Methodologies used for determining impact significance and the implications for EIA effectiveness in South Africa: Case studies from KwaZulu-Natal

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Abstract

The evaluation of impact significance is an important but less understood component of EIA theory and practice. Studies of EIA effectiveness, in terms of impact significance, reveal marginal to poor performance levels in determining impact significance in impact evaluation. A review of the Environmental Impact Assessment (EIA) literature in South Africa found that there is very little information that addresses the effectiveness of the EIA in South Africa. The Lee and Colley review method was adopted to review impact significance assessment methods in ten Basic Assessment Reports (BARs). In addition, questionnaires were completed by respondents in the EIA field to obtain their perspectives on the impact significance assessment methods and the effectiveness of the EIA process. The study found that the EIA process overall is considered as being moderately effective and the method of impact assessments used by EAPs do not fully comply with the relevant environmental legislative requirements (i.e. the 2010 EIA Regulations) and guidelines (i.e. DEAT Guideline Series 5). This in turn has an effect on the overall effectiveness of the EIA process in terms of impact significance. Recommendations are provided to improve the impact significance assessment methods which can ultimately contribute to EIA effectiveness.

Key words: Environmental Impact Assessment (EIA), Significance, Effectiveness Impact Significance Assessment Method, South Africa.

Declaration

In partial fulfilment of the requirements of the degree of Master of Science (Coursework) in Environmental Science at the University of KwaZulu-Natal.

I, Manogrie Chetty, hereby declare that this dissertation submitted for the degree of Master of Science (Coursework) in Environmental Science is my own work and that all borrowed ideas have been adequately referenced.

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Acronyms

BID	Background Information Document
BA	Basic Assessment
BAR(s)	Basic Assessment Report(s)
CA	Competent Authority
COGTA	Cooperative Governance and Traditional Affairs
CONNEP	Consultative National Environmental Policy Process
DAEA	Department of Agriculture and Environmental Affairs
DAEARD	Department of Agriculture, Environmental Affairs and Rural Development
DAFF	Department of Forestry and Fisheries
DEA	Department of Environmental Affairs
DEAT	Department of Environmental Affairs and Tourism (Note: DEA was formerly known as DEAT)
DMR	Department of Mineral Resources
DWS	Department of Water and Sanitation
DUCT	Duzi Umgeni Conservation Trust
EA	Environmental Authorisation
EAP(s)	Environmental Assessment Practitioner(s)
ECA	Environmental Conservation Act
EE	Environmental Effect
EIA	Environmental Impact Assessment
EIAR	Environmental Impact Assessment Report
EIR(s)	Environmental Impact Report(s)
EIS	Environmental Impact Statement
EDTEA	Department of Economic Development, Tourism and Environmental Affairs (KZN)
EKZNW	Ezemvelo KZN Wildlife
EMPr	Environmental Management Programme
EMS	Environmental Management System
ENRC	Environmental and Natural Resource Committee
EP(s)	Equator Principle(s)
ERA	Environmental Risk Assessment
GIS	Geographical Information System
GNR	Government Notice Regulation
IAIA	International Association for Impact Assessment
IDP	Integrated Development Plan
I&AP(s)	Interested and Affected Party(s)

IEM	Integrated Environmental Management
KZN	KwaZulu-Natal
MPRDA	Mineral and Petroleum Resources Development Act (Act 28 of 2002)
NEMA	National Environmental Management Act (Act 107 of 1998)
NEMAQA	National Environmental Management Air Quality Act (Act 39 of 2004)
NEMBA	National Environmental Management Biodiversity Act (Act 10 2004)
NEMICM	National Environmental Management Integrated Coastal Management Act (Act 24 of 2008)
NEMP	National Environmental Management Principles
NEMPAA	National Environmental Management Protected Areas Act (Act 57 of 2003)
NEMWA	National Environmental Management Waste Act (Act 59 of 2008)
NEPA	National Environmental Policy Act
NGO	Non-governmental Organisation
PADC	Project Appraisal for Development Control
SA	South Africa
SANBI	South African National Biodiversity Institute
SANParks	South African National Parks
SAWS	South African Weather Service
SDCEA	South Durban Community Environmental Alliance
SEA	Strategic Environment Assessment
UK	United Kingdom
UKZN	University of KwaZulu-Natal
UNEP	United Nations Environmental Programme
US	United States
USA	United States of America
WRAM	Water Resource Assessment Methodology

Chapter One

1.1 Introduction

In the early 60's, civilisation became mindful of the impact that they were having on the environment, including the earth's natural resources, raw materials and people (Achieng Ogola, 2007). This knowledge eventually led to awareness of the need for an interdependent connection between people and the natural environment, where this environment was to be nurtured and its resources were to be used sustainably (Achieng Ogola, 2007). This however was not always evident. The concept of sustainable development was introduced globally in the 1980s as an expression of the interdependence between people, nature and economic development (Weaver, 2003). The most widely accepted definition of sustainable development describes it as "development that meets the needs of the present without compromising the ability of future generations to meet their needs and aspirations" (WCED, 1987: page 1). The need for sustainable development resulted in groups being created with the intention of developing a tool that can be used to protect the environment during development (Achieng Ogola, 2007). This tool became known as the Environmental Impact Assessment (EIA). EIA is pertinent to an extensive range of development actions which include plans, programmes, policies, and projects (Glasson *et al*, 2012). "EIA is a tool used to identify the environmental, social and economic impacts of a project", during the planning and design phase, prior to decision-making (Shah *et al*, 2010: page 47).

The EIA was first introduced in the United States of America (USA) in 1969 under the National Environmental Policy Act (NEPA) (Glasson *et al*, 2005). The United Nations Conference on the Environment in Stockholm in 1972 formalised EIA (Achieng Ogola, 2007). This tool aims to predict environmental impacts, find ways to minimise negative impacts, adjust development to enhance the local environment and to bring to the attention of the decision-makers, the expectations and alternatives of that project (UNEP, 2002a). The environmental impacts of a project are those subsequent fluctuations in environmental factors, in space and time, in comparison to what would have taken place should the project have not proceeded (Glasson *et al*, 1999). The environmental parameters refer to air quality, water quality, noise, levels of local unemployment, crime and any other physical and /or socio-economic parameters (Glasson *et al,* 1994). The EIA process is made up of phases, commencing in most cases with the scoping

phase, thereafter followed by the baseline studies. Once the baseline conditions have been established, the impact prediction phase is undertaken, which includes the evaluation of impacts and determination of impact significance, followed by the mitigation phase. According to Bevan (2009), the term significance is evident in EIA legislation, policy, guidelines and even impact statements. According to Lawrence (2005), significance determination in EIA practice makes a decision about what is considered to be significant, desired or satisfactory and it also unravels the level of importance / significance. Significance determination in the EIA process, if properly undertaken, should thus be able to identify and aim to realise both substantive and procedural objectives (Lawrence, 2005). The need to determine the significant effects emphasises the importance of understanding the different methods that can be used in listing significant impacts (Thompson, 1990). Internationally, methods of impact significance through impact prediction were found to vary between and within EIA components (Morris and Therivel, 2001). All findings of the impact assessment phase are then described in an Environmental Impact Statement (EIS), followed by the monitoring phase which involves monitoring the construction phase to ensure that the proposed mitigation measures as stated in the Environmental Management Programme (EMPr) are implemented to minimise and/or prevent all potentially significant impacts (Van de Linde, 2009). The establishment of EIA in the USA in 1969, lead to the establishment of EIA systems throughout the world. Developed countries began to establish their own EIA systems (i.e. "Canada in 1973, Australia in 1974, West Germany in 1975, France in 1976" (Glasson *et al*, 1999: page 37), followed by the developing world. EIA is now practised in more than 100 countries worldwide including a number of international aid agencies and development banks (UNEP, 2002a).

According to Van de Linde (2009), in addition and complementary to strong environmental management and conservation strategies, environmental protection is often provided through law. Environmental law can be seen as the legal principles which have the subject that they regulate as a common denominator but not their distinct character, which in this case is the environment (Van de Linde, 2009). Environmental politics and policies have been emerging rapidly through the world since environmental issues were included in the international agenda in the early 1970s (Najam *et al*, 2006). Environmental Governance according to the Murombedzi (2013) is the way in which people determine and act on objectives and priorities related to managing natural resources in the environment. It also comprises formal and informal rules that preside over

human behaviour in the decision-making process (Murombedzi, 2013). Appropriate legal frameworks at all levels, ranging from global to local, are essential to good environmental governance (Murombedzi, 2013). The environmental governance system that is in place today globally takes into consideration both the achievements and failures of this development and there is an increased understanding of environmental threats posed and several attempts have transpired to address these issues (Najam *et al*, 2006). The term environment has been defined by South African statutory law as a subject within the environmental law context (Van de Linde, 2009). South Africa has one of the worlds' most progressive "environmental legal frameworks entrenched with the environmental right to ecologically sustainable development" (Van Wyk, 2012: page 58). A number of tools, including the EIA, are presented within the legal framework as listed in National Environment Management Act (Act 107 o 1998) (NEMA). NEMA is a framework legislation which has the potential to enhance co-operative environmental governance [1] between different ministries and spheres of government within a country (Van de Linde, 2009). The EIA system in South Africa is considered to be "integrative and holistic, addressing social, economic, and environmental or ecological issues concurrently" (Murombo, 2008: page 107). The National Environmental Management Principles (NEMP) in NEMA states that "Development must be socially, environmentally and economically sustainable" (SA, 1998: page 10). The main purpose of the EIA process is thus to make sure that development is sustainable. The EIA regulations were promulgated as a result of need for sustainable development. The 2010 EIA Regulations were reviewed for the purpose of this research study.

One of the core questions of research on the effectiveness of environmental policy tools from a traditional approach has been whether the tool works, is used as envisioned, and meets the purposes for which it is intended (Polonen *et al*, 2010). According to Polonen *et al* (2010), effectiveness often refers to the achievement of policy goals. The effectiveness of EIA is vital in EIA development due to its pivotal role in environmental management. Since the emergence of EIA, a number of questions have been raised relating to its effectiveness. Some believe that the process seems beneficial in theory but fails to deliver practically.

[1] The Constitution of South Africa, 1996 establishes "national government, provincial government and local government as distinctive, interdependent and interrelated spheres" (SA, 1996: page 14). "Despite each sphere having different roles and responsibilities the Constitution recognises that the spheres cannot work independently of each other. Chapter 3 of the Constitution provides for co-operative governance. The co-operation should take place in mutual trust and good faith" (SALGA, 2006: page 44).

EIA can be considered to be an efficient tool of environmental management, if it achieves three purposes: facilitates decision-making, aids the developer and, achieves sustainable development (Glasson *et al* 1999). The EIA process should be a way to achieve good environmental management; this can only be achieved if the assessment of impacts is continued through the entire life cycle of the project (Harmer, 2005). In other words, the EIA needs to go beyond the construction phase to be effective in environmental management (Harmer, 2005).

1.2 Research Problem

A review of the EIA literature in South Africa found that there is very little information that addresses the effectiveness and efficacy of the EIA in South Africa. Impact significance is a vital part of determining whether the EIA process is effective or not. The concept of significance is mentioned many times in the South African EIA Regulations, and is integral to an effective EIA system, however, it seems to be one of the most intricate, controversial and least comprehended aspects of EIA (Bevan, 2009). Regardless of the essential and complicated function, significance is still a misunderstood part of EIA theory (Wood, 2008). Nonetheless, the assessment of the impact significance is critical in EIA theory and practice (Mosakong Development, 2010). Studies undertaken on the effectiveness of EIA show that the performance levels achieved during significance determination were marginal to poor (Sadler, 1996 as cited in Lawrence, 2005). The assessment may be qualitative or quantitative where qualitative assessments are found to utilise ratings such as "neutral, slight, moderate, large" and quantitative assessments may include the "measurement or calculation of numerical values i.e. the level of a pollutant in relation to a statutory threshold value" (Morris and Therivel, 2001: page 8).

The manner in which significance determination should occur in both Environmental Impact Reports (EIRs) and Basic Assessment Reports (BARs) is set out in the South African 2010 EIA Regulations (Government Notice Regulation (GNR) 543) (SA, 2010). The 2010 EIA Regulations (GNR 543) requires *"... an assessment of each identified potential significant impact including: the cumulative impacts; the nature of the impact; the extent and duration of the impact; the probability of the impact occurring; the degree to which the impact can be reversed; the degree to which the impact may cause irreplaceable loss of resources;*

and the degree to which the impact can be mitigated" (SA, 2010: page 25). However, one finds that different Environmental Assessment Practitioners (EAPs)[2] use different methods / approaches to assess impact significance, depending on the type of project and the Competent Authority (CA) who reviews the applications, amongst others (Mosakong Development, 2010). In view of the above observations, this study focuses on the South African experience and (i) investigates different methods or approaches used by EAPs to determine impact significance in impact assessment practice; (ii) explores the views of various participants on different impact assessment methodologies and how these may influence EIA outcomes; and (iii) investigate how these methods relate to EIA effectiveness in South Africa overall. It is hoped that the findings will thus add value to the growing body of knowledge on EIA effectiveness, and more specifically make a contribution to filling the current gap in the literature on the South African experience and add to the debate on how significance can be expressed meaningfully.

1.3 Research Questions

The followings questions aim to be answered by this research study:

i. What is the legislative framework and are there guidelines in place for ascribing impact significance in South Africa?

ii. What are the different methods or approaches used for determining impact significance in a Basic Assessment Reports in South Africa?

iii. What are the views of key participants regarding impact significance methodologies and the implications these have for EIA outcomes in South Africa?

iv. What recommendations can be put forward in relation to the methodologies used in the determination of impact significance that might benefit EIA practice in South Africa?

[2] *Environmental Assessment Practitioner (EAP)* according to NEMA, means the individual responsible for the planning, management and coordination of environmental impact assessments, strategic environmental assessments, environmental management plans or any other appropriate environmental instruments introduced through regulations.

1.4 Aim and Objectives

The aim is to:

Investigate the methodologies used for determining impact significance and the implications for EIA effectiveness in South Africa: case studies from KwaZulu-Natal.

The aim will be achieved by the following objectives:

i. To critically review international experience and develop an understanding of the regulatory framework for EIAs and guidelines for impact significance in South Africa;
ii. To compare and critically review the different 'methods / approaches' for determining impact significance in a sample of Basic Assessment Reports;
iii. To explore the views of key participants regarding impact significance methodologies and outcomes and the EIA process in South Africa; and
iv. To make recommendations for methodologies for determining impact significance that might benefit EIA practice in South Africa.

1.5 Structure of the Dissertation

This document comprises of six chapters. Chapter One provides a brief introduction to the EIA process internationally and contextualises the current study. This chapter also outlines the research problem, the aim and objectives of the research.

Chapter Two presents an overview of the existing literature on the EIA process. This chapter begins with a review on the development of the EIA process internationally, followed by the a review of the EIA process in South Africa in terms of Integrated Environmental Management (IEM), the regulatory framework and applicable guidelines. This chapter also presents a review on the effectiveness of EIA in relation to meeting procedural requirements as well as substantive outcomes, with a focus on how it pertains to impact significance methodologies internationally and in South Africa. The chapter concludes with a review on EIA Impact Significance Methodologies and different approaches internationally and local experience, merits, challenges.

Chapter Three describes the methodology utilised to obtain the data for this research project. The research design is introduced where the different methodologies are defined. A review and comparison of both the qualitative and quantitative methods used was conducted. Questionnaires were submitted to the relevant participants involved in the EIA process including the CA, the applicant, NGOs, the EAP, the municipality and any other commenting authorities such as the Department of Water and Sanitation (DWS), AMAFA. A range of BARs were reviewed from different environmental consultancies in KwaZulu-Natal to identify the different methods adopted. Methods considered 'best practice' internationally are used as a model for comparison together with the recommendations of the 2010 EIA Regulations. In the absence of a specified methodology or best practice guideline in South Africa, a set of evaluation criteria was developed to form the basis of the analysis of the case study reports.

Chapter Four presents and discusses the results in terms of the impact assessment methods used in the case study BARs by the Environmental Assessment Practitioners (EAPs). The findings of the above are discussed and presented and recommendations made based on the outcome of the literature review together with the interviews and review of the case studies.

Chapter Five presents the findings and discusses the views of participants. Results of a thematic analysis of the questionnaires are presented and discussed in this chapter.

Chapter Six provides a conclusion drawn from the research and presents suggestions for improving the methods used in the EIA process so as to improve the effectiveness of EIA in South Africa.

Chapter Two - Literature Review

This chapter provides a background to the development of the EIA process internationally, followed by a discussion of the EIA system in South Africa in terms of Integrated Environmental Management (IEM), the regulatory framework and applicable guidelines. This chapter also presents a review of the effectiveness of the EIA meeting procedural requirements, with specific focus on how it pertains to methodologies used for assessing impact significance both internationally and in South Africa. Further to this review, this chapter concludes by unpacking the various methods employed to assess impact significance in EIAs globally and in the local context.

2.1 Introduction

The EIA was formally established in the USA in 1969 (Glasson *et al,* 1999) to identify and investigate the environmental impacts of a project and to facilitate the decision making process (Sowman *et al*, 1995). This establishment subsequently resulted in the emergence of a number of definitions of EIA. According to Glasson *et al* (2012: page 4), the EIA definition that is adopted by the International Association for Impact Assessment (IAIA) is "the process of identifying, evaluating and mitigating the biophysical, social and other relevant effects of proposed development proposals prior to major decisions being taken and commitments made".

The purpose of EIA, according to King and O'Beirne (2014), is to ensure that the environmental impacts of any development are effectively taken into consideration in the decision-making process and that purpose has been applied to the principles of sustainable development. The purpose of that EIA process according to (UNEP, 2002a) is to present information on the environmental effects of proposed activities for decision-making and identify suitable mitigation measures that encourage environmentally beneficial and sustainable development. The aim and objectives of EIA, according to the literature reviewed, can be separated into two groups: the short term and long term objectives (Table 2.1). The aim of the short term objective according to UNEP (2002a) is to ensure that the decision-making authority is provided with the necessary information including the identification of potential significant environmental impacts and hazards of the project activities. The long term aim is to achieve sustainable development. One of the ways to achieve this is to

ensure that the proposed development activities does not damage important resource and ecological functions provided by the environment, including the role it provides to communities in terms of their well-being, and lifestyles (UNEP, 2002a).

Table 2.1: Immediate and Long-Term Objectives of the EIA Process (Source: UNEP, 2002a)

Immediate objectives of EIA	Long-term objectives of EIA
• Enhance the environmental design or layout of the proposed project; • Make sure that natural resources are used correctly and in a manner that is not wasteful; • Recognise suitable measures for preventing, reducing and /or mitigating the potential impacts of the proposed development; and • Enable an informed decision making process whereby the environmental duration, conditions and limitations for the proposed project are put forward.	• Protect the health and safety of the affected community; • Avoid permanent changes that will result in grave damage to the natural environment; • Protect resources, natural areas and ecosystem components that are deemed irreplaceable; and • Increase the social aspects of the proposed development or project. .

The EIA process is based on principles of good governance which seek to ensure that the aims and objectives as set out above are met. According to Saidi (2010), first and foremost, the EIA needs to be *purposive* by informing decision-making and ensuring that the environment, as well as human health is protected. The EIA also needs to be *focused* and *adaptive* by considering significant environmental issues and seeks to adapt the project proposals to minimise the potential impacts (Saidi, 2010). The EIA commenced as practical tool that was supposed to be used to aid decision making where the goal is to ensure a decision that is informed and defensible. This is not always possible for many reasons i.e. the various objectives and pressures of different stakeholders, the many conflicting limitations between the different environmental options, and the collection of huge amounts of project-specific information that the public and decision maker have to take into consideration (Evans, 2014). According to Evans (2014), environmental decisions present very complex choices so much so that the choices are more political, social, cultural, and economic based.

According to Saidi (2010), the EIA process allows for the participation of Interested and Affected Parties (I&APs) and allows for the consideration of the issues / concerns raised by these I&APs and is thus *participative*. The inclusion of public participation is not always evident. The lack of inclusion of the principles of good governance into the EIA process were also identified by Yusuf (2008), King (2009) and Shepherd (2012), where the public participation process was found to be inadequate.

Transparency of the EIA process allows for an open process where documentation is easily available to the public (Saidi, 2010), however, in some cases corruption seemed to be at the forefront (Kakonge, 2013). These principles are not always adhered to, one such example looks at Victoria's (Western Australia) EIA legislation, it is considered to be inadequate in achieving a sustainable future for Victoria (Rao, 2010). The Victorian Parliament's Environment and Natural Resources Committee (ENRC) undertook an investigation and found that the system in place at the time of the inquiry did not meet the standards of leading practice, it failed to meet globally "understood purposes of a rigorous, transparent, accountable, participative and deliberative assessment of projects" as described in best practise guidelines by the International Association for Impact Assessment (IAIA) (Rao, 2010: page 36). The Environments Effect (EE) Act of 1978 was in effect at the time of the inquiry and the act was found to be fatally flawed. According to Rao (2010), the act did not require complete and transparent investigations into proposed activities, it does not provide any assurance that the public will be provided with an opportunity to be involved in the EIA process and the EIA system that is currently in effect is based on an Act that is not obligatory. The EE Act does not allow for the comparison of alternatives and options, does not integrate environmental, social and economic concerns, nor does it allow for the avoidance or minimisation of potential negative effects (Rao, 2010).

The EIA process should also be both *rigorous* and *practical* by ensuring that the best practicable methods are used to address the impacts and issues and seeks to implement practical mitigation measures (Saidi, 2010). Finally the EIA process must be *credible* and *efficient*. According to Saidi (2010), this means that the EIA process must be fair, objective, impartial, and enforce the lowest cost burden on applicants who consistently meet the process requirements and objectives. In addition, the process must be carried out by an independent professional who has the relevant qualification and experience. The EIA process is not always

considered to be credible and efficient as it is sometimes undertaken by professionals who lack the expertise and accreditation (Van Heerden, 2012). The principles of EIA are in place to ensure good environmental governance, and if implemented correctly can ensure that development is sustainable.

2.2 EIA, Sustainable Development and Sustainability

The EIA is considered worldwide to be a key tool for sustainable development. Impact assessment tools are used throughout the world to ensure that all planned projects are economically feasible, socially unbiased and environmentally sustainable (Weaver, 2003). The legislature and policy framework currently in place in the region and through the world, together with the sustainable development challenges in southern Africa, allow for the EIA to take on a leading role (Weaver, 2003).

Sustainable Development according to the Brundtland Commission is defined as "ability to make development sustainable—to ensure that it meets the needs of the present without compromising the ability of future generations to meet their own needs" (WCED 1987: page 41). There is no mention of development or the environment, however, the paragraphs that follow this definition clearly state that in terms of development basic human requirements are essential; that resources must be shared with the poor; that economic growth is vital to support them; and that equity is supported by effective public participation (Kates *et al*, 2005). With regards to the environment, Kates *et al* (2005: page 11) indicates that the following is also evident in relation to the concept of sustainable development: "The concept of sustainable development does imply limits—not absolute limits but limitations imposed by the present state of technology and social organization on environmental resources and by the ability of the biosphere to absorb the effects of human activities"

Sustainable development according to Keating (2013) is the process of achieving sustainability. Sustainability is defined as "meeting the ecological, social and economic needs and aspirations of human and other species" (Lawrence, 1997: page 25). The use of environmental resources in sustainable manner is imperative in directing governance and management in the Anthropocene (Knight, 2015). Anthropocene was a term that was introduced to capture this quantitative shift in the affiliation between people and the global

environment (Steffen *et al*, 2011). The sustainability concept is the viewed as being at the centre of the human–environment connection and is based on the notion that the resources that are used by people can be quantified and is limited and as such the ways in which resources are used can be managed or regulated (Knight, 2015). Sustainability is therefore about accomplishing two challenging tasks simultaneously, meeting human needs whilst bringing the environmental impact of all development in the world to a sustainable level (Keating, 2013). A sustainable environment is one that is environmentally sound, cost-effective, and fair to society (Lawrence, 1997). The sustainability concept is an important environmental management perception, however, there are several concerns and hindrances that must be attended to if the concept is to be transformed into realistic strategies (Lawrence, 1997). It is a perception that can present a number of important lessons for the EIA and environmental management overall (Lawrence, 1997).

In the past, EIA has been criticised as an administrative tool with marginal value to environmental management (Lawrence, 1997). The EIA has in the past lacked the following: a foundation based on ethics, a purpose is clear and concise, a means for determining significance and assessing alternative options, and a way of connecting EIA to other instruments of environmental management (Lawrence, 1997). The amalgamation of the sustainability concept into EIA offers the ability to ameliorate these limitations.

The next subsection reviews the history of EIA internationally.

2.3 Background to the EIA

The history of Environmental Assessment (EA) has been one of significant progress, where three trends are prominent. The first trend is the adoption of EA world-wide from its United States (US) origins, followed by the innovations in law, method and procedure that have driven the development of the process and the last trend includes the expansion in the scope of assessment in response to new challenges and issues (Sadler, 1996). The United States National Environmental Policy Act (NEPA) (1969) was the first legislation that required EIAs. This was fundamental as it was the first official tool that was used for the protection of the environment and natural resources (Achieng Ogola, 2007). Since the establishment of the Act, institutional

frameworks in the US have taken a number of forms, and the process has diversified significantly, however, the purpose of the EA in NEPA has remained the same (Sadler, 1996).

According to Sadler (1996) and UNEP (2002a), the EIA was introduced in the NEPA to address the public concern over the state of the environment; and to address the concern relating to the increasing consequences resulting from proposed new technologies and bigger development schemes. Prior to NEPA, the economic appraisal techniques that was in place at that time did not consider the environmental and social impacts of large projects (UNEP, 2002a). When NEPA was created, it was the intention of the environmental impact statement to be a means of changing the way decisions were made by government in the USA (UNEP, 2002a). This ultimately resulted in the global adaptation of EIA and culmination of Principle 17 of the Rio Declaration on Environment and Development (UNEP, 2002a).

The EIA process has also significantly advanced, determined by advancement in law, procedure and methodology. The evolution of EIA according to Sadler (1996) and UNEP (2002a) can be divided into four overlapping phases. The first phase is the introduction and early development of EIA which occurred during 1970 – 1975. The mandate and base of EIA was created in the USA in this phase, it was accepted by countries i.e. Australia, Canada, New Zealand; and the fundamental notion, process and approach are applied (Sadler, 1996 and UNEP, 2002). During the mid ’70s to early ’80s, increasing scope and sophistication occurred. More advanced techniques i.e. risk assessment, which involves the identification, analyses and evaluation of potential risks posed by project, was developed; the screening and scoping phases of the process was implemented; impacts of a social nature were now taken into consideration in the process; issues raised by the public steered innovations in developed countries; EIA was now used in developing countries i.e. China and the Philippines) (Sadler, 1996 and UNEP, 2002a). The third phase occurred in the early ‘80s to ‘90s. During this phase the EIA process was strengthened and integrated; review of EIA processes was undertaken; EIA frameworks were updated; EIA was synchronised with other processes, changes to ecosystem levels and cumulative effects; compliance monitoring was taken into consideration (Sadler, 1996 and UNEP, 2002a). EIA was then adopted in more countries, the European Community and the World Bank established multi national and global lending prerequisites (UNEP, 2002a). In the last phase the aspects of

EIA are incorporated into international agreements; there is rise in capacity training and networking; Strategic Environmental Assessment (SEA) policies and plans are established; sustainability concepts and principles are included in EIA and SEA practice; EIA practised in numerous developing countries (Sadler, 1996 and UNEP, 2002a). These phases are not representative of EIA development in all countries, it is specific to the USA (Sadler, 1996 and UNEP, 2002a).

The inclusion of EIA into NEPA has resulted in the establishment of EIA systems throughout the world, starting with first world countries (i.e. "Canada (1973), Australia (1974), West Germany (1975) and France (1976)"), and later in less developed countries including African and South American countries (Glasson *et al*, 2012: page 40). The European Directive on EIA was accepted in the late 1980's and facilitated the commencement of EIA legislation in many European countries and in the early 1990's, EIA regulations and guidelines were increasingly being established in Africa and South America (Glasson *et al*, 2012). According to Glasson *et al* (2012), by 1996, more than 100 countries had an EIA system in place which varied greatly. In some countries regulations, acts or statutes were in place and in other cases, EIA guidelines were well established (Glasson *et al*, 2012). Guidelines differ from regulation, acts or statutes in that it is not enforceable (Glasson *et al*, 2012).

Leading financial agencies i.e. the World Bank, not only act as a financier but through its analytical and technical assistance and lending programs the World Bank has been a strong partner for countries, supporting environment and social objectives and sustainable development (EASES, 2006). Bankers review EIAs to confirm that they are of acceptable standards and to also ensure that the correct policy and procedural requirements have been considered (i.e. the World Bank's protection policies) (DEAT, 2004). Financial institutes use the Equator Principles (EPs) to determine, assess and manage environmental and social hazards in development (EPA, 2011). The EPs are a risk management framework which aims to stipulate the minimum standards, these standards encourage responsible risk decision-making to ensure that due-diligence is met (EPA, 2011).

Not all international EIA systems are the same, but the systems seem to have a similar pattern in terms of the process implemented, where the general goal is to promote the implementation of sustainable development (Nanda and Pring, 2013). The EIA process consists of a few sequential steps and most often commences with the screening phase. The next section provides details on the steps of the EIA process, as generally applied in the international context.

2.4 EIA Process Internationally

The screening phase is the first step of the EIA process and is undertaken at the concept stage to determine if the proposed project activities will have a significant impact on the environment. Following the screening phase, the main procedures[3] of the EIA that are likely to be followed to assess the environmental parameters are as follows (Figure 2.1) (Morris and Therivel, 2001):

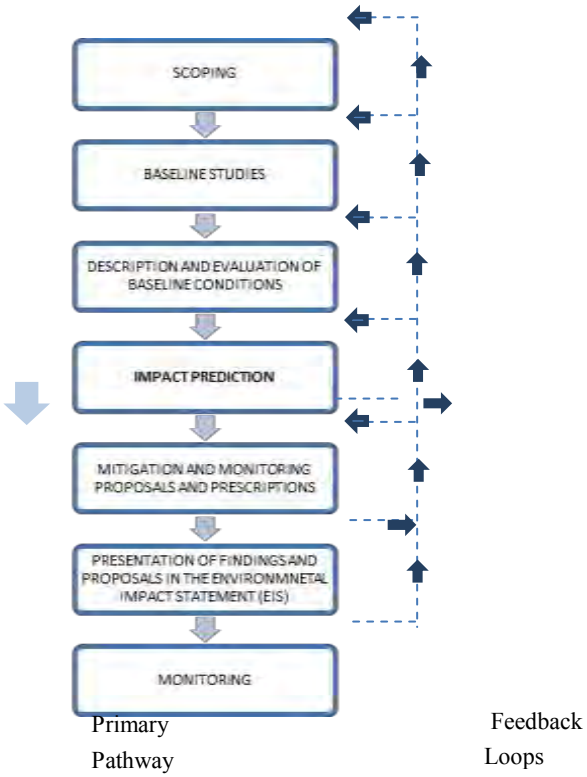

Figure 2.1: Procedures in the Assessment of EIA (Morris and Therivel, 2001)

[3] Refers to an established or accepted way of doing something

Figure 2.1 demonstrates the stepwise nature of the EIA, as well as the requirement for constant reappraisal and adjustment (as indicated in the feedback loops) (Morris and Therivel, 2001). The EIA process is iterative and this is evident in the screening phase of the process where the necessity for a formal EIA and its related cost implications can cause the applicant to reconsider the design of the project to reduce the significant impacts of that project to a point where it will no longer require an EIA (Nielsen *et al* 2005).

2.4.1 Screening

The main aim of the screening phase is to determine whether a project needs to undergo the EIA process including the amount of detail required (Achieng Ogola, 2007). Screening according to Lattemann (2010), involves the initial evaluation of the projected impacts arising the activities of that project and of their comparative significance. Screening is often governed by the EIA Regulations in effect in that country (Glasson *et al*, 1999). Figure 2.1 assumes that the screening process has already been undertaken by the developer.

The screening procedures can be categorised into two approaches, the prescriptive approach and the discretionary approach. With the prescriptive approach, project applications either have to follow the EIA process or not based on the activities listed in the legislation and regulations, and with the discretionary approach each application is screened using indicative guidance (UNEP, 2002b). A combination of both these approaches is also sometimes used when screening. It may sometimes be difficult to determine which approach or whether a combination of both approaches should be used as the environmental impacts is not always evident. It is recommended that when there is uncertainty, screening should be undertaken for that individual application, and established guidelines and criteria should be considered (UNEP, 2002b). This places more responsibility with the CA in determining the requirements.

2.4.2 Scoping

The first step of the EIA process after the screening phase is the scoping phase. 'The scope of an EIA is the impacts and issues it addresses' and the scoping process decides which impacts are significant following a review of all potential impacts and project alternatives (Glasson *et al*, 1999). This phase aims to achieve the

following: to identify crucial receptors, consideration of alternative options and the impacts related to each option, selection of impact assessment methodologies, identify important I&APs that must be afforded an opportunity to comment; to make sure that resources and time are spent on significant impacts and receptors; to establish early communication between all directly and indirectly affected stakeholders that can provide important information; and to bring to the applicants' attention, potential constraints that may be a problem to the project (Morris and Therivel, 2001). The scoping phase is a vital step in the EIA process as it identifies important issues that the EIA must focus on and areas that are of less significance (Lattemann, 2010). The scoping phase serves to identify key stakeholders, both governmental and non-governmental, and to also ascertain good lines of communication (Dougherty and Hall, 1995). It is important that people directly affected by the proposed project are notified as soon as possible, as their knowledge and perspectives can have major bearings on the focal point of the EIA (Dougherty and Hall, 1995).

2.4.3 Baseline Studies

According to Morris and Therivel (2001), baseline studies often acts as the supporting phase of the EIA and only when these studies have obtained the necessary data on the environmental, social and economic systems in the area likely to be impacted, can effective impact predictions be made, appropriate mitigation measures can be recommended, and valuable monitoring programmes can be compiled and implemented. The first two steps assist in providing a description and evaluation of the baseline conditions (Morris and Therivel, 2001). The conditions of the baseline studies are established during the scoping phase (Lattemann, 2010). Once significant issues have been identified, the need for specialist studies can be clearly identified and data collection can commence (Dougherty and Hall, 1995). The baseline conditions should be clearly described and evaluated and comprise of a proper description of the methods used and clear and concise presentation of results attained; an indication of the identified gaps, limitations and ambiguities; and an inclusion of the assessment of the importance of significant receptors and the associated impact sensitivity (Morris and Therivel, 2001).

2.4.4 Impact Prediction, Evaluation and Significance Assessment

The impact prediction is the fourth step in the assessment of the environmental component of the EIA and fundamental to the EIA process. This part of the EIA phase which includes the assessment of impact significance, is directly related to this research project.

The potential impacts of the development should be taken into consideration for all components of the environment. Impact prediction must comprise an assessment of direct, indirect and cumulative impacts across all project phases (Morris and Therivel, 2001). Methods of impact prediction were found to differ not only between EIA components but also within those same components (Morris and Therivel, 2001). According to UNEP (2002c), the identification and prediction of impacts are compared to the baseline environmental conditions and are separated by the indices and indicators they represent (i.e. noise, biodiversity, air/water, ecological sensitivity). There are different techniques than can be utilised in impact prediction i.e. checklists; matrices; networks; mathematical / statistical models; and mapping and Geographical Information Systems (GIS) (Morris and Therivel, 2001). These techniques will be reviewed in more depth, given its relevance to this study, in the next main section (Section 2.5).

Once the impacts have been predicted, the assessment of impact significance follows. The impact significance is "the product of an impact's characteristics (magnitude and extent in space and time) and the value, sensitivity/ fragility and recoverability of the relevant receptor(s)" (Morris and Therivel, 2001: page 8). Significance determination in EIA makes decisions about what is considered to be vital, desired or satisfactory and it also "interprets degrees of importance" (Lawrence, 2005: page 3). According to SNH (2013), the significance of an impact originates from an evaluation of the following: resource sensitivity; the magnitude and timing of the impact; the extent and duration of the impact; the probability of the impact; the impact significance; and a comparison of the no-go option.

EIA practice can, however, never be absolutely complete as there is always a possibility that there are a greater number of impacts that can be addressed; interactions and alternatives can be considered over a broader area, for an extended duration, and with varying levels of detail (Lawrence, 2005). Additionally a

study undertaken by Sadler (1996 as cited in Lawrence, 2005: page 5) on EIA effectiveness provides evidence of "marginal to poor performance levels" in significance determination, in the evaluation of impacts and in "specifying the significance of residual impacts". Significance determination, if correctly carried out, "should identify and seek to achieve both procedural (how significance determinations are made) and substantive (outcomes from significance determinations) objectives" (Lawrence, 2005: page 5). "There are certain essential properties associated with impact significance judgements in EIA practise" and "each property has implications for how significance determination procedures can and should be conducted" (Lawrence, 2005: page 7).

2.4.5 Mitigation

Avoidance, minimisation, remediation or compensation of the anticipated project impacts what mitigation measures aim to achieve (Morris and Therivel, 2001). This step of the EIA process is considered to be both a creative and practical phase and seeks to find the best ways and means of achieving its aim (UNEP, 2002d). According to UNEP (2002d), mitigation can be conveyed by physical measures (i.e. layout or site changes, process alterations) and non-physical measures (i.e. economic reasons, legislative requirements, social reasons including the provision of essential social services to communities as well as training and capacity building of community members).

The specific actions predicted as mitigation by the EIA practitioner give structure to what can be termed the 'mitigation form' and these actions may be 'directed against the project, its processes, the end product of its processes, the by-products of the process, or even the structure or essence of the development' (Marshall, 2012: page 197). Mitigation approaches, however, require two additional components in their performance, the implementation phase (the phase of the project or timing when mitigation is applied) and the methodology (the means by which the action envisaged is to be enacted) (Marshall, 2012). Mitigation measures change the nature of the project and its associated impacts. If the significant impact is eliminated then certain issues can be scoped out of the EIA and in some cases the EIA may not be required (Sheate, 2012). Those impacts that still continue beyond the mitigation phase are referred to residual impacts (Sheate, 2012).

2.4.6 Monitoring

According to Morris and Therivel (2001: page 9), monitoring can be described as the "continuous assessment of environmental or socio-economic variables by the systematic collection of specific data in space and time". In an EIA, monitoring can comprise of the monitoring of baseline conditions, monitoring compliance to check if certain conditions are adhered to and / impact and mitigation monitoring whereby the impacts are compared to establish whether the mitigation measures are effective (Morris and Therivel, 2001). This step differs from the mitigation step in that it ensures that the mitigations proposed are implemented.

Baseline monitoring, according to Tache (2011), is considered the measurement of conditions on site prior to the commencement of that project whereby the environmental, social and economic variables are determined. Whereas impact monitoring refers to the incorporation of quantification of the same variables as done during baseline monitoring (Tache, 2011). However this is done during the construction and operation phases of the development to identify changes that result from the project (Tache, 2011). Compliance monitoring refers to the monitoring of conditions during different periods (i.e. seasonal monitoring) and / continuous measurement of levels various socio-economic parameters (Tache, 2011).

Various methodologies can be used be used to achieve impact assessment significance (as discussed in section 2.4.4). The different methods identified during the literature review have been discussed in the next section.

2.5 Determining Impact Significance in EIA

The focus of this section is a review of the most vital steps of the EIA process, impact prediction and evaluation of impacts including significance determination. Issues identified in the scoping phase are analysed and potential impacts described by identifying the various types of impacts; by impact prediction (including magnitude, probability and extent of anticipated impacts); and by impact significance determination (AEPS, 1997).

2.5.1 Impact Significance in EIA

2.5.1.1 Types of Impacts

There are three different impact types, these impacts can result in changes to the current conditions and can be direct, indirect or cumulative. Changes can occur at different ecological and social levels and can also vary over time and space and can be negative or positive (AEPS, 1997). Changes in environmental factors as a result of direct "cause-effect consequences of interactions between the environment and project activities" are referred to as direct impacts whereas indirect impacts are the outcome of "cause-effect consequences of interactions between the environment and direct impacts" (AEPS, 1997: page 18). The accumulations of changes to the environment due to human activities are referred to as cumulative impacts (AEPS, 1997).

2.5.1.2 Concept of Significance

Impact significance is a vital part of determining the effectiveness of the EIA process and the concept of significance is integral to an effective EIA, however, it appears to be complicated, controversial and not very well understood (Bevan, 2009). Significance often includes a minimum of two elements for significance determination. Significance often includes magnitude, duration or extent or any other element that can be scientifically measured (Marttunen *et al*, 2013). There is a connection between people and elements in nature that can be measured, occasionally referred to as the social aspect of environmental impacts (Marttunen *et al*, 2013).

The concept of significance is fundamental in the identification, prediction and evaluation of impacts. Significance assists decision-makers in deciding if a project may cause significant environmental effects, this is at the heart of the EIA (DEAT, 2002; Ehrlrich and Ross, 2015; and Marttunen *et al*, 2013). This concept still remains undefined and there seems to be no consensus on one definition (Ehrlrich and Ross, 2015; and Marttunen *et al*, 2013). Listed in table 2.2 below are some of the definitions reviewed in DEAT (2002: page 6).

Table 2.2: Selected examples of the definitions or interpretations of the concept of significance (DEAT, 2002; Ehrlich and Ross, 2015; Marttunen et al, 2013; and Rossouw, 2003)

Source	Definition
Sadler (1996) as cited in DEAT (2002)	*"The evaluation of significance is subjective, contingent upon values, and dependent upon the environmental and community context. Scientific disciplinary and professional perspectives frame evaluations of significance. Scientists therefore evaluate significance differently from one another and from local communities."*
Sippe (1999) as cited in DEAT (2002)	*"Environmental significance is an anthropocentric concept, which uses judgement and values to the same or greater extent than science-based criteria and standards. The degree of significance depends upon the nature (i.e. type, magnitude, intensity, etc.) of impacts and the importance communities place on them."*
Canter and Canty (1993) as cited in DEAT (2002)	*"Significance can be considered on three levels: (1) significant and not mitigatable, (2) significant but mitigatable, and (3) insignificant. Significance is sometimes based on professional judgement, executive authority, the importance of the project/issue, sensitivity of the project/issue, and context, or by the controversy raised. Decisions of significance will not necessarily be determined on verifiable evidence, but may include intuition. Describing the impacts in terms of type, scale, complexity, intensity and duration develops a basis for comparison and the application of judgement."*
Lawrence (2007a: page 757)	Significance determination in EIA "makes judgements about what is important, desirable or acceptable", "it also interprets degrees of importance".

Once the potential impacts have been identified, the nature (size and characteristics) of the impact can be predicted (UNEP, 2002c and DEAT, 2002). Predictions are founded on simple theoretical models of how natural processes operate (Rossouw, 2003), where the models vary in complexity from those considered to be perceptive to those based on clear assumptions about the environmental processes (Munn, 1979 as cited in DEAT, 2002 and Rossouw, 2003). Criteria that are often used to describe the nature of an impact include the extent; period or duration (how long will that impact last); the intensity or concentration of the identified

impact; severity of the impact; whether that impact is negative or positive in terms of whether it is beneficial or harmful; the reversibility of the impact (can that impact be reversed or will that impact have a permanent effect); the degree of confidence that the impact will occur; and the mitigatory potential – whether that impact can reduced, prevented or mitigated against (DEAT, 2002; Rossouw, 2003; and UNEP, 2002c).

Further to predicting and describing the impacts, the evaluation phase follows whereby the significance of the impacts is assessed. Impact significance should be determined by reference to legislation, the acknowledged scientific standards or socially acceptable standards (DEAT, 2002; Bevan, 2009; and Rossouw, 2003) and where this is not available, the EAP can assess the magnitude of the identified impacts which are founded on a set of unambiguous, factual criteria (DEAT, 2002). According to DEAT (2002) and Rossouw (2003), the depiction of significance is critical, based on personal opinion and often changeable.

During the EIA process, changes to the environment must be predicted, however, not all predicted changes identified as potential impacts (Lohani *et al*, 1997). The levels of significance of changes to the environment must be determined and then allocated to the relevant impacts. Significance assessment is centered on assigning values to the various environmental elements (Lohani *et al*, 1997). This can also include the degree of change and following the assessment of potential impacts, mitigation measures are suggested to avert, lessen, or otherwise ameliorate the potential impacts of the proposed development (Lohani *et al*, 1997).

A number of formal methods and / approaches were created to identify possible impacts, predict the nature of the impact and evaluate significance of the impacts. Those methods are reviewed in the succeeding sections.

2.5.2 Impact Identification

The aim of impact identification in EIA is to establish the lost likely environmental effect of a proposed activity for the basis of seeking public views on issues of concern and organising and focusing the impact prediction activities (Glasson *et al*, 1994). A number of approaches are used to identify impacts, the most common approaches reviewed is discussed below.

The first such approach is the checklist, these typically lists of the impact types of the proposed development. This type of method is often used for organising information and ensures that no impact is disregarded (Achieng Ogola, 2007 and Glasson *et al*, 1999). There are four typical checklist types; the simple checklist which is simply the listing of environmental parameters, there are no recommendations on how the parameters are to be calculated or interpreted; a descriptive checklist which provides a description of the environmental parameters and provides recommendations on how to record specific parameters; a scaling checklist which is similar to a descriptive checklist, but differs in that it provides added data on subjective ranking of the described parameters; and the scaling weighting checklist, this checklist is similar to the scaling checklist but provides, with added data for the subjective assessment of each parameter in comparison to all the other parameters, whereby all parameters are weighted (Lohani *et al* 1997). Checklists act as a memory aide, however, this method do not specify how impacts should be assessed, nor does it offer any advice on the type of prediction method to be used or the type of data that is necessary (USAID, 2004). Checklists provide a degree of standardisation in the coverage of impact assessment, however, this approach can be considered to be non-quantitative in nature (Morgan, 1998). This approach, however, is not as effective in "identifying higher order impacts or the inter-relationships between impacts" (UNEP, 2002c: page 258).

Matrix methods recognise the interrelated connections between the different project actions, environmental parameters and elements and like the checklist method, include a list of project activities and the components of the environment that may be affected by these actions (Achieng Ogola, 2007). A matrix of possible connections is created by combining both lists and inserting one on the perpendicular axis and the other on the horizontal axis (Lohani *et al* 1997). This method is most often used to identify impacts, however, the

some matrices go beyond impact identification by providing a description of the based on extent, magnitude, importance (Glasson *et al*, 1999). The advantage of the matrix is that it is a good method for displaying EIA results, however, with the use of this method there if potential for the doubling of impacts scores and there is difficulty in distinguishing between direct and indirect impacts (UNEP, 2002c).

Network diagrams recognise that environmental systems consist of a complex web of relationships (Glasson *et al*, 1999). This method is considered to be the most efficient representation of causal chains and provides a means for presenting the impacts in terms of first, primary, secondary and so on (Lohani *et al*, 1997). This method is advantageous as it links the action to the impact as well as handles both direct and indirect impacts, however, this method has the potential to become very complex (UNEP, 2002c).

Maps have been used for many centuries and have only recently been incorporated with modern technology i.e. computer graphics and databases, to create what we refer to as GIS (Shazabi, 2004). Overlay maps are easy to use and can easily chow the spatial distribution of impacts (Glasson *et al*, 1999). This method however has the potential to become cumbersome and is does not adequately address impact duration or likelihood (UNEP, 2002c). GIS can be used during any EIA phase and can also be used to within the EIA process to improve different elements i.e. data storage and access (Shazabi, 2004). GIS excels at impact identification and spatial analysis, however, there is a substantial reliance on existing knowledge and data sets and can thus be very complex and expensive (UNEP, 2002c).

2.5.3 Impact Prediction

The aim of impact prediction is to "identify the impact magnitude and other dimensions of identified change in the environment with a project or action, in comparison with the situation without that project or action" (Glasson *et al*, 1999: page 129 -130).

One of the most common methods of prediction is the mathematical model, which utilises equations to signify the purposeful relationships between the different variables and in general, groups of equations are merged to reproduce the behaviour of that environmental system (Lohani *et al*, 1997). This type of analysis

was in the past used for physical impacts, now there is evidence that is being used to examine biological and socio-economic impacts (UNEP, 2002c). It is important to note that when interpreting results of quantitative mathematical models, these models are simple representations of the physical world and requires the specialist to make various assumptions for the proposed development (UNEP, 2002c). The incorrect assumptions have direct implications for the correctness and efficacy of the data (UNEP, 2002c).

Environmental Risk Assessment (ERA) is another technique that is also commonly used in impact prediction internationally which uses statistical model and event tree analysis[4] (Morris and Therivel, 2001). There are two important benefits of the ERA in that it provides a means to "systematically identify potential hazards of a proposal and scope the detailed investigations required for the EIA" and establishes EIA priorities and regulate ambiguity (Hyett, 2010: page 3). According to Morris and Therivel (2009), ERA saves cost and is efficient when included into the impact statement of the EIA. This method, however, is unable to fairly determine whether a risk is considered to be within acceptable limits; "is not particularly suited to evaluating project compliance with legislation and policy as part of the EIA process"; and does not adequately assess the cumulative impacts of a project (Hyett, 2010: page 4 -5).

2.5.4 Impact Mitigation

This phase of the EIA process stipulates measures that improve the social and environmental benefits of a proposed development whereby adverse impacts are avoided, minimised or remedied; and make sure that residual impacts are within suitable levels (UNEP, 2002d).

The principles of mitigation are to ensure that avoidance and prevention measures are given preference; that feasible alternatives to the proposed development are considered; that recommended measures are adapted to reduce the impacts identified; that the measures are suitable both environmentally and economically; and finally that remuneration or off-sets are used as a last option (UNEP, 2002d).

[4] *"Event tree analysis is based on binary logic, in which event either has or has not happened or a component has or has not failed. It is valuable in analysing the consequences arising from a failure rather than definitive" (IET, 2012: page 2)*

2.5.5 Impact Evaluation

Once the impacts are predicted, its relative significance needs to be assessed (Glasson *et al*, 1999). The significance criteria include the "magnitude and likelihood of the impact and its spatial and temporal extent, the likely degree of the affected environment recovery, the value of the affected environment, the level of public concern, and political repercussions" (Glasson *et al*, 1999: page 140). Evaluation is similar to prediction in that the choice of the evaluation method is related to the task in hand and available resources, however, evaluation feeds into most stages of the EIA process (Glasson *et al*, 1999). It is important to note that each step of the EIA process informs the next, from the identification of impacts, to the prediction and evaluation of those impacts and eventually determining the significance of those same impacts. Significance of an impact cannot be determined unless the methods to identify and predict methods have been used as significance is considered to be a combination of the consequence of the impact (i.e. the extent, duration, intensity) and the likelihood that the impact will occur.

2.5.6 Methods used for Determining Impact Significance

Different types of methods can be used to assess significance and be either qualitative or quantitative. Qualitative assessments usually make use of "ratings such as neutral, slight, moderate, large" and are "applied to both negative and positive impacts" whereas "quantitative assessments involve the measurement or calculation of numerical values" (Morris and Therivel, 2001: page 7). Significance in EIA is straightforward and often practical, based on experience and expert opinion rather than complicated analysis (Glasson *et al*, 2012).

There are a number of different approaches / methods than has been identified for the determination of impact significance. Some of the more formal methods were created to support impact prediction, these methods were characterised by objectivity, quantification, aggregation and judgment (Rossouw, 2003 and Bevan, 2009). A review of twenty four international methodologies was undertaken by Thompson (1990), presented below are six such approaches:

i. Project Appraisal for Development Control (PADC) methodology

This method determines significance for each impact with a choice between "five polarities" ("adverse/beneficial, short/long term, reversible/irreversible, direct/indirect and local/strategic"), each polarity is weighted equally and the numbers in each polarity are added (Thompson, 1990: page 238).

This method is made up of three phases, which involves the exchange of information, the analysis of the impacts and the decision making stage (Clark *et al*, 1976 as cited in BVSDE, 2001). According to DEAT (2002), this method can be adapted to suite each project and provides an all- approach to impact assessment and uses the checklist to assess impacts, however, it has been criticised as this method does not consider the economic and social environmental impacts; does not envisage local alternatives for the implementation of the project; it requires a large amount of data; and is considered to be an expensive method (Clark *et al*, 1976 as cited in BVSDE, 2001).

ii. Fischer Davis Methodology

In this methodology the potential impacts are allocated a positive or negative score based on whether it will be beneficial or harmful, and the degree of impact is rated from 1 to 5, with 1 being the lowest and 5 the highest score that can be achieved, this however is very subjective as it is based on the interpretations (Thompson, 1990). Only those impacts that have the highest scores, undergo further analysis. According to Fisher and Davies (1973) and BSVDE (2001), the development of this model consists of four main phases: the first step is to identify the planned and induced activities of a project, the second phase is the identification of characteristics of the environment that may be affected, the third phase is the assessment of initial and subsequent impacts from activities encompassed by the project and the last phase is the management of beneficial or adverse environmental impacts that have been generated by activities planned or implemented in the course of a project. This method can be criticised for the degree of subjectivity in terms of the ratings as well as the high cost associated with the increased number of specialists required to work on the project (Fisher and Davies, 1973 and BSVDE, 2001). This method was found to be used in specialist reports that feed into EIA reports.

iii. Water Resource Assessment Methodology (WRAM)

This method incorporates both the scaling and weighting methods for the different environmental, social and economic parameters whereby a ranked pairwise comparison method is used (Thompson, 1990). With this technique, all individual criteria are paired against all others and this technique assumes that humans are more capable of making relative judgement than absolute judgements (Lattemann, 2010). Three alternative weighting approaches are used. The values attained for the effect of each alternative on each component is conveyed in terms of an alternate choice co-efficient (Thompson, 1990). Scaling and weighting values are then multiplied into a matric which produces the final score for each alternative; however this method involves no input of public opinion (Thompson, 1990).

iv. The Crawford Methodology

This method makes use of public input, using a Delphi technique on three reference publics. The Delphi technique is a judgemental technique which is used as a means of collecting expert or informed opinion and of working consensus (Batta, 2000). Information is obtained for "the assigning of relative weights, the prediction of consequences for the alternatives to be evaluated, estimations of probability for the predicted consequences and numbers to represent the magnitude of the impact of each consequence on each evaluative criterion" (Thompson, 1990: page 238). Consequences are predicted by a panel of experts who are also responsible for estimating probability for each alternative. The estimates of the impact magnitude are created using a scale with seven points ranging from -3 to +3 and the impact of the alternative is determined by multiplying the probability by the size of that impact and the results are then presented as a percentage of the highest conceivable negative or positive impact (Thompson, 1990). This method is an example of quantitative assessment where numerical values are assigned and makes use of extensive public participation. However, one of the weaknesses of this method is that significance cannot be pre-determined before impact prediction (DEAT, 2002). This method also does not accommodate impact magnitude, and significance is determined only by the particular environmental and social situation posed by that proposed development (DEAT, 2002).

v. The Leopold Matrix

This method has no guidelines on how to determine significance and there is no accumulation of impacts and does not address public concerns raised (Thompson, 1990). This quantitative method uses matrix cells to connect the activities of development to the relevant environmental factors, where the cells are divided by a diagonal line (Thompson, 1990). Above each line, a value is inserted which represents the impact magnitude whilst a denomination representing the importance is inserted below that diagonal line (Thompson, 1990). A rating scheme of 1-10 is then used and the impact statement contains reasons for the distribution of values for importance and magnitude. This method is a checklist that integrates qualitative information on the 'cause-and-effect' relationship and it is also beneficial for conveying results (DEAT, 2002). The limitations of the method as follows: "the matrix is not selective and does not focus on the key issues", it "does not distinguish between immediate and long-term impacts" nor does it "provide a means for discriminating between quantitative and qualitative data", the "matrix contains no provision for indicating scientific uncertainty", precise "criteria for assigning numerical values of the weights, indicating relative importance of effects, are not given" and "a synthesis of the predictions is not possible, because the results are summarized in an 88 by 100 cell matrix" and the decision-maker is presented with as many as "17 600 items for each project alternative" (DEAT, 2002: page 12).

vi. The Loran Method

This method does not allow for detailed significance to be taken into consideration; does not consider issues raised by the public; and it uses a matrix of 234 development activities and 27 environmental characters where each element is scaled from lowest (0) – highest (5) according to the severity of that impact (Thompson, 1990). According to Thompson (1990), a computer algorithm is used to record the result and an aggregation[5] of impacts is obtained by clustering highly rated impacts. This method is used to classify significant environmental issues by grouping similar project activities and impacts,

[5] "*Aggregation* is the combination of different types of impact values to produce composite scores, which facilitates a comparison of project alternatives" (DEAT, 2002: page 7).

however, following the identification of the significant issues, there is a lack of further evaluation and there is no clarity on the evaluation of project alternatives (DEAT, 2002).

The approaches that were reviewed by Thompson (1990) are most often used in the United Kingdom (UK), USA, and Canada. As can be seen by the above method examples there are a number of different international techniques, both quantitative and qualitative, which incorporate different techniques that are very useful in the EIA process (Thompson, 1990). A number of these methods are still used in present day EIA, however, a number of the methods are often combined to create a more efficient method. It is important to note that these methods were created at a time where the quantification of impacts was central to EIA and during this period, the specialists most often determine the process used to quantify impacts and ascribe significance and there was little to almost no public participation in the process of determining significance (Rossouw, 2003). None of the methods according to Rossouw (2003), provide a comprehensive approach for significance determination, can be criticised from one or another perspective and were designed for a specific type of development. This was further emphasised by (Lawrence, 2007b), where it is stated that most approaches only address the issue of impact significance to a certain extent and most often in participatory way.

Three general approaches for ascribing impact significance have since been identified; these include the technical approach, the collaborative approach and the reasoned approach (Lawrence, 2007b). The technical approach "breaks down significance questions down into their constituent parts and applies a technical procedure to progressively aggregate the relevant impact significance determination considerations" whereas the collaborative approach is based upon the assumption that subjective, value-based decisions regarding what is important should come about from interactions with I&APs (Lawrence, 2007b: 752). With this approach, the I&APs "determine what is acceptable and unacceptable, important and unimportant, and how much importance to attach each concern and potential impact (i.e. the degree of significance)" (Lawrence, 2007b: page 736). The reasoned argumentation approach according to Lawrence (2007b: page 752) "views significance determination as a process of making reasoned judgements, supported by technical and non-technical evidence". Each method described above has negative and positive tendencies and no one

approach is preferable over another (Lawrence, (2007b and Marttunen *et al*, 2013). A combination of different approaches has the potential to enhance the positive aspects and counterbalance the negative aspects of each individual approach as there seems to be no consensus on which is the most appropriate or effective method to use in the determination of impact significance (Lawrence, 2007a; Lawrence, 2007b; and Marttunen *et al*, 2013).

2.5.7 Key Challenges

The EIA process is a widely acknowledged decision making tool, and there are, however, a number of issues that have been identified. The EIA process is iterative, whereby some of the stages in the process recur and feed back into that same process and project design as new information is obtained (Sheate, 2012). Only those projects that are considered to have significant impact on the environment undergo the EIA process, however, being able to define what is significant or not, is not an easy task (Sheate, 2012). The EIA process should ideally commence during the planning phase of any project, however, it becomes difficult to predict the costs associated with the EIA process (Sheate, 2012). The various role players in the EIA process have different accesses to the process and resultant information (Glasson *et al*, 1999). The involvement of the different stakeholders in the process seems to be a challenge as the levels of public participation required differs from one country to the next (Glasson *et al*, 1999). The environmental consultants is often appointed by the developer to undertake the EIAs, which creates an issue of biasness in the EIA process, however, in other cases, the EIA can be recommended by the authority that will make the decision (Sheate, 2012). The EIA process is different in each country and is often undertaken to obtain approval from a planning perspective, ironically, due to the associated financial implications, there is a lack of compliance to the EIA process (Kakonge, 2013). Another key challenge to the EIA process is that there is no consensus over which impact significance determination method is most appropriate and effective (Lawrence, 2007a). There is room for improvement in ascribing significance to ultimately ensure that all development is sustainable and meets the purpose of the EIA process (Marttunen *et al*, 2013).

The next section reviews the development of the EIA system in South Africa, the existing legislation and regulatory framework as well the current EIA processes and procedures in place.

2.6 EIA in South Africa

South Africa currently has one of most advanced environmental legal frameworks in the world and one of the tools used to ensure environmental protection is the EIA. The sections below provide an in depth review of the legislation and regulatory frameworks in place at present as well a review of the development of EIA in South Africa.

2.6.1 Legislative Mechanisms and Policy Approaches

According to Van de Linde (2009), in addition and complementary to environmental management and conservation strategies, protection of the environment is often provided for through law. Environmental law can be seen as all the principals permissible under the relevant legislation whereby the subject regulated is the common denominator and not the special character possessed, which in this case is the *environment* which is defined by South African statutory law (Van de Linde, 2009).

South Africa was slow to develop procedures suitable to its contextual issues, "*the key constraints to the development and implementation of environmental evaluation procedures in South Africa have been the absence of a general environmental policy, a lack of political will and awareness of the need to consider environmental issues, an authoritarian system of government, a lack of accountability by decision-makers, inadequate public participation, inefficient administrative structures, legislative inadequacies, and a lack of environmental expertise and financial resources*" (Sowman *et al*, 1995: page 46). This was found to be the case in many of the developing countries.

The first dedicated environmental statute in South Africa that was passed in the 1980s was the Environment Conservation Act No.100 of 1982, this act was not very effective as its purpose was to co-ordinate environmental matters within government and did not include any substantive provisions regarding environmental management (Glazewski, 2000). This act was repealed and replaced by the Environment Conservation Act 73 of 1989 (referred to as the ECA). There are provisions in the amended Environment Conservation Act 73 of 1989 to manage activities that may have a negative impact on the environment and to require that environmental impact reports be compiled. The EIA regulations promulgated under ECA were

superseded by the National Environmental Management Act 107 of 1998 (NEMA) EIA Regulations (2006) which repealed some of the provisions of ECA (Sowman *et al*, 1995). An important section of the ECA that has not been repealed provides that the Minister may declare activities to be affected activities in which case an environmental assessment may be required (Section 21, ECA)(SA, 1989). This act also contains an important section empowering the Minister and other competent authorities to take action whenever the environment is threatened or actually degraded (Section31A, ECA)(SA, 1989).

The White paper on an Environmental Management Policy for South Africa referred to the need for a mean between conservation and economic development and laid the foundation stones for NEMA and underwent an intensive process to take into consideration public input known as the Consultative National Environmental Policy Process (CONNEP) (Glazewski, 2000). There are two important general features that form the basis of the White Paper and thus NEMA: the White paper emphasizes the idea of sustainable development and endorses the definition and analysis offered by the Brundtland report (Glazewski, 2000). Secondly, the White Paper, according to Glazewski (2000), is firmly embedded in the context of the transition to democracy and its socio-economic implications – "In our country, we have come to realise that the process of democratisation and establishing good governance can only be guaranteed if it is based on a sound economic and socio-economic framework that is environmentally sustainable." (SA, 1997: page 2). It is therefore evident that the White Paper set the stage for a more assertive and effective environmental management in South Africa, now encapsulated in the NEMA which simultaneously gives effect to the constitutional imperative to enact legislative environmental measures (i.e. section 24b of the Constitution)(Glazewski, 2000).

The most important step in the development of an environmental legal system in South Africa has been the inclusion of an environmental clause in the Bill of Rights of the South African Constitution 108 of 1996 (Glazewski, 2000). The South African Constitution provides in section 24 of the Bill of Rights that:

"Everyone has the right –

a) to an environment that is not harmful to their health or well-being; and

b) *to have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that –*

   i. *prevent pollution and ecological degradation;*

   ii. *promote conservation; and*

   iii. *secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development"* (SA, 1996: page 9).

To give effect to the constitutional commitments and rights afforded by the South African Constitution, the National Environmental Management Act (NEMA) was legislation to establish the basic legal framework for environmental protection and repeals the larger part of ECA (Van de Linde, 2009). NEMA sets out the EIA processes and procedures that ensure environmental protection and the EIA is an assessment tool that is used in the planning phase of the development process.

The NEMA defines the environment as the following: "*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 (i) and (ii) 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 well-being*" (SA, 2008: page 8). This term was, however, re-defined following the post-apartheid era to include both the green issues of conservation and the brown issues of human settlements and well-being (Wynberg and Fig, 2014).

In South Africa, there are three legislative mechanisms that are in place protect to the environment: "the first mechanism focuses on the constitutional entrenchment of environmental issues through either a rights-based or regulatory approach in the Constitution, the second mechanism aims to protect the environment through environmental framework legislation, and the third mechanism focuses on the adoption of specific environmental legislation that can cover a range of environmental media" (Van de Linde, 2009: page 193). Most often a combination of all three mechanisms is used to protect the environment. Nationally, framework legislation provides an overarching framework for environmental protection in South Africa and it gives

force to constitutional provisions dealing with the environment and serves as enabling legislation for constitutional provisions dealing with environmental rights (Van de Linde, 2009).

NEMA is a framework legislation which has the potential to enhance co-operative environmental governance between different ministries and spheres of government within a country. Co-operative environmental governance is broadly defined as the development of decentralised governance in policy relating to the environment (Muller, 2009). Good governance must be removed from any one sector of government as it is a pre-requisite for effective governance in all stages of the project cycle (DEAT, 2011).

It is also important to note that other national laws dealing with the environment may also contain elements of framework legislation such as the South African National Water Act (NWA) (Act 36 of 1998), the National Forest Act (NFA) (Act 84 of 1998), the Development Facilitation Act (DFA) (Act 67 of 1995) and the Marine Living Resources Act (MLRA) (Act 18 of 1998). The NWA provides a framework for the protection, management and sustainable use of all water resources, the NFA ensures that all forests and ecosystems are protected, the MLRA provides framework that ensures the protection and sustainable use of all marine resources and organisms and the DFA recommends land development procedures relating to land use and also deals with land tenure. These state departments are commenting authorities to the EIA process. Framework legislation such as NEMA "*includes concepts and international soft law*[6] *principles that ensure the sustainability of the environment and natural resources; adopts precautionary measures in relation to socio economic impacts; integrates environmental considerations into development planning and management; promotes public participation in both decision-making and environmental enforcement; and provides legal and institutional machinery for application of principles"* (Van de Linde, 2009: page 194 - 195). This is important to this research as NEMA sets outs the EIA Process and procedures to ensure protection of the environment. According to Willemien and Nel (2001 as cited in Kidd (20115), framework legislation aims to define the all-encompassing and general principles in terms of which legislation it is embedded and to improve the co-operative environmental governance between disjointed line departments.

It is stated in Van de Linde (2009: page 195), that there are four characteristics that intend to achieve four distinct objectives which include: "generic legal elements, a flexible approach to address changing circumstances, dedicated specific sectoral legislation; and the inclusion of broad-based environmental policy and principles". Van de Linde (2009: page 195), further states that these four characteristics ensure: "*popular broad-based participation during formulation; co-operative governance between all spheres and sectors of government; use of innovative integration of multiple environmental management tools and instruments; and benefit to the environment.*"

NEMA provides a range of instruments and tools which are aimed at protecting the environment. Integrated Environmental Management (IEM) is considered to be a key instrument of NEMA (DEAT, 2004). The correct application of this tool benefits the environment and one of the ways this is achieved is through the assessment of significant impacts (Van de Linde, 2009). Integrated Environmental Management (IEM) according to Frieder (1997: page 17), "is a way of thinking about the environment as a whole and managing the environment in a way that recognises links between elements of the whole". The objective of IEM as per Section 23(2) of NEMA (SA, 1998: page 34) is to -

b) *"...identify, predict and evaluate the actual and potential impact on the environment, socio-economic conditions and cultural heritage, the risks and consequences and alternatives and options for mitigation of activities, with a view to minimising negative impacts, maximising benefits, and promoting compliance with the principles of environmental management set out in section 2;..."*

The main basic principles of the IEM according to NEMA are the following: accountability and responsibility of all stakeholders, adaptability of the process, alternative options must be considered, the community must be empowered, the process must be continually improved, informed and holistic decision making must occur, environmental justice must be served and responsibility of the environment should be global (DEAT, 2004). According to Lindeque (2003), the IEM principles are similar to the Agenda 21

[6] Environmental 'soft' law consists of both non-binding law in the form of principles, goals, and guidelines, and codes of conduct adopted at both a global and regional level to assist governments in environmental management strategies and sustainable development' (Van de Linde, 2009: page 182).

sustainable development principles as a number of the basic principles of IEM are also listed as principles of Agenda 21.

IEM acts as the collective term for different environmental management tools, and according to Hugo *et al* (1997), it is a formalised philosophical approach which acknowledges the fact that all actions undertaken during the life of a project must be planned in advance and ensure that no significances are missed or undervalued. The IEM toolbox of instruments (as illustrated in Figure 2.2) according to Lindeque (2003) is efficient as there are different tools available that can be used so that no environmental consequences are overlooked or underestimated (Lindeque, 2003). The IEM principles can be realised through the application of these tools. IEM in South Africa was related to authorisations of regulated activities, but as IEM evolved, a more extensive and broader understanding developed, and IEM is now considered a fundamental philosophy and set of tools that can be instilled into the decision-making process by society at all levels (e.g. government, private sector and the general public) (DEAT, 2004).

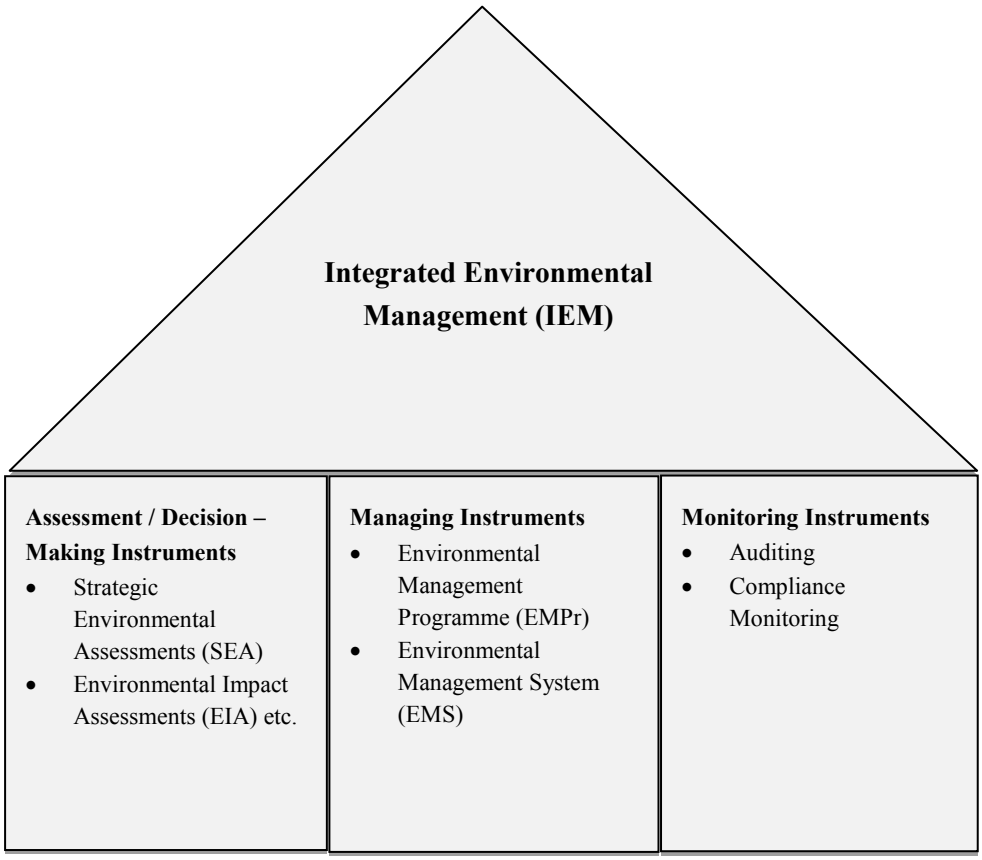

Figure 2.2: Illustration of the Overarching Function of IEM (DEAT, 2004)

The EIA is one of the assessment tools that can be used in the planning phase of the development process. It is an "information gathering process, which is intended to facilitate environmentally sound decision-making which is the process of choosing between alternative courses of action, which is essentially political in nature" (UNEP, 2002e). These decisions according to UNEP (2002e), may be made by the stakeholders which include the decision-maker, the proponent, the commenting authorities and any other affected I & AP.

The EIA process in South Africa is integrative and holistic, addressing social, economic, and environmental or ecological issues concurrently (Murombo, 2008). The National Environmental Management Principles (NEMP) in NEMA states that "*Development must be socially, environmentally and economically sustainable*" (SA, 1998: page 10). The primary purpose of the EIA process is thus to ensure that development is sustainable (refer to section 2.2 for review of sustainability). The next section provides a review of the different stakeholders involved in the EIA process.

2.6.2 Institutional Arrangements and Stakeholders

Stakeholder is the conventional term that often refers to all people and organisations in civil society who have a right to be part of the decision-making process that affects them. "Stakeholder involvement refers to participation of interest groups (i.e. representatives of locally affected communities, national or local government authorities, politicians, civil society organizations and businesses) in a planning or decision-making process" (Hauck *et al,* 2014: page 1). According to Hauck *et al* (2014), there are four main stakeholder groups, the first group are the stakeholders who directly benefit from the proposal, the second group are negatively affected, the third group are the stakeholders who directly impact on ecosystem and the fourth group of stakeholders indirectly influence the ecosystem services[7]. Realistically, only one ecosystem service often incorporates most of the stakeholder groups involved, whereas only one specific stakeholder group may fulfil many of these roles (Hauck *et al,* 2014). Stakeholders are also actively involved specialist study investigation as they possess local knowledge of project areas which is important in the description of the environment (Nguene *et al*, 2012). Stakeholder engagement is important in the EIA process as well as

[7] Ecosystems offer a range of goods, services and attributes that generate value and contribute to human welfare. Services refer to the processes that contribute to economic production or that save costs (Turpie, 2009: page 3).

the need for accountability of stakeholder contributions in EIA and throughout project lifecycles (Nguene *et al*, 2012).

The South African legislative and institutional framework in place for the protection of the environment according to Middleton *et al* (2011) is complicated and has caused fragmentation in the allocation of responsibility across government at all level and public entities. According to Middleton *et al* (2011), the national Department of Environmental Affairs (DEA) (previously referred to as Department of Environmental Affairs and Tourism (DEAT)) is the lead agent for the environment and responsible for air quality, pollution control and waste management, environmental impact management, biodiversity conservation, marine and coastal management. In addition to DEA, eight other national departments are responsible for regulating activities related to environmental management or which may have an impact on the environment. The Department of Agriculture, Forestry and Fisheries (DAFF) is responsible for agricultural resources, pests, regulation of fertilisers, farm feeds and agricultural remedies, Genetically Modified Organisms, veld, forests and forestry; the Arts and Culture Department is responsible for National Heritage (including World Heritage Sites); Rural Development and Land Reform is responsible for development facilitation in relation to land use and development, animal breeding; The Department of Mineral Resources (DMR) is responsible for providing access to minerals, mine related health and safety and is responsible for mining related activities that require EIA; DWS is responsible for water resources, water services, mountain catchments; and Cooperative Governance and Traditional Affairs (COGTA) is responsible for municipal planning, integrated development plans, municipal service delivery, disaster management (Middleton *et al*, 2011: page 18). In relation to this study, the CA is responsible for reviewing the EIA impact significance assessment methodologies to ensure compliance with the EIA regulations. Other stakeholders are responsible for reviewing those methods. There are three national agencies (which report to DEA) which also have environmental responsibilities and these include the South African National Biodiversity Institute (SANBI), the South African National Parks (SANParks) and the South African Weather Services (SAWS). These agencies act as stakeholders are tasked with protecting the ecosystem during the EIA process.

The provincial environmental departments play an important role reviewing and authorising EIAs, ensuring protection of the protected natural areas, as well as the issuing and compliance monitoring of any other permits (Middleton *et al*, 2011). They are also instrumental in bioregional planning to ensure that sustainable development occurs, and are also responsible for creating standards under the different pieces of environmental legislation (Middleton *et al*, 2011). The provincial department according to (Middleton *et al*, 2011) is also responsible for providing input into the Provincial Spatial Development Frameworks (PSDFs) and for the preparation of Environmental Implementation Plans (EIPs) and to ensure that municipalities adhere to these plans in the preparation of their Integrated Development Plan (IDP). The Local Government Municipals Act (Act 32 of 2000), states that every council must adopt an IDP which contains a Spatial Development Framework (SDF) (Claassen, 2009). The provincial department also assumes a role in ensuring that municipalities comply with the NEMA principles in the preparation and implementation of municipal mandates. Every province has a provincial environmental department and may include other functions. In KZN the current provincial environmental department is part of the Economic Development of Tourism and Environmental Affairs (EDTEA)[8]. The eThekwini Municipality is the metropolitan municipality located within the province of KZN and is one of the important stakeholders in the EIA process with the eThekwini Municipal area and relates directly to this research project which is based on information gathered mainly from this area.

The CA according to NEMA is the "organ of state charged by this Act with evaluating the environmental impact of that activity and, where appropriate, with granting or refusing an environmental authorisation in respect of that activity" (SA, 2008: page 8). The DEA or EDTEA act as the CA for EIA applications in the province of KZN. The EAP is the person that plans, manages and coordinates the EIA, strategic environmental assessments, environmental management programmes and/or any other appropriate environmental tool that is regulated by environmental legislation (SA, 2008). In South Africa, the EAP is the person responsible for the planning, management and coordination of the EIA process and the CA together with the EAP ensures that the principles of NEMA are implemented to achieve sustainable

[8]The provincial environmental department is now a part of the EDTEA, this department was previously part of the Department of Agriculture, Environmental Affairs and Rural Development (DAEARD) and Department of Agriculture and Environmental Affairs (DAEA).

development. The EAP is responsible for assessing a particular project and determining whether it requires EIA and if so, and then the EAP is also responsible for assessing that project including determining the impact significance as well as undertaking public participation and ensuring the process is compliant with the relevant legislation. The EAP must be independent and objective even though they are appointed by the person seeking authorisation. The I&AP according to NEMA is interested and affected party contemplated in section 24(4)(a)(v), and which includes-"*(a) any person, group of persons or organisation interested in or affected by such operation or activity; and (b) any organ of stale that may have jurisdiction over any aspect of the operation or activity*" (SA 2008: page 10). The organ of state will for example include the DWS, DAFF, COGTA, eThekwini Municipality, AMAFA and Ezemvelo KZN Wildlife (EKZNW) (Table 2.3). These organs of state act as commenting authorities for example KZN Wildlife will submit comment during the EIA process aimed at protecting wilderness areas and public nature reserves in KZN. The CA is responsible for decision-making in terms of the EIA process and are responsible for issuing permits and licenses (DEAT, 2004). Other commenting authorities would also review an EIA in the same manner as the decision-makers to ensure all necessary regulatory requirements have been acknowledged and addressed in the EIA (DEAT, 2004). NGOs in KZN may include the South Durban Community Environmental Alliance (SDCEA).

Table 2.3: Summary of Key Stakeholders and their Respective Roles (Source: Middleton *et al*, 2011: page 18)

Stakeholder	Level	Role
DEA	National	Lead agent for the environment, responsible for air quality; pollution control and waste management; environmental impact management; biodiversity conservation; and marine and coastal management.
DAFF	National	Responsible for agricultural resources, pests, regulation of fertilisers, farm feeds and agricultural remedies, Genetically Modified Organisms, veld, forests and forestry.
Arts and Culture Department	National	Responsible for protecting National Heritage.
Rural Development and Land Reform	National	Responsible for development facilitation and principles governing land development, land use and animal breeding.
DMR	National	Responsible for providing access to minerals, mine related health and safety and is responsible for mining related activities that require EIA.
DWS	National	Responsible for protection and management of water resources, water services and mountain catchment.
COGTA	National	Responsible for municipal planning, integrated development plans, municipal service delivery and disaster management.
SANBI	National Agency	These agencies act as stakeholders are tasked with protecting the ecosystem during the EIA process.
SANParks	National Agency	
SAWS	National Agency	
EDTEA	Provincial	Acts as the CA for provincial applications, issue EA, responsible for compliance monitoring within the province.
eThekwini Municipality	Local	Commenting Authority. Ensures protection of environmental resources at local level.
AMAFA	Provincial	Commenting Authority. Ensure protection of cultural and heritage resources within the province.
EKZNW	Provincial	Commenting Authority. Responsible for biodiversity protection within the province.

All of the above stakeholders play an important role in the EIA process. In South Africa, the EIA process is regulated by NEMA. The legislation requires that the EIA process follow one of two processes, either a

Basic Assessment (BA) process or a full scoping and EIA, depending on whether the proposed project is deemed to have minimal impact or a significant impact. The EAP usually advises the applicant with regards to which process to follow and the CA either confirms this or decides otherwise depending on the nature of the project. The next section describes the EIA processes that are currently applied in South Africa.

2.6.3 EIA Process and Procedures

The purpose of the NEMA EIA regulations (otherwise known as Government Notice Regulation (GNR) 543 in terms of the 2010 EIA Regulations and (GNR 982 in terms of the 2014 EIA Regulations) is to regulate the procedure as set out in Chapter 5 of NEMA "relating to the submission, processing and consideration of, and decision on, applications for environmental authorisations" (South Africa, 2010: page 11).

For an activity to commence, an application for an environmental authorisation must be made to the CA referred to in Regulation 3 (i.e. identification of the CA). When appointed to undertake an EIA process, the EAP must, in accordance with the EIA regulations, determine the type of EIA process to be applied for and must consider any guidelines applicable to the activity subject to the application and any recommendations given by the CA in terms of regulation 5 (SA, 2010). Projects that are considered by the CA to have little impact on the environment will most likely follow the BA process. These activities are smaller in size and the impacts of the triggered activities can be easily managed and are less likely to have significant impact on the surrounding environment (EWT, 1999). Projects or activities that are anticipated to have greater impact on a much larger scale are more likely to follow the Scoping and EIR (S&EIR) process (EWT, 1999). The determination of which process to follow is guided by the level of impact the proposed project is anticipated have on its environment, the decision of which process to follow is also guided by the list of activities / thresholds listed in the EIA Regulations. An application must be managed in accordance with part 2[9] of chapter 3 of the NEMA EIA Regulations if a BA process must be applied to the application or part 3[10] of the chapter 3 NEMA EIA Regulations if S&EIR must be applied to the application.

[9] Part 2 provides a description of what must be included into the BAR.

[10] Part 3 provides details on what must be included into the scoping and EIR.

The S&EIR process can be divided into two phases, namely the scoping phase and the EIR phase. The scoping phase reviews the proposed development, alternatives, and the receiving environment and identifies potential impacts. The scoping report is subject to public review and if approved by the CA, then the EIR phase commences. This EIR phase is similar to the BA phase, whereby the impacts that were identified in the scoping phase are assessed, the significance of the impact is rated and suitable mitigation measures are provided. This report is also subject to public review prior to submission to the CA for approval.

This research study focuses on the BA process which is followed when projects require Environmental in terms of listing notices 1 (GNR 544) and 3 (GNR 546) of the 2010 EIA Regulations. The projects that follow this process are considered to have little impact on the environment, by the CA, in comparison to activities that trigger the S&EIR. The research for this study was undertaken when the 2010 EIA Regulations were still in effect, thus any reference made to the EIA Regulations in the study refers to the 2010 EIA Regulations and not the 2014 EIA Regulations unless it is specifically mentioned. It is important to note that in terms of the requirements of the BAR, there is no significant difference between the 2010 and 2014 EIA Regulations. One of the main reasons for the promulgation of the 2014 EIA Regulations was to give effect the 'One Environmental System' which allows for the integration of the EIA process, the Water Use License and mining license/permit applications. A description of the 2014 EIA process as described in GNR 982 is described in Figure 2.3. The BA process as per the 2014 EIA Regulations is summarised in figure 2.3.

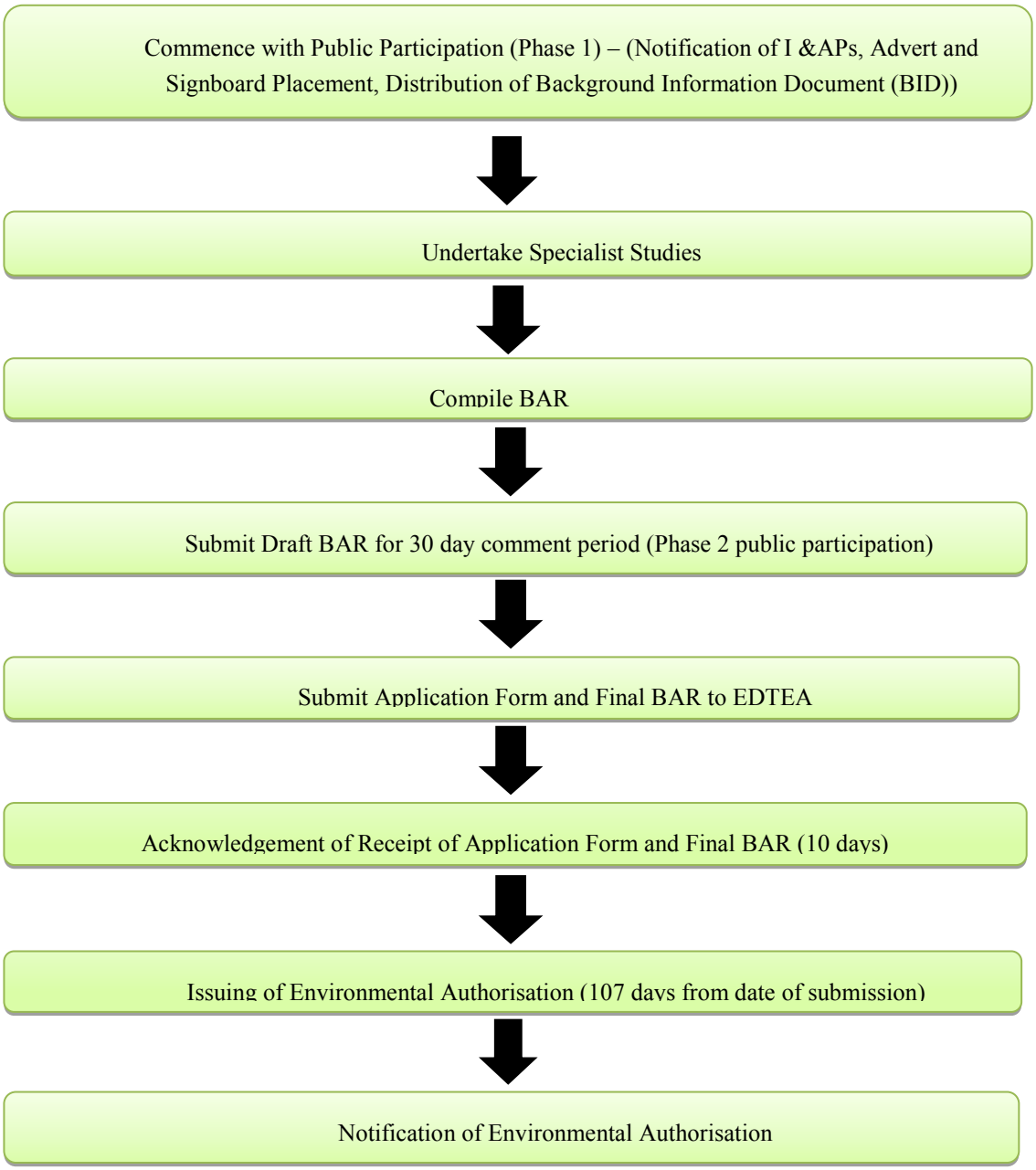

Figure 2.3: Summary of the BA Process

Timeframes in the EIA process are crucial. The interuption of the EIA process can often result in a delay in the implementation phase of that project. This in turn causescreates a domino effect whereby the applicant faces increased costs and the implementation of mitigation measures, which are there to ensure the protection of the environment and prevent the degradation of sensitive areas, are delayed. It is important to note that one of the important components of the BAR is determining and ascribing significance to potential impacts, which ultimately determines whether the proposed project can proceed any further.

2.6.4 Guidelines and Impact Assessment Methods in South Africa

The then DEAT published an IEM Series, which comprises sixteen separate guidelines on all aspects of environmental management and assessment. Walmsley and Patel (2011) highlight that these include the following: integrated environmental management in general, screening, scoping, participant engagement, specialist studies, impact significance, ecological risk assessment, cumulative effects assessment, cost-benefit analysis, life cycle assessment, strategic environmental assessment, alternatives, EMPrs, EIA review, auditing, environmental impact reporting and environmental economics. Some of the provinces have developed their own specific guidelines. For example, the Western Cape has published a series of guidelines on specialist input into the EIA process. "Specialist involvement is needed when the environment could be significantly affected by the proposed activity, where that environment is valued by or important to society, and/or where there is insufficient information to determine whether or not unavoidable impacts would be significant" (Keatimilwe and Ashton, 2005: page ii). These guidelines aim to enhance the capacity of EIA practitioners in preparing appropriate terms of reference (ToR) for specialist input, and also assist all role-players in determining whether or not specialist input to the EIA process is required for differing development and environmental contexts (Keatimilwe and Ashton, 2005). These guidelines are not legally binding, however, it is important that it be taken into account when applying for Environmental Authorisation in terms of NEMA.

The DEAT Guideline series 5 is based on impact significance and focuses on the concept of significance in the identification, prediction and evaluation of impacts. The aim of this guideline is to provide an overview of the key literature sources on impact significance (DEAT, 2002). In the absence of consensus with respect to the determination of impact significance (Ehrlrich and Ross, 2015; and Marttunen *et al*, 2013), "this guideline provides a comprehensive review of the international literature to highlight that this is one aspect of EIA [impact significance assessment] that has challenged experts globally" (DEAT, 2002: page 5). These definitions are still applicable at present as the assessment of impact significance has no changed in South Africa since the publication of those guidelines. According to DEAT (2002: page 5), as cited in Rossouw (2003: page 44) "formal EIA methods and generic approaches were developed to identify the potential impacts of a proposed development on the environment, predict the likely nature of such impacts and

evaluate the significance of the potential impacts". The guideline focuses on the concept of significance in the identification, prediction and evaluation of impacts and the definitions of the concept of significance are provided together with examples of formal methods, which endeavour to attain stability and agreement in determining impact significance (DEAT, 2002). General approaches and judgemental criteria (Rossouw, 2003), which can be adapted to individual contexts, are presented in this guideline. However, DEAT (2002: page 2) note that "this document does not prescribe or recommend specific methods, but rather provides an overview of the key criteria to consider in determining significance". Guidelines are in place to assist the EAP in ensuring that the EIA process undertaken meets the relevant legislative requirements and is effective in achieving its purpose.

In the absence of a single, prescribed method for ascribing impact significance in South Africa, as is the case in many other countries, a number of different methods being used by EAPS to assess impact significance. The 2010 EIA Regulations, Government Notice 543 22(2)(i), describes content of the BAR which must include the following with regard to the impact assessment:

"a description and assessment of the significance of any environmental impacts, including-

- *(i) cumulative impacts, that may occur as a result of the undertaking of the activity or identified alternatives or as a result of any construction, erection or decommissioning associated with the undertaking of the activity;*
- *(ii) the nature of the impact;*
- *(iii) the extent and duration of the impact;*
- *(iv) the probability of the impact occurring;*
- *(v) the degree to which the impact can be reversed;*
- *(vi) the degree to which the impact may cause irreplaceable loss of resources; and*
- *(vii) the degree to which the impact can be mitigated"* (SA, 2010: page 29).

This regulation allows for a generalised approach to undertaking the assessment phase of the EIA process, and results in different approaches being used to assess impact significance (DEAT, 2002). Different EAPs in South Africa employ different methods to assess significance; some of the methods used are based on the

DEAT series 5 guideline and some of these methods employed are based on the EAPs experience and is considered to be subjective to the EAP (DEAT, 2002).

DEAT (2002) has contended that these are the key challenges identified in determining significance, scientific uncertainty (i.e. lack of, or limited information or understanding), communication of scientific information to the public in the manner that it can be understood, and the abundance of values whereby different participants in the EIA process view impact significance and its acceptability differently. To ensure that the EIA processes in South Africa adhere to the relevant legislations, the DEA produced a number of guidelines to assist the EAP and other stakeholders to better understand the requirements of the NEMA EIA Regulations.

Further to the regulations and practical guidelines, it is evident that there is a significant gap in the international literature as well as in the South African literature (as mentioned in section 1.2) with regards to the review of the effectiveness of the methodologies used to assess impact significance in environmental assessment This literature review has attempted to show that gap and is hoped that the findings of this study will thus add value to the growing body of knowledge on EIA effectiveness, and more specifically make a contribution to filling the current gap in the literature on the South African experience and add to the debate on how significance can be expressed meaningfully. The effectiveness of the EIA overall is reviewed in the next section.

2.7 EIA Effectiveness

EIAs are considered to have less influence internationally than anticipated, and the following concerns were raised i.e. "the different views about the nature and purpose of EIA and especially its relationship to decision making processes; institutional implementation issues; problems associated with practice, including limited or no public participation; and the limited substantive effect of EIA as a process" (Shakil and Ananya, 2015: page 117; Ortolano and Shepherd, 1995; Morgan, 2012; Retief, 2010). Three broad themes based on a review of the international literature on environmental assessment were identified and include theoretical grounding, quality and effectiveness (Retief, 2010). EIA effectiveness in relation to this research

study is that which aims to determine if the methods used to assess impact significance comply with the legislation, thus meeting the EIA requirements.

The effectiveness of EIA is core to the development of EIA and ultimately contributes towards environmental management (Sadler, 1996). The assessment of EIA effectiveness is intended to establish the change that EIA is making. It is thus important to define EIA effectiveness. According to Sadler (2004: page 249), EIA Effectiveness is defined as "whether the EIA process or elements has measured up to it's procedural requirements and substantive purpose" whereas Polonen *et al* (2010: page 121) refers to a more traditional definition "whether the instrument works, is used as intended to and meet the purposes for which it is designed". Effectiveness includes, "evaluation of EIA compliance with procedural requirements, evaluation of EIA criteria to confirm whether the EIA process met its purpose and objectives, and whether the EIA process delivered these outcomes with the least cost and with minimum delay and without bias or prejudice" (Sadler 2004 as cited in Van Heerden, 2010: page 17).

There are four categories of effectiveness, procedural effectiveness, substantive effectivenenss, transactive effectiveness and normative effectiveness (Shakil and Ananya, 2015). According to Sadler (1996), procedural effectiveness relates to whether the assessment complies with the recognised requirements and principles, substantive effectiveness shows the achievement of expected objectives (i.e. does it allow for informed decision making and ensure that the environment is protected) and transactive effectiveness refers to whether the EIA process delivers these outcomes with the minimum cost in the least time possible (i.e. is the EIA process 'effective and efficient'?). According to Bond and Morrison-Saunders (2013: page 45) "normative effectiveness reflected the extent to which normative goals, defined as a combination of social and individual norms" were achieved. Shakil and Ananya (2015: page 118) argue that "one of the major problems of EIA effectiveness assessment is to visualise the different scenarios with and without EIA and it is because of the difficulty to assess which environmental parameters will improve with the help of EIA".

The effectiveness of EIA in the UK planning system was examined by reviewing 40 planning applications and found that EIA influenced the decision in only one case (Wood and Jones, 1997). According to Shakil

and Ananya (2015: page 118), EIA acted as a "confidence providing factor for the respective planning officer during his/her recommendation about the proposal". It was also found that the EIA only allow for slight modification of the project design (Shakil and Ananya, 2015). Similarly, according to Wood (2003), the EIA does have some influences on project decisions, but often the findings of EIA are side-lined in favour of other considerations. The findings of the expert assessments are often outweighed non-environmental, objectives and political factors (Wood, 2003).

There has been very little research conducted on the effectiveness of EIA systems in South Africa. Wood (1999) undertook one of the very first reviews of the EIA system in South Africa. The evaluation criteria used, meet the recognised international good practise and were derived from an analysis of the stages of the EIA process (Wood, 1999). The study found that seven of the fourteen evaluation criteria were met, two partially met, and five were not met at all. According to Wood (1999: page 57), the main weakness related to EIA include monitoring the EIA system monitoring, review of reports, importance is not given to "the full range of impacts, impact monitoring, public participation, and the SEA of programmes, plans and policies".

NEMA specifies that procedures for independent review must be implemented, however, there is no formal requirements for checks on objectivity for the preparation of a draft EIR, or for consultation and participation in review (Wood, 1999). The decision to approve a project is often made by overwhelmed provincial staff on limited information, rather than on the full range of factors normally considered in internationally recognised good EIA practice (Granger 1998, as cited in Wood 1999). Monitoring is an important component of environmental management in South Africa and the IEM guidelines specified the necessity of its importance, however, neither the EIA regulations nor the DEAT guidelines refered to monitoring at the time of the review undertaken by Wood (1999). The provincial and local authorities lack the capacity to take enforcement action. EIA system monitoring is also lacking, there seems to be no provision for a review of the EIA system or for the keeping of documents relating to EIA (Wood, 1999). In terms of participation, the the proponent is responsible for consultion and public participation and not the CA (Wood, 1999). The EIA regulations apply only to projects, although the need for the SEA is widely acknowledged, the EIA regulations have failed to take account of cumulative effects and sustainability issues

more generally at the time of the review (Wood, 1999). Following this review, two other reviews were done on the South African EIA system in terms of effectivenenss, one by Kruger and Chapman (2005) and the other by Sandham *et al* (2005). A number of issues were identified from these studies including the following:

- compliance to the EIA regulations was poor;
- there was a lack of focus on socio-economic impacts;
- the impact assessment methodology used was very subjective;
- there was poor or no baseline information;
- inadequate attention given to the alternatives as well as public participation;
- specialist input was lacking; and
- there seemed to be a lack of integration of the findings of the EIA into the Environmental Authorisation (Van Heerden, 2012).

The review of EIA quality is thus important in determing whether the EIA process undertaken is effective or not (Lee *et al*, 1999). Compliance of the impact significance assessment to the EIA regulations is one of the indicators of effectiveness and ultimately contributes to a good quality environmental report ensuring the the report meets the requirments of the EIA regulations (Lee *et al*, 1999).

The evaluation of the quality of the Environmental Report, including impact significance assessment, can be conducted by using a set of criteria or standards, called a review package. One such package was developed by Lee and Colley in 1992. The Lee and Colley review package was developed for the review of EIA reports in the UK (Lee *et al*, 1999). This package has "been widely used to undertake reviews of project level EIA reports and consists of multiple criteria arranged in a four level hierarchical structure consisting of an overall report grade, review areas, categories and sub-categories, which are used to assess the quality of EIA reports" (Lee *et al*, 1999: page 54). One of the criteria assessed by this method is impact significance assessment, which is discussed in more detail in section 2.5.

2.8 Conclusion

The EIA was formally established in the 1960's in the USA and was a tool that would be used for the protection of the environment in the face of increasing development pressures. This was followed by the development of EIA systems in other countries including African countries.

South Africa was "slow to develop procedures appropriate to its circumstances" (Sowman *et al*, 1995: page 46). The first dedicated environmental statute in South Africa was only passed in the 1980s (Glazewski, 2000). Since then South Africa has come a long way, with the promulgation of framework legislation which aims to achieve four distinct objectives which include: generic legal elements, a flexible approach to address changing circumstances, dedicated specific sectoral legislation; and the inclusion of broad-based environmental policy, principles and instrumental tools. The EIA is an important environmental management tool, discussed in NEMA and if applied correctly, benefits the environment. This can be achieved through the assessment of significant impacts.

Impact significance determination is recognised as an important part of the EIA process, however it is one of the least understood and most complex parts of the process (Lawrence, 2007). There a number of different methods that have been identified internationally, yet there is still no consensus on what is the most suitable or effective method (Lawrence, 2007). According to TEEIC (2002), determining the significance of impacts can be one of the most difficult aspects of an impact assessment. Significance determination occurs throughout the EIA process and one of the major concerns worldwide relate to the determination of significance in the early phases of the EIA process as this ultimately affects how the EIA then proceeds (Martunnen *et al*, 2013).

According to DEAT (2002: page 2), the process of determining and ascribing significance to impacts includes "impact identification, impact prediction and impact evaluation" and "consideration of the significance of environmental effects must acknowledge that EIA is inherently an anthropocentric concept" as it is focused on the impacts of human activities and essentially comprises a value judgement of the significance of these effects. "Ideally significance should be communicated from a variety of perspectives

(for example from public, political, scientific and economic perspectives) and EIA practitioners are sometimes required to extend their evaluation of impacts beyond their professional perspective and to emphasize those environmental attributes perceived by society to be significant" (DEAT, 2002: page 2).

There is extensive room for improvement in determining and ascribing significance to impacts in environmental assessment. It has been criticised "as being too narrowly defined, as biased in favour and against particular values and practices, and as devoting too little attention to some types of impacts, to uncertainties, to theory, and to lessons from practice" (Lawrence, 2007: page 3). These limitations, however, can be improved with better practice.

Chapter Three - Methodology

3.1 Introduction

This chapter provides a description of the methods used to obtain data for this research project. The research design presented and sampling methods used to collect BARs and obtain feedback on the questionnaires are described in this chapter. A qualitative approach was applied to this research. Qualitative research was chosen for this particular research project. It is characterised by its aims, which relate to being considerate about the social aspect of life, and its methods which (in general) produce words, as data for analysis (Patton and Cochran, 2002). The research was undertaken by commencing with a review of the relevant literature, regulations and guidelines, followed by a review of BARs to identify the different methods used to assess impact significance. Finally a review of questionnaires which were administered to selected participants was undertaken. It is important to note that although the approach to the research overall was primarily qualitative (social constructivist), there was some quantification of the qualitative data. A quantitative analysis of qualitative data "involves turning the data from words or images into numbers" (Bernard, 2013: page 394). The qualitative data for this research was quantified by converting the questionnaire responses into percentages and then presenting this in the form of charts and graphs.

3.2 Research Design

The approach used in this research is a qualitative approach which is framed in a social constructivist paradigm (i.e. it assumes that knowledge is socially constructed and subjectivity is part of the production of data) (Creswell, 2014). The process of qualitative research, according to Creswell (2014), includes emerging questions and procedures, information that is typically collected in the participant's location, data analysis inductively building from specific to general themes, and the researcher making interpretations of the significance of the information obtained. The study adapted a primarily qualitative methodological approach (noting that there was some quantification of the data), with the purpose being to investigate different methods used to determine and ascribe impact significance, and then to explore the views of participants by undertaking a thematic analysis of the questionnaire data. The collected data was accordingly discussed in relation to the applicable themes within the literature (i.e. the theoretical framework that informs and frames this study). These themes included sustainable development and sustainability in relation to EIA; background

to the EIA internationally and in South Africa; understanding how impact significance is determined in EIA; and the implications of this for EIA effectiveness overall. Sources of literature included published journal articles, books, and internet search engines (i.e. Google) for articles from the popular press and other documents, and from these sources, key themes were gleaned out in relation to the research topic.

3.3 Sampling and Data Collection

This section provides detailed information on the sampling method used for this research and also provides information on the data sets reviewed, including details on the participants.

3.3.1 Sampling

Qualitative research often relies on converting information from observations and reports into data and then into the written word (Hildebrandt, 2012). The research objectives and the characteristics of the study population (i.e. size and diversity) allow us to determine which and how many people to select (Family Health International, 2006). Qualitative studies often use a form of non-probability sampling such as accidental or purposive sampling, as well as snowball sampling (Sarantakos, 2005). This sampling strategy utilised for the research project included both purposive sampling and the snowball sampling.

According to Sarantakos (2005) with purposive sampling, the researcher chooses subjects who in their opinion are relevant to the project. With this sampling strategy, sample sizes depend on the resources and time available, as well as the study's objectives (Family Health International, 2006). These sample sizes are often determined on the basis of theoretical saturation (Family Health International, 2006). For this research study, this sampling method was used as the participants that completed the questionnaires were chosen because of their particular roles / responsibilities within an organisation, or because of the organisation they represent, or their role in the EIA process either as the EAP or an I&AP (NGO), a commenting authority (the local municipality) or the CA (EDTEA / DEA). According to Family Health International (2006: page), snowballing / snowball sampling is considered to be a type of purposive sampling where participants who were already contacted by the researcher made use of their social networks to refer other participants to the researcher who could contribute to the study. This sampling strategy was employed during the identification

of participants for participation in the questionnaire analysis and collection of data. Additional participants were contacted following recommendations made by initial contact identified during purposive sampling.

3.3.1.1 Sampling of BARs

The BARs reviewed as part of this research were obtained from EAPs located in KwaZulu Natal, South Africa. This was mainly due to the logistical feasibility of choosing projects where the researcher could easily access copies of the BARs, as the researcher was based in Durban, KwaZulu Natal. Internet search engines (i.e. Google) were used to identify BARs that were compiled for projects based in KwaZulu Natal, and the authors of those reports were then requested to participate in this research study. A number of EAPs located within KZN were contacted to provide copies of BARs that they had completed for projects located within the study area, and were requested to provide copies of BARs for a range of applications. A number of BARs were identified by the researcher, however, only nine BARs were used and reviewed as part of this research as only nine of the EAPS provided consent to allow for the review of the BARs as part of this study. The reason for this is that although the BARs are available on the internet as public documents, the methods used within those reports are the property of the EAP and as such cannot be reviewed without their consent. However, it is noted that ten different methods used to assess impact significance were reviewed for the purpose of this research. The tenth method was prepared by an EAP for use in both BARs and EIRs, however, the EAP has not yet completed a BAR with this method. Written consent was obtained from the EAPs that compiled the BARs. The BARs reviewed assessed activities that were submitted under the 2010 EIA Regulations. The EAPs that provided the reports were from ten different companies, each EAP was either in the position of an environmental consultant or a more senior position (senior consultant / director / owner). The proposed activities that were assessed in the 9 BARs included the proposed construction of a marula pack house and jam processing plant, the proposed expansion of a warehouse, the operation of an Asphalt Plant, for site clearing and site preparation activities at a port, the construction of a pedestrian bridge, the proposed construction of a school, for the upgrade of a sewage network, or the demolition and construction of dwelling and for the upgrade of a lifeguard facility (Table 3.1). These activities all trigger BARs as the potential level of impact posed by each activity is considered to be of a small scale in nature and the impacts posed by each activity should be less significant irrespective of the type.

Table 3.1: Details of BAR / EIR Reviewed

Name	Nature of Application	Date of BAR	Report Obtained for Research
BAR 1 (Method 1)	Construction of a marula pack house and jam processing plant.	2013	15 August 2014
BAR 2 (Method 2)	Expansion of a warehouse.	2014	10 September 2014
BAR 3 (Method 3)	Operation of an Asphalt Plant.	2013	26 August 2014
BAR 4 (Method 4)	Upgrading and decommissioning of fuel storage infrastructure (tanks, pipelines, etc.).	2014	28 July 2014
BAR 5 (Method 5)	Upgrading and extension dirt road to a gravel road.	2013	30 April 2014
BAR 6 (Method 6)	Construction of a school	2014	12 November 2014
EIR 1 (Method 7)	Method prepared by EAP for use in futures BAR, same as method currently used for EIR.		18 August 2014
BAR 7 (Method 8)	Upgrade of sewage infrastructure.	2013	15 May 2014
BAR 8 (Method 9)	Demolition and construction of dwelling	2013	30 April 2014
BAR 9 (Method 10)	Expansion of a lifeguard facility	2013	10 September 2014

Please note that the 10 methods reviewed were provided by ten different EAPs even though the methods may be similar or different in technique or approach. Note that this also gives you a sense of the range of methods within or across different companies

3.3.1.2 Sampling of Participants for Questionnaire Analysis

The participants that were selected to participate in this research study were identified using the internet search engines (i.e. Google) and Linked-In (a social networking service that allows representatives from different businesses to connect). Approximately 40 participants were contacted via email, telephone or using social media (Linked-In) to ascertain their interest in this research project. They were requested to complete a questionnaire which was developed to explore the views of the key participants regarding impact significance methodologies and outcomes. Copies of the research questionnaire were sent to those

participants and only 24 of those participants provided completed or partially completed questionnaires for analysis. The participants that were contacted were selected based on the role and responsibilities that they undertook in the EIA process. Table 3.2 provides details on the respondents that participated in this research. The respondents that participated in this research study requested to remain anonymous and as such they are referred to by their designation and a number was allocated to differentiate between each participant, for example the first respondent is referred to as NGO 1, the second as EAP 1 and so on.

Questionnaires were submitted to participants that were actively involved in the EIA process. Participants included Environmental Assessment Practitioners (EAPs), representatives from the local municipality, the CA, Non-Governmental Organisations (NGOs) i.e. SDCEA, DUCT, Coastwatch and applicants. The NGOs refer to a group of people who pursue the interest of the public and the environment rather than a commercial / economic interest. EAPs are responsible for compiling the BAR and ensuring that complies with the relevant EIA regulations. The local municipality (eThekwini Metro Municipality) can assume the role of an applicant or as a commenting authority. The CA is responsible for approving or refusing EA for all EIA applications.

Table 3.2: Participants Selected as Key Respondents

	EAP NGO / CA / I & AP	**Position**	**Roles & Responsibilities**	**Date Questionnaire Completed**
Respondent 1	NGO 1	EIA Co-ordinator	• Review EIA reports and provide comment into the EIA process; and • Incorporate comments provided by other team member into letter.	04 August 2014
Respondent 2	EAP 1	Environmentalist / Practitioner	• Undertake EIA processes; • Undertake Water management applications; and • Undertake Compliance Monitoring and Auditing and act as the ECO.	12 August 2014
Respondent 3	Client 1	Environmental Manager	• Advise Company on environmental issues or concerns; • Review reports submitted by EAP; • Liaise with CA regarding all projects that require EA; • Ensure company is compliant with all environmental legislation and regulations; and	03 August 2014

			• Assist with Environmental Management Systems and Strategic Environmental Management for company.	
Respondent 4	NGO 2	Jnr. Soil & Rehab. Specialist/Environmental Compliance Officer	• Act as an NGO regarding any proposed development that is deemed to have an effect on water resources and riparian areas/corridors.	28 July 2014
Respondent 5	EAP 2	Owner / Manager	• Compile BAR, EIA, Scoping Reports for EA for submission to the public and to the CA; • Undertake ECO Monitoring. Compile; and • Compile Water Use License Applications and Mining Permits.	08 August 2014
Respondent 6	EAP 3	Consultant	• Compile BAR, EIA, Scoping Reports for EA for submission to the public and CA; and • Undertake ECO Monitoring.	04 May 2014
Respondent 7	Competent Authority (CA) 1	Assistant Manager: EIA	• Review all EIA applications to ensure compliance with the legislation; • Provide advice to applicants; and • Issue EA.	26 September 2014
Respondent 8	NGO 3	Chair of NGO	• Review EIA applications.	23 July 2014
Respondent 9	EAP 4	Managing Director	• Compile and review BAR, EIA, Scoping Reports for EA for submission to the public and to the CA.	29 April 2014
Respondent 10	Commenting Authority (Local Municipality) 1	Environmentalist	• Provide environmental support (review EIA applications) and advice for municipal projects.	09 August 2014
Respondent 11	EAP 5	Senior Environmentalist	• Compile BAR, EIA, Scoping Reports for EA for submission to the public and to the CA; • Undertake ECO Monitoring. Compile; and • Compile Water Use License Applications.	11 September 2014
Respondent 12	EAP 6	Director & EAP	• Compile BAR, EIA, Scoping Reports for EA for submission to the public and to the CA; • Undertake ECO Monitoring. Compile; and • Compile Water Use License Applications.	11 September 2014
Respondent 13	EAP 7	Managing Member	• Compile BAR, EIA, Scoping Reports for EA for submission to the public and to the CA;	14 May 2014

			• Undertake ECO Monitoring. Compile; and • Compile Water Use License Applications.	
Respondent 14	EAP 8	Owner	• Compile BAR, EIA, Scoping Reports for EA for submission to the public and to the CA; • Undertake ECO Monitoring. Compile; and • Compile Water Use License Applications.	04 August 2014
Respondent 15	NGO 4	Environmental Project Officer	• Develop and conduct research on environmental educational plans focussing on all environmental issues such as climate change, access to information, spatial development and sustainability. • Facilitate educational workshops and training sessions for community, schools, academic and other institutions. • Assist with GIS and mapping computer systems. • Monitoring and evaluation of projects. • Liaise with various participants on projects- whether Government, private sector, industries and the public. • Comment and critically analyse EIAs and other environmental documents as well as legislation, policy and deal with issues concerning compliance.	05 May 2014
Respondent 16	EAP 9	Project Manager	• Compile BAR, EIA, Scoping Reports for EA for submission to the public and to the CA; • Undertake ECO Monitoring. Compile; • Compile Water Use License Applications; and • Compile Air Emissions Licenses and Waste licenses.	08 September 2014
Respondent 17	CA 2	Control Environmental Officer – Grade B (Deputy Director)	• Review EIA applications submitted to the CA and provide advice on applications. Assist with EA.	24 July 2014
Respondent 18	EAP 10	Ecologist / Environmental Consultant	• Undertake EIA and wetland studies.	23 July 2014
Respondent 19	Client 2	SHEQ Manager	• Ensure compliance with environmental and health and safety legislation and regulations for the company.	04 November 2014
Respondent 20	Client 3	Environmental Specialist	• Advise company on environmental compliance for all projects.	04 August 2014
Respondent 21	EAP 11	Environmental Consultant	• Compile BAR, EIA, Scoping Reports for EA to the CA. Undertake ECO Monitoring.	15 August 2014

Respondent 22	EAP 12	Director	• Compile BAR, EIA, Scoping Reports for EA to the CA. Undertake ECO Monitoring.	05 November 2014
Respondent 23	CA 3	Assistant Manager: Environmental Planning	• Provide advice within the environmental planning section. Strategic environmental management	24 July 2014
Respondent 24	EAP 13	Environmental Specialist	• Act as the Environmental Assessment Practitioner (BA and EIAs); • Use Geographic Information Systems for strategic planning; • Act as the Visual Impact Assessments (Specialist) and Air Quality Assessments; and • Undertake Atmospheric Emissions Licences.	04 November 2014

Of the twenty four participants that submitted completed questionnaires, the EAPs are represented by fourteen respondents (58%), the CA is represented by two respondents (8%), the local municipality is represented by one respondent (4%), the NGO category is represented by three respondents (13%) and the applicants are represented by four respondents (17%) as well). The majority of the respondents that participated in this research study were made up of EAPs, with the CA and the local municipality making up the bottom two groups.

3.3.2 Data Collection

3.3.2.1 Collection of BARs

Ten different EAPs provided copies of the impact assessment methods they used in the compilation of their own BARs. Nine BARs were reviewed from different environmental consultancies and consulting engineering companies in Kwa-Zulu Natal, South Africa to identify the different impact assessment methods presented in their reports. The tenth impact assessment method that was reviewed was compiled by the EAP for use in both BARs and EIRs. The reason for only reviewing ten impact assessment methods is that although the BARs and EIRs are available on the internet as public documents, the methods used within those reports are the property of the EAP and as such cannot be reviewed without their consent. EAPs were contacted and requested to participate in this research study, however, a number of them did not respond and some EAPs did not want to have the impact assessment method that was used by their companies, reviewed as the study may have highlighted potential issues associated with the method used. Consent was only

received from ten different EAPs to review the impact assessment methods used for the purpose of compiling BARs. BARs were reviewed instead of EIRs for this research study. The review of BARs was chosen by the research due to the lack of this type of research in the KZN province. Another reason for reviewing BARs and not EIRs is that although the BA process is applied to activities that are considered by the CA to have little impact on the environment, the impacts caused may still be significant (EWT, 1999). This, however, can only be confirmed with significance determination; a shorter BA process does not necessarily mean that the impacts of the project will be less harmful to the environment.

3.3.2.2 Questionnaires

A questionnaire (Appendix 1) was compiled to explore the views of key participants regarding impact significance methodologies and outcomes. The questionnaire was divided into the following sections: (a) Background information; (b) EIA legislation and guidelines in South Africa; (c) Impact significance in the South African context; and (d) EIA effectiveness overall. The questionnaire was designed to gather the views of a range of participants on the EIA process, with specific focus on impact significance and the overall effectiveness of the EIA process. Note that Ethical Clearance was applied and granted by the University of KwaZulu-Natal (UKZN) Research Office, a copy has been included as Appendix 3.

As discussed Section 3.3.1.1, the participants were identified and selected based on their roles and responsibilities within the EIA field. The questionnaires were submitted to participants electronically (via email) from April 2014 until October 2014. Approximately 40 participants were requested to participate with the research. Completed questionnaires were received from 24 participants (Appendix 1 and 2).

3.4 Analysis and Interpretation

To determine whether the impact assessment methods comply with the South African legislation, the methods were compared to a set of criteria as identified in the South African EIA Regulations Government Notice 543 which sets out the requirements for the EIA process, including, a description and assessment of the significance of any environmental impacts. This notice stipulates the minimum requirements in terms of impact assessment on what needs to be assessed to determine if the proposed development will have

significant impact on the surrounding environment. The impact assessment methods will be also be compared to guidelines (DEAT Guideline Series 5), that is a guideline based on impact significance and focuses on the concept of significance in the identification, prediction and evaluation of impacts.

The subsequent subsections provide information on the types of analysis (documentary analysis; and coding and thematic analysis) used for this research project. Details of the method used for the review of the impact significance, is also discussed.

3.4.1 Documentary Analysis

A review of the policy documents linked with the regulatory framework (i.e. NEMA) was undertaken together with a review of the relevant international, local EIA published literature and BARs. This was done to develop an understanding of the regulatory framework for EIAs both internationally and in South Africa. Harmer (2005) emphasises that it is important to structure the research within a literary context to identify where conclusions have already been reached and also to highlight areas where the more research is required (to determine the gaps in knowledge). During the literature review, the review of the quality of EIA reports in South Africa was identified as a gap in research where more research needed to be undertaken, specifically the lack of information available on the effectiveness of EIA in South Africa. One of the ways to determine effectiveness is to review the quality of EIRs and BARs. The following key concepts and themes in the published literature and documentary sources were reviewed:

- Development of EIA (internationally);
- EIA in South Africa (in terms of IEM, current regulatory framework and guidelines);
- EIA effectiveness (in relation to meeting procedural requirements as well as substantive outcomes, focus on how it pertains to impact significance methodologies internationally and in South Africa); and
- EIA Impact Significance Methodologies (focus on different approaches internationally and local experience, merits, challenges).

3.4.2 Reviewing Methods used to Ascribe Significance

The South African legislation and published guidelines were reviewed to determine whether the impact significance assessment methods in the case study BARs comply with the set of criteria as identified in the South African EIA Regulations Government Notice (GN) 543. The NEMA 2010 EIA regulations (GN 543) were promulgated by the CA following review of the international methods used to determine impact significance (SA, 2010). The CA set out the steps for the EIA process including a description and assessment of the significance of any environmental impacts in the EIA Regulations including a set of criteria to be assessed. The criteria listed in the EIA Regulations (SA, 2010) include:

- extent or spatial scale of the impact;
- intensity or severity of the impact;
- duration of the impact;
- mitigatory potential;
- acceptability;
- degree of certainty;
- status of the impact; and
- legal requirements.

The Lee and Colley review package was identified as being the most suitable package to review the 'methods /approaches' employed by EAPs, this model will be adapted to consider whether those 'methods / approaches' comply with the South African legislative requirements.

<u>Review Model as Adapted for this Study</u>

In 1989, Colley created a review package for use in assessing the quality of environmental statements submitted in response to UK planning regulations. Since then it has "undergone a number of revisions and refinements and has been widely used in the assessment of the quality of EIA" (Lee *et al*, 1999 as cited in Van Heerden, 2010: page 30). The assessment of the quality of the EIA report is important in determining the effectiveness of that EIA report and this was one of the main reasons for using this review package as a basis for this research study. The Lee and Colley review model consists of a list of criteria / review areas

used to evaluate the quality of each EIA report, a collation sheet where the findings should be recorded and advice and guidance for the reviewers (Lee *et al*, 1999).

There are four main review areas / criteria according to Lee *et al* (1999) and include the (1) description of the development, the local environment and the baseline conditions; (2) identification and evaluation of key impacts; (3) alternatives and mitigation of impacts; and (4) communication of results. The reviewer commences at the sub-category / lowest level and gradually moves upwards to the categories level. A review of the categories is done and the overall grade of the EIA Report is completed by reviewing the review areas (Lee *et al,* 1999). The review is conducted in a hierarchical structure (Figure 3.1).

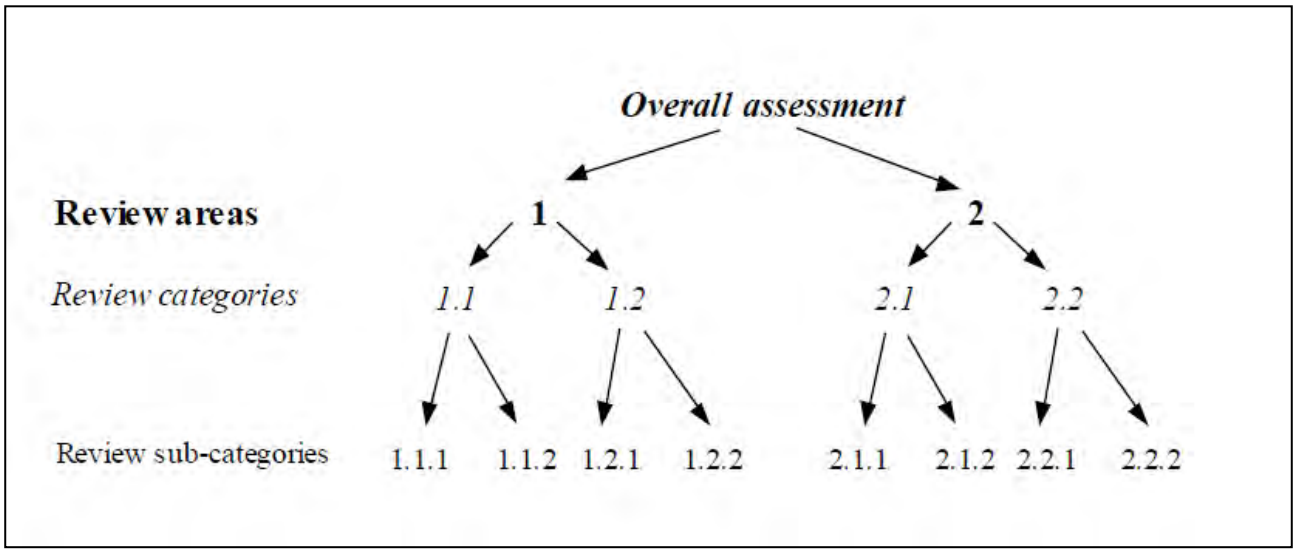

Figure 3.1: A Schematic Representation of the Review Hierarchy in Review Areas 1 and 2 (Lee *et al*, 1999)

A list of assessment of symbols are allocated to each sub-category, category and review area to determine the overall quality of the EIA Report. These symbols range from A – F, depending on how well each specific task is performed (Table 3.3: page 58), letters are used as assessment symbols to prevent reviewers from "crude aggregation to obtain assessments at the higher levels in the pyramid" (Lee *et al*, 1999: page 6). Furthermore letters, unlike numbers, cannot be added or subtracted, thereby distorting the results (Simpson, 2001).

Table 3.3: Rating System as Used in the Lee and Colley Review Package (Lee *et al*, 1999)

A	Generally well performed, no important tasks left incomplete
B	Generally satisfactory and complete, only minor omissions and inadequacies
C	Can be considered just satisfactory despite omissions and or inadequacies
D	Parts are well attempted but must, as a whole be considered just unsatisfactory because of omissions or inadequacies
E	Not satisfactory, significant omissions or inadequacies
F	Very unsatisfactory, important tasks(s) poorly done or not attempted
N/A	Not applicable. The review topic is irrelevant in the context of this EIA report

Review area 2 (the identification and evaluation of key impacts) consists of different categories. There are 5 categories within this review area, definition of impacts, identification of impacts, scoping, prediction of impact magnitude and assessment of impact significance. The last category, assessment of impact significance, which includes the review of the significance methods is relevant to this research project.

A rating system adopted from the Lee and Colley (1999) method as described was used for this purpose (Table 3.3).

DEA (formerly DEAT) Criteria

IEM is a key instrument of NEMA and the principles of IEM are interpreted as applying to all phases of the development or activity at local, national and international level that has a potentially significant effect on the environment. The principles of IEM have been incorporated into the NEMA principles. The NEMA principles and following generic criteria, as indicated in the DEAT (2002) Guideline Series 5 (drawn from the published literature and South African practice) can be used to describe magnitude and significance of impacts in a systematic manner. The criteria to be used are listed at the beginning of section 3.4.2.

Review Model as Adopted for this Study

The focus of this research study is impact significance assessment, only one of the categories within the Lee and Colley review package (i.e. Category 2.5 of Review area 2: 'assessment of impact significance') is the main focus to this study. A review model / package was created for this research study which incorporated criteria from the Lee and Colley review package together with the requirements of NEMA and the DEAT (2002) Impact Assessment Guidelines Series 5. This model was created specifically to determine whether the methods used in the case study BARS to assess impact significance complies with 2010 EIA Regulations, NEMA Principles (1998) and DEAT (2002) guidelines. This review model was adopted, from Category 2.5 of the Lee and Colley review package, to determine whether the impact significance assessment phase of the case study BARs complies with the relevant legislative requirements and guidelines. Ten impact assessment methods in case study BARs were reviewed, as provided by ten different EAPs as part of this study.

Review Area Two (2) of the Lee and Colley review package focused on the identification and evaluation of impacts, however, with an adaptation for this study that focused on the evaluation of impacts and not identification. Review Area Two is made up of 5 categories (Table 3.4).

Table 3.4: Review Categories in Review Area Two (Lee *et al*, 1999)

Review Category	Description
2.1	Definition of impacts: Potential impacts of the development on the environment should be investigated and described. Impacts should be broadly defined to cover all potential effects on the environment and should be determined as the predicted deviation from the baseline state.
2.2	Identification of impacts: Methods should be used which are capable of identifying all significant impacts.
2.3	Scoping: Not all impacts should be studied in equal depth. Key impacts should be identified, taking into account the views of interested parties, and the main investigation centred on these.
2.4	Prediction of impact magnitude: The likely impacts of the development on the environment should be described in exact terms wherever possible.
2.5	Assessment of impact significance: The expected significance that the projected impacts will have for society should be estimated. The sources of quality standards, together with the rationale, assumptions and value judgements used in assessing significance, should be fully described.

Review categories 2.1 to 2.5 of the Lee and Colley method were considered and only Review category 2.5 was the focus to this research study. However, it must be acknowledged that significance cannot be determined without the identification and prediction of those impacts. So even though the researcher has not included categories 2.2 and 2.4 of the Lee and Colley method; those categories have been ultimately incorporated into the method adapted for this research study. The DEAT criteria in essence include the criteria associated with impact identification and prediction. The assessment of impact significance cannot exist in isolation; it is dependent on the identification, prediction and evaluation of those impacts.

Emphasis was placed on review category 2.5 "*Assessment of Impact Significance: The expected significance that the projected impacts will have for society should be estimated. The sources of quality standards, together with the rationale, assumptions and value judgements used in assessing significance, should be fully described*" (Lee e*t al,* 1999: page 43). The case study BARs were reviewed in relation to sub-categories 2.1.1 to 2.5.3 (Table 3.5).

Table 3.5: Sub-categories in Review Area Two, Specific to Assessment of Impact Significance (Lee *et al*, 1999)

Review Category	Sub-category	Description
2.5	2.5.1	The significance to the affected community and to society in general should be described and clearly distinguished from impact magnitude. Where mitigating measures are proposed, the significance of any impact remaining after mitigation should also be described.
	2.5.2	The significance of an impact should be assessed, taking into account appropriate national and international quality standards where available. Account should also be taken of the magnitude, location and duration of the impact in conjunction with national and local societal values.
	2.5.3	The choice of standards, assumptions and value systems used to assess significance should be justified and any contrary opinions should be summarised.

In summary these subcategories focused on the description of the significance before and after mitigation. Future assessment should take into account the location, magnitude and duration of the impact in relation to local and national standards (i.e. NEMA and DEAT Guidelines), and the assumptions and limitations of the

method used should be explicitly discussed in the impact significance assessment methodology section of the report before the assessment is undertaken. A collation sheet was compiled following a review of the case study BARs in relation to the review areas, categories and subcategories (Table 3.5).

Based on the Lee and Colley (1999) method as adopted, the impact assessment method in each BAR was compared to the set of criteria (as identified in section 2.5 of the Lee and Colley review package, the NEMA and DEAT Guideline Series 5) to determine if the method used complies with the South African legislation and NEMA Principles and DEAT Guidelines (Table 3.6). Only one category was applied to specifically review the methods used to assess impact significance in BARs in the South African setting. Subcategories were then be allocated as indicated in the Table 3.5 and is a combination of DEAT Guideline requirements and Section 2.5 of the Lee and Colley review package. This combination is important as the DEAT criteria ultimately incorporate the identification, predication and evaluation of impacts, which collectively determines significance in the practise of EIA in South Africa. Each sub-category was then rated according to the system (Table 3.3) to determine the final overall rating and determine whether the method used to assess impact significance complies with national requirements (NEMA Principles, DEAT Guidelines). It is important to note that the emphasis of this study relies primarily on the Lee and Colley rating system (A-F) (Table 3.2). The completed collation sheets for the case study BARs have been included as Appendix 4.

Table 3.6: Criteria Reviewed for Each Impact Significance Determination Assessment Method (as adopted from Lee and Colley Review Package (Lee *et al*, 1999)

Category / subcategory	Description of sub-category	Ratings (A, B, C, D, E, F, N/A)
1. Assessment of Impact Significance		
1.1	Assumptions and limitations of the methods are explicitly discussed	
1.2	Description of impact severity encompass the appropriate characteristics of impact	
1.2.1	Degree of reversibility	
1.2.2	Magnitude / Intensity	
1.2.3	Extent / spatial scale	

1.2.4	Duration	
1.2.5	Frequency	
1.2.6	Likelihood of occurrence	
1.2.7	Irreplaceability	
1.3	The significance of impacts of the proposed project are assessed both with and without mitigation action.	
1.4	Estimates of impacts rated / quantified	
1.5	Cumulative impacts are adequately assessed using this method	
1.6	Impacts are assessed for all phases of the proposed development (i.e. Construction, operation and decommissioning).	
1.7	Method is compliant with requirements of GNR543 22(i)	
Final Overall Rating		

**** The subcategories highlighted in **green** have been were included to adopt this sheet to the South African context and are based on the (former) DEAT Guidelines. The subcategories highlighted in **orange** are from the Lee and Colley review package (1999).

3.4.3 Coding and Thematic Analysis

The questionnaire involved a series of questions which were divided into different sections. Section 1 was based on Background information, section 2 was focused on EIA legislation and guidelines in South Africa, Section 3 on the assessment of impact significance in the South African context and Section 5 related to the effectiveness of EIA overall in South African. The responses provided to the questions within each section / theme is discussed in Chapter 5. These sections were developed to explore the views of the key participants regarding impact significance methodologies and outcomes, described as research objective iii.

The completed questionnaires were then analysed using the coding process. According to Sarantakos (2005), where observation categories have been developed and the items of observation are clear, specific and known in advance, codes can be used to record the data. Coding is thus and essential procedure in qualitative

research as it directly informs the thematic analysis. Common themes i.e. impact significance assessment and EIA effectiveness, were coded out using this process. Through the thematic analysis, trends within each theme were identified. These trends were then represented graphically using Microsoft Excel.

3.5 Methodological Reflections

There were some of the areas of this research study that worked well. The EIA process is a topic that has attracted much debate and as such, there is considerable literature available on the actual process, although limited research on ascribing significance and implications for EIA effectiveness overall. The methodology used was considered to be appropriate to this research study as it allowed the researcher to collect the necessary data required for analysis i.e. the case study BARs and participant feedback gathered via questionnaires. Having access to a number of BARs allowed the researcher to reflect on a range of methods used to ascribe significance for a number of EIA applications for different types of development activities, and gathering feedback via questionnaires enabled the researcher to gather insights into the process from representatives of a number of stakeholder groups.

However, there were a number of limitations and challenges that were encountered during the research process. There is no specific review package for the review of the impact assessment method in isolation to the entire EIA process, as documented in the overall report. The Lee and Colley (1999) method was found to be used to review the quality of EIA Reports in its entirety, however, as this project examines only one part of the EIA process, it is not possible to review a number of different categories and subcategories as done with Lee and Colley review package. Only one category from the Lee and Colley review package focused on impact significance. The assigning of rating symbols to the subcategories was based on the researcher's interpretation of the subcategories and ratings, it was based on the researchers own bias and can be considered as a limitation to this study.

Approximately 40 questionnaires were distributed, however, a number of the respondents chose not to participate in the research. Some of the participants were not able to allow access to BARs due to the confidentiality of the documents. The EIA process requires that the public is made aware of the projects that

undergo this process, and as such these documents which were submitted for public review are then considered public documents. This, however, was not the case, the EAP / gatekeeper / author of the reports did not grant approval for the review of the methods used to assess impact significance, which can be considered a contradiction to the openness and transparency of the NEMA principles. It is important to note that a sample size of 30 BARs would have been ideal, however, obtaining permission from the gate keepers (authors of the BAR / impact assessment method) was difficult. The views of the participants and the number of BARs reviewed may not be a true representation of the whole of KZN due to the lack of participation from EAPs and respondents. EAPs from through KZN were requested to participate in this research, however, most of the EAPs that were willing to participate in this research study were concentrated within the eThekwini Municipal area and as such may not be a true reflection of the entire province of KZN.

3.6 Concluding Statement

The qualitative approach which included both purposive and snowball sampling methods to collect data sets was used in the sampling of BARs and in the identification of respondents who participated in the questionnaire. The Lee and Colley review package was adopted and applied to create an adapted collation sheet that was used to determine whether the methods used to assess impact significance in BARs, comply with national legislation (i.e. NEMA Principles, and 2010 EIA Regulations) and guidelines (DEAT 2002 Guideline Series 5). The EIA Regulations (including the EIA process) are based on the international methods and procedures as discussed in DEAT Guideline Series No.5. The final overall rating was determined using the rating system (A-F). The methods used to assess impact significance in ten BARs were reviewed, and questionnaires completed by 24 participants were reviewed and analysed using coding and thematic analysis. The next section provides an analysis of results following a review of the impact significance assessment methods used in the case study BARs.

Chapter Four – Impact Significance Determination Approaches and Methods

This chapter presents and discusses the results of the impact significance assessment methods used in the case study BARs by the EAPs. The aim of this project is to investigate the methodologies used for ascribing significance in impact assessment and the implications for EIA effectiveness in South Africa. One of the ways in which this aim was achieved was to compare and critically review the different methods or approaches for ascribing significance in a sample of BARs. The methodological approach used allowed the researcher to obtain the necessary data (i.e. the case study BARs) which were then analysed in response to research question (ii), posed in Section 1.2 (page 5), thus addressing the aim and the associated research objective (ii).

4.1 Comparison and Critical Review of BAR Impact Assessment Methods

This chapter provides the results obtained from the review and analysis of the impact assessment methods used in the case study BARs in South Africa. The BARs reviewed assessed reports that were compiled for submission under the 2010 EIA Regulations. A description of the each impact significance data method, in comparison to the assessment criteria, is discussed. This is then followed by a review of the rating assigned to each sub-category that was used to determine whether the impact assessment methods used comply with the relevant legislation.

Each sub-category was rated according to the adapted Lee and Colley system (Table 3.3: page 58) to determine the final overall rating and determine whether the method used to assess impact significance assessment complies with national requirements and guidelines.

Method 1 provided both a qualitative (a more descriptive process) and a quantitative (assigns measurable or numerical value to quantify the impact) assessment of impact significance. This method provided a detailed description of the impacts and encompassed appropriate characteristics i.e. magnitude, extent, duration, frequency, likelihood, irreplaceability and reversibility. This method was found to assess impacts across all phases of the development, including cumulative impacts, and rated the impacts. This method failed to discuss any assumptions and /or limitations of the method, nor did it provide a significance rating of the

impacts before mitigation. This method was found to comply with the requirements of GNR 543 22(i) with minor omissions or inadequacies noted (i.e. the method did not include the degree to which the impact can be mitigated).

Methods 2 and 5 were found to be similar to each other and achieved similar scoring. Both methods provided a description of the impacts but both methods failed to include 'frequency' as part of the appropriate characteristics. Method 5 also failed to include the assessment of the 'magnitude' of the impact. Methods 2 and 5 differed from method 1 in that those methods did not incorporate all the required appropriate characteristics as method 1 did. Methods 2 and 5 were found to be similar to method 1 in all other aspects. These methods assessed the impacts across project phases, namely planning / pre-construction, construction, operation and decommissioning; assessed cumulative impacts adequately; provided a rating system for the impacts. However they only provided a significance rating of impacts after mitigation and failed to discuss any assumptions and /or limitations associated with the method used. Method 5 was found to fully comply with the requirements of GNR 543 22(i) and method 2 complied with minor omissions or inadequacies noted in terms of the degree of mitigation of the identified impact.

The third method that was reviewed was a purely descriptive qualitative method, where the impacts were described, no rating was applied. This method failed to discuss the assumptions and/or limitations of the method used, did not incorporate any of the characteristics (i.e. extent, duration, frequency, likelihood of occurrence and irreplaceability) into the assessment method and did not provide any rating of impacts. Significant impacts were merely highlighted, but the significance of impacts before and after mitigation was not evident, and this method did not meet the requirements of GNR 543 22(i) as it did not include the nature, extent, duration, probability, degree of irreplaceability, degree of mitigation of the identified impact and significance of impact. Cumulative impacts were described and mitigation measures provided and this method seemed to, however, assess impacts across all phases of development.

Similar scorings were achieved by methods 4, 6 and 7. As with methods 1, 2 and 5, methods 4, 6 and 7 did not provide any assumptions and /or limitations of the methods used. All three methods failed to include

‘frequency’ and ‘irreplaceability’ as part of the characteristics considered. The degree of reversibility was not adequately assessed in all three methods. These three methods assessed the impacts across all proposed phases, assessed cumulative impacts adequately, provided a rating system for the impacts and provided a significance rating of the impacts assessed before and after mitigation. All three methods can be considered as incorporating most of the requirements of GNR 543 22(i), despite the omissions noted in terms of extent, degree of reversibility, degree of irreplaceability and degree of impact mitigation.

A description of the impacts was provided in method eight and it incorporated most of the required characteristics (i.e. extent, duration, likelihood of occurrence, irreplaceability), however, failed to include ‘frequency’ and ‘magnitude’ in the assessment of appropriate characteristics. As with method 1, this method was found to assess impacts across all phases of the development, including cumulative impacts, rated the impacts, but did not discuss any assumptions and /or limitations of the method and did not provide a significance rating of the impacts before mitigation. This method was also found to fully comply with the requirements of GNR 543 22(i), as was the case with method 2.

The ninth method that was reviewed failed to provide any assumptions and/or limitations of the method used and did not assess the overall significance of impacts before and after mitigation. Impacts were rated and assessed across all phases of development, namely the planning / pre-construction, construction, operation and decommissioning phases, with this method. The assessments of cumulative impacts were included in the report but found to be inadequate as it only provided a description of the impact. ‘Irreplaceability’, ‘frequency’ and ‘magnitude’ were omitted from the impact assessment and the overall compliance of this method with GNR 543 22(i) requirements was considered to be satisfactory, as omissions were evident in terms of degree of mitigation, degree of irreplaceability, degree of reversibility and extent. The assumptions and/or limitations of the method were not discussed.

Method 10 described the impacts, characteristics i.e. magnitude, extent, duration and likelihood were only rated and discussed in the Environmental Impact Statement (EIS) and not assessed for each impact identified. The significance of impact was again only mentioned in the EIS and this method failed to include

most of the requirements of GNR 543 22(i) in the assessment of the impacts in terms of degree of irreplaceability, reversibility and mitigation; and the significance of each impact was not provided. The assumptions and/or limitations of the method were also not evident. This method, however, provided a descriptive assessment of impacts across all phases, including cumulative impacts.

The criteria reviewed for each impact significance assessment method in the case study BARs (Table 3.6: page 61) is summarised in Table 4.1. The ratings for the results as discussed in the sections above are summarised in Table 4.1. All methods achieved an 'A' rating for ensuring that impacts are assessed during all phases of the development (sub-category 1.6 of table 3.3), it must be noted that this is a minimum requirement of the EDTEA BAR template (Table 4.1). In other words, all methods fully complied with only one of the minimum requirements of the BAR impact assessment method as required by the CA.

Table 4.1: Rating Scores Achieved in Each Sub-Category Review for Each Method in the Case Study BAR

Method	Subcategories						
	1.1 Assumptions and limitations of method	1.2 Characteristics for impact severity	1.3 Significance of impacts with and without mitigation	1.4 Rating of Impacts	1.5 Assessment of cumulative impacts	1.6 Impact assessment for all phases of development	1.7 Compliance to GNR 543 22(i)
1	F	A	C	A	A	A	B
2	F	B	C	A	A	A	B
3	F	F	E	F	D	A	E
4	F	C	A	A	A	A	C
5	F	B	C	A	A	A	A
6	F	C	A	A	A	A	C
7	F	C	A	A	A	A	C
8	F	B	C	A	A	A	A
9	F	C	F	A	B	A	C

10	F	E	E	D	A	A	D

All ten impact significance assessment methods reviewed achieved the lowest rating (F) for subcategory 1.1, EAPs failed to include any information on the assumptions and limitations associated with the impact assessment methods used in the BAR. Eight (80%) of the methods used achieved an 'A' rating for subcategories 1.4 (Quantification of Impacts) and 1.5 (Assessment of Cumulative Impacts). In terms of complying with the legal requirements (subcategory 1.7) of GNR 543, only two of the methods reviewed fully complied with the 2010 EIA Regulations, two of the methods complied with EIA regulations and achieved a rating of 'B' with a few omissions (i.e. degree of mitigatory potential, assessment of impact significance) and another four methods reviewed achieved a rating of C, meaning that they were considered to be satisfactory despite the omissions and inadequacies (i.e. nature of impact, degree of mitigation, assessment of significance). Only 1 of the methods reviewed achieved an 'E' rating and one achieved a 'D' rating in that subcategory and does not comply with the 2010 EIA Regulations, these methods provided a descriptive assessment of the impacts and failed to provide any information on the degree of mitigatory potential, degree of reversibility, degree of irreplaceable loss, nature or extent of impact and significance of impact.

In sub-category 1.3 (Significance assessed prior to and after mitigation), three (30%) of the ten methods achieved an 'A' rating, two (20%) achieved an 'E' rating, one (10%) achieved an 'F' rating and the remaining four (40%) achieved a 'C' rating. The review of these methods highlighted that in most cases, the EAP highlights the significance of the impact only after mitigation and fails to discuss the significance of the impact prior to mitigation.

Four (40%) of the methods were considered satisfactory as they achieved a 'C' rating for sub-category 1.2 (Characteristics of Impact Assessment). Only one (10%) method encompassed all the required characteristics and achieved an 'A' rating. One of the methods achieved an 'E' rating, one method achieved an 'F' rating in this sub-category and the remaining three (30%) were considered to be generally satisfactory achieving a 'B'

rating. The overall performance assessment of each method for determining impact significance is tabulated in Table 4.2.

Table 4.2: Overall Rating of the Impact Significance Assessment Methods Used in the Case Study BARs

Method	Overall Rating
1	B
2	B
3	E
4	B
5	B
6	B
7	B
8	B
9	C
10	D

None of the impact assessment methods reviewed achieved an overall 'A' rating (well performed) (Figure 4.1). Seven (70%) of the methods reviewed achieved an overall rating of 'B' (generally satisfactory) and one (10%) of the methods achieved an overall rating of 'C' (just satisfactory). One (10%) of the methods used achieved an overall rating of 'E' (not satisfactory) and one (10%) achieved an overall rating of 'D' (satisfactory with significant omissions).

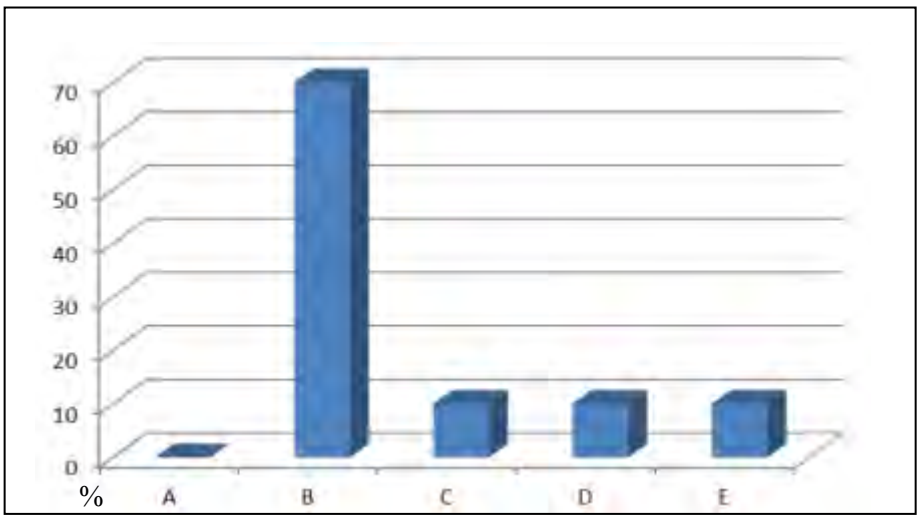

Figure 4.1: Overall Rating Achieved for Each Impact Significance Assessment Method

4.2 Discussion

The findings of this component of the research are discussed in relation to several key themes in international and local EIA literature, as presented in Chapter Two, including the South African regulatory framework and / or guidelines and the importance of ascribing significance in a meaningful way; the implications this has for EIA effectiveness; and the overall importance of this for the goal of EIA in working towards sustainability. Based on the results of the review and evaluation of the impact significance assessment methods, it is evident that methods used in the South African context can be slightly adjusted to ensure compliance with both the GNR 543 EIA Regulations and the DEAT (2002) Impact Significance Guideline. Most of the methods used achieved an overall "B' rating (generally satisfactory, with minor omissions and or inadequacies). It is, however, important to note that none of the methods reviewed achieved an overall 'A' rating, implying that none of those methods fully comply with national requirements and guidelines.

A review of the quality of EIA reports in the Free State province was undertaken by Kruger and Chapman (2005), which found that 49% of the case studies reviewed used only one impact assessment method, which was possibly due to EAPs avoiding increased cost and time associated with different assessment methods. It must also be noted that each EAP adapted a similar method in their respective BARs hence a limited range

of results in their overall performance was evident. The impact assessment methodology used was found to be highly subjective as the method used cannot readily provide information on duration or uncertainty (Kruger and Chapman, 2005). According to Kruger and Chapman (2005), assessment methodology that is dominated by quantative assessment (i.e the measurement of numerical values) based on desktop study leaves no defence against an appeal for the EAP or CA and can severely affect the outcome of the Environmental Authorisation. This study in comparison to the study undertaken by Kruger and Chapman (2005), found that most methods were based on both the inclusion of a quantitative and qualitative assessment method where the ratings of low, medium and high were assigned numerical values to determine the overall signficance rating score.

Impact prediction and impact evaluation was identified as a weakness of the South African EIA system based on the results (Van Heerden, 2012 and Talime, 2011). A review of the quality of the assessment of the EIA reports in the Limpopo Province of South Africa found impact prediction and evaluation to be the most poorly attempted Review Area with only 27% of the EIA reports reviewed being of satisfactory level (Talime, 2011). In comparison this study achieved a much higher overall compliance in terms of impact significance thus showing that there has been an improvement in the impact prediction and evaluation phase of the EIA process. EIA effectiveness is dependent on, amongst others, compliance of the process with the procedural requirements (Sadler 2004 as cited in Van Heerden, 2010), and the results of this study has shown that there has been a significant improvement in the compliance of the EIA process to procedural requirements. This compliance is evident of a system striving towards achieving sustainable development.

According to Talime (2011) the consideration of cumulative impacts is as important as that of direct and indirect impacts. This study found that 80% of the methods reviewed, included an assessment of cumulative impacts, this however differed from the study undertaken by Talime (2011) in Lesotho, where it was found that cumulative impacts were not so well attempted in most reports. The assessment of cumulative impacts is considered a significant part of the impact prediction phase of the EIA process and ultimately in ascribing significance (Morris and Therivel, 2001). The lack of consideration of the cumulative impacts in the South African EIA regulations, was a significant finding of a study undertaken by Wood (1999), as it highlighted

the failure of the EIA system to in addressing broader sustainability issues. Based on the results obtained from this study, it is evident that there has been an improvement in the assessment of cumulative impacts, as is required by the current South African EIA regulations, thus moving towards attaining an effective EIA system overall, and in view of the long term goals of EIA, ultimately ensuring that development within South Africa is sustainable.

"The determination of the significance of environmental impacts has been identified as the most critical element of EIA" (Sadler, 1996: page 118). This study found that the significance of impacts can be considered as 'just satisfactory' as only three methods achieved an 'A' rating, and the remaining seven methods achieved a 'C' and below. Studies undertaken by Talime (2011) and Pretorius (2006) showed similar results. The study undertaken in Lesotho by Talime (2011), found that the assessment of impact significance was the most poorly performed of Review Area 2 with only 27% of the EIA reports being rated satisfactory. A study undertaken by Pretorius (2006) on the EIA reports in the North West Province of South Africa, also found that significance assessment was considered to be satisfactory in 58% of the cases reviewed.

The description of impact and encompassment of all characteristics in the current research (i.e. nature extent, duration, intensity, likelihood, irreplaceability and reversibility) can be considered as 'just satisfactory' as most methods achieved a 'C' rating or higher. Pretorius (2006) similarly found that 81% of the cases reviewed, in terms of included the necessary characteristics (i.e. extent, duration, intensity and probability) in the report, and was considered to be satisfactory. Based on these results, it is evident that more works needs to be done to improve the significance of impact assessment, thus ensuring that the EIA reports are effective. The results of this study show that certain parts of the impact assessment process, such as the impact prediction and evaluation phases, and the assessment of cumulative impacts, can be considered more effective than other parts. This shows that although the assessment of impacts is considered as effective in some aspects, it seems to fall short in other aspects. For the EIA system to be effective, reports need to not only meet the procedural requirements, but also the substantive requirements (Polonen *et al*, 2010).

It is evident from the results of this study that methods used in South Africa for the impact significance assessment in BARs need to reviewed to ensure that they fully comply with national legislative requirements and guidelines (as discussed in section 2.6), not just by the EAPs but also by the assessing officers who approve these methods when they provide positive Environmental Authorisation. The methods used to ascribe impact significance in BARs also need to be reviewed more frequently to ensure that these documents are effective, as it is significant to the development of EIA in South Africa. It is recommended that methods need to be both qualitative (description of impacts) and quantitative (rating of impacts by adding measureable or numerical value) to properly assess the significance of the impacts, with the guidance of the CA. This is a requirement of the EIA Regulations, however, it is not adhered to by all EAPs and not enforced by the CA. A more regulated impact significance assessment guideline should be developed with the intent of developing a standard impact significance assessment method, a method that fully complies with legal requirements (NEMA EIA Regulations), guidelines and best practice (international) methods.

There is currently still no formal accreditation of EAPs in South Africa (Van Heerden, 2012); this was also a weakness within the South African environmental legislative framework and although independence of EAPs is a legislative requirement, the current lack of accreditation or certification results in unqualified individuals being in a position to carry out EIAs (Van Heerden, 2012). An independent body needs to be created with the purpose of certifying EAPs ensuring that they are suitably qualified to act as an EAP and are thus able to ensure that the methods used for impact significance assessment meets the relevant legal requirements, guidelines and best practice requirements (Kakonge, 2013). This issue needs to be addressed to ensure that the methods used to assess impact significance are improved and standardised to ensure compliance with the national environmental legislative requirements. The Environmental Assessment of Practitioners Association of South Africa (EAPASA) was launched in 2011 and in in the process of registering with the Minister of Environmental Affairs to be recognised as a Registration Authority in terms of Section 24H of the National Environmental Management Amendment Act (NEMA), Act 107 of 1998 (EAPSA, 2013). Once EAPASA is recognised, the Minister will publish a date by which all EAPs practicing in terms of NEMA must be registered (EAPSA, 2013), at the time of completion of this study, that date is still to be published by the Minister.

The accreditation of EAPs alone will not improve the quality of the reports including the impact assessment methods used to assess significance. The impact assessment methods used to determine significance is determined not only by the legislation but also by the CA who reviews these methods. The CA is the authority responsible for enforcing the legislative requirements and if the CA does not enforce compliance to these regulations, then EAPs will continue to use methods irrespective of whether they fully comply with the legislative requirements and guidelines as long as they achieve a positive Environmental Authorisation. It thus becomes necessary to ensure that the EAP as well as the assessing officer that represents the CA are well equipped with knowledge and training required to ensure that the reports written by the EAP and reviewed by the CA comply with the legislative requirements (Talime, 2011).

Questionnaires were provided to participants to obtain their views on the effectiveness of the EIA process in South Africa and the methods used to assess impact significance. The questionnaires were reviewed, trends were identified and the resultant findings have been presented and discussed in the next section.

Chapter Five – Attitudes of Participants on Determining Impact Significance

5.1 Introduction

Chapter 5 explores the attitudes of participants[11] on the effectiveness of the EIA system in South Africa and the methods used to assess impact significance. The results obtained from the thematic analysis of the questionnaires is presented and discussed in detail in this chapter. Further to critically reviewing the methods used to determine and ascribe significance, the views of key participants regarding impact significance methodologies and outcomes, and the EIA process in South Africa overall, was obtained. The methodological approach used allowed the researcher to obtain the necessary data (i.e. the views of key participants) which were then analysed thus allowing the research to answer the research question (iii), posed in Section 1.2 (page 5), thus addressing the aim and associated research objective (iii).

5.2 Background, Experience and Expertise of Participants

This section provides details on the respondents that participated in the questionnaire. It is important to understand the background, experience and expertise of the participants as these are the people that are responsible for compiling, commenting or approving EIA applications (including BARs) in Kwazulu-Natal. It is important that the participants are well equipped with the necessary knowledge, skills and experience they require as their decisions affect not only the proposed developments, but the affected environment as well. The completed questionnaires can be viewed in Appendix 2.

The experience of the participant is important in fulfilling their respective roles in the EIA process, they need to be able to have the experience to determine whether the EIA and BARs meet the legislative requirements in ensuring protection of the environment, or whether more information is required by the CA to make a decision. Figure 5.1 provides an indication of the number of years' experience of the respondents. Out of the 24 respondents that participated in this research, ten of the respondents (42%) have more than 10 years' experience, ten of the respondents (42%) have between 5 and 10 years' experience and the remaining four

[11] Participants refer to participants in the EIA (impact significance assessment) process and hence is more focused than the term 'stakeholder'. In this study the participant is also referred to as the 'respondent' as well.

respondents (16%) have between 1 and 5 years' experience. Based on the results, it is evident that most participants that are actively involved in the EIA process have more than 5 years' experience.

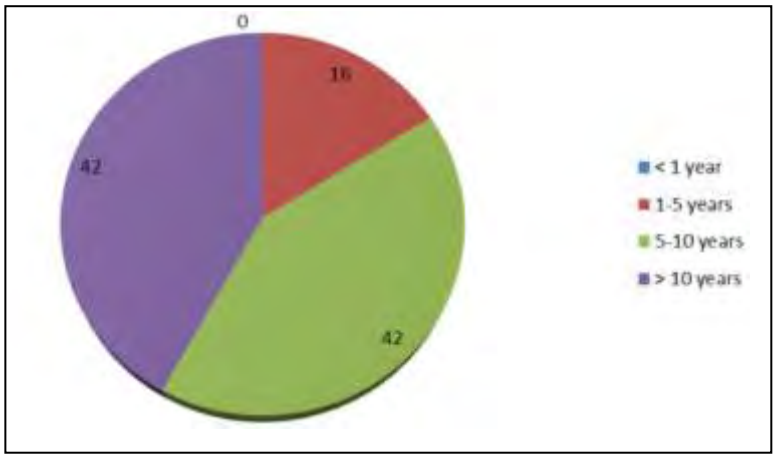

Figure 5.1: Number of Years' Experience of the Respondents

The qualification and / training of the participants (Figure 5.2) is important as it enables them to undertake their respective roles successfully in the EIA process, the correct training enables them to be able to assess the project adequately and to ensure that all factors are taken into consideration prior to making any recommendations that may affect the environment. Thirteen of the respondents (54%) involved in the EIA process hold a Master's Degree, with only four respondents (17%) holding an Honours degree. Six of the respondents (25%) hold a Bachelor of Science undergraduate degree or equivalent, and only one of the respondents (4%) did not have any tertiary qualifications.

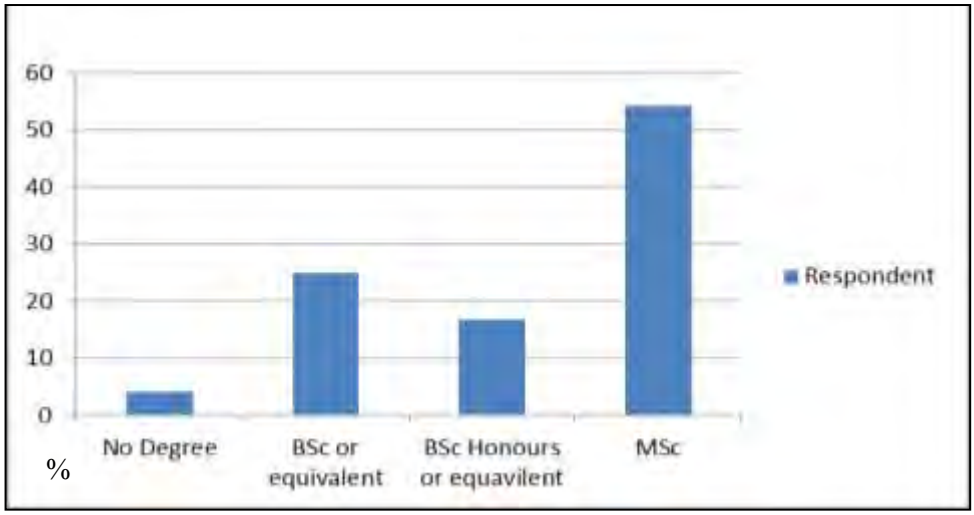

Figure 5.2: Qualification of Respondents

Most of the respondents hold a minimum of a Master's Degree and more than 80% of the respondents have more than 5 years' experience in their relevant field of expertise. This is important to the methods used for the assessment of impact significance as the methods used as indicated section 4 is very subjective, and the experience of the EAP undertaking the EIA process is important as it seems to determine the level of assessment used (SSI, 2011).

The EAP (SSI, 2011), is often the project manager, usually at the centre of an EIA process, who is tasked with bringing together all of the many findings of the specialists and evaluating them to make recommendations for the CA. The discipline of environmental management in South Africa is considered to be both young and multi-disciplinary, which has meant that entry to the profession may come from many different paths (SSI, 2011). According to Saidi (2010), a large number of inexperienced people are employed to write and undertake EIAs, and in South Africa, this has meant that people with little or no environmental management training and qualification are now involved in conducting EIAs. The employment of unqualified and inexperienced EAPs was also noted as contributing to poor quality EIA reports by (Sandham *et al,* 2010). A large number of EIA consulting firms use students or inexperienced staff as a source of cheap labour to undertake the EIA process resulting in poor quality EIA reports, however, the same situation repeats itself on the side of the CA (Saidi, 2010). There are few EAPs who have the necessary blend of qualifications and relevant EIA experience (Ridl and Couzens, 2010). The CAs according to Saidi (2010) are

poorly resourced, staffed with inexperienced and/or under-qualified staff, suffer from high staff turn-over and are ill-equipped to handle the large volumes of EIA applications that they receive. The lack of staff and skills of decision makers was also noted by Osborne (2015). EAPs, according to Osborne (2015), sometimes make decisions outside their field of expertise which contributes to the poor quality EIA report. This was supported by SSI (2011), noting that, the lack of skills and competencies amongst EAPs and decision makers are a real problem. This needs urgent attention as the ultimate aim of all role-players in the environmental management field should be to protect and conserve natural resources whilst contributing to social and economic growth and development.

In a study undertaken in South Africa to review the effectiveness and efficiency of the EIA, respondents were asked to comment on the statement that the officials who review and evaluate the EIA do not possess the requisite skills or experience (SSI, 2011). The majority of respondents of that study agreed with this statement and believed that at that time there were real concerns regarding the ability and competency of officials to deal with EIA (SSI, 2011).

The results of the current study show that 96% of the respondents (which include EAPs and officials of the CA) have a minimum of a BSc degree with 84% of the respondents holding at least 5 years' experience. Although lack of experience and under qualified staff was considered to be a significant issue in the past, there seems to be some improvement in South Africa (SSI, 2011).

5.3 EIA Legislation, Regulations and Guidelines

The review of legislation, regulations and guidelines is an important part of undertaking or reviewing the EIA process as it provides respondents with the necessary information to successfully undertake the EIA process. It also provided background and context to this project. Respondents provided feedback in terms of the legislation and guidelines that they perceived to be important when they participate in the EIA process and the determination of impact significance.

Guidelines used by Participants

Most respondents that participated in this study indicated that they refer to not only the 2010 NEMA EIA Regulations, but also the DEAT Series Guidelines and Western Cape Guidelines (Table 5.1). Only one respondent indicated that that they do not refer to any guideline. Respondents indicated that they refer to the National Environmental Management Act (NEMA) (EIA Regulations, 2010), NEMA (Act 107 of 1998) / Specific Environmental Management Acts (SEMAs) (i.e. National Environment Management Biodiversity Act (NEM:BA) (Act 10 of 2004), National Environmental Management Air Quality Act (NEM:AQA) (Act 39 of 2004), National Environmental Management Waste Act (NEM:WA) (Act 59 of 2008), National Environmental Management Protected Areas Act (NEM:PAA) (Act 57 of 2003) and National Environmental Management Integrated Coastal Management Act (NEM:ICM) (Act 24 of 2008)), National Water Act (Act 36 of 1998) followed by review of the DEAT Series Guidelines. The SEMAs fall under the umbrella of the principle act, NEMA.

Table 5.1: Different Guidelines Used by Respondents When Undertaking or Reviewing the EIA Process

	NEMA EIA Regulations and NEMA Acts	National (DEA) / DEAT Guidelines	Western Cape Guidelines	Other	None
Respondent 1		X		X	
Respondent 2		X			
Respondent 3	X				
Respondent 4	X				
Respondent 5	X				
Respondent 6	X			X	
Respondent 7	X	X		X	
Respondent 8					X
Respondent 9	X	X	X		
Respondent 10		X		X	
Respondent 11	X			X	
Respondent 12	X	X		X	
Respondent 13	X			X	
Respondent 14		X	X		
Respondent 15	X				
Respondent 16	X		X		
Respondent 17	X	X		X	

Respondent 18	X			X	
Respondent 19	X	X		X	
Respondent 20	X				
Respondent 21	X				
Respondent 22	X				
Respondent 23	X			X	
Respondent 24	X				

A number of respondents indicated that in addition to the NEMA EIA regulations and SEMAs, DEAT guidelines and Western Cape Guidelines, other guidelines were reviewed when undertaking or reviewing the EIA process. These other guidelines included KZN Wildlife and WESSA guidelines (Respondent 1, 2014) and / recommendations, NWA guidelines (Respondent 6, 2014), World Bank Standards (Respondent 6, 2014), US EPA guidelines (Respondent 10, 2014), guidelines from the International Association for Public Participation (Respondent 19, 2014), South African Constitution (Respondent 23, 2014) and any other applicable guideline applicable to the scope and nature of the application. In terms of the assessment of impact significance in the South African context, it is only the EIA Regulations and DEAT guidelines that provide recommendations for this step of the EIA process. The other guidelines discussed provide feedback not only to the impact assessment phase but to other phases of the EIA process.

Improvements or Setbacks in the EIA 2010 Process

At the time of this research study, the 2010 EIA Regulations were in effect (this had replaced the 2006 EIA listed activities, which were repealed when the 2010 EIA Regulations came into effect). Respondents were thus requested to provide feedback in terms of whether or not they perceived the 2010 EIA Regulations (GNR 543) to have been an overall improvement to the 2006 EIA Regulations (GNR 385) or a setback or both. Ten of the respondents (42%) perceived the 2010 EIA Regulation to be an improvement only whilst only three (12%) of the respondents thought that there was a definite setback, with the 2010 EIA Regulation amendment. The remaining eleven respondents (46%) perceived the 2010 EIA Regulation to be both an improvement and a setback in comparison to the 2006 EIA Regulations.

Some of the respondents believed that although the 2010 EIA regulations were an improvement, others indicated that there were also a number of setbacks. One of the improvements that many of the respondents

agree on is the list of activities (Client 1, 2014; CA 1, 2014; and EAP 5, 2014) which is perceived to be more comprehensive that the previous 2006 EIA Regulations. The inclusion of thresholds was also seen as an improvement, for example, a stop sign in a watercourse would have previously required a BA process (EAP 2, 2014). The inclusion of the timelines for the CA was also considered to be an improvement (EAP 4, 2014). Some considered the amended 2010 EIA regulations to have streamlined the list of activities (EAP 5, 2014). However, some the respondents believed that 2010 regulations were not structured enough. Other setbacks often raised by the respondents included the lengthy public participation (EAP 1, 2014 and Client 1, 2014), the inclusion of application fees (EAP 10, 2014) and the inclusion of listing notice 3 (GNR 545) which focused on geographically sensitive areas (EAP 11, 2014). This seemed to be impractical to the South African context and it was too onerous as most people did not have access to GIS and spatial mapping systems to determine if there site was located in a geographically sensitive area (EAP 11, 2014; CA 1, 2014; and EAP 2, 2014)). This meant that increased pressure was placed on the CA as they now had to respond to additional queries relating to listing notice 3 (EAP 11, 2014 and CA 1, 2014). Some of the respondents believed that the 2010 EIA regulations were too complex (Commenting Authority 1, 2014) and contained too many listing activities (EAP 10).

The EIA legislation in South Africa is still considered to be very young in comparison to the developed countries and it anticipated that it will be amended and improved as the years go by. Taking this into consideration, participants were asked to comment and provided feedback on potential changes to the current 2010 EIA legislation (Please note that the 2014 EIA Regulations were promulgated in December 2014 after participants had completed their questionnaires and as such the 2010 EIA Regulations were current at the time of this research and some of the recommendations made by participants were incorporated into the 2014 EIA Regulations). They were asked whether they would effect change to the current 2010 EIA legislation in South Africa and if so, what would those changes be. Twenty three of the respondents (95.8%) stated that they would effect change to the current EIA legislation and only one respondent (4.2%) stated that they would not effect change to the EIA Legislation (Figure 5.3).

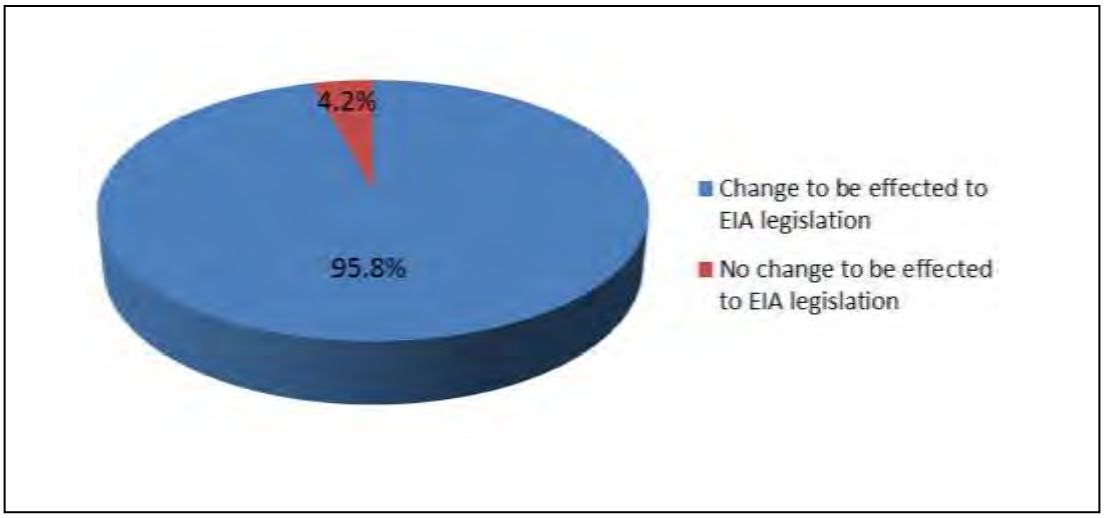

Figure 5.3: Respondents Views on Potential Change to 2010 EIA Legislation

It is apparent that most respondents would affect changes to not only to NEMA but also specifically to the 2010 EIA regulations. Key changes that were recommended included changes to lengthy timeframes associated with public participation and the EIA process (EAP 1, 2014), improvement to legislation in terms of the integration of license / application processes require urgent attention (Client 2, 2014 and EAP 13, 2014) i.e. the EIA process and Water Use Licence Application process (Process required to obtain a license as defined by the NWA for any activity that has an impact on the watercourse), compliance monitoring was also raised as an issue that required change (NGO 1, 2014 and NGO 3, 2014), as well as the inclusion of standard methods for the impact assessment process (EAP 9, 2014).

Some of the issues raised by respondents on the 2010 EIA Regulations have been addressed in the 2014 EIA Regulations. With the promulgation of the 2014 EIA Regulations, the timeframe for the comment period associated with the review of the BAR or EIR has been reduced from 40 days to 30 days. The 2014 EIA Regulations have also allowed for the integration or streamlining of the processes (EIA process, WULA process, mining permit / license application process). In December 2014, the 'One Environmental System' was initiated which will allow for streamlining of the licensing processes for mining, EAs and Water use (DEA, 2014). This was agreed upon between the Ministers responsible for environmental affairs, water and sanitation, and mineral resources departments resulting in amendments being made to the Mineral and

Petroleum Resources Development Act, 2002 (Act No. 28 of 2002) (MPRDA), the National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004) (NEMAQA), National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA), the National Water Act, 1998 (Act No. 36 of 1998) (NWA), and the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) (NEMWA) to give effect to a "One Environmental System" for South Africa (EADP, 2014). This system allows for fixed time-frames for the consideration and issuing of the permits, licenses and EAs in their respective legislation (DEA, 2014). With the promulgation of the 2014 EIA Regulations, the BAR template will no longer be required, EAPs must ensure that the report is compiled as indicated in Appendix 1 of the 2014 EIA Regulations.

At present, the defining legislative context for giving effect to sustainability in South Africa is encapsulated in Chapter 2 of NEMA whereby the principles, as laid out in Chapter 2 of NEMA, address sustainability and sustainable development to varying degrees (Van Wyk, 2012). According to Van Wyk (2012: page 1), "the efficacy of the principle-based approach to the implementation of the NEMA mandate in achieving sustainability is questionable". The NEMA principles are ultimately considered to be high-level guidelines which are lacking any discernible form or precise normative content against which sustainability can be measured (Van Wyk, 2012). NEMA and the EIA regulations must ultimately achieve sustainability, however, it seems that the legislation requires more improvement to be able to achieve that goal (Van Wyk, 2012).

It is also important to note that as this research was undertaken when the 2010 EIA Regulations were replaced with the 2014, EIA Regulations, some of the potential changes recommended i.e. the incorporation of timeframes for the CA to assess applications has been included into the 2014 EIA Regulations.

5.4 Impact Significance

Methods used to Determine Significance

The methods used to assess impact significance were the focal point of this section and thesis overall. The following question was posed to the respondents: "*During the assessment / review of impact significance for various activities, have you come across different methods used? Please provide a brief description of the methods used*." The methods referred to include the overall process i.e. impact identification, prediction and evaluation.

Twenty two of the respondents (92%) stated that there are a variety of impact assessment methods and only 2 of the respondents (8%) did not come across a variation in the methods used to assess impact significance (Figure 5.4). The variations that were raised by most respondents included the impact rating and ranking systems, with a few of the respondents indicating that variations were noted in the identification, predication and evaluation stages. According to EAP 11 (2014), *the use of a scoring system where impacts are rated and then assessed as an average is of particular concern as often one impact (which may be a fatal flaw) is masked by the average weighting score on a particular alternative*). Differences were also noted in the rating system used in the *impact rating assessment tables* (EAP 13, 2014). According to EAP 1 (2014), some EAPs use *a scoring system, a score is assigned to each criteria, a matrix is used and a cumulative score is determined.*

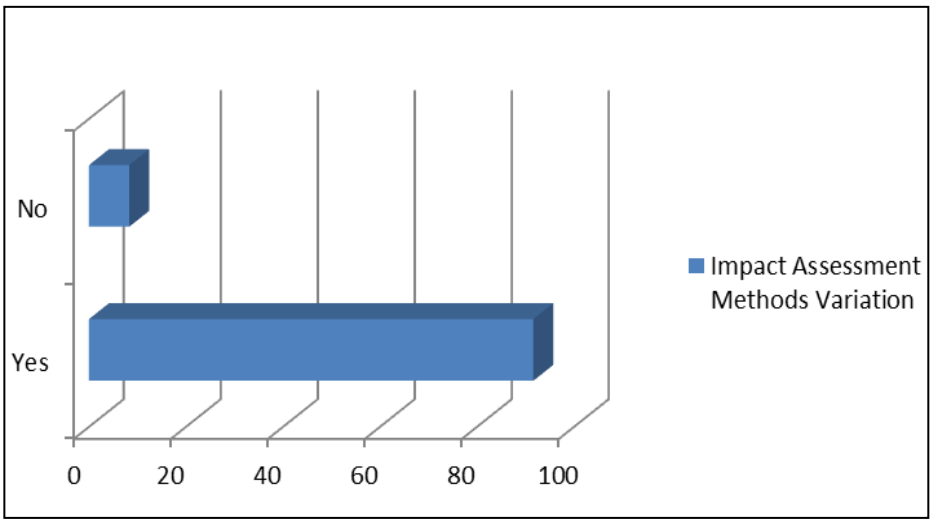

Figure 5.4: Respondents Views on Impact Assessment Method Variation

According to Morris and Therivel (2009) the qualitative assessments often employ ratings such as neutral, slight, moderate, large and is applied to both negative and positive impacts whereas the quantitative assessments involve the measurement or calculation of numerical values. The checklist and flowcharts are examples where qualitative assessment is used whereas the matrix method is an example where numerical values are assigned.

Twenty three of the respondents provided comment on the variation in impact assessment methods, most of the respondents (44%) indicated that the methods that were often used in the EIA process were both qualitative and quantitative in nature. During the impact assessment phase, these respondents found that the EAP did not provide a description of the impact, numerical values were also assigned to the impact to quantify the impact.

The qualitative method was seen to be mostly used by seven of the respondents (30%) and the remaining six respondents (26%) found that the quantitative method was most often used in the EIA process. Four out of the 24 respondents that participated in the questionnaire chose not to answer this question. Most of the respondents (33%) had no preference in terms of the type of impact assessment method. 29% of the respondents preferred to use both a qualitative and a quantitative method, with only 17% of the respondents

preferring the quantitative method and the remaining 4% preferred the qualitative impact assessment method (Figure 5.5).

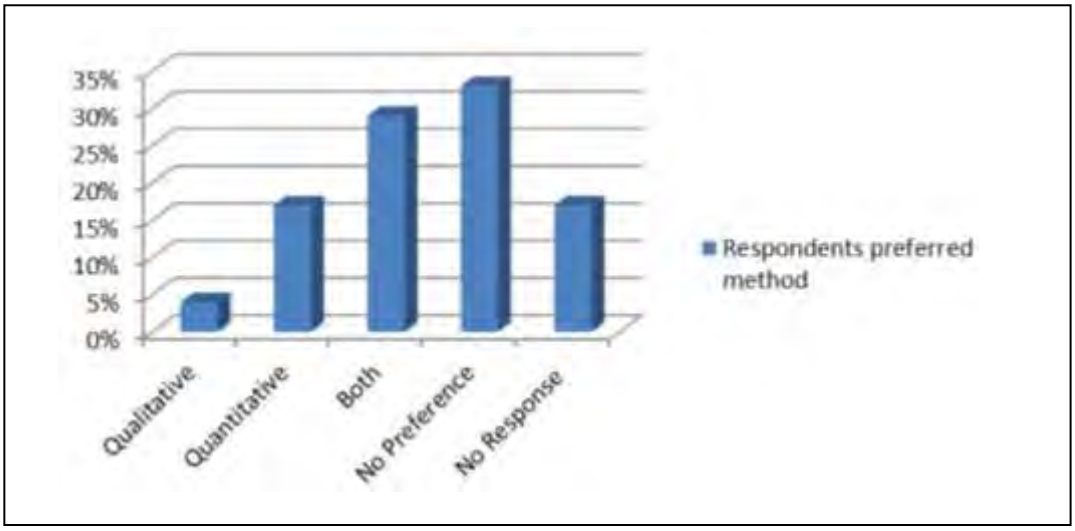

Figure 5.5: Preferred Impact Assessment Method

Respondents also indicated that local I&APs and commenting authorities can often provide valuable input into the impact significance assessment section of the report irrespective of the type of methods used. There is no one single ideal method that can be used for impact assessment according to Partidario (2011).

Types of Activities and Associated Impacts

Respondents commented on whether the assessments of certain activities were poorly or more rigorously assessed. Two of the 24 respondents chose not to participate in this section of the questionnaire. Out of the remaining 22 respondents, 17 of the respondents thought that certain impacts were either poorly or rigorously assessed whilst the remaining 5 respondents thought that there was no difference in different activities impact assessment (Figure 5.6).

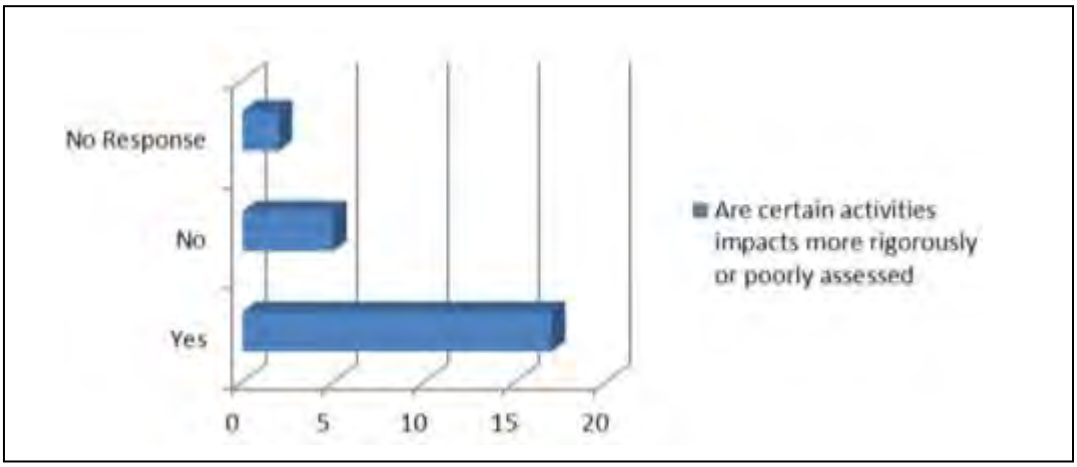

Figure 5.6: Opinion on the Assessment of Activities

Of the 17 respondents that thought that some activities were more rigorously / poorly assessed, most respondents (12) thought that certain activities impacts were poorly assessed, only 2 of the respondents thought that some activities impacts were more rigorously assessed and 3 of the respondents that certain impacts were either rigorously and poorly assessed (Figure 5.7).

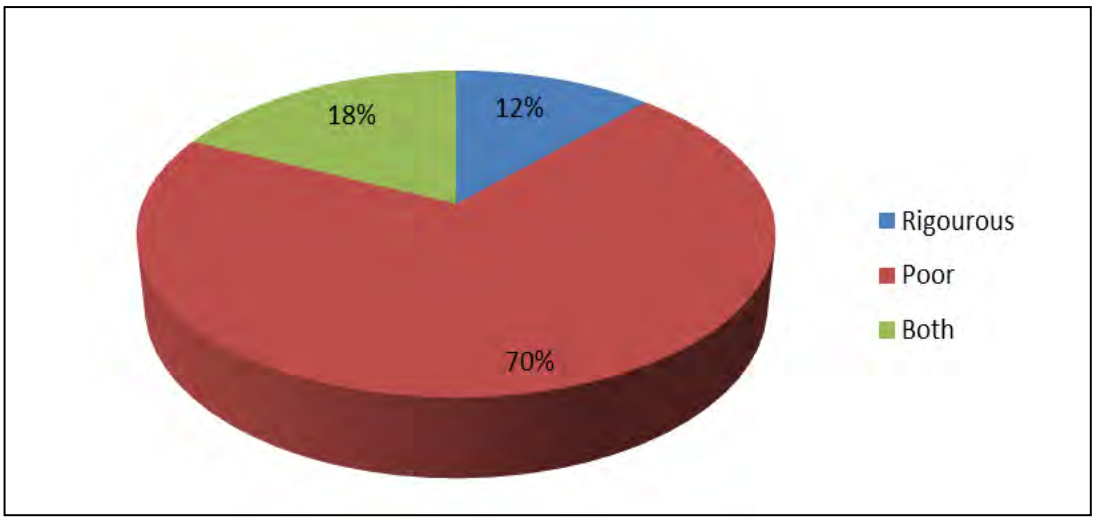

Figure 5.7: Opinion on Whether Impacts are more Poorly or Rigorously Assessed

The following activities were considered to be poorly assessed:

- Residential activities;
- Industrial activities;

- Coastal activities; and
- Linear activities (mainly road activities).

Assessments were considered to be too rigorous for certain activities i.e. asphalt plant related activities. Respondents thought that vegetation and wetland impacts were more rigorously assessed when compared to socio-economic impacts, pollution and air quality impacts, cumulative and residual impacts, noise impacts, construction impacts and impacts related to the ecosystem function, especially when compared to financial gain. Similarly, the lack of focus on socio-economic impacts was found to be a weakness in the EIA review undertaken by Kruger and Chapman (2005) and Sandham *et al* (2005). This finding was also supported by Talime (2011), where his study showed that socio-economic and cumulative impacts were not so well attempted in most EIA reports. In another study undertaken by Hildebrandt (2012), the identification of key social impacts was also identified as a weakness, especially when compared to the biophysical impacts in terms of NEMA and ECA. The study also revealed the relatively weak report quality compared to EIA report quality, but with an improvement, in report quality since 1997.

The re-assessment or additional assessment of impact significance was the focus of the next section, where respondents were asked to provide comment on whether there were any cases where the CA required the re-/additional assessment of (the significance of) impacts. The re/additional assessment specifically refers to when the CA, after reviewing the final BAR, finds that the report is lacking information, specifically with respect to impact assessment and as such requests the EAP to either re-assess those specific impacts or to undertake additional assessment where that impact as not previously assessed.

Only twenty three respondents participated in this section of the questionnaire, thirteen of those respondents (54%) have not experienced any cases where the above was requested (Figure 5.8). The remaining 10 (42%) respondents have experienced cases where the CA requested re-/additional assessment of impacts associated with specialist input.

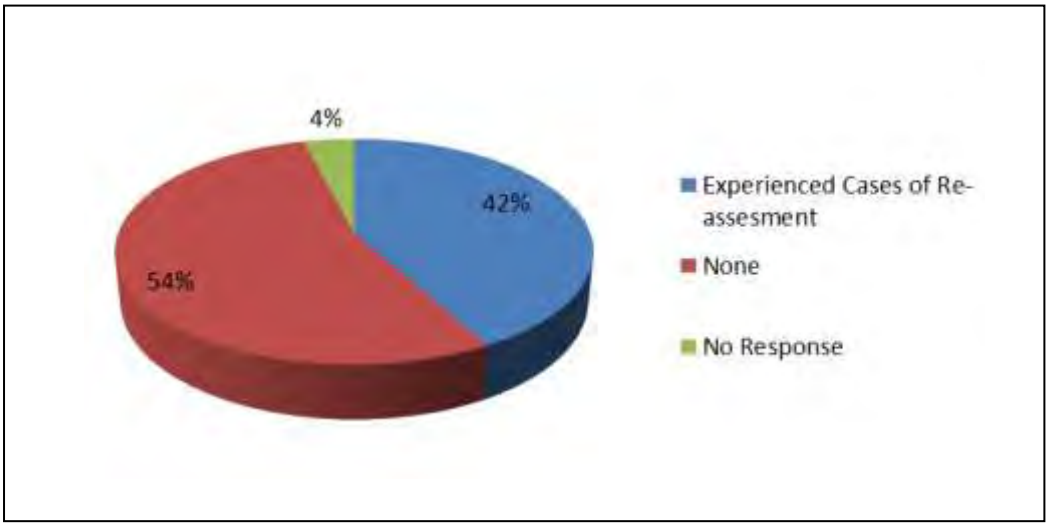

Figure 5.8: Respondent's Opinion on Re-/additional Impact Assessment

Re-/additional assessment of impacts were most often requested in cases where additional specialist input was required. According to EDOWA (2011: page 1), "if there are environmental issues which were not adequately assessed with the strategic proposal, if there is new information that justifies reassessment, or if there has been a significant change in the relevant environmental factors since the strategic proposal was assessed, then re-assessment of impacts is requested". This is important especially since evaluation of impacts was found to be a weakness.

Impact Significance and Environmental Authorisations

As per the 2010 EIA Regulations, the EAP is required to provide recommendations on whether the proposed activity should commence or not, the CA can either choose to accept those recommendations if they are satisfied that the impacts were adequately assessed, or completely disregard those and put in a new set of recommendations. The recommendations are usually made following the impact assessment where significance and mitigation is determined.

Fifteen of the respondents (63%) indicated that the method used to determine impact significance does not affect the outcome of the Environmental Authorisation and 10 of the respondents (33%) are of the opinion that the method used does not affect the outcome of the Environmental Authorisation (Figure 5.9).

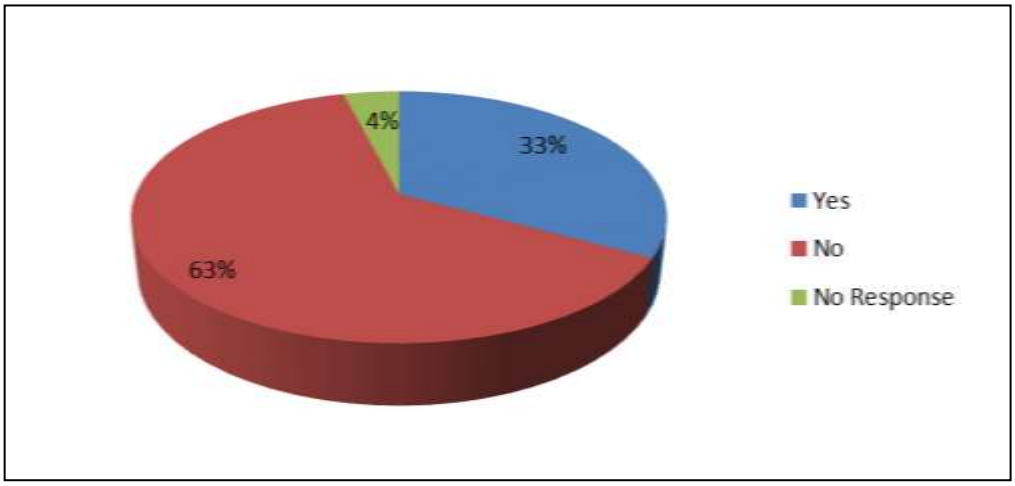

Figure 5.9: Respondent's Feedback on Whether the Impact Assessment Method Affects EA

Some of the respondents felt that the EAPs recommendations were often carried through to the conditions of the EA (NGO 1, 2014). These recommendations often included mitigation measures included in the BAR and the EMPr that would need to be implemented prior to commencement of construction to ensure that the potential impacts are minimised, reduced or prevented (i.e. layout options, physical on site measures). Others indicated that the methods are typically only challenged in a public forum whilst others perceived the conditions of the EA and the EAPs recommended conditions to be a cut and paste exercise (Commenting Authority 1, 2014). This is an issue that is evident in EIAs undertaken both nationally and internationally. Wynberg and Fig (2014) reviewed two case studies, one of which looks at where a small South African non-governmental organisation (NGO) launched legal proceedings against the state to obtain information about the release of genetically modified (GM) crops into the environment. This case study presented evidence that the risk assessment undertaken revealed a lack of scientific rigour, typically resembling cut-and-paste versions from applications made elsewhere in the world, citing species that did not even occur in South Africa (Wynberg and Fig, 2014) and also found that there was no evidence of any EIA or socio-economic assessment having been done.

According to Wright *et al* (2013), EIAs all over the world are now usually awarded to the lowest bidder, where there is more emphasis placed on achieving mandated deadlines, rather than on product quality. More

expertise and resources are often used to put together a winning contract rather than completing it, and it also means that important scientific work is done cheaply by inexperienced graduates or interns (Wright *et al*, 2013). Consequently, many EIAs have become insufficiently re-searched documents that draw heavily from previous EIAs while being rushed to completion to meet legislative dead-lines or avoid delaying projects and this often results in the practice of "cutting and pasting" old or inappropriate information from previous EIAs on similar projects, sometimes incorrectly (Wright *et al*, 2013). The cut and paste was considered fraudulent when a multinational mining company received a 74-year lease to mine bauxite in India, based on an EIA prepared for a mining project in Russia (ELAW, 2008). According to De Silva (2008), a request for information revealed that an EIA for a bauxite mining project in Ratnagiri, Maharashtra, was copied at least in part from a Russian EIA for a bauxite mine. The variables in surface water quality, precipitation, bird and mammal densities, number of species and assessment of impacts of the projects were the same, a cut and paste exercise (De Silva, 2008). The cut and paste exercise (Commenting Authority 1, 2014) was not only noted in the EAPs reports, but also in the Environmental Authorisations which were found to be poorly drafted, the conditions of the authorisation were cut and pasted from other documents and often did not make sense (DEA, 2011).

Other respondents (Client 1, 2014; NGO 2, 2014; CA 1, 2014; NGO 3, 2014; and CA 2, 2014) stated the method for determining impact significance used does play a role in the outcome but it must be remembered that the CA not only considers the outcomes of the significance rating, it also considers a number of other factors before making a decision, most of these are not measureable through the significance rating (i.e. need and desirability, NEMA principles, sustainable development guidelines and Section 24(4) of NEMA). However, in some cases, deviations in the EA outcome were noted by some of the respondents, where the EAP provided a recommendation and the CA issued an EA with a different set of recommendations. There were instances were certain projects were approved by the CA even when the EAP highlighted the numerous negative impacts associated with the project. Reasons for this were found to be of a political and economic nature. According to Client 1 (2014), a negative authorisation would have been a logical outcome, however, the project was issued with a positive authorisation. One such example is the Koeberg Nuclear Power Station on the Western Cape (Client 1, 2014). The CA is often accustomed to a certain way of assessing EIA

findings whereby the report must comply with the checklists. When unorthodox methods are used that do not comply with these checklists, methods that the CA is not often familiar with, the CA often refuses those EA as it deviates from their standard format (NGO 2, 2014). Deviations can be caused when the applicant changes the preferred site resulting in specialist studies being carried out in the incorrect season (for example undertaking a fauna and flora assessment during winter when some species remain dormant), subsequently resulting in the wrong findings (EAP 5, 2014). These findings are then carried into the impacts assessment section of the BAR/EIA report. The incorrect findings often result in the CA deviating from the findings of the EAP. Another case where a deviation was noted was where the CA went against the EAPs recommendation and failed to consider all of the specialist studies, the CA did not consider the recommendations put forward by all the specialists. The CA focused on the significance rating provided by one specialist instead of reviewing all specialist studies as the EAP undertook when recommendations were made (EAP 7, 2014). Thirteen specialist studies were required as part of an EIA for a transmission line project, the social impacts were rated much lower when compared to the ecological impacts. However, following a 3 year assessment, the EAP reviewed all specialist reports and made recommendations based on the project as a whole, only to have their recommendations ignored by the CA (EAP 7, 2014). The CA, who only focused on one aspect of the project, deemed the significance rating of one specialist study to outweigh the recommendations of the EAP who tried to balance the impacts (EAP 7, 2014). This meant that the CA did not consider the impact on the entire environment, they only focused on one component which failed to meet the principles of NEMA.

The EIA system in South Africa is based on one where the EAP is paid by the applicant undertake and EIA study on their behalf. This unfortunately means that EAPS can be biased as they are dependent on their clients for income (CA 3, 2014). Very rarely does one find that the EAPs decision is an unbiased one, and in these cases where this is evident, the CA has to balance the views of all I&APs in the decision making process. This results in times where there is a deviation or a difference in the decision from the views of the EAP. The I&AP plays an important role in the impact significance assessment phase, as they are able to provide information that can affect the decision making process. For example, AMAFA as a heritage resource agency can identify areas of sensitivity in terms of heritage significance and the eThekwini

Municipality Environmental Department can provide the EAP with information pertaining to sensitive wetland and vegetation that will require detailed specialist assessments. The I&AP can thus add value to the impact significance assessment phase of the EIA, by providing important information.

Shortcomings and Strengths

Respondents provided feedback on their perspectives of the impact significance determination overall in terms of shortcomings and strengths. One respondent chose not to participate in this part of the questionnaire. Thirteen of the respondents (54%) stated that in their opinion there were mainly shortcomings to the impact significance assessment overall, whilst only 4 of the respondents (17%) perceived that there were mainly strengths. Six of the respondents (25%) mentioned that there were both strengths as well as shortcomings of impact significance overall.

The subjectivity of the EIA process, the lack of a prescribed impact assessment method, the appointment of the EAP by the applicant, the lack of integration of sustainability in the EIA process and the assumption of the EAP that each element in the assessment phase has equal weighting, are considered to be the major shortcomings of impact significance overall by respondents. The inclusion of important criteria into the impact assessment requirements is one of the major strengths, as well as the fact that the impact significance assessment allows for the assessment of impacts during all phases of the project.

The subjectivity of the impact assessment process together with the lack of standardised methodology, and the fact that in South Africa, like many other countries, the EAP is appointed and paid by the applicant, are considered to be the major shortcomings of the impact significance determination overall. This is when the qualification and experience of the EAP and CA is vital in improving the EIA process to ensure that natural resources are protected whilst contributing to social and economic growth. A major strength of the impact significance is that the process can be adapted to identify the flaws in a project design and allows for the incorporation of environmental best practices, such as energy reducing measure or measures to reduce greenhouse gases, to ensure sustainable development.

A major strength of the EIA process, according to Murombo (2008), is that the process aims to achieve integration which is the centre of sustainable development whereas the complexity of any attempt to ensure that all the dimensions of an activity are sufficiently considered in the EIA process was found to be a weakness. The studies undertaken by Kruger and Chapman (2005) and the other by Sandham *et al* (2005), found that impact methodology used was very subjective. Talime (2011) identified the lack of quantitative methodology to be a weakness / shortcoming in the Lesotho EIA process.

Practice Versus Theory

The assessment of impact significance in practice differs from theory. According to respondents what is set out in theory i.e. the quantification and rating of impacts, is not always practical (Table 5.2). It sometimes becomes more difficult to practically implement best practise guidelines with the aim of achieving sustainable development. Theory suggests that certain impacts be quantified and rated, whereas in practice it is limited by aspects of this dynamic environment which are not measurable or quantifiable. Similarly the impact assessment theory sets out a number of specific criteria which must be considered, this isn't the case in practice, where the environment is considered to be dynamic (Table 5.2). These are some of the issues that have been identified by respondents, the main issues highlighted by respondents have been presented in Table 5.2.

Table 5.2: Respondents Perception on Impact Significance Practise Versus Theory

In theory, "It's a tick box approach", in practise however it is "time consuming and onerous" (EAP 1, 2014: page 5).
In theory, projects should be adapted in response to impact assessment findings, however in practice some projects proceed despite negative impact assessment rating by the EAP and the specialists (Client 1, 2014).
The EIA processes are allocated timelines in theory, however in practise this doesn't always work. Certain specialist studies (i.e. flora and fauna studies which need to be undertaken over different seasons) require more time than what is allocated for within the EIA timeframes (EAP 2, 2014).
In theory assessment of impact significance are based on limited aspects while in practise the environment is dynamic (EAP 5, 2014).

In theory it makes or provides for a manner in which certain impacts can be quantified and rated, however in practice it is limited by aspects which are not measurable or quantifiable (CA 2, 2014).
Practically it is difficult to assess the range of impacts that are expected to be assessed as stated in the theory (EAP 10, 2014).

Clausen *et al* (2011) similarly noted that while significant improvements have been achieved in the EIA policy framework in Vietnam, an important gap remains between EIA theory and practice. Cashmore (2003: page 422) argues that there is a necessity for more "theory-led and purposeful research to be conducted within a broader framework of an integrative and connective research strategy (strategy that adopts a holistic approach to consider the effects and effectiveness of EIA) focused on theory advancement", this research agenda must progress and mature for this globally significant decision tool to achieve its full potential as a tool for sustainable development and environmental management. EAPs need to ensure that the assessment of impacts ultimately achieves sustainable development, this is where the qualification and experience of the EAP becomes an important factor as it allows the EAP to adopt the impact assessment methods used to suite the project under assessment. This is not always clear in theory as the assessment of significant impacts is not always considered to be black and white (EAP 11, 2014). According to Cashmore *et al* (2014), the EIA offers more in theory than it has so far delivered in practice. The ability of EIA to successfully contribute to environmental governance is questionable (Cashmore *et al*, 2014).

Way Forward

Respondents commented on the way forward for determining impact significance in the EIA process in South Africa. The implementation of single legislated impact assessment method and the training of EAPs and decision makers were issues raised by respondents as key to the way forward for the impact assessment process (Table 5.3). In addition respondents suggested that the assessment of social, resource economics and climate change issues must be incorporated into the impact assessment phase to ensure that all impacts are assessed. Respondents also suggested the development of a new BAR template so that the impact assessment doesn't seem like a template. It is important to note that this specific issue has been addressed with the promulgation of the 2014 EIA Regulations, the BAR template is no longer in use. EAPs must compile a

report similar to the EIR ensuring that all requirements as indicated in the 2014 EIA Regulations are adhered to. Other important factors that respondents viewed as being important to the way forward for impact significance have been summarised in Table 5.3.

Table 5.3: Respondents Perception on the Way Forward for Impact Significance

• A prescribed legislated impact significant assessment method needs to be implemented (EAP 1, 2014).
• Social impacts and resource economics need to be addressed more in the impact assessment section as well as climate change issues (EAP 5, 2014).
• New BAR templates need to be put together so the process and the impact assessment is not just a template (EAP 2, 2014).
• A centralised and impartially managed database of impact significance needs to be referenced in project discussions/ conclusions, in a similar way to academic journal papers (EAP 3, 2014). For instance, a low significance needs to be validated against a relevant example from another published authorisation involving the same/ similar impact. If the authorised project had a 'high' significance, the EAP needs to motivate why their project is 'low'. Too often the decision on significance is isolated from similar peer reviewed (i.e. authorised) work (EAP 3, 2014).
• There needs to be greater flexibility in process to allow alternative approaches depending on type and nature of activity (CA 1, 2014).
• Quantitative methods need to be more widely used by EAPs (EAP 4, 2014).
• A uniform framework should be adopted to ensure all assessments comply with a certain level of investigation (EAP 8, 2014).
• A guideline needs to be implemented. It should consider the baseline of how to develop such a methodology and how to review and assess it. This guideline should also provide guidance on what constitutes the different rating scales including the broad groups for assessment (duration, frequency, level of impact etc.) (CA 2, 2014). This guideline should also provide guidance on how the CA would consider this information.
• The way forward would be to reduce the number of impacts assessed and focus on the most important

impacts per project (EAP 10, 2014).
• Both EAPs and the assessing officers need to be adequately trained and spend more time understanding the development they are assessing and apply their minds to the impacts anticipated to be generated by these developments (EAP 11, 2014). Without fully understanding what one is assessing one cannot rate the significance of impacts with any degree of accuracy.
• GIS needs to be used more in impact assessment (EAP 5, 2014).

The application of the EIA process seems to vary from one country to another with the sole purpose of gaining planning and environmental approval. However, due to lack of experienced professionals writing the EIA reports and poor quality of the reports, development seems to proceed at the cost to the environment in South Africa (Kakonge, 2013). According to Kakonge (2013: page1), "if government of developing countries are committed to the EIA process, they should build capacity in their regulatory agencies or ministries to ensure that the entire EIA is not only adhered to but it is also transparent, efficient and effective". Additionally, once the results of EIA studies are available, the media should "enter the process as a participant and help to have the summaries of these studies translated into the necessary official and local languages and communicated to the public" (Kakonge, 2013: page 3). EIAs are costly in terms of both money and time but, irrespective of this, the process should be taken seriously and should not be compromised in any way (Kakonge, 2013). According to Kakonge (2013: page 1), "there is a need to develop best-practice examples of EIAs, and the entire process should, among other things, be practical, cost effective, efficient, focused, participatory, interdisciplinary and transparent".

5.5 Effectiveness of the EIA Process Overall

Most respondents feel that the main purpose of the EIA process is to ensure the protection of the environment whilst ensuring that sustainable development takes place. One of the ways in which this can be achieved is through significance determination, which highlights potentially adverse impacts that must be addressed to ensure that the surrounding environment is protected, thus ensuring that the EIA is effective. According to NGO 1 (2014), the purpose is to prevent further degradation of the environment and protect natural resources whilst ensuring sustainable development. In other words, the EIA process must identify all

potential positive and negative impacts (biophysical, social and environmental) and ensure that all impacts can be mitigated against and also meeting the objectives of the NEMA principles (EAP 10, 2014 and Client 2, 2014). This was further supported by Client 3 (2014), who indicated that the purpose of the EIA process needs to inform the project not only in the design phase of the development but also throughout the lifecycle of that project, within a "green economy trajectory". The purpose of the EIA process should also be to improve the lives of South Africans, by ensuring poverty up-liftment and ensure that all affected parties are given an opportunity to participate in the process and provide valuable input (EAP 8, 2014 and Client 2, 2014).

Some respondents, however, did not agree with the majority and were of the view that the EIA process is just a "tick box exercise" used to obtain a "permit for development to proceed" (NGO 3, 2014 and EAP 1, 2014). Some respondents indicated that the EIA process is very generic, in some cases, the EIA may provide reasons as to why development should not proceed, and they seem to still be approved due to the political nature of those projects (NGO 1, 2014 and NGO 3, 2014).

"EIAs serve an essential decision-making role, but if they are left to fulfil only that role, they will never be effective in protecting the environment and promoting sustainable development" (King and O'Beirne, 2014: page 1). Thirteen of the respondents (54%) consider the current EIA system to be effective in ensuring protection of the environment while six of the respondents (25%) disagree with this as they consider the EIA system to be not effective at all (Figure 5.10). Respondents felt that it was not effective as it is "currently a paper chase and able to be influenced by politicians and developers" (NGO 3, 2014), the process is just one more hurdle that the developer needs to get through which is often influenced by politics and the applicant essentially pays for the EAP to undertake the EIA (CA 1, 2014 and EAP 1, 2014). Four of the respondents (17%) were unsure as they considered it be effective in some cases and not effective in others. One of the respondents chose not to provide a response to this question.

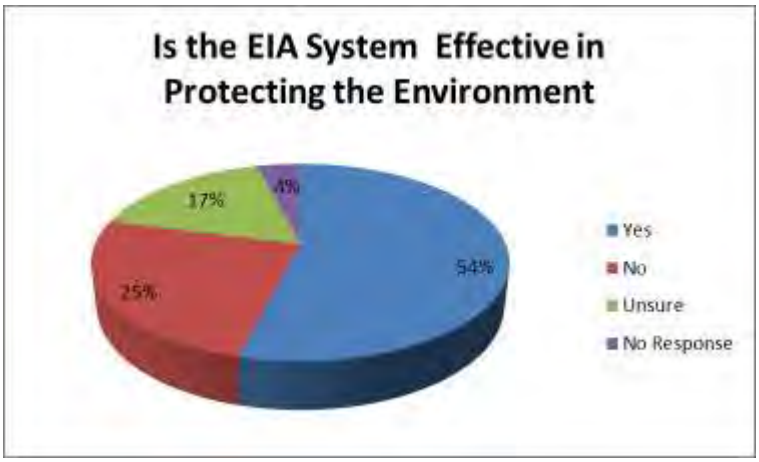

Figure 5.10: Effectiveness of the EIA system in South Africa in Protecting the Environment

Respondents were then requested to provide additional comment on the effectiveness of the EIA system by indicating the extent of the effectiveness. Fifteen of the respondents (63%) considered the EIA system to be moderately effective while five of the respondents (21%) considered it to be slightly effective overall (Figure 5.11). Only one of the respondents (4%) considered the EIA system to be very effective and one of the respondents (4%) considered the EIA system not effective at all. Two of the respondents (8%) chose not to participate in this part of the questionnaire.

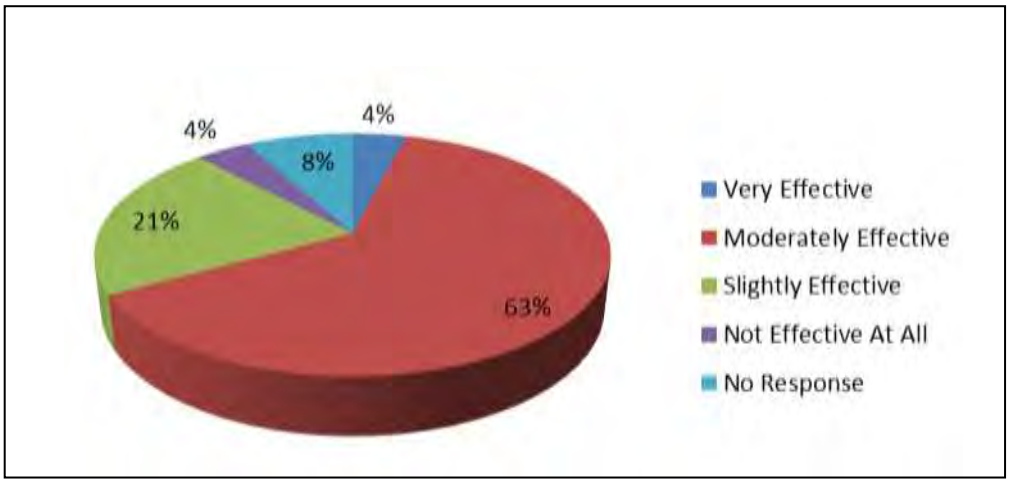

Figure 5.11: Respondent's Feedback in Terms the Overall Effectiveness of the EIA system in South Africa

Most respondents consider the EIA process to be moderately effective overall, however there are a few issues raised by respondents as to why the process is not as effective as it should be. Significance

determination plays an important role in the effectiveness of EIA. The EIA process is considered to be politically influenced in some cases and as such, activities that should not proceed go ahead in any case (NGO 3, 2014). The approach used is very generic and does not apply to all projects (EAP 1, 2014) and the EIA process does not facilitate sustainable development effectively and discourages investment (EAP 4, 2014). Compliance monitoring and enforcement is lacking, once an authorisation is issued the CA does not have the capacity to monitor compliance or take corrective action should there be non-compliance (Commenting Authority 1, 2014). Cumulative impacts are not adequately addressed in the EIA process and upon issuing of the authorisation it is actively implemented during construction, but seems to fade away thereafter (EAP 5, 2014). Projects that involve the provision of basic services i.e. potable water or housing take too long with the EIA process, not enough focus is given to socio-economic part of assessment (EAP 8, 2014). The cost to undertake the EIA process is too expensive and as such applicants choose not to apply this tool (EAP 10, 2014).

The results of this research study support previous findings where the lack of focus on socio-economic impacts was identified as an issue (Van Heerden, 2012). The lack of enforcement was similarly identified as an issue in Wood (1999).

5.6 Summary

As with the previous chapter, the findings of this component of the research have been examined in relation to the key themes highlighted in the literature review, including the South African regulatory framework and / or guidelines; the importance of ascribing significance in a meaningful way as linked with the qualification, experience and independence of the practitioner, specialist and decision-maker; the implications this has for EIA effectiveness; and the overall importance of this for the long term goal of EIA in working towards sustainability.

The questionnaire was administered to a number of respondents to explore their attitudes and perspectives on the methods used to determine impact significance in South Africa and the effectiveness of the EIA system. The main themes of the questionnaire included background information on the respondents, EIA legislation

and guidelines in South Africa, assessment of impact significance and EIA effectiveness. The results obtained were analysed and discussed. More than forty respondents were asked to participate in this study, however, only twenty four (24) participants provided feedback, and whereby more than 50% of the respondents were represented by EAPs. Other representations included the CA, local municipality as a commenting authority, applicants and NGOs. More than 80% of the respondents have more than 5 years' experience, with 54% of the respondents in possession of a Master Degree.

It is evident from the results obtained that most respondents refer directly to the NEMA (Act 107 of 1998) and associated 2010 EIA Regulations. In 2002, DEAT (now the DEA) published a set of guidelines to undertake the EIA process, followed by the public participation guidelines in 2012. In addition to these guidelines, the Western Cape guidelines provide guidance on undertaking the EIA process. Based on the results, less than 50 % of the respondents use the DEAT guidelines and only 12.5% use the Western Cape Guidelines. A number of the respondents indicated that other guidelines are reviewed and considered, which included KZN Wildlife and WESSA guidelines and / recommendations, NWA guidelines, World Bank Standards, US EPA guidelines, guidelines from the International Association for Public Participation, South African Constitution and any other applicable guideline applicable to the scope and nature of the application.

Most of the respondents feel that the promulgation of the 2010 EIA Regulations had a number of improvements, however, there were a number of issues associated with these regulations and more than 95% of the respondents were of the opinion that the current 2010 EIA Regulations needed to be amended. Please note that these amendments do not take cognisance of the amendments associated with 2014 EIA regulations as the research was undertaken prior to the promulgation of this regulations. Of the many changes that were recommended, the issue of timeframes, lack of public participation and assessment of social impacts, lack of integration of NEMA and NWA processes and the lack of a standard impact assessment method were raised as some of the shortcomings. In December 2014, the 'One Environmental System' was initiated which will allow for streamlining of the licensing processes for mining, EAs and water use (DEA, 2014). This system also allows for fixed time-frames for the consideration and issuing of the permits, licenses and EAs in their respective legislation (DEA, 2014).

In terms of determining impact significance, variation in methods was often noted by respondents with a combination of both qualitative and quantitative assessments most often used by EAPs. However, most of the respondents had no preference in terms of the method used, provided it met the legal requirements (i.e. the NEMA EIA regulations) and adequately assessed the impacts associated with the relevant project. The combination of a qualitative and quantitative method is important in ensuring that the impact assessment is effective in achieving development that is sustainable. Respondents noted that some activities were often poorly assessed including residential, industrial, coastal and linear activities. Respondents thought that smaller projects were not assessed as efficiently as the bigger projects and sometimes due to the large number of residential and linear projects that undergo EIA, EAPs sometimes 'cut and paste' similar impacts and mitigation measures from other reports. This creates a number of challenges whereby the surrounding environment is inadequately assessed and thus results in certain activities being poorly assessed.

Most of respondents were of the opinion that the method / approach for determining impact significance that is used does not affect the EA, however, deviations were noted in some cases whereby the CA went against the recommendations of the EAP. Very rarely does one find that the EAP's decision is an unbiased one, and in these cases where this is evident, the CA has to balance the views of all I&APs in the decision making process. The I&APs play an important role in the impact significance assessment phase, as they are able to provide information that can affect the decision making process as they may possess pertinent information on the local environment. The inclusion of impacts raised by the public is a requirement of the South African EIA regulations and must be addressed in all reports or the report produced will be rejected by the CA (South Africa, 2010). This is important in moving towards achieving an effective EIA system that address all impacts raised, not just the ones highlighted by the specialists, but also by the public. The incorporation of public participation is essential in achieving sustainable development. Others indicated that the methods are typically only challenged in a public forum whilst others perceived the conditions of the EA and the EAPs recommended conditions to be a cut and paste exercise. The cut and paste exercise was not only noted in the EAPs reports, but also in the Environmental Authorisations which were found to be poorly drafted, the conditions of the authorisation were cut and pasted from other documents and often did not make sense (DEA, 2011).

The impact significance methods was seen as having shortcomings by most of the respondents, one of the main reasons being that it is very subjective. Respondents also highlighted that certain impacts i.e. socio-economic impacts are poorly assessed when compared to, for example, ecological impacts. The lack of focus of socio-economic issues was also identified as a weakness Kruger and Chapman (2005), Sandham *et al* (2005) and Hildebrandt (2012). Most respondents are of the opinion that what is set out in theory in terms of impact significance is not always practical in terms of the suggested rating systems and the criteria that must be assessed for each application. Theory is not always practical as the environment is dynamic and each project that requires impact assessment is different and unique and should be treated as such. Many respondents suggested that a standard method for impact assessment needs to be adopted by EAPs, in addition, these methods should incorporate a qualitative and quantitative aspect to be able to assess all impacts. The implementation of better guidelines in terms of impact significance as well as the implementation of adequate training for both EAPs and assessing officers were also recommended, to improve impact significance determination in South Africa.

In terms of the effectiveness of the EIA system in South Africa overall, more than 50% of the respondents are of the opinion that the system is effective in protecting the environment and thus contributing to sustainable development. However, most of the respondents indicated that they considered it to be only 'moderately effective' in terms of overall effectiveness. A few issues were raised by respondents that highlighted why they believed that the EIA process overall was lacking, these included the lack of assessment of cumulative impacts and compliance monitoring, as well the fact that the EIA process is too expensive and time consuming. It is important to note that even though the respondents were of the opinion that cumulative impacts are generally not included in EIA reports, 80% of the BARs reviewed for this research incorporated cumulative impact assessment as part of the methodology use in ascribing impact significance.

A more standardised impact assessment method is likely to improve the standard of impact significance assessment. It is envisaged that best practise examples and or guidelines, especially in terms of the impact significance assessment methods will enable EAPs and decision makers to adequately undertake and assess

EIA applications respectively, ensuring that EIA meets its purpose. It is also evident that the impact assessment process needs to be standardised to ensure compliance with legal requirements. The impact assessment method needs to incorporate both quantitative and qualitative elements to adequately assess the impacts associated with each EIA application. The EIA process needs to be improved to ensure that it serves its purpose and ensures protection of the environment whilst allowing sustainable development to proceed. In addition, training programmes need to be developed and implemented for both the EAP and Assessing Officers / Case Officers and must take into account experience and issues raised

Chapter Six – Conclusion

This chapter summarises the findings of this study and provides recommendations regarding the methodologies used for impact significance assessment.

The aim of this project was to investigate the methodologies used for ascribing significance in impact assessment and the implications for EIA effectiveness in South Africa drawing on case studies from KwaZulu-Natal. The objectives of this research study were to:

i. To critically review international experience and develop an understanding of the regulatory framework for EIAs and guidelines for impact significance in South Africa (this was achieved in Chapter 2 of this study);
ii. To compare and critically review the different 'methods / approaches' for determining impact significance in a sample of BARs (impact significance methods used in the case study BARs were compared and evaluated in Chapter 4);
iii. To explore the views of key participants regarding impact significance methodologies and outcomes (Questionnaires were evaluated and the trends were presented and discussed in Chapter 5); and
iv. To make recommendations for methodologies for determining impact significance that might benefit EIA practice in South Africa (recommendations are made in this chapter based on the results).

The results showed that based on a review of the BARs produced by EAPs in KZN, none of the reports fully comply with both the 2010 EIA regulations and the Impact Significance Guideline Series 5. Based on a review of the questionnaires and the BARs, the impact assessment methods used by EAPs are not very effective as the methods failed to fully comply with EIA legislation and recommendations, which implies that the EIA process is slightly ineffective. This finding aims to reduce the gap that has been identified in the curernt knowledge, by highlighting the quality of the methods used to assess impact significance. It also assists in determining the effectiveness of the EIA reports in South Africa.

Following a review of the impact assessment methods used in BARs, most of the methods used achieved an overall "B" rating. According to Lee and Colley's (1999) rating definitions, this means that most of the

methods used can be considered generally satisfactory despite minor omissions and or inadequacies. Three of the methods reviewed achieved a rating of "C" or less. The findings show that the methods used to assess significance in BARs are not 100% compliant with the published South African environmental legislation and guidelines.

A review of the questionnaires submitted by respondents found that many respondents perceived that the impact assessment process needs to be improved to incorporate both qualitative and quantitative elements. The EIA process is perceived as being 'moderately effective' and a number of shortcomings were identified. The EIA process needs to be improved to ensure that it serves its purpose and ensures protection of the environment whilst allowing sustainable development to proceed.

In summary based on the review of BARs and on the views of the respondents, the following key shortcomings are noted in terms of the impact assessment methods used to assess significance:

- Impact assessment methods in general do not comply fully with the legal requirements and lack a quantitative approach;
- Assumptions and limitations of the methods used to assess impact significance are not discussed in the methodology component of the impact assessment section of the report;
- The methods used to assess significance do not encompass all the required characteristics of the impact as required by the NEMA EIA regulations and DEAT (2002) guidelines (i.e. frequency, degree of irreplaceability, degree of reversibility);
- Significance before mitigation is often not assessed by the EAP; and
- Cumulative impacts are not adequately assessed by EAPs.

Respondents consider that the EIA process overall, is only moderately effective in achieving its purpose and there are many shortcomings with not only the impact assessment method but with the EIA process in its entirety. There are many challenges that exist with the current legislation and its implementation. The DEA and the EDTEA have a significant role in guiding us towards environmental sustainability, but there are a number of constraints that hinder the effectiveness of the EIA in achieving sustainable development. The

findings of this research have implications not only for the methods used to assess significance, but also for the effectiveness of the EIA process overall.

Making the process of determining the significance of impacts more explicit, open to comment and public input would be an improvement of EIA practice (DEAT 2002). According to DEAT (2002), the general practice of determining significance is to use a combination of scientific methods and values ascribed by the EIA team. "The various participants involved in the EIA process are very seldom afforded an opportunity to relate their concerns, views and values to determining the significance of impacts, including participants in the process of determining the significance of impacts therefore represents a serious challenge to the current EIA practice" (DEAT, 2002: page 29). The evaluation of significance according to DEAT (2002) will continue to be a controversial issue, even when a more structured generic approach is utilised or when scientific criteria for thresholds of significance are used. It is for this reason that impact prediction and assessment of significance should thus incorporate a reflection of 'value judgements' and the values represented (DEAT, 2002).

Recommendations

In light of the above shortcomings, all role-players in the EIA field need to ensure that they are more than familiar with the environmental legislation, guidelines and regulations associated with the EIA process, not only the South African requirements, but also the international requirements. It is also recommended that a more regulated set of impact significance assessment guidelines is developed with the intent to standardise the methods used. Impact Assessment methods must incorporate both a qualitative and quantitative rating system to fully assess the impacts. Training programmes need to be developed and implemented for both the EAP and Assessing Officers / Case Officers based on clearly defined needs. This programme must take into account experience and issues raised. EAPs need to be certified by an independent body (i.e. EAPASA) to ensure that they are not only qualified but competent to undertake the EIA process and assess the significance of impacts to ensure compliance with the legal requirements.

The EIA process has its limitations, however, it has the potential to promote sustainable development. It is thus imperative that the assessment of impact significance and effectiveness of the EIA process is further researched to ensure that the EIA reaches its full potential.

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Appendices

Appendix 1: Example of Questionnaire Submitted to Participants: Questionnaire on Methodologies Used for Determining Impact Significance and Implications for EIA Effectiveness in SA

PARTICIPANT QUESTIONARE

(The information collected from this questionnaire will be used solely for the purpose of completing my MSc-CW Environmental Sciences Degree at the University of KwaZulu-Natal)

Name:	
Company:	
Designation:	
Contact Details:	
Date:	

Dear Sir / Madam

Thank you for taking your time to assist with the completion of this questionnaire. The purpose of this questionnaire is to assist me (Ms Manogrie Chetty – UKZN Student Number 202513349) with obtaining information to be used towards the completion of my MSc-CW Environmental Science Degree. All information obtained from your organisation will be used for the sole purpose of research and may be included or referred to as part of my thesis, the contents of which will be the property of the UKZN. Should you wish to remain anonymous kindly indicate so in the consent form and your name and contact details will not be included into any thesis documentation.

Your assistance is greatly appreciated.

Kind Regards

Ms Manogrie Chetty

Section A: Background information

1. Category of participant and work experience: government (national, provincial or local) / academic / private sector / NGO / other (specify)

2. Level of education: Degree / Honours / Masters / PhD; and academic background and training: natural sciences / social sciences / law

3. Field of expertise: strategic environmental management / environmental assessment / compliance monitoring / environmental law / other (specify)

4. Your role or function in the organisation that you represent: Environmental Assessment Practitioner (EAP) / Competent Authority (CA) / Commenting Authority / Applicant / other (please specify if applicable)

5. Time in practice: 1 year / 1-5 years / 5-10 years / more than ten years

Section B: EIA Legislation & Guidelines in South Africa (SA)

1. What guidelines do you refer to when undertaking / reviewing the EIA process in South Africa?

2. When looking at the current EIA regulations (of 2010, as amended), and comparing them to the previous regulations, have there been improvements or setbacks in the EIA process? Please describe.

3. If you had the ability to effect change in South African EIA legislation, what would changes would you effect and why?

Section C: Impact Significance in the SA context

1. During the assessment / review of impact significance for various activities, have you come across different methods used? Please provide a brief description of the methods used.

2. Are the methods used to assess impact significance mostly qualitative or quantitative in nature?

3. Is there a method that you find is preferred over most? If so, please describe.

4. Are there any particular types of activities of which the impacts are often poorly / rigorously assessed?

5. From your experience, have there been cases where the CA required the re- / additional assessment of (the significance of) impacts? Please provide examples and reasons for the re-assessment.

6. Do you find that the method used in assessing impact significance affects the outcome of the environmental authorisation? (i.e. cases where there were deviations from the EIA findings in the final authorisation). Please provide examples and reasons for the deviation.

7. What do you feel are the most important shortcomings / strengths of impact significance assessment overall?

8. How does the assessment of impact significance in practice differ from in theory?

9. How do you see the way forward for impact significance assessment in EIA in SA?

Section D: EIA effectiveness overall

1. As a specialist in the field of EIA, what does EIA in practice mean to you?

2. What do you consider should be the overall purpose of EIA in South Africa today?

3. To what extent can an EAP / assessing officer truly understand and connect with the full range of impacts assessed in an EIA?

4. Do you think that the EIA system in South Africa is effective in ensuring the protection of the environment?

v. To what extent would you consider the EIA system in South Africa as being effective overall? (very / moderately / slightly / not at all). Please provide examples and / or reasons.

THANK YOU

Appendix 2: Copy of Completed Questionnaires

Appendix 3: Copy of Ethical Clearance

Appendix 4: Collation Sheets Showing Assessment of Each BAR Method

Collation Sheet for Method 1 Used in BAR 1

Category / subcategory	Description of sub-category	Ratings (A, B, C, D, E, F, N/A)
1. Assessment of Impact Significance		
1.1	Assumptions and limitations of the methods are explicitly discussed	F
1.2	Description of impact severity encompass the appropriate characteristics of impact	A
1.2.1	Degree of reversibility	A
1.2.2	Magnitude / intensity	A
1.2.3	Extent / spatial scale	A
1.2.4	Duration	A
1.2.5	Frequency	A
1.2.6	Likelihood (Probability) of occurrence	A
1.2.7	Irreplaceability	A
1.3	The significance of impacts of the proposed project are assessed both with and without mitigation action.	D
1.4	Estimates of impacts rated / quantified	A
1.5	Cumulative impacts are adequately assessed using this method	B
1.6	Impacts are assessed for all phases of the proposed development (i.e. Construction, operation and decommissioning).	A
1.7	Method is compliant with requirements of GNR543 22(i)	B
Final Overall Rating		B

Collation Sheet for Method 2 Used in BAR 2

Category / subcategory	Description of sub-category	Ratings (A, B, C, D, E, F, N/A)
1. Assessment of Impact Significance		
1.1	Assumptions and limitations of the methods are explicitly discussed	F
1.2	Description of impact severity encompass the appropriate characteristics of impact	**B**
1.2.1	Degree of reversibility	A
1.2.2	Magnitude / Intensity	A
1.2.3	Extent / spatial scale	A
1.2.4	Duration	A
1.2.5	Frequency	F
1.2.6	Likelihood (Probability) of occurrence	A
1.2.7	Irreplaceability	A
1.3	The significance of impacts of the proposed project are assessed both with and without mitigation action.	C
1.4	Estimates of impacts rated / quantified	A
1.5	Cumulative impacts are adequately assessed using this method	A
1.6	Impacts are assessed for all phases of the proposed development (i.e. Construction, operation and decommissioning).	A
1.7	Method is compliant with requirements of GNR543 22(i)	B
Final Overall Rating		B

Collation Sheet for Method 3 Used in BAR 3

Category / subcategory	Description of sub-category	Ratings (A, B, C, D, E, F, N/A)
1. Assessment of Impact Significance		
1.1	Assumptions and limitations of the methods are explicitly discussed	F
1.2	Description of impact severity encompass the appropriate characteristics of impact	F
1.2.1	Degree of reversibility	F
1.2.2	Magnitude / Intensity	F
1.2.3	Extent / spatial scale	F
1.2.4	Duration	F
1.2.5	Frequency	F
1.2.6	Likelihood of occurrence	F
1.2.7	Irreplaceability	F
1.3	The significance of impacts of the proposed project are assessed both with and without mitigation action.	E
1.4	Estimates of impacts rated / quantified	F
1.5	Cumulative impacts are adequately assessed using this method	D
1.6	Impacts are assessed for all phases of the proposed development (i.e. Construction, operation and decommissioning).	A
1.7	Method is compliant with requirements of GNR543 22(i)	E
Final Overall Rating		E

Collation Sheet for Method 4 Used in BAR 4

Category / subcategory	Description of sub-category	Ratings (A, B, C, D, E, F, N/A)
1. Assessment of Impact Significance		
1.1	Assumptions and limitations of the methods are explicitly discussed	F
1.2	Description of impact severity encompass the appropriate characteristics of impact	C
1.2.1	Degree of reversibility / migratory potential	B
1.2.2	Magnitude / Intensity	A
1.2.3	Extent / spatial scale	A
1.2.4	Duration	A
1.2.5	Frequency	F
1.2.6	Likelihood of occurrence	A
1.2.7	Irreplaceability	F
1.3	The significance of impacts of the proposed project are assessed both with and without mitigation action.	A
1.4	Estimates of impacts rated / quantified	A
1.5	Cumulative impacts are adequately assessed using this method	A
1.6	Impacts are assessed for all phases of the proposed development (i.e. Construction, operation and decommissioning).	A
1.7	Method is compliant with requirements of GNR543 22(i)	C
Final Overall Rating		B

Collation Sheet for Method 5 Used in BAR 5

Category / subcategory	Description of sub-category	Ratings (A, B, C, D, E, F, N/A)
1. Assessment of Impact Significance		
1.1	Assumptions and limitations of the methods are explicitly discussed	F
1.2	Description of impact severity encompass the appropriate characteristics of impact	B
1.2.1	Degree of reversibility	A
1.2.2	Magnitude / Intensity	F
1.2.3	Extent / spatial scale	A
1.2.4	Duration	A
1.2.5	Frequency	F
1.2.6	Likelihood of occurrence	A
1.2.7	Irreplaceability	A
1.3	The significance of impacts of the proposed project are assessed both with and without mitigation action.	C
1.4	Estimates of impacts rated / quantified	A
1.5	Cumulative impacts are adequately assessed using this method	A
1.6	Impacts are assessed for all phases of the proposed development (i.e. Construction, operation and decommissioning).	A
1.7	Method is compliant with requirements of GNR543 22(i)	A
Final Overall Rating		B

Collation Sheet for Method 6 Used in BAR 6

Category / subcategory	Description of sub-category	Ratings (A, B, C, D, E, F, N/A)
1. Assessment of Impact Significance		
1.1	Assumptions and limitations of the methods are explicitly discussed	F
1.2	Description of impact severity encompass the appropriate characteristics of impact	C
1.2.1	Degree of reversibility / mitigatory potential	C
1.2.2	Magnitude / Intensity	A
1.2.3	Extent / spatial scale	A
1.2.4	Duration	A
1.2.5	Frequency	F
1.2.6	Likelihood of occurrence	A
1.2.7	Irreplaceability	F
1.3	The significance of impacts of the proposed project are assessed both with and without mitigation action.	A
1.4	Estimates of impacts rated / quantified	A
1.5	Cumulative impacts are adequately assessed using this method	A
1.6	Impacts are assessed for all phases of the proposed development (i.e. Construction, operation and decommissioning).	A
1.7	Method is compliant with requirements of GNR543 22(i)	B
Final Overall Rating		B

Collation Sheet for Method 7 Used in BAR 7

Category / subcategory	Description of sub-category	Ratings (A, B, C, D, E, F, N/A)
1. Assessment of Impact Significance		
1.1	Assumptions and limitations of the methods are explicitly discussed	F
1.2	Description of impact severity encompass the appropriate characteristics of impact	C
1.2.1	Degree of reversibility / mitigatory potential	F
1.2.2	Magnitude / Intensity / Severity	A
1.2.3	Extent / spatial scale	A
1.2.4	Duration	A
1.2.5	Frequency	F
1.2.6	Likelihood of occurrence	A
1.2.7	Irreplaceability	F
1.3	The significance of impacts of the proposed project are assessed both with and without mitigation action.	A
1.4	Estimates of impacts rated / quantified	A
1.5	Cumulative impacts are adequately assessed using this method	A
1.6	Impacts are assessed for all phases of the proposed development (i.e. Construction, operation and decommissioning).	A
1.7	Method is compliant with requirements of GNR543 22(i)	C
Final Overall Rating		B

Collation Sheet for Method 8 Used in BAR 8

Category / subcategory	Description of sub-category	Ratings (A, B, C, D, E, F, N/A)
1. Assessment of Impact Significance		
1.1	Assumptions and limitations of the methods are explicitly discussed	F
1.2	Description of impact severity encompass the appropriate characteristics of impact	B
1.2.1	Degree of reversibility / mitigatory potential	A
1.2.2	Magnitude / Intensity / Severity	F
1.2.3	Extent / spatial scale	A
1.2.4	Duration	A
1.2.5	Frequency	F
1.2.6	Likelihood of occurrence	A
1.2.7	Irreplaceability	A
1.3	The significance of impacts of the proposed project are assessed both with and without mitigation action.	C
1.4	Estimates of impacts rated / quantified	A
1.5	Cumulative impacts are adequately assessed using this method	A
1.6	Impacts are assessed for all phases of the proposed development (i.e. Construction, operation and decommissioning).	A
1.7	Method is compliant with requirements of GNR543 22(i)	A
Final Overall Rating		B

Collation Sheet for Method 9 Used in BAR 9

Category / subcategory	Description of sub-category	Ratings (A, B, C, D, E, F, N/A)
1. Assessment of Impact Significance		
1.1	Assumptions and limitations of the methods are explicitly discussed	F
1.2	Description of impact severity encompass the appropriate characteristics of impact	C
1.2.1	Degree of reversibility / mitigatory potential	F
1.2.2	Magnitude / Intensity / Severity	A
1.2.3	Extent / spatial scale	A
1.2.4	Duration	A
1.2.5	Frequency	F
1.2.6	Likelihood of occurrence	A
1.2.7	Irreplaceability	F
1.3	The significance of impacts of the proposed project are assessed both with and without mitigation action.	F
1.4	Estimates of impacts rated / quantified	A
1.5	Cumulative impacts are adequately assessed using this method	B
1.6	Impacts are assessed for all phases of the proposed development (i.e. Construction, operation and decommissioning).	A
1.7	Method is compliant with requirements of GNR543 22(i)	C
Final Overall Rating		C

Collation Sheet for Method 10 Used in BAR 10

Category / subcategory	Description of sub-category	Ratings (A, B, C, D, E, F, N/A)
1. Assessment of Impact Significance		
1.1	Assumptions and limitations of the methods are explicitly discussed	F
1.2	Description of impact severity encompass the appropriate characteristics of impact	E
1.2.1	Degree of reversibility / mitigatory potential	F
1.2.2	Magnitude / Intensity / Severity	D
1.2.3	Extent / spatial scale	D
1.2.4	Duration	D
1.2.5	Frequency	F
1.2.6	Likelihood of occurrence	D
1.2.7	Irreplaceability	F
1.3	The significance of impacts of the proposed project are assessed both with and without mitigation action.	E
1.4	Estimates of impacts rated / quantified	D
1.5	Cumulative impacts are adequately assessed using this method	A
1.6	Impacts are assessed for all phases of the proposed development (i.e. Construction, operation and decommissioning).	A
1.7	Method is compliant with requirements of GNR543 22(i)	D
Final Overall Rating		D

Questionnaire on Methodologies Used for Determining Impact Significance and Implications for EIA Effectiveness in SA

(The information collected from this questionnaire will be used solely for the purpose of completing my MSc-CW Environmental Sciences Degree at the University of KwaZulu-Natal)

Name:	Client 1
Company:	
Designation:	Environmental Manager
Contact Details:	
Date:	03 August 2014

Dear Sir / Madam

Thank you for taking your time to assist with the completion of this questionnaire. The purpose of this questionnaire is to assist me (Ms Manogrie Chetty – UKZN Student Number 202513349) with obtaining information to be used towards the completion of my MSc-CW Environmental Science Degree. All information obtained from your organisation will be used for the sole purpose of research and may be included or referred to as part of my thesis, the contents of which will be the property of the UKZN. Should you wish to remain anonymous kindly indicate so in the consent form and your name and contact details will not be included into any thesis documentation.

Your assistance is greatly appreciated.

Kind Regards

Ms Manogrie Chetty

Section A: Background information

1. Category of stakeholder and work experience: government (national, provincial or local) / academic / private sector / NGO / other (specify)

State Owned Enterprise (SoE)

2. Level of education: Degree / Honours / Masters / PhD; and academic background and training: natural sciences / social sciences / law

Masters of Environmental Management - UKZN

Candidate MBA – UKZN

3. Field of expertise: strategic environmental management / environmental assessment / compliance monitoring / environmental law / other (specify)

- Strategic Environmental Management;
- Environmental Assessment;
- Compliance Monitoring; and
- Environmental Management Systems

4. Your role or function in the organisation that you represent: Environmental Assessment Practitioner (EAP) / Competent Authority (CA) / Commenting Authority / Applicant / other (please specify if applicable)

Environmental Manager and Advisor

5. Time in practice: 1 year / 1-5 years / 5-10 years / more than ten years

More than 10 years

Section B: EIA Legislation & Guidelines in South Africa (SA)

1. What guidelines do you refer to when undertaking / reviewing the EIA process in South Africa?

National Environmental Management Act (2010) EIA Guidelines; National Management Biodiversity Act (2014); National Environmental Management Waste Act (2008); National Environmental Management Air Quality Act (2008).

2. When looking at the current EIA regulations (of 2010, as amended), and comparing them to the previous regulations, have there been improvements or setbacks in the EIA process? Please describe.

The old EIA regime under Environmental Conservation Act 1989 was good enough to cover activities as they were but with developments in technology and information, the need for revised EIA regulations under NEMA (2006 and 2010) was inevitable. There has been improvement in terms of listing of activities requiring only Basic Assessment and those requiring a full EIA process. However, based on experience, there is still room for improvement in terms of cutting down regulatory time allocated for public participation. With regards to mining activities, the EIA process has taken a few steps back in that mining activities should be covered under NEMA EIA Regulations as these have the same impacts on the environment.

3. If you had the ability to effect change in South African EIA legislation, what would changes would you effect and why?

The EIA as a planning tool is now insufficient considering that it doesn't cover climate change issues. The EIA process should be able to provide climate resilient framework for developments.

In addition, EIAs for smaller and insignificant activities should only cover screening as was the case with the old EIA regime as this would help expedite planning approval.

Notwithstanding the fact that the positive Environmental Authorisation (EA) is not a given, with regards to National Water Act and requirements for Water Use Licensing, the EIA process should allow the two processes to run concurrently.

Section C: Impact Significance in the SA context

1. During the assessment / review of impact significance for various activities, have you come across different methods used? Please provide a brief description of the methods used.

The impact assessment process in SA is a rigid and straight forward impact assessment rating format.

2. Are the methods used to assess impact significance mostly qualitative or quantitative in nature?

Methods used are qualitative in nature for most EIA applications.

3. Is there a method that you find is preferred over most? If so, please describe.

4. Are there any particular types of activities of which the impacts are often poorly / rigorously assessed?

Cumulative and residual impacts are poorly assessed in EIA processes. It is for that reason that most projects get a positive authorisation with only the environment suffering at the end.

5. From your experience, have there been cases where the CA required the re- / additional assessment of (the significance of) impacts? Please provide examples and reasons for the re-assessment.

Yes, where the scoping process identified a list of specialist studies to be undertaken as part of Plan of Study for EIA, only for the applicant and the EAP to only cover a limited number of specialists

6. Do you find that the method used in assessing impact significance affects the outcome of the environmental authorisation? (i.e. cases where there were deviations from the EIA findings in the final authorisation). Please provide examples and reasons for the deviation.

In some cases yes. South Africa is awash with cases of mega projects that were assessed and a negative authorisation would have been a logical outcome but the CA issue a positive EA. Reasons are mostly political and economic. For example the expansion of Kruger National Park, the Koeberg Nuclear Power Station on the Western Cape, Mining projects.

7. What do you feel are the most important shortcomings / strengths of impact significance assessment overall?

Impact significance assessment allows the EAP and the CA to qualitatively measure the potential impacts of the project during review of the EIR or BAR.

Notwithstanding the diversity evident within the broad field of impact assessment, we can make some general observations on the strengths and weaknesses of the field based upon the preceding discussion. The strengths of impact assessment include:

- The widespread incorporation, particularly of EIA, into legislation and international agreements, and the increasing acceptance of other, supplementary forms of impact assessment;

- The generally good availability of procedural guidance and the value of this for the purposes of both procedural effectiveness and capacity building, notwithstanding that some practice areas are better established than others and that debates continue regarding the appropriate extent and level of prescription of such guidance;
- A strong body of NGOs including academics and in some cases international community, resulting in a continually evolving field; for instance the input of NGOs in the proposed N2 Toll Plaza through biodiversity rich Wild Coast and the then proposed St Lucia Wetland Development.

The weakness relate to the lack of integrated consideration of broader sustainability issues within impact assessment, which could be due to factors including increasing specialization and resultant silos within the profession as well as lack of recognition and hence resources allocated to on-regulated forms of impact assessment.

8. How does the assessment of impact significance in practice differ from in theory?

The enactment of NEMA created a different, but somewhat vague, set of requirements for relevant authorities with regards to SEAs, EMFs and among these is the integrated use of the social and economic sciences in assessing impacts on the human environment. Over the years, the EIA has always been about the ecological impacts with little in terms of building resilience.

If the purpose of impact assessment is considered to be to influence decision-making (in accordance with both NEMA and SA Constitution), this can mean that proposals are modified in response to impact assessment findings (the most common example of this being the identification of appropriate mitigation measures for predicted impacts) or that proposals are rejected based upon impact assessment findings. However, in practice is not the case as some of the projects go ahead despite negative impact assessment rating by the EAP and the specialists. It is also a challenge for EAPs to harmonize the impact assessment for social, economic and ecological specialists studies such as HIA, SIA, and fauna and flora assessments.

9. How do you see the way forward for impact significance assessment in EIA in SA?

In its current format, EIA is considered relatively inefficient at ensuring: impacts were

minimized; irreversible impacts were avoided; and sustainable development was facilitated.

Section D: EIA effectiveness overall

1. As a specialist in the field of EIA, what does EIA in practice mean to you?

An EIA process is a development planning tool and it should be applied as such for projects. For this reason, the applicant, engineers and architecture should work with the EAP from the inception of the project concept and not only after the project has been conceptualised.

2. What do you consider should be the overall purpose of EIA in South Africa today?

It should form part of project conceptualisation, planning up until decommissioning. It should not just be an impact assessment on the side-lines but should inform the project design, especially within the green economy trajectory.

3. To what extent can an EAP / assessing officer truly understand and connect with the full range of impacts assessed in an EIA?

To a certain extent but that is why South Africa needs modern EIA practitioners who have a diverse set of skills including built environments and economics.

4. Do you think that the EIA system in South Africa is effective in ensuring the protection of the environment?

Yes it is but judging by an overall national number of annual Section 24Gs submitted in South Africa, that is an indication that a lot more needs be done to improve its effectiveness

1. To what extent would you consider the EIA system in South Africa as being effective overall? (very / moderately / slightly / not at all). Please provide examples and / or reasons.

Moderately effective for the very same reasons mentioned above.

THANK YOU

Questionnaire on Methodologies Used for Determining Impact Significance and Implications for EIA Effectiveness in SA

(The information collected from this questionnaire will be used solely for the purpose of completing my MSc-Environmental Sciences Degree at the University of KwaZulu-Natal)

Name:	Client 2
Company:	
Designation:	SHEQ MANAGER
Contact Details:	
Date:	04/11/2014

Dear Sir / Madam

Thank you for taking your time to assist with the completion of this questionnaire. The purpose of this questionnaire is to assist me (Ms Manogrie Chetty – UKZN student Number 202513349) with obtaining information to be used towards the completion of my MSc- CW Environmental Science Degree. All information obtained from your organisation will be used for the sole purpose of research and may be included or referred to as part of my thesis, the contents of which will be the property of the UKZN. Should you wish to remain anonymous kindly indicate so in the consent form and your name and contact details will not be included into any thesis documentation.

Your assistance is greatly appreciated.

Kind Regards

Ms Manogrie Chetty

Section A: Background information

1. Category of stakeholder and work experience: government (national, provincial or local) / academic / private sector / NGO / other (specify)

Private Sector – Environmental Practitioner – SHEQ Manager - (2000-present) TONGAAT HULETT DEVELOPMENTS (PTY)Ltd

2. Level of education: Degree / Honours / Masters / PhD; and academic background and training: natural sciences / social sciences / law

Cambridge Institute for Sustainability Leadership (2010) BSc Hons Environmental Science (2006) BSc Geography and Environmental Management (2004) Advanced GIS (2000)

3. Field of expertise: strategic environmental management / environmental assessment / compliance monitoring / environmental law / other (specify)

Environmental Assessment Environmental Compliance Monitoring Spatial Sensitivity Mapping and Analysis (GIS and Remote Sensing) Water Use Licensing

Waste Management

Rural Development

Gender and Land Management

Environmental Law

4. Your role or function in the organisation that you represent: Environmental Assessment Practitioner (EAP) / Competent Authority (CA) / Commenting Authority / Applicant / other (please specify if applicable)

APPLICANT - (Client)

EAP Management (Reviewer)

5. Time in practice: 1 year / 1-5 years / 5-10 years / more than ten years

5-10 years

Section B: EIA Legislation & Guidelines in South Africa (SA)

1. What guidelines do you refer to when undertaking / reviewing the EIA process in South Africa?

EIA Regulations (2010)(as amended) and the associated GNR's are the primary guide when compiling/reviewing EIA reports.

We also use the following:

http://www.environment.gov.za//Documents/Publications/2003Jun24_1/eia_info_series_24062003.html

Information Series 1: Screening

Information Series 2: Scoping

Information Series 3: Stakeholder engagement

International Association for Public Participation. www.iap2.org. Core Values.

International Association for Public Participation. www.iap2.org. Spectrum of public participation.

International Association for Public Participation. www.iap2.org. Toolbox of public participation methodologies.

We always apply the principles of IEM and follow the DEAT (2002) guidelines.

2. When looking at the current EIA regulations (of 2010, as amended), and comparing them to the previous regulations, have there been improvements or setbacks in the EIA process? Please describe.

The EIA Regulations (2010)(as amended) have, in my opinion, improved from earlier regulations. The Listed Notices are more inclusive and the thresholds and specific exclusions are clearly set out. Furthermore, most applications are subject to a BA rather than a full scoping/EIA process which encouraged developers to undertake assessments.

3. If you had the ability to effect change in South African EIA legislation, what would changes would you effect and why?

Firstly, I believe a professional body is required to hold EAPs accountable and to a particular standard to ensure comprehensive and consistent assessments. Similarly, I believe assessing officers with the CAs also need to be professionally registered with this body as well.

I would like to see public participation timeframes shortened. I would also like to see a shift away from reactive EIAs to more proactive SEAs which in my opinion should be legislated, especially for large-scale developments. I think this shift has now started with the proposed 2014 regulations.

I would also like to see an integrated authorisation/licensing/permitting process for all pieces of environmental legislation in South Africa – e.g. there should be an integrated process to obtaining an environmental authorisation, waste management licence, water use licence, air emissions licence, mining right, etc.

Section C: Impact Significance in the SA context

1. During the assessment / review of impact significance for various activities, have you come across different methods used? Please provide a brief description of the methods used.

Yes, various methodologies are employed by different consultants to rate the significance of impacts and in my opinion, the CAs do not promote consistency when reviewing applications. I have seen the following methodologies use:

- McHarg Technique (1971) – (Overlay map technique using transparencies for each impact
- Loran Method (1975) – (Matrix using 234 activities and 27 environmental features)
- Adkins and Burke Method (1974) – (Scaling checklist from +5 to -5 used to compare project alternatives)
- KSIM Technique (1973) – (Mathematical model using + and – scoring for impact prediction
- Hills Goal Achievement Matrix (1966) -(Desired goals ranked in order of importance)
- Sondheim Method (1978) – (Experts form a weighting panel to evaluate each aspect of project)
- Crawford Method (1973) – (Experts weight aspects on a 7 point scale i.e +3 (strongly positive) -3 (strongly negative) to form numerical measure of each evaluation criteria)
- Multi-criteria Analysis using GIS and expert weightings

2. Are the methods used to assess impact significance mostly qualitative or quantitative in nature?

The methodologies applied are usually quantitative methodologies, however the prediction of the extent, duration and probability of occurrence by a specialist or EAP is often qualitative or subjective.

3. Is there a method that you find is preferred over most? If so, please describe.

We usually use different methods to suite the specific nature of a development. A preferred method for larger developments is multi-criteria analysis (MCA) using an Analytical Hierarchy Process). Specialist have to rate individual impacts in their discipline on a common rating scale. These ratings are then weighted depending on the discipline (eg. wetland impacts may receive a higher weighting than visual impacts) and finally the weights are aggregated in GIS to determine the overall significance of the development.

4. Are there any particular types of activities of which the impacts are often poorly / rigorously assessed?

Usually the quality of the impact assessment is determined by the quality of the specialist assessment. We often find that inconsistent methodologies by specialist consultants compromise if the aggregation of impacts by the EAP. Furthermore, not all specialists follow an impact rating methodology in terms of nature, extent, duration and probability of occurrence which means the EAP has to infer these ratings.

5. From your experience, have there been cases where the CA required the re- / additional assessment of (the significance of) impacts? Please provide examples and reasons for the re-assessment.

I have not encountered a situation where the CA has requested the re- / additional assessment of the significance of impacts. In my opinion, this aspect of the assessment is poorly monitored (particularly at Provincial level) with the Provincial CAs, rarely if ever, critiquing the quantitative impact significance. I am also aware that in many instances, the KZN Provincial CA accepts Basic Assessments without the EAP undertaking a significance rating of impacts. The greatest challenge for EAPs is ensuring a professional body (EAPSA) is enacted and the CAs start to ensure the level of assessments produced are consistent and meet the required rigorous scientific assessments.

6. Do you find that the method used in assessing impact significance affects the outcome of the environmental authorisation? (i.e. cases where there were deviations from the EIA findings in the final authorisation). Please provide examples and reasons for the deviation.

In my experience, the method use in assessing impact significance has not affected the final authorisation.

7. What do you feel are the most important shortcomings / strengths of impact significance assessment overall?

Too subjective and lack of consistency in the methods used amongst different consultants. There should be a baseline model which all consultants must be permitted by rule to follow.

8. How does the assessment of impact significance in practice differ from in theory?

In theory, impact significance is meant to be determined scientifically using a quantitative methodology. This is rarely the case in practice.

9. How do you see the way forward for impact significance assessment in EIA in SA?

Guidelines for acceptable methodologies need to be provided by the CAs and a registration board is required.

Section D: EIA effectiveness overall

1. As a specialist in the field of EIA, what does EIA in practice mean to you?

The primary purpose of an EIA, to my mind, is the prediction of consequences, identification and comparison of alternatives and inclusion of all stakeholders in the decision-making process, to ensure constraints are addressed at an early stage of project planning. Therefore, an EIA should lead to informed decision-making; be based on the most relevant, accurate, and scientifically correct information as well as open up the decision-making process for inspection and public scrutiny. Environmental Impact Assessments (EIAs) is one of a number of tools that have a role to play towards achieving the sustainability or sustainable development vision.

Before the role that EIAs play in sustainability can be critically assessed, a general understanding of the concept is necessary. The South African Constitution makes it clear that "ecologically sustainable development" is to be

secured, while "promoting justifiable economic and social development"[1] .

The country's National Environmental Management Act[2] (NEMA) defines sustainable development as "the integration of social, economic and environmental factors into planning, implementation and decision-making so as to ensure that development serves present and future generations".

2. What do you consider should be the overall purpose of EIA in South Africa today?

The objectives of an EIA are:

- Ensure that environmental considerations are integrated into the development decision-making process at an early stage of planning;
- to describe the proposed project and associated works together with the requirements for carrying out the proposed developments;
- Predict, avoid, minimise and/or compensate for adverse environmental, social, economic and cultural effects of a project;
- Protect the productivity and capacity of natural systems and the ecological processes which maintain their functions;
- Present clear options for the mitigation of impacts and for sound environmental management;
- Ensure the involvement of the public and key stakeholders; and to
- Promote sustainable development and enhance the use of resources and management opportunities.
- to identify and quantify any potential losses or damage to flora, fauna and natural habitats;

3. To what extent can an EAP / assessing officer truly understand and connect with the full range of impacts assessed in an EIA?

The ability of an EAP to connect with the full range of impacts depends largely on their background, experience and ability to interpret scientific information. Without a registration body, it is my experience that almost anyone can act as an EAP at present, and most EAPs do not have a scientific background. They are trained in the social sciences and therefore, do not have the full spectrum of ecological systems and impacts. An EAP should be trained in a scientific field. Furthermore, an EAP should ideally be trained in Environmental Science rather than in a specialist background (e.g. many EAPs studied Biology, Ecology, Zoology, etc.) as in the Environmental Science discipline, graduates are exposed to a broad spectrum of disciplines (e.g. hydrology, geomorphology, coastal impacts, biogeography, ecology, etc.). This allows the EAP to have a broad understanding of many disciplines and allows them to apply and interpret the findings of a specialist in any particular field.

The same principle can be applied for an assessing officer.

4. Do you think that the EIA system in South Africa is effective in ensuring the protection of the environment?

Please refer to response below.

1. To what extent would you consider the EIA system in South Africa as being effective overall? (very / moderately / slightly / not at all). Please provide examples and / or reasons.

I would consider the EIA system in South Africa to be moderately effective at present.

In order for any activity to be 'sustainable', we must impose a limit to ensure that future generations are not hindered by this current generation. For an EIA to be successful, arguments encouraging strong sustainability principles should be adopted as these views ensure that earth and people alike are protected so that we can all ensure a good quality of life for all across generations.

Challenges with the effective implementation of the EIA process include: the general attitude of society, hungry developers and decision-makers, rigid legislation and a general need for development in many poor regions of the world. For EIA to accomplish its full potential, capacity-building for administrators, practitioners and the public at large; monitoring of compliance with recommendations, sharing of 'best practise' globally as well as strengthening of links between EIA and SEA is required. Furthermore, there is a need to dispel the impression that EIA is an obstructive process that keeps people in poverty rather than one that ensures future generations will enjoy resource security and a good quality life.

THANK-YOU

Questionnaire on Methodologies Used for Determining Impact Significance and Implications for EIA Effectiveness in SA

(The information collected from this questionnaire will be used solely for the purpose of completing my MSc-CW Environmental Sciences Degree at the University of KwaZulu-Natal)

Name:	Client 3
Company:	
Designation:	Environmental Specialist
Contact Details:	
Date:	04 August 2014

Dear Sir / Madam

Thank you for taking your time to assist with the completion of this questionnaire. The purpose of this questionnaire is to assist me (Ms Manogrie Chetty – UKZN Student Number 202513349) with obtaining information to be used towards the completion of my MSc-CW Environmental Science Degree. All information obtained from your organisation will be used for the sole purpose of research and may be included or referred to as part of my thesis, the contents of which will be the property of the UKZN. Should you wish to remain anonymous kindly indicate so in the consent form and your name and contact details will not be included into any thesis documentation.

Your assistance is greatly appreciated.

Kind Regards

Ms Manogrie Chetty

Section A: Background information

1. Category of stakeholder and work experience: government (national, provincial or local) / academic / private sector / NGO / other (specify)

Parastatal. Eight years

2. Level of education: Degree / Honours / Masters / PhD; and academic background and training: natural sciences / social sciences / law

Bachelor of Environmental Science Degree

3. Field of expertise: strategic environmental management / environmental assessment / compliance monitoring / environmental law / other (specify)

Environmental Impact Assessment, Environmental Management Systems, Compliance Monitoring, Environmental Law and Ecology

4. Your role or function in the organisation that you represent: Environmental Assessment Practitioner (EAP) / Competent Authority (CA) / Commenting Authority / Applicant / other (please specify if applicable)

Environmental Advisor

5. Time in practice: 1 year / 1-5 years / 5-10 years / more than ten years

5-10 ten years

Section B: EIA Legislation & Guidelines in South Africa (SA)

1. What guidelines do you refer to when undertaking / reviewing the EIA process in South Africa?

Environmental Legislations for South Africa

2. When looking at the current EIA regulations (of 2010, as amended), and comparing them to the previous regulations, have there been improvements or setbacks in the EIA process? Please describe.

There has been some improvement with regards to the time for the authority to provide decisions and in terms of the clear description of listed activities. The ambiguity with regards to the listed activities has been minimised.

3. If you had the ability to effect change in South African EIA legislation, what would changes would you effect and why?

The threshold in the listed activities doesn't address the significant of impact. The S24Application which is part of the EIA process should also have time frame with regards to the decision making. The requirements for the authorisation to comply with other legal requirements needs to be looked at, because some of the legislations (e.g. National Water Act) with regards to the water use license, doesn't have time frame. This have significant impact in terms of projects as one cannot commence with an activity until such time the authorisation has been received from the other Authorities.

Section C: Impact Significance in the SA context

1. During the assessment / review of impact significance for various activities, have you come across different methods used? Please provide a brief description of the methods used.

Checklists , Matrices, Networks, Process flow charts, Overlays Public Opinion, Experts opinion, GIS .

2. Are the methods used to assess impact significance mostly qualitative or quantitative in nature?

They are both qualitative and quantitative.

3. Is there a method that you find is preferred over most? If so, please describe.

Checklist method:

Easy to understand and use

Enables proponents to review likely impacts and select sites

Ranking and weighting in a simple

4. Are there any particular types of activities of which the impacts are often poorly / rigorously assessed?

No

5. From your experience, have there been cases where the CA required the re- / additional assessment of (the significance of) impacts? Please provide examples and reasons for the re-assessment.

No

6. Do you find that the method used in assessing impact significance affects the outcome of the environmental authorisation? (i.e. cases where there were deviations from the EIA findings in the final authorisation). Please provide examples and reasons for the deviation.

Yes.

7. What do you feel are the most important shortcomings / strengths of impact significance assessment overall?

It narrow down to a decision about whether the project or an activity is likely to cause

unacceptable adverse environmental impact.

8. How does the assessment of impact significance in practice differ from in theory?

The significant of impact might change when the project is being implemented onsite, either due to unforeseen circumstances.

9. How do you see the way forward for impact significance assessment in EIA in SA?

Section D: EIA effectiveness overall

1. As a specialist in the field of EIA, what does EIA in practice mean to you?

A tool to ensure sustainable development.

2. What do you consider should be the overall purpose of EIA in South Africa today?

A tool to promote environmentally sound and sustainable development through the identification of appropriate enhancement and mitigation measures.

It should provide detail and clear information to assist the authorities in decision making process in terms of the consequences of the activity.

3. To what extent can an EAP / assessing officer truly understand and connect with the full range of impacts assessed in an EIA?

4. Do you think that the EIA system in South Africa is effective in ensuring the protection of the environment?

It's in some instances where the case officer has experience in decision making and has read the EIA report properly.

1. To what extent would you consider the EIA system in South Africa as being effective overall? (very / moderately / slightly / not at all). Please provide examples and / or reasons.

Moderate.

The process provides justice in terms of decision making as it provides the public with an opportunity to have their concerns addressed in the process.

The monitoring of compliance with conditions of the authorisation onsite is not being adequately enforced by the authorities. However, one could say that this is due to limited resources.

THANK YOU

Questionnaire on Methodologies Used for Determining Impact Significance and Implications for EIA Effectiveness in SA

(The information collected from this questionnaire will be used solely for the purpose of completing my MSc-CW Environmental Sciences Degree at the University of KwaZulu-Natal)

Name:	Commenting Authority 1
Company:	
Designation:	Environmentalist: municipal infrastructure
Contact Details:	
Date:	9 August 2014

Dear Sir / Madam

Thank you for taking your time to assist with the completion of this questionnaire. The purpose of this questionnaire is to assist me (Ms Manogrie Chetty – UKZN Student Number 202513349) with obtaining information to be used towards the completion of my MSc-CW Environmental Science Degree. All information obtained from your organisation will be used for the sole purpose of research and may be included or referred to as part of my thesis, the contents of which will be the property of the UKZN. Should you wish to remain anonymous kindly indicate so in the consent form and your name and contact details will not be included into any thesis documentation.

Your assistance is greatly appreciated.

Kind Regards

Ms Manogrie Chetty

Section A: Background information

1. Category of stakeholder and work experience: government (national, provincial or local) / academic / private sector / NGO / other (specify)

Local Government Work experience – EIAs, Policy, Compliance and Enforcement

2. Level of education: Degree / Honours / Masters / PhD; and academic background and training: natural sciences / social sciences / law

BSc, Honours Zoology Training: EIA, Compliance and Enforcement

3. Field of expertise: strategic environmental management / environmental assessment / compliance monitoring / environmental law / other (specify)

EIA, compliance monitoring, environmental law, policy

4. Your role or function in the organisation that you represent: Environmental Assessment Practitioner (EAP) / Competent Authority (CA) / Commenting Authority / Applicant / other (please specify if applicable)

Environmental support and advice

5. Time in practice: 1 year / 1-5 years / 5-10 years / more than ten years

More than 10 years

Section B: EIA Legislation & Guidelines in South Africa (SA)

1. What guidelines do you refer to when undertaking / reviewing the EIA process in South Africa?

DEA Guidelines

US EPA training guidelines

2. When looking at the current EIA regulations (of 2010, as amended), and comparing them to the previous regulations, have there been improvements or setbacks in the EIA process? Please describe.

There have been both improvements and setbacks.

While the previous regulations were simple, but regulated almost everything, the new regulations are more complex, and a number of important aspects/activities have been overlooked.

The regulations are not specific in terms of activities in wetlands, although there are implicit

clauses. Roads and electrical infrastructure have escaped the EIA regulations to a certain degree.

Certain activities are quantified , e.g. infilling of more than Xcm^3 of wetland, or disposal of Xcm^3 of waste – which does not necessarily serve as an barrier to environmental damage and degradation.

The regulations make it possible to damage almost anything – with approval from the relevant authority. The regulations do not contain any prohibitory provisions.

3. If you had the ability to effect change in South African EIA legislation, what would changes would you effect and why?

In addition to norms and standards – I would include prohibitory activities in certain designated areas.

Remove some of the “quantified” benchmarks or triggers for EIA.

Section C: Impact Significance in the SA context

1. During the assessment / review of impact significance for various activities, have you come across different methods used? Please provide a brief description of the methods used.

Rating and ranking of impact significance seems to be the most common method used.

Others use various ways and means of assessing impact significance, based on their qualifications and experience as practitioners.

2. Are the methods used to assess impact significance mostly qualitative or quantitative in nature?

Most of those I have come across seem to be mostly quantitative.

3. Is there a method that you find is preferred over most? If so, please describe.

A combination of both qualitative and quantitative assessment is required, more especially, the choice should be based on the proposed development, the location of the project, the surrounding communities/stakeholders, and the issues at hand.

4. Are there any particular types of activities of which the impacts are often poorly / rigorously assessed?

Road design and construction

Housing projects

Industrial projects

Also - Health impacts, social impacts

5. From your experience, have there been cases where the CA required the re- / additional assessment of (the significance of) impacts? Please provide examples and reasons for the re-assessment.

Yes.

Housing projects.

The assessment was adequate for the type of project, and overlooked a number of issues

and potential impacts.

6. Do you find that the method used in assessing impact significance affects the outcome of the environmental authorisation? (i.e. cases where there were deviations from the EIA findings in the final authorisation). Please provide examples and reasons for the deviation.

Usually this is the case. Generally the authorisation is a cut and paste from previous authorisations or the recommendation of the EAP.

7. What do you feel are the most important shortcomings / strengths of impact significance assessment overall?

Strengths:

Serves as a control measure for development.

Shortcomings:

1. most cases becomes an academic exercise instead of a practical analysis of potential environmental impacts.
2. EAPs base their assessment and input on mostly theories and textbook knowledge, rather than on practical field experience – as far as potential impacts are concerned.
3. Some EIAs lack simple and practical description of potential impacts – makes it difficult for authorities to review and base their decision on.
4. Most reports are not read-friendly

8. How does the assessment of impact significance in practice differ from in theory?

See above

9. How do you see the way forward for impact significance assessment in EIA in SA?

There needs to be focused training for Practitioners – in conducting EIAs, rating impacts significance and report-writing.

Same for authorities, but also to look at impact significance assessment more critically and have systems and resources in place to verify some of the information contained in EIA reports.

Section D: EIA effectiveness overall

1. As a specialist in the field of EIA, what does EIA in practice mean to you?

Practical, field experience and being able to conduct impact assessment in a practical, meaningful and reasonable manner, to the benefit of the proponent, the environment, and the public.

2. What do you consider should be the overall purpose of EIA in South Africa today?

1. to regulate development
2. to prohibit certain activities and conduct affecting the environment
3. to improve the lives of SA citizens
4. to safeguard our natural, social and economic heritage

3. To what extent can an EAP / assessing officer truly understand and connect with the full range of impacts assessed in an EIA?

1. conduct scoping effectively

2. communicate effectively with interested and affected parties.

4. Do you think that the EIA system in South Africa is effective in ensuring the protection of the environment?

No.

At present, it is seen as a hurdle by developers, to overcome – such as is building plans etc.

The focus seems to be on getting an authorisation rather than conducting an EIA.

Authorities are focused on issuing authorisations, and less on “regulating” or protecting the environment.

1. To what extent would you consider the EIA system in South Africa as being effective overall? (very / moderately / slightly / not at all). Please provide examples and / or reasons.

Slightly;

Once an authorisation is issued, the authorities do not have the capacity nor the competency to monitor compliance – nor take punitive and corrective action should there be non compliance .

A number of housing projects are quoted as examples – where damage to wetlands etc. have been the result of poor compliance monitoring and enforcement.

This basically has the effect of rendering the EIA process – wasteful.

THANK YOU

Questionnaire on Methodologies Used for Determining Impact Significance and Implications for EIA Effectiveness in SA

(The information collected from this questionnaire will be used solely for the purpose of completing my MSc-CW Environmental Sciences Degree at the University of KwaZulu-Natal)

Name:	Competent Authority 1
Company:	
Designation:	Assistant Manager: Environmental Planning
Contact Details:	
Date:	26 September 2014

Dear Sir / Madam

Thank you for taking your time to assist with the completion of this questionnaire. The purpose of this questionnaire is to assist me (Ms Manogrie Chetty – UKZN Student Number 202513349) with obtaining information to be used towards the completion of my MSc-CW Environmental Science Degree. All information obtained from your organisation will be used for the sole purpose of research and may be included or referred to as part of my thesis, the contents of which will be the property of the UKZN. Should you wish to remain anonymous kindly indicate so in the consent form and your name and contact details will not be included into any thesis documentation.

Your assistance is greatly appreciated.

Kind Regards

Ms Manogrie Chetty

Section A: Background information

1.Category of stakeholder and work experience: government (national, provincial or local) / academic / private sector / NGO / other (specify)

Provincial Government

2.Level of education:Degree / Honours / Masters / PhD; and academic background and training: natural sciences / social sciences / law

Master of Science: Protected Landscape Management (Wales) Natural Sciences background with a B. Tech: Nature Conservation and ND: Nature Conservation

3.Field of expertise:strategic environmental management / environmental assessment / compliance monitoring / environmental law / other (specify)

strategic environmental management / environmental assessment / compliance monitoring and enforcement/ environmental law / environmental planning and policy

4. Your role or function in the organisation that you represent: Environmental Assessment Practitioner (EAP) / Competent Authority (CA) / Commenting Authority / Applicant / other (please specify if applicable)

Competent Authority (CA)

5. Time in practice: 1 year / 1-5 years / 5-10 years / more than ten years

More than 10 years

Section B: EIA Legislation & Guidelines in South Africa (SA)

1. What guidelines do you refer to when undertaking / reviewing the EIA process in South Africa?

NEMA principles

NEMA: Regulations

DEA Guideline series

DAEA Draft guidelines

EKZN Draft guidelines

2. When looking at the current EIA regulations (of 2010, as amended), and comparing them to the previous regulations, have there been improvements or setbacks in the EIA process? Please describe.

There has been significant deterioration of the legislative framework. The simplicity of the ECA regulations has been lost and the legal framework has been unnecessarily complicated. The inclusion of thresholds and the delisting of activities has gone counter to the best principles of impact assessment that uses a sifting mechanism to distinguish between those impacts that are significant and those that are not. It must be borne in mind that "small" applications can often have a greater impact than "larger" applications particularly if undertaken in a sensitive environment.

No rational or scientific basis underpins the established thresholds or the delisting of activities.

The inclusion of geographic areas, while a novel approach, is unworkable within the South African context where most people are ignorant of the environmental legislation and do not have access to GIS and spatial mapping to determine if their activities require authorisation. It places enormous burden on the Competent Authority to answer queries on listed activities. Similarly the ability to undertake compliance monitoring and enforcement on unlawful activities is made significantly harder.

The inclusion of EMF's however is a step in the right direction towards one of

strategic planning rather than reactive impact assessment.

3.If you had the ability to effect change in South African EIA legislation, what would changes would you effect and why?

The legislation needs to be made simpler to apply, interpret and implement. Greater use of Norms and Standards or "General Authorisations" should be applied for classes of applications. A screening process should be introduced, which sifts applications based on their impacts, rather than an arbitrary theshold.

More flexibility and adaptability needs to be included to best use the principles of impact assessment rather than set standards regulations that apply in all circumstances.

Section C: Impact Significance in the SA context

1.During the assessment / review of impact significance for various activities, have you come across different methods used? Please provide a brief description of the methods used.

Most applications have used the standards Impact/Duration/Mitigation/Significance type tables

2.Are the methods used to assess impact significance mostly qualitative or quantitative in nature?

Mostly qualitatative

3.Is there a method that you find is preferred over most? If so, please describe.

I have found that standards Impact/Duration/Mitigation/Significance type tables are not very useful in establishing significance of impact as they tend to be bias towards the applicant. The best methods balance the views of the EAP with the outcomes of the public and authority consultation. The issues raised by I&AP's tend to give a better evaluation of significance, keeping in mind that significance of impact varies from the perspective of the affected party.

4.Are there any particular types of activities of which the impacts are often poorly / rigorously assessed?

It's not so much Activities but types of impacts:

Social impacts are often neglected or not adequately considered

5.From your experience, have there been cases where the CA required the re- / additional assessment of (the significance of) impacts? Please provide examples and reasons for the re-assessment.

This happens very frequently.

The reason for the re-assessment is that many EAP's do not adequately address the issues that have emerged out of the consultation process, but produce a standard report. The assessment process, is just that, a process. The details of the assessment or the types of "additional" assessments that are required can only be established after the public and authority consultation process.

Elements of the assessment process that are often not adequately considered are Alternatives and Need & Desirability.

6. Do you find that the method used in assessing impact significance affects the outcome of the environmental authorisation? (i.e. cases where there were deviations from the EIA findings in the final authorisation). Please provide examples and reasons for the deviation.

There are occasions where there is deviation from the EIA findings or EAP's view and that of the final decision of the Competent Authority.

Unfortunately the EIA system in SA is based on one where the developer pays an EAP to produce a report on their behalf. This lends an inherent bias in the process as EAP's are dependent on their clients for income. There are very few EAP's that present an unbiased view in their reports. It is the function of the Competent Authority to balance the views of all parties in the decision making process. This results in times where there is a difference in the decision from the views of the EAP.

7. What do you feel are the most important shortcomings / strengths of impact significance assessment overall?

Many of these are discussed above

8. How does the assessment of impact significance in practice differ from in theory?

The concern that I have is that the impact assessment significance determination is too theoretical and not practical enough

9.How do you see the way forward for impact significance assessment in EIA in SA?

There needs to be greater flexibility in process to allow alternative approaches depending on type and nature of activity

Section D: EIA effectiveness overall

1. As a specialist in the field of EIA, what does EIA in practice mean to you?

EIA plays an important role, however should not be seen as the only tool to achieve sustainable development. Other IEM Tools can play important roles in this regard.

2.What do you consider should be the overall purposeof EIA in South Africa today?

EIA is a tools to consider the impacts of an activity on the environment, before undertaking the activity. Its primary aim is to identify mitigation measures to avoid, reduce or minimise environmental impacts.

3.To what extent can an EAP / assessing officer truly understand and connect with the full range of impacts assessed in an EIA?

EIA is a predictive tool of the potential impacts. It is not possible to understand all elements of the environment or scale and nature of impacts. Decisions are based on available knowledge and experience.

4.Do you think that the EIA system in South Africa is effective in ensuring the protection of the environment?

It forms part of a suite of tools that aim to protect the environment. The application of EIA and other tools is however not universally or equitably applied in SA, which undermines its effectiveness.

1. To what extent would you consider the EIA system in South Africa as being effective overall? (very / moderately / slightly / not at all). Please provide examples and / or reasons.

Moderately (SA has moved progressively in environmental management since 1997)

THANK YOU

STAKEHOLDER QUESTIONARE

(The information collected from this questionnaire will be used solely for the purpose of completing my MSc-CW Environmental Sciences Degree at the University of KwaZulu-Natal)

Name:	Competent Authority 2
Company:	
Designation:	Control Environmental Officer – Grade B (Deputy Director)
Contact Details:	
Date:	24 July 2014

I WISH THAT ALL ABOVE INFORMATION REMAIN ANONYMOUS.

Dear Sir / Madam

Thank you for taking your time to assist with the completion of this questionnaire. The purpose of this questionnaire is to assist me (Ms Manogrie Chetty – UKZN Student Number 202513349) with obtaining information to be used towards the completion of my MSc-CW Environmental Science Degree. All information obtained from your organisation will be used for the sole purpose of research and may be included or referred to as part of my thesis, the contents of which will be the property of the UKZN. Should you wish to remain anonymous kindly indicate so in the consent form and your name and contact details will not be included into any thesis documentation.

Your assistance is greatly appreciated.

Kind Regards

Ms Manogrie Chetty

Section A: Background information

1. Category of stakeholder and work experience: government (national, provincial or local) / academic / private sector / NGO / other (specify)

Government (National and Provincial)

2. Level of education: Degree / Honours / Masters / PhD; and academic background and training: natural sciences / social sciences / law

Degree Bachelor of Social Science (majoring in Geography and Environmental Management)

3. Field of expertise: strategic environmental management / environmental assessment / compliance monitoring / environmental law / other (specify)

Environmental Assessment

4. Your role or function in the organisation that you represent: Environmental Assessment Practitioner (EAP) / Competent Authority (CA) / Commenting Authority / Applicant / other (please specify if applicable)

Competent Authority

5. Time in practice: 1 year / 1-5 years / 5-10 years / more than ten years

5-10 years

Section B: EIA Legislation & Guidelines in South Africa (SA)

1. What guidelines do you refer to when undertaking / reviewing the EIA process in South Africa?

DEA Companion Guideline

DEA Guideline series 1-13 for the EIA Regulations 2006

DEA Public Participation Guideline

Any other guidelines applicable to the scope and nature of the application.

2. When looking at the current EIA regulations (of 2010, as amended), and comparing them to the previous regulations, have there been improvements or setbacks in the EIA process? Please describe.

In some instances there have been improvements, and in some setbacks. There has been a great deal more effort placed in describing/ unpacking the processes especially where there have been grey-areas in terms of interpretation. The bold step has been fine-tuning/ lining thrresholds to ensure that what is requiring assessment is what is captured in the EIA thresholds. Further also prescribing mandatory timelines for the CA to meet and not timelines for the CA to strive to meet. The introduction of Listed activities that apply to certain geographical areas (Listing Notice 3) was also a revelation. The only challenge in some instances was that all areas became geographical area, thus most areas were again un-anticipatedly caught. The change from landowner consent to landowner notification and the reasons for the change was logical. What was not anticipated was the fact that as much as some may notify landowners it becomes a legal challenge in our decision when we authorise someone who does not have legal rights to occupy or own the land cannot undertake the necessary authorised activities.

3. If you had the ability to effect change in South African EIA legislation, what would changes would you effect and why?

The most critical change I would currently consider is the gap in the decision-making. Currently the Competent Authority drafts the legal tool which provides details of the decision, the Environmental Authorisation decision. This must be a legal document therefore we draft it with conditions that are legal and enforceable (ie using words like must and avoiding ambiguous open ended wording). The other hand the EMPr which is drafted by consultants still uses words like it is recommended that, or adviseable that,… which are open ended and not really enforceable as these are words of encouragement rather than enforcement. Thus the change I would enforce being training EAPs to draft EMPr's that are legally enforceable. The second change which is critical would be to introduce a legal requirement for municipalities to consider all existing environmental tools within their SDFs and IDPs and be required to provide proof of how these were considered/ included where appropriate.

Section C: Impact Significance in the SA context

1. During the assessment / review of impact significance for various activities, have you come across different methods used? Please provide a brief description of the methods used.

In the current review process the evaluation of significance ratings of impacts is a challenge as there is no benchmark with which to start your rating. The methods used vary greatly between EAPs including the ratings; again no benchmark exists with which you can verify aside from using your educational background, experience and logic. If you do any investigations you will find that no EIA course/ training pays attention to the aspect of significance rating and how to rate or evaluate this. Most focus on the legal requirements and how to meet these requirements, or how to verify and assess whether this legal requirement has been met and what legislation should guide you in your thought process.

2. Are the methods used to assess impact significance mostly qualitative or quantitative in nature?

In the current review process the evaluation of significance ratings of impacts is a challenge as there is no benchmark with which to start your rating. The methods used vary greatly between EAPs including the ratings; again no benchmark exists with which you can verify aside from using your educational background, experience and logic. If you do any investigations you will find that no EIA course/ training pays attention to the aspect of significance rating and how to rate or evaluate this. Most focus on the legal requirements

and how to meet these requirements, or how to verify and assess whether this legal requirement has been met and what legislation should guide you in your thought process.

3. Is there a method that you find is preferred over most? If so, please describe.

In the current review process the evaluation of significance ratings of impacts is a challenge as there is no benchmark with which to start your rating. The methods used vary greatly between EAPs including the ratings; again no benchmark exists with which you can verify aside from using your educational background, experience and logic. If you do any investigations you will find that no EIA course/ training pays attention to the aspect of significance rating and how to rate or evaluate this. Most focus on the legal requirements and how to meet these requirements, or how to verify and assess whether this legal requirement has been met and what legislation should guide you in your thought process.

4. Are there any particular types of activities of which the impacts are often poorly / rigorously assessed?

The poor or rigorous review is often not linked to the type of application but rather to the experience and expertise (and at times professionalism) of the EAP in understanding that type of application/ project. The quality of work for the same or similar application types differs between different EAPs.

5. From your experience, have there been cases where the CA required the re- / additional assessment of (the significance of) impacts? Please provide examples and reasons for the re-assessment.

Yes, there have been cases where the significance ratings have not linked to the project description, there have been instances where the significance rating has been calculated without clear consideration of the duration of the impacts identified.

6. Do you find that the method used in assessing impact significance affects the outcome of the environmental authorisation? (i.e. cases where there were deviations from the EIA findings in the final authorisation). Please provide examples and reasons for the deviation.

The method plays a role in the outcome but it must be remembered that the competent authority does consider the outcomes of the significance rating but also considers a number of other factors before making a decision, most of these are not measureable through the significance rating such as (need and desirability, NEMA principles, sustainable development guidelines and Section 24(4) of NEMA).

7. What do you feel are the most important shortcomings / strengths of impact significance assessment overall?

There is no baseline or basic criteria considerations which would inform the bare minimum conditions under which you would begin to evaluate and decide the review of a significance rating as well as methodology.

8. How does the assessment of impact significance in practice differ from in theory?

In theory it makes or provides for a manner in which certain impacts can be quantified and rated. In practice it is limited by aspects which are not measurable or quantifiable. It presupposes that the rating with the reasons provided by the EAP for such is factual. It does not allow robust engagement (pro-actively) without causing delays in the EIA process.

9. How do you see the way forward for impact significance assessment in EIA in SA?

A guideline is essential that would consider the baseline of how to develop such a methodology and how to review and assess it. This guideline should also provide guidance on what constitutes the different rating scales including the broad groups for assessment (duration, frequency, level of impact etc). It should also provide guidance on how the Competent Authority would consider this information (assessment thought process/ what to consider in deciding significance impacts and ratings up until the point of a recommendation.

Section D: EIA effectiveness overall

1. As a specialist in the field of EIA, what does EIA in practice mean to you?

EIA is a tool which can be used effectively were it to be understood and its context applied (ie planning stage). It allows for a number of potential issues to be considered, investigated, assessed and reported on. Further it provides a platform for organisations and community members to voice their concerns and ensure their environmental rights are upheld. It currently unfortunately is not a process that one can categorize as an affordable process.

2. What do you consider should be the overall purpose of EIA in South Africa today?

EIA in south Africa should focus more on enabling a process whereby all south Africans can afford to undertake it should they require it. Perhaps we should consider funding of certain types of social projects ito doing the EIA work.

3. To what extent can an EAP / assessing officer truly understand and connect with the full range of impacts assessed in an EIA?

To the extent that they allow themselves to learn, understand and be able to implement and utilize all of the tools identified within section 24 of NEMA as Integrated Environmental Management tools.

4. Do you think that the EIA system in South Africa is effective in ensuring the protection of the environment?

I think the tools are there the challenge is in enforcement of those tools, capacity awareness and building confidence within our communities to take ownership of the environment and safeguarding it.

1. To what extent would you consider the EIA system in South Africa as being effective overall? (very / moderately / slightly / not at all). Please provide examples and / or reasons.

Moderately, it is the implementation of the tool that is a challenge not a tool itself. Bottomline is whether we consider tools being used on other countries in Africa or elsewhere all EIA type tools have their challenges as well as their benefits. It is up to us to develop what works for us but most critical is developing a process whereby we utilize these tools as efficiently as we think best. Because the tools are there and on paper they look good now we need to take these and adapt them to our

situation of being a third world country, needing development to unlock economic potential but having a suite of legislation that does not speak to each other, resulting in it being a financial nightmare to try and comply with all of them.

THANK YOU

Questionnaire on Methodologies Used for Determining Impact Significance and Implications for EIA Effectiveness in SA

STAKEHOLDER QUESTIONARE

(The information collected from this questionnaire will be used solely for the purpose of completing my MSc-CW Environmental Sciences Degree at the University of KwaZulu-Natal)

Name:	Competent Authority 3
Company:	
Designation:	Assistant Manager: EIA
Contact Details:	
Date:	24 July 2014

Dear Sir / Madam

Thank you for taking your time to assist with the completion of this questionnaire. The purpose of this questionnaire is to assist me (Ms Manogrie Chetty – UKZN Student Number 202513349) with obtaining information to be used towards the completion of my MSc-CW Environmental Science Degree. All information obtained from your organisation will be used for the sole purpose of research and may be included or referred to as part of my thesis, the contents of which will be the property of the UKZN. Should you wish to remain anonymous kindly indicate so in the consent form and your name and contact details will not be included into any thesis documentation.

Your assistance is greatly appreciated.

Kind Regards

Ms Manogrie Chetty

Section A: Background information

1. Category of stakeholder and work experience: government (national, provincial or local) / academic / private sector / NGO / other (specify)

Provincial

2. Level of education: Degree / Honours / Masters / PhD; and academic background and training: natural sciences / social sciences / law

MSc - Environmental Science

3. Field of expertise: strategic environmental management / environmental assessment / compliance monitoring / environmental law / other (specify)

Environmental assessment

4. Your role or function in the organisation that you represent: Environmental Assessment Practitioner (EAP) / Competent Authority (CA) / Commenting Authority / Applicant / other (please specify if applicable)

Competent Authority

5. Time in practice: 1 year / 1-5 years / 5-10 years / more than ten years

5 years

Section B: EIA Legislation & Guidelines in South Africa (SA)

1. What guidelines do you refer to when undertaking / reviewing the EIA process in South Africa?

NEMA Water Act The SA Constitution

2. When looking at the current EIA regulations (of 2010, as amended), and comparing them to the previous regulations, have there been improvements or setbacks in the EIA process? Please describe.

Both. The current regs sometime, are not favourable to the simple layman. Many have existing properties with watercourses within their property. Although no impact on the watercourse, they are bound by the regulations. On the other hand, there are stricter controls in terms of the conservation of natural resources.

3. If you had the ability to effect change in South African EIA legislation, what would changes would you effect and why?

To make EIA more accessible and available to the disadvantaged. They are unable to afford such assessments & therefore impact negatively on the current environmental.
Further, environmental education is minimal in such communities.

Section C: Impact Significance in the SA context

1. During the assessment / review of impact significance for various activities, have you come across different methods used? Please provide a brief description of the methods used.

Yes.
Many are rated as high, medium or low impact.
Probabilities are often used.
Rating index.

2. Are the methods used to assess impact significance mostly qualitative or quantitative in nature?

In many instances, both are used.

3. Is there a method that you find is preferred over most? If so, please describe.

No.
Each method adopted is significant to that particular proposal.

4. Are there any particular types of activities of which the impacts are often poorly / rigorously assessed?

Just one case that I have dealt with.
The assessment of an impact where the natural area to be affected could not be avoided. The EAP did not explore offsets or the use of a conservation management plan.

5. From your experience, have there been cases where the CA required the re- / additional assessment of (the significance of) impacts? Please provide examples and reasons for the re-assessment.

Yes.
A wetland assessment needed to be re-conducted as the municipality did not agree with the methodology adopted by the specialist. The specialist did argue the stance taken. However, a new method was suggested & a new assessment undertaken.

6. Do you find that the method used in assessing impact significance affects the outcome of the environmental authorisation? (i.e. cases where there were deviations from the EIA findings in the final authorisation). Please provide examples and reasons for the deviation.

In most instances, both aspects need to be explored in order to make an informed decision.

7. What do you feel are the most important shortcomings / strengths of impact significance assessment overall?

Shortcomings - timeframes to complete report. Some specialist need to be conducted seasonally which results in "rushed" reports being produced.
Strengths - active involvement of stakeholders.

8. How does the assessment of impact significance in practice differ from in theory?

Not much of a difference.
If it is proposed, then it should be adopted.

9. How do you see the way forward for impact significance assessment in EIA in SA?

I do feel that we are moving in the right direction, although slowly as compared to internationally. As a developing country we are at an advantage, as the larger/first world countries can "afford to make the mistakes".
Our politicians need to be involved at a "grass-roots" level. This will enable product growth in our current systems.

Section D: EIA effectiveness overall

1. As a specialist in the field of EIA, what does EIA in practice mean to you?

Ensuring economic development in a sustainable manner.

2. What do you consider should be the overall purpose of EIA in South Africa today?

To achieve sustainable development in a manner that is not detrimental to the environment, economy, or livelihoods of our people.

3. To what extent can an EAP / assessing officer truly understand and connect with the full range of impacts assessed in an EIA?

By on-going training in the field, more practical experiences, sound legislation.

4. Do you think that the EIA system in South Africa is effective in ensuring the protection of the environment?

Yes, but there is much more room for improvement.

1. To what extent would you consider the EIA system in South Africa as being effective overall? (very / moderately / slightly / not at all). Please provide examples and / or reasons.

Moderately.
We are getting there. We do need to adopt more common international standards on certain issues. Government invests a lot in the education of the country, the current climate change should be a reality to further enforce environmental education.

THANK YOU

UNIVERSITY OF KWAZULU-NATAL

Questionnaire on Methodologies Used for Determining Impact Significance and Implications for EIA Effectiveness in SA

(The information collected from this questionnaire will be used solely for the purpose of completing my MSc-CW Environmental Sciences Degree at the University of KwaZulu-Natal)

Name:	EAP 1
Company:	
Designation:	EAP
Contact Details:	
Date:	12 August 2014

Dear Sir / Madam

Thank you for taking your time to assist with the completion of this questionnaire. The purpose of this questionnaire is to assist me (Ms Manogrie Chetty – UKZN Student Number 202513349) with obtaining information to be used towards the compilation of the dissertation for an MSc-CW Environmental Science Degree. All information obtained from your organisation will be used for the sole purpose of research and may be included or referred to as part of my thesis, the contents of which will be the property of the UKZN. Should you wish to remain anonymous kindly indicate so in the table above and your name and contact details will not be included into any thesis documentation.

Your assistance is greatly appreciated.

Kind Regards

Ms Manogrie Chetty

Email: manogriec@gmail.com

Tel: 084 401 1512

Fax: 031 266 5287 / 086 560 8481

Section A: Background information

1. Category of stakeholder and work experience: government (national, provincial or local) / academic / private sector / NGO / other (specify)

Other - Parastatal Sector – Environmental Assessment Practitioner

2. Level of education: Degree / Honours / Masters / PhD; and academic background and training: natural sciences / social sciences / law

MSc Environmental Science

3. Field of expertise: strategic environmental management / environmental assessment / compliance monitoring / environmental law / other (specify)

Environmental Impact Assessments (EIA's), Water management, Compliance Monitoring and Auditing

4. Your role or function in the organisation that you represent: Environmental Assessment Practitioner (EAP) / Competent Authority (CA) / Commenting Authority / Applicant / other (please specify if applicable)

EAP

5. Time in practice: 1 year / 1-5 years / 5-10 years / more than ten years

3.5 years

Section B: EIA Legislation & Guidelines in South Africa (SA)

1. What guidelines do you refer to when undertaking / reviewing the EIA process in South Africa?

DEADP guidelines are the main source

2. When looking at the current EIA regulations (of 2010, as amended), and comparing them to the previous regulations, have there been improvements or setbacks in the EIA process? Please describe.

In the current regulations, there is definitely an improvement in terms of the comprehensive suite of activities and the way in which they are categorised. However, in terms of the public participation, the previous regulations specified that interested and affected parties located within a specified buffer be notified whereas the new regulations have removed the buffer and stated that the adjacent landowners be notified. In this regard it seems like the regulations took a step backward.

3. If you had the ability to effect change in South African EIA legislation, what would changes would you effect and why?

I would effect changes to the public participation process. If one compares the EIA regulations in South Africa to other African countries (i.e. Angola), you find that the public participation process here is exceptionally onerous. A simple process has become highly complex and convoluted. The process used in Angola is much more efficient and not as complex, but you reach the end goal of the public participation process. The number of engagements throughout the process is too many and when you look at the details, it is too long. Sometimes for a very simple project, the public participation process is more complex than the actual activity triggered.

Section C: Impact Significance in the SA context

1. During the assessment / review of impact significance for various activities, have you come across different methods used? Please provide a brief description of the methods used.

Yes

The first method that I have come across is a qualitative method where the EAP only looks at spatial extent, duration, probability etc. Statements are made regarding the significance, which is based primarily on their expertise. A scoring system is not often used in this method.

The other method that I have come across is a semi qualitative method which is based on the EAP's knowledge whereby statements are made with regards to the spatial extent, duration etc. In addition to this the EAP uses a scoring system. A score is assigned to each criteria, a matrix is used and a cumulative score is determined.

2. Are the methods used to assess impact significance mostly qualitative or quantitative in nature?

Qualitative

3. Is there a method that you find is preferred over most? If so, please describe.

The semi qualitative approach. This method uses expertise knowledge brought to the table as well as a scoring system which can be used for comparison purposes.

4. Are there any particular types of activities of which the impacts are often poorly / rigorously assessed?

No. The method I have used is fairly consistent irrespective of the type of activity.

5. From your experience, have there been cases where the CA required the re- / additional assessment of (the significance of) impacts? Please provide examples and reasons for the re-assessment.

No further requests were required.

6. Do you find that the method used in assessing impact significance affects the outcome of the environmental authorisation? (i.e. cases where there were deviations from the EIA findings in the final authorisation). Please provide examples and reasons for the deviation.

No deviations noted. Different methods may or may not affect the outcome of the EA. It depends on the way it is packaged. If you use a different method and you were to dismantle it and explain it properly, you would most likely reach the same outcome as any other method. It would affect it. If someone uses a poor method then this will definitely affect the ROD. If a poor method lacks proper description, one can't assign scores without the proper description.

7. What do you feel are the most important shortcomings / strengths of impact significance assessment overall?

Shortcomings - No specific guidelines that prescribe a method. The major shortcoming is the fact that there isn't a standardised method, however we don't want a tick box method. We are part of a research organisation, where we try and use a method that is different to what other consultants use. Some may see the fact that we don't have a prescribed method as a shortcoming and some may not. The major shortcoming is that there is no standardised method, the way that it is applied by the letter of the law is that decision makers have to apply sustainable thinking across the various methods used by EAP's. If I were the decision maker and I have to look at 5 different assessments used in one EIA / BA Report, it becomes difficult and that is the challenge.

Strengths –the fact that it looks at varying different criteria like spatial, intensity. These are tried and tested methods overseas and we have adopted a very similar approach to international methods used.

8. How does the assessment of impact significance in practice differ from in theory?

In theory, it's a tick box approach. In practise, it is time consuming and onerous. In theory, there are specified criteria to be assessed, when you practise it, there is conflict based on different opinions and it doesn't always work.

9. How do you see the way forward for impact significance assessment in EIA in SA?

A prescribed method would be preferable. However this may not always work. The EIA process is very reactive. For projects on a large scale such as the dug out port, Strategic Environmental Impact Assessments (SEA's) should have been done first big projects like the dug out port however this is not a legal requirement. SEA should be a legal requirement. There is also no certification required for the EAP's that undertake the EIA process. The CA should also put together a database where all projects that are undertaken throughout the

country, at provincial and national level where this information can be made available. Until these issues are dealt with, these issues are not going to go away.

Section D: EIA effectiveness overall

1. As a specialist in the field of EIA, what does EIA in practice mean to you?

EIA practise is a tick box approach and become an incredibly onerous approach and has lost its meaning, it is very reactive and we need to move away from this approach. A restructure in the Competent Authority is required, proper designation and description is required. Different tools are needed. The EIA is a legal document that has created employment and developers work around the EIA process, there doesn't seem to be a genuine concern, just a process to be done. Developers work around the regulations to get out of doing the EIA. Too many challenges.

2. What do you consider should be the overall purpose of EIA in South Africa today?

To get a permit to proceed with development, it should however be more than this.

3. To what extent can an EAP / assessing officer truly understand and connect with the full range of impacts assessed in an EIA?

Depends on the EAP's knowledge of the area, site visit, specialist input, experience of the EAP, various databases to do desktop assessments.

4. Do you think that the EIA system in South Africa is effective in ensuring the protection of the environment?

No

5. To what extent would you consider the EIA system in South Africa as being effective overall? (very / moderately / slightly / not at all). Please provide examples and / or reasons.

Moderately effective. It is just a prescribed blanket method for every development taking place which varies. It is a very generic approach. So it is effective in some cases and not in others.

THANK YOU

Questionnaire on Methodologies Used for Determining Impact Significance and Implications for EIA Effectiveness in SA

(The information collected from this questionnaire will be used solely for the purpose of completing my MSc-CW Environmental Sciences Degree at the University of KwaZulu-Natal)

Name:	EAP 2
Company:	
Designation:	Owner / Manager
Contact Details:	
Date:	08 August 2014

Dear Sir / Madam

Thank you for taking your time to assist with the completion of this questionnaire. The purpose of this questionnaire is to assist me (Ms Manogrie Chetty – UKZN Student Number 202513349) with obtaining information to be used towards the completion of my MSc-CW Environmental Science Degree. All information obtained from your organisation will be used for the sole purpose of research and may be included or referred to as part of my thesis, the contents of which will be the property of the UKZN. Should you wish to remain anonymous kindly indicate so in the consent form and your name and contact details will not be included into any thesis documentation.

Your assistance is greatly appreciated.

Kind Regards

Ms Manogrie Chetty

Section A: Background information

1. Category of stakeholder and work experience: government (national, provincial or local) / academic / private sector / NGO / other (specify)

Private Sector

2. Level of education: Degree / Honours / Masters / PhD; and academic background and training: natural sciences / social sciences / law

MSc Estuarine Fish Ecology (Natural Sciences)

3. Field of expertise: strategic environmental management / environmental assessment / compliance monitoring / environmental law / other (specify)

Environmental Impact Assessment (EIA), Compliance Monitoring, Mining Applications / Permits

4. Your role or function in the organisation that you represent: Environmental Assessment Practitioner (EAP) / Competent Authority (CA) / Commenting Authority / Applicant / other (please specify if applicable)

Environmental Assessment Practitioner (EAP)

5. Time in practice: 1 year / 1-5 years / 5-10 years / more than ten years

More than 10 years

Section B: EIA Legislation & Guidelines in South Africa (SA)

1. What guidelines do you refer to when undertaking / reviewing the EIA process in South Africa?

NEMA EIA Regulations (543, 544, 545, 546) and based on expertise and interaction with the competent authority.

2. When looking at the current EIA regulations (of 2010, as amended), and comparing them to the previous regulations, have there been improvements or setbacks in the EIA process? Please describe.

In some respects, the 2010 EIA regulations in comparison to the ECA and 2006 EIA regulations are considered to have improved. There were certain issues that were clarified with the 2010 regulations, with specific reference to watercourses and the thresholds that have been applied with the 2010 regulations. With the previous regulations, a stop sign within 32m of a watercourse triggered a basic assessment process, whereas with the 2010 regulations, the $50m^2$ size was applied and a small structure like a stop sign no longer triggered a basic assessment. These sorts of changes streamline the regulations. There is said to be further improvements that are anticipated with future amendments.

The addition of listing notice 3 (GNR 546) seems to have created more grief, it is important and we acknowledge the value of it, however in some respects it doesn't work. For example, the activity within GNR 546 that refers to the removal of 75% of indigenous vegetation and there seems to be difference in interpretation. There was a farmer who had grazing land which was used for the purpose of grazing for many years and was heavily invaded and were advised that in that instance the 75% would not apply because there was a conflict in the legislation in terms of the interpretation of natural and indigenous vegetation and so he was instructed to do an EIA. In other instances, in the Durban area if the site is completely invaded then the protected ecosystem can be deemed not to apply if agreed to by the competent authority. However most of KZN is covered with protected areas even developed urban sites. They have made it too broad, it needs to tie in more with the Mucina and Rutherford which is a useful guideline and scientifically based. There seems to be a difference in opinion regarding what is endangered, too many disparate elements that need to come together. It needs to be more streamlined and more structured.

3. If you had the ability to effect change in South African EIA legislation, what changes would you effect and why?

One of the things is the mining which is an issue and is now going to be addressed by the end of the year and DMR are going to take over the mining issues, so that is a move in the right direction, however having DMR as the deciding factor on environmental issues is of concern as there mandate is to mine and for them make the decision on mining and environmental is not the right decision, but bringing the two processes together is the right call.

If you look at the issue of independence and that the appointed specialist cannot be from the same company as the EAP. This doesn't make sense as the CA insists that the EPA be

independent, but by then telling the EAP that they can't then have a specialist on board, they are effectively saying that we are not independent. So they insist that the EAP must be independent, but they don't seem to believe that they are. At one point, they tried to apply this to the EAP and ECO and this was overturned, this query and the fact that it was raised, questions the independence of the EAP.

Section C: Impact Significance in the SA context

1. During the assessment / review of impact significance for various activities, have you come across different methods used? Please provide a brief description of the methods used.

There are few different methods that we have come across. Most of them centre on the same idea of locality, extent of impact, length of time etc. There seems to be a set pattern that they follow and then they rate the significance of the impacts thereafter. There is one that is available on the internet where one could spend the entire day filling out the tick boxes to get an answer and while these things have a place no matter how good it is they tend to be too restrictive. There needs to be enough room for an intelligent thinking person with experience to assess the impacts. One can fill out those tick boxes and may still not agree with the answer or significance rating provided. Often EAPs will slightly tweak the method slightly to get it to the significance that they think is more correct. This seems to be the flaw in those systems. It is impossible to assess significance only using these check boxes. These check boxes make it easy for the CA to assess the applications but you then eliminate a lot of the scientific review and experience and many other things if you turn it into a tick box process.

We use a primarily qualitative approach for the BAR's. For the mining permits, they want to see a quantitative approach. On the bigger projects there needs to be both qualitative and quantitative.

2. Are the methods used to assess impact significance mostly qualitative or quantitative in nature?

It depends on the nature and / type of the project. Can be quantitative / qualitative or both.

3. Is there a method that you find is preferred over most? If so, please describe.

We prefer to use the qualitative method. One can spend the entire day filling out the tick

boxes to get an answer and while these things have a place and no matter how good it is they tend to be too restrictive. There needs to be enough room for an intelligent thinking with experience to assess the impacts. One can fill out those tick boxes and may still not agree with the answer or significance rating provided. Often EAPs will slightly tweak the method slightly to get it to the significance that they think is more correct. This seems to be flaw in those systems. It is impossible to assess significance only using these check boxes. These check boxes make it easy for the CA to assess the applications but you then eliminate a lot of the scientific review and experience and many other things if you turn it into a tick box process.

4. Are there any particular types of activities of which the impacts are often poorly / rigorously assessed?

Sometimes there are certain projects where they do tend to become too focused, but this is generally due to lack of understanding. For example we do assessments for a lot of asphalt plants, when we initially started there was a lot of fear and concern around these projects where people thought of the old asphalt plants which emitted black smoke into the sky whereas now you have these really fancy plants with all the bells and whistles, that meet international standards. These projects were being over scrutinised, but this was because people weren't very familiar with these plants and now these projects go through much less scrutiny. When a project is new to the people, it undergoes a lot more scrutiny.

The EIA regulations seems to have spilt the projects into BA and Scoping and EIA's depending on the activity and potential impacts, but sometimes there are these projects which don't fit into the boxes. For example you might get a road, which for the most part is very easy/simple to assess where there are no major issues and then you might get another one which impacts on watercourses and graves etc. at this point it comes down to the individual EAP, everything has be equally assessed, while the legislation has said that it is a simple BA, much will be required to accurately assess the potential impacts of the proposed activity. This where the specialist input would be important. Alot of the process comes down to the individual, professional integrity and knowledge of the process.

5. From your experience, have there been cases where the CA required the re- / additional assessment of (the significance of) impacts? Please provide examples and reasons for the re-assessment.

None in the impacts issue. Additional specialist studies were requested or they wanted a plan or additional layout etc. The impacts relating to the aspect in question were discussed in the impact assessment section, however the commenting authority sometimes ask for

additional specialist input to back up what was stated. Usually the specialist is brought in then and generally agrees with what was already stated

6. Do you find that the method used in assessing impact significance affects the outcome of the environmental authorisation? (i.e. cases where there were deviations from the EIA findings in the final authorisation). Please provide examples and reasons for the deviation.

There are minor differences. Never been a direct conflict between the method that we use and the decision by the CA. The method that we use has always been successful.

7. What do you feel are the most important shortcomings / strengths of impact significance assessment overall?

It comes down to qualitative / quantitative difference. If you rely solely on the quantitative, you put things into boxes and this leaves out a lot of important information and nothing is ever black and white. Whereas qualitative method allows for the experience of the EAP to bring it in, and certainly adds value. However there are places where both are required due to the nature and complexity of the project. Come down to the individual EAP, where he / she has to be equipped with the right tools and where review is important.

8. How does the assessment of impact significance in practice differ from in theory?

The problem which any university professor will say is that we are predicting the impacts to the surrounding environment based on the EAP's experience and the site visit which was undertaken within a very short space time. Some assessments can only be done in the right season or over a certain time frame, otherwise how can we effectively predict what the impacts are. Unfortunately with the type of assessments and time available, one hopes that the system works and that there is enough information out there to use into these assessments and where this cannot be avoided then all the time required to determine the impacts must be sought by the EAP and the CA to be able to make an informed decision. Rely on the integrity and ethics of the EAP. Theoretically it works, but not practically, not enough time for long impact assessments.

9. How do you see the way forward for impact significance assessment in EIA in SA?

It is of concern that we are getting boxed in more and more, not just on the impacts

assessment, but on the whole process. The Department is trying to regulate this, but the more that they regulate and add more listing notices, we seem to lose something along the way and this is of concern. You become so used to the BAR template and most good consultants actually work around what they ask in those templates. These BAR templates arent very well put together and don't ask all the right questions. When they redo these templates then they should ask the consultants for input which would be invaluable to the process. It seems to be turning into a yes / no process.

The way forward would be to try and fix it, have discussions with the industry and workshop before that compile new templates.

Section D: EIA effectiveness overall

1. As a specialist in the field of EIA, what does EIA in practice mean to you?

As a consultant we are trying to walk the path of sustainable development, so as the EAP we are trying to promote development, while ensuring that it is environmentally sustainable. We also provide valuable input, so when a client comes and says that he want to a certain development, we as the EAP look at it critically and help the client to do so, but by also making the client aware of the potential impacts and providing sustainable alternatives, while minimising or preventing impacts.

2. What do you consider to be the overall purpose of EIA in South Africa today?

The purpose of it should be to ensure that the development does occur in a sustainable manner that protects our resources and the environment but doesn't prevent development. Development must meet NEMA principles. Development must occur in the right way and at the right time.

3. To what extent can an EAP / assessing officer truly understand and connect with the full range of impacts assessed in an EIA?

This depends on the experience of the EAP, this is where review and management of the projects are important to ensure that person undertaking the assessment understands the project and potential impacts. Must have more than one person review a report. At least two people must be involved and more opinions should be obtained where necessary. Specialist input is also very important. Team effort is very important.

4. Do you think that the EIA system in South Africa is effective in ensuring the protection of the environment?

It does work in certain instances because the perspective of the EAP and the developer is different. If the job is done properly then it does work, if one applies their mind to the assessment / project.

5. To what extent would you consider the EIA system in South Africa as being effective overall? (very / moderately / slightly / not at all). Please provide examples and / or reasons.

Moderately. There have been situations where is has worked and there are other situations where it hasn't. For example, one that has worked was for one where an assessment was done for a childrens centre in Sherwood and there were dwarf chameleons on that site, worked as a team with the specialist and the department and came up with a good solution which allowed the centre to be developed and allowed for protection of the chameleons, buffers were set up and it seems to have worked so far though time alone will tell in the long run. There are some instances where it hasn't worked but that is usually where th applicant doesn't adhere to the requirements of the authorisation and recommendations of the EAP.

THANK YOU

Questionnaire on Methodologies Used for Determining Impact Significance and Implications for EIA Effectiveness in SA

(The information collected from this questionnaire will be used solely for the purpose of completing my MSc-CW Environmental Sciences Degree at the University of KwaZulu-Natal)

Name:	EAP 3
Company:	
Designation:	Consultant
Contact Details:	
Date:	04/05/2014

Dear Sir / Madam

Thank you for taking your time to assist with the completion of this questionnaire. The purpose of this questionnaire is to assist me (Ms Manogrie Chetty – UKZN Student Number 202513349) with obtaining information to be used towards the completion of my MSc-CW Environmental Science Degree. All information obtained from your organisation will be used for the sole purpose of research and may be included or referred to as part of my thesis, the contents of which will be the property of the UKZN. Should you wish to remain anonymous kindly indicate so in the consent form and your name and contact details will not be included into any thesis documentation.

Your assistance is greatly appreciated.

Kind Regards

Ms Manogrie Chetty

Section A: Background information

1. Category of stakeholder and work experience: government (national, provincial or local) / academic / private sector / NGO / other (specify)

Private: Lectured at UKZN for 1 year and have been consulting for 3 years

2. Level of education: Degree / Honours / Masters / PhD; and academic background and training: natural sciences / social sciences / law

MSc (*cum laude*): Environmental Science. BSc (Hons) Environmental Management and Geography BSc Environmental Management and Geography

3. Field of expertise: strategic environmental management / environmental assessment / compliance monitoring / environmental law / other (specify)

Expertise range through all of the options specified as I work on many different projects. Masters research was in Estuarine Geomorphology.

4. Your role or function in the organisation that you represent: Environmental Assessment Practitioner (EAP) / Competent Authority (CA) / Commenting Authority / Applicant / other (please specify if applicable)

Environmental Assessment Practitioner (EAP)

5. Time in practice: 1 year / 1-5 years / 5-10 years / more than ten years

1-5 years

Section B: EIA Legislation & Guidelines in South Africa (SA)

1. What guidelines do you refer to when undertaking / reviewing the EIA process in South Africa?

NEMA IFC World Bank standards National Waste, water, and air legislation, ISO… etc.

2. When looking at the current EIA regulations (of 2010, as amended), and comparing them to the previous regulations, have there been improvements or setbacks in the EIA process? Please describe.

Changes have been relatively benign. Typically work as usual for an EAP although changes to Waste Act appear to streamline the process (i.e. categorisation and terminology seems more straight forward).

3. If you had the ability to effect change in South African EIA legislation, what would changes would you effect and why?

I would legislate that all environmental (i,e. baseline) findings for all national projects are placed into a GIS database (potentially linked to Google earth) for public reference. This mitigates duplication between EAPs of different organisations and allows the public to pro-actively know/ value environmental indicators that proposed projects could affect. It would also substantially reduce costs if it EAPs could use it instead of commissioning specialist studies each time.

The database would need a dedicated department to manage it and ensure quality control. It could also be used to benchmark new studies and indicate gaps in current understanding; stimulating relevant research. Costs may initially be steep but would be marginal in the long run.

Section C: Impact Significance in the SA context

1. During the assessment / review of impact significance for various activities, have you come across different methods used? Please provide a brief description of the methods used.

Methods are typically standard (i.e. same as Vopak Fuel 3 BA methodology).

2. Are the methods used to assess impact significance mostly qualitative or quantitative in nature?

Where legislation provides standards and guidelines; methods are typically quantitative (i.e. result vs requirement). A qualitative assessment is then employed if there is an offset or perceived benefit to another assessed factor that mitigates the original impact.

Qualitative methods are typically used for anthropocentric impacts where legislation does not specify a numeric standard. These methods include interviews and public meetings where the views of I&APs are assessed in conjunction with the perceptions of relevant authorities.

3. Is there a method that you find is preferred over most? If so, please describe.

Methods most effective are those involving authorities and I&APs. Any method is essentially a scoping mechanism until these stakeholders have been included. In other words, their perception is key to determining the significance of an impact, even if legislation permits the impact.

4. Are there any particular types of activities of which the impacts are often poorly / rigorously assessed?

Economic impacts are often poorly assessed as a lump sum figure is often thrown about without an actual detailed investigation by a trained economist. The situation is exacerbated through the assessment of these impacts by sociologists that essentially reinforce the findings of other specialists (e.g. ecologists etc) without critically evaluating the findings.

5. From your experience, have there been cases where the CA required the re- / additional assessment of (the significance of) impacts? Please provide examples and reasons for the re-assessment.

No. Discrepancies have to date been discussed openly in meetings with relevant authorities/ specialists, and resolved.

6. Do you find that the method used in assessing impact significance affects the outcome of the environmental authorisation? (i.e. cases where there were deviations from the EIA findings in the final authorisation). Please provide examples and reasons for the deviation.

No. Methods are typically generic and Authorities will for the most part follow the recommendations of the EAP and specialists (e.g. ecologist). Methods are typically only challenged in a public forum to delay a project if it perceived (typically emotively) to marginalise minorities.

7. What do you feel are the most important shortcomings / strengths of impact significance assessment overall?

Shortcoming:

'Significance' is often determined subjectively without comparison to a baseline derived from other similar projects (or circumstances). Such impacts are only further investigated if the public or authority deems them noteworthy (NGOs are typically best suited for this 'review' but they are often under resourced). EAPs are usually under resourced themselves (if specialist assessments are poor) and may not sufficiently interrogate the assessments.

Strengths

Assessment of impact significance, by virtue of being partially subjective, can be adapted and retrofitted to identify salient flaws in project design and specialist studies. It can also be used to incorporate dynamic and contemporary best practices, if appropriate.

For example, a good EAP will review 'significant' findings and use their experience to discern gaps in specialist assessments.

Conclusion

In summary, the methodologies used today (qualitative and quantitative) are subjective and are only as good as the professional using them.

8. How does the assessment of impact significance in practice differ from in theory?

Politics and emotive histories have the potential to blur the science behind impact significance.

9. How do you see the way forward for impact significance assessment in EIA in SA?

A centralised and impartially managed database of impact significance needs to be referenced in project discussions/ conclusions, in a similar way to academic journal papers.

For instance, a low significance needs to be validated against a relevant example from another published authorisation involving the same/ similar impact. If the authorised project had a 'high' significance, the EAP needs to motivate why their project is 'low'. Too often the decision on significance is isolated from similar peer reviewed (i.e. authorised) work.

Section D: EIA effectiveness overall

1. As a specialist in the field of EIA, what does EIA in practice mean to you?

EIA is a tool to identify impacts, mitigate negative- and improve positive- impacts. Often project will be sanctioned despite findings (if there is no obvious reason to halt the development), however it is the primary responsibility of the EIA to highlight all impacts and provide management procedures to ensure the project does the most good with the least harm (i.e. stimulate sustainability).

2. What do you consider should be the overall purpose of EIA in South Africa today?

As stated above, EIA is a tool to facilitate development to be sustainable. Its primary role is to create awareness about impacts and provide a means of improving (increasing) and mitigating (decreasing) positive and negative impacts respectively.

3. To what extent can an EAP / assessing officer truly understand and connect with the full range of impacts assessed in an EIA?

The potential is there for EAPs to fully connect with the full range of impacts assessed in an EIA. In fact, the EAP is the only person in a position to do this. In practice however, EAPs are typically not sufficiently experienced and too constrained by timelines to fully understand/ engage in the full

scope of impact assessment.

4. Do you think that the EIA system in South Africa is effective in ensuring the protection of the environment?

Yes, but could be improved as discussed above.

1. To what extent would you consider the EIA system in South Africa as being effective overall? (very / moderately / slightly / not at all). Please provide examples and / or reasons.

Moderately (see above).

THANK YOU

Questionnaire on Methodologies Used for Determining Impact Significance and Implications for EIA Effectiveness in SA

UNIVERSITY OF KWAZULU-NATAL

STAKEHOLDER QUESTIONARE

(The information collected from this questionnaire will be used solely for the purpose of completing my MSc-CW Environmental Sciences Degree at the University of KwaZulu-Natal)

Name:	EAP 4
Company:	
Designation:	MD
Contact Details:	
Date:	29 April 2014

Dear Sir / Madam

Thank you for taking your time to assist with the completion of this questionnaire. The purpose of this questionnaire is to assist me (Ms Manogrie Chetty – UKZN Student Number 202513349) with obtaining information to be used towards the compilation of the dissertation for an MSc-CW Environmental Science Degree. All information obtained from your organisation will be used for the sole purpose of research and may be included or referred to as part of my thesis, the contents of which will be the property of the UKZN. Should you wish to remain anonymous kindly indicate so in the table above and your name and contact details will not be included into any thesis documentation.

Your assistance is greatly appreciated.

Kind Regards

Ms Manogrie Chetty

Email: manogriec@gmail.com

Tel: 084 401 1512

Fax: 031 266 5287 / 086 560 8481

UNIVERSITY OF KWAZULU-NATAL

Section A: Background information

1. Category of stakeholder and work experience: government (national, provincial or local) / academic / private sector / NGO / other (specify)

Private Sector
20 years experience

2. Level of education: Degree / Honours / Masters / PhD; and academic background and training: natural sciences / social sciences / law

MSc (cum laude)

3. Field of expertise: strategic environmental management / environmental assessment / compliance monitoring / environmental law / other (specify)

Environmental Assessment
Ecologist

4. Your role or function in the organisation that you represent: Environmental Assessment Practitioner (EAP) / Competent Authority (CA) / Commenting Authority / Applicant / other (please specify if applicable)

MD
EAP

5. Time in practice: 1 year / 1-5 years / 5-10 years / more than ten years

More than 10 years

Section B: EIA Legislation & Guidelines in South Africa (SA)

1. What guidelines do you refer to when undertaking / reviewing the EIA process in South Africa?

NEMA regulations
All guidelines issued by National DEA
+ also use Western Cape Guidelines

2. When looking at the current EIA regulations (of 2010, as amended), and comparing them to the previous regulations, have there been improvements or setbacks in the EIA process? Please describe.

It is difficult to say either way
Biggest improvements would be timeline
for authority response - providing
authorities stick to these

3. If you had the ability to effect change in South African EIA legislation, what would changes would you effect and why?

- more regimented timelines to facillitate sustainable development.
- All government depts must be made to comply with timelines or loose their right to provide comment

Section C: Impact Significance in the SA context

1. During the assessment / review of impact significance for various activities, have you come across different methods used? Please provide a brief description of the methods used.

Yes there are a variety of methods and I believe that the assessment of significant impacts will probably follow the new SANBI regulations for impacts on wetlands + offsets.
This is a better approach and it is ~~tangible~~ more quantitative

2. Are the methods used to assess impact significance mostly qualitative or quantitative in nature?

Currently qualitative → moving towards quantitative

3. Is there a method that you find is preferred over most? If so, please describe.

4. Are there any particular types of activities of which the impacts are often poorly / rigorously assessed?

Impacts poorly assessed: Social, economic, visual

Rigorously: vegetation
wetland
heritage

5. From your experience, have there been cases where the CA required the re- / additional assessment of (the significance of) impacts? Please provide examples and reasons for the re-assessment.

Yes - discrepancies between parties ie EAP and authority

6. Do you find that the method used in assessing impact significance affects the outcome of the environmental authorisation? (i.e. cases where there were deviations from the EIA findings in the final authorisation). Please provide examples and reasons for the deviation.

NO

7. What do you feel are the most important shortcomings / strengths of impact significance assessment overall?

Lack quantitative response. Difficult to compare impacts of different aspects.

8. How does the assessment of impact significance in practice differ from in theory?

NA

9. How do you see the way forward for impact significance assessment in EIA in SA?

- Need EAPs to break down impacts more
- Need quantative method for assessing impacts

UNIVERSITY OF KWAZULU-NATAL

Section D: EIA effectiveness overall

1. As a specialist in the field of EIA, what does EIA in practice mean to you?

- Professionally promoting sustainable development and protecting natural resources.

2. What do you consider should be the overall purpose of EIA in South Africa today?

As above.

3. To what extent can an EAP / assessing officer truly understand and connect with the full range of impacts assessed in an EIA?

Well, if have cared experience and knowledge.

4. Do you think that the EIA system in South Africa is effective in ensuring the protection of the environment?

Yes

5. To what extent would you consider the EIA system in South Africa as being effective overall? (very / moderately / slightly / not at all). Please provide examples and / or reasons.

moderately -
Does not facillitate sustainable development effectively and discourages investment.

THANK YOU

Questionnaire on Methodologies Used for Determining Impact Significance and Implications for EIA Effectiveness in SA

STAKEHOLDER QUESTIONARE

(The information collected from this questionnaire will be used solely for the purpose of completing my MSc-CW Environmental Sciences Degree at the University of KwaZulu-Natal)

Name:	**EAP 5**
Company:	
Designation:	**Senior Environmentalist**
Contact Details:	
Date:	**11 September 2014**

Dear Sir / Madam

Thank you for taking your time to assist with the completion of this questionnaire. The purpose of this questionnaire is to assist me (Ms Manogrie Chetty – UKZN Student Number 202513349) with obtaining information to be used towards the completion of my MSc-CW Environmental Science Degree. All information obtained from your organisation will be used for the sole purpose of research and may be included or referred to as part of my thesis, the contents of which will be the property of the UKZN. Should you wish to remain anonymous kindly indicate so in the consent form and your name and contact details will not be included into any thesis documentation.

Your assistance is greatly appreciated.

Kind Regards

Ms Manogrie Chetty

Section A: Background information

1. Category of stakeholder and work experience: government (national, provincial or local) / academic / private sector / NGO / other (specify)

Dudu Ngidi is MD and works at Ludloko Developments CC. She has 20 years experience in environmental impact assessment. She worked for Eskom as an environmental practitioner for 10 years. She then moved to work for Mondi Forest PLC as environmental manager for three years. She later joined Ludloko Developments as a senior environmentalist and has been working at the company for 7 years to date

2. Level of education: Degree / Honours / Masters / PhD; and academic background and training: natural sciences / social sciences / law

Dudu Ngidi has a Masters degree in environmental science (MSc) obtained from Aberdeen University Scotland, UK in 1994. She obtained an Honours degree (BSC Hons) from University of Natal (now (UKZN) in 1992. She graduated her BSc undergraduate at UNITRA (Walter Sisulu University). Dudu Ngidi has done a number of environmental courses: Environmental Soil Rehabilitation, Mine Water Quality (Potchestroom University); Environmental Management from UCT

3. Field of expertise: strategic environmental management / environmental assessment / compliance monitoring / environmental law / other (specify)

• Environmental Assessment; • Compliance monitoring; • EMS (ISO 14001); • Water Use Application

4. Your role or function in the organisation that you represent: Environmental Assessment Practitioner (EAP) / Competent Authority (CA) / Commenting Authority / Applicant / other (please specify if applicable)

EAP

5. Time in practice: 1 year / 1-5 years / 5-10 years / more than ten years

20 years

Section B: EIA Legislation & Guidelines in South Africa (SA)

1. What guidelines do you refer to when undertaking / reviewing the EIA process in South Africa?

- Guideline for EIA Regulations: Government gazette 29 June 2010 No 33333
- KZN OU Environmental Management System Procedure In Accordance With SANS 14001:2005/ISO 14001:2004
- Eskom Herbicide Application Procedure
- Water Use Authorisation Application Process DWA 2007
- A practical field procedure for identification and delineation of wetlands and riparian areas. DWA
- Basic Guidelines for the Handling of EIAs and Licence Applications for Eskom Holdings Linear Infrastructure Affecting Natural Forests Protected Trees oe State Forests
- Notice 162 of 2010: Dept of Environmental Affairs & Tourism NEMA, 1998 – National Guidelines on EIA for facilities to be Included in the Electricity Response Plan

2. When looking at the current EIA regulations (of 2010, as amended), and comparing them to the previous regulations, have there been improvements or setbacks in the EIA process? Please describe.

- EIA 2010 Regulations streamlined EIA
- Improved on clarifying the EIA process
- Improved on Activity Listings, particularly activity thresholds
- Came up with more relevant activities and removed insignificant activities that increased amount of authorisation work and delayed projects and development
- More refining of activities is needed to remove insignificant activities
- Environmental Screening Guidelines need updating and be user friendly
- Training on completing Environmental Screening document template is necessary for due diligence
- Listing necessitated that other activities be done under BA process as opposed to the long and comprehensive EIA process
- A lot of project benefited from this streamlining as full EIA process can be costly and eliminated prospective developments
- Some critical activities were omitted in the EIA 2006 Regulations
- 2010 EIA Regulations provides timeframes for Government to respond

3. If you had the ability to effect change in South African EIA legislation, what would changes would you effect and why?

- Habitat destruction is changing the state of environment rapidly and is eliminating species dependant on these rapidly reducing environments. NEMBA needs to list Alien invasion listing better and streamline the activities to support scoping and biodiversity management
- Streamline Water Use Authorisation Application Process as well as Waste Licence Application Process. Make them project specific so as reduce costs

Section C: Impact Significance in the SA context

1. During the assessment / review of impact significance for various activities, have you come across different methods used? Please provide a brief description of the methods used.

1. Simple matrix table with activities against environmental significance parameters with weightings (1 – 5 05 L – M- H)

			ENVIRONMENTAL IMPACT		SIGNIFICANCE					BEFORE MITIGATION			MITIGATION
ACTIVITIES, PRODUCTS OR SERVICE	ASPECTS	IMPACTS	LIKELIHOOD	MAGNITUDE	REGULATORY SCRUTINY	DURATION & FREQUENCY	STAKEHOLDER INTEREST	REVERSIBILITY	BUSINESS RISK/BENEFIT	PREDICTION OF CONFIDENCE	SIGNIFICANCE RATING	CUMULATIVE IMPACTS	DESCRIBE FELLOW UP

2. Significance Rating Calculation
    a. Significant aspect score = (likelihood x magnitude) + regulatory scrutiny + stakeholder interest + business risk/benefit.
3. Cumulative rating = Prediction x Significance value
4. Questionnaire: Yes or No
5. Socio-economic assessment
6. Ecological impact assessment

2. Are the methods used to assess impact significance mostly qualitative or quantitative in nature?

- Quantitative in nature. Significance is given a value

3. Is there a method that you find is preferred over most? If so, please describe.

Significance quantitative rating is easier to work with
Activities are set against impacts

4. Are there any particular types of activities of which the impacts are often poorly / rigorously assessed?

1. Noise generated during construction
2. Disturbing scenery

5. From your experience, have there been cases where the CA required the re- / additional assessment of (the significance of) impacts? Please provide examples and reasons for the re-assessment.

None

6. Do you find that the method used in assessing impact significance affects the outcome of the environmental authorisation? (i.e. cases where there were deviations from the EIA findings in the final authorisation). Please provide examples and reasons for the deviation.

Deviation can be caused by late landowner change in preferred site, underlying rock material and thin topsoil layer which will not provide stability, high water table not evident during winter season, sudden flush of rare flora species that were not visible during winter season, late changes from municipality planning department

Method used in assessing impact significance does affect the outcome for EA. But the method used is part of the assessment process. The assessment process also considers effectiveness of mitigation measures in ability to reduce level of impacts.

7. What do you feel are the most important shortcomings / strengths of impact significance assessment overall?

Strengths:

- It gives value to the level of impacts
- Provides an indication of level of disturbance of each activity
- Indicates the ability of receiving environment to absorb impact
- Indicates the level of impact after mitigation

Shortcomings

- Subjective and based predictive approach
- Relies on professional knowledge and judgement
- Relies on quality of knowledge, which can have loop holes
- Cannot be tested at laboratory
- Uses old untested historic data
- Lack of baseline information and data (lack of SEA and EMF)

8. How does the assessment of impact significance in practice differ from in theory?

In theory assessment of impact significance are based on limited aspects while in practise the environment is dynamic. Effects of climate change are not included in the assessment. Future cumulative impacts are not known and their collective impact cannot be predicted yet

9. How do you see the way forward for impact significance assessment in EIA in SA?

- Improvements in use of GIS in impacts assessment
- New assessment tools such as resource economics assessment (environmental value)
- Post project impact assessment and monitoring
- Climate impact and assessment
- Valuation of ecosystems services
- Public health risk assessment
- Measuring quality of impact assessments
- Technical analysis
- Better ecological indicators and better knowledge on such indicators
- Better explanation of spatial dynamics

Section D: EIA effectiveness overall

1. As a specialist in the field of EIA, what does EIA in practice mean to you?

- EIA is a tool a means to an end
- As with all analytic tools there will be an element of risk
- Need for good scientific knowledge
- Use of EA to protect environment and to influence political will in reaching sustainable decisions
- Ability to make necessary project modification, an indication of understanding of EA by project designers and willingness to embrace it throughout the project

2. What do you consider should be the overall purpose of EIA in South Africa today?

- Streamlining and refining EIA assessment procedures, tools and analytic methods
- Integrating baseline tools such as SEA, EMF, bioregional plans and SDF with EIA using GIS tools to improve analysis
- Incorporate biodiversity assessment

3. To what extent can an EAP / assessing officer truly understand and connect with the full range of impacts assessed in an EIA?

- Better understanding of project activities and technical assessment of the project
- Historical information of similar projects
- Public review of EI documents
- Effective consultation of all relevant stakeholders
- Incorporation of specialist studies

4. Do you think that the EIA system in South Africa is effective in ensuring the protection of the environment?

The EIA process is legislated. There are liabilities with negligence and non-compliance. Without the legislation and regulations there will poor management and protection of environmental resources. This will have health implications. Loss of habitats and species

1. To what extent would you consider the EIA system in South Africa as being effective overall? (very / moderately / slightly / not at all). Please provide examples and / or reasons.

In SA the working of EA satisfactorily is evident in most projects however, effectiveness is a broad term for assessing performance
Project proponents and developers often use EA narrowly not fully integrated from project conceptualisation to decommissioning. The EA is actively implemented during construction and to a lesser degree on other project phases
Cumulative, health, safety factors are not adequately addressed
Poor monitoring and enforcement by CA
Variable impact predictions and suitability of mitigation measures influence EA effectiveness

THANK YOU

Questionnaire on Methodologies Used for Determining Impact Significance and Implications for EIA Effectiveness in SA

(The information collected from this questionnaire will be used solely for the purpose of completing my MSc-CW Environmental Sciences Degree at the University of KwaZulu-Natal)

Name:	EAP 6
Company:	
Designation:	Managing Director
Contact Details:	
Date:	11 September 2014

Dear Sir / Madam

Thank you for taking your time to assist with the completion of this questionnaire. The purpose of this questionnaire is to assist me (Ms Manogrie Chetty – UKZN Student Number 202513349) with obtaining information to be used towards the completion of my MSc-CW Environmental Science Degree. All information obtained from your organisation will be used for the sole purpose of research and may be included or referred to as part of my thesis, the contents of which will be the property of the UKZN. Should you wish to remain anonymous kindly indicate so in the consent form and your name and contact details will not be included into any thesis documentation.

Your assistance is greatly appreciated.

Kind Regards

Ms Manogrie Chetty

Section A: Background information

1. Category of stakeholder and work experience: government (national, provincial or local) / academic / private sector / NGO / other (specify)

Private

2. Level of education: Degree / Honours / Masters / PhD; and academic background and training: natural sciences / social sciences / law

Masters – MSc Environmental Science. Refer to CV for academic background and training.

3. Field of expertise: strategic environmental management / environmental assessment / compliance monitoring / environmental law / other (specify)

Environmental assessment and all aspects of environmental management. Compliance monitoring, licensing, etc.

4. Your role or function in the organisation that you represent: Environmental Assessment Practitioner (EAP) / Competent Authority (CA) / Commenting Authority / Applicant / other (please specify if applicable)

EAP

5. Time in practice: 1 year / 1-5 years / 5-10 years / more than ten years

5-10 years

Section B: EIA Legislation & Guidelines in South Africa (SA)

1. What guidelines do you refer to when undertaking / reviewing the EIA process in South Africa?

(a) National Environmental Management Act (104 of 1998)
(b) National Environmental Management Act, EIA Regulations (2010)
(c) DEAT (2006) Guideline 5: Assessment of Alternatives and Impacts in support of the Environmental Impact Assessment Regulations, 2006. Integrated Environmental Management Guideline Series, Department of Environmental Affairs and Tourism (DEAT), Pretoria.
(d) Australian Government Department of the Environment (2013). Matters of National Environmental Significance, Significant Impact Guidelines 1.1., Environment Protection and Biodiversity Conservation Act 1999. 39pp.
(e) Federal Environmental Assessment Review Office (1994). A reference guide for the Canadian Environmental Assessment Act, Determining Whether a Project is Likely to Cause Significant Adverse Environmental Effects.
(f) Specialist studies undertaken for the specific activity to be undertaken for the application
(g) The EAP's professional expertise and opinion.

2. When looking at the current EIA regulations (of 2010, as amended), and comparing them to the previous regulations, have there been improvements or setbacks in the EIA process? Please describe.

In some areas there have been improvements, for example in relaxing thresholds for road

construction activities,

3. If you had the ability to effect change in South African EIA legislation, what would changes would you effect and why?

I would certainly effect change in authorisation requirements for GAP housing developments. I think that the social importance and urgency of low cost housing outweighs the EIA process requirements. Perhaps a feasibility study and an authorisation letter from the CA be sufficient for the development to go ahead rather than a 6-18 month process that will unnecessarily delay the recipients from receiving houses.

Most importantly, the sister Acts under NEMA and their various requirements should 'talk' to each other. The separation of licensing from the EIA authorisation may ease administrative burden on the CA, but ultimately the various requirements from the sister Acts makes it an onerous process for developers to follow.

Section C: Impact Significance in the SA context

1. During the assessment / review of impact significance for various activities, have you come across different methods used? Please provide a brief description of the methods used.

It is very well know that the method of assessing the significance of impacts has not been very descriptive by the EIA regulations nor the CA. Neither has the definition of significance been very clear. It is up to the EAP to formulate the methodology that best suits the project in question.

For ECA Consulting, we have chosen to make the impact significance a quantitative effort so as to translate impacts into comparable measures of significance such as numbers that represent classes. In the formulation of our methodology, we have researched local and international best practices and note that impact assessment varies widely.

What must be noted is that as much we aim to make the impact assessment process a uniform methodology across projects, it will ultimately depend on the nature and scale of the project in question. Some EAPs can satisfy the impact assessment process and assessment of significance using a qualitative approach by unpacking the significance of an impact in a manner that has is based on the EAPs experience and discretion. In my opinion, this approach may not always be a very objective and clear approach.

Some EAPs chose to use a quantitative method that uses a series of variables with associated levels that have an equivalent score. The sum of the individual scores will determine the significance level. This approach can also be flawed, for example significance weightings are not including in some assessments. It must be noted that cognisance must be taken of the weightings of each environmental element. For example, the significance ratings must not purport that a low environmental significance is equivalent to a low social significance. Specifically, the significance of a loss of a wetland cannot be directly compared to generation of noise as these are separate elements and have their own significance in terms of magnitude, duration, extent and probability.

In my opinion, the significance of an environmental impact is difficult to accurately assess. The environment is a complex suite of elements that is continuously interacting with each other. When quantitatively assessing impact significance, a major flaw in some assessments is assuming that each element has an equal weighting. Even if stated that a loss of a drainage line is more significant than the dust pollution, by what factor would one impact be more significant than another. In such cases, the quantitative assessment cannot be used alone. Significance of an impact, then, ultimately depends on the EAPs experience and discretion.

2. Are the methods used to assess impact significance mostly qualitative or quantitative in nature?

As above.

3. Is there a method that you find is preferred over most? If so, please describe.

Yes, a combination of quantitative and qualitative. Against the various pieces of guidelines for the assessment of impact significance, the EAP has adopted the following measures to determine significance:

Significance = the extent of the impact in combination with the duration and magnitude of the impact in consideration of the probability of the impact occurring.

A scoring system will be applied and be used to compare alternatives. It must be noted that cognisance must be taken of the weightings of each environmental element. For example, the significance ratings must not purport that a low environmental significance is equivalent to a low social significance. Specifically, the significance of a loss of a wetland cannot be directly compared to generation of noise as these are separate elements and have their own significance in terms of magnitude, duration, extent and probability.

The scoring system will be used to compare impacts of alternatives for the same environmental element. For example, the area of wetland loss for alternative 1 will be compared with the area of wetland loss for alternative 2. It must also be noted that a comparative assessment will be done for only the main anticipated impacts that will distinguish between choosing the most feasible alternative.

The following scoring system will be used:

Criteria	Class	Score
Magnitude	**Low**	**1**
	Moderate	**2**
	Severe	**3**

Extent	**Site**	**1**
	Surrounding area within 2km from project area	**2**
	Local between 2km to 50km	**3**
	Regional between 50km to 200km	**4**
	Provincial – impact of provincial significance	**5**
Duration	**Very short term – during construction (0-1 yrs)**	**1**
	Short term (2-5 yrs)	**2**
	Medium term (5-15 yrs)	**3**
	Permanent	**4**
Probability after mitigation	**Low**	**1**
	Medium	**2**
	High	**3**
	Very high	**4**
Reversibility	**Can the impact be prevented?**	**1**
	Can the impact be reversed?	**2**
	Can the impact be managed?	**3**

It must be noted the described scoring system is not prescriptive and will ultimately be interpreted by the EAP in terms of the geographic context of the project and the predicted main anticipated impacts. As such, the Environmental Impact Statement provides a discussion of the scores and the relative implications for this. The Environmental Impact Statement must be considered as the conclusive statement of the environmental impact assessment phase taking into consideration the assessment of potential impacts and the impact on the environment after the management and mitigation of impacts have been taken into account.

4. Are there any particular types of activities of which the impacts are often poorly / rigorously assessed?

Construction activities need a more serious consideration especially in residential areas.

5. From your experience, have there been cases where the CA required the re- / additional assessment of (the significance of) impacts? Please provide examples and reasons for the re-assessment.

No.

6. Do you find that the method used in assessing impact significance affects the outcome of the environmental authorisation? (i.e. cases where there were deviations from the EIA findings in the final authorisation). Please provide examples and reasons for the deviation.

No

7. What do you feel are the most important shortcomings / strengths of impact significance assessment overall?

As per 1.

8. How does the assessment of impact significance in practice differ from in theory?

There is no theory. It is upto the EAP to make a final statement.

9. How do you see the way forward for impact significance assessment in EIA in SA?

Section D: EIA effectiveness overall

1. As a specialist in the field of EIA, what does EIA in practice mean to you?

2. What do you consider should be the overall purpose of EIA in South Africa today?

3. To what extent can an EAP / assessing officer truly understand and connect with the full range of impacts assessed in an EIA?

4. Do you think that the EIA system in South Africa is effective in ensuring the protection of the environment?

Maybe. At the moment it is the only control in place to protect environmental resources and promote sustainable development.

1. To what extent would you consider the EIA system in South Africa as being effective overall? (very / moderately / slightly / not at all). Please provide examples and / or reasons.

moderately

THANK YOU

UNIVERSITY OF KWAZULU-NATAL

Questionnaire on Methodologies Used for Determining Impact Significance and Implications for EIA Effectiveness in SA

(The information collected from this questionnaire will be used solely for the purpose of completing my MSc-CW Environmental Sciences Degree at the University of KwaZulu-Natal)

Name:	EAP 7
Company:	
Designation:	Managing Member
Contact Details:	
Date:	14.05.2014

Dear Sir / Madam

Thank you for taking your time to assist with the completion of this questionnaire. The purpose of this questionnaire is to assist me (Ms Manogrie Chetty – UKZN Student Number 202513349) with obtaining information to be used towards the compilation of the dissertation for an MSc-CW Environmental Science Degree. All information obtained from your organisation will be used for the sole purpose of research and may be included or referred to as part of my thesis, the contents of which will be the property of the UKZN. Should you wish to remain anonymous kindly indicate so in the table above and your name and contact details will not be included into any thesis documentation.

Your assistance is greatly appreciated.

Kind Regards

Ms Manogrie Chetty

Email: manogriec@gmail.com

Tel: 084 401 1512

Fax: 031 266 5287 / 086 560 8481

Section A: Background information

1.Category of stakeholder and work experience: government (national, provincial or local) / academic / private sector / NGO / other (specify)

Private EAP consultant – 17 years experience, worked all over South Africa and in Mozambique, Swaziland, Botswana, Malawi, Uganda and the Republic of Sao Tome and Principe.

2.Level of education:Degree / Honours / Masters / PhD; and academic background and training: natural sciences / social sciences / law

BSc (Agric)

3.Field of expertise:strategic environmental management / environmental assessment / compliance monitoring / environmental law / other (specify)

Very wide general expertise in EIAs, Social Surveys or impact assessments, agricultural food security work across the following sectors

- Water Resource Development.
- Agriculture and Irrigation Development.
- Household Food Security.
- Resettlement and Community Restoration.
- Mining, Industry and Transport.
- Power Transmission.
- Marine Infrastructure and Port Development.

4. Your role or function in the organisation that you represent: Environmental Assessment Practitioner (EAP) / Competent Authority (CA) / Commenting Authority / Applicant / other (please specify if applicable)

Only member and manager of E&D Consulting Services

5. Time in practice: 1 year / 1-5 years / 5-10 years / more than ten years

17 years

Section B: EIA Legislation & Guidelines in South Africa (SA)

1. What guidelines do you refer to when undertaking / reviewing the EIA process in South Africa?

Mainly EIA 2010 regulations, National Waste Act and listed activities

2. When looking at the current EIA regulations (of 2010, as amended), and comparing them to the previous regulations, have there been improvements or setbacks in the EIA process? Please describe.

Probably some improvements, hard to recall and remember and it also can depend a lot on the specific project context.

3.If you had the ability to effect change in South African EIA legislation, what would changes would you effect and why?

Have another process called something like ‘ Exemption and EMP’ – whereby certain projects which trigger activities can be assessed by an EAP and CA in a single site visit and a decision made on the spot if it can proceed to the construction phase as long as a standard Government issued EMP is complied with by the contractor, you could place an advert in the media stating this decision and requesting objections within a certain period. i.e. you could have generic EMPs which for roads, small construction developments etc. I had a 1.4 km road upgrade, of an existing dirt road with sugar cane fields on each side – it needed the whole BAR process. Another time I had a rural school upgrade/extension onto degraded unused land adjacent to the existing school – it also needed the whole BAR. Both of these projects had no real impact upon the environment, which was quite obvious from a single site visit and the EMPs were very generic. But each project like this all across the country requires an EAP, a whole BAR process, a new EMP etc. When they are all essentially quite similar.

Scrap the BAR template as it is far too prescriptive and just make a short 10-12 page report necessary. Its much easier to discuss issues in paragraphs then to try and tick all their boxes. Or at least let someone in the private sector proof read and improve it.

Make an internal EAP/Applicant appeal process whereby EAP’s or the Applicant can appeal an officials interpretation and get another officials or an ombudsman’s opinion, or appeal to have an ROD altered. Currently, if the DAEA official makes a typo or a stupid error in the ROD there is no way for the EAP or applicant to get it changed without appealing to the National Minister. i.e. the ROD for one project spanning hundreds of kilometres stated that ‘No indigenous vegetation was to be removed’ rather than ‘No protected indigenous vegetation was to be removed without a permit’. When DAFF refused to issue any protected tree permits because

of this DAEA condition, DAEA said I should have appealed the ROD when it was issued. I said it was ridiculous to waste the ministers time with this when I had actually applied to remove more than 5 ha of vegetation as one of the listed activities which was also in the ROD. So I just told DAEA to fix up their error which fortunately they did, but there is no 'official' process for them to do they by.

Another key issue is that the Environmental Authorisation should somehow cover the other required environmental permits. You can get Environmental Authorisation (EA) for a project, but then on some projects you still need to get a protected plant permit from EKZN Wildlife, a protected tree permit from DAFF, a borrow licence from DME, a water permit from DWA etc. even though all of these Departments were involved in the process and gave comments. This is highly inefficient and costs a lot of time and money and so the EA should cover them all if they were all considered in the EIA report.

Section C: Impact Significance in the SA context

1.During the assessment / review of impact significance for various activities, have you come across different methods used? Please provide a brief description of the methods used.

There are various methods – some use a number type ranking, I use various criteria 'frequency, duration, intensity, irreversibility etc.)

But all these methods are basically subjective perspectives that are easily manipulated to either be significant or not significant. I don't know of any truly scientific methods as impacts and their significance will depend on who is involved and their viewpoint. Also what is highly significant for one individual is insignificant in terms of the whole project – if a 500 km powerline really significantly affects one person who will loose his farm, is that significant enough to stop the project. For the individual it is, but for the region and country only having to buy out one person is a minor impact.

If a mine opens near a rural natural area, those opposing it will deem it to have a highly significant negative impact, whilst those unemployed in the local area will feel it could have a highly significant positive impact. It is difficult to get standard criteria that rank all of these sort of aspects objectively.

2.Are the methods used to assess impact significance mostly qualitative or quantitative in nature?

As above, some methods are qualitative, some quantitative, if I classify an impact on a scale of 1-5 or as small, medium, large, extensive etc. it does not really make a difference if I am just assessing the individual impacts.

But one way I have seen quantitative impact methods lend themselves to be used incorrectly is that they rate all the various impacts of different project alternatives on a score of say 1-5 and then add up the total scores at the end to see which comes alternative comes out as the preferred alternative.

The weakness of this approach is that it then places all the identified impacts on an equal footing or scoring platform. i.e. lets take three project impacts 'resettlement', 'loss of vegetation' and 'visual impacts' I reviewed an EIA in Uganda on a dam project which numerically ranked such impacts based on each ones significance for different alternatives and then added up the scores. But are the visual impacts of dams really of equal importance to resettlement issues or the loss of vegetation if it is valuable conservation area? Dam walls are usually not visible from anywhere but just below the dam wall, stakeholders seldom raise visual objections on dam projects, and the water can be a positive visual impact, but its the resettlement or loss of riverine vegetation which can be devastating. By using the same scale – one point on visual scale is equal to one point on resettlement scale and then by averaging the scores out the EAP allowed a 'non-issue' (visual impacts) to hide or minimise the true significance of a 'serious issue'

But on other projects such as powerlines, resettlement may be far less of an issue, but then visual impacts may be more significant, so then you would want alter the priority of the issues in the opposite direction, so you need to really prioritise the ranking of impacts before you just score them i.e. a score of 3 on this impact scale should be equal to a score of 1 on that that impact scale, because this impact is an issue whilst this one is not really an issue. etc.

Using the same number and average scoring approach for both projects would result in some of the significance being lost in the 'number averaging' although it sounds

and looks all scientific.

3.Is there a method that you find is preferred over most? If so, please describe.

I don't really think any rating method I have see is fool-proof and it always comes down to the 'gut-feel' perspective of the EAP who needs to try and balance the conflicting impacts as best as possible.

Such methods are also highly susceptible to bias i.e. if I have a significance rating method is it the method I use to identify and assess the significance of the impact or have I already decided upon the significance of the impact and now I use the method to justify my decision.

If you go down this path of social and evaluation bias it opens up another whole can of worms.

4.Are there any particular types of activities of which the impacts are often poorly / rigorously assessed?

Not sure of any off hand

5.From your experience, have there been cases where the CA required the re- / additional assessment of (the significance of) impacts? Please provide examples and reasons for the re-assessment.

No, never has a CA needed the significance reassessed, usually its something far more unimportant and process related – did not have an EIA number on the media

advert etc.

6. Do you find that the method used in assessing impact significance affects the outcome of the environmental authorisation? (i.e. cases where there were deviations from the EIA findings in the final authorisation). Please provide examples and reasons for the deviation.

Never found the method of assessing the impacts significance affects environmental authorisation on the whole, but have found that the significance rating given by specialists in specialist studies is often taken over and above that of the EAP in the EIR report. Had an Eskom transmission line project with 13 different specialist studies I had to integrate. Obviously not all 13 studies had the same significance for the same alternatives – social impacts were far lower where the vegetation/ecological impacts were higher etc. So after three years of assessment, different alternatives considered and public participation the CA after reading the report for a few weeks wanted to issue the ROD with a powerline route that did not go to the substation alternative, because she was just looking at individual specialist assessment tables in isolation and not the whole picture which the EAP has to. Also made the common mistake that the CA just assumes the 'specialist' has more knowledge or experience than the EAP but this is often not the case and many may be juniors who only consider their own narrow field, do a quick two month study, whilst the EAP sits with the project for longer (if a big EIA) and thinks much more about how to balance the impacts.

7. What do you feel are the most important shortcomings / strengths of impact significance assessment overall?

Sort of discussed above already, basically its all a subjective approach which in the end is based on experience.

Also in terms of the BAR, the BAR template does not require that the EAP assessment the impact of any issues according to an established format or approach. All it does is provide tables for discussion.

8. How does the assessment of impact significance in practice differ from in theory?

I think this is back to the bias question, which comes first the method to assess the significance, or the significance finding with the method to justify it.

9.How do you see the way forward for impact significance assessment in EIA in SA?

Not sure

Section D: EIA effectiveness overall

1. As a specialist in the field of EIA, what does EIA in practice mean to you?

Opportunity to influence and improve project design on some projects, an exercise in paperwork on other projects.

2.What do you consider should be the overall purpose of EIA in South Africa today?

To as is the intention, improve the consideration and protection of the environment in the project planning cycle and in project decision-making.

3.To what extent can an EAP / assessing officer truly understand and connect with the full range of impacts assessed in an EIA?

I think an EAP can understand and connect quite well with the range of issues, I think a lot of assessing officers often have no clue about the issues and just go through their checklist to tick off items. I have seen at times when the assessing officer has clearly not understood any of the key issues.

4.Do you think that the EIA system in South Africa is effective in ensuring the protection of the environment?

Partly in some respects and probably not in others, it depend on the project and context. But in general I would think it does improve the protection of the environment in comparison to not having it.

5. To what extent would you consider the EIA system in South Africa as being effective overall? (very / moderately / slightly / not at all). Please provide examples and / or reasons.

Moderately-very - i.e. I have had projects with little impacts, few alternatives in non-sensitive environments where the BAR was just a paper-work exercise that added little or no value. On other projects I have essentially redesigned the entire project and layout to minimise impacts. So in some cases you make a large difference, on others hardly any at all, apart from adding costs.

THANK YOU

Questionnaire on Methodologies Used for Determining Impact Significance and Implications for EIA Effectiveness in SA

(The information collected from this questionnaire will be used solely for the purpose of completing my MSc-CW Environmental Sciences Degree at the University of KwaZulu-Natal)

Name:	EAP 8
Company:	
Designation:	EAP, Owner
Contact Details:	
Date:	04 August 2014

Dear Sir / Madam

Thank you for taking your time to assist with the completion of this questionnaire. The purpose of this questionnaire is to assist me (Ms Manogrie Chetty – UKZN Student Number 202513349) with obtaining information to be used towards the completion of my MSc-CW Environmental Science Degree. All information obtained from your organisation will be used for the sole purpose of research and may be included or referred to as part of my thesis, the contents of which will be the property of the UKZN. Should you wish to remain anonymous kindly indicate so in the consent form and your name and contact details will not be included into any thesis documentation.

Your assistance is greatly appreciated.

Kind Regards

Ms Manogrie Chetty

Section A: Background information

1. Category of stakeholder and work experience: government (national, provincial or local) / academic / private sector / NGO / other (specify)

All of the above

2. Level of education: Degree / Honours / Masters / PhD; and academic background and training: natural sciences / social sciences / law

Masters on Environment and Development. Currently working towards my PhD.

3. Field of expertise: strategic environmental management / environmental assessment / compliance monitoring / environmental law / other (specify)

Environmental Assessment Compliance monitoring

4. Your role or function in the organisation that you represent: Environmental Assessment Practitioner (EAP) / Competent Authority (CA) / Commenting Authority / Applicant / other (please specify if applicable)

EAP

5. Time in practice: 1 year / 1-5 years / 5-10 years / more than ten years

10 years

Section B: EIA Legislation & Guidelines in South Africa (SA)

1. What guidelines do you refer to when undertaking / reviewing the EIA process in South Africa?

DEA (2010a), Companion to the EIA Regulations 2010, Integrated Environmental Management Guideline Series 5, Department of Environmental Affairs (DEA), Pretoria, South Africa. DEA (2010b), Environmental Management Frameworks in terms of the EMF Regulations of 2010, Integrated Environmental Management Guideline Series 6, Department of Environmental Affairs (DEA), Pretoria, South Africa. DEA (2010c), Public Participation 2010, Integrated Environmental Management Guideline Series 7, Department of Environmental Affairs (DEA), Pretoria, South Africa. DEA&DP (2010a) Guideline on Alternatives, EIA Guideline and Information Document Series. Western Cape Department of Environmental Affairs & Development Planning (DEA&DP). DEA&DP (2010b) Guideline on Public Participation, EIA Guideline and Information Document Series. Western Cape Department of Environmental Affairs & Development Planning (DEA&DP). DEA&DP (2010c) Guideline on Needs and Desirability, EIA Guideline and

Information Document Series. Western Cape Department of Environmental Affairs & Development Planning (DEA&DP).
I have also developed my own EIA review framework for proposed developments. See attached. This forms part of a journal article which is currently under review.

2. When looking at the current EIA regulations (of 2010, as amended), and comparing them to the previous regulations, have there been improvements or setbacks in the EIA process? Please describe.

No improvements. Obviously amendments have been made, however I do not find that they have helped.

3. If you had the ability to effect change in South African EIA legislation, what would changes would you effect and why?

Tighten up on definitions.

Section C: Impact Significance in the SA context

1. During the assessment / review of impact significance for various activities, have you come across different methods used? Please provide a brief description of the methods used.

As previously mentioned, I have developed my own.

2. Are the methods used to assess impact significance mostly qualitative or quantitative in nature?

Qualitative.

3. Is there a method that you find is preferred over most? If so, please describe.

I prefer using my framework as I believe it encompasses all facets of the environment.

4. Are there any particular types of activities of which the impacts are often poorly / rigorously assessed?

The more complicated the development, the greater the amount of information obtained from implementing the framework.

5. From your experience, have there been cases where the CA required the re- / additional assessment of (the significance of) impacts? Please provide examples and reasons for the re-assessment.

No.

6. Do you find that the method used in assessing impact significance affects the outcome of the environmental authorisation? (i.e. cases where there were deviations from the EIA findings in the final authorisation). Please provide examples and reasons for the deviation.

No.

7. What do you feel are the most important shortcomings / strengths of impact significance assessment overall?

EAP's not being proficient in all spheres of the environment (i.e. they may know their grasses, however they are not aware of social and economic environments), thus you have very 'one sided' assessments being conducted.

8. How does the assessment of impact significance in practice differ from in theory?

It is very important that all assessment is based on theory – hence my framework being based on SES's and Andries et al. 2004.

9. How do you see the way forward for impact significance assessment in EIA in SA?

A uniform framework should be adopted in order to ensure that all assessments comply with a certain level of investigation.

Section D: EIA effectiveness overall

1. As a specialist in the field of EIA, what does EIA in practice mean to you?

The equal assessment of all facets of the environment. The triple bottom line approach.

2. What do you consider should be the overall purpose of EIA in South Africa today?

Ensure poverty upliftment, but not at the expense of the ecological environment. Finding the 'perfect' compromise.

3. To what extent can an EAP / assessing officer truly understand and connect with the full range of impacts assessed in an EIA?

Provided all assessment is based on theory, I believe that all EAPs can have a good grasp of the full range of impacts associated with a development.

4. Do you think that the EIA system in South Africa is effective in ensuring the protection of the environment?

Generally, yes.

1. To what extent would you consider the EIA system in South Africa as being effective overall? (very / moderately / slightly / not at all). Please provide examples and / or reasons.

Very effective – compared to other countries. SA is unique – with have both first and third world environments. First work EIA assessment (e.g. UK and US), focuses on impacts associated with the ecological environment, as all the basic needs of the population are met, and the priority can be the ecological environment, without people going hungry. However, in SA there is a high level of poverty, thus EIA is required to take into consideration both socio and economic impacts, just as much as the ecological environment.

THANK YOU

Questionnaire on Methodologies Used for Determining Impact Significance and Implications for EIA Effectiveness in SA

(The information collected from this questionnaire will be used solely for the purpose of completing my MSc-CW Environmental Sciences Degree at the University of KwaZulu-Natal)

Name:	EAP 9
Company:	
Designation:	Project Manager
Contact Details:	
Date:	08 September 2014

Dear Sir / Madam

Thank you for taking your time to assist with the completion of this questionnaire. The purpose of this questionnaire is to assist me (Ms Manogrie Chetty – UKZN Student Number 202513349) with obtaining information to be used towards the completion of my MSc-CW Environmental Science Degree. All information obtained from your organisation will be used for the sole purpose of research and may be included or referred to as part of my thesis, the contents of which will be the property of the UKZN. Should you wish to remain anonymous kindly indicate so in the consent form and your name and contact details will not be included into any thesis documentation.

Your assistance is greatly appreciated.

Kind Regards

Ms Manogrie Chetty

Section A: Background information

1. Category of stakeholder and work experience: government (national, provincial or local) / academic / private sector / NGO / other (specify)

Private Sector – Environmental Consultants.

Work experience – Government (all), private sector, NGOs, academic, etc. Everyone really.

2. Level of education: Degree / Honours / Masters / PhD; and academic background and training: natural sciences / social sciences / law

- Postgraduate Certificate in Education (Senior and Further Education and Training (FET) Phase), University of South Africa (2014 – final year of studies)
- Masters in Conservation Biology, University of Cape Town, South Africa (2004/5)
- Honours in Zoology, University of Cape Town, South Africa (2003)
- Bachelor of Science, University of Cape Town, South Africa (2000-2002)
- Diploma, General Secretarial, Academy of Learning, South Africa (1999)
- Diploma, Comprehensive Computers, Computer Career Training College, South Africa (1999)

3. Field of expertise: strategic environmental management / environmental assessment / compliance monitoring / environmental law / other (specify)

- Strategic Environmental Assessment (SEAs)
- Environmental Impact Assessments (BAs and S&EIRs)
- Environmental Control Officer (ECO – compliance monitoring)
- Environmental Law – only so far as application and advice to clients and attending courses or talks on legal updates/ changes
- Environmental training – presenting courses on EIAs and Environmental Management
- Water Use License Applications (WULAs)
- Waste Management Licenses (WMLs)
- Air Emissions Licenses (AELs)
- Environmental Authorisation (EA) Amendment Applications
- NEMA Section 24G Rectification Applications
- Environmental feasibility/ due diligence assessments/ studies

4. Your role or function in the organisation that you represent: Environmental Assessment Practitioner (EAP) / Competent Authority (CA) / Commenting Authority / Applicant / other (please specify if applicable)

EAP – Project Manager and Environmental Manager

5. Time in practice: 1 year / 1-5 years / 5-10 years / more than ten years

5 – 10 years

Section B: EIA Legislation & Guidelines in South Africa (SA)

1. What guidelines do you refer to when undertaking / reviewing the EIA process in South Africa?

There are a lot…

- Need and Desirability Guideline (2012 version)
- DEA&DP (Western Cape Dept of Environmental Affairs & Development Planning) EIA guideline and information document series (2013 version)

  Part 1: Guideline on Transitional Arrangements
  Part 2: Generic Terms of Reference for EAPs and Project Schedules
  Part 3: Generic TORs for EAPs and Project Schedules: Annexure: Generic Project Schedules
  Part 4: Guideline on Public Participation
  Part 5: Guideline on Alternatives
  Part 6: Guideline on Need and Desirability
  Part 7: Guideline on Exemption Applications
  Part 8: Guideline on Appeals

- PUBLICATION OF THE COMPANION GUIDELINE ON THE IMPLEMENTATION OF THE ENVIRONMENTAL IMPACT ASSESSMENT REGULATIONS, 2010 (Oct 2013 version)
- PUBLICATION OF PUBLIC PARTICIPATION GUIDELINE (Oct 2012)
-

2. When looking at the current EIA regulations (of 2010, as amended), and comparing them to the previous regulations, have there been improvements or setbacks in the EIA process? Please describe.

I believe there have been improvements. The activities are more clearly defined and the addition of listing notice 3 allowed for changes in the thresholds where most developments/ activities (unless really large and substantial) fall within the Basic Assessment ambit.

3. If you had the ability to effect change in South African EIA legislation, what would changes would you effect and why?

The process needs to be shortened as most developers indicate that they cannot wait so long for an Environmental Authorisation. There are also usually delays in terms of specialist investigations (additional studies and/or seasonal studies – which are fine and accepted as necessary) it is just that the core process takes too long.

There also should be a standard method for impact assessment that is approved by the professional body – most likely either IAIA or EAPASA. This makes assessments between projects more comparable for a competent authority point of view.

Section C: Impact Significance in the SA context

1. During the assessment / review of impact significance for various activities, have you come across different methods used? Please provide a brief description of the methods used.

2. Are the methods used to assess impact significance mostly qualitative or quantitative in nature?

Quantitative

3. Is there a method that you find is preferred over most? If so, please describe.

4. Are there any particular types of activities of which the impacts are often poorly / rigorously assessed?

5. From your experience, have there been cases where the CA required the re- / additional assessment of (the significance of) impacts? Please provide examples and reasons for the re-assessment.

6. Do you find that the method used in assessing impact significance affects the outcome of the environmental authorisation? (i.e. cases where there were deviations from the EIA findings in the final authorisation). Please provide examples and reasons for the deviation.

7. What do you feel are the most important shortcomings / strengths of impact significance assessment overall?

8. How does the assessment of impact significance in practice differ from in theory?

9. How do you see the way forward for impact significance assessment in EIA in SA?

Section D: EIA effectiveness overall

1. As a specialist in the field of EIA, what does EIA in practice mean to you?

2. What do you consider should be the overall purpose of EIA in South Africa today?

3. To what extent can an EAP / assessing officer truly understand and connect with the full range of impacts assessed in an EIA?

4. Do you think that the EIA system in South Africa is effective in ensuring the protection of the environment?

1. To what extent would you consider the EIA system in South Africa as being effective overall? (very / moderately / slightly / not at all). Please provide examples and / or reasons.

THANK YOU

Questionnaire on Methodologies Used for Determining Impact Significance and Implications for EIA Effectiveness in SA

(The information collected from this questionnaire will be used solely for the purpose of completing my MSc-CW Environmental Sciences Degree at the University of KwaZulu-Natal)

Name:	EAP 10
Company:	
Designation:	Ecologist/Environmental Consultant
Contact Details:	
Date:	23/07/2014

Dear Sir / Madam

Thank you for taking your time to assist with the completion of this questionnaire. The purpose of this questionnaire is to assist me (Ms Manogrie Chetty – UKZN Student Number 202513349) with obtaining information to be used towards the completion of my MSc-CW Environmental Science Degree. All information obtained from your organisation will be used for the sole purpose of research and may be included or referred to as part of my thesis, the contents of which will be the property of the UKZN. Should you wish to remain anonymous kindly indicate so in the consent form and your name and contact details will not be included into any thesis documentation.

Your assistance is greatly appreciated.

Kind Regards

Ms Manogrie Chetty

Section A: Background information

1. Category of stakeholder and work experience: government (national, provincial or local) / academic / private sector / NGO / other (specify)

Private sector - consultant

2. Level of education: Degree / Honours / Masters / PhD; and academic background and training: natural sciences / social sciences / law

BSc Honours – Ichthyology and Fisheries Science

3. Field of expertise: strategic environmental management / environmental assessment / compliance monitoring / environmental law / other (specify)

Ecology

4. Your role or function in the organisation that you represent: Environmental Assessment Practitioner (EAP) / Competent Authority (CA) / Commenting Authority / Applicant / other (please specify if applicable)

Specialist and EAP

5. Time in practice: 1 year / 1-5 years / 5-10 years / more than ten years

8 years

Section B: EIA Legislation & Guidelines in South Africa (SA)

1. What guidelines do you refer to when undertaking / reviewing the EIA process in South Africa?

National Water Act guidelines and NEMA EIA process guidelines mostly.

2. When looking at the current EIA regulations (of 2010, as amended), and comparing them to the previous regulations, have there been improvements or setbacks in the EIA process? Please describe.

Improvements:

None

Setbacks:

- Too many listed activities – too many grey areas and loop holes
- Too process driven – no room for rational thinking/reasoning/flexibility
- Cost of EIA process – not only does the process cost a lot to undertake but application fees have to be paid. This also has to do with long time frames and excessive information required.

3. If you had the ability to effect change in South African EIA legislation, what would changes would you effect and why?

1) Reduce the number of listed activities – this will reduce confusion regarding what is relevant or not

2) Place more responsibility on consultants for making decisions (in terms of process in particular), much like engineers, architects and other professionals. The department would then review information provided and support or challenge a decision. Consultants must be able to rationalise and defend their decisions. If negligence is shown on the part of a consultant they can be sued. This will ensure progressive thinking and ensure scientific rationale is applied to the situation.

3) Review the water use license process – recent changes have made things difficult for all parties involved.

4) Change the focus of the EIA process from public and process decision making criteria to biophysical aspects. Socio economic issues can be handled by the town planning legislation.

Section C: Impact Significance in the SA context

1. During the assessment / review of impact significance for various activities, have you come across different methods used? Please provide a brief description of the methods used.

1) descriptive – rational explanation of impacts

2) rating systems – using numeric values to rate impact severity, magnitude etc.

Both are relevant in different situations. A universal application of one or the other cannot be justified.

2. Are the methods used to assess impact significance mostly qualitative or quantitative in nature?

There is a trend towards rating/quantitative assessment as the process has become more administrative as less scientific knowledge is required to interpret the findings.

3. Is there a method that you find is preferred over most? If so, please describe.

A combination of rating and describing impacts, whereby quantifiable impacts are quantified and descriptive (or subjective) impacts are described as opposed to rated. Ratings are highly subjective are given too much weight in decision making. Multivariate statistical tools should

be used where impacts can be quantified – distances, heights areas etc and should be used to aid decisions regarding impacts.

4. Are there any particular types of activities of which the impacts are often poorly / rigorously assessed?

Coastal developments, particularly in built up areas are over scrutinised or scrutitinsed incoreectly as are some waste handling activities (recycling and composting in particular).

5. From your experience, have there been cases where the CA required the re- / additional assessment of (the significance of) impacts? Please provide examples and reasons for the re-assessment.

Yes. A request was recently received for the assessment of climate change impacts for a coastal residential development. The reasons given by the CA were not clear so a TOR was requested from the CA. No TOR has been received to date and the application remains unresolved.

6. Do you find that the method used in assessing impact significance affects the outcome of the environmental authorisation? (i.e. cases where there were deviations from the EIA findings in the final authorisation). Please provide examples and reasons for the deviation.

No. The EAs I have received have relied heavily on the findings of the EIA and have generally been in line with the recommendations. In most instances the impact assessment provided becomes secondary, superceded to post submission negotiations and changes.

7. What do you feel are the most important shortcomings / strengths of impact significance assessment overall?

A major short coming is that there is too much expectation on assessing every possible impacts. Often the major/serious impacts are over looked in favour of impacts that are more social/common/easier to understand. Often things are over looked or the importance over/under stated.

8. How does the assessment of impact significance in practice differ from in theory?

Practically it is difficult to assess the range of impacts that are expected to be assessed in the theory.

9. How do you see the way forward for impact significance assessment in EIA in SA?

The way forward would be to reduce the number of impacts/scope of impacts assessed and focus on the most important impacts per assessment/project.

Section D: EIA effectiveness overall

1. As a specialist in the field of EIA, what does EIA in practice mean to you?

An administrative process used to assess the impacts of various activities.

2. What do you consider should be the overall purpose of EIA in South Africa today?

To assess the biophysical impacts of development/listed activities only.

3. To what extent can an EAP / assessing officer truly understand and connect with the full range of impacts assessed in an EIA?

It is impossible to fully understand. There will always be assumptions and unknowns. The assessment of impacts should operate within the realm of the known facts and acknowledge the limitations set by the unknowns.

4. Do you think that the EIA system in South Africa is effective in ensuring the protection of the environment?

Impact assessment is not directly responsible for the protection of the environment in South Africa. In the end it is the individual who is in control. The indirect benefit of the EIA process is that is forces one to consider the environment, but the EIA process does not control what people do. The environment is only protected by control peoples actions. The EIA may have slowed down high impact development, but the limitations are purely due to the administrative short falls of the process. Because and EIA sets buffer limitations, does not mean that the buffer or wetland will be managed or preserved. Such actions remaining the hands of the individuals. Changing the mind set of industries and the common man in South Africa is the key to true environmental protection.

1. To what extent would you consider the EIA system in South Africa as being effective overall? (very / moderately / slightly / not at all). Please provide examples and / or reasons.

Slightly affective as it only controls those who subscribe to the process and law. EIA is also an expensive process and many choose to act illegally due to the difficulties associated with complying – mainly high cost.

It is important to make processes affordable and easy to comply with, with a focus on compliance monitoring. Most often the EIA process makes development un feasible, particularly for those who need it most. They are thus forced into noncompliance by the very process that is meant to address

such activities. EIA should not protect the environment by marginalisation, but by regulation.

THANK YOU

Questionnaire on Methodologies Used for Determining Impact Significance and Implications for EIA Effectiveness in SA

(The information collected from this questionnaire will be used solely for the purpose of completing my MSc-CW Environmental Sciences Degree at the University of KwaZulu-Natal)

Name:	EAP 11
Company:	
Designation:	Environmental Consultant
Contact Details:	
Date:	15 August 2014

Dear Sir / Madam

Thank you for taking your time to assist with the completion of this questionnaire. The purpose of this questionnaire is to assist me (Ms Manogrie Chetty – UKZN Student Number 202513349) with obtaining information to be used towards the completion of my MSc-CW Environmental Science Degree. All information obtained from your organisation will be used for the sole purpose of research and may be included or referred to as part of my thesis, the contents of which will be the property of the UKZN. Should you wish to remain anonymous kindly indicate so in the consent form and your name and contact details will not be included into any thesis documentation.

Your assistance is greatly appreciated.

Kind Regards

Ms Manogrie Chetty

Section A: Background information

1. Category of stakeholder and work experience: government (national, provincial or local) / academic / private sector / NGO / other (specify)

Private Sector Environmental Consultancy Firm

2. Level of education: Degree / Honours / Masters / PhD; and academic background and training: natural sciences / social sciences / law

Msc Natural Sciences

3. Field of expertise: strategic environmental management / environmental assessment / compliance monitoring / environmental law / other (specify)

Environmental Assessment Compliance Monitoring Environmental Audits Project Management

4. Your role or function in the organisation that you represent: Environmental Assessment Practitioner (EAP) / Competent Authority (CA) / Commenting Authority / Applicant / other (please specify if applicable)

Environmental Assessment Practitioner (EAP)

5. Time in practice: 1 year / 1-5 years / 5-10 years / more than ten years

5-10 years

Section B: EIA Legislation & Guidelines in South Africa (SA)

1. What guidelines do you refer to when undertaking / reviewing the EIA process in South Africa?

All relevant EIA legislation and regulations currently in force in South Africa

2. When looking at the current EIA regulations (of 2010, as amended), and comparing them to the previous regulations, have there been improvements or setbacks in the EIA process? Please describe.

Some improvements but some of the listed activities are very onerous and impractical especially in listing notice 3.

3. If you had the ability to effect change in South African EIA legislation, what would changes would you effect and why?

I would try to streamline the authorisation process and focus the assessments on the impacts and mitigation measures to reduce these impacts.

Section C: Impact Significance in the SA context

1. During the assessment / review of impact significance for various activities, have you come across different methods used? Please provide a brief description of the methods used.

There are a number of methods used by EAPs throughout South Africa. Some I feel are valid but others highly subjective. The use of a scoring system where impacts are rated and then assessed as an average is of particular concern as often one impact (which may be a fatal flaw) is masked by the average weighting score on a particular alternative.

2. Are the methods used to assess impact significance mostly qualitative or quantitative in nature?

We use both but describe impacts mainly as qualitative.

3. Is there a method that you find is preferred over most? If so, please describe.

Specialist Impact Assessment Criteria used by ACER

The following methodology will be applied to predict and assess the potential impacts associated with the proposed development:

- **Direct impacts** are impacts that are caused directly by the activity and generally occur at the same time and at the place of the activity. These impacts are usually associated with the construction, operation or maintenance of an activity and are generally obvious and quantifiable.

- **Indirect impacts** of an activity are indirect or induced changes that may occur as a result of the activity. These types of impacts include all the potential impacts that do not manifest immediately when the activity is undertaken or which occur at a different place as a result of the activity.

- **Cumulative impacts** are impacts that result from the incremental impact of the proposed activity on a common resource when added to the impacts of other past, present or reasonably foreseeable future activities. Cumulative impacts can occur from the collective impacts of individual minor actions over a period of time and can include both direct and indirect impacts.

- **Nature** – the evaluation of the nature of the impact. Most negative impacts will remain negative, however, after mitigation, significance should reduce:
  - **Positive**.
  - **Negative**.

- **Spatial extent** – the size of the area that will be affected by the impact:
  - **Site specific**.
  - **Local** (limited to the immediate areas around the site; <2 km from site).
  - **Regional** (would include a major portion of an area; within 30 km of site).
  - **National** or **International**.

- **Duration** – the timeframe during which the impact will be experienced:
  - **Short-term** (0-3 years or confined to the period of construction).
  - **Medium-term** (3-10 years).
  - **Long-term** (the impact will only cease after the operational life of the activity).
  - **Permanent** (beyond the anticipated lifetime of the project).

- **Intensity** – this provides an order of magnitude of whether or not the intensity (magnitude/size/frequency) of the impact would be negligible, low, medium or high):
  - **Negligible** (inconsequential or no impact).
  - **Low** (small alteration of systems, patterns or processes).
  - **Medium** (noticeable alteration of systems, patterns or processes).
  - **High** (severe alteration of systems, patterns or processes).

- **Frequency** – this provides a description of any repetitive, continuous or time-linked characteristics of the impact:
  - **Once off** (occurring any time during construction).
  - **Intermittent** (occurring from time to time, without specific periodicity).
  - **Periodic** (occurring at more or less regular intervals).
  - **Continuous** (without interruption).

- **Probability** – the likelihood of the impact occurring:
  - **Improbable** (very low likelihood that the impact will occur).
  - **Probable** (distinct possibility that the impact will occur).
  - **Highly probable** (most likely that the impact will occur).

- **Definite** (the impact will occur).

- **Irreplaceability** – of resource loss caused by impacts:
  - **High** irreplaceability of resources (the project will destroy unique resources that cannot be replaced).
  - **Moderate** irreplaceability of resources (the project will destroy resources, which can be replaced with effort).
  - **Low** irreplaceability of resources (the project will destroy resources, which are easily replaceable).

- **Reversibility** – the degree to which the impact can be reversed/the ability of the impacted environment to return/be returned to its pre-impacted state (in the same or different location):
  - Impacts are **non-reversible** (impact is permanent).
  - **Low** reversibility.
  - **Moderate** reversibility of impacts.
  - **High** reversibility of impacts (impact is highly reversible at end of project life).

- **Significance** – the significance of the impact on components of the affected environment (and, where relevant, with respect to potential legal infringement) is described:
  Please note that this excludes positive impacts on the environment. In these cases, the level of significance should be denoted as Low**, Moderate** or High**.
  - **Low** (the impact will not have a significant influence on the environment and, thus, will not be required to be significantly accommodated in the project design).
  - **Medium** (the impact will have an adverse effect or influence on the environment, which will require modification of the project design, the implementation of mitigation measures or both).
  - **High** (the impact will have a serious effect on the environment to the extent that, regardless of mitigation measures, it could block the project from proceeding).

- **Confidence** – the degree of confidence in predictions based on available information and specialist knowledge:
  - **Low**.
  - **Medium**.
  - **High**.

4. Are there any particular types of activities of which the impacts are often poorly / rigorously assessed?

Air quality, as it is very hard to measure and often the impacts are not obvious

5. From your experience, have there been cases where the CA required the re- / additional assessment of (the significance of) impacts? Please provide examples and reasons for the re-assessment.

Not to date

6. Do you find that the method used in assessing impact significance affects the outcome of the environmental authorisation? (i.e. cases where there were deviations from the EIA findings in the final authorisation). Please provide examples and reasons for the deviation.

Very much so if the assessment does not highlight specific impacts and mitigation measures in the assessment these are often not carried through into the environmental authorisation.

7. What do you feel are the most important shortcomings / strengths of impact significance assessment overall?

The fact that many EAPs do not really understand the significance assessments they are doing. The impacts need to be looked at on an individual basis and viewed from both the environmental, social and economic perspectives. Importantly many EAPs

forget the significance of cumulative impacts associated with a development.

In my opinion a good EAP is a person who can correctly identify impacts and assess their significance within the context of the proposed development

8. How does the assessment of impact significance in practice differ from in theory?

In practice impacts are far more interconnected to each other than in theory. There is no black and white when assessing significance.

9. How do you see the way forward for impact significance assessment in EIA in SA?

Hard to tell, hopefully EAPs will spend more time getting to understand the development they are assessing and apply their minds to the impacts anticipated to be generated by these developments. Without fully understanding what you are assessing you cant rate the significance of impacts with any degree of accuracy

Section D: EIA effectiveness overall

1. As a specialist in the field of EIA, what does EIA in practice mean to you?

It's a way to understand, access and identify impacts associated with developments which allows you to find the alternative which best protects the environment (all

Spheres) while promoting responsible development. If a project is fatally flawed in some way, and no mitigation measures are available, the EAP should say as much and the project should not proceed.

2. What do you consider should be the overall purpose of EIA in South Africa today?

To promote responsible development and protect the environment

3. To what extent can an EAP / assessing officer truly understand and connect with the full range of impacts assessed in an EIA?

If the EAP understands the development they are assessing I feel they can effectively identify the impacts associated with any development. The trick is to look at the project

holistically and not narrow your assessment into particular avenues

4. Do you think that the EIA system in South Africa is effective in ensuring the protection of the environment?

Yes if done correctly and the reviewing authorities are suitably qualified to subjectively assess the EIA reports submitted.

1. To what extent would you consider the EIA system in South Africa as being effective overall? (very / moderately / slightly / not at all). Please provide examples and / or reasons.

THANK YOU

Questionnaire on Methodologies Used for Determining Impact Significance and Implications for EIA Effectiveness in SA

(The information collected from this questionnaire will be used solely for the purpose of completing my MSc-CW Environmental Sciences Degree at the University of KwaZulu-Natal)

Name:	EAP 12
Company:	
Designation:	DIRECTOR
Contact Details:	
Date:	05 November 2014

Dear Sir / Madam

Thank you for taking your time to assist with the completion of this questionnaire. The purpose of this questionnaire is to assist me (Ms Manogrie Chetty – UKZN Student Number 202513349) with obtaining information to be used towards the completion of my MSc-CW Environmental Science Degree. All information obtained from your organisation will be used for the sole purpose of research and may be included or referred to as part of my thesis, the contents of which will be the property of the UKZN. Should you wish to remain anonymous kindly indicate so in the consent form and your name and contact details will not be included into any thesis documentation.

Your assistance is greatly appreciated.

Kind Regards

Ms Manogrie Chetty

Section A: Background information

1. Category of stakeholder and work experience: government (national, provincial or local) / academic / private sector / NGO / other (specify)

- National government
- Provincial government
- Local government
- Private sector

2. Level of education: Degree / Honours / Masters / PhD; and academic background and training: natural sciences / social sciences / law

Education

- BSc Environmental Management (Chemistry), 2006 - UNISA
- Honours BSc Environmental Management, 2010 – UNISA

Accreditations

- Global Carbon Exchange (GCX) certified carbon footprint analyses course
- Global Reporting Initiative (GRI) certified training course on GRI sustainability reporting.

Professional registration

Registered as a *Certified Environmental Assessment Practitioner* by the Interim Certification Board of the Environmental Assessment Practitioners Association of South Africa (EAPASA)

3. Field of expertise: strategic environmental management / environmental assessment / compliance monitoring / environmental law / other (specify)

- Environmental assessment
- Compliance monitoring

4. Your role or function in the organisation that you represent: Environmental Assessment Practitioner (EAP) / Competent Authority (CA) / Commenting Authority / Applicant / other (please specify if applicable)

- Environmental Assessment Practitioner (EAP)
- Director

5. Time in practice: 1 year / 1-5 years / 5-10 years / more than ten years

8 years

Section B: EIA Legislation & Guidelines in South Africa (SA)

1. What guidelines do you refer to when undertaking / reviewing the EIA process in South Africa?

- Impact Assessment Regulations 2010 - R543

2. When looking at the current EIA regulations (of 2010, as amended), and comparing them to the previous regulations, have there been improvements or setbacks in the EIA process? Please describe.

- One setback - I find it unnecessary to have three different sets of listed activities. We should revert back to two sets of listed activities. Legislation should be made as simple as possible. Remember, we also have the additional waste listed activities.

3. If you had the ability to effect change in South African EIA legislation, what would changes would you effect and why?

- I find that the current basic assessment report is cumbersome. EAPs should be allowed to prepare their own BA reports that conform to legislative guidelines, as per the preparation of Scoping Reports & EIRs.

- The current application fees of scoping/EIA application are too high and disproportionate to BA application fees. I recommend that scoping/EIA fees be not more than R6000.00.

Section C: Impact Significance in the SA context

1. During the assessment / review of impact significance for various activities, have you come across different methods used? Please provide a brief description of the methods used.

The methods I have seen are similar in terms of environmental impact assessment rating. Environmental impacts are generally assessed and rated using the following indicators:

- Geographical (spatial) extent of the impact
- Severity of the impact
- Duration of the impact
- Probability of the impact occurring

2. Are the methods used to assess impact significance mostly qualitative or quantitative in nature?

Quantitative

3. Is there a method that you find is preferred over most? If so, please describe.

1.1 Environmental Impact Assessment Methodology

Impact assessment must take account of the nature, scale and duration of impact on the environment whether such effects are positive (beneficial) or negative (detrimental). Each impact is also assessed according to the project stages from planning, through construction to the operational phase. Mitigation measures are proposed to address these potential impacts. Environmental Impact Assessment of all alternatives. In order to evaluate and classify the impacts a rating system has been used accordingly. The following scoring criteria have been used:

- Environmental impacts will be assessed and rated using the following indicators:
  - Geographical (spatial) extent of the impact
    - Site: impacting the site only.
    - Local: Impacting both the site and surrounding areas.
    - Municipal: Impacting the municipal area
    - Provincial: Impacting the province
    - National: Impacting the country
    - Global: Impacting the global environment
  - Severity of the impact
    - 4 - Very high
    - 3 – High
    - 2 – Moderate
    - 1 – Low
  - Duration of the impact
    - 4 – Permanent
    - 3 – Long term: More than 20 years
    - 2 – Medium term: 5 – 20 years
    - 1 – Short term: less than 5 years
  - Probability of the impact occurring
    - 4 – Definite
    - 3 – Likely
    - 2 – Possible
    - 1 – Unlikely

Significance assessment
The determination of the significance of environmental impacts is based on a combination of the impact severity, duration, and probability. The allocated values of these components are multiplied against each other, providing a final value. This final value is then categorised into the following categories:

Score	Category	Significance of Environmental Impact
48 - 64	**Very high**	Permanent and irreversible change to the natural, cultural, social, or socio-economic environment. Society would probably view these impacts as catastrophic.

32 - 47	High	Society would probably view these impacts in a serious light. Project redesign/alteration measures may be required to reduce the environmental impact. Mitigation measures will be required the construction and operational phases to reduce the significance of the environmental impact to acceptable levels
16 - 31	Moderate	Moderate impacts have the potential to negatively affect the environment. Mitigation measures are necessary to reduce the significance of the environmental impact.
1 - 15	Low	Low or no impact to the environmental. Impacts are usually short term and are unlikely to pose a significant threat to the environment.

4. Are there any particular types of activities of which the impacts are often poorly / rigorously assessed?

The cumulative impact of indigenous vegetation removal

The impact of a development on potable water resources

5. From your experience, have there been cases where the CA required the re- / additional assessment of (the significance of) impacts? Please provide examples and reasons for the re-assessment.

No

6. Do you find that the method used in assessing impact significance affects the outcome of the environmental authorisation? (i.e. cases where there were deviations from the EIA findings in the final authorisation). Please provide examples and reasons for the deviation.

Yet to be determined

7. What do you feel are the most important shortcomings / strengths of impact significance assessment overall?

I think more attention/significance needs to be given to significance assessment relating to impacts on water resources, pollution, energy, climate change, and the socio-economic benefits to society especially the poorer communities.

8. How does the assessment of impact significance in practice differ from in theory?

If the project is strictly managed and monitored according to the environmental authorisation and EMP, then the gap between the practice and theory should narrow. I have also noticed more frequent audits conducted by the CA on construction and operation phases of developments, which is positive.

9. How do you see the way forward for impact significance assessment in EIA in SA?

I agree with the majority of the regulations and practices associated with EIAs. However, we should continuously strive for efficiency and continual improvement.

Section D: EIA effectiveness overall

1. As a specialist in the field of EIA, what does EIA in practice mean to you?

EIA practice means addressing the environmental impacts associated with development, especially significant impacts. It think it is critical for the EAP to advise the applicant during the pre-application phase on the feasibility of the project. The responsibility of an EAP should go beyond just managing an EIA

2. What do you consider should be the overall purpose of EIA in South Africa today?

Fair and independent EIAs are critical to protect the environment from further degradation, which the environment has already significantly endured as a result of human action for the past centuries. EIAs should also provide the opportunity to improve degraded environments.

3. To what extent can an EAP / assessing officer truly understand and connect with the full range of impacts assessed in an EIA?

EIAs are not an exact science. The EAP will most probably not be able to list/understand the full range of impacts. However, it is important to list/understand significant impacts associated with a project. The EAP should also favour caution (precautionary principal), especially when dealing with significant impacts or when unsure of impact significance.

4. Do you think that the EIA system in South Africa is effective in ensuring the protection of the environment?

I think the intention of our current EIA system is good. However the CA should not be pressurised by government applicants or big business to approve applications just because large amounts of money is involved. It is critical that the CA provides fair decision making on EIA applications.

1. To what extent would you consider the EIA system in South Africa as being effective overall? (very / moderately / slightly / not at all). Please provide examples and / or reasons.

In between very to moderate. Our legislation relating to EIAs is good but what is on paper doesn't always translate into reality. There needs to be more cohesion between legislation and practice.

THANK YOU

UNIVERSITY OF KWAZULU-NATAL

Questionnaire on Methodologies Used for Determining Impact Significance and Implications for EIA Effectiveness in SA

(The information collected from this questionnaire will be used solely for the purpose of completing my MSc-CW Environmental Sciences Degree at the University of KwaZulu-Natal)

Name:	EAP 13
Company:	
Designation:	Environmental Scientist
Contact Details:	
Date:	04 November 2014

Dear Sir / Madam

Thank you for taking your time to assist with the completion of this questionnaire. The purpose of this questionnaire is to assist me (Ms Manogrie Chetty – UKZN Student Number 202513349) with obtaining information to be used towards the compilation of the dissertation for an MSc-CW Environmental Science Degree. All information obtained from your organisation will be used for the sole purpose of research and may be included or referred to as part of my thesis, the contents of which will be the property of the UKZN. Should you wish to remain anonymous kindly indicate so in the table above and your name and contact details will not be included into any thesis documentation.

Your assistance is greatly appreciated.

Kind Regards

Ms Manogrie Chetty

Email: manogriec@gmail.com

Tel: 084 401 1512

Fax: 031 266 5287 / 086 560 8481

Section A: Background information

1. Category of stakeholder and work experience: government (national, provincial or local) / academic / private sector / NGO / other (specify)

Private Sector (Consulting)

2. Level of education: Degree / Honours / Masters / PhD; and academic background and training: natural sciences / social sciences / law

Honours – Natural Science

3. Field of expertise: strategic environmental management / environmental assessment / compliance monitoring / environmental law / other (specify)

Environmental Assessments, Compliance Monitoring, Geographic Information Systems, Visual Impact Assessments, Air Quality Assessments and Licencing

4. Your role or function in the organisation that you represent: Environmental Assessment Practitioner (EAP) / Competent Authority (CA) / Commenting Authority / Applicant / other (please specify if applicable)

Environmental Assessment Practitioner (BA and EIAs) Geographic Information Systems (strategic planning) Visual Impact Assessments (Specialist) Air Quality Assessments and Atmospheric Emissions Licences

5. Time in practice: 1 year / 1-5 years / 5-10 years / more than ten years

5 years

Section B: EIA Legislation & Guidelines in South Africa (SA)

1. What guidelines do you refer to when undertaking / reviewing the EIA process in South Africa?

All applicable Environmental Management Acts, eg:

- NEMA
- NEM:AQA
- NEM:WA
- NWA
- NEM:BA
- National Heritage Resources Act
- NEM:PAA
- NEM:ICMA
- MRPDA (if applicable)

2. When looking at the current EIA regulations (of 2010, as amended), and comparing them to the previous regulations, have there been improvements or setbacks in the EIA process? Please describe.

In certain circumstances, I would say improvements – i.e. the legislation in connection to livestock farming.

However in terms of many linear activities (I.e. powerlines), a 132kV now only requires a BA rather than an EIA, however this sort of activity can have major impacts on the environment.

Furthermore, competent authorities, often do not have the competence to deal with certain applications, as well as do not adhere to timeframes set out.

3. If you had the ability to effect change in South African EIA legislation, what would changes would you effect and why?

Strict timeframes for completing an assessment for practitioners as well as competent authorities. Competent authorities should be chosen on a project-by project case (and if required the departments should get an external specialist to assist in informing decisions, in complex projects).

The competent authorities should be required to liaise directly on projects (i.e. DWS, DEA, EDTEA) – thus licencing would be a part of a project.

Legislation should potentially be more integrated.

Section C: Impact Significance in the SA context

1. During the assessment / review of impact significance for various activities, have you come across different methods used? Please provide a brief description of the methods used.

In undertaking specialist studies, which form part of different EIAs, I have come across various impact rating assessment tables – otherwise generally EAPs tend to follow the same protocol requirements of the Department.

2. Are the methods used to assess impact significance mostly qualitative or quantitative in nature?

EIAs - Quantitative

In undertaking Visual impact Assessments – both qualitative and quantitative

3. Is there a method that you find is preferred over most? If so, please describe.

I prefer a combination of qualitative and quantitative methods, as this considers both the environment and social aspects, which I believe best capture the proposed project impacts. (this is obviously dependant on the project)

4. Are there any particular types of activities of which the impacts are often poorly / rigorously assessed?

Depends on the qualifications and experience of the EAP.
But I find the often linear activities assessments are not as rigorously assessed as a site specific project.

5. From your experience, have there been cases where the CA required the re- / additional assessment of (the significance of) impacts? Please provide examples and reasons for the re-assessment.

I have not experienced this.

6. Do you find that the method used in assessing impact significance affects the outcome of the environmental authorisation? (i.e. cases where there were deviations from the EIA findings in the final authorisation). Please provide examples and reasons for the deviation.

I have not experienced this.

7. What do you feel are the most important shortcomings / strengths of impact significance assessment overall?

In depth on the ground assessment

Detailed specialist studies

Sound methodology which will accurately predict the impacts of the proposed development

8. How does the assessment of impact significance in practice differ from in theory?

Theory lays out the basics, where in practise many projects can be more complex.

9. How do you see the way forward for impact significance assessment in EIA in SA?

Potentially a legislated rating system, which all EIAs are based.

The problem with this is that some developments are more complex, and therefore would need a more detailed significance rating assessment than others.

Section D: EIA effectiveness overall

1. As a specialist in the field of EIA, what does EIA in practice mean to you?

Carefully assessing the potential impacts on the environment and social aspects of a proposed development, whereby appropriate management and mitigation measures can be implemented where necessary.
Development, which considering the environment.

2. What do you consider should be the overall purpose of EIA in South Africa today?

Currently many developers consider EIAs as a "Tick box" exercise.
However, I believe that many industries are becoming more environmentally conscious, and this is leading to sustainable development.

3. To what extent can an EAP / assessing officer truly understand and connect with the full range of impacts assessed in an EIA?

Depends on the project – size, complexity, project timeframe, etc.
Generally the EAP relies on the specialist study information, and the assessing officer on the EAPs report – due to the number of EIAs being undertaken, I don't believe that the assessing officers are able to understand the projects full constraints during the assessment process. This applies to the EAP to an extent as well.

4. Do you think that the EIA system in South Africa is effective in ensuring the protection of the environment?

Yes, as it forces developers to consider the environment prior to construction activities.
As well as forces them to consider the rehabilitation implications, before the development occurs.

5. To what extent would you consider the EIA system in South Africa as being effective overall? (very / moderately / slightly / not at all). Please provide examples and / or reasons.

Moderately.

- Considers impacts on the environment
- Needs to be more integrated (i.e. NWA, NEMA) – whereby licences and EA are correlated in terms of timeframes

THANK YOU

Questionnaire on Methodologies Used for Determining Impact Significance and Implications for EIA Effectiveness in SA

STAKEHOLDER QUESTIONARE

(The information collected from this questionnaire will be used solely for the purpose of completing my MSc-CW Environmental Sciences Degree at the University of KwaZulu-Natal)

Name:	NGO 1
Company:	
Designation:	EIA Co-ordinator
Contact Details:	
Date:	4 August 2014

Dear Sir / Madam

Thank you for taking your time to assist with the completion of this questionnaire. The purpose of this questionnaire is to assist me (Ms Manogie Chetty – UKZN Student Number 202513349) with obtaining information to be used towards the completion of my MSc-CW Environmental Science Degree. All information obtained from your organisation will be used for the sole purpose of research and may be included or referred to as part of my thesis, the contents of which will be the property of the UKZN. Should you wish to remain anonymous kindly indicate so in the consent form and your name and contact details will not be included into any thesis documentation.

Your assistance is greatly appreciated.

Kind Regards

Ms Manogie Chetty

Section A: Background information

1. Category of stakeholder and work experience: government (national, provincial or local) / academic / private sector / NGO / other (specify)

NGO

2. Level of education: Degree / Honours / Masters / PhD; and academic background and training: natural sciences / social sciences / law

I have no formal education or training in the environmental field. While employed by WESSA KZN Region, Nov. 2006 – May 2013, and continuing involvement with Coastwatch KZN, I have attended short courses on pertinent issues and subjects.

3. Field of expertise: strategic environmental management / environmental assessment / compliance monitoring / environmental law / other (specify)

I have no expertise in an environmental field.

4. Your role or function in the organisation that you represent: Environmental Assessment Practitioner (EAP) / Competent Authority (CA) / Commenting Authority / Applicant / other (please specify if applicable)

I review EIA reports and comment, incorporating comments provided by Coastwatch members who have expertise in the relevant field.

5. Time in practice: 1 year / 1-5 years / 5-10 years / more than ten years

My interest in the environmental field, engaging in the EIA process as an I&AP is in excess of 10 years.

Section B: EIA Legislation & Guidelines in South Africa (SA)

1. What guidelines do you refer to when undertaking / reviewing the EIA process in South Africa?

DEAT Guidelines; Information on the EIA process provided by the NGO's EWT and WESSA.

2. When looking at the current EIA regulations (of 2010, as amended), and comparing them to the previous regulations, have there been improvements or setbacks in the EIA process? Please describe.

I aim not to answer in detail but it is positive to see, for example, minimum buffer

widths around wetlands increased to align with requirements of the provincial conservation authority. From reviewing EIA reports I see no great improvement in the planning and design of developments.

3. If you had the ability to effect change in South African EIA legislation, what would changes would you effect and why?

I believe that I&APs (the Conservancy movement is strong in KZN, for example) can play a significant role in ensuring that good practice and stipulated conditions of authorisation are implemented post RoD. As the CA often fails to ensure compliance there may be benefit in the legislation providing a structure for ongoing I&AP participation.

The need for this could be negated provided that the CME departments are fully capacitated!

Section C: Impact Significance in the SA context

1. During the assessment / review of impact significance for various activities, have you come across different methods used? Please provide a brief description of the methods used.

The following response is relevant to questions 1 – 7 below:

As an I&AP reviewing EIA reports the Impact Significance Rating is a section which I do not spend much time on. I feel that it is subjective and it is easy to make the preferred development alternative "fit". I would, however, be prepared to reconsider this opinion if there was a means to assess post-development impact significance with the significance ratings given during the EIA process. I am unable to provide comment on the different methods of rating.

2. Are the methods used to assess impact significance mostly qualitative or quantitative in nature?

3. Is there a method that you find is preferred over most? If so, please describe.

4. Are there any particular types of activities of which the impacts are often poorly / rigorously assessed?

5. From your experience, have there been cases where the CA required the re- / additional assessment of (the significance of) impacts? Please provide examples and reasons for the re-assessment.

I am not aware of a requirement for re-/additional assessment.

6. Do you find that the method used in assessing impact significance affects the outcome of the environmental authorisation? (i.e. cases where there were deviations from the EIA findings in the final authorisation). Please provide examples and reasons for the deviation.

In my experience the EAPs opinion is carried through to final authorisation.

7. What do you feel are the most important shortcomings / strengths of impact significance assessment overall?

Shortcoming: it is a subjective assessment without means of verification.

8. How does the assessment of impact significance in practice differ from in theory?

Following on from above - the question is difficult to respond to as public participation in the EIA process does not continue after environmental authorisation has been granted thus precluding our ongoing involvement and understanding of the successful outcome of an assessment. However, we fear that there is generally a greater significance in impacts (in practice) but this may be as a result of poor implementation/compliance, and lack of enforcement of mitigation by authorities.

9. How do you see the way forward for impact significance assessment in EIA in SA?

Following on from above, compliance and enforcement needs to be significantly improved.

Section D: EIA effectiveness overall

1. As a specialist in the field of EIA, what does EIA in practice mean to you?

As a member of an NGO I see the EIA process generally as a 'tick the box' exercise with the purported economic benefits overruling environmental considerations.

2. What do you consider should be the overall purpose of EIA in South Africa today?

The purpose of EIA should be to prevent further degradation of our

environment/ecosystems, with improvement being an overriding objective. In order for the objectives of the process to be realised there needs to be a better understanding by the public, affected parties, politicians of what the aim of the process is and the long term benefits for SA. It is not a short term job creation exercise.

3. To what extent can an EAP / assessing officer truly understand and connect with the full range of impacts assessed in an EIA?

EAP: with assistance from appointed specialists an experienced and independent EAP would be able to understand and connect with the full range of impacts assessed in an EIA;

Assessing Officer: I would consider it unlikely that an assessing officer is in a position to objectively evaluate all social, economic and environmental issues – it would require expertise in all 3 fields and it would need to preclude any political interference and decision making.

4. Do you think that the EIA system in South Africa is effective in ensuring the protection of the environment?

Generally – No.

1. To what extent would you consider the EIA system in South Africa as being effective overall? (very / moderately / slightly / not at all). Please provide examples and / or reasons.

Slightly. In my opinion –

- In general Applicants fail to fully appreciate their responsibility with respect to the environment. The EIA process is seen as a tedious requirement which must be met.

- The EIA process, too, is often politically influenced.

- The independence of an EAP cannot be adequately ensured while SA employs the structure where an Applicant appoints and pays the practitioner.

THANK YOU

Questionnaire on Methodologies Used for Determining Impact Significance and Implications for EIA Effectiveness in SA

(The information collected from this questionnaire will be used solely for the purpose of completing my MSc-CW Environmental Sciences Degree at the University of KwaZulu-Natal)

Name:	NGO 2
Company:	
Designation:	Jnr. Soil & Rehab. Specialist/Environmental Compliance Officer
Contact Details:	
Date:	28 July 2014

Dear Sir / Madam

Thank you for taking your time to assist with the completion of this questionnaire. The purpose of this questionnaire is to assist me (Ms Manogrie Chetty – UKZN Student Number 202513349) with obtaining information to be used towards the completion of my MSc-CW Environmental Science Degree. All information obtained from your organisation will be used for the sole purpose of research and may be included or referred to as part of my thesis, the contents of which will be the property of the UKZN. Should you wish to remain anonymous kindly indicate so in the consent form and your name and contact details will not be included into any thesis documentation.

Your assistance is greatly appreciated.

Kind Regards

Ms Manogrie Chetty

Section A: Background information

1. Category of stakeholder and work experience: government (national, provincial or local) / academic / private sector / NGO / other (specify)

NGO/NPO,Jnr. EAP for Ecoform Technologies, Environmental Compliance Officer for the uMsunduzi Municipality & liaison officer for Enviroedge (private environmental consultants).

2. Level of education: Degree / Honours / Masters / PhD; and academic background and training: natural sciences / social sciences / law

Bss. Degree in Geography and environmental Management. Academic background and training is mainly from the natural and social sciences.

3. Field of expertise: strategic environmental management / environmental assessment / compliance monitoring / environmental law / other (specify)

Compliance monitoring: conducting environmental audits, compliance reports, and environmental management. Translating environmental notices/basic information documents into isi-Zulu and coordinating public meetings for the public participation phase of EIA's

4. Your role or function in the organisation that you represent: Environmental Assessment Practitioner (EAP) / Competent Authority (CA) / Commenting Authority / Applicant / other (please specify if applicable)

My role is to play the part of being an interested and affected party for DUCT regarding any proposed development that is deemed to have an effect on our water resources and riparian

areas/corridors. A commenting authority on all proposed developments affecting the uMsunduzi & uMngeni rivers and their aligned tributaries.

5. Time in practice: 1 year / 1-5 years / 5-10 years / more than ten years

1-5 years

Section B: EIA Legislation & Guidelines in South Africa (SA)

1. What guidelines do you refer to when undertaking / reviewing the EIA process in South Africa?

- NEMA EIA Listing Notices (1-3)
- NEMA EIA Regulations
- NEMA EMF Regulations
- The Conservation of Agricultural Resources Act (CARA)
- NEMWA:Waste and Water Acts
- NEMBA: Biodiversity Act
- NEMA (act 107 of 1998) and other relevant legislation

2. When looking at the current EIA regulations (of 2010, as amended), and comparing them to the previous regulations, have there been improvements or setbacks in the EIA process? Please describe.

To be brief, the amended regulations have somewhat made a step forward in terms of bettering the EIA process. The regulations have moved from being just an exercise of

"ticking a box" to a more involved and adaptive process in terms of fully assessing environmental impacts on a particular environment. Each EIA is more tailor-made for a particular development as all developments tend to differ in terms of potential impacts.

3. If you had the ability to effect change in South African EIA legislation, what would changes would you effect and why?

I think what is mainly lacking in today's current EIA legislation is a better focus on the social impact that certain developments will bring to affected parties, most especially the local community. Currently little regard is given towards the SIA (social impact assessment) process. Not enough people are being involved in this process within terms of public participation. I find this aspect of the EIA to be pivotal in determining the success of a proposed development.

Section C: Impact Significance in the SA context

1. During the assessment / review of impact significance for various activities, have you come across different methods used? Please provide a brief description of the methods used.

In my experience I have not come across different methods being carried out. All EIA

applications that one has dealt with in the past have been of a standard/regular/normal format.One finds that if this is the case, few setbacks or disagreements are achieved.

2. Are the methods used to assess impact significance mostly qualitative or quantitative in nature?

Within my line of expertise, I find almost any potential impact to be of a qualitative nature as in most cases it is very difficult to pin-down the effects on the environment into numbers. Although what one would suggest is to use both approaches (Q &Q) as this ensures that a rounder & fuller assessment of potential impacts is produced and achieved. If we as assessors can move to a more quantitative nature we can then speak to the budgets and finances of all relevant stakeholders involved.

3. Is there a method that you find is preferred over most? If so, please describe.

Currently, I feel that there is no preference for a specific method.It is standard throughout all assessments are carried out on lines of evidence that are both qualitative and quantitative,

that support or refute the proposed development.

4. Are there any particular types of activities of which the impacts are often poorly / rigorously assessed?

Very little attention is given towards the SIA and Socio-Economic Impact Assessment activities.One still gets a feel that for most EAP's it is just a matter of "ticking a box" and doing the bare minimum requirements. They hardly dwell on this matter, but I particularly find this aspect of the assessment the crux of ensuring that the benefits of a proposed assessment are fully reaped by all.

5. From your experience, have there been cases where the CA required the re- / additional assessment of (the significance of) impacts? Please provide examples and reasons for the re-assessment.

Yes, whilst working for uMsunduzi Municipality (Competent authority),there were numerous EIA's that one had to send back for re-assessing as there were certain aspects of the EIA that were overlooked or not fully analysed. For instance most rejected applications were sent back because certain specialist studies were not included with the final EIA document (such as HIA's, TIA's, Geotech. Assessments etc).

6. Do you find that the method used in assessing impact significance affects the outcome of the environmental authorisation? (i.e. cases where there were deviations from the EIA findings in the final authorisation). Please provide examples and reasons for the deviation.

Most definitely, competent authorities are mostly use to a standard way of assessing EIA findings. Those who use unorthodox methods usually are not granted authorisation as it deviates from the norm. In my experience all EIA documents look the same and come in a standard format.

7. What do you feel are the most important shortcomings / strengths of impact significance assessment overall?

The particular strength that I find with such assessments is that they take into account the full picture of what effects a proposed activity will have on the local environment. Its shortcomings do come in the form of certain assessment activities not being carried out rigorously by most EAP's.Many practitioners choose to interpret most EIA legislation the way they see it.

8. How does the assessment of impact significance in practice differ from in theory?

In most cases there are significant/vast differences between the two. Just like any other comparison involving a practical and theoretical component differences are bound to occur.In truth, what is mostly written down on paper proves to be non-feasible for most EAP's in terms of them simply not having enough capacity to see them through and not enough finances are set aside for such practices

9. How do you see the way forward for impact significance assessment in EIA in SA?

From a personal perspective, I view such assessments to further expand and grow in terms of importance and relevance and informing decision-making for future proposed developments. I see these assessments assuming a much more socially orientated perspective.

Section D: EIA effectiveness overall

1. As a specialist in the field of EIA, what does EIA in practice mean to you?

In simple terms, an EIA is a public process involving the identification of potential environmental impacts for any proposed development/project on the environment.

2. What do you consider should be the overall purpose of EIA in South Africa today?

The EIA should be used as a comprehensive body of knowledge that is to be used in informing decision-making.It should be seen as the number one go-to tool in terms of environmental management.

3. To what extent can an EAP / assessing officer truly understand and connect with the full range of impacts assessed in an EIA?

The only way the above can be realised is if the EAP concerned fully immerses him/herself into all of the environmental aspects that must be considered when looking at a particular proposed project. This complete focus can only be achieved when the EAP gets hands-on (literally) with all the impacts concerned.

4. Do you think that the EIA system in South Africa is effective in ensuring the protection of the environment?

Personally, I feel it is very effective especially on paper.It is informed by arguably one of the best forms of legislation on this side of the continent. The issue arises when having to fully apply and exercise the tool as a whole especially within terms of compliance monitoring (an area that we as a country are lacking)

1. To what extent would you consider the EIA system in South Africa as being effective overall? (Very / moderately / slightly / not at all). Please provide examples and / or reasons.

I'd like to say moderately effective as from my little time spent within the compliance monitoring field many people take heed directives/instructions related to environmental compliance. The EIA system provides stringent laws/regulations that are in most cases adhered to. A lot of respect is given towards the system as most developments completely cease in terms of operations. If environmental compliance is ignored. Although, one must say that of recent times many systems are

constantly trying to bend the rules at all times which in most cases compromises the environment.

THANK YOU

Questionnaire on Methodologies Used for Determining Impact Significance and Implications for EIA Effectiveness in SA

(The information collected from this questionnaire will be used solely for the purpose of completing my MSc-CW Environmental Sciences Degree at the University of KwaZulu-Natal)

Name:	NGO 3
Company:	
Designation:	Self employed Sole Proprietor – Environmental Consultant
Contact Details:	
Date:	23 July 2014

Dear Sir / Madam

Thank you for taking your time to assist with the completion of this questionnaire. The purpose of this questionnaire is to assist me (Ms Manogrie Chetty – UKZN Student Number 202513349) with obtaining information to be used towards the completion of my MSc-CW Environmental Science Degree. All information obtained from your organisation will be used for the sole purpose of research and may be included or referred to as part of my thesis, the contents of which will be the property of the UKZN. Should you wish to remain anonymous kindly indicate so in the consent form and your name and contact details will not be included into any thesis documentation.

Your assistance is greatly appreciated.

Kind Regards

Ms Manogrie Chetty

Section A: Background information

1. Category of stakeholder and work experience: government (national, provincial or local) / academic / private sector / NGO / other (specify)

Stakeholder (current): Midlands Conservancies Forum (Chair); Winterskloof Conservancy (Chair); Coastwatch Previously: worked in industry – chemical manufacturing

2. Level of education: Degree / Honours / Masters / PhD; and academic background and training: natural sciences / social sciences / law

MSc Environmental Management BSc (hons) Molecular Genetics BSc Zoology and Microbiology

3. Field of expertise: strategic environmental management / environmental assessment / compliance monitoring / environmental law / other (specify)

General Environmental Management, including legal compliance focusing on water and waste management Biodiversity Conservation Marine pollution

4. Your role or function in the organisation that you represent: Environmental Assessment Practitioner (EAP) / Competent Authority (CA) / Commenting Authority / Applicant / other (please specify if applicable)

Sole Proprietor – self employed environmental consultant

5. Time in practice: 1 year / 1-5 years / 5-10 years / more than ten years

> 20 years

Section B: EIA Legislation & Guidelines in South Africa (SA)

1. What guidelines do you refer to when undertaking / reviewing the EIA process in South Africa?

None! Just use my experience and expertise

2. When looking at the current EIA regulations (of 2010, as amended), and comparing them to the previous regulations, have there been improvements or setbacks in the EIA process? Please describe.

From civil society perspective, it requires too much expertise, time and energy – unpaid, while all the other stakeholders are paid. Have to take time off from paid work to do this – really draining and people burn out quickly. Need to have regional personnel available who are paid to do this on behalf of ngo's or local residents, who provide the local context and knowledge of the situation and cumulative effects to the person compiling it.

There appears to be no-one listening to our inputs for example:

Cascades S24g application and EIA's – we stated that flooding would be the most significant impact from the cumulative destruction of the wetland and riparian zone for the shopping centre and office park. This was ignored and flooding has been significant and will continue!

Howick developments – we stated that there was insufficient infrastructure to deal with effective stormwater management, treatment of sewage, roads, waste, electricity and water supply. These developments were allowed in wetlands, riparian zones and grasslands providing absorbent surfaces for rainfall. The sewage into Midmar from Mpophomeni's failing infrastructure and poorly devised transfer system, into the uMngeni River from surcharging pump stations and the non-compliant effluent from the overloaded and poorly performing Howick Wastewater Treatment Works and Currys Post Landfill were all predicted but ignored.

3. If you had the ability to effect change in South African EIA legislation, what would changes would you effect and why?

The EAP's would not be paid by the developer/proponent – they do not represent the environment.

There is no post authorisation monitoring and enforcement

There is no auditing of EIA claims – jobs, financials etc. Most are just pure bull!

The ecosystems that provide goods and services have no (or negative) value in EIA's. They then have to mitigate impacts of a project with HUGE financial implications (only to the developer usually!!) and the true costs are not shown or used in the accounting process. Financials are inflated and values of eco goods and services minimised or not included. Ecosystems damaged by development are discounted in value even further, so able to be sacrificed as not functioning properly – eg wetlands and grasslands/forests etc infested with Alien Invader plants. Some property owners deliberately allow infestations to develop so they can transform virgin grasslands and other ecosystems – eg. Kamberg!

Advice from specialists ignored by EAP's unless it provides desired outcome.

No acknowledgement that there are LIMITS TO GROWTH.

We do not need more – wedding venues, shopping centres, office parks, etc

We do need – restoration and enhancement of ecological infrastructure to mitigate impacts

Section C: Impact Significance in the SA context

1. During the assessment / review of impact significance for various activities, have you come across different methods used? Please provide a brief description of the methods used.

A lot of bad science – eg Delmas Coal EIA for KiPower!!

2. Are the methods used to assess impact significance mostly qualitative or quantitative in nature?

Depends on what outcome is desired! A lot of crud that we have to wade through to get to the nub of the issue. Mostly subjective assessment and discounting of ecosystem goods & services value and strategic importance.

3. Is there a method that you find is preferred over most? If so, please describe.

No

4. Are there any particular types of activities of which the impacts are often poorly / rigorously assessed?

As above – the value of free goods and services are discounted and the impacts that are cumulative and synergistic.

Jobs, financials impacts can outweigh the ability of an ecosystem to attenuate flooding, modulate extremes of temperature, etc for example.

5. From your experience, have there been cases where the CA required the re- / additional assessment of (the significance of) impacts? Please provide examples and reasons for the re-assessment.

Don't use acronyms – presume CA refers to the authority!!??

No, never seen this – despite the poor science being pointed out eg KiPower

6. Do you find that the method used in assessing impact significance affects the outcome of the environmental authorisation? (i.e. cases where there were deviations from the EIA findings in the final authorisation). Please provide examples and reasons for the deviation.

Yes, where the economics and job creation numbers are inflated - authorities never question them or ask for a peer review by someone else not linked to the proponent.

7. What do you feel are the most important shortcomings / strengths of impact significance assessment overall?

Lack of local knowledge of the authorities, so are unable to see the bull from the

facts

Political prerogatives outweigh environmental sense. Example – Galleria Shopping Centre in Amanzimtoti authorisation decided on the bonnet of a car on N3 highway offram by the regulator with the politician! Post construction flooding was predicted!

8. How does the assessment of impact significance in practice differ from in theory?

No cumulative or synergistic impacts assessed

EAP seldom represents the environment

Management of the environment is seldom integrated or sustainable in the true sense of the word – short term gain is allowed.

Officials are seldom able to see the "bigger picture" environmentally, only politically and definitely do not understand ecology and the linkages.

9. How do you see the way forward for impact significance assessment in EIA in SA?

Don't – offsets must be stopped!

Section D: EIA effectiveness overall

1. As a specialist in the field of EIA, what does EIA in practice mean to you?

Official stamp of approval for projects which have huge (and/or cumulative) impacts for sustainability.

Silly little projects with little or no impact are made to jump through hoops to get authorised.

Sanity needs to be regained.

2. What do you consider should be the overall purpose of EIA in South Africa today?

Ticking boxes

3. To what extent can an EAP / assessing officer truly understand and connect with the full range of impacts assessed in an EIA?

They need to be people with integrity and understanding of the connectedness of life.

Mostly they are not these kind of people – I refuse to do EIA's as I would have to sell my soul!

4. Do you think that the EIA system in South Africa is effective in ensuring the protection of the environment?

No!

1. To what extent would you consider the EIA system in South Africa as being effective overall? (very / moderately / slightly / not at all). Please provide examples and / or reasons.

Not at all! Examples provided above and must deal with the ironies and peverse incentives.

KiPower – using poor grade coal from the old mine to generate electricity – when we have signed the protocols for global warming and are considering a carbon tax!! Wetland Offsets were considered before evaluating the impacts, while the area was being flooded at the end of summer!!

Currently a paper chase and able to be influenced by politicians and developers

THANK YOU

UNIVERSITY OF KWAZULU-NATAL

Questionnaire on Methodologies Used for Determining Impact Significance and Implications for EIA Effectiveness in SA

(The information collected from this questionnaire will be used solely for the purpose of completing my MSc-CW Environmental Sciences Degree at the University of KwaZulu-Natal)

Name:	NGO 4
Company:	
Designation:	Environmental project Officer
Contact Details:	
Date:	05 May 2014

Dear Sir / Madam

Thank you for taking your time to assist with the completion of this questionnaire. The purpose of this questionnaire is to assist me (Ms Manogrie Chetty – UKZN Student Number 202513349) with obtaining information to be used towards the compilation of the dissertation for an MSc-CW Environmental Science Degree. All information obtained from your organisation will be used for the sole purpose of research and may be included or referred to as part of my thesis, the contents of which will be the property of the UKZN. Should you wish to remain anonymous kindly indicate so in the table above and your name and contact details will not be included into any thesis documentation.

Your assistance is greatly appreciated.

Kind Regards

Ms Manogrie Chetty

Email: manogriec@gmail.com

Tel: 084 401 1512

Fax: 031 266 5287 / 086 560 8481

Section A: Background information

1. Category of stakeholder and work experience: government (national, provincial or local) / academic / private sector / NGO / other (specify)

NGO

2. Level of education: Degree / Honours / Masters / PhD; and academic background and training: natural sciences / social sciences / law

1. Degree in Geography and Environmental Management (UKZN) 2. NDip in Safety Management- Occupational Health and Safety (UNISA- last year)

3. Field of expertise: strategic environmental management / environmental assessment / compliance monitoring / environmental law / other (specify)

• Environmental Management • Compliance and Monitoring • Assessing and commenting on all Environmental assessments and legal documents- legislation, Acts, Bills etc • Community liaison and public participation • Conducting workshops and training to public/ community members on various environmental issues

4. Your role or function in the Organisation that you represent: Environmental Assessment Practitioner (EAP) / Competent Authority (CA) / Commenting Authority / Applicant / other (please specify if applicable)

Environmental Project Officer To name a few: • Develop and conduct research on environmental educational plans focussing on all environmental issues such as climate change, access to information, spatial development and sustainability. • Facilitate educational workshops and training sessions for community, schools, academic and other institutions. • Assist with GIS and mapping computer systems. • Monitoring and evaluation of projects. • Liaise with various stakeholders on projects- whether Government, private sector, industries and the public. • Comment and critically analyse EIAs and other environmental documents as well as

legislation, policy and deal with issues concerning compliance.

5. Time in practice: 1 year / 1-5 years / 5-10 years / more than ten years

1 and a half years

Section B: EIA Legislation & Guidelines in South Africa (SA)

1. What guidelines do you refer to when undertaking / reviewing the EIA process in South Africa?

- One needs to firstly fully understand the type of project
- Affects and impacts on economic, social and the environmental spheres
- The levels of risks involved in the project will determine the level of review and analysis
- Right procedures and processes have to be followed according to the various acts, legislation, policy and the constitution, NEMA act etc.
- All of the above and if more information is needed, needs to be taken into account when assessing an EIA or any environmental assessment document.
- Usually a site visit is advisable to create a physical or visible picture of the scene, setting or environment in which the project is planned.
- It is vital to research the alternative options which should be stated.
- Research on best practice methods or comparism to other similar developments or project.

2. When looking at the current EIA regulations (of 2010, as amended), and comparing them to the previous regulations, have there been improvements or setbacks in the EIA process? Please describe.

- The current EIA regulation is an improvement on the previous one but in my opinion there is still more to be done.
- Stakeholders have often complained about the duration of the commenting period, it needs to consider and allow for appropriate extension without hesitation.
- Another aspect I believe should be looked at more is the process of public participation. I think there is a lot that needs to be added and changed to initiate further engagement on projects.

3. If you had the ability to effect change in South African EIA legislation, what would changes would you effect and why?

- More consideration needs to be done on the public participation side of EIA and projects.
- More engagement with community members and stakeholders.
- More transparency on information and raw data should be provided on request much more willingly than now.
- Public hearings should be more advertised and should be able to be understood by all members of the society that is including translators when necessary.
- Providing documents in more than one language so all participants are able to effectively be involved..

- Times and venues at which these meetings are to be held needs to be at the appropriate times and places suitable for everyone.
- All advertisements need to be made on local/ community radio stations, local newspapers, community newsletter and even according to the extent and impact of the project door to door pamphlets.

Section C: Impact Significance in the SA context

1. During the assessment / review of impact significance for various activities, have you come across different methods used? Please provide a brief description of the methods used.

- It is generally a standardised procedure
- The method used is the same in S.A content.
- It is a strategic process which has to be executed the proper way.

2. Are the methods used to assess impact significance mostly qualitative or quantitative in nature?

- In my opinion it is both qualitative and qualitative
- Any information needs to be backed up by figured and statistics when comparing and so on so that is why I say both.

3. Is there a method that you find is preferred over most? If so, please describe.

- Any process needs to be followed well with detailed information constitutionally.
- The preferred process should follow the EIA regulations definitely and the appropriate structure needs to be abided by.

4. Are there any particular types of activities of which the impacts are often poorly / rigorously assessed?

In my opinion:

- Pollution (Air, water, land, waste soil, and noise) assessments have often been poorly conducted.
- Risk assessments also have been compromised on both health and environmental relation.
- The oversight on secondary hazards and indirect affected bodies like the effect of water polluti9on on groundwater.

5. From your experience, have there been cases where the CA required the re- / additional assessment of (the significance of) impacts? Please provide examples and reasons for the re-assessment.

Yes

The EIR was rejected on the basis of not considering all community and stakeholder comments- Clairwood Racecourse

6. Do you find that the method used in assessing impact significance affects the outcome of the environmental authorisation? (i.e. cases where there were deviations from the EIA findings in the final authorisation). Please provide examples and reasons for the deviation.

- In my opinion not so much since any method used still needs to identify the key concerns stated and then considered.
- Key uncertainties should be defined at the outset, with the best and worst-case scenarios for a project considered. For an EIA, the worst-case scenario regarding the impact on the environment should be considered to ensure that mitigation measures have been adequately addressed. This will minimize 'surprises' caused by the conditions set in the Record of Decision (RoD) issued by the regulatory authorities.

7. What do you feel are the most important shortcomings / strengths of impact significance assessment overall?

- Impact significance helps to characterise the risks involved in a particular project by comparing the level of chemicals or pollutants to the guideline values
- It helps to classify the risks to both human health and environmental and to know whether it is low- medium- high risk. From this level you know should be able to state whether the project should or should not go ahead.

8. How does the assessment of impact significance in practice differ from in theory?

- It doesn't differ from the theory if the risk matric is used after the characterization of the risk.

9. How do you see the way forward for impact significance assessment in EIA in SA?

- All hazards involved should be allowed without resistance for all documents and assessments to be properly assessed by independent expert specialists if requested by stakeholder parties.
- All requirements must be met
- There should not be any difference between theory and practice especially when it comes to potential impacts and risks involved-assessments

Section D: EIA effectiveness overall

1. As a specialist in the field of EIA, what does EIA in practice mean to you?

- It is a formal process that has to follow standardized steps in order to predict and further

eliminate any harm, impacts on the environmental and social environment.

- It proposes measures to adjust impacts to acceptable levels or to investigate new technological solution. Although it can lead to difficult economic decisions, strong political and social commitments, but it protects environment which sounds basis for effective and **sustainable development.**
- The purpose of the assessment is to ensure that decision makers consider the process of identifying, predicting, evaluating and mitigating the biophysical, social, and other relevant effects of development proposals prior to major decisions being taken and commitments made environmental impacts when deciding whether or not to proceed with a project.

2. What do you consider should be the overall purpose of EIA in South Africa today?

- It is for decision makers to decide whether a project should go ahead or not, it requires them to take into consideration the environmental impacts and to justify them by the value and community comments on the potential environment effects.
- EIAs as a tool have pros and cons with regard to their role in achieving sustainability and sustainable development viz. limitations and effectiveness.
- The contribution of EIA to consent and design decisions can be viewed resolutely as one component of incremental changes in institutions, organizations, philosophy, science and culture.

3. To what extent can an EAP / assessing officer truly understand and connect with the full range of impacts assessed in an EIA?

- There is no limit to fully understand the impacts assessed since one is vested in the interests of sustainability but at all counts EAPs need and should always remain completely independent and facilitate the process on the means of proper guidance from all policies, laws, regulations and acts governing the process of Environmental assessments and decisions.
- They need to be fair on all aspects and no biased in any way.

4. Do you think that the EIA system in South Africa is effective in ensuring the protection of the environment?

- South African policies and acts relating to the environment, is one of if not the best in the world and having said that it is also clear to one that it is much easier written than actually practised. Most definitely this is up for debate but in my personal opinion I believe that when it comes to south African legislation concerning the environment we by far have one of the greatest environmental legal frameworks, however how much is it abided by or truly practised and to what extent is it honouring those very written rules is also again up for debate and to me it's not so much.
- There are a lot more strictness and firmness in executing these regulations that needs to be considered.
- An important development within this trend towards sustainable development is the development and implementation of laws and policies providing for environmental impact

assessment (EIA) procedures. EIA is an important concept and procedure as it is one of the most effective tools or techniques for ensuring that development activities are sustainable provided they are done the proper way.

5. To what extent would you consider the EIA system in South Africa as being effective overall? (very / moderately / slightly / not at all). Please provide examples and / or reasons.

- Slightly to moderately – I say this because whilst having one of the best legal frameworks in the world environmentally, specifically, we however are too blinded by need for economic development and modernization, therefore compromising the impacts this might and have caused on the environment and its people.
- At the heart of environmental authorization is the intention to implement sustainable development. The phrase is often used, and sweeping statements about sustainability are commonly made; development is to be sustainable, negative effects on the environment should be avoided even if it means in my opinion to stop the development entirely.
- The primary purpose of EIA in South Africa is to serve as a key implementing instrument in ensuring sustainable development. In order to achieve this, the objective of EIA is to anticipate and avoid, minimise or mitigate (including offset) significant negative impacts on the environment and this should be practiced no matter the cost.

THANK YOU

UNIVERSITY OF KWAZULU-NATAL
INYUVESI YAKWAZULU-NATALI

9 July 2015

Mrs Manogrie Chetty 202513349
School of Agriculture, Earth and Environmental Science
Westville Campus

Dear Mrs Chetty

Protocol reference number: HSS/0422/014M
Project title: An investigation of the methodologies used for determining impact significance and the implications for EIA effectiveness in South Africa: Case studies from KwaZulu-Natal

Full Approval – Expedited Application

In response to your application received on 20 April 2014, the Humanities & Social Sciences Research Ethics Committee has considered the abovementioned application and the protocol have been granted **FULL APPROVAL.**

Any alteration/s to the approved research protocol i.e. Questionnaire/Interview Schedule, Informed Consent Form, Title of the Project, Location of the Study, Research Approach and Methods must be reviewed and approved through the amendment/modification prior to its implementation. In case you have further queries, please quote the above reference number.

PLEASE NOTE: Research data should be securely stored in the discipline/department for a period of 5 years.

The ethical clearance certificate is only valid for a period of 3 years from the date of issue. Thereafter Recertification must be applied for on an annual basis.

I take this opportunity of wishing you everything of the best with your study.

Yours faithfully

.....

Dr Shenuka Singh (Chair)
Humanities & Social Sciences Research Ethics Committee

/pm

Cc Supervisor: Ms Dayle Trotter
Cc Academic Leader Research: Professor Onisimo Mutunga
Cc School Administrator: Ms Marsha Manjoo

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