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AN ASSESSMENT OF THE MONITORING ASPECT OF THE ENVIRONMENTAL IMPACT ASSESSMENT PROCEDURE IN CAPE TOWN, SOUTH AFRICA.

ROBIN BENJAMIN SWANEPOEL

Dissertation submitted in partial fulfilment of the requirements for the degree Master of Technology Environmental Management in the Faculty of Applied Science at the Cape Peninsula University of Technology

Supervisor: Dr. Vincent Zungu
November 2020

DECLARATION

I, Robin Benjamin SWANEPOEL, declare that the contents of this dissertation represent my own unaided work, and that the dissertation has not previously been submitted for academic examination towards any qualification. Furthermore, it represents my own opinions and not necessarily those of the Cape Peninsula University of Technology.

20 November 2020

Signed **Date**

ABSTRACT

This thesis assesses the monitoring aspects of the Environmental Impact Assessment (EIA) procedure in Cape Town, South Africa. EIA is a tool used within sustainable development to identify, predict, evaluate, and mitigate potential impacts of proposed developments. This study argues that for EIAs in South Africa to contribute effectively to sustainable development, they must be underpinned by a holistic “cradle to grave” approach (DEAT, 2004c: 4–10). Currently, this is not the case, as Cashmore et al. (2004) argued that the EIA process is “relatively inefficient at ensuring: impacts were minimized; irreversible impacts were avoided; and sustainable development was facilitated.” These concerns are echoed by Jay et al. (2007) and Devuyst (2000: 68–72).

With the establishment of the Environmental Assessment Practitioners Association of South Africa (EAPASA), only registered environmental assessment practitioners (EAPs) are mandated to conduct the EIA process; however, no such mandate exists for post-EIA activities[1].

The EIA process is seldom undertaken outside the pre-feasibility or feasibility phase, creating an administrative hurdle for project progression. However, Schmidt et al. (2008) noted that the subsequent engineering design phase often results in EIA-approved designs evolving and developing post-environmental authorization (EA), potentially invalidating or rendering inapplicable many originally predicted environmental impacts. Conversely, design changes may introduce "new" environmental impacts.

Upon construction commencement, the responsibility for ensuring adherence and compliance with the environmental management programme (EMPr) and environmental authorization falls to either the environmental control officer (ECO) and/or the environmental auditor. Ironically, the ECO's roles and responsibilities are undefined, while the environmental auditor is merely required to possess environmental auditing experience. Both roles remain unregulated within the broader South African environmental management industry. Consequently, quality control of post-EIA related work remains unchecked, and current post-EIA learnings do not iteratively inform future EIA processes.

To assess the monitoring aspects of the post-EIA procedure in South Africa, Phase Two and Phase Three of the proposed Plankenbrug Main Outfall Sewer and Associated Works development in the Western Cape were used as an illustrative case study. A qualitative

[1] Post-EIA is the monitoring, and evaluation of the impacts of a project or plan (that had been subject to EIA) for management of, communication about, the environmental performance of that project or plan (after Morrison-Saunders et al. 2004).

research design was adopted, supplemented by surveys, focus groups[2], and in-depth face-to-face interviews with various industry stakeholders. Primary data collected from interviewees and research participants was augmented with secondary data sourced from various documentary and archival materials.

This study revealed that the EIA regime in South Africa is not fully effective due to several procedural shortcomings inherent in the EIA process, which diminish its contribution to achieving the ideals of sustainable development. Finally, the study concludes that without a "cradle to grave" approach, a holistic view of impacts assessed throughout the development lifecycle will not be achieved, hindering effective mitigation.

[2] The focus group comprised representatives from industry, competent authorities, developers etc who presented at the IAIAsa Technical Workshop held in Bellville, 2016, on the Roles and Responsibilities of Environmental Control Officers.

ACKNOWLEDGEMENTS

I wish to thank:

- My family – thank you for being there through all the good times and bad
- Bronwen – thank you for the late-night chats, balanced views, informed opinions, and your friendship
- Jan-Albert and Nigel – thank you for the journey, your wisdom and friendship
- Wouter, baie dankie vir jou hulp met die kaarte, ek waardeur dit baie!
- My gratitude goes to Dr Vincent Zungu for his supervisory role. I also extend to the staff at Cape Peninsula University of Technology for assistance, encouragement, and guidance that they offered during my studies.
- And finally, to all my fellow environmental practitioners who took the time and made the effort to contribute towards this research, a heartfelt thank you to one and all, it is greatly appreciated.

DEDICATION

For

James, my boy, this work has demanded so much of me, and I know it's meant time away from you. I hope you understand. Please forgive me. I long to make up for every moment lost. I'm bursting with pride at the young man you've become. I love you more than words could ever express.

My father Ben and Grandmother Joan, you both saw me start this, but neither of you saw me finish it.
RIP

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GLOSSARY

Key terms

EIA follow-up; sustainable development; efficacy; monitoring; outcomes

Clarification of key concepts

Competent authority in respect of a listed activity or specified activity, means 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 (after National Environmental Management Act (Act 107 of 1998), as amended).

Development means the building, erection, construction or establishment of a facility, structure or infrastructure, including associated earthworks or borrow pits, that is necessary for the undertaking of a listed or specified activity, but excludes any modification, alteration or expansion of such a facility, structure or infrastructure, including associated earthworks or borrow pits, and excluding the redevelopment of the same facility in the same location, with the same capacity and footprint (after 2014 EIA Regulations, as amended).

Environmental aspect in terms of International Organization for Standardization (ISO) 14001, is an element of an organization's activities, products, or services that has or may have an impact on the environment. (after ISO 14001: 2015).

Environmental assessment practitioner when used in Chapter 5 of the National Environmental Management Act (Act 107 of 1998), means the individual responsible for the planning, management, coordination or review of environmental impact assessments, strategic environmental assessments, environmental management programmes or any other appropriate environmental instruments introduced through regulations" (after 2014 EIA Regulations, as amended).

Environmental Control Officer means the party who act(s) as quality controller regarding all environmental concerns. In this respect, the ECO is to conduct periodic site inspections, attend regular site meetings, pre-empt problems and suggest mitigation and be available to advise on incidental issues that arise" (DWAF, 2005).

Environmental impact assessment means a systematic process of identifying, assessing, and reporting environmental impacts associated with an activity and includes basic assessment and (sic) scoping and environmental impact reporting (S&EIR)" (after 2014 EIA Regulations, as amended).

Environmental Management Programme[3]**,** in terms of Section 24N of the National Environmental Management Act, (Act 107 of 1998) as amended, is a tool which prescribes monitoring and management mechanisms for the prevention or reduction of negative impacts whilst promoting positive benefits associated with developments.

Post environmental impact assessment (Post-EIA) refers to all activities occurring after the decision has been issued by the competent authority e.g., design, construction, operation etc of a development (after Sebone. 2021: iii)

Post-EIA follow up is the monitoring, and evaluation of the impacts of a project or plan (that had been subject to EIA) for management of, communication about, the environmental performance of that project or plan (after Morrison-Saunders et al. 2004).

Sustainable development is "the integration of social, economic and environmental factors into planning, implementation and decision-making to ensure that development serves present and future generations" (after 2014 EIA Regulations, as amended).

[3] Whereas an Environmental Management Plan (EMP) is a requirement of Section 11 of the National Environmental Management Act, (Act 107 of 1998) as amended, which prescribes organs of state to develop an environmental implementation plan and environmental management plan to guide "…*national departments that exercise functions that may affect the environment*…".

List of Acronyms and Abbreviations

Acronym / Abbreviation	Explanation
IAIAsa	International Association of Impact Assessors, South Africa Affiliate
BAR	Basic Assessment Report
ECA	Environmental Conservation Act
DEA	Department of Environmental Affairs
DEAT	Department of Environmental Affairs and Tourism
DFFE	Department of Forestry, Fishery and Environment
DMR	Department of Mineral Resources
EAP	Environmental Assessment Practitioner
EIA	Environmental Impact Assessment
EAPASA	Environmental Assessment Practitioners Association of South Africa
ECO	Environmental Control Officer
EO	Environmental Officer
EMPr	Environmental Management Programme
I&AP(s)	Interested and Affected Party(ies)
IEM	Integrated Environmental Management
ISO	International Organisation for Standardisation
LCA	Life-cycle Assessment
n.d.	No Date
NEMA	National Environmental Management Act (Act 107 of 1998)
NGO	Non-government Organisation
NPO	Non-profit Organisation
SACNASP	South African Council for Natural Scientific Professionals
SEMA	Specific Environmental Management Act
S&EIR	Scoping and Environmental Impact Report
WWF-SA	World Wildlife Fund for Nature – South African Affiliate

CHAPTER ONE
INTRODUCTION AND BACKGROUND

1. Introduction: Background to the study

This study investigates the effectiveness of the post-EIA process in achieving sustainable development for proposed projects in South Africa. The research focuses on a specific case study within the Western Cape Province.

The concept of sustainable development has gained significant academic attention in recent decades, particularly in the context of EIA's role (Betey et al., 2013; Morrison-Saunders et al., 2012; Arts et al., 2012, 2001; Hill et al., 2010). While EIA is widely accepted as a crucial tool for achieving sustainable development (Barrow, 2006), concerns exist regarding the potential shortcomings of poorly defined roles and responsibilities within the post-EIA process (Wessels, 2015).

These concerns stem from the potential for inadequate monitoring of EIA outcomes, as identified by Wessels and Morrison-Saunders (2012). This hinders the integration of valuable institutional knowledge gained during post-EIA stages[4] into future projects, potentially reducing the overall effectiveness of EIA in promoting sustainable development (Bond et al., 2012).

The concept of sustainable development was first formally introduced by the World Commission on Environment and Development (WCED) in its 1987 Brundtland Report (United Nations, 1987). Sustainable development emphasizes the need to integrate social, economic, and ecological concerns. It strives to meet current needs without compromising the ability of future generations to meet their own (SAEP). A core principle is intergenerational equity, ensuring current development practices do not burden future generations with irreversible ecological and social costs (Piachaud et al., 2009).

South Africa's environmental legislative framework incorporates EIA as a tool to balance development needs with environmental protection[5]. While EIA is often viewed as a key instrument for achieving sustainable development throughout a project's lifecycle ("cradle to grave"), this study argues that unaddressed anomalies within the post-EIA process hinder the current EIA regime's ability to fully realize sustainable development ideals.

Over the past 15 years, scholars have actively debated the sustainability of EIA in South Africa (Boer et al., 2005; Bond et al., 2012; Audouin et al., 2012). Morrison-Saunders et al. (2012) highlight the importance of balancing development and

4 i.e. Design for the environment and subsequent EMPr implementation auditing.

5 NEMA. Chapter 1. National Environmental Management Principles. Section 2 - Principles

environmental needs to preserve or improve social, economic, and environmental resource bases.

Sustainable development necessitates the implementation of sustainable practices. South Africa's National Environmental Management Act (NEMA) (Act No. 107 of 1998) reflects this notion by mandating that "development must be socially, environmentally and economically sustainable" (Chapter 1). Chapter 5 further emphasizes Integrated Environmental Management (IEM) as a tool for achieving this objective.

However, Saidi (2010) argues that EIA, as a tool for integrating environmental concerns into development, has been "controversial" since its adoption in South Africa. Public debates and negative media coverage suggest that EIA remains a contested policy tool.

The South African EIA process is inherently fragmented, technical, and procedural due to its legislative foundation. It is primarily viewed as a predictive planning tool informing decision-making for proposed developments (Peris-Mora et al., 2015).

While often seen as a recent legislative tool, it's important to note that EIA was voluntarily introduced in South Africa during the 1970s for large-scale infrastructure projects. The process became mandatory in September 1997 with the promulgation of the EIA Regulations under the Environmental Conservation Act (ECA) (Act 73 of 1998). These regulations were later repealed in 2006 with the introduction of NEMA EIA Regulations. These regulations included the requirement for an Environmental Management Programme (EMPr) to manage and mitigate potential negative impacts.

Amendments in 2010 mandated the inclusion of an environmental awareness program and a rehabilitation and closure plan. Further amendments in 2014 focused on financial provisions for rehabilitation and closure of mining projects, and streamlining the application process. Notably, these changes included post-authorization auditing to facilitate iterative learning and compliance monitoring.

In practice, once the administrative process is finalized and an Environmental Authorization (EA) is issued, the EIA process is considered complete (Western Cape Government, 2014). The Western Cape Government's "EIA Processes - Western Cape: How to Guide" (2015) identifies only five distinct phases within the EIA process: screening, scoping, specialist studies, integration and assessment, and authority review and decision-making.

However, incorporating additional post-authorization phases for monitoring EIA outcomes can significantly contribute to sustainable development by informing future EIA processes through iterative learning and continuous improvement (Plan-Do-Check-Act Cycle).

2. Problem Statement

Over the past three decades, the EIA process has been employed as a tool for promoting sustainable development (Sandham et al., 2008: 701). Although the ECA EIA Regulations (1997) were superseded by NEMA in 2006, the EIA process in South Africa remains primarily a predictive planning tool designed to inform decision-making at the commencement of development projects. However, current regulatory requirements and industry practices seem to preclude a comprehensive “cradle to grave” approach due to the fragmented nature of the EIA process within the project development lifecycle. While pre-development aspects of the EIA process are legislated and documented, there are no mandatory legal mechanisms specifying how the post-EIA process should be conducted to achieve the intended sustainable development outcomes. Once the EIA has been submitted to the Competent Authorities (at either the national or provincial level) and an Environmental Authorisation is issued, the EIA process is generally considered complete. This raises concerns that post-EIA activities may fall short of the EIA's intended outcomes, particularly as new and evolving design impacts are identified. In this context, conflicts can arise between contractual obligations and environmental considerations, while budgetary and time constraints can compromise environmental protection during the development process. Therefore, this study aims to assess monitoring aspects associated with the EIA process during the post-Environmental Authorisation phase.

3. Research Questions

Given the problem statement, the following questions were raised:

- How do monitoring aspects of the EIA process seek to achieve sustainable development?
- Are monitoring aspects associated with the EIA process being implemented in South Africa?
- How do role-players within the EIA regime view or perceive the role of monitoring aspects in the EIA process in South Africa?

4. Objectives of the study

The objective of the study is twofold. First, to interrogate:

- To assess whether monitoring aspects associated with the EIA procedure achieve sustainable development.
- To identify if monitoring aspects associated with the post-EIA process are being implemented in South Africa.
- To ascertain how the role-players within the EIA regime view or perceive the role of monitoring aspects in the EIA process in South Africa.

Secondly, to present measures to ensure sustainable development through the implementation of these aspects within the broader EIA process.

5. Project delineation

The construction of Phases Two and Three of the Plankenbrug Main Outfall Sewer and Associated Works[6] (in short, the Plankenbrug Sewer), sought to replace ageing and under-capacitated main outfall sewers servicing the town of Stellenbosch. This upgrading was required to negate the regularly occurring design capacity exceedances which resulted in both sewerage surcharges being released from manholes and network-wide flooding.

5.1. Background to the study area

This section provides an overview of the study area and summarizes the case study employed in this research. Case study research allows for contextualization of the obtained data. This specific case study was selected because it represents a typical EIA process followed by post-EIA follow-up procedures[7] related to monitoring the Principal Contractor's compliance with EMPr implementation. Consequently, monthly post-EIA follow-up compliance monitoring site visits were conducted, and associated reports were generated for submission to the Competent Authority. The outcomes of this monitoring highlighted shortcomings in the EIA process and its associated lack of iterative learning to inform future EIA processes.

The case study focused on the construction of Phase Two and Phase Three of the Plankenbrug Sewer development in Stellenbosch, Western Cape. Due to the project's nature, which involved replacing existing sewer pipeline infrastructure and working within a watercourse, an EIA process (DEA&DP Ref: 16/3/1/1/B4/5/1107/14) was initiated, culminating in an Environmental Authorisation granted on 27 November 2015.

The study area is located in Stellenbosch, approximately 50 km east of Cape Town. Founded in 1679 by Simon van der Stel, Stellenbosch is the second oldest town in South Africa.

Over the past two centuries, the town has experienced continuous and rapid urban development. Recent development in Khayamandi, a low-cost residential area of Stellenbosch, highlighted the inadequacy of the existing sewer infrastructure to contain and transport sewage to the Stellenbosch Wastewater Treatment Works (WwTW), necessitating a sewer with improved capacity. Construction commenced in 2016 on two phases (Phases 2 and 3), involving the installation of approximately four kilometers of pipelines ranging from 400 mm to 1200 mm in diameter.

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[6] https://www.engineeringnews.co.za/article/aecom-completes-work-on-plankenbrug-outfall-sewer-in-stellenbosch-2017-07-28-1

[7] To which the Researcher was directly involved as Client's Environmental Control Officer.

Phase 2 extended from the intersection of Merriman Avenue and Adam Tas Road to the Distillery Road Bridge over the Plankenbrug River. Phase 3 commenced at Nuutgevonden Estate near Welgemoed Boulevard and terminated at the George Blake Street River bridge over the Plankenbrug River.

A study by Barnes (2003) in her doctoral thesis, “The Impact of Water Pollution from Formal and Informal Urban Developments along The Plankenbrug River on Water Quality and Health Risk,” described Khayamandi as a settlement located on a steep, hilly area with hard, stony, high-clay-content ground overlooking the Plankenbrug River. This terrain was deemed unsuitable for the numerous ventilated improved pit latrines (VIPs) constructed there. Prior to the completion of Phases Two and Three of the Plankenbrug Sewer, many residents resorted to using neighbouring vineyards, open spaces, and watercourse banks for sanitation. Furthermore, the deteriorated state of the municipal sewerage system resulted in frequent overflows into the Plankenbrug River due to its inability to handle the sewage volume.

Figure 1. Map of Phase 2 and Phase 3 of the route

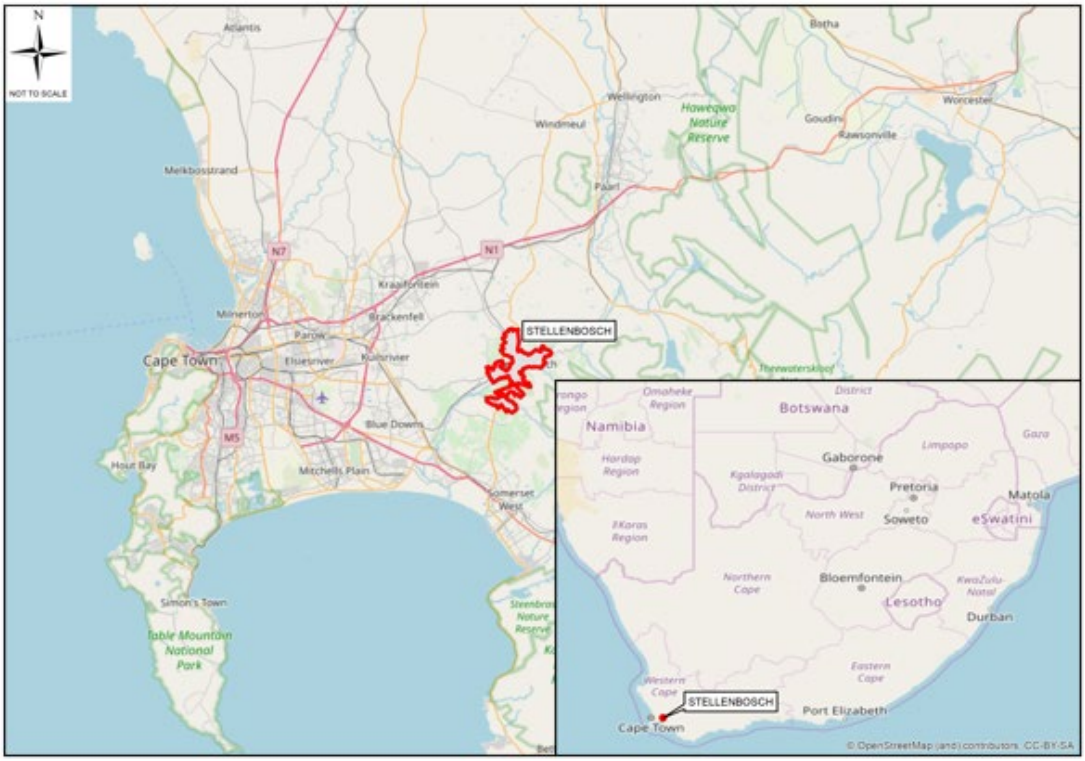

Figure 2: Location of Stellenbosch in relation to Cape Town and the rest of South Africa

5.2. Climate

The site experiences a typical Mediterranean climate with hot dry summers and wet cold winters, often experiencing frontal rainfall only in winter. The prevailing summer winds come from the south-east, which brings cool relief to temperatures soaring over 30°C. The prevailing winter winds blow from the north-west, bringing an annual rainfall of about 740 mm per year. Snow is a regular occurrence on the mountains surrounding Stellenbosch (de Villiers. 2018: 106 – 108).

5.3. Fauna and flora

The EIA process (Withers. 2016: 12-13) undertaken as part of the development indicated the development footprint would have historically included Swartland Shale Renosterveld, however that landscape is currently largely transformed due to urban developments. Remnant species occur along the Plankenbrug River and include arum lilies (Zantedeschia aethopica), wild olives (Olea europaea subsp Africana), indigenous willows (Salix capensis).

This transformation has resulted in almost no indigenous vegetation remaining on the development footprint, with the riverbanks being predominantly dominated by alien invasive vegetation including Eucalyptus species, black wattle (Acacia melanoxylon), and Spanish reed (Arundo donax), together with a variety of other cosmopolitan weeds.

Habitat transformation consequently provides limited support to available indigenous mammal species; whereas typical riverine fauna species abound with clicking stream frogs, freshwater crabs and a variety of invertebrates recorded.

Avian fauna has adapted to the prevailing conditions with Blacksmith Plovers, Crowned Plovers, Cape Wagtails, doves, guinea fowl and feral pigeons frequently being observed.

5.4. Drainage

The Plankenbrug River is a tributary of the Eerste River and drains a catchment of approximately 108 km^2. This catchment includes areas to the east of Bottelary Hills, west of Simonsberg Mountains and 15 km to the north of Stellenbosch. This area comprises mostly agricultural lands, residential areas such as Cloetesville and Khayamandi; and the industrial Plankenbrug Industrial Area.

The river is in a highly transformed state with much of it being canalised, realigned, or overgrown with alien invasive vegetation.

In the Department of Water Affairs and Forestry's "River Health Program report on the Greater Cape Town's Rivers" (2005: 25), the Plankenbrug River was identified as posing a high risk to public health. This was due to high numbers of waterborne human pathogens identified within the watercourse.

Barnes (2003: iii) reported the rivers' coliform count could rise to 13 million during periods of warmer weather dropping significantly during cooler periods. This is significantly higher than the South African Water Quality Guidelines' (1996: 17) provision that >5 per 100 ml is considered a health risk.

5.5. Land use

The development footprint is wholly within the existing Stellenbosch urban edge. The pipeline and associated infrastructure were placed within existing servitudes within erven zoned for industrial or business use; and along the transformed eastern bank of the Plankenbrug River.

6. Motivation for the Study

Scientific and academic discourse regarding the efficacy and effectiveness of EIA in South Africa has re-emerged over the past two decades (Retief et al., 2011: 154; Morrison-Saunders et al., 2012: 34; Sandham et al., 2013: 155; DEA, n.d.: 4; Alberts et al., 2019: 205-206; Buthelezi, 2020: 20). This ongoing debate forms the context for the present study, which addresses the continuing need to evaluate the extent to which the South African EIA regime contributes to sustainable development. Since the promulgation of the 2014 EIA Regulations, understanding aspects related to

compliance monitoring has become crucial for realizing the intended outcomes of the EIA process, although this area remains understudied.

Factors such as a lack of regulatory guidance, limited self-regulation within the industry, insufficient training, inadequate capacity within Competent Authorities[8], and a limited understanding of contractual arrangements in the construction sector have contributed to confusion surrounding post-EIA follow-up work. This confusion is further compounded by diverse interpretations of the roles and responsibilities of the various stakeholders involved in post-EIA compliance monitoring, resulting in suboptimal post-EIA follow-up monitoring practices (Alers, 2016: 3-4; Morrison-Saunders et al., 2003: 43-54).

These examples highlight the uncertainties associated with post-EIA follow-up (monitoring) aspects that fall outside the traditional EIA process. This study contributes to a better understanding of these monitoring aspects, aiming to ensure that EIA outcomes effectively contribute to the ideals of sustainable development. It is anticipated that the findings will contribute to the existing body of knowledge in fields such as Environmental Management, Engineering and Construction, Environmental Law, and Natural Resource Management.

7. Structure of the Thesis

The structure of the thesis and content of each chapter of the thesis are presented below:

Chapter One: Introduction

Chapter One introduces the research topic relating to the assessment of key monitoring aspects associated with the EIA process. In addition, the Chapter provides a brief high-level overview of the concepts of sustainable development, the EIA process and post-EIA follow-up, as the study's theoretical framework. It furthermore motivates the rationale and significance of this study in generating debate around how and if the EIA process, in its current state, is contributing towards sustainable development.

And finally, it provides a case study to delineate the research within the South African context.

Chapter Two: Literature Review

Chapter Two seeks to locate the study within the broader theoretical context by presenting, in an analytical fashion, a detailed literature review discussion on the history of environmental management. It furthermore traces the emergence of sustainable

[8] Competent Authority is the administrative department, either at provincial or national level, that is mandated or empowered to preside over environmental authorization process in terms of the relevant South African EIA regulations.

development; the rise of the EIA as the preferred global integrated environmental management tool, and its evolution in South Africa, together with how it insularly aligns within the regionally focused strategic environmental assessments (SEA) context, the cradle to grave approach, and its associated challenges; and the resources and their competencies to provide towards sustainable development.

Chapter Three: Research Methodology and Design

This chapter describes in detail the research methodological design adopted in the study for obtaining qualitative data, namely: a literature review; a case study methodology; and an interview methodology.

The literature review draws from inter alia scholarly and industry role players to provide philosophical context; whilst the interview methodology draws from focus group, survey interview (semi-structured) and face to face in-depth interviews to provide industry in-sight; whilst the case study triangulated the qualitative data obtained to provide an in depth multi-faceted understanding of the multiple data source types.

Lastly, it describes how these methods were used to collect and analyse the data to inform the conclusions presented.

Chapter Four: Data Analysis and Results

This Chapter analyses the data obtained from both primary and secondary sources. In presenting the findings, it attempts to answer the research question centred on whether key monitoring aspects associated with the EIA process can provide form basis for ensuring the sustainability of specific development proposal.

Chapter Five: EIA Regime in South Africa – Analysis and Discussion

This chapter provides an analysis and discussion on the monitoring aspects associated with the EIA process. Key findings associated with Independence; Professional Registration; Roles and Responsibilities; Experienced EIA follow-up Practitioners and Poor Understanding of Post-EIA Follow-up Monitoring are presented. It furthermore provides recommendations based on the findings whilst suggesting further research be undertaken.

Chapter Six: Conclusion

The chapter summarises the research whilst concluding the study and assessing whether the EIA process furthers sustainable development; and recommending aspects within the broader EIA process for improvement in sustainable development practices. The Chapter links the key findings of the research objectives with published literature and industry experience and reflects on the learning obtained from conducting the research. The Chapter highlights potential implications which compromise the "cradle to grave" EIA process; and concludes that key monitoring aspects were investigated and identified to fall short in adequately pursuing the ideals of sustainable development.

CHAPTER TWO
LITERATURE REVIEW

1. Introduction

This chapter proposes that the rise of sustainable development in the late 1980s and early 1990s played a pivotal role in the development of the EIA process as a mechanism for ensuring development is sustainable from ecological, economic, and social perspectives. The chapter traces the origins and historical evolution of the EIA process in South Africa and examines how the post-EIA follow-up phase[9] (Bond, 2005: 1) is crucial for achieving sustainable development.

While extensive scholarly work exists on the effectiveness of EIA in South Africa (Retief et al., 2011: 154; Morrison-Saunders et al., 2012: 34; Sandham et al., 2013: 155; Alberts et al., 2019: 205-206; Buthelezi, 2020: 20), particularly over the last 20 years (DEA, n.d.: 4), there has been limited research on the impact of inadequate post-EIA follow-up on EIA effectiveness (Wessels, 2013: 169–170, 177; Nel et al., 2010: 57–58). Instead, much of the focus has been on issues such as public participation (Bennie, 2010: 82–83; Leonard, 2017: 3–4; Zungu et al., 2021: 1), development planning (Gerber, 2009: 149), and governance (Warburton, 2014: 106–107). This has resulted in less attention being paid to the role of the Environmental Assessment Practitioner (EAP) in both the EIA and post-EIA follow-up processes. Within this context, the post-EIA process and its effectiveness should also consider the prescriptive role of the Environmental Auditor, who is responsible for conducting environmental audits (DEA, 2014: 39).

This chapter aims to address the research questions by contributing to the ongoing debate on aspects of the EIA process that have consistently emerged in scholarly articles and among industry stakeholders. These aspects, whether considered individually or collectively, may reduce the effectiveness of the EIA process in achieving sustainable development.

The chapter concludes with a summary advocating for amendments within the EIA process to establish a holistic lifecycle approach to impact assessment, management, and mitigation.

2. Historical context: Sustainable Development and EIA

The EIA process focuses on identifying impacts on the natural and social environment and providing methodologies for their management and mitigation. Sustainable development, in essence, aims to ensure development occurs in a way that allows for intergenerational improvements in living standards without incurring environmental

[9] Please note that in the context of this study, the concept of post-EIA follow-up relates to all activities that occur after the EIA authorization or approval is granted.

costs for future generations. Without post-EIA auditing, the cost-benefit analysis of undertaking an EIA (Roos et al., 2019: 1) in pursuit of sustainable development cannot be effectively evaluated (Htun, 1990: 15–15). Therefore, when investigating the role of post-EIA follow-up within the broader environmental assessment context, it is crucial to understand the historical origins of sustainable development and its influence on the development of the EIA regime. The rise of sustainability led to the emergence of environmental management tools such as EIA and Environmental Law as countermeasures to unsustainable development practices.

Caradonna (2017: 154) argues that unsustainable economic growth, manifested in various developments across both developing and developed nations, brought sustainable development to the forefront. However, Mensah et al. (2019: 5) suggest that the emphasis on economic growth within sustainable development frameworks could perpetuate unsustainable growth at the expense of environmental and social dimensions. This analysis by Mensah et al. arguably lacks a clear articulation of the relationship between increasing population growth and the distribution of limited resources, a key pillar of sustainable development.

Historically, the emergence of sustainable development as an alternative development model can be traced back to international discussions as early as 1972 (United Nations, 1973: 3). However, the term gained widespread recognition with the publication of “Our Common Future” in 1987. In this report, the World Commission on Environment and Development (WCED) sought a pragmatic approach to addressing environmental and developmental challenges (United Nations, 1987: 1–10). This report generated considerable momentum, culminating in the 1992 United Nations Conference on Environment and Development (UNCED) in Rio de Janeiro. This conference resolved that all countries should develop practices and policies to "implement integrated, enforceable and effective laws and regulations… based upon sound social, ecological, economic and scientific principles" (Kurukulasuriya et al., 2006: 32).

Subsequently, sustainable development has been a central theme at numerous United Nations conferences held since the 1992 Earth Summit, focusing on pathways to achieving sustainable development.

Of note, is

- the African Ministerial Conference on the Environment (AMCEN) of 1985 and 2005 – 2006, which aimed for advocacy rights for the protection of the environment, particularly in the African continent (UNEP. n.d.);
- the New Partnership for Africa’s Development (NEPAD) which aimed through the alleviation of poverty, to promote sustainable development (NEPAD. 2003: 4 – 5); and

- the Johannesburg Plan of Action which aimed to reduce the rate of biodiversity loss (DEAT. 2005: 7); and (d) the Paris Declaration on Aid Effectiveness and the Accra Agenda for Action which aimed to provide aid for developing countries to take ownership of their development (OECD. n.d.: 1 – 2). All these conferences have highlighted the interdependence link between the environment and development.

The Millennium Development Goals, established by the United Nations Millennium Summit of 2000 (United Nations, 2000: 1–9), set objectives for enhancing social welfare, incorporating environmental considerations and economic development.

Conceptually, the terms “sustainable development” and “sustainability” have been used interchangeably since 1972. This has led to the concept being described as “intrinsically value-laden and open to wide interpretation” (Fenner et al., 2006: 145). At its core, sustainable development seeks to balance economic, environmental, and social development constraints equitably. Sustainability implies the maintenance of healthy ecosystems and natural resources (Basiago, 1998: 145) as essential for human health and well-being (Thomas, 2015: 107). It further recognizes the finite and non-renewable nature of resources. Some authors argue that sustainable development is simply a process employed to achieve sustainability (Mensah et al., 2019: 5-7). Thus, sustainable development allows for development that promotes the attainment of social and economic goals. As Thomas (2015: 107) argues, this is based on the premise that basic needs can be met without compromising the supporting environment. To achieve this balance and ensure environmental protection while promoting social and economic progress, environmental assessments (including EIA, strategic environmental assessment (SEA), and other associated tools and instruments) are necessary.

3. State of Environmental Assessment

Environmental assessment serves as a central framework for integrating environmental issues and concerns into the development lifecycle. While the EIA process is the predominant environmental assessment tool in South Africa, various other instruments have been developed to enhance development sustainability. These tools operate in two primary modes: proactive and reactive. Proactive environmental assessment addresses environmental issues at strategic, policy, or program levels, while reactive assessment focuses on project-level planning, specifically assessing and mitigating environmental impacts arising from a specific development proposal. Each of these assessment tools provides mechanisms for "estimated, evaluated or predicted" impacts on both the natural and social environments (UNEP, 2015: 4). Within the South African context, SEA provides strategic guidance, while EIA focuses on project-level planning.

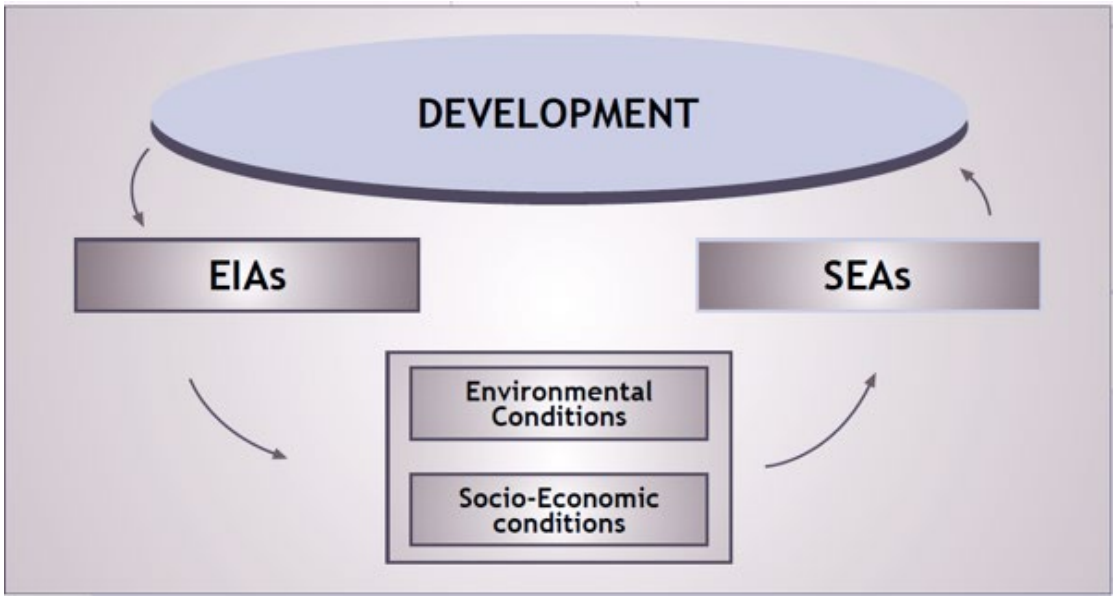

Figure 3: The EIA and SEA relationship, whereby the EIA process assesses the effects of the development on the natural and socio-economic environment; whilst the SEA assesses the effect of the natural and socio-economic environment on the development (after DEAT 2004a)

Figure 3 is a diagrammatic representation of the cyclical nature and interdependence between the EIA and the SEA.

Figure 4 reflects how the strategic and proactive nature of the SEA sets the contextual framework for the EIA at the project level; whilst the EIA reactively assesses impacts within a specific geographic context. This in turn addressed some of the EIA's shortcomings of not being able to assess "whether, where, and what type of development" was most suited for the intended purpose (University of South Hampton n.d.) (Clean Air Asia. 2021).

Through the EIA's authorisation conditions, it, in turn, supports evaluating whether the policies and programmes of the SEA attain their sustainability objectives, to improve future decision-making (DEAT. 2004a: 5).

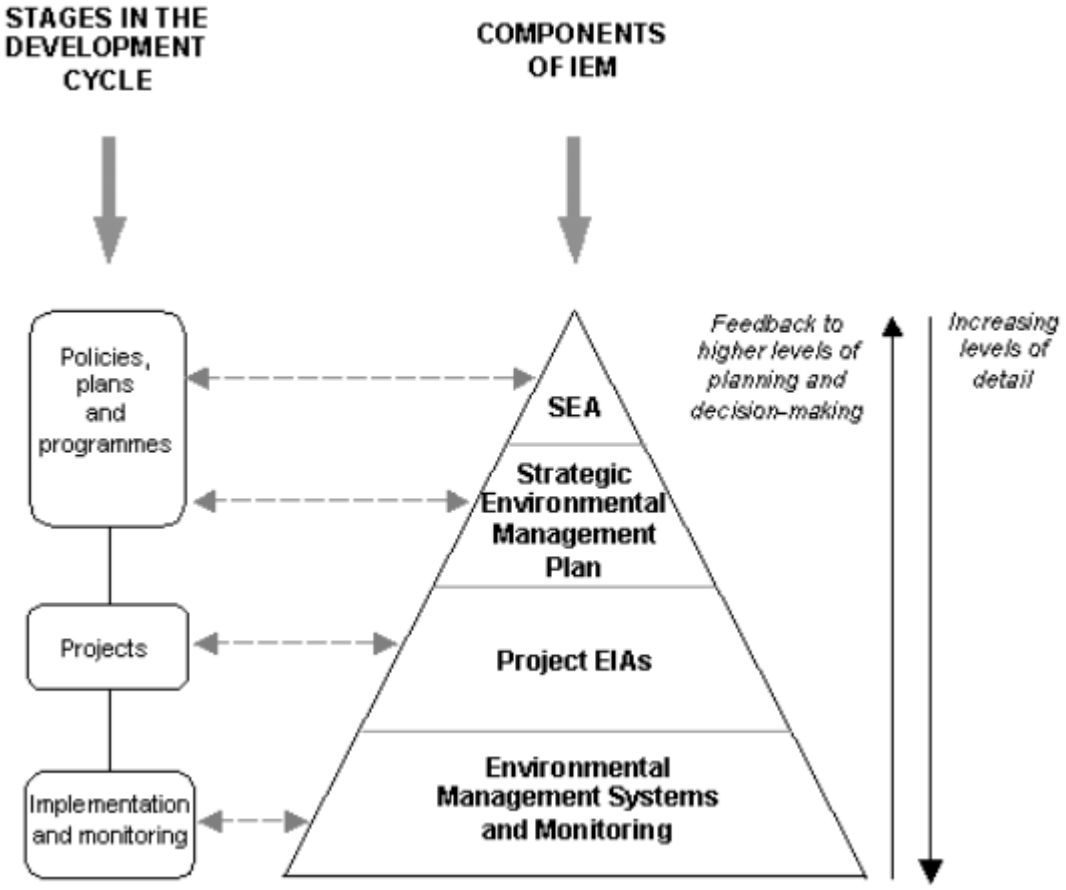

Figure 4: The hierarchical approach to SEA and EIA within the South African context (after Rossouw, et al. 2000)

4. Strategic environmental assessment

While SEA has limited direct legislative backing, it provides a crucial framework for contextualizing strategic policy, planning, and program perspectives within regional development initiatives (Fischer et al., 2020: 28; Noble et al., 2017: 165; Govender, 2005: 2). SEA facilitates the incorporation of regional economic, environmental, and social objectives into planning and policy processes, aiming for their integration into localized, sustainable developments (Canadian Environmental Assessment Agency, 2010: 2). Therefore, SEA complements the EIA process by evaluating or modifying proposed or formulated national or regional frameworks, programs, policies, and plans (DEAT, 2004a: 1–16).

As illustrated in Figure 5 (below), SEA adopts a broad perspective from the outset. This aligns with Sadler et al.'s (1996) description of SEA as "a systematic process for evaluating the environmental consequences of proposed policy, plan or programme initiatives in order to ensure they are fully included and appropriately addressed at the earliest appropriate stage of decision making on par with economic and social considerations."

It is noteworthy that subtle regional variations exist in the definition of SEA. The White Paper on Environmental Management Policy for South Africa (1998: 169) defines it as “a process to assess the environmental implications of a proposed strategic decision, policy, plan, programme, piece of legislation or major plan.” Internationally, however, it is more commonly understood as “a process for assessing the environmental consequences of policies, plans and programmes (PPP)” (CSIR, 2007: 32).

Regardless of these regional nuances, SEA remains a proactive process designed to inform development proposals from a broad perspective, ensuring that a desired level of protection for both the natural and social environments is maintained. This is achieved through "a low level of detail to provide a vision and overall framework" (NRF. SARAO, n.d.).

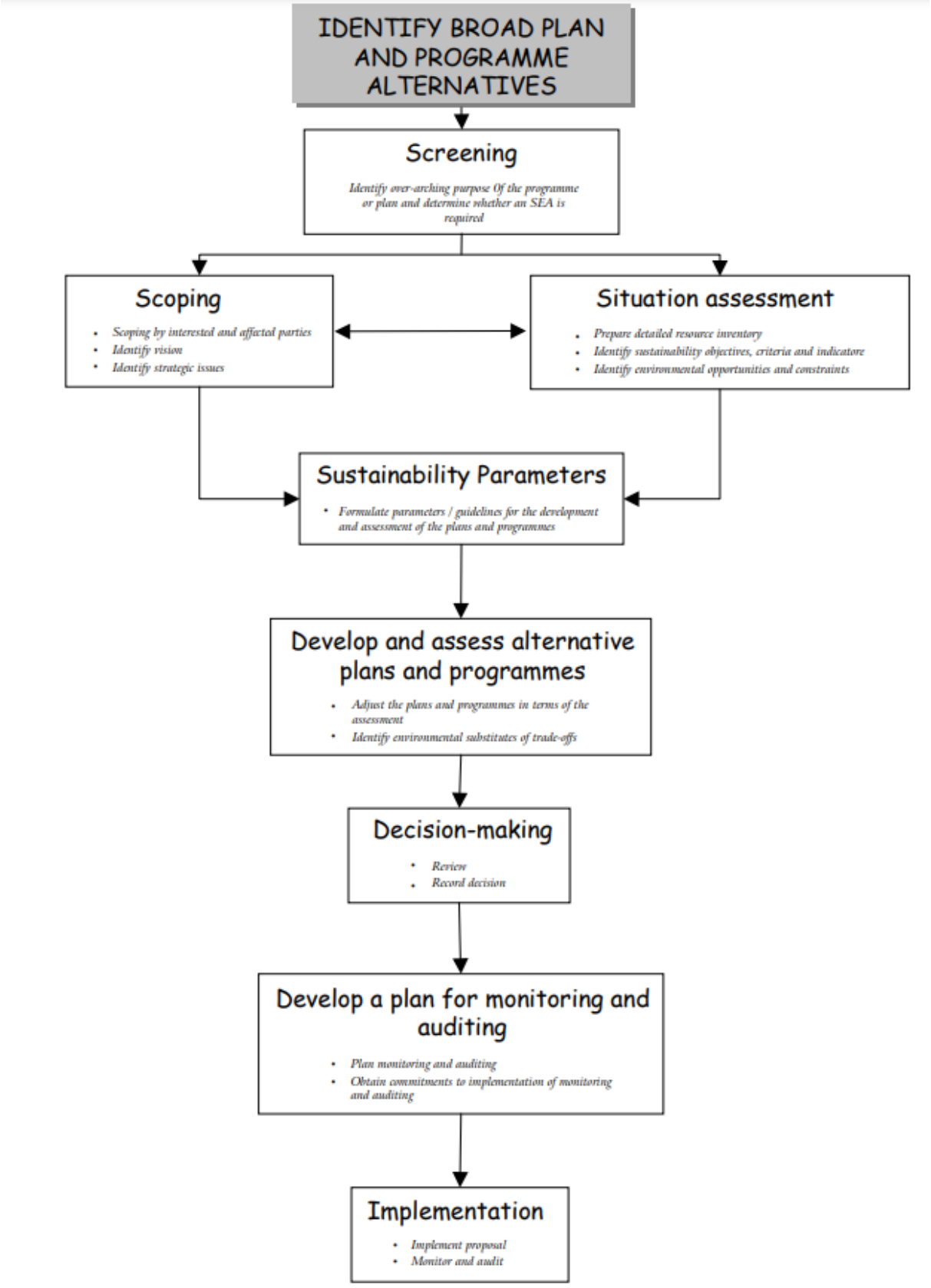

Figure 5: SEA Process (CSIR, 2007)

5. Environmental Impact Assessment

In contrast to SEA, the South African EIA is a legislated, interdisciplinary process that informs project-level environmental management[10] practices. Impacts are assessed during the planning phase of a development, and management and mitigation measures are devised to reduce the severity of these impacts on the receiving environment.

The South African EIA process offers two distinct assessment pathways: a "Basic Assessment" for known and quantifiable impacts, and a full "Environmental Impact Assessment" for unknown or unquantifiable impacts. Both processes are regulated and adhere to a prescribed methodology until a decision is issued by a Competent Authority. Once this decision is obtained and the appeals process is concluded (as illustrated in Figures 6 and 7 below), the formal EIA process is typically considered complete.

Consequently, the EIA process, as currently structured, does not encompass a “cradle to grave” approach. It does not explicitly address the mitigation of previously unidentified impacts[11] post-environmental authorization, nor does it provide adequate mechanisms for iterative learning from audits to inform current and future impact assessment processes[12]. Its reactive nature, particularly during the construction phase of a development (Partidario, n.d.: 2-3; Tomlinson et al., 1987: 187–198; Morrison-Saunders et al., 2004: 1-21), often leads to non-compliance with environmental authorizations and EMPrs as impacts evolve or new impacts emerge (Shubane, 2015: 3). As a result, valuable lessons learned by EMPr implementers are not consistently integrated into future EIA processes (Arts et al., 2001: 181)[13]. This issue is further compounded by the lack of regulatory guidance concerning the roles and responsibilities of those tasked with implementing[14] and verifying compliance with environmental authorizations and EMPrs[15]. This deficiency has prompted the Department of Forestry, Fisheries and Environment (DFFE) to issue numerous iterations of the EIA Regulations in an effort to improve and streamline the process and better realize sustainable development goals.

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[10] These include plans, specialist studies, as well as the local knowledge of those affected or interested by the development; culminating in management and mitigation measures contained in the EMPr

[11] Without having to initiate a new EIA process, thus causing potential schedule delays

[12] See point 12 below

[13] Unlike other life-cycle processes, the EIA process fails to provide the same level of detail associated with iterative learning and quality control. This is due to those tasked with implementing the EMPr not necessarily also tasked with writing the EMPr. Thus, lessons learnt do not inform future EMPrs

[14] Environmental Officers

[15] Environmental Auditors

It should be noted that the audit process prescribed within Regulation 34 of the EIA Regulations, does not feature within Figure 6 and Figure 7, nor any form of EIA follow-up.

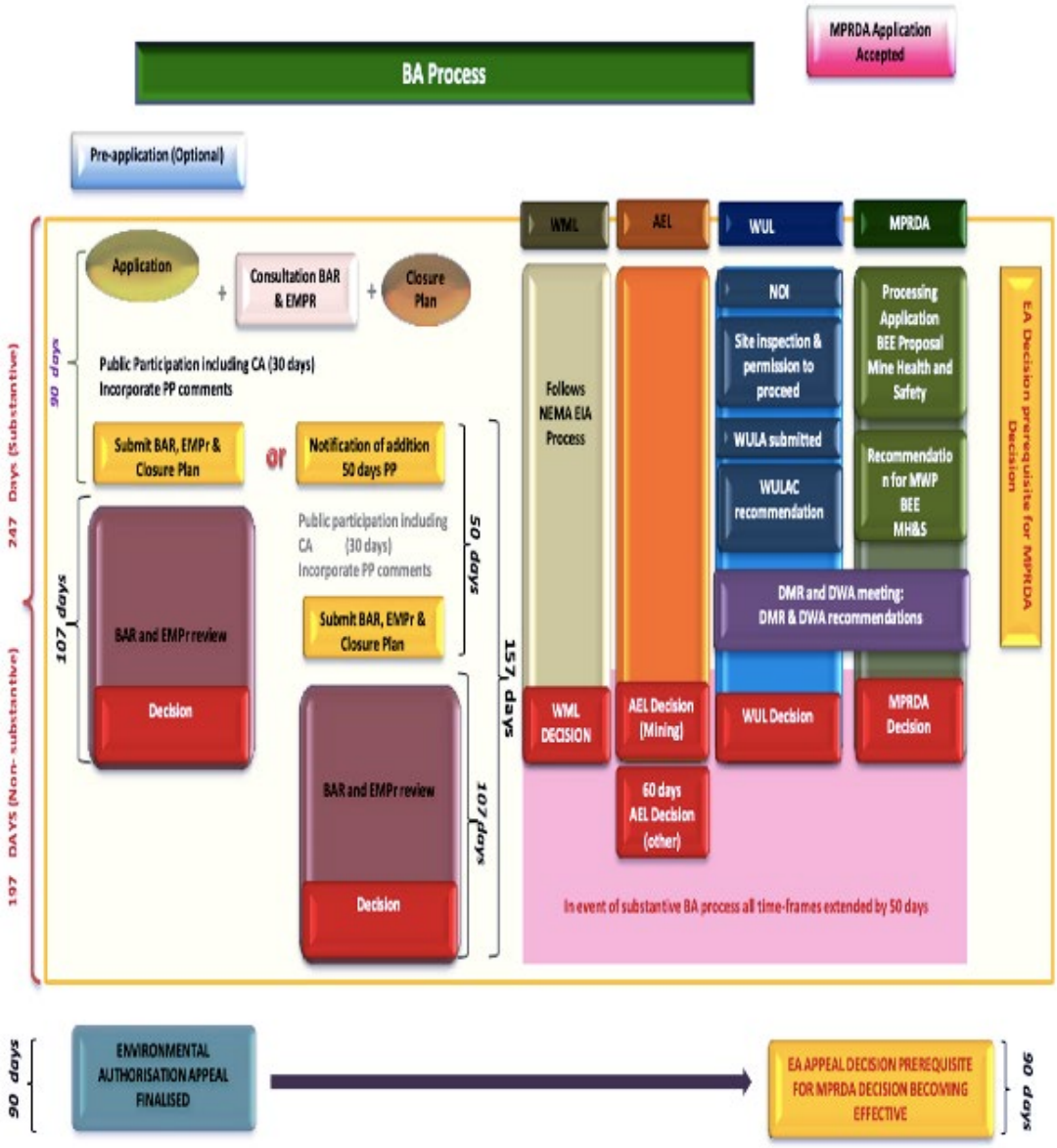

Figure 6: Basic Assessment Process (Western Cape Government 2014. 95-96)

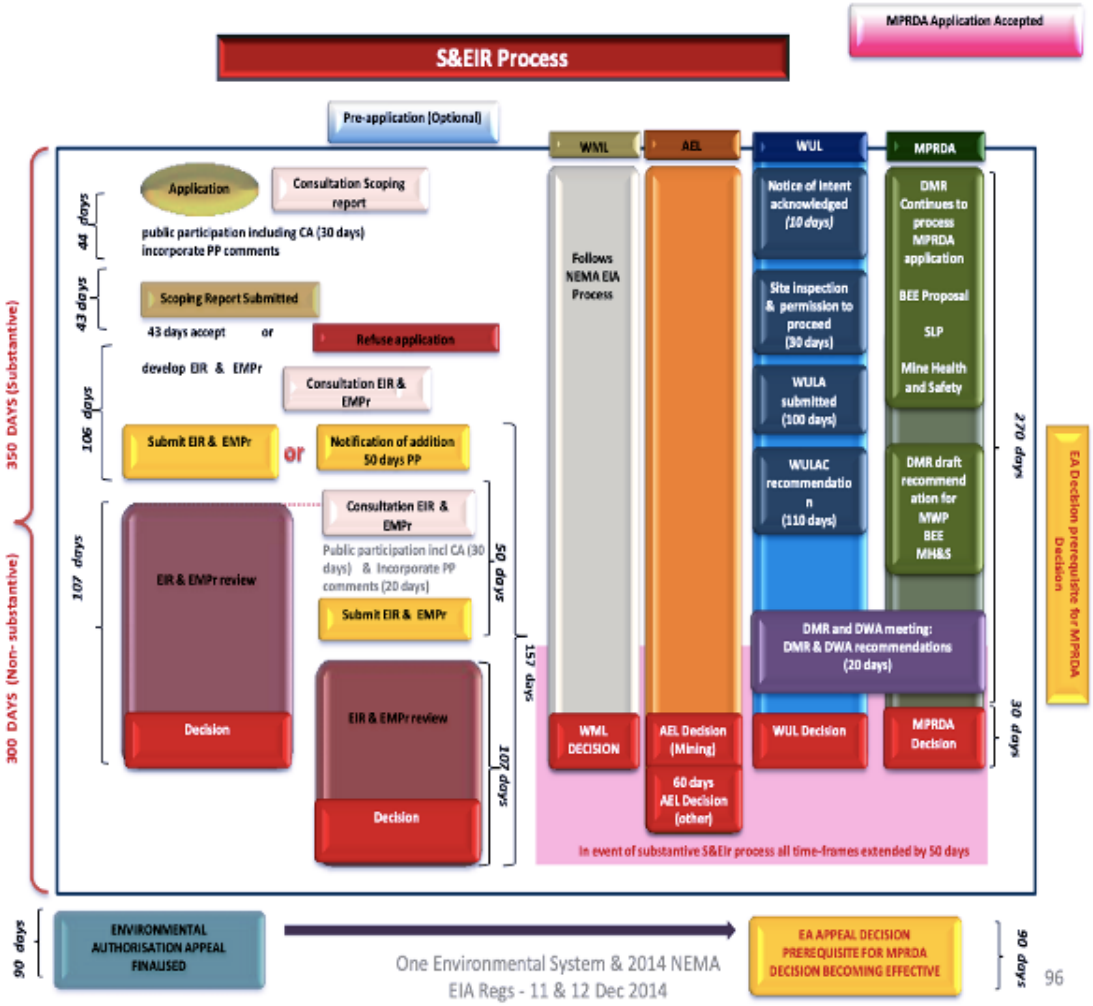

Figure 7: Environmental Impact Assessment Process (Western Cape Government 2014. 95-96)

5.1. Tracing the Evolution of Environmental Impact Assessment in South Africa

The EIA process is internationally recognized as a crucial decision-making tool contributing to effective environmental management. Within the South African context, EIA was initially adopted as a voluntary practice in the 1970s. This changed with the promulgation of the Environmental Conservation Act (ECA) in 1989, which aimed "to provide for the effective protection and controlled utilization of the environment and for matters incidental thereto." As South Africa's first legislative attempt to regulate development sustainably, the ECA provided mechanisms for pollution control, protection of natural environments, and impact assessment16. However, it is important to note that the regulations specifically addressing impact assessments were not promulgated until almost a decade later, resulting in the continued reliance on voluntary EIA practices.

This period coincided with significant political transformation in South Africa, culminating in the transition to democracy in 1994 and the subsequent implementation

[16] Sections 21, 22 and 26

of a law reform program encompassing far-reaching economic, political, and social changes[17]. The introduction of a human-rights-based Constitution, establishing new democratic structures and processes (DEAT, 2008: 6–11), led to the enactment of the Constitution of the Republic of South Africa (Act No. 108 of 1996). Section 24 of this Constitution enshrines the right[18] to an environment protected for present and future generations through "ecologically sustainable development" while "promoting justifiable economic and social development."

This constitutional provision was followed within six months by the White Paper on Environmental Management Policy (July 1997), which articulated the national policy on environmental management and laid the foundation for future regulatory requirements (DEAT, 1997: 23-43).

Shortly thereafter, in September 1997, the ECA EIA Regulations (Government Gazette No. 18261, GNR.1182 and R. 1183) were gazetted. However, these regulations were criticized for broadly defined activities and unclear threshold definitions, leading to considerable confusion (Retief, 2010: 385). Consequently, the ECA was subsequently and partially repealed and replaced by the National Environmental Management Act (NEMA) in 1998 (Ridl et al., 2010: 80–112)[19].

NEMA, along with its subsequent amendments[20], sought to give effect to Section 24 of the South African Constitution. As an overarching legal framework, NEMA established National Environmental Principles[21] (Ridl et al., 2010: 80–112) and a suite of Specific Environmental Management Acts (SEMAs) addressing specific environmental domains such as air quality, biodiversity, coastal management, protected areas, and waste management (Thornhill et al., 2008: 1–2). However, Nugent (2009: 108) argues that these SEMAs inadvertently created complexities due to the increased number of regulatory requirements that needed to be met. Ironically, the intent of NEMA and its SEMAs was to promote “the integration of social, economic, and environmental factors

[17] Together with exponential growth within environmental regulatory requirements (Retief. 2010: 388) (Wylie et al. 2018: 1).

[18] The Bill of Rights drew from its international obligations by providing for Environmental Rights (Section 24), whereby:

“… 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 …”

[19] Certain provisions remain in force, notably sections 19A, 29 and 31A of ECA.

[20] Amendments took place in 2002, 2003, 2004, 2004, 2008, 2009, 2013, 2014, as per https://www.gov.za/documents/national-environmental-management-act

[21] These principles define how developments are to be undertaken in a socially, environmentally, and economically sustainable manner.

in the planning, implementation and evaluation of decisions to ensure that development serves present and future generations."

To ensure that development decisions were informed by these integrated considerations, regulations were promulgated requiring the undertaking of environmental assessments.

5.2. NEMA EIA Regulations

Within the South African context, EIA has become the primary instrument for conducting environmental assessments. This is reflected in NEMA, which provides regulations specifically for EIA, but not for other environmental management tools[22] [23]. The then Department of Environmental Affairs (DEA[24]) acknowledged this focus in its 2014 Environmental Impact Assessment and Management Strategy for South Africa (2014: 116). Morrison-Saunders et al. (2012: 34) suggest that this prioritization of EIA at the project level is not unique to South Africa but is a global trend. They argue that the EIA process has (ironically) become the de facto sustainability-oriented tool, often being erroneously extended to function as a "sustainability assessment," despite its primary purpose being to contribute towards sustainable development, not to serve as a comprehensive sustainability assessment in and of itself.

Therefore, a brief historical overview of the EIA Regulations is pertinent. For the purposes of this study, the ECA EIA Regulations are excluded because they did not establish post-EIA follow-up requirements.

The following overview of the evolution of the EIA Regulations provides context for the sequential development of the NEMA EIA process to date.

The 2006 EIA Regulations (GNR. 385, R. 386 and R. 387 in Government Gazette No. 28753 of 21 April 2006) provided:

[22] the Minister may prescribe other environmental management tools as prescribed in NEMA Section 24 (5) (bA).

[23] It must be noted that contained within the EIA Regulations is Appendix 4 which addresses the Environmental Management Programme; and Regulation 34 of GnR 982 National Environmental Management Act (Act 107 of 1998): Environmental Impact Assessment Regulations, 2014(a), as amended, which provides for "…Auditing of compliance with environmental authorisation, environmental management programme and closure plan…". These Regulations however provide limited guidance on post-EIA follow-up auditing, as evidenced by Section 4 of Circular 16 of 2019, as issued by the Department of Environmental Affairs and Development Planning.
Pers. Comm with Sabelo Malaza (Chief Directorate - Integrated Environmental Authorisations) at the 2019 IAIA National Conference, Bela Bela (22 August 2019), confirmed that further clarification and professional recognition is required to inform this role and responsibility.

[24] Now the Department of Forestry and Fisheries and Environment (DFFE).

- Application for Environmental Authorisation for either a basic assessment, or scoping and EIA[25];
- Definitive roles and responsibilities of EAPs and Specialists;
- Threshold defined listed activities; and
- Development of an Environmental Management Plan.

The 2010 EIA Regulations (GNR. 543, R. 544, R. 545, and R. 546 in Government Gazette No. 33306 of 18 June 2010) repealed the 2006 EIA Regulations, providing:

- Geographic specific application for Environmental Authorisation[26];
- Amended application timeframes; and
- Amended listed activity thresholds.

The 2014(a) EIA Regulations (GNR 982, 983, 984 and 985 in Government Gazette No 38282 of 04 December 2014) repealed the 2010 EIA Regulations, providing:

- An Environmental Auditor function as an additional role-player within the EIA process;
- Additional geographic specific application for Environmental Authorisation[27];
- Amended application timeframes; and
- Amended listed activity thresholds.

Further amendments, presently appearing in the 2014(a) EIA Regulations (GNR 982, 983, 984 and 985 in Government Gazette No 38282 of 04 December 2014a) as amended by GNR 326 in Government Gazette 40772 of 7 April 2017 and GNR 706 in Government Gazette 41786 of 13 July 2018 include:

- Minor amendments to provide clarification and contextualisation on certain procedural aspects; and
- Alignment of the environmental management requirements of the Departments of Environmental Affairs; Mineral Resources; and Water and Sanitation under the "One Environmental System".

[25] According to the severity of the impact. Basic Assessment: assessment of activities where the limited scale and nature of impacts are known and easily managed; Scoping – EIA: assessment of activities where extensive scale and higher risk associated with undefined impacts pose a significant impact.
[26] Basic assessments
[27] Basic assessments

It must be noted that these amendments did not address changes to the scope of the EAP to ensure that the follow up EIA phase is mandatory, nor does it provide context to the Environmental Auditor.

5.3. Efficacy of the EIA Process

The efficacy of EIAs is a global concern among EAPs (Barker et al., 1999: 387; Sandham et al., 2008: 701). Numerous studies have been conducted in both developed and developing contexts to investigate this issue (Van Heerden, 2010: 17–19; Cele, 2016: 2, 38–43). Sadler (2004: 249) defined EIA efficacy as "whether the EIA process or elements has measured up to its procedural requirements and substantive purpose." Bond et al. (2017: 160) further suggested that numerous factors, both controllable[28] and uncontrollable[29], can influence the EIA process. Ironically, Ross et al. (2006: 3) argued that EAPs, by simply applying "common sense," could significantly influence EIA outcomes.

Within the South African context, the DEA (n.d.: 4) noted that "EIA in South Africa is marginally effective and it should not be discarded as an instrument as there is currently nothing better to take its place." Concerns were raised that EIA was not considered effective or the appropriate management tool for all development types, and that the Regulations were not consistently interpreted by either EAPs or the various Competent Authorities, leading to confusion.

5.4. Quality Control in Relation to EIA Efficacy

Concerns regarding EIA efficacy have led to several unintended consequences, including issues related to quality control; uncertain approval outcomes (i.e., whether a positive or negative authorization would be issued) (Sandham et al., 2008: 701–706; Pope et al., 2013: 15; DEA, n.d.: 112–114; Cele, 2016: 2); and capacity constraints among the various stakeholders (Duthie, 2001: 215–219; Jalava et al., 2010: 25; DEA, n.d.: 112–114; Pope et al., 2013: 15).

For the purpose of this study, it is important to note that factors directly associated with capacity constraints may include:

- the focused approach of complying with the administrative processes associated with the EIA, instead of developing an understanding of the often highly technical information supplied;
- a poor understanding of the interconnected relationship between the various Acts and their Regulations; or

[28] E.g. Procedural and juristic.
[29] E.g. Public finance.

- information overload or “stakeholder fatigue” (DEAT. 2002a: 16) (World Bank. 2011: 156) (Newton et al: 2017: 25).

These capacity constraints have subsequently resulted in a prevalence of low-quality EIAs. Practices like "copy-and-paste" reports became common, where not all impacts are adequately identified, analyzed, or evaluated (Ross et al., 2006: 3–22; DEA, 2011: 8; Pope et al., 2013: 15; Kabir et al., 2014: 1595; DEA, 2014: 153; Kagstrom, 2016: 169). Additionally, inexperienced case officers representing interdepartmental factions often held conflicting interpretations of the NEMA (Montgomery, 2015: 21–23; Duthie, 2001: 221; DEA, 2014: 128–129). This led to the authorization of numerous poor-quality EIAs that should have been rejected (DEA, 2014: 101).

5.5. Environmental Assessment versus Environmental Authorisation

Even when discounting the aforementioned issues of EIA quality, Cashmore et al. (2004: 295–310) argued that the recommended management and mitigation measures were often not effectively integrated into post-environmental authorization decision-making processes. This negates the value of information gathered during the EIA process for informing aspects such as the sustainable design of engineering components. This point is reinforced by Bruhn-Tysk (2006: 22), who reported that isolating the EIA process from post-EIA follow-up significantly diminishes informed decision-making.

Ortolano et al. (1995: 9, 15-16), Saidi (2010: 5), and King (2015: 5) have consequently and ironically characterized the “environmental impact **assessment** process” as an “environmental impact **authorization** process,” highlighting the perceived shift from genuine assessment to mere rubber-stamping of authorizations. This transforms the EIA process into a purely administrative tool rather than a mechanism for informing impact reduction in subsequent project phases. This perceived deficiency led the DEA (2014: 117) to acknowledge the neglect of the "check and act phases" within the integrated environmental management (IEM) system. This view was foreshadowed by the DEA (2013: 3), which suggested that the EIA process did not adequately address environmental management principles, thereby administratively failing to uphold the concept of sustainable development.

This failure has been recognized by various scholars: (i) Nel (2006: 2–4) pointed out the availability of complementary tools for post-EIA development phases that were not being utilized; (ii) Baby (2011: 253) raised concerns about the EIA process’s insufficient focus on impact mitigation, monitoring, and management, a view endorsed by Cele (2016: ii), who stated that EIA effectiveness depends on successful post-EIA follow-up; (iii) Wood (2013: 367–368) emphasized the need for strengthened institutional capacity and political will; (iv) Smith (2017: 48) questioned whether EIA was achieving its

intended purpose; and (v) Scheepers (2019: 1) lamented a "significant gap" between theoretical principles and actual practice.

Therefore, it is evident that the life-cycle impacts of developments are not being adequately addressed. According to Saidi (2010: 4), this problem is exacerbated by consultancies employing students or low-cost labor to complete EIA components[30], as the process is often perceived as an unwelcome cost incurred to satisfy administrative "tick-box" requirements. This results in "cheap and dirty"[31] processes being favored over more robust and comprehensive ones[32]. These issues raised by Saidi can lead to revisions of project approvals (environmental authorizations) or, in more severe cases, the undertaking of additional EIA processes to address identified deficiencies in the approved EIA. This may also be accompanied by the potential imposition of financial or criminal sanctions for the commencement of unauthorized activities[33].

5.6. Environmental Management Programme

A prescribed outcome of the EIA process is the development of an EMPr, which outlines measures to manage and mitigate the environmental and social impacts identified during the EIA throughout the development lifecycle[34]. Baby (2011: 254) succinctly described it as a "plan or program that seeks to achieve a required end state and describes how activities, which have or could have an adverse impact on the environment, will be mitigated, controlled, and monitored during the commissioning, mobilization, construction, operation, maintenance and decommissioning of a project; and that the positive benefits of the projects are enhanced."

To realize these positive benefits, the measures contained within the EMPr must first obtain approval from the Competent Authority before development commencement (Lochner, 2005: iii). This requirement stems from the "Duty of Care" placed upon those who cause, have caused, or may cause potential pollution or degradation of the natural and social environment[35]. The EMPr thus provides a "Plan, Do, Check, Act" model to ensure continual improvement, ensuring that lessons learned inform not only current practices but also future EIA processes (EPA, 2005: 1). However, the periodic auditing associated with this continual improvement has often been delayed indefinitely, largely due to industry reluctance to conduct and submit these audits promptly[36]. This inaction

[30] E.g. Report writing, EMPr development and implementation / compliance monitoring.
[31] Saidi (2010: 4) - highlighted the misinterpretation or the withholding of facts.
[32] Ibid - noted kickbacks being paid to expedite the approvals process.
[33] Ibid - identified EIA processes being truncated, whilst the appeals processes were not transparent.
[34] As per the requirements of Sec 24N of the NEMA.
[35] NEMA Sec 28 (Duty of care and remediation of environmental damage).
[36] GnR 599 2014 EIA Regulations, as amended, of 29 May 2020, relating to the indefinite postponement of environmental audits until further notice.

negates the potential for iterative learning and the dissemination of information to stakeholders and competent authorities.

5.7. Shortcomings of the Environmental Management Programme

The Department of Environmental Affairs and Tourism[37] (2004b: 2) described the objectives of an EMPr to:

- "identify the possible environmental impacts of the proposed activity; and
- develop measures to minimise, mitigate and manage these impacts".

Section 24N of NEMA articulates the objectives and associated deliverables required for inclusion within the EMPr. However, Rathi (2019: 241) argues that this inclusion is not being implemented as intended, partly due to EAPs not prioritizing the EMPr's importance or developing EMPrs with sufficient robustness to address impact mitigation throughout the development lifecycle. This viewpoint is supported by Saidi (2010: 5) and Lochner (2005: 20), who state that, within the South African context, EMPr content is almost exclusively focused on the construction phase, neglecting subsequent phases of the development.

Rathi (2019: 241) further contends that this problem is exacerbated when EAPs develop EMPrs without the requisite competence or experience to determine the pragmatism or appropriateness of the proposed lifecycle measures. This prompts Wessels et al. (2012: 48) and Pope et al. (2013: 15) to suggest that those responsible for EMPr development and implementation should possess relevant experience and specialized knowledge. Consequently, Rathi (2019: 241) notes that while a well-developed EMPr is essential for mitigating, managing, and monitoring impacts identified during the EIA process, only regular updates and periodic audits can address its inherent shortcomings and effectively contribute to sustainable development.

The Southern African Institute for Environmental Assessment (2013) concluded that the EMPr remains the least developed aspect of the EIA process.

5.8. Blinkered focus

NEMA currently provides detailed responsibilities for EAPs, but lacks similarly detailed responsibilities for roles outside the EIA process[38]. This legislative focus reinforces the common perception that all professionals within the environmental industry must be EAPs proficient in conducting EIAs[39]. This is exemplified by the Environmental

[37] Now Department of Environment, Forestry and Fisheries

[38] Who may not be EAPs but career environmental managers or environmental auditors.

[39] "Environmental assessment practitioner" when used in Chapter 5 of the NEMA,"…*means the individual responsible for the planning, management, coordination or review of environmental impact assessments, strategic environmental assessments, environmental management*

Assessment Practitioners Association of South Africa (EAPASA) website[40], where professional registration applications for EAPs require the submission of "At least (3) Environmental Impact Assessment case studies." It is important to note that EAPASA is currently the only professional registration body for environmental practitioners in South Africa, as mandated by Section 24H[41] of NEMA. However, its scope is limited to EIA generators (EAPs) and EIA authorizers (competent authorities), excluding other stakeholders involved in subsequent development stages or other facets of environmental management[42]. This exclusivity is further compounded by the fact that the EIA is typically finalized before the commencement of subsequent development phases, resulting in limited to no EAP exposure to, and consequently limited learning and awareness of, these later stages. This creates the perception that this single planning tool is sufficiently robust to adequately address the as-yet-unknown risks associated with these subsequent phases. This perception poses a risk of diminishing the contribution of complementary environmental management tools to sustainable development.

6. Post-EIA Process: Environmental Impact Assessment Follow-up

Arts et al. (2001: 176) defined “post-EIA follow-up” as an umbrella term encompassing activities related to “monitoring; auditing; ex-post evaluation; post-decision analysis; and post-decision management” conducted after EIA completion. Consequently, its focus is on the post-approval implementation of individual EIAs, rather than the procedure itself, which is governed by the EIA Regulations. This has led Morrison-Saunders et al. (2012: 37) to argue that EIA, as an administrative process, is often reduced to "ticking the boxes" to ensure procedural compliance (Brownlie et al., 2013: 4; Leonard, 2017: 1). Similarly, Brown et al. (1995: 223–225) critically portrayed the outcomes of the EIA process as "passive," stating that it "had to be done rather than [require anything necessarily] be done by it." It has been observed that the dynamic nature of developments leads to constant changes in planning, design, pre-construction, and construction elements. Therefore, conducting the EIA prior to the completion of these phases diminishes its efficacy in contributing to sustainable

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programmes or any other appropriate environmental instruments introduced through regulations…”.
(Definition of “environmental assessment practitioner” inserted by section 1 of Act 8 of 2004)
(Definition of “environmental assessment practitioner” substituted by section 1(e) of Act 30 of 2013).

[40] https://www.eapasa.org/index.php/registration/core-competencies

[41] Section 24H Registration Authorities of the NEMA, as amended.

[42] 2019 IAIAsa National Conference, Bela-Bela (22 August 2019). Gwen Gosney. Post EA Professionals. Registration Needs and Expectations of TCTA;
2019 IAIAsa National Conference, Bela-Bela (22 August 2019). Hlela, S. EAPASA – a Professional Body for EAPs. What about Environmental Officers and Compliance Auditors?; and
2019 IAIAsa National Conference, Bela-Bela (22 August 2019). Malaza, S. Registration of post-decision implementers and independent verifiers.

development. This observation lends credence to the notion that the EIA process, as a highly regulated and prescriptive procedure, is primarily geared towards the issuance of an environmental authorization by a Competent Authority. After the completion of the appeals process, the EIA is typically considered concluded, as reflected in Figures 6 and 7 (above) (Western Cape Government, 2014: 95–96).

However, impact identification, assessment, management, and mitigation cannot be effectively suspended upon the issuance of environmental authorization, only to resume during construction[43]. Such exclusion of best practicable environmental options during, for instance, the engineering design phase, precludes an "in-depth quality control" approach for both EIA and post-EIA phases of a development (DEA, 2011a: 32; DEA, 2014: 112). Arts et al. (2000: 3) questioned the inclusivity and value of environmental management within the broader development lifecycle, noting that the engineer often dictates the extent of environmental practitioner involvement in the project planning, design, and pre-construction phases, creating an "...implementation gap..." between EIA and subsequent phases. To bridge this gap, Arts et al. (2000: 2–3) proposed "post-EIA follow-up" to encompass work undertaken in "various stages of the project life cycle after the consent decision has been taken – which may include the (final, detailed) designing, the construction, and the operation phases."

It is important to acknowledge that the exclusion of environmental practitioners from these phases creates a skills gap, preventing the consideration of best practicable environmental options and limiting opportunities for further learning. This issue is further compounded by the highly technical nature of integrating environmental and engineering requirements sustainably within the constraints of contractual agreements, budgetary allocations, and penalty-driven schedules (Pope et al., 2013: 15). Such specialized knowledge, critical for sustainable development, is not gained through administrative processes but rather through practical experience, which typically excludes EAP involvement. This preclusion, often not attributable to the EAP's actions, has resulted in limited deployment of EAPs post-environmental authorization.

Given these limitations, Jalava et al. (2010: 24) argued that post-EIA follow-up represents a weak link within the EIA process. To address this deficiency, Section 8 of Act 62 of 2008 (DEA, 2008) amended NEMA to include Section 24Q: Monitoring and Performance Assessment. Section 24Q provided for monitoring and performance assessment of developers implementing the environmental authorization, while also assessing the adequacy of the EMPr (DEA, 1998: 59; Ndlovu, 2015: 38). However, the

[43] As an environmental auditing requirement

regulations giving effect to Section 24Q were only promulgated on 4 December 2014 (DEA, 2014)[44].

Wessels et al. (2015: 27) noted a lack of detail regarding the role and responsibility of the Environmental Auditor, as prescribed within these regulations, detracting from a potentially credible and efficient process (IAIA, 1999: 3; Jalava et al., 2010: 24). Arts et al. (2000: 10) concluded that this is a long-standing issue, with poor levels of post-EIA follow-up and EMPr implementation generally juxtaposed against well-regulated EIA processes in many countries, indicating that this problem is not unique to South Africa.

6.1. Planning and Design

In the preceding section, reference was made to the “engineering design phase.” This phase of development typically occurs after the issuance of environmental authorization and prior to the commencement of construction activities. It provides the detailed plan for project execution. Cropley (2015: 115) defined engineering design as the “development of technological solutions to problems in a systematic and scientific way.” For this process to effectively contribute to sustainable development, the management and mitigation measures outlined in the EMPr and environmental authorization must inform post-EIA design, construction, and auditing activities. However, various scholars have noted that this intended integration has not been fully realized (Bailey, 1997: 318; Jalava et al., 2010: 24; DEA, 2011a: 71–72; Madubela, 2013: 4–5). Consequently, Cherp (2008: 433–434) identified a disconnect between the procedural EIA process and engineering design and subsequent construction activities. Warburton (2014: ii) observed that many design-related uncertainties remain unknown to the EAP, as they arise post-EIA completion and are therefore not understood, assessed, or contextualized during the EIA process. Arts et al. (2000: 3) suggested that many EAPs resort to using "best guess" mitigation measures, often resulting in poorly managed, impractical, or inadequately defined measures within the EMPr, which consequently fail to effectively inform detailed engineering designs. Cherp (2008: 433–434) further argued that this issue is compounded by the fact that neither national nor international standards adequately inform engineering design, nor do they account for the evolving nature of designs and technology, world markets, political climate, and changing client requirements.

It is important to acknowledge that these latter aspects are typically not considered during the EIA process. However, “Design for the Environment,” as defined by Fiksel (1996), directly addresses this consideration. Fiksel defines it as “the systematic consideration of design performance with respect to environmental, health, and safety objectives over the full product and process life cycle.” Although primarily focused on

[44] Regulation 34 of the 2014 EIA Regulations, as amended.

manufacturing processes, its principles can be applied during the EIA and engineering design phases to design out or reduce impacts. Ironically, this practice is not prescribed for use within or as a supplement to the EIA process in the South African context. It would be prudent, therefore, for the EAP and the Design Engineer to collaborate on identifying, managing, and mitigating impacts in a manner that supports sustainable development.

Figure 8: Design for the Environment seeks to address product lifecycle / sustainability concerns early in the design phase[45]

6.2. Independence

Internationally, the independence of EAPs responsible for conducting EIAs has been the subject of considerable debate regarding its practical application and implications within the EIA context (Retief, 2010: 388; Wessels, 2013: 169–179). Within South Africa, the amended 2014 EIA Regulations prescribe independence for EAPs undertaking EIA-related work. However, the DEA (2014: 153) acknowledges that such independence requirements may hinder EAP effectiveness in post-EIA activities (Wessels et al., 2012: 48). The DEA[46] further expressed concern that when EAPs are involved in post-EIA work, their appointments are often too late in the process, or they are excluded from contributing holistically to the interdisciplinary team. This typically results in planning and design processes lacking a sustainability focus. This deficiency is primarily attributable to the current regulatory framework, which does not mandate

[45] After Fiksel, Joseph, Design for Environment: Creating Eco-efficient Products and Processes, McGraw-Hill, New York, 1996.
[46] Ibid.

the inclusion of environmental professionals in post-EIA activities such as planning and design (Wessels et al., 2012: 48)[47].

It is important to note that this aspect of environmental management is generally absent from mainstream environmental training and educational programs (Brownlie et al., 2013: 8). This lack of training prevents EAPs from effectively integrating strategic environmental planning into design and construction activities (Pope et al., 2013: 15; DEA, 2014: 153).

6.3. Roles and responsibilities

The amended 2014 EIA Regulations prescribe the requirement for both an EAP and an Environmental Auditor. However, while the role and responsibilities of the EAP are adequately addressed, the corresponding provisions for the Environmental Auditor are insufficiently detailed to provide effective guidance. This deficiency led both Cele (2016: 5) and Wessels et al. (2018: 1) to express concern regarding the inadequate capacity and mandate of those tasked with auditing to conduct sound compliance monitoring.

Ironically, Wessels et al. (2012: 6–7) noted that the Department of Water Affairs and Forestry's "Environmental Best Practice Specifications for Construction" (2005) provided the only industry definition for post-EIA follow-up resources within the South African context. However, these specifications have not been updated or aligned with the subsequent three iterations of the EIA Regulations[48]. Furthermore, these specifications are not widely known within the broader South African environmental community, limiting their potential to provide greater support to the profession.

6.4. Compliance Monitoring

Morrison-Saunders et al. (2001: 3) defined monitoring as the "systematic, repetitive collection of data." Consequently, compliance monitoring can be understood as the collection of data to verify adherence to a set of pre-defined criteria. To ensure credible verification, a robust methodology is essential. The Alberta Environmental Monitoring Panel, in their publication "A World Class Environmental Monitoring, Evaluation and Reporting System for Alberta" (2011: 28), argued that implementing "a world class environmental monitoring system" would enhance international credibility and provide high-quality information to government, regulators, industry, and other stakeholders.

However, within the South African context, both Saidi (2010: 5) and the DEA[49] (2011a: 71–72; n.d.: 5) reported that compliance monitoring requirements have been poorly

[47] Unlike EAPs undertaking EIA related work.
[48] 2006 EIA Regulations – GNR 385 in Government Gazette No 28753 of 21 April 2006; 2010 EIA Regulations (GNR. 543, R. 544, R. 545 and R. 546 in Government Gazette No. 33306 of 18 June 2010); and 2014 EIA Regulations – GNR 982 in Government Gazette 38282 of 4 December 2014, as amended.
[49] Now the Department of Environment, Forestry and Fisheries

implemented, resulting in diminished credibility and suboptimal post-EIA follow-up[50]. This deficiency has significantly hampered the ability of compliance monitoring to confirm predicted impacts and assess the efficacy of implemented mitigation and management measures. A comprehensive set of compliance monitoring requirements, integrated within a credible process, could address emerging issues and enhance controls in light of evolving best practices (DEA, 2014: 23). An unintended consequence of inadequate compliance monitoring requirements has been the adoption of a laissez-faire attitude towards post-EIA follow-up activities (Morrison-Saunders et al., 2004: 1; Retief, 2010: 377). This attitude may have developed due to a prevalent culture of disobedience and non-compliance with the rule of law, potentially rooted in South Africa's historical context (Offor, 2007: 133–134; Wessels, 2013: 169).

A further complicating factor is the inconsistent and often vastly differing levels of regulatory enforcement implemented by various competent authorities (Retief, 2010: 381, 385). This inconsistency prompted the DEA, in 2008[51], to follow an international trend (Bartle et al., 2005: 1) by relying on industry self-monitoring (Wessels, 2013: 1; Youthed, 2009: 28). However, without appropriate guidelines, such self-monitoring has failed to deliver the desired results (IAIAsa, 2012; Wessels et al., 2018: 2) due to the absence of directly enforceable legal controls.

The introduction of the amended 2014 EIA Regulations marked a significant shift, providing much-needed structure[52]. However, they did not provide detailed specifications regarding the skill sets and capabilities required for those tasked with post-EIA follow-up (Wessels et al., 2018: 2). As the regulations remain focused on the EAP and the associated EIA process, it is unclear whether the intention is to sequentially clarify other aspects of environmental management over time. Failure to do so may result in the continued incomplete closure of the "Plan, Do, Check, Act" loop.

6.5. Capacity

The ability and capacity of human resources have been identified as significant factors influencing both EIA and post-EIA follow-up activities (Youthed, 2009: 28–30; Pope et al., 2013: 15). It has been argued that deficiencies in this area can negatively impact the sustainability of development projects (Duthie, 2001: 215; Harmer, 2005: 1–2; Jalava et al., 2010: 24–25; Kakonge, 2013; DEA, 2014: 108–109). This lack of ability and capacity, both in terms of the number of reviewers and the training provided to

[50] An example of such tarnished credibility relates to the identification of several environmental consultancies who failed to adhere to accepted monitoring methodologies. (CER. 2019 : 8-9) https://fulldisclosure.cer.org.za/2019/doc/Full-Disclosure-2019.pdf

[51] Amendments took place in 2008 as per https://www.gov.za/documents/national-environmental-management-act

[52] Regulation 34 of the 2014(a) EIA Regulations, as amended.

staff, has been observed within various competent authorities (Brownlie et al., 2013: 5; DPME, 2014: 31–33; Mostert, 2014: 23).

Consequently, Youthed (2009) emphasized the need for dedicated individuals possessing “knowledgeable, committed and long-term staff with good interpersonal skills” to contribute to, among other things, successful post-EIA follow-up. This view is supported by Ortolano et al. (1995: 12–13), who cited the US Army Corps' practice of appointing environmental “specialists with disciplinary training” to perform specialized tasks. Such a level of specialization is not widely evident within the South African context, with the exception of the Environmental Management Inspectors (EMIs), also known as Green Scorpions. Their mandate, as defined by Section 31D of NEMA, is to “…monitor and enforce compliance” with prevailing regulatory requirements. It is important to note that this training is exclusively available to public servants and encompasses both environmental and non-environmental curricula (DEA, 2016). Due to the limited number of EMIs, their role tends to be reactionary, responding to environmental incidents rather than proactively preventing potential pollution or degradation. This reactive approach reduces opportunities for industry collaboration, which in turn negatively impacts sustainable development (DEA, 2014: 40 & 125).

6.6. Iterative learning

For iterative learning to be effective, it requires the continued reinvestment of acquired knowledge (Morrison-Saunders et al., 2001a: 289; Retief, 2010: 377; DEA, 2014: 23). The amended 2014 EIA Regulations prescribe the submission of environmental audit reports to the Competent Authority[53]. These submissions are intended to assure stakeholders of environmental protection and provide opportunities for iterative learning. However, EAPs responsible for compiling the initial EIA are typically not permitted to be involved in post-EIA activities, resulting in a significant loss of this knowledge to the broader industry[54] (DEA, 2014: 175–177). Hullet et al. (2002: 297–309) argued that this issue is compounded by the fact that EAPs tasked with post-EIA follow-up work often have divergent understandings of their roles and varying levels of practical knowledge.

In contrast to the "linear nature" of the EIA process, iterative processes like the Deming Cycle ("Plan, Do, Act, Check"), which promotes continual improvement (Deming, 2014), and Life Cycle Assessment (LCA)[55], which aims to "identify, check, evaluate and present" (ISO 14040, 2006: 9) and facilitates continuous assessment and

[53] GNR 982, Regulation 34.

[54] Due *inter alia* to the independence requirements of the EIA Regulations whereby the EAP responsible for the EIA is not permitted to undertake environmental auditing duties. Whilst this is a hinderance to iterative learning, it also is key to ensuring post-EIA follow-up specialization of the Environmental Auditor.

[55] International Organisation for Standardisation (ISO) (ISO 14040:2006).

improvement (Joshi, 2000: 96), offer alternative frameworks. It is noteworthy that the DEA[56] (2014: 139) has recognized the internationally accepted LCA standard as an important tool for driving improvement within the IEM system.

6.7. Command and Control

NEMA's legislative framework promotes an integrated and proactive approach, utilizing governance and regulation to guide development towards sustainability. However, Craigie et al. (2009: 41) observed that "governance and regulation are largely meaningless without compliance." Accordingly, NEMA's command-and-control governance model employs EMIs to issue fines or initiate criminal proceedings within a penalty-based enforcement system (DEA, 2014: 125).

Due to the limited number of EMIs and to promote more proactive monitoring through a "force multiplier effect," Section 24Q of NEMA mandates that holders of environmental authorizations "ensure compliance with the conditions of the environmental authorisation" through "monitoring and performance assessment." These assessments are conducted through regular environmental audits that evaluate the "appropriateness and adequacy of the environmental management programme (EMPr)." Ironically, the outcomes of these audits rarely inform formal guidelines or EMPr revisions, and are often not publicly available, fragmented, conflicting, or based on outdated interpretations.

Because holders of environmental authorizations are typically developers rather than environmental specialists, they may lack the necessary environmental knowledge or expertise. Furthermore, budgetary constraints and the perception that environmental management has been adequately addressed during the administrative EIA process and is not required post-EIA have precluded further involvement of many environmental practitioners (DEA, 2014: 153). Consequently, the DEA (2014: 140) suggested that the EMPr should play a more significant bridging role between impact assessment and implementation. Through robust EMPrs, endorsed by the environmental authorization and sufficiently detailed to prescribe enforcement mechanisms, the DEA aims to enhance developers' efficacy in monitoring their performance and assessing compliance (DEA, 2014: 125–126). The DEA further suggested the use of an environmental management system (such as ISO 14001: 2015) during post-EIA follow-up to facilitate iterative learning and full lifecycle environmental management.

[56] Now the Department of Forestry Fisheries and Environment (DFFE).

6.8. Integrated Environmental Management

The evolving nature of the environmental management function has led to numerous changes over time, some resulting in significant improvements, while others have generated confusion. A notable example of this confusion relates to the DEA's 1992 publication of an IEM Guideline Series[57] (Day, 2015: 13, 43), which initially described IEM as a "procedure" "designed to ensure that the environmental consequences of development proposals are understood and adequately considered in the planning process" (DEA, 1992: 8). A subsequent revision in 1998 attempted to redefine IEM as encompassing "concepts, principles and tools," shifting the focus from the EIA procedure to a "wider range of environmental assessment and management tools across the full activity life cycle and by all sectors of society" (DEA, 2004: 8). However, within the South African context, EIA continues to be used synonymously with integrated environmental management, with EIA being promoted as the standard approach to achieving sustainable development. It is important to note that because the EIA process is used to assess impacts at the project level, these assessments are often conducted in isolation (Pope et al., 2013: 15) and completed in a fragmented, piece-meal fashion (Day, 2015: 21). Consequently, the EIA process seldom adopts an integrated approach that considers direct, indirect, or cumulative impacts of a spatial or temporal nature extending beyond the immediate development footprint (Beanlands et al., 1983: 21; Alberta Government, 2013: 7). Similarly, the complementary relationship between EIA and post-EIA follow-up is often implemented in a similarly fragmented manner, underscoring the need for improved utilization of the broader environmental management toolbox (DEA, 2014: 23). Failure to contextualize the EIA process in conjunction with post-EIA follow-up in a way that facilitates iterative learning and adaptive management will impede the achievement of sustainable development (DEA, 2014: 23, 30).

7. The Environmental Role Players

The amended 2014 EIA Regulations delineate detailed roles and responsibilities for both the EAP and Specialist. However, they fail to provide comparable detail for practitioners working directly outside the EIA process[58], such as the Environmental Auditor.

[57] The current IEM Guideline series can be found at: https://www.environment.gov.za/documents/strategies/integrated_environmentalmanagement_eim.

[58] NEMA Section 24H which refers to registration of environmental assessment practitioners (GnR 849 of 22 July 2016).

7.1. Environmental Assessment Practitioner

Many scholarly articles have been written reflecting on the role and responsibility of the EAP. Consequently, the below shall merely contextualise their role and responsibilities in relation to the research topic.

7.1.1. Defining the Environmental Assessment Practitioner and Specialist

NEMA defines an "'environmental assessment practitioner' when used in Chapter 5 as the individual responsible for the planning, management, coordination or review of environmental impact assessments, strategic environmental assessments, environmental management programmes or any other appropriate environmental instruments introduced through regulations" (as amended by section 1(e) of Act No. 30 of 2013). Industry stakeholders, such as the World Wildlife Fund South Africa (WWF-SA), have affirmed the EAP's role within the EIA process, stating that "Environmental Assessment Practitioners work as part of a team of experts to conduct environmental impact assessments, to determine the effect that developments are likely to have on the environment and society. They work within a framework of standards and regulations of the newly established Environmental Assessment Practitioners Association of South Africa that ensures ethical conduct in this profession" (WWF-SA, n.d.).

In contrast, the Department of Environmental Affairs' Integrated Environmental Management Information Series: Specialist Studies (Volume 4) (2002: 5) defines the role of the Specialist within the EIA process as being twofold: (1) to address issues raised during scoping and (2) to provide sufficient information for use by decision-makers.

Both these definitions focus almost exclusively on the EIA process, neglecting other specializations or functions related to other tools within the IEM framework. This narrow focus has led Morrison-Saunders et al. (2012: 37), Brownlie et al. (2013: 1), and the DEA (2014: 153) to question the effectiveness of these role players in contributing to sustainable development within a broader context.

7.1.2. Proficiency of EAPs to perform post-EIA follow-up work

In an attempt to address these concerns, the DEA[59] (2011a: 81–101) proposed a skill set for EAPs intended to provide for "...effective EIA management," yet failed to propose a similar skill set for post-EIA follow-up. This omission suggests a limited understanding of the complexities inherent in post-EIA follow-up, evidenced by the DEA's[60] proposition that the only requirement was possession of the same skill set defined for EAPs (2011: 77–81) as detailed in "Environmental Impact Assessment and Management Strategy –

[59] Now the Department of Forestry, Fisheries and Environment, (DFFE).
[60] Now the Department of Forestry, Fisheries and Environment, (DFFE).

Subtheme 8: Skills of EAPs and Government Officials" and compliance with Regulation 13[61] of the amended 2014 EIA Regulations.

However, it is crucial to recognize that the EIA process remains an administrative and highly regulated procedure. Experience within this process does not necessarily translate to competence in post-EIA follow-up work, which is largely unregulated and technical in nature. Such experience is not typically part of higher education curricula and is primarily acquired through trial and error during the implementation and verification of compliance with EMPrs and environmental authorizations (Pope et al., 2013: 10; Kakonge, 2013). Consequently, without gaining practical experience in "understanding of the construction/commissioning/implementation process in respect of planning and design, pre-construction and construction activities," EAPs are significantly disadvantaged when developing pragmatic EMPrs or undertaking compliance monitoring activities to further sustainable development (Griffiths et al., 2012).

Therefore, without standardized curricula, industry-wide acceptance of the role, and professional registration, post-EIA follow-up will not achieve recognition within mainstream IEM. This deficiency has been acknowledged by the DEA[62] (2014: 30, 190), which argues that all stakeholders should be suitably capacitated to understand their responsibilities, relevance, and sphere of influence. Retief (2010: 377) consequently argued for the avoidance of "unlearning" key lessons and for building upon the existing EIA knowledge base to facilitate future learning. It has been argued that iterative learning is not entrenched as an accepted practice in the South African context, partly due to a constrained legislative framework. This lack of professional and institutional memory in South Africa has resulted in continuous debate and the associated "reinvention of the wheel." Saidi (2010: 6) claimed this is exacerbated by varying proficiency levels among individuals, even those claiming expertise across the IEM spectrum. Pope et al. (2013: 15) suggested this variation is due to the absence of accepted standards against which competencies can be benchmarked and compared. Consequently, Arts et al. (2000: 3) argued that the EIA process fails to achieve its intended purpose.

[61] It must be noted that Section 13 specifically provides the terms of reference and "… *general requirements for EAPs or a person compiling a specialist report or undertaking a specialised process*", in that "… *an EAP and a specialist* ..." are responsible for work associated with "… *the application*". The "application" as defined in the regulations (GNR 982) refers to the process associated with the undertaking of an EIA process in order to apply for an environmental authorisation, thus is again limited to the planning tool only. Therefore, the primary role of the EAP is presented as being to undertake EIAs only.

[62] Now the Department of Forestry, Fisheries and Environment, (DFFE).

7.2. Environmental Auditor

To assess the efficacy of management and mitigation measures proposed in the EIA process, regular audits of the environmental authorization and EMPr are required. Accordingly, Regulation 34 of the amended 2014 EIA Regulations mandates such audits. The generated audit reports are then submitted to the relevant Competent Authority for review and record-keeping. However, the only prescribed requirement pertaining to the role, responsibility, and level of quality control for these audit reports is that they must "be prepared by an independent person with the relevant environmental auditing expertise[63]."

The Cambridge Dictionary[64] defines "expertise" as "a high level of knowledge or skill." However, to verify such knowledge or skill, Wessels et al. (2018: 3) argued for the necessity of a specific professional registration authority for "independent (environmental) verifiers[65]." They concluded that no such authority exists within the South African context[66], unlike in other professions such as financial auditing[67] or arbitration[68].

Ironically, both the DEA (2011a: 77–101) and EAPASA believe that the individual responsible for impact assessment (the EAP) possesses sufficient skills to undertake compliance monitoring/environmental auditing (EAPASA, 2019; EAPASA Core Competency 4[69]), thus implying that no additional professional registration, specialized skill set, or knowledge base is required. However, concerns have been raised that the aforementioned competency constraints would exclude a significant portion of practitioners due to their limited years of experience, specialization, or a generic approach where the practitioner attempts to be proficient in both EIA and post-EIA activities (Wessels et al., 2018: 16), consequently lacking the required specialization or knowledge base.

At a technical workshop hosted by the IAIAsa Western Cape Committee (Hill & Hlela, 2019), Hill and Hlela, as EAPASA Board members, argued that Environmental Auditors and Environmental Control Officers (ECOs) lack the capacity to undertake activities associated with the EIA process. However, unlike the EAP, who assesses potential impacts remotely, the auditor and ECO experience these impacts firsthand, are

[63] Regulation 34 (2) (a) of 2014 EIA.
[64] https://dictionary.cambridge.org/dictionary/english/expertise.
[65] I.e., auditors
[66] The DEA (2004:7) did however proffer that the Southern African Auditor Training and Certification Association (SAACTA) may well be such an authority, yet its auditing certification related to environmental management systems, which even though was environmentally focused, did not provide expertise relevant to post-EIA follow-up/compliance monitoring.
[67] Independent Regulatory Board for Auditors.
[68] Association of Arbitrators South Africa
[69] https://www.eapasa.org/index.php/registration/core-competencies. 2020.

potentially required to make remedial recommendations, and report on their efficacy in subsequent audit reports. This iterative knowledge is invaluable for informing future EIAs. It is counterintuitive that the individual (the EAP) with the least first-hand experience is required to professionally register and develop management and mitigation measures for use in future EIAs without the benefit of this iterative knowledge.

7.3. Environmental Control Officer

Unlike the Environmental Auditor, the role of the Environmental Control Officer (ECO) remains an unregulated appointment post-EIA issuance (Wessels et al., 2018: 1). Due to the diverse interpretations of what constitutes an “ECO,” Wessels et al. (2018: 3) argued that ECOs often deviate "from performing the defined roles and responsibilities as stipulated in authorization and environmental management plan conditions." As highlighted by Focus Group Participants at the IAIAsa Technical Workshop held in Bellville in 2016 on the Roles and Responsibilities of Environmental Control Officers, this deviation is largely attributable to the complexities of development projects, which necessitate ECOs performing varying roles and responsibilities.

The confusion created by the Department of Water Affairs and Forestry (DWAF) did not alleviate the perceptions of these Focus Group Participants. In their 2005 publication, “Environmental Best Practice Specifications: Construction Integrated Environmental Management Sub-Series No. IEMS 1.6” (2005: 50–51), DWAF prescribed the role of the ECO to "undertake environmental audits for the duration of the construction project as required," while defining the Environmental Auditor as "an unaffiliated party who will undertake environmental audits for the duration of the project as required." Setting aside the issue of independence, both roles included auditing as a core function of their appointment. This ambiguity necessitated the DEA&DP (2019: 4-5) to issue Circular 0016/2019, which provided some clarification, albeit focusing solely on the responsibilities of the environmental auditor. Consequently, no industry consensus exists regarding the definition of an ECO. Even the minimum qualifications required to perform ECO-related services are disputed, with Scheepers[70] (2019) suggesting a "Grade 12" qualification as sufficient, while EAPASA (Core Competency 4[71]) requires tertiary qualifications and professional registration (as an EAP, who, anecdotally, can perform ECO-related activities by virtue of their registration as an assessment practitioner).

[70] Scheepers, Frans. 23 August 2019. Department of Environment, Forestry and Fisheries at the IAIAsa National Conference, Bela-Bela. Pers. Comm.
[71] https://www.eapasa.org/index.php/registration/core-competencies. 2020.

Numerous workshops[72] have been conducted in recent years to define the role and responsibility of the ECO (and other post-EIA environmental management resources) (Wessels et al., 2018: 1–17) to provide clarity for the industry.

8. Conclusion

Wessels et al. (2018: 16), in their paper “Occupation to profession: the need, drivers and course of action for regulating South African Environmental Control Officer industry,” presented the outcomes of workshops held throughout South Africa between 2016 and 2018. Ninety-seven percent of respondents agreed that post-EIA follow-up work required regulation; 88% believed that regulation would enhance credibility; and 99% believed that the industry required professionalization. It was further argued that "dedicated, learned and competent people" were necessary to "independently verify sustainability commitments in construction and development projects."

However, the DEA (2014: 29) (now the DFFE) maintains its stance that the EAP is suitably skilled across all facets of IEM. Numerous studies, referenced elsewhere in this work, have revealed capacity constraints directly related to shortcomings within the EIA process itself, let alone aspects directly or indirectly associated with the EIA's administrative function. This has further resulted in a blurring of roles and responsibilities among various stakeholders, with a belief that a generic approach, at the expense of specialists, would iteratively resolve dynamic environmental impacts. Pope et al. (2013: 15) consequently argued that without specialist knowledge, the attainment of sustainable development is compromised. Accordingly, impacts must be identified, and management and mitigation measures presented within the EIA process. Engineering designs must be informed to ensure that design for the environment is contextualized, and compliance must be monitored to verify that these actions have been implemented. Consequently, utilizing the EIA process as a singular tool without iterative impact verification detracts from its initial and core function—the assessment of impacts. Supplementary tools are therefore required to address its shortcomings and ensure that sustainable development is practiced (DEA, 2014: 138).

The EIA process must therefore be amended to holistically address post-EIA follow-up, or this specialized aspect must be recognized as a stand-alone specialist function. Consequently, the industry's "divide and conquer" strategy of excluding a lifecycle approach by separating post-EIA follow-up from the EIA process must change. Without iterative learning informing the EIA process, improvements that contribute to sustainable development will not be realized (DEA, 2014: 138).

72 AIAsa Technical Workshop. 2016, Bellville The Roles and Responsibilities of Environmental Control Officers.
AIAsa Technical Workshop. 2017, Johannesburg. The Roles and Responsibilities of Environmental Control Officers.
AIAsa Technical Workshop. 2018, Durban. The Roles and Responsibilities of Environmental Control Officers.

CHAPTER THREE
RESEARCH METHODOLOGY AND DESIGN

1. Research Methodology

Burns (1997: 2) defined research as a systematic investigation involving data collection, analysis, and interpretation to "understand, describe, predict or control an educational or psychological phenomenon or to empower individuals in such contexts." The research question and aim, as previously stated, informed the research design adopted for this study, which focused on investigating key monitoring aspects associated with the Environmental Impact Assessment (EIA) procedure that could impede sustainable development within the Western Cape, South Africa.

To situate the research within a broader theoretical context, stakeholder perceptions related to monitoring aspects of the Plankenbrug Sewer case study were explored. A qualitative research methodology was employed for this purpose.

1.1. Qualitative Research Approach

Given the study's adoption of a qualitative research design, it is essential to justify the applicability of this approach to the research inquiry. Williams (2007: 65–69) identified three broad research approaches: quantitative, qualitative, and mixed methods. This research employed a qualitative approach because, unlike quantitative research, which focuses on generating and describing numerical data, qualitative research centers on generating meanings often expressed as textual data. As argued by Humphreys et al. (2021: 1), Bengtsson (2016: 8), and Briggs (2007: 551), textual data reflects the meanings derived from how individuals experience the researched issue. Consequently, qualitative research provides an in-depth and detailed approach to capturing the experiences and perspectives of interviewees or research participants regarding their implementation of monitoring aspects within the broader South African EIA context (Kumar, 2011: 7). This approach facilitates the identification of intangible aspects associated with the research, such as industry norms and stakeholders' perceptions of post-EIA monitoring implementation. The scientific merit of this methodology is widely recognized, supported by Fosnot et al. (2005: 10–11), who argued that social constructivism, as a philosophical approach, contributes to individual members' real-world learning experiences within a group (due to their interactions within the group), thereby informing the direction of scientific knowledge. This approach was implemented through face-to-face, in-depth interviews with key stakeholders within the EIA industry in the Western Cape. Data triangulation was achieved through a focus group questionnaire designed to validate the data collected through the individual interviews.

The qualitative research methods employed in this study provided a mechanism for obtaining specific types of data, namely:

- Qualitative observations undertaken as the researcher participated in various conference and workshops proceedings with the research participants.
- Face-to-face interviews to obtain detailed data on Interviewees' personal experiences and perspectives; and
- Focus group questionnaire which provided a broad overview and understanding of issues of concern within the group.

1.2. Case Study Approach

A case study from Stellenbosch, Western Cape, focusing on the construction of a sewage pipeline and associated infrastructure, was employed to gather qualitative data and develop an in-depth, multi-faceted understanding derived from multiple data sources. This approach was selected because, as stated by Bromley (1990: 302), case studies provide a "…systematic inquiry into an event or set of related events which aims to describe and explain the phenomenon of interest…". This view is supported by Yin (1984: 23), who defined the case study research method as "…an empirical inquiry that investigates a contemporary phenomenon within its real-life context; when the boundaries between phenomenon and context are not clearly evident; and in which multiple sources of evidence are used…". Choy (2014: 100) further posited that case studies often rely on researcher interpretation of presented data, due to qualitative research's reliance on respondent impressions and experiences rather than numerical data. This characteristic allows qualitative researchers to identify and address bias as it emerges, a capability less readily available in quantitative research. Runeson et al. (2009: 136) indicated that case studies typically employ a flexible design, granting researchers the adaptability to address potentially changing parameters.

Research requires triangulation to ensure that the various approaches taken within the case study provide a comprehensive understanding. This is particularly important when dealing with broader and richer qualitative data, which is inherently less precise than quantitative data. Data obtained through other methods was used to validate (Golden, 2017: 13) and triangulate the data gathered through the case study approach. These methods included (Stake, 1995: 53):

- Data source triangulation, utilizing multiple data sources.
- Methodological triangulation, employing diverse data collection methods.
- Theory triangulation, incorporating alternative viewpoints.

To ensure the validity of the qualitative research, the investigation was conducted ethically.

Although Merriam (2009: 191–192) argued that the case study approach can be considered a weaker approach potentially lacking robustness, these limitations are mitigated through direct researcher involvement and interpretation of interviewee and participant perceptions, along with their detailed descriptions, and through data triangulation.

This approach subsequently informed the "how" and "why" of aspects related to monitoring EIA procedure outcomes. This was further supported by in-depth interviews and observations.

Consequently, first-hand accounts of experiences by the researcher[73] related to post-EIA follow-up monitoring of the Plankenbrug Sewer were used to inform the study. These accounts drew from descriptions of activities and various project records, including audit reports, emails, and presentations.

The case study approach was deemed useful in investigating perceptions associated with monitoring aspects within the EIA procedure. This approach allowed for the phenomenon of post-EIA monitoring at the Plankenbrug Sewer to be investigated, along with various stakeholders appointed by the Developer (Stellenbosch Municipality).

1.3. Sampling Techniques

Due to the qualitative nature of the research, a purposive sampling technique (a form of non-probability sampling) was employed to gather data and develop a more nuanced understanding within the broader theoretical framework. This technique allowed the researcher to identify both Focus Group Participants and face-to-face interviewees who could contribute valuable information based on their knowledge and experience (Tongco, 2007: 147). This level of control afforded by purposive sampling allowed for the inclusion of “outliers,” which are typically excluded from quantitative approaches. Such inclusion enabled the exploration of exceptions that could potentially “prove the rule” (Barbour, 2011: 156). Purposive sampling facilitated the selection of participants based on their specific experience, knowledge, and background (Mack et al., 2005: 5). Consequently, four[74] (4) participants (Focus Group Participants) representing industry, competent authorities, and developers, who presented at the IAIAsa Technical Workshop held in 2016 on the Roles and Responsibilities of Environmental Control

[73] The researcher functioned as the Developer’s ECO.

[74] This figure represented one quarter of the presenters at the IAIAsa Technical Workshop on the Roles and Responsibilities of Environmental Control Officers.

Officers[75], were approached and interviewed using face-to-face, in-depth interviews. Additionally, seventeen (17) respondents within the environmental management industry voluntarily responded to a request to participate in a questionnaire.

The focus of the information gathered was on quality and depth rather than scope and breadth, as is characteristic of quantitative research (Nowell et al., 2017: 1–11). Thus, all interviewees and participants were directly and actively involved in the environmental field, where exposure to aspects associated with the "cradle to grave" process of developments is a requirement.

2. Data Collection Method

2.1. Data Collection from Primary Sources

2.1.1. Interviews

Qualitative research interviews were utilized to elucidate and unpack key themes emerging from respondents' lived experiences regarding the operationalization of the EIA regime in South Africa (Kvale, 2006: 481). Various interview methods were employed to gain both factual and meaningful understanding, ranging from face-to-face interviews, which facilitated the collection of in-depth information, to focus group interviews, which provided a broader overview derived from group discussions regarding experiences with post-EIA functional aspects. Respondents were questioned about their experiences related to key monitoring aspects associated with the EIA procedure. Consequently, their involvement in the case study aimed to provide insight into their roles, responsibilities, and understanding of procedural aspects associated with the EIA process, as well as their perspectives and understanding of monitoring aspects within the EIA procedure (Choy, 2014: 102).

- **Semi-structured interviews:**

Semi-structured interviews were employed to gain further insight into aspects relevant to the research question. A non-random purposive sampling method was used for participant selection, with interviews conducted with four respondents representing a range of stakeholders across the industry spectrum, including competent authorities, environmental practitioners, and developers.

This approach was chosen to allow flexibility in exploring questions without adhering to a rigid, structured format (David et al., 2004: 87).

Semi-structured interviews possess both strengths and weaknesses. Strengths include the researcher's ability to pose prompting and probing questions, interpret responses,

[75] Sixteen presenters presented at the workshop. Their presentations followed a set questions presented to them by the researcher and addressed their experiences with post-EIA follow-up.

and test interpretations for improved understanding. Weaknesses include the time-intensive nature of the process and the consequent limitation to smaller sample sizes (Rahman, 2017: 102).

- **Face to face in-depth interviews:**

Contrary to the previous approach, face-to-face, in-depth interviews employed in this study followed a semi-structured format (Bell et al., 2016: 193–194). This approach offered a balance between control and flexibility. While a predetermined set of questions guided the interview, the format allowed for exploration beyond initial prompts (Patton, 1987: 111). This flexibility enabled the researcher to probe deeper into specific aspects of respondents' experiences and perspectives related to monitoring within the EIA process.

Four volunteers from the Western Cape environmental management industry participated in these interviews. To minimize potential bias and ensure consistency, each interview was conducted individually. This allowed the researcher to ask all questions in a neutral manner, listen attentively, and pose follow-up questions for clarification (Mack et al., 2005: 29).

The semi-structured format facilitated in-depth exploration through open-ended questions, encouraging interviewees to provide broader perspectives on the topic (Mack et al., 2005: 29). Participation was voluntary, fostering an environment where interviewees felt comfortable sharing their experiences and perceptions.

- **Focus group interviews:**

To gain a broader perspective on stakeholder perceptions, the researcher facilitated a full-day technical workshop on the Roles and Responsibilities of Environmental Control Officers[76] held in Bellville, 2016, under the auspices of the Western Cape Branch of the South African affiliate of the International Association of Impact Assessment (IAIAsa). During the workshop, participants (n = 17)[77] were engaged as a focus group.

The focus group discussions employed a semi-structured format. Participants were presented with a set of open-ended and structured questions designed to elicit case study examples and personal experiences related to monitoring within the EIA process. These questions served as general guidelines, allowing participants to identify the aspects they considered most important. The researcher also posed follow-up questions for clarity when necessary (Mack et al., 2005: 29). As Barbour (2000: 158) suggests, focus groups can facilitate comparative analysis, enabling researchers to

76 https://cdn.myactive.co.za/wm-698609-cmsimages/InvitationtotheTechnicalWorkshopontheRolesandResponsibilitiesofEnvironmentalControlOfficerson29thNovember.pdf

77 Whilst all the Participants were open to the presentations being used within this study, only eight Participants provided written consent.

identify patterns in participant responses. However, Barbour et al. (2011: 63) also caution that group dynamics can potentially skew attitudes and individual viewpoints.

To mitigate this potential bias and ensure all key points were captured, each participant was invited to present their responses within a Microsoft PowerPoint® presentation. This approach ensured all participants had an equal opportunity to respond to the questions and share their perspectives.

It is important to note that the focus group discussions were not intended to predetermine the research outcome. Rather, they served as a springboard for further, in-depth research through individual interviews.

2.2. Data Collection from Secondary Sources

Data collected from secondary sources served to corroborate the primary data and contribute to answering the research questions. This secondary data was integral in providing context and insight into industry experiences related to the research topic. It not only helped identify potential gaps in the research (Patton et al., 2002: 21) but also assisted in situating the research within the broader academic discourse. The secondary sources consulted provided a comprehensive understanding of the topic, spanning from international perspectives to the specific South African context. Furthermore, these sources aided the researcher in substantiating the collected data, thereby contributing to a more robust and well-supported answer to the research question.

Documents such as research papers, books, online resources, and articles pertaining to the research question were utilized to further contribute to answering the research questions (Patton et al., 2002: 21).

2.3. Data Analysis and Interpretation

Braun et al. (2006: 79) defined thematic analysis as “a method for identifying, analysing, and reporting patterns (themes) within data,” thereby providing “an independent and a reliable qualitative approach to analysis.” This method allows for the rich and broad data collected through various collection methods to be accounted for in a “qualitative, detailed, and nuanced” manner. Vaismoradi (2013: 400) suggested that this approach is based on a “factist” perspective, assuming the data to be accurate.

Consequently, drawing upon the analytical frameworks proposed by both Braun et al. (2006: 35) and Creswell (2012: 147–176), six essentially similar steps were employed to analyze[78] and interpret the collected data.

The six steps are contained in Table 1 below.

[78] The IBM® SPSS® software platform was used to analyse data.

Table 1: Comparison between Braun and Clarke and Creswell's data analysis approaches

	Braun and Clarke's (2006)	Creswell's (2012)
Step 1:	Familiarising with data: Data is transcribed, reviewed and initial ideas noted.	Organise and prepare data: Data is collated to provide clarity between data sets and ease of comparison.
Step 2:	Generating initial codes: Coding interesting features across the data set and collating data relevant to each code	Review all data: Data is reviewed to obtain a general context and determination of completeness thereof.
Step 3:	Searching for themes Collating codes and gathering data pertinent to each potential theme	Undertake detailed analysis with a coding process: Analysis of data provides answers to research questions.
Step 4:	Reviewing themes: Checking themes in relation to the coded extracts and generating a thematic map.	Coding process to generate description and themes for analysis: Major research questions are answered providing in-depth understanding; whilst dividing data in categories and placement thereof into themes. These themes provide for headings within the findings section of the research.
Step 5:	Defining and naming themes: Continuous analysis of themes and the overall story that the analysis tells, generating clear definitions and names for each theme.	Represent description and themes in a qualitative narrative: Findings are displayed in a logical narrative to explain what has been found in response to answering the research question.

Step 6:	Producing the report: The final opportunity for analysis. Selection of vivid, compelling extract examples, final analysis of selected extracts, relating the analysis back to the research question and literature, producing a report of the analysis	Interpretation or meaning of the data: Holistic overview review of research provides interpretation to the qualitative nature of research.

As indicated in Table 1 (above), themes were identified and analyzed, capturing pertinent information related to the research question. These themes emerged, representing specific phenomena, and were identified and categorized for analysis after coding (Fereday et al., 2006: 9). Braun and Clarke (2006: 6–8) defined coding as the creation of categories prior to interpretation. Coding can reveal themes that are directly observable in the data (i.e., manifest content) or those implied within literature resources (i.e., latent content). To mitigate subjectivity, specific criteria were established to determine codability (Joffe, 2012: 209). Thematic analysis typically prioritizes manifest content as the primary theme, with latent content providing context and understanding of the manifest content.

According to Braun and Clarke (2006: 14), themes identified through thematic analysis can be either inductive (moving from the specific to the general, strongly linked to the raw data) or deductive (moving from the general to the specific, driven by the researcher's analytical interpretation of existing theory). However, Joffe (2012: 2010) suggested that qualitative data would be of limited value if researchers did not focus on the “naturalistically occurring themes evident in the data itself” without simply replicating or refuting existing studies derived from theoretical themes. It was therefore argued that while researchers inevitably begin with preconceived ideas derived from existing theories, they must remain open to new and emerging concepts to avoid mere replication of previous studies.

Systematic text condensation was then employed to facilitate the pragmatic analysis of the various qualitative datasets obtained (interviews, case study, and focus groups). Malterud (2012: 795) described this procedure as comprising four stages: “1) total impression – from chaos to themes; 2) identifying and sorting meaning units – from themes to codes; 3) condensation – from code to meaning; 4) synthesizing – from condensation to descriptions and concepts.” This method facilitated a comparative assessment through a reproducible and comprehensive review of the collected data (Bornbaum et al., 2015: 2).

3. Strengths and Limitations

Silverman (2011: 84–85) emphasized the importance of acknowledging limitations in evaluating research. In this study, initial errors were identified during data collection concerning question clarity and the number of questions included in the questionnaire. However, as the questionnaires had already been distributed, these issues were left uncorrected to allow for individual interpretation by the respondents. It was also observed that certain questions were potentially misunderstood and inadequately answered, leading to their exclusion from the final dataset. Despite this exclusion, these responses provided valuable context regarding the level of site-based construction experience attributed to each respondent, thus proving invaluable in confirming their "cradle to grave" experience and understanding the context of their contributions.

The following strengths were observed:

- Interviewees shared valuable personal insights that, due to the nature of their work/appointments, would typically not be publicly disclosed.
- Both interviewees and participants demonstrated a strong willingness to actively contribute to the broader debate.

The following limitations were encountered:

- Of the 23 questionnaires distributed, only 17 were completed or partially completed and returned. Similarly, while the focus group comprised 16 members, only eight consented to the inclusion of their presentations in the study. Cohen et al. (2007: 101) suggest that sample sizes smaller than 30 are generally considered insufficient for meaningful statistical analysis.
- Limited literature is available specifically addressing "cradle to grave" EIA practice in support of sustainable development. Consequently, much of the supporting data was derived from primary sources, including questionnaires, interviews, focus group discussions, and the case study.
- The study's scope was limited to monitoring aspects[79] within the EIA process that, due to perceived limiting or vague regulatory requirements, were considered potentially restrictive to holistic sustainable development.

4. Ethical Consideration

Ethical research practices are fundamental to ensuring credible research, guaranteeing protection for interviewees and participants from unnecessary harm and stress. Furthermore, ethical conduct safeguards the validity and trustworthiness of the

[79]Aspects include: i) independence; ii) lack of professional registration; iii) poorly defined environmental management roles and responsibilities within the EIA process; and iv) lack of suitably experienced post-EIA follow up practitioners.

collected data (Cacciattolo, 2015: 55–56). Interviewees were assured of voluntary and anonymous participation, with the exception of the Focus Group Participants. These participants presented at a publicly hosted IAIA Workshop in Bellville in 2016. Consequently, only those who consented to the use of their presentations have their contributions included in this research.

All interviews were recorded, transcribed, and coded.

The selected interviewees and participants represent a diverse range of backgrounds within the broader environmental management field. This sampling strategy ensured equitable inclusion of various stakeholders contributing to sustainable development.

Ethical clearance was obtained prior to conducting the study.

Furthermore, the researcher's positionality within qualitative research can significantly influence research outcomes. It is therefore acknowledged that the researcher's experiences and values may have influenced the research findings. To mitigate this potential bias, the researcher aimed to engage with the research process in a transparent and reflexive manner.

CHAPTER FOUR
DATA ANALYSIS AND RESULTS

1. Introduction

This chapter presents the research findings derived from the interviews, case study analysis, and workshop participation. It aims to address the central research question: whether key monitoring aspects associated with the EIA process contribute to sustainable development.

To answer this question, seventeen interviewees from within the environmental management industry were interviewed, representing the Provincial Competent Authority, Local Municipal Authority, academia, developers, EAPs, and ECOs. These interviewees responded to structured questionnaires, providing data for understanding industry perceptions of post-EIA follow-up monitoring. A focus group of sixteen participants[80] was provided with general guidelines to identify aspects they considered important, enabling a comparative analysis with the data obtained from the structured interviews. These findings were further contextualized by collaborative evidence drawn from the researcher's own experiences with the case study.

The research outcomes presented in this chapter are structured to broadly correspond with the research objectives: (1) to determine how monitoring aspects of the EIA procedure seek to achieve sustainable development; (2) to assess whether these monitoring aspects are being effectively implemented in South Africa; and (3) to understand how stakeholders within the EIA regime view or perceive the role of monitoring aspects in EIA in South Africa.

2. Background to the study

NEMA first defined an environmental assessment practitioner in 2004[81], with a revised definition in 2013[82] stating that, "…when used in Chapter 5, [it] means the individual responsible for the planning, management, coordination or review of environmental impact assessments, strategic environmental assessments, environmental management programmes or any other appropriate environmental instruments introduced through regulations…". Notably, NEMA does not define roles outside the scope of the EIA process itself. This is evident in Regulation 34 of the amended 2014 EIA Regulations, which requires the environmental authorization holder to ensure compliance with the conditions of the authorization and EMPr at specified intervals and to submit audit reports to the Competent Authority. However, the regulations do not

[80] Representatives of a Provincial Competent Authority, Local Municipal Authority, Academia, Developers, Lawyer, EAPs and ECOs.
[81] Section 1 of the National Environmental Management Amendment Act, (Act 8 of 2004).
[82] Section 1 of the National Environmental Management Laws Second Amendment (Act 30 of 2013)

explicitly define the role or responsibilities of the person conducting the Environmental Audit, specifying only that the audit report must be "…prepared by an independent person with the relevant environmental auditing expertise…[83]". This definition of an EAP does not appear to encompass the performance of audits or compliance monitoring.

Consequently, Environmental Authorizations (EAs) have historically designated the ECO to undertake auditing and compliance monitoring related to the EA and EMPr[84]. Rossouw (2019), Griffiths et al. (2012), Hill (2000: 50), Wessels (2013: 169–178), and Barker et al. (1999) have all argued that the ECO's roles and responsibilities in performing these duties are not clearly defined. This lack of clarity was corroborated by Malaza (2019)[85], who conceded that the Department of Forestry, Fisheries and Environment (DFFE) has not had, nor currently has, the intention to regulate or formally define the role and responsibility of the ECO. Malaza further acknowledged that this lack of formalization within the industry has led to potential confusion and suboptimal outcomes in compliance monitoring. He proposed the establishment of an "ECO" Task Team, comprising representatives from industry, the DFFE, EAPASA, and IAIAsa, to provide guidance toward professionalizing the industry by establishing a professional registration body[86].

This absence of formalized professional compliance monitoring has diminished the efficacy of what should be a robust compliance monitoring process.

3. Status Quo of Post-EIA Compliance Monitoring in the South African Context

The amended 2014 EIA Regulations stipulate that the entity responsible for preparing an EIA, specialist report, or environmental audit report must be independent[87]. However, the regulations make no explicit mention of the entity needing to be defined as competent. The only reference to "competent" within the regulations pertains to the "Competent Authority." The regulations do require the entity to possess "expertise" relevant to the task. This contrasts with the argument of Evers et al. (2017: 84), who contended that competence encompasses not only ability but also the acceptance of responsibility for actions. They argue that expertise alone does not imply accountability; merely possessing knowledge does not make an individual responsible for its application or consequences.

[83] Regulation 34 (2)(a) of the 2014 EIA Regulations as amended.
[84] As opposed to environmental monitoring aligned with Regulation 34 of the 2014 EIA Regulations.
[85] Malaza, S. 2019. Registration of post-decision implementers and independent verifiers. DFFE. IAIAsa National Conference. Pers. comm.
[86] Post-EIA Implementers and Verifiers Panel discussion outcomes. IAIAsa National Conference. Email: 2 September 2019.
[87] Chapter 1 of 2014 EIA Regulations, as amended.

4. Does the South African environmental management industry exhibit high or low levels of competence

Interviewees were asked to rate six aspects of the South African environmental management industry according to perceived levels of understanding associated with competence.

4.1. Environmental Planning

Interviewee perceptions of competence within the South African environmental management industry concerning Environmental Planning revealed a significant disparity. Forty-seven percent of interviewees assessed competence as ranging from negligible to low-moderate, while only twelve percent perceived competence at moderate-high to high levels. A further twenty-nine percent indicated moderate competence.

The twelve percent non-response rate warrants consideration. However, it is unlikely that including these responses within any existing category would significantly alter the overall negative perception of competence in Environmental Planning.

Considering the generally negative responses to subsequent questions, concerns arise that Environmental Planning may not provide a suitable foundation for subsequent development phases. This concern is echoed by the attributed quote from Benjamin Franklin: "…if you fail to plan, you are planning to fail…[88]". Thus, the generally low levels of perceived competence across the industry, as evidenced by the data, may be attributable to systemically poor planning.

4.2. Environmental Impact Assessment

Regarding competence in EIA activities within the South African environmental management industry, thirty-five percent of interviewees perceived competence levels ranging from negligible to low-moderate, while twenty-nine percent assessed them as moderate-high to high. Another twenty-nine percent reported moderate competence.

While the six percent non-response rate could potentially influence the distribution of responses, its relatively small proportion suggests a limited impact on the overall findings.

It is noteworthy that the prevailing perception among interviewees indicates a lack of high competence within the industry. This contrasts sharply with the expectation that a professionally registered industry would demonstrate a higher consensus of competence, exceeding a mere "moderate" level. This observation prompts a critical

[88] https://www.goodreads.com/quotes/460142-if-you-fail-to-plan-you-are-planning-to-fail
https://quoteinvestigator.com/2018/07/08/plan/
http://puttincologneontherickshaw.com/authors-blog/if-you-fail-to-plan-you-plan-to-fail/

question: does simply demonstrating the ability to conduct EIA-related work equate to genuine competence and reflect high-quality workmanship?

4.3.Design for the Environment

A majority (53%) of interviewees perceived competence in Design for Environment as negligible to low-moderate, with only twelve percent assessing it as moderate-high to high and twenty-nine percent as moderate.While the six percent non-response rate could potentially influence the distribution of responses, its small proportion suggests a limited impact on the overall findings.

This perception is reinforced by responses to Chapter 4 Section 8.2(a), which addressed evolving designs. All participants (100%) indicated that the EIA process does not adequately facilitate the integration of sustainability criteria into evolving designs. Consequently, over half of the interviewees concluded that EAP competence in linking the EIA process with construction-related activities is suboptimal. This lack of effective linkage can hinder the implementation of sustainable development practices. This was observed on the Plankenbrug project where it was the ECO, and not the EAP, who actively engaged the Design Engineers in optimising, minimising and managing potential impacts[89] during both the design and construction phases of the pipeline.

4.4.Environmental Management Programme Implementation

EMPr implementation is crucial for mitigating and managing actual environmental impacts. However, the apparent shortage of suitably skilled resources, as identified in Chapter 4 Section 8.1, may compromise EMPr efficacy. This is further exacerbated by the often draft or generic nature of EMPrs (Rabie, 2016) and the potentially lengthy timeframes between their development and implementation (excluding the engineering design phase), as reported by Swanepoel (2016). These delays may render the contained mitigation measures ineffective.

The Plankenbrug EMPr exemplifies this issue. Its generic nature resulted in repetitive and impractical requirements necessitating substantial post-approval editing by the ECO to create a more usable document. Furthermore, its omission of the Contractor's Environmental Officer's role hindered implementation efficacy, leading to limited environmental protection efforts by the contractor. This deficiency aligns with Rabie's (2016) observation that EMPrs should "...clearly specifies (sic) responsibilities and mandates…".

Regarding competence in Environmental Management Programme (EMPr) implementation within the South African environmental management industry, forty-

[89] Chapter 4 Section 6.3

seven percent of interviewees perceived competence levels as ranging from negligible to low-moderate, while eighteen percent assessed them as moderate-high to high. Twenty-nine percent reported moderate competence.

The six percent non-response rate may have a minor influence on these figures.

4.5.Compliance Monitoring

Perceptions of competence in Compliance Monitoring also indicated significant concerns. Forty-seven percent of interviewees percieved competence levels as negligible to low-moderate, while eighteen percent assessed them as moderate-high to high. Twenty-nine percent reported moderate competence.

The six percent non-response rate may have a minor influence on these figures.

Given that nearly half of the interviewees identified negligible to low-moderate competence within the industry the practice of assigning this crucial function to a formally unrecognized role with undefined responsibilities within generic Environmental Authorisation clauses is questionable. This is exemplified by the Plankenbrug Environmental Authorisation, which, like many others, erroneously assigned compliance monitoring to either the ECO or the Contractor's Site Agent (SAICE, 2010)[90]. As the Site Agent represents the contractor, it is unclear why Competent Authorities would mandate the contractor to "...ensure compliance with the EMP and the conditions contained therein[91]..." when the contractor's contractual obligation is to implement the EMPr. Smith (2016) supports the view that ensuring compliance is the ECO's responsibility. In the Plankenbrug EMPr, this compliance was operationalized through the ECO using a checklist for monitoring contractor adherence. This involved monthly ECO audit checklists, monthly client meetings to discuss audit outcomes, and subsequent dissemination of audit reports to the Competent Authority for record-keeping.

4.6.Environmental Auditing

Competence in Environmental Auditing also received low ratings, where forty-seven percent of interviewees perceived competence levels as negligible to low-moderate, while only twelve percent assessed them as moderate-high to high. Thirty-five percent reported moderate competence.

The six percent non-response rate may have a minor influence on these figures.

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[90] Clause 4.12.3 states: "..the Contractors Site Agent shall have authority to receive, on behalf of the Contractor…"

[91] DEA&DP. 2015. Environmental Authorisation for the Proposed Upgrading of the Existing Plankenbrug Main Outfall Sewer and Associated Works in Stellenbosch. (Ref: 16/3/1/1/B4/5/1107/14)

These perceived competency levels were reflected in the focus group discussions, where participants often conflated compliance monitoring and auditing, both of which were attributed to the ECO within the context of the Environmental Authorisation/EMPr. There was a lack of clear distinction between these activities and ambiguity regarding the responsible parties. Notably, there was minimal reference to the Environmental Auditor tasked with conducting audits as prescribed by Regulation 34 of the 2014 EIA Regulations, as amended. Focus group responses revealed uncertainty regarding the responsible party for auditing and their associated responsibilities.

Similarly, the Plankenbrug EMPr did not stipulate the involvement of an Environmental Auditor but mandated the ECO to conduct audits within four weeks of each construction phase's completion. It is unclear whether these audits aligned with Regulation 34. Furthermore, the EMPr's failure to prescribe an EO necessitated the ECO to provide substantial advice and guidance to the contractor, thereby compromising their independence. Consequently, any subsequent auditing conducted by the ECO, as per Regulation 34, would lack the necessary independence. Furthermore, a deficiency in ECO formulating recommendations that are contractually or practically untenable, thereby potentially diminishing their professional standing.

5. Independence Versus Competence

A majority (65%) of interviewees indicated that both competence and independence are necessary for effective environmental management in EIA and post-EIA processes. Notably, eighteen percent prioritized competence over independence, while six percent held the opposite view. Eleven percent of respondents did not provide a definitive answer or expressed uncertainty.

This distribution of opinions contrasts sharply with regulatory requirements, which prioritize and emphasize independence[92] as a prerequisite for undertaking EIA-related activities.

6. What type of environmental management practices are you engaged in?

The Interviewees were questioned on their experience within the six environmental management practices.

6.1.Environmental Planning

Seventy-six percent of interviewees reported engagement in and experience with Environmental Planning. Interviewee 1 suggested that while Environmental Planning experience in South Africa was previously low, it is improving due to the increasing number of legislated planning requirements. These requirements span a broad

[92] Regulation 13 of the 2014 EIA Regulations, as amended, requires EAPs and specialists, appointed in terms of regulation 12(1) or 12(2), to be independent.

spectrum, including spatial planning and land use management[93], municipal spatial development frameworks (SDFs), municipal integrated development plans (IDPs), strategic environmental assessments, environmental management frameworks, and the requirements associated with various specific environmental management acts (SEMAs)[94]. However, concern was raised that this experience does not necessarily translate into effective planning, with the interviewee stating "…that the analyses as well as the strategy formulation needs to (sic) improvement together with an improvement in the performance management systems…". A consensus among the interviewees was that the industry exhibits varying degrees of experience and, consequently, varying levels of competence.

6.2.EIA

Seventy-six percent of interviewees indicated engagement in and/or experience related to Environmental Impact Assessments.

Interviewee 1 concluded that there was a "…high level of competence in SA and will improve further now that the requirement for professional registration to be obtained and maintained comes into effect in 2020…". Interestingly, one in four interviewees reported no EIA experience, suggesting a sufficient level and diversity of work outside the scope of EIA.

6.3.Design for Environment[95]

Seventy-six percent of interviewees reported having no experience with Design for the Environment. This finding is supported by the data presented in Chapter 4 Section 4.3, where fifty-three percent of interviewees assessed industry competence in Design for the Environment activities as ranging from "No" to "Low-Moderate." Design for the Environment, as defined by Fiksel, involves "…the systematic consideration of design performance with respect to environmental, health, and safety objectives over the full product and process life cycle." While primarily aimed at manufacturing processes, it seeks to address product lifecycle and sustainability concerns early in the design phase. It is important to note that, like other concurrent engineering techniques, its principles are aligned with the engineering design process. The high percentage of interviewees lacking experience in addressing sustainability concerns during the

[93] e.g. Spatial Planning And Land Use Management Act (Act 16 of 2013).
[94] The National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004), National Environmental Management: Integrated Coastal Management Act, 2008 (Act No. 24 of 2008), and the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) all also require environmental planning in the form of Air Quality Management Plans, Coastal Management Programmes, and Waste Management Plans.
The National Water Act, 1998 (Act No. 36 of 1998) have also required environmental planning in terms of Catchment Management Strategies and related plans.
[95] As defined in Fiksel, Joseph, Design for Environment: Creating Eco-efficient Products and Processes, McGraw-Hill, New York, 1996.

design phase raises concerns that opportunities to establish a foundation for incorporating sustainability requirements in later project lifecycle phases are being missed.

This is illustrated by the fact that only one Focus Group Participant[96] focused on Design for the Environment as a means of proactively resolving issues before construction commencement. Consequently, the constrained servitude on the Plankenbrug Sewer project necessitated that the ECO provide Design for the Environment guidance to the engineers regarding pipeline placement. This involvement extended back to the Phase 1 Design Phase, where the ECO provided advice on maintaining impacts below EIA Listed Activity thresholds. This involvement, whilst optimising the design, addressing impacts not assessed during the EIA process, and providing improvement management and mitigation measures, potentially compromised the role of the ECO. Furthermore, the ECO was required, due to much repetition and unpractical prescriptions, to redraft the EMPr to align it with an outcomes-based approach for ease of implementation, which subsequently impacted the project budget. Although the DEA&DP initially advised the ECO that legal action would be pursued for altering an EMPr without approval, the matter was resolved with the acceptance of the amended EMPr as a more pragmatic approach[97].

6.4.Environmental Management Programme Implementation (on behalf of the Contractor)

The Environmental Authorisation designates the Developer/Proponent as the legally responsible entity for EMPr implementation. However, this responsibility is typically devolved contractually to the appointed construction contractor. The contractor then either appoints an internal environmental representative or outsources EMPr implementation to a professional service provider (PSP). Consequently, fifty-nine percent of interviewees reported having implemented an EMPr at some point during a development lifecycle. The fact that forty-one percent of interviewees had not yet implemented an EMPr raises concern. This lack of implementation experience deprives these interviewees of firsthand knowledge regarding EMPr effectiveness and practicality. Such iterative learning could be invaluable for Competent Authorities in determining EMPr suitability and for EAPs in informing future EMPr improvements.

As observed in the Plankenbrug Sewer case, the Health and Safety Officer was assigned the combined role of Health, Safety, and Environmental Officer to implement the EMPr. Due to limited prior experience, the individual in this role struggled with

[96] Swanepoel, R. 2016. Taking a Step Back. The Roles And Responsibilities Of Environmental Control Officers. IAIAsa

[97] The approved EMPr remained in force, whilst the amended and streamlined version was used to simplify the day-to-day implementation of mitigation and management of impacts.

effective EMPr implementation. This challenge was exacerbated by the prioritization of health and safety concerns, which consistently took precedence over environmental issues. However, it is important to note that many unchecked environmental risks can ultimately lead to health and safety incidents.

6.5.Environmental Compliance Monitoring; (on behalf of the Client – "ECO")

Because the term "compliance monitoring" was not defined for the interviewees, it is unclear whether their responses reflected compliance with regulatory requirements, environmental management system (EMS) requirements, EMPr requirements, or a combination thereof. Regardless of the specific type of compliance being referenced, the high percentage of positive responses underscores the perceived importance of compliance monitoring. Consequently, seventy-six percent of interviewees indicated that they were engaged in and/or had experience related to compliance monitoring.

Acknowledging the importance of compliance monitoring, Scheepers[98] (2019) raised concerns that "excessive" compliance monitoring within the industry may be attributed to the Department of Forestry, Fisheries and Environment's (DFFE) practice of including blanket compliance monitoring requirements within their environmental authorizations. He expressed concern that compliance monitoring is being prescribed irrespective of impact magnitude and development context. Many developments generating low-magnitude impacts may not justify the financial burden imposed by these monitoring requirements. Furthermore, it was stated that the lack of prescribed minimum competency requirements for ECOs casts doubt on the value of some compliance monitoring reports.

6.6.Environmental Auditing[99] (as per Reg 34 of the 2014 EIA Regulations, as amended)

Given that environmental auditing requirements have been in effect since the promulgation of the amended 2014 EIA Regulations (December 4, 2014), the fact that only fifty-three percent of interviewees possessed relevant experience is a cause for concern. This lower percentage may be partially explained by the regulatory requirement prescribing audits only once every five years or as stipulated within the Environmental Authorisation. These extended intervals may limit opportunities for many environmental practitioners to gain extensive experience in the auditing field. Furthermore, Environmental Authorisations place significant emphasis on monitoring conducted by ECOs, despite ECO monitoring not being a regulated requirement. This emphasis on the ECO role within Environmental Authorisations and EMPrs comes at

[98] Scheepers, Frans. 23 August 2019. Department of Environment, Forestry and Fisheries at the IAIAsa National Conference, Bela-Bela. Pers. Comm.
[99] Current regulatory requirements do not prescribe professional registration.

the expense of the Environmental Auditor, whose role and responsibilities remain formally undefined[100].

7. Professional Registration

Prior to the establishment of the Environmental Assessment Practitioners Association of South Africa (EAPASA), prevailing regulatory requirements stipulated that practicing scientists register with the South African Council of Natural Scientific Professions (SACNASP)[101] (2016). Following EAPASA's establishment[102], all practicing environmental assessment practitioners (EAPs) are required to register with EAPASA. Consequently, twelve percent of interviewees reported EAPASA registration, while twenty-nine percent reported SACNASP registration. A significant concern arises from the fact that fifty-nine percent of interviewees were currently unregistered with either body.[103].

7.1. Is the environmental management industry provided with appropriate professional registration?

All interviewees[104] acknowledged the existence of appropriate professional registration for specific disciplines[105] within the broader environmental management field. However, they either indicated a lack of inclusivity for all disciplines[106] or expressed concerns about the proliferation of professional registration bodies requiring professionals to register with multiple organizations. This concern was exemplified by Interviewee 11, who highlighted the associated costs of each registration. Given the current challenging economic climate in South Africa, the numerous professional registration bodies impose lengthy and onerous registration processes, along with associated registration costs and annual membership fees. It was argued that many professionals within the industry are qualified and skilled enough to register with more than one body. Consequently, these professionals are obligated to register with multiple bodies to undertake specific work without fear of legal repercussions. Such multiple registrations, beyond the financial burden, deprive applicants of valuable time that could be better spent securing further work or engaging in continuous professional development.

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[100] Scheepers, Frans. 23 August 2019. Department of Environment, Forestry and Fisheries at the IAIAsa National Conference, Bela-Bela. Pers. Comm.
[101] Registration body exclusively for scientists.
[102] In terms of G.N.R. 849 of 22 July 2016 Section 24H Registration Authority Regulations.
[103] In terms of prevailing professional registration requirements, the Southern African Institute of Ecologists and Environmental Scientists (SAIEES) does not provide towards professional registration and consequently shall be considered “No Registration”.
[104] Interviewee 13 whose response was incomplete, indicated uncertainty, yet believed there should be “…one core body…” to which all environmental management professionals should register.
[105] SACNASP (2016a) for the scientific professionals and EAPASA for environmental assessment practitioners.
[106] E.g. ECOs, environmental managers and environmental auditors.

Multiple registrations also necessitate adherence to numerous codes of conduct. Interviewee 2 raised concerns regarding appropriate sanctions in the event of transgression, questioning how different registration bodies would agree on appropriate sanctions. Furthermore, instead of uniting and strengthening the industry holistically, these multiple registration bodies, each representing their respective mandates, appear to operate with a "divide and conquer" mentality from within their respective "ivory towers." This contrasts sharply with the United Kingdom-based Institute of Environmental Management and Assessment (IEMA) (2016), which positions itself as a "…professional body for everyone working in environment and sustainability…[107]", offering various tiers aligned with an applicant's level of qualification and experience. A similar model is observed with the South African Engineering Council of South Africa (ECSA, n.d.), which, as a unified professional body, caters to all nine engineering disciplines[108].

Interviewee 2 cautioned, "…I think we need to be extremely careful regarding professional registration…," elaborating on various concerns. However, a concern not explicitly mentioned in any of the responses relates to the aforementioned "ivory tower" approach. While EAPs are required to register with EAPASA, those responsible for post-EIA follow-up, compliance monitoring, and auditing are precluded from registering with EAPASA and are often required to seek registration elsewhere, even in the absence of suitable alternative registration bodies. This raises the question of how EAPASA intends to maintain any semblance of quality control over the outcomes of the EIA process and its associated iterative learning if such quality control is managed by third-party registration bodies.

7.2.If no, does the lack of appropriate professional registration result in limited accountability and professionalism?

As previously noted, all interviewees except Interviewees 5 and 13 agreed that "…in the absence of professional registration there is very little recourse to sanction poor performance…". This was further reinforced by Interviewee 4, who stated "…Clients make choices based on who promises a favourable outcome and who is cheapest, rather than who is competent…". This contrasts with the view of Interviewee 5, who did not believe that a professional registration body for post-EIA follow-up practitioners would inherently ensure "…more accountable or professional…" practice. While most interviewees agreed on the need for regulation, valid concerns were raised about potential "fly-by-night consultants[109]." There was a prevailing belief that many

[107] https://www.iema.net.
[108] https://www.ecsa.co.za/EcsaDocuments/sitepages/ecsa%20documents.aspx#ProfEng.
[109] As noted by Interviewee 4.

established practitioners with strong reputations were already accountable and professional, held responsible through their contractual obligations[110].

Interviewee 7 noted that the existing legal framework within which work is conducted creates a rigid environment where it is "…difficult to limit/avoid accountability and professionalism…". This is particularly true of Regulation 13 of the amended 2014 EIA Regulations, which outlines "General requirements for EAPs and specialists" but does not provide a similar framework for those responsible for post-EIA follow-up work. Despite this, the industry still includes environmental practitioners who are registered simply because they could fulfill the administrative requirements of registration, while their actual levels of competence, accountability, and professionalism are, according to Interviewee 17, deficient. These individuals disregard the compliance requirements of Regulation 13. This concern is echoed by Interviewee 8, whose analogy summarized the issue: "…If a building collapses, the engineer will likely face repercussions with the registration body. If an EAP recommends a development that is too close to the sea and it is damaged by coastal erosion 20 years from now, he/she will probably never have to face the consequences. It is like flying a plane while taking out the pop rivets from the plane. If you take out one or two, it will continue to fly. If you take out one too many, it will crash some or other time. It seems to me environmental management is like trying to find out how many pop rivets we can remove without crashing the plane…". This analogy does not inspire confidence in the current system.

8. Post-EIA process

The intent of the EIA process is to provide a mechanism for assessing impacts and establishing management mechanisms for their mitigation. These mechanisms are developed during the administrative phase of the process and documented in the EMPr, generally addressing known impacts with generic mitigation measures. However, information is typically limited on actual design- and construction-related impacts, particularly when the EAP has limited or no prior experience with these phases. This is further compounded by the historical overemphasis on the administrative component of the EIA process, with limited legislative support for post-EIA follow-up work. Figure 9 (below) presents a holistic overview of an iterative process where post-EIA follow-up informs future policy and provides a mechanism for addressing corrective action outcomes. While the current 2014 EIA Regulations provide for post-EIA follow-up compliance monitoring, implementation details are left to the EAP's discretion. Consequently, without industry-accepted roles and responsibilities for post-EIA follow-up practitioners, the EAP defines these roles based on their own experiences, leading to a wide variety of differing roles and responsibilities

[110] As noted by Interviewee 14.

documented in various EMPrs. These differences are further exacerbated by resources undertaking either singular or multiple roles depending on the scale of the development. Large-scale projects typically have an ECO fulfilling an "**ensuring**" role, while on smaller projects, the ECO may be responsible for assuring, ensuring, and implementing compliance with the EMPr. This was evident in the Plankenbrug sewer project, where the EMPr did not prescribe the need for either an Environmental Auditor or a Contractor's Environmental Officer. An Environmental Auditor is required by Regulation 34 of the amended 2014 EIA Regulations to **assure** the Competent Authority (as well as I&APs) that compliance with the Environmental Authorisation and EMPr has been achieved. The contractor could engage an Environmental Officer to **implement** the EMPr on their behalf. As both of these roles were absent, the project's ECO was required to assist the contractor in advising on EMPr implementation while also assuring the Competent Authority of compliance with the Environmental Authorisation and EMPr. This duality of roles has raised industry concerns that, while the ECO plays an important function, their role is often compromised[111]. Consequently, a technical workshop hosted by Messrs. R. Swanepoel and N. Rossouw on November 29, 2016, titled "The Roles and Responsibilities of Environmental Control Officers[112]," established the following objectives:

- Share learning on ECO practice;
- Debate roles and responsibilities of ECOs;
- Debate the professional competency requirements needed for ECO work; and
- Understand the perspectives and expectations from Authorities, Developers, and Consultants.

The workshop presenters[113] concluded that the current status quo of post-EIA follow-up compliance monitoring did not effectively align with the spirit of the Environmental Management Cycle depicted in Figure 9 and therefore did not adequately contribute to sustainable development.

[111] The ECO is responsible for ensuring compliance to the Environmental Authorisation and EMPr.
[112] Under the auspices of IAIAsa Western Cape Branch held at the Eskom Training Centre, Bellville.
[113] The Focus Group.

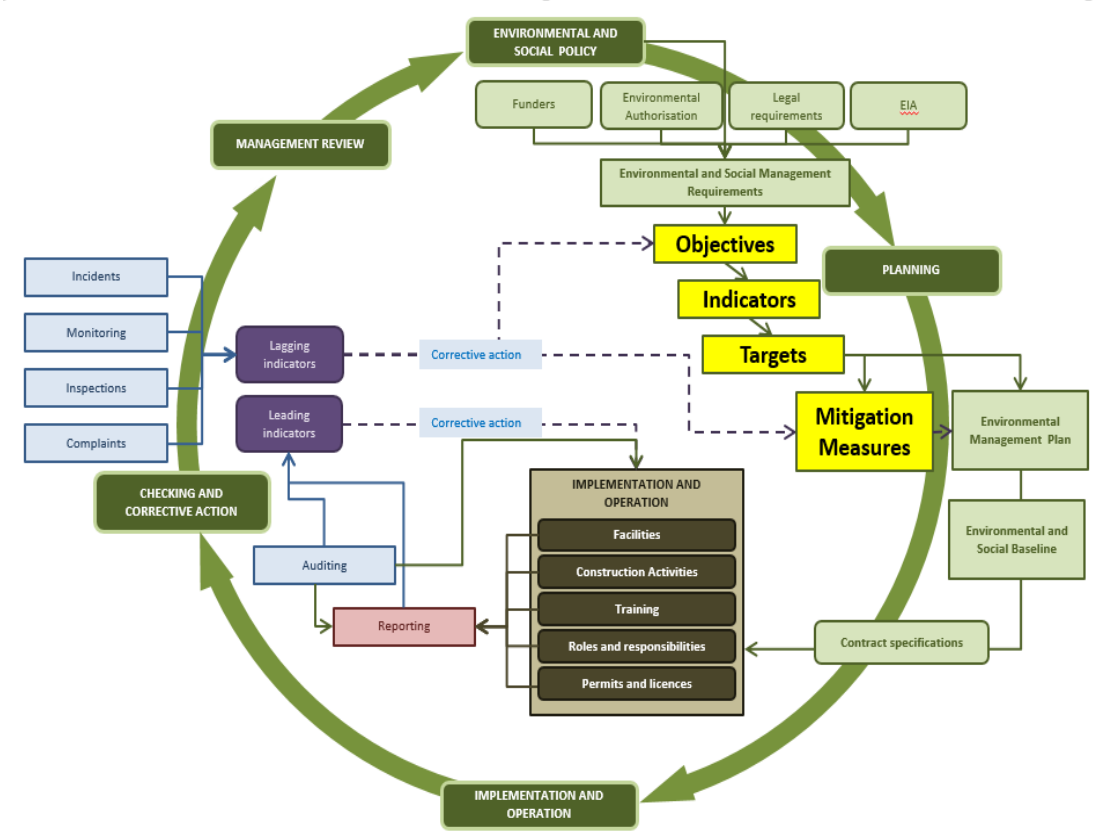

Figure 9 : Environmental Management Cycle[114]

8.1. Lack of suitably experienced post-EIA follow-up practitioners

a. Do you think the various role-players possess a sufficient skillset to undertake all facets associated with post-EIA follow-up (aka construction-site environmental management)?

Interviewees unanimously agreed that role-players within the environmental management sector lack the requisite skillset to effectively execute all aspects of post-EIA follow-up work. This contrasts sharply with EAPASA's (2020) Core Competency 4, which requires applicants to "…Demonstrate the ability to manage and review environmental assessment and management procedures and methods and manage and monitor the implementation of development proposals…"[115]. This discrepancy raises concerns that EAPASA assumes EAPs possess the necessary skills for both the EIA process and subsequent follow-up activities.

[114] After Rossouw, N. 2019. Post EIA Environmental Management: Clarification Of Roles Of Implementers And Independent Verifiers. IAIAsa Western Cape Workshop.
[115] https://www.eapasa.org/index.php/registration/core-competencies.

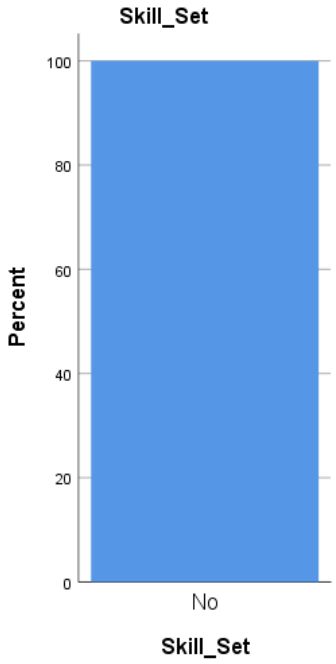

Figure 10: Interviewee Perception of Industry Skillset

This viewpoint was substantiated by several interviewees. Interviewee 1 asserted, "…the skill set needed by an ECO is, however, a skill set that is different to those of an EAP." This was corroborated by Interviewee 3, who stated, "…EAPs have no understanding or knowledge about construction and contracting, and what mitigation measures are feasible or reasonable…", and Interviewee 4, who noted, "…EIA is an administrative process and as such, EIA experts are not sufficiently skilled and experienced in construction environmental management to provide meaningful monitoring. Construction environmental management competence is almost solely a function of the experience of on-the-ground implementation and monitoring, whereas the EIA process is typically a desktop study…". Interviewee 14 succinctly encapsulated this sentiment, stating, "…To find a combination of these proficiencies is rare in a team – let alone in an individual". It is pertinent to note that these four interviewees possess a combined 89 years of experience across various facets of the EIA process.

Interviewee 2, with nearly 30 years of international experience, highlighted a frequently overlooked aspect: "…there is seldom review to ensure that the design of the project is consistent with what was assessed in the EIA…". As designs evolve, impacts can be mitigated, or new impacts can emerge. EAPs, who often perform a primarily administrative function (or, as Interviewees 14 and 15 described, engage in "…copy paste… /…cut and paste…" practices), lack the technical expertise to effectively inform engineering designs and determine the appropriateness of proposed mitigation measures. This underscores the rationale for ECSA's provision of specialist registration

fields, which aim to ensure that suitably qualified and experienced professionals undertake specific tasks, thereby minimizing risks and maximizing opportunities. This aligns with Swanepoel's (2016) assertion that differing skillsets are required for various role-players due to their distinct functional responsibilities.

b. In the event of "no" (above), do you think there is sufficient mentorship and training for, and appropriate industry acceptance of post-EIA follow-up practitioners?

The prevailing sentiment among interviewees suggests that post-EIA follow-up work receives insufficient attention. As Interviewee 2 stated, "No, EIA follow-up is in general not given the attention that it deserves. EIA is seen as the vanguard for all things environmental and much of the training that is available focuses on EIA rather than EIA follow-up where it is in EIA follow-up that the 'rubber hits the road'". Interviewee 4 further noted professional resistance, stating, "No. there is resistance from the EAP profession. EAPs typically do not recognise the function and profession of construction EM[116], and as such have not been supportive of such endeavours".

These observations raise concerns about the efficacy of the EIA process in promoting sustainable development. The potential for iterative learning through post-EIA follow-up compliance monitoring is undermined by a lack of capacity building for those responsible for future EIAs. While Interviewee 9 offered a more optimistic perspective, noting that "In some cases, junior staff are lucky enough to have excellent mentors and they take that advantage on further into their careers", this positive outlook is tempered by the possibility of inadequate mentorship due to the mentor's own limited capabilities. Knowledge regarding post-EIA follow-up compliance monitoring is often acquired through self-learning, experience, and on-the-job training. Consequently, the absence of formalized industry guidelines or professional registration to ensure consistency among role-players results in mentorship based on individual experience, potentially leading to inconsistent or inadequate knowledge transfer. This is supported by Interviewee 9's observation that "The lack of clarity of what the environmental management professionals should be undertaking though leads to mentors who mean well, but themselves have not been suitably capacitated means that many who would otherwise serve as good mentors, cannot. The lack of clear communication with the rest of the design team and those who will have to do the construction (and operation) in another form of mentorship is mostly lacking".

Interviewee 1 concluded that "EIA must never be an hoc re-active compliance driver event but must rather form part of a bigger environmental management and sustainability strategy and system which must provide for continuous analyses,

[116] Environmental Management.

evaluation, adjustment and improvement". Such improvement is achievable through iterative learning, informing the professional development of younger practitioners. However, current practices often involve senior EAPs deploying junior staff to development sites for post-EIA follow-up compliance monitoring without providing adequate mentorship due to their own capacity constraints. This practice is reportedly common within the industry, driven by competitive tendering processes that prioritize cost reduction by employing less experienced personnel. This was the personal experience of the Plankenbrug Sewer ECO, who lacked formal mentorship and training in post-EIA follow-up work, acquiring expertise through trial and error.

The Plankenbrug Sewer project further illustrated this issue, as the ECO provided regular mentorship to the Contractor's SHE Officer. Without this proactive mentorship, the Contractor's SHE Officer likely would not have effectively implemented the EMPr. This reactive approach to mentorship compromised the ECO's independence and overall effectiveness.

8.2. EIA Process

a. Do you think that once the EIA process is concluded that it holistically informs the inclusion of sustainability criteria into evolving designs (associated within the subsequent engineering design process)?

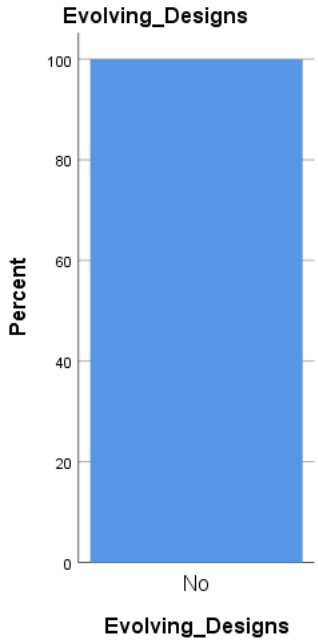

Figure 11: Interviewee Perception on Evolving Designs informing Sustainable Development

A consistent concern raised by all interviewees was the perceived failure of the EIA process to holistically integrate sustainability criteria into evolving project designs.

This view is exemplified by Interviewee 1, who stated, “Often an applicant simply does an EIA as an ad hoc re-active compliance driver event. EIA must, however, rather form part of a bigger environmental management and sustainability strategy and system which must provide for continuous analyses, evaluation, adjustment and improvement”. Interviewee 14 further elaborated, “I have seldom encountered any meaningful provisions that promote sustainability in a practical manner. At best there are requirements included that are aligned with elements of the sustainable development goals but the suitability of these to the project is often questionable. True sustainability elements can be included in designs but considering that EIA requires the design to be at a phase that has already identified listed activities limit these options. The early involvement of environmental contributions in the feasibility and pre-feasibility project planning would be more effective”.

This aligns with Ortolano et al.’s (1995: 15) observation that “the use of EIA as an ex post facto rationalization for decisions reflects a failure to integrate EIA into project planning” due to factors such as “many project proponents don’t give the same weight to environmental objectives as they give to economic performance measures such as the internal rate of return”.

The researchers' own phenomenological experience, derived from involvement in over R 1.4 trillion worth of developments across Africa, corroborates this perspective. Reviews of environmental and social impact assessments (ESIAs) and EMPrs prior to implementation typically reveal a strong focus on managing and mitigating construction-related impacts. At this late stage, fundamental design changes are often impractical, and the contractor is primarily tasked with mitigating construction-related impacts. In contrast, the design phase offers opportunities to design out significant impacts as further information becomes available and designs evolve. Interviewee 4 observed that “typically the EA and EMPr do not take into account the dynamic nature of a project’s evolution and ongoing design changes until completion”; this despite DEAT’s (2004: 7) prescription for the “Application of IEM tools earlier in the planning and design process”.

This situation contrasts sharply with the perspective of the UK-based Institute of Environmental Management and Assessment (IEMA), which states that “EIA helps to shape the design and siting of development such that social value to communities and broader economic value to investors can both be met, without eroding natural capital

and pushing the boundaries of environmental limits – a tool that can truly support moves towards sustainability”[117].

Currently, the EMPr is the primary mechanism for ensuring consideration of sustainability aspects within the engineering design phase. However, NEMA Section 24N (Environmental Management Programme), when considered in the context of sustainable development, only makes two references to sustainable development, both related to rehabilitation[118]. This limited focus may explain Interviewee 3's blunt assessment, based on 27 years of experience in the environmental management field, attributing the lack of sustainable development integration into design to “ignorance and incompetence”.

[117] https://transform.iema.net/article/eia-%E2%80%93-key-unlocking-sustainable-development.
[118] It must be noted that rehabilitation refers to a period after the useful lifespan of a development.

b. Would the inclusion of environmental practitioners during this critical aspect (engineering design) of a development provide towards improved sustainable development?

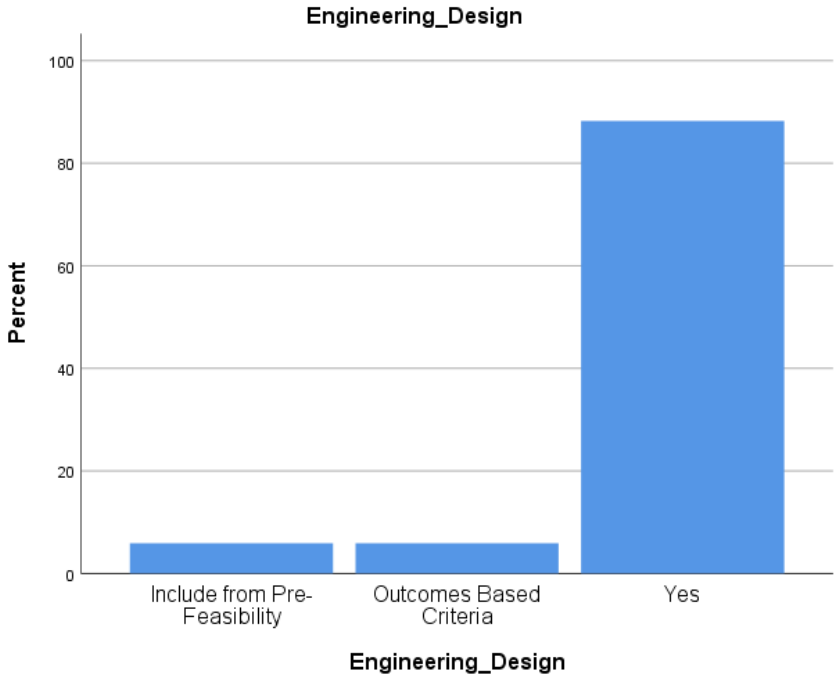

Figure 12: Interviewee Perception of Inclusion of Environmental Practitioners in Engineering Design

Interviewee 14 emphasized that “Accountability for the achievement of sustainable development requires high level commitment at a strategic and political level”. To effectively implement sustainable development, it was suggested that “Inclusion of sustainability elements need to take place well before the EIA process. Feasibility and pre-feasibility stages of projects are the appropriate place for this kind of inclusion”. This perspective is valid, as the absence of an enabling environment creates a void where pragmatic and holistic integration of sustainable aspects within the development cycle cannot be guaranteed. Due to the EIA process functioning primarily as an administrative approval mechanism, rather than a pragmatic and holistic mitigation hierarchy mechanism, numerous significant impacts emerge post-EIA during the design and construction phases. Consequently, Interviewee 15 suggested that “there would be improved sustainable development if there were some links between authorisation and detailed design to ensure that continuity gets through. You will always have some gap, but you should be that much closer to something that is more workable”. Such a “workable” solution is significantly easier to implement with early buy-in from all parties. Subsequently, Interviewee 4 noted that “as with safety it is much more efficient to ‘design in’ solutions and mitigation measures, rather than retrofit”.

However, the EIA process typically commences at a later stage in the project lifecycle and does not adequately provide a “cradle to grave approach” to inform subsequent project phases. This is because post-EIA management and mitigation measures are often limited by the knowledge of the EAP (the EIA and EMPr author). These professionals seldom possess experience in post-EIA processes, hindering the successful integration of EIA outcomes and sustainability aspects into the engineering design. When questioned about the appropriate individual responsible for incorporating these aspects into the design[119], Interviewee 16 suggested that “this animal we are talking about here, may need to be a unique Specimen that is uniquely design based. Over the years there have been a couple that I have run into, but it is a scarce animal”. It was further suggested that “Somehow things have to be written into the process so that this person isn't overlooked”, and that “The EIA will need to make them [i.e., the appointment of this person] a recommendation” and that “when it comes to environmental design that you are talking about; it should be a unique specialisation”. Similar levels of experience were also deemed necessary by Interviewee 12, who stated “provided EAP’s are experienced enough with a holistic knowledge”.

In contrast, Interviewee 2 advocated for an outcomes-based approach defining performance criteria rather than prescriptive actions, allowing design engineers flexibility to develop the most cost-effective and technologically advanced designs that address site-specific requirements. It was further argued that “for the most part we as an industry are not very creative when it comes to mitigation and tend to roll out the same old stuff time and time again”. This implies that the very mechanism intended to promote sustainable development may be hindering creative impact mitigation. This sentiment was echoed by Interviewee 7, who suggested “Perhaps we could get EMPr documents that are actually realistically possible to be implemented”. Ironically, the approved EMPr for the Plankenbrug Sewer required rewriting by the ECO to facilitate implementation during construction. Prescriptive conditions were reformulated to allow for an outcomes-based approach aligned with EMPr objectives. This provided a more pragmatic approach, which, while strengthening EMPr conditions, allowed for implementation flexibility.

[119] Sequential project life-cycle phase following an EIA.

c. Is post-EIA follow-up compliance monitoring seen as a value add to the EIA process?

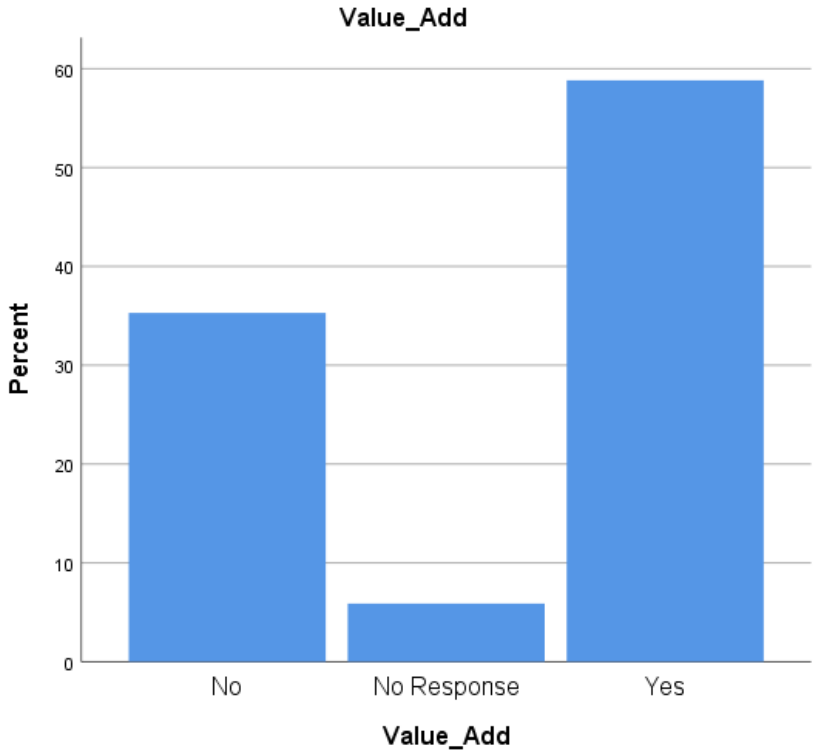

Figure 13: Interviewee Perception about Compliance Monitoring Value Add

Fifty-nine percent of interviewees asserted that post-EIA follow-up compliance monitoring adds value to the EIA process, contrasting with thirty-five percent who believed it does not. Concerns raised included: “No, it is seen as a grudge-purchase and a tick-box exercise” (Interviewee 4); “It should be but in most cases is seen as an irritant and delay when issues are encountered” (Interviewee 9); “Essentially, it should be seen to add value, but unfortunately it is not. For the designing team it is merely a tick box exercise and to some extent it is the same for ECO as their opinion, recommendations fall onto deaf ears” (Interviewee 13); and “At present it is seen as a formality to be reported on and implemented as a matter or formality” (Interviewee 14).

These responses are critical of the process and suggest a dismissive attitude towards the perceived role of the ECO within the broader EIA process, as well as a limited commitment to iterative learning. This is succinctly captured by Interviewee 1, who stated, “Post-EIA follow-up is vital but must not only focus on compliance. Environmental Auditing focuses on compliance as well as environmental performance. EIA is an Integrated Environmental Management instrument. EIA was never supposed to be about a once off process and permit, but rather about ongoing environmental management and continuous environmental performance”. The emphasis on EIA as an integrated management instrument is significant; however, post-EIA follow-up

compliance monitoring is not perceived within this integrated context, but rather as subordinate to and an afterthought of the EIA itself. This is illustrated by Interviewee 7's concern: "I don't think it's even seen as a part of the EIA process by EAPs". This perception may stem from the relatively recent formal inclusion of compliance monitoring/auditing requirements within the EIA Regulations (December 2014). A significant critique of the industry is that, despite the 2014 EIA Regulations, the associated roles and responsibilities of post-EIA follow-up compliance monitoring role-players remain undefined in relation to these regulations, in contrast to the clearly defined role, responsibility, and professional registration requirements for EAPs.

Therefore, it appears that without defined and industry-accepted roles and responsibilities working towards "continuous environmental performance" (as referenced by Interviewee 1), the EIA process may realize limited added value in the foreseeable future. Interviewee 14 expressed concern that "sadly the EIA process itself is not seen as a value add as its capacity to bring about meaningful environmental protection and sustainable development is limited – specifically due to its limited project-based scope".

d. Do you believe the manner in which compliance monitoring is currently being undertaken in South Africa, informs future EIA processes in an iterative manner resulting in sustainable development?

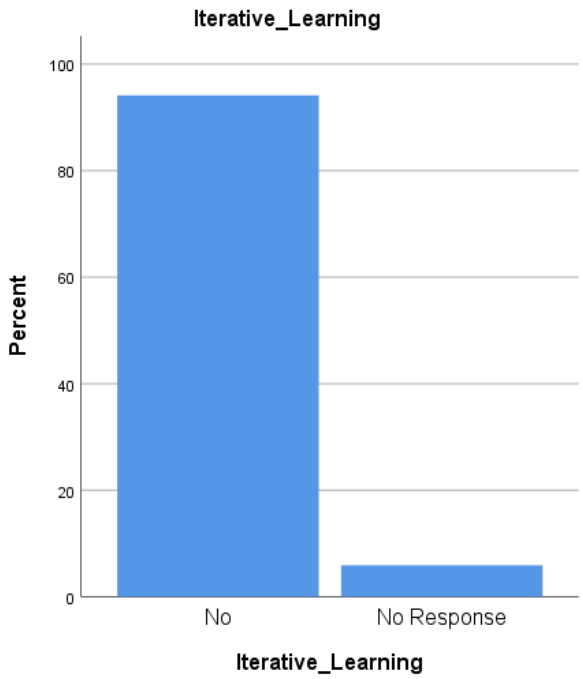

Figure 14 : Interviewee Perception on whether Compliance Monitoring informs Sustainable Development

Interviewees unanimously agreed that post-EIA follow-up compliance monitoring, as currently implemented, does not effectively inform future EIA processes. This deficiency stems from the independent and sequential appointment of compliance monitoring personnel relative to those conducting the EIA. Furthermore, regulatory processes associated with compliance monitoring do not mandate iterative learning to inform subsequent EIAs. This is partly attributed to Competent Authorities' emphasis on maintaining independence between various role-players. This perspective is supported by Interviewee 10's comment: "Yes, if the EAP is the ECO, then this is likely, but then there is the possibility that their possible mistakes in the EIA process, can be "covered up" when they manage their own work, and no one knows any better".

The interviewees' consensus regarding limited or absent iterative learning is not a recent observation, as evidenced by Wessels (2015), who stated that "little learning about" "EIA follow-up has been drawn and shared from this industry". This persists despite Interviewee 14's concern that Environmental Audit Reports submitted to the Competent Authority for review often result in "the majority of our projects get EA conditions that are copied and pasted from other projects, or they are being issued from a flawed template". This suggests that even though Competent Authorities possess a repository of Environmental Audit Reports, they are not effectively utilizing the lessons learned to inform future EA conditions. This may be attributable to a lack of competence, insufficient insight into how such lessons can inform future EIA processes, or simply a misalignment between departmental procedures and prevailing best practice. This aspect warrants further investigation.

Several interviewees indicated that informal iterative learning may occur, with ECOs/Auditors incorporating lessons learned into future practice. However, as Interviewee 10 concluded, "ECOs, in all likelihood, don't do EIAs or are not included". This concern rests on the premise that if the "EIA process is flawed, then the EAP might not appreciate the ECOs commentary"; moreover, many career ECOs are not EAPs and will thus never conduct an EIA.

Significantly, EAPASA (2015) does not formally recognize the role and responsibility of ECOs, perceiving their function merely as a "tick box" approach to ensuring compliance with EMPr and EA conditions. Consequently, the very body established to promote professionalism within the industry effectively excludes practitioners with first-hand implementation knowledge from attaining professional status and contributing to future EIA processes.

9. Post-EIA Follow-up Role Players

The EIA, as an administrative process, typically involves only an EAP and relevant specialists. In contrast, post-EIA follow-up work employs a tiered approach with diverse environmental resources representing various role-players, such as the Developer, Engineer, and Contractor. While Interested and Affected Parties (I&APs) and Competent Authorities are involved in both EIA and post-EIA follow-up, they will not be discussed further for the sake of focus.

Figure 15 (below) illustrates the context of each role-player. Unlike the EIA process, which is administered by a single entity (the EAP), post-EIA follow-up is characterized by a multitude of role-players, each represented by their respective environmental resource(s) performing distinct, role-specific functions. These roles range from specialist (e.g., Scientific Environmental Monitors) to generalist (e.g., Environmental Officer). Although some overlap between roles may occur, their core functions remain differentiated.

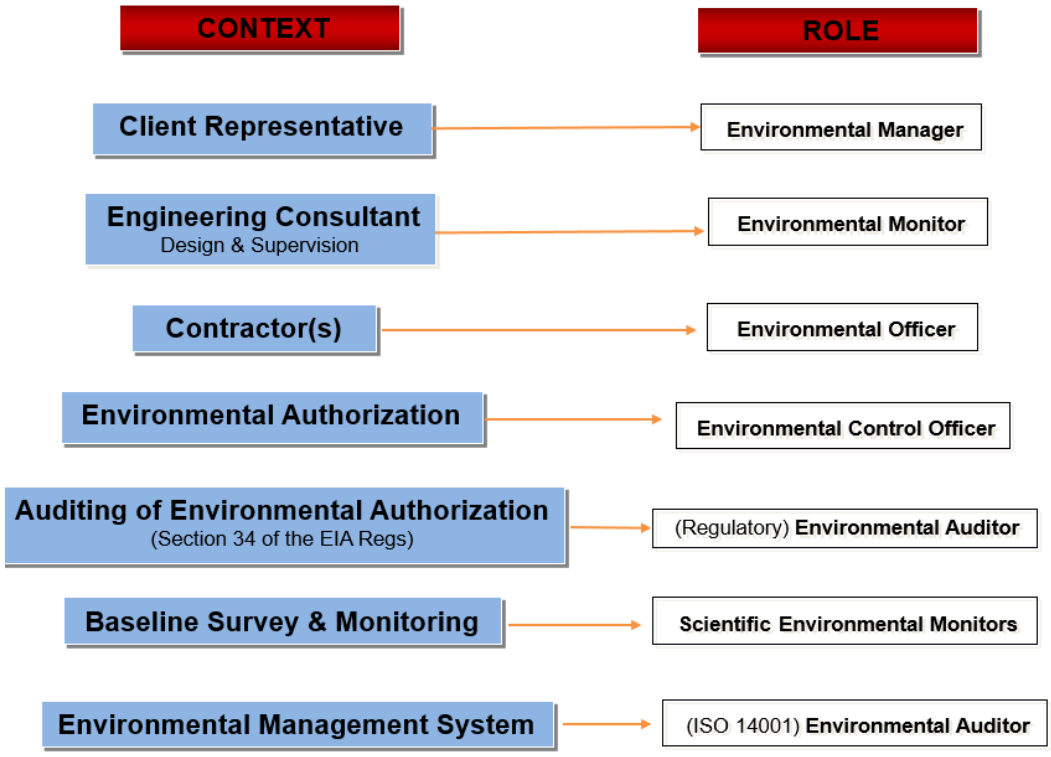

Figure 15: Context of the Roles for Various Role Players Involved with Post-EIA Follow-up Monitoring[120]

[120] After Rossouw, N. 2019. Post EIA Environmental Management: Clarification Of Roles Of Implementers And Independent Verifiers. IAIAsa Western Cape Workshop.

9.1. Implementing, Ensuring and Assuring

Effective assurance, enforcement, and implementation of the Environmental Authorisation and EMPr necessitate role-players with varying levels of competency. The Contractor's Environmental Officer, responsible for i**mplementation**, manages the execution of both the Environmental Authorisation and the EMPr. Consequently, this role can be considered an "entry-level position" within post-EIA follow-up work. A well-constructed EMPr should adequately guide the Environmental Officer in fulfilling their responsibilities, with regular feedback from the ECO through monthly reports and site visits facilitating the correction of any non-compliance issues.

The Environmental Control Officer performs a quality control function, **ensuring** (enforcement) the correct implementation of the Environmental Authorisation and EMPr by the Contractor. The ECO, via the Engineer's Representative, raises instances of non-compliance, prompting the Contractor (through the Environmental Officer) to implement corrective actions. Given the ECO's potential to provide pre-emptive advice or suggest mitigation measures with significant cost implications, the ECO should possess comprehensive knowledge of both implementing and ensuring compliance with the Environmental Authorisation and EMPr.

The Environmental Auditor's role differs from that of the ECO, focusing solely on compliance **assurance** through objective "yes/no" assessments of whether compliance has been achieved. Unlike the ECO, the Environmental Auditor does not require intimate knowledge of specific processes, contractual arrangements, or construction sequencing to conduct an environmental audit. However, the Environmental Auditor must possess expertise in auditing methodologies to produce a credible audit report that assures compliance.

9.1.1. Post-EIA follow-up and associated monitoring

a. Please describe which role-player(s) is/are prescribed to implement, ensure and assure the conditions of the environmental management programme / environmental authorization are upheld, as defined in the South African context?

Only twelve percent of interviewees provided a comprehensive overview of the various role-players responsible for implementing, ensuring, and assuring compliance with the environmental management programme/environmental authorization[121]. The remaining 88% either did not provide a comprehensive overview, offered an inadequate overview that did not address all role-players, or presented conflicting interpretations regarding responsibilities for implementing, ensuring, and assuring compliance.

[121] As identified within the Department of Water Affairs and Forestry, February 2005 Environmental Best Practice Specifications: Construction Integrated Environmental Management Sub-Series No. IEMS 1.6. Third Edition. Pretoria.

Furthermore, some assigned responsibilities to entities not typically associated with such actions. For example, Interviewee 4 stated that the EAP was responsible for implementing the EMPr and EA, while Interviewee 1 asserted that both the authorization holder and the ECO were responsible for "implementing, ensuring and assuring that the conditions are upheld" of the EMPr and EA.

A conflict of interest arises when the EAP who conducted the EIA subsequently implements the EMPr and EA as the ECO, thereby implementing conditions, monitoring compliance, and assuring compliance through auditing. An EAP implementing their own work could potentially conceal shortcomings in the EIA, while simultaneously, as the ECO, they could not be expected to impartially audit their own implementation. Interviewee 9 further noted that this issue is exacerbated because "all too often the ECO is expected to implement and actively control environmental aspects of compliance – and often to undertake all work-related thereto. This whilst being ignored and not given real power on a site. Many times, they are also effectively (contractually) gagged, with no right to inform the Competent Authority of non-compliances".

The prevailing view among the remaining interviewees was that the EAP is responsible for defining the roles and responsibilities of the various role-players within the EMPr. However, EAP involvement typically ceases after EA issuance. This is supported by the fact that 41% of interviewees reported not having implemented an EMPr during the development lifecycle. This lack of appropriate site-based experience combined with contractual knowledge may prevent EAPs from developing EMPrs with adequate site-based roles and responsibilities. This is further compounded by Environmental Authorisations assigning generic compliance requirements to either the ECO or the Contractor's Site Agent. Interviewee 14 corroborated this, stating "Environmental Authorisations and EMPr requirements have a limited range of role players. Generally, the authorisations require or refer only to ECOs or independent (sic) compliance auditors. Sometimes in EMPr documents responsibilities are assigned to developers and their contractors but these are often poorly aligned with existing contractual obligations. The roles specified for ECO parties have historically confused or mixed deliverables – in particular by requiring ECO to be both independent and issues (sic) instructions for correction or issues for (sic) protection of the environment. This direct contradiction is highly problematic and leads to poor practice and a focus on compliance to minimum requirements".

The Plankenbrug EMPr did not define the roles and responsibilities for the various contractual role-players[122]—namely, the Contractor (Implement) and Environmental

[122] The EMPr provided only towards the role and responsibilities of an ECO (from an environmental management perspective). I don't understand "provided only towards"

Auditor (Assure). Consequently, the Contractor's Health and Safety Officer was tasked with assuming the role of the Health, Safety, and Environmental Officer (HSE Officer), responsible for EMPr implementation. Without clear responsibilities or prescribed minimum requirements, the HSE Officer struggled to adequately implement the EMPr without constant guidance and mentorship from the ECO. This deficiency compromised the ECO's ability to maintain independence in ensuring compliance. Furthermore, the EMPr prescribed the ECO to undertake tasks that were contractually the Contractor's responsibility[123]. These tasks involved work procedures developed by the Contractor to demonstrate their understanding of how they intended to execute specific tasks. Moreover, no Environmental Auditor was designated to assure that the work undertaken adhered to the EMPr and EA, as required by regulations[124].

These sentiments were echoed by the Focus Group. Wessels (2016) concluded that there are "currently no regulative requirements or codes for ECOs to follow or beholden to, as there are no professional registration options for this industry" and "This is an anomaly in comparison to other verification professions worldwide as independent auditors, assurers, and/or verifiers such as for systems (e.g. ISO17021, 2006) and financial auditors (Bakar et al., 2005; Everett et al., 2005), arbitrators (Hong-Lin & Shore, 2003) are almost always regulated by registration and certification requirements.". This was supported by the City of Cape Town (2016), which considered the "Role of the ECO (to be) poorly defined (within) EMPs" and questioned the "capabilities of the ECO (as being) limited". According to Transnet (2016), this could result in "making them unaccountable for any incorrect advice" and that their "Giving advice and monitoring compliance could create a conflict of interest".

b. If the roles and responsibilities are not clearly defined within the South African context, do you think this lack of definition results in the undertaking of conflicting responsibilities for appointed roles?

The former Department of Water Affairs and Forestry (DWAF), now the Department of Water and Sanitation, defined the roles and responsibilities of various development-related role-players in a cradle-to-grave manner within its 2005 Environmental Best Practice Specifications[125]. This valuable resource predates the promulgation of the 2006 EIA Regulations of NEMA, as amended. However, it appears to be unknown to 88% of the interviewees. This lack of awareness led Interviewee 14 to lament that "the

[123] D5 of the EMPr: "…Identify non-compliances and problem areas, and provide action plans and/or method statements to avoid costly stoppages and / or further environmental damage…".
[124] Regulation 34 of GnR 982 of the 2014(a) EIA Regulations, as amended.
[125] Department of Water Affairs and Forestry, February 2005 Environmental Best Practice Specifications: Construction Integrated Environmental Management Sub-Series No. IEMS 1.6. Third Edition. Pretoria.

situation as it stands leads to confusion and loopholes that result in poor understanding – in some instances key positions go unfilled and in many other instances there are too many people in “policing” or checking capacities and not sufficient focus on the roles required to get works implemented to a high standard”. This perspective was echoed by Interviewee 5, who believed “they are suitably defined, any conflict that could potentially arise is likely a result of said personnel/authorities not fulfilling mandates properly”. This observation may have prompted Interviewee 1 to state, “…Rather than lack of definition, it is that often a system is lacking”.

These responses suggest potentially widespread issues within the industry, further complicated by differing approaches, as a uniform approach may not be pragmatic. For instance, large-scale greenfield infrastructure developments present significantly greater complexities than small-scale brownfield developments or expansions. This view is supported by Interviewee 2, who suggested that “the situation would be improved with better role definition. I think one has to be careful about defining such roles definitively though because one runs the risk of appointing people that may or may not be required. For large-scale construction projects, it may be necessary to appoint a number of site reps, whereas for smaller projects an individual could potentially fulfil several roles”. This perspective was corroborated by the Focus Group Participants, who concurred that the roles and responsibilities for large versus small projects required distinct definitions to mitigate conflict.

CHAPTER FIVE
EIA REGIME IN SOUTH AFRICA – ANALYSIS AND DISCUSSION

1. Introduction

This chapter analyzes and discusses the monitoring aspects associated with the EIA process.

Sandham et al. (2005: 51) defined the EIA process as a "planning and management tool for sustainable development, aimed at providing decision-makers with information on the likely causes of their actions". Zhang et al. (2013: 150) further refined this concept by categorizing the EIA process into five stages within their implementation model:

- The pre-EIA stage (including agenda setting, initiation/deciding to decide, and project formulation);
- The EIA stage "preparing the ground" (including screening, scoping, and identification of alternatives);
- The EIA stage "assess and protect" (including prediction and mitigation);
- The EIA stage "wrap it up" (including documentation, EIS review, and monitoring); and
- The post-EIA stage (including application and implementation, feedback and evaluation, project maintenance, succession, or termination).

This research primarily focuses on the "wrap it up" and post-EIA stages. While the EIA process is a formalized and globally accepted procedure, post-EIA follow-up work remains informal and less clearly defined. This is evidenced by the relatively recent promulgation of the 2014 EIA Regulations, as amended, which mandate the inclusion of auditing as part of the EIA process. Such auditing allows for the evaluation of impact mitigation and management measure efficacy, with concurrent iterative learning creating an environment conducive to improvement within the EIA process.

However, the EIA process in South Africa is perceived by various stakeholders, including the Endangered Wildlife Trust (2018), as not effectively contributing to sustainable development or environmental protection. It is viewed by some as an administrative tool utilized by the African National Congress (ANC) government as a political instrument to expedite regulatory processes and facilitate job creation[126]. This perspective suggests a prioritization of the EIA process as a singular assessment and management tool, potentially at the expense of holistic environmental management

[126] Parliamentary Monitoring Group. 2014. Infrastructure Development Bill [B49-2013]: Public Hearings Day 3.

practices. This viewpoint is not unique to South Africa. Arts et al. (2012a: 3) argued that the effectiveness of the EIA process at the project level is largely context-specific, dependent on "the actors involved, their interests and power positions and extent which the most powerful decision-makers are open to environmental values and to revising their original plans". Laurence (2022: 67–70) further argued that the EIA process is inherently prone to failure due to:

- Inadequate investment resulting from regulated timeframes for EIA completion, which significantly hinders holistic, yet resource-intensive, assessments that comprehensively review interconnected impacts on a broader scale;
- Insufficient scope, as the EIA process focuses on the immediate construction impact footprint;
- Vested interests, as the Developer funds either their preferred or the most cost-effective EAP to conduct the EIA, potentially compromising "true" competence and independence; and
- Poor governance due to Competent Authorities themselves lacking adequately skilled resources to holistically assess impacts and ensure EIA integrity.

Zhang et al. (2013: 151–154), in their 2013 paper "Critical Factors for EIA Implementation: Literature Review and Research Options," published in the Journal of Environmental Management, concluded that EAPs lack independence due to their financial dependence on "agents that support them financially," compromising impartiality. They should be "qualified experts and competent and trained personnel" with "adequate education and training," exercising "professional judgement" as "professional EIA practitioners" within their "predefined roles and responsibilities". It was further argued that an EIA report (and its associated EMPr) is only as effective as the "experience and competence" of its author. Consequently, even substantial assessments conducted by an author lacking post-EIA follow-up experience may be rendered ineffective, potentially resulting in a generic, non-site-specific EMPr.

These issues, while reported globally, are equally pertinent in the South African context. The following sections address key findings of this research.

2. Independence

Independence remains a contested issue, as developers often employ either the most cost-effective or a preferred EAP known for securing environmental authorizations[127]. This pattern is mirrored in post-EIA follow-up, where developers tend to appoint practitioners least likely to disrupt the construction schedule or impose cost-related penalties. However, as argued by Evers et al. (2017: 84), independence does not

[127] Chapter 4 Section 7.2.

equate to competence. Moreover, isolated work practices hinder the integration of various disciplines, precluding opportunities for considered and holistic development. Only a holistic approach enables contextualized impact measurement and the development of proactive processes that facilitate optimized engineering designs prior to construction commencement. This is evidenced in Chapter 4 Section 8.2, where all interviewees (100%) concurred that EIA processes do not holistically inform sustainable development.

This lack of holistic integration of sustainable development is further exacerbated by poorly drafted EMPrs that fail to include suitably defined roles for those involved in implementing, ensuring, and assuring compliance with the Environmental Authorisation and EMPr. This compromises those tasked with ensuring compliance (i.e., the ECO), as they are often required to assist the contractor in EMPr implementation while simultaneously conducting audits to assure the Competent Authority of compliance, as observed at the Plankenbrug Sewer Project. Swanepoel (2016) argued that this issue is exemplified by EAPs appointing inexperienced, junior ECOs to construction sites without providing institutional knowledge or support from experienced ECOs. Consequently, these junior ECOs immediately lose independence as the contractor assumes a “mentorship” role tailored to their own requirements. These concerns are supported by Wessels et al. (2012: 33), who argued that significant discrepancies exist regarding the role and independence of the ECO within the South African context, concluding that these factors “all of which ultimately contribute to failure in compliance monitoring and enforcement on a construction site.”

3. Lack of professional registration

The Department of Environmental Affairs (DEA), in its 2014 Draft “Environmental Impact Assessment and Management Strategy for South Africa,” proposed the establishment of a “Council for Environmental Professionals” (see Figure 16). This proposed council would encompass five associations: EAPASA; the Association for Public Participation Practitioners; the Association of Social Impact Assessors; the Association for Environmental Control Officers; and the Association for other Environmental Professionals. However, a review of EAPASA’s (2015a) six Core Competencies reveals that these competencies incorporate aspects associated with the other four proposed associations. This raises questions about why EAPASA focuses exclusively on the EIA process rather than adopting a more holistic approach to environmental management, as demonstrated by IEMA.

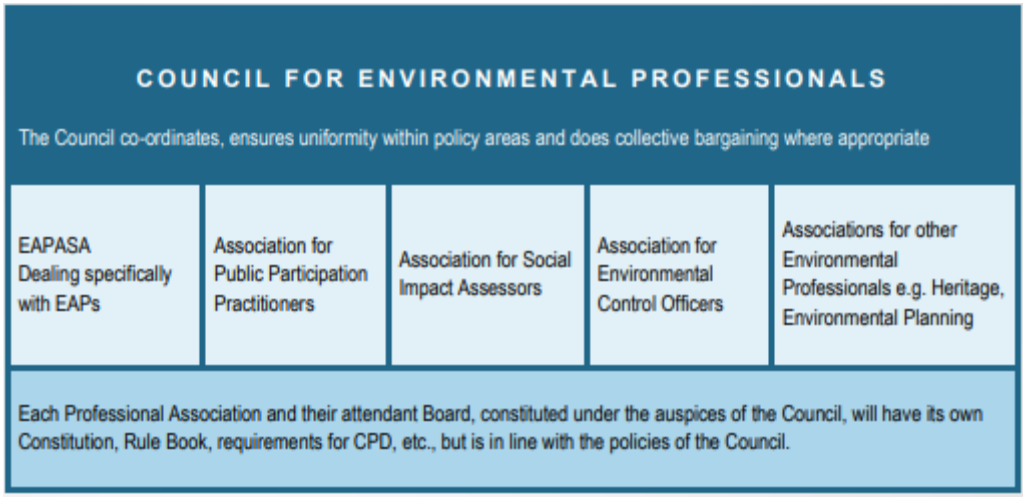

Figure 16: Council for Environmental Professionals

It is therefore ironic that EAPASA (2015) currently does not recognize post-EIA follow-up compliance monitoring resources within the scope of the EAP definition. The current six EAPASA Core Competencies exclude the roles and responsibilities of environmental practitioners involved in the broader EIA/post-EIA follow-up processes, focusing solely on EAP applicants who can demonstrate completion of a minimum of three EIA processes as the basis for their application[128].

Consequently, no professional registration body exists within the South African context specifically catering to post-EIA follow-up compliance monitoring. This was confirmed by EAPASA (2019), which reiterated that, according to Section 24H of NEMA, a professional registration body should be established for EAPs and that "No person other than a registered Environmental Assessment Practitioner" "may hold primary responsibility for the planning, management, coordination or review of environmental impact assessments and associated EMPr".

While other professional bodies exist (e.g., SACNASP, SACPLAN[129], SAATCA[130], SACLAP[131]), they address aspects not directly related to post-EIA follow-up compliance monitoring. Wessels (2019) expressed concern that surveys conducted between 2016 and 2018 revealed that 82% of respondents were registered with SACNASP, while only 5% were registered with EAPASA. This is despite the fact that much of the work undertaken by ECOs is non-scientific but directly aligned with the EIA process.

[128] https://www.eapasa.org/index.php/component/content/article/2-uncategorised/107-registration-process-for-eaps-in-south-africa.
[129] South African Council for Planners.
[130] South African Auditor Training and Certification Association.
[131] South African Council for the Landscape Architectural Profession.

This situation raised concerns among interviewees regarding the limited recourse available through professional registration bodies for addressing poor performance by errant professionals in post-EIA follow-up.

4. Poorly defined environmental management roles and responsibilities within the EIA process

Eighty-eight percent of interviewees, when interviewed, did not adequately consider all the roles and responsibilities of post-EIA follow-up resources, demonstrated a lack of awareness of these roles, or provided conflicting accounts of responsibilities. The poor definition of roles and responsibilities was further substantiated by the ECOs within the Focus Group Participants, who presented divergent views on the ECO's responsibilities. Furthermore, the Plankenbrug Sewer EMPr prescribed responsibilities for the ECO that created a conflict of interest.

Sadler (2004: 259) questioned whether the determination of efficacy would provide a fit-for-purpose solution. This concern is reflected in the uncertainty surrounding role specialization, which impacts environmental practitioner objectivity and, consequently, diminishes the efficacy of implementing, ensuring, and assuring compliance with the Environmental Authorisation and EMPr. Wessels et al. (2012: 46) supported this view, stating that “without clear rules of engagement the role of an independent ECO can be reduced to a perfunctory role”.

5. Lack of suitably experienced post-EIA follow-up practitioners

While fifty-nine percent of interviewees stated that compliance monitoring added value to the EIA process, thirty-four percent lamented the loss of this value, describing it as merely a “grudge purchase and tick-box exercise.” Critically, ninety-four percent believed that the outcomes of compliance monitoring did not inform future EIAs. According to all interviewees (100%), this loss of EIA value is attributable to an insufficient skillset for all facets of post-EIA follow-up work, resulting in the generation of poor-quality audit reports and, as many reported, a near-complete absence of mentorship.

This lack of mentorship and limited iterative learning has the potential to create a generation of under-skilled ECOs who, in later career stages, may conduct EIAs of questionable value. The concern is that the current generation of ECOs is being positioned for failure, potentially rendering the future of the EIA process a valueless endeavor.

This concern is further compounded by the fact that Competent Authority officials, tasked with reviewing EMPrs and audit reports, may deem their contents suitable for impact management and mitigation despite lacking practical experience in these areas.

This situation presents a clear case of inadequate oversight and expertise, metaphorically described as “the blind leading the blind.”

6. Poor Understanding of Post-EIA Follow-up Monitoring

The general understanding and involvement of both interviewees and focus group participants in post-EIA follow-up work was assessed as ranging from low to moderate. This was exemplified by the authors of the Plankenbrug Sewer EMPr, who apparently did not fully comprehend the importance of including the environmental practitioner responsible for EMPr implementation (i.e., the Contractor’s EO) within the EMPr itself.

While interviewees and participants expressed both positive and negative views on the value added by post-EIA follow-up compliance monitoring, critical perspectives characterized it as a perceived irritant or “grudge-purchase.” This negative perception persisted despite acknowledgement of its importance for iterative learning. Consequently, the significance of monitoring appears to be diminished, preventing it from effectively informing improvements to the overall EIA system (Marshall et al., 2003: 17). This aligns with Polonen et al.’s (2011: 126) argument that monitoring enhances understanding, thereby promoting more accurate prediction methods for future assessments. This raises concerns that those tasked with monitoring are inadequately mentored and trained, and provided with vague job descriptions. This is compounded by limited formal recognition and the requirement, at times, to ensure compliance with generic, non-site-specific EMPrs.

The cyclical nature of integrated environmental management practices follows a “Plan-Do-Check-Act” process (see Figure 17), where planned work requires checking to verify its efficacy. A deficient understanding of post-EIA follow-up monitoring can impede the feedback loop, preventing effective checking of the implementation ("Do") against the initial plan ("Plan"). This is often observed when EMPrs fail to incorporate mechanisms to check key performance indicator (KPI) efficacy. An example of such a KPI is: “Does the waste management plan provide mechanisms to determine its efficacy in aligning with the waste hierarchy principles?” Without such mechanisms, compliance monitoring outcomes may not accurately reflect actual site conditions. Therefore, it is crucial for practitioners involved in the EIA process to fully comprehend the requirements of post-EIA follow-up monitoring.

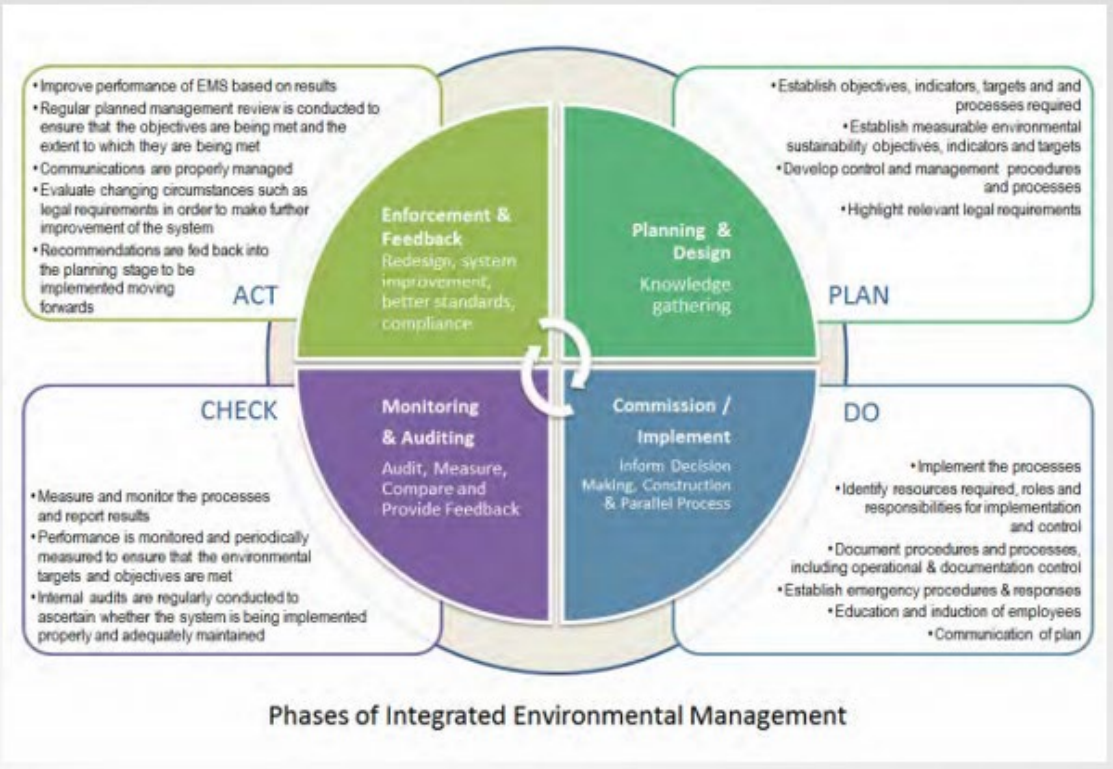

Figure 17: Phases of Integrated Environmental Management[132]

7. EIA in a Utopian World

For the EIA process to effectively contribute to sustainable development the following should be considered:

7.1. Independence

Wessels et al. (2012: 47) argued that "practitioners identified competency and the regulation of the ECO industry as core needs of the industry". They further stated that they "viewed independence as a critical ingredient in the success of the ECO function and ultimately the successful implementation of environmental legal requirements on a construction site. However, caution should be practiced by practitioners not to obsess with independence to such an extent that this compromises the ability of an ECO to fulfil their roles".

Zhang et al. (2013: 151) proposed that the review body (Competent Authority) should be independent, while the EAP should be competent, thereby enabling "cross-sectoral networks to critically evaluate and reflect on existing experience, to experiment with various approaches and be open to diverse forms of domestic and international knowledge". This aligns with Wilkins' (2003: 401) assertion that greater subjectivity is inherent in the EAP's role, as "the values of the people engaged in an EIA play a significant role in its results due to the considerable subjective decision-making upon

[132] DEA. 2014 Draft "Environmental Impact Assessment and Management Strategy for South Africa".

which EIA is based". Wilkins further posited that "the central role of prediction in EIA makes subjectivity unavoidable due to politicized evaluations, narrow boundaries (sic) setting, data gaps and simplified assumptions". Building on Wilkins' position, Polonen et al. (2011: 126) emphasized the critical role of attitudes and values in the process of knowledge production. The EIA process, therefore, should not only serve as a means to inform planning decisions but also as a mechanism for directing development. Consequently, prioritizing enhanced competence aligned with professionalism, while placing less emphasis on strict independence, is likely to yield improved sustainable development outcomes.

7.2. Lack of professional registration

Professional registration for the broader environmental management industry would ensure a consistent standard of practice for all role-players within the EIA process. Many post-EIA follow-up practitioners are employed by EAPs to conduct compliance monitoring on large-scale infrastructure projects, often in remote locations and with limited project durations. Consequently, these practitioners frequently leave the field in pursuit of greater job security and stability, often transitioning into EIA consultancies. This potential staff turnover and loss of institutional knowledge should be mitigated by retaining these practitioners within a professional registration framework. Retaining these individuals and providing mentorship and career guidance would contribute to a stronger, more inclusive environmental management industry. While establishing a "Council for Environmental Professions" could result in a proliferation of professional registration bodies, potentially diminishing their individual efficacy, a single, unified registration body would provide holistic linkages between all environmental management disciplines.

7.3. Poorly defined environmental management roles and responsibilities within the EIA process

Due to economies of scale, resourcing for post-EIA follow-up compliance monitoring varies significantly between large and small developments. Large-scale developments may necessitate complex, tiered structures of implementing, ensuring, and assuring role-players, unlike their smaller counterparts. However, the distinction between "large" and "small-scale" requires further definition. Development value may be driven by the inclusion of expensive equipment or technologies rather than the scale of the environmental impact (e.g., an industrial factory), while low-cost developments can have catastrophic environmental consequences (e.g., a dam). Consequently, assigning multiple layers of implementers, ensurers, and assurers to provide a "policing" function on a low-impact development may not be an efficient use of resources, and the reverse is equally true. Roles and responsibilities should be commensurate with the scale, complexity, and nature of the development. This principle also applies to assigning

responsibilities to specific role-players, meaning that not all developments will necessarily require both an ensurer and an assurer. Therefore, the function of each role should determine the associated responsibilities.

Table 2 and Table 3 illustrate recommended roles and responsibilities associated with each function.

Function	Stakeholder	Role	Responsibilities
Monitor	Consultant	Environmental Monitor	Responsible, on behalf of the Engineer, for monitoring the implementation of the EMPr and Environmental Specifications by the Implementors appointed per construction package on large scale infrastructure developments. Shall inform designs, site layout plans, procurement process; develop Environmental Specifications and advise the Engineer on the Contractors implementation thereof; review and interpret environmental monitoring data received; collate submissions; and provide guidance to both Engineer and Contractor. Responsible for ensuring audit findings / observations are timeously addressed.
Influencer / Manager	Proponent	Environmental Manager	Provide strategic management function to the development team during the development lifecycle. Ensure permit applications are timeously completed and environmental practitioner appointments are fit for purpose.
Interested and Affected Party	Community	Environmental Monitoring Committee	Monitor the implementation of the EMPr and Environmental Authorisation, advise on measures to improve compliance; and inform various competent authorities and stakeholder bodies of the development status quo.
Regulator	Competent Authority	Environmental Management Inspectorate	Legislatively mandated to routinely inspect and undertake investigations where possible non-compliances have been identified, ensuring enforcement through administrative processes.

Table 2: Implementor, Ensurer and Assurer Roles and Responsibilities for both large and small-scale developments

For large-scale developments, the above roles can be augmented by those reflected, below, in Table 3.

Table 3: Supporting Roles and Responsibilities for large-scale developments

7.4. Lack of suitably experienced post-EIA follow-up practitioners

Professional registration for post-EIA follow-up practitioners could offer a two-pronged benefit: upskilling and industry recognition. While continuous professional development

is often a requirement for maintaining registration, the onus ultimately falls on the practitioners to take ownership of their learning and self-development. Failure to do so can erode professional credibility. Clayton et al. (n.d., 7) support this notion, highlighting the potential for "professionals to lack the up-to-date knowledge and skills necessary for effective performance in their current or future roles."

However, a significant portion of learning within this field occurs through working in multi-disciplinary teams across various project stages. This stands in contrast to the formalized training courses currently available in South Africa. Ideally, environmental practitioners, regardless of specialization, should undergo mentorship on construction sites before developing or informing processes associated with the design and construction phases of projects. Invaluable mentorship from experienced and competent post-EIA follow-up practitioners would provide environmental practitioners with a crucial understanding of the post-EIA consequences of their actions.

This mentor-driven learning would also expose EAPs to typical impacts associated with various development types. This, in turn, would lead to improved predictive assessments and a reduction in risks not typically considered during the EIA process. Consequently, continuous professional development and participation in iterative learning processes would ensure continuous improvement in practitioner competency, ultimately leading to higher-quality deliverables. Improved outputs translate to more accurate impact assessments and a reduction in the scale and severity of environmental consequences.

The 2014 Draft “Environmental Impact Assessment and Management Strategy for South Africa” proposes three categories for professional registration. However, the current EAPASA registration structure only recognizes "Candidate" and "Registered Professional" categories. Similar to the IEMA system in the UK, incorporating a "Master" category could incentivize continued professional development. However, unlike the restrictive approach outlined in Figure 18, this "Master" category should promote the development of expertise and competence aligned with holistic environmental management practices.

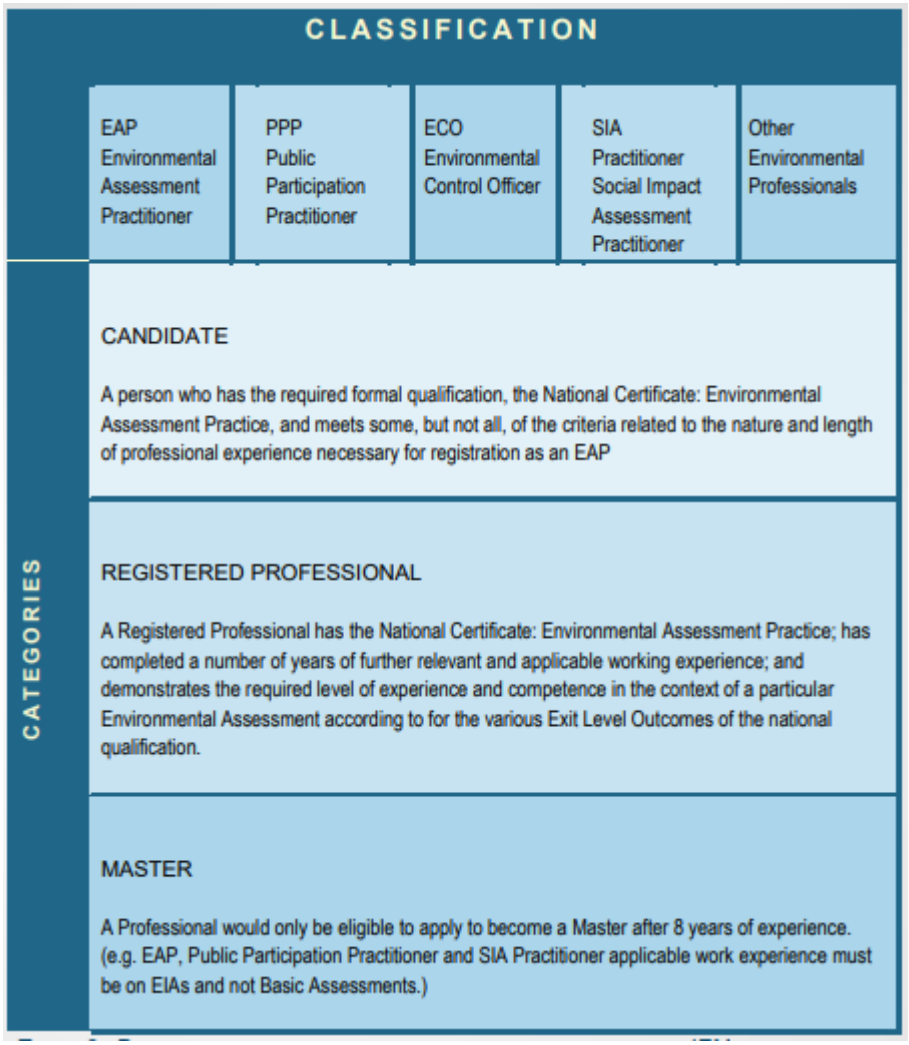

Figure 18: Professional Development Categories

7.5. Can the EIA Process be Improved to Provide for Sustainable Development?

The pursuit of absolute perfection is unattainable due to the continuous evolution of the world, which necessitates ongoing improvements. Static processes would negate iterative improvement cycles[133] and stifle the exploration of new approaches. Similarly, the 2014 EIA Regulations stipulate Environmental Audits to inform and assure the Competent Authority and Interested and Affected Parties of compliance with the EMPr and Environmental Authorisation. These audits also allow for proposed amendments to the EMPr or Environmental Authorisation, enabling enhancements to impact mitigation and management measures. However, this research reveals that post-EIA follow-up practitioners demonstrate low levels of awareness, experience, understanding of their roles and responsibilities, and independence to effectively influence such impact mitigation. Figure 19 (below) illustrates the iterative learning facets associated with environmental management. Without increased awareness and behavioral change fostered through effective and iterative compliance monitoring and

[133] e.g. Deming Cycle.

enforcement of the EMPr and Environmental Authorisation, sustainable development practices will decline.

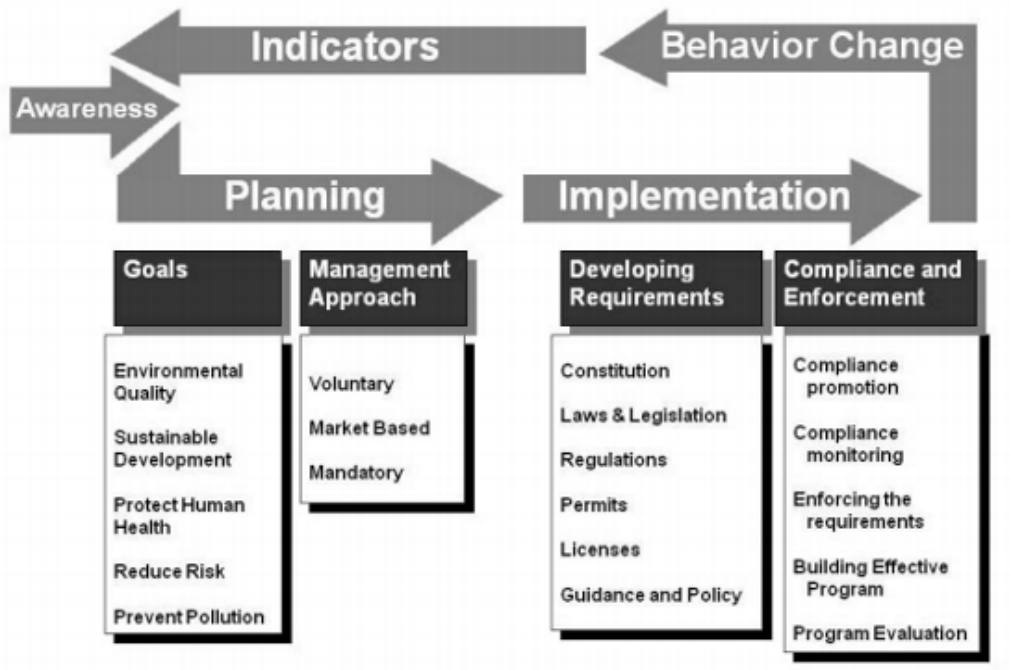

Figure 19: Environmental Compliance[134]

7.6. Resilience

Current EIA practices in South Africa lack a focus on building resilience in both natural and social environments. As Wenning et al. (2017: 969) point out, the integration of resilience indicators and tools within the EIA process remains underdeveloped.

One potential solution lies in incorporating "Design for the Environment" principles during the design engineering phase. This proactive approach could lead to the implementation of optimization measures that enhance resilience during construction activities. However, the current reliance on generic, non-site-specific EMPrs presents a significant obstacle. These documents typically fail to address resilience or provide mechanisms for assessing the effectiveness of implemented mitigation measures[135].

A critical step towards addressing this gap is to develop EMPrs that incorporate subsequent auditing criteria. These criteria should shift the focus from simply verifying

[134] INECE. 2009. Principles of Environmental Compliance and Enforcement Handbook. www.inece.org.

[135] E.g. Security, Traffic, Heritage, Soil and hazardous Materials Management.

compliance with prescriptive EMPr conditions towards measuring the efficacy of mitigation measures and the overall project's contribution to resilience.

The limitations of current EMPrs are exemplified by the Plankenbrug Sewer EMPr. Not only did it lack mechanisms to achieve resilience, but it also excluded specific requirements for rehabilitation. The sole reference to rehabilitation was the subjective statement of ensuring "satisfactory rehabilitation" to "an environmentally acceptable standard" based on the ECO's judgment. This approach fails to address crucial aspects like minimum species composition, acceptable ground cover percentage, or endemism levels. Such subjectivity creates a conflict of interest for the ECO and hinders efficient resource allocation for rehabilitation efforts. Furthermore, the absence of clear rehabilitation requirements during the tender stage prevents contractors from accurately pricing suitable measures.

In conclusion, the EIA process, particularly through robust EMPrs, needs to incorporate resilience as an integral part of "recovery" during and after project site disturbance (Mahmoudi, 2018: 567). Only by integrating such principles can we ensure sustainable development practices that foster long-term environmental and social well-being.

7.7. Tertiary Training

The domain of post-EIA follow-up work necessitates proficiency in both environmental and engineering terminology and concepts, requiring practitioners to possess expertise in both fields. Professional registration within the engineering field in South Africa (e.g., through the Consulting Engineers of South Africa) mandates an understanding of environmental management practices[136]. This is reflected in university curricula; for instance, the BSc (Eng) program at the University of the Witwatersrand[137] includes Integrated Resource Management, while the University of Cape Town[138] offers Introduction to Environmental Assessment and Management. However, EAPASA professional registration does not require comparable mastery of engineering concepts, nor do environmental degrees offered at local universities typically incorporate engineering curricula. This discrepancy raises concerns that, while the EIA process and post-EIA follow-up monitoring inform and are integrated within engineering work, environmental practitioners possess limited engineering knowledge to provide informed opinions on how environmental impact management and mitigation affect engineering practices. It is therefore recommended that tertiary training institutions integrate engineering and contractual curricula into environmental courses.

[136] https://www.cesa.co.za/book/export/html/139.
[137] https://www.wits.ac.za/course-finder/undergraduate/ebe/civil-engineering/.
[138] http://www.civil.uct.ac.za/civil/undergraduate-courses.

7.8. Guidelines

Okpara (n.d.: 10-11) observed that "monitoring requirements do not clearly specify and explain what work is needed and who is responsible for what, and little attention is given to accountability and commitment of parties involved." Consequently, there is a need

Function	Stakeholder	Role	Responsibilities
Implementor	Contractor	Environmental Officer	Contractually responsible for the day-to-day implementation of the EMPr and (Contractual) Environmental Specification; and consequently, developing necessary method statements and action plans in association with the Contractor. Responsible for managing and mitigating construction-related impacts; undertaking environmental monitoring; implementing measures to reduce impacts; and ensuring emissions comply with regulatory requirements. Furthermore, acceptably processing complaints and transgressions.
Ensurer	Proponent	Environmental Control Officer	Responsible for monitoring and enforcing compliance by the Implementor to the EMPr and Environmental Authorisation; verifying environmental monitoring reports submitted; and providing regular feedback to the Proponent. The Ensurer shall undertake regular site visits and audits which shall inform the Engineer of appropriate measures to be taken for ensuring the Contractor complies with the EMPr and Environmental Authorisation.
Assurer	Proponent	Environmental Auditor	An unaffiliated party responsible for undertaking independent audits at prescribed intervals. Provides audits assuring efficacy of environmental controls implemented, compliance to the EMPr and Environmental Authorisation; and competence of the Ensurer in undertaking compliance monitoring.

for industry guidelines that clearly define the roles and responsibilities of the various stakeholders. These guidelines should be developed in collaboration with specialists possessing extensive practical monitoring experience, rather than being drafted solely by the Competent Authority. Furthermore, such guidelines should adopt a holistic approach, encompassing both the natural and social environments. Finally, they should be outcome-oriented rather than prescriptive, allowing for adaptation to the specific needs of both small-scale and large-scale infrastructure developments.

CHAPTER SIX
CONCLUSION

8. Introduction

The emergence of heightened environmental awareness over four decades ago led to the global adoption of the EIA process as an environmental management tool aimed at promoting sustainable development through proactive economic, environmental, and social strategies.

This study investigated key monitoring aspects associated with the EIA procedure, using a selected EIA project and supporting information from a focused workshop conducted within the Western Cape Province, South Africa. The investigation focused on four key aspects of the EIA process: (i) independence; (ii) the absence of professional registration for post-EIA practitioners; (iii) poorly defined environmental management roles and responsibilities; and (iv) the scarcity of suitably experienced post-EIA follow-up practitioners.

Qualitative research methods were employed to gather specific data types:

- Participant observations, conducted through a case study approach from a first-person perspective (Gallagher, 2012: 7);
- Face-to-face interviews to collect detailed data on interviewees' personal experiences and perspectives; and
- Focus group interviews to provide a broad overview and understanding of key issues of concern within the group.

The research identified several shortcomings in the current implementation of post-EIA follow-up compliance monitoring in South Africa, revealing reduced efficacy in achieving sustainable development.

This chapter is structured into three sections: an overview of the study methodology; a discussion of how the aims and objectives were achieved; and recommendations for best practicable environmental options for EIA improvement.

2. Overview of Methodology

A qualitative research approach was employed to explore how individuals experience the research topic. Data were collected through face-to-face interviews with purposively selected interviewees and focus group participants. These interviews utilized pre-determined questions designed to elicit respondents' perspectives on their roles, responsibilities, and experiences related to monitoring aspects.

A case study provided a specific context for the research and offered first-hand accounts of experiences related to post-EIA follow-up monitoring. Focus group interviews further enriched the data, providing a platform for broader discussion without

predetermining research outcomes, and establishing a basis for future research. Secondary data sources were also consulted to support the primary data and address the research questions.

3. Key Findings

Objective One sought to determine how the monitoring aspects of the EIA procedure contribute to the achievement of sustainable development. This objective was met, and the findings align with the research of Morrison-Saunders et al. (2003: 44-46). They posit that effective EIA follow-up (which encompasses monitoring), as illustrated in Figure 20 (below), requires consideration of the following factors to promote sustainable development:

- Contextual Factors ("what"):
  - Regulatory and institutional arrangements;
  - Approaches and techniques employed;
  - Available resources and capacity; and
  - The specific project type.
- Key Role-Players ("who"):
  - The project proponent;
  - The regulatory authority; and
  - The affected community.

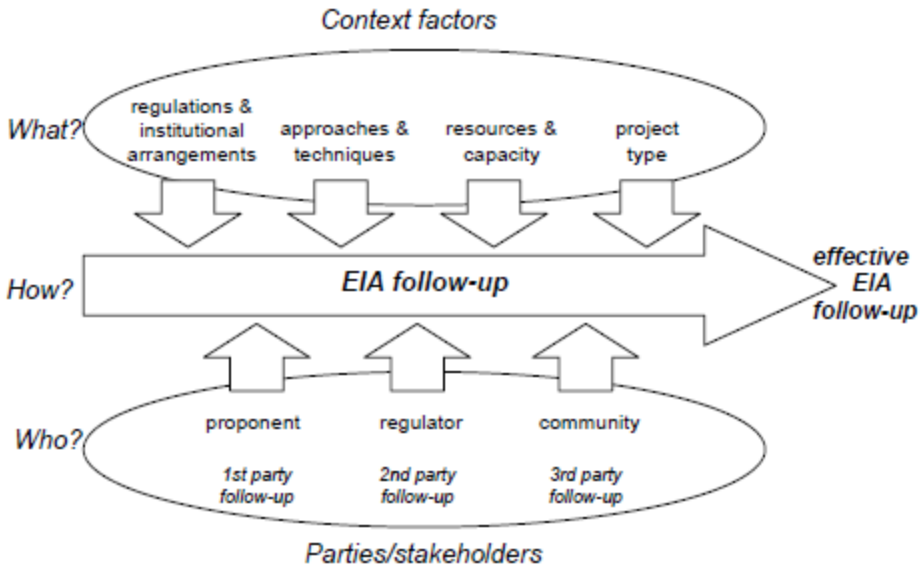

Figure 20: Contextual Factors and Parties Relevant for Successful EIA Follow-up[139]

Both interviewees and focus group participants concurred that the "what" and "who" elements identified by Morrison-Saunders et al. (2003: 44-46) were necessary for effective EIA follow-up. However, they emphasized that the "how" of implementation is crucial for creating an enabling environment for sustainable development. They also acknowledged that significant improvements are needed in the "what" and "who" aspects of post-EIA follow-up work to achieve parity with the EIA process itself. Broadening the scope of the EIA process from a purely administrative procedure to one of adaptive management—incorporating post-EIA follow-up into the design, capacitating and regulating practitioners responsible for implementing, ensuring, and assuring Environmental Authorisation and EMPr implementation, and enabling efficacy verification—would facilitate a holistic "assessment–prevention–management–mitigation–control–rehabilitation" lifecycle approach.

According to Singh et al. (2016: 144), much work remains, as while the EIA process "is the best-perceived tool for achieving sustainability," the "link between EIA and sustainability is recognized & well established but still insufficiently explored". This "insufficiently explored" aspect is evident in the failure to use the value of post-EIA follow-up compliance monitoring iteratively to inform improvements in impact prediction, assessment, and prevention. Such improvements would not only benefit the receiving environment and the broader economy but, as suggested by Campion et al. (2013: 37), could also significantly contribute "to sustainable development and reduction in poverty of people affected by projects". This is particularly relevant given the World Bank's (2018: xv) report, "Overcoming Poverty and Inequality in South Africa: An Assessment of Drivers, Constraints and Opportunities," which identified South Africa as having the highest level of inequality between rich and poor. This inequality continues to worsen, with the expanded definition of unemployment in South Africa reaching 42% in Quarter 2 of 2020 (STATSSA, n.d.).

While further research is necessary, both the EIA and post-EIA follow-up processes have the potential to significantly contribute to sustainable development in South Africa. Had this potential been fully realized, a different outcome might be expected in the World Bank report.

Objective Two aimed to determine whether the monitoring aspects associated with the EIA process are being implemented effectively in South Africa. This objective was addressed by exploring the following aspects of post-EIA follow-up compliance monitoring: independence; lack of professional registration; poorly defined

[139] Morrison-Saunders *et. al.* (2003: 45).

environmental management roles and responsibilities; and the scarcity of suitably experienced post-EIA follow-up practitioners.

- **Independence**

Sixty-five percent of interviewees concurred that both independence and competency are necessary for the successful execution of both the EIA and post-EIA follow-up processes.

- **Lack of professional registration**

All interviewees agreed that professional registration is essential for establishing and maintaining minimum professional standards. However, they also concurred that no existing professional registration body currently encompasses post-EIA follow-up practitioners. This exclusion can lead to limited accountability and a lack of mechanisms for addressing poor performance. Consequently, practitioner competence cannot be assured through formal registration, potentially leaving independence as the sole criterion for quality control.

- **Poorly defined environmental management roles and responsibilities within the EIA process**

The research revealed a lack of clarity in the definition of environmental management roles and responsibilities for various stakeholders. Instances were identified where a Competent Authority's lack of understanding of contractual requirements led to the inclusion of ineffective and impractical prescriptive conditions within the Environmental Authorisation. Furthermore, EMPrs that assigned responsibilities incongruent with specific roles were shown to create conflicts of interest and diminish the efficacy and intended function of those roles. The scale and complexity of a development were found to influence the appropriate level of involvement for each role-player.

- **Lack of suitably experienced post-EIA follow-up practitioners**

Interviewees unanimously agreed that the various role-players lacked the necessary skillsets to effectively execute all facets of post-EIA follow-up work. This deficiency is exacerbated by a lack of appropriate mentorship and tertiary training. Moreover, the nature of post-EIA follow-up work often requires interaction with engineers and contractors on construction sites. This can lead to these parties effectively “mentoring” the environmental practitioner in a manner aligned with their own priorities, which may not necessarily align with the needs of sound environmental practice. This combination of factors contributes to the development of a generation of under-skilled, poorly trained, and inadequately mentored individuals who subsequently become the EAPs of the future.

Objective Three aimed to ascertain how role-players within the EIA regime perceive the role of monitoring aspects in EIA within South Africa.

Both interviewees and focus group participants concurred that post-EIA follow-up monitoring is vital. However, they also agreed that its current implementation is significantly flawed. A consensus emerged that the lack of iterative learning, mentorship, clearly defined roles and responsibilities, and professionalism all contribute to ineffective monitoring. The limited understanding of post-EIA follow-up among Competent Authorities and the administrative, rather than practical, focus of the follow-up process were also identified as problematic.

4. Recommendations

Based on the research findings, the following recommendations are proposed to enhance the efficacy of post-EIA follow-up and its contribution to sustainable development:

- **Acknowledging Subjectivity and Prioritizing Competence**: Acknowledge the inherent subjectivity within post-EIA follow-up. In contrast to prevailing industry practice, absolute independence is not always necessary within all aspects of this work. A shift in emphasis from independence to demonstrated professional competence is required to improve service delivery.
- **Unified Professional Registration**: Integrate post-EIA follow-up practitioners into a single professional registration body (e.g., EAPASA). This unified structure will ensure consistent standards and promote holistic professionalization of practitioners involved in the “cradle to grave” EIA process.
- **Defined Roles, Responsibilities, and Training**: Clearly define the roles and responsibilities of practitioners, including requirements for associated mentorship, training, and on-site experience. This mentorship and training should be extended to raise general awareness among interested and affected parties, empowering decision-makers to effectively deploy competent practitioners in appropriate roles.
- **Collaborative Guideline Development:** Industry stakeholders, in collaboration with Competent Authorities, should develop guideline documents addressing roles, responsibilities, and best practices. These guidelines should:
  - Inform regulatory amendments to formally recognize the roles and responsibilities of post-EIA follow-up practitioners.
  - Define legal and contractual requirements that establish accountability mechanisms for practitioners performing inadequate post-EIA follow-up work.

This will necessitate that Competent Authorities employ appropriately trained personnel to review the adequacy of EMPrs prior to implementation.

- Establish competency levels for post-EIA follow-up tailored to the scale of development (small-scale vs. large-scale infrastructure projects).

- **Lifecycle Practitioner Involvement:** Ensure environmental practitioner involvement throughout all development lifecycle stages ("cradle to grave") to address evolving design requirements and actively promote sustainable development.
- **Enhanced Tertiary Education:** Implement post-EIA follow-up curricula at tertiary institutions, presented by experienced practitioners. These curricula should include fundamental engineering concepts, terminology, and contract law.
- **EAPASA Admission Requirements:** EAPASA should amend its admission requirements to include a demonstrated understanding of basic engineering principles as a prerequisite for professional registration.
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5. Concluding Remarks

Post-EIA follow-up, as a tool within the integrated environmental management framework, has the potential to facilitate the implementation of best practicable environmental options while ensuring appropriate environmental protection, assuring decision-makers of compliance with the Environmental Authorisation and EMPr, and generating iterative learning to inform future EIA processes.

However, the efficacy of this tool is contingent upon the crucial role of post-EIA follow-up practitioners. Without professionalization, including competency requirements, adequate training, and clearly defined roles and responsibilities, only limited long-term iterative learning and potentially flawed practices can be expected.

In conclusion, this investigation of key monitoring aspects associated with the Environmental Impact Assessment process has revealed shortcomings that hinder its adequate contribution to sustainable development.

CHAPTER SEVEN

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APPENDICES

A. Interview Questionnaire

Research project title: An Assessment of Key Monitoring Aspects Associated with the Environmental Impact Assessment Procedure in Cape Town, South Africa.

Dear Participant

I hereby wish to invite you to participate in the above-mentioned research study. I am currently enrolled with the Cape Peninsula University of Technology where I am completing my MTech Environmental Management. The purpose of the research is to determine whether the EIA process contributes to sustainable development.

Your participation in this research is voluntary and consequently you may refrain from responding to any question you do not wish to answer. However please note that your identity will remain anonymous and your responses confidential. Such information will only be made known to the researchers.

Should you participate in this research, please answer the questions to the best of your ability. Please return the questionnaire to the researcher before CoB 29 May 2019 via robinswanepoel0@gmail.com

Thank you for your assistance in this research.

Research investigator: Robin Swanepoel

Interview questions:

A. Can you please tell me more about yourself and the following?

What is your professional title?

……
……
……

What qualifications do you possess?

……
……
……
……

What type of environmental management practices are you engaged in? Please indicate by encircling the relative fields below:

- Environmental Planning;
- EIA;
- Design for Environment[140];
- Environmental Management Programme Implementation (on behalf of the Contractor);
- Environmental Compliance Monitoring; (on behalf of the Client – "ECO"); and
- Environmental Auditing[141] (as per Reg 34 of the 2014 EIA Regulations, as amended).

……
……
……
…….

How many projects have you been directly involved with where you were responsible for aspects associated with development planning, EIA, design, construction and operational activities?

……
……
……

[140] "The systematic consideration of design performance with respect to environmental, health, and safety objectives over the full product and process life cycle." As contained in Fiksel, Joseph, *Design for Environment: Creating Eco-efficient Products and Processes*, McGraw-Hill, New York, 1996.

[141] Current regulatory requirements do not prescribe professional registration. Should you have a related professional registration, please define.

……
……
Have you ever had any additional environmental training and if yes, was it based on Environmental Planning, EIA, Environmental in Design, Environmental Management Programme Implementation and Environmental Compliance Monitoring? Please define.
……
……
……
……
……
Do you have any professional registration? And if so, what professional registration do you have?
……
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……
How long have you worked in the environmental field?
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……..

B. Is Independence of an Environmental Practitioner more importance than competence?

1. Do you believe the South African environmental management industry exhibits high or low levels of competence associated with the fields referred to in Question A (3) above? Please define.

   ……
   ……
   ……
   ……
   …….

2. Do you believe the current regulated focus on independence overrides competence to undertake the task at hand? Please define

   ……
   ……
   ……
   ……
   …….

C. Lack of professional registration

1. Is the environmental management industry provided with appropriate professional registration? Please explain.
   ……
   ……
   ……
   ……
   ……
2. If no, does the lack of appropriate professional registration result in limited accountability and professionalism? Please define.
   ……
   ……
   ……

……
……

D. Lack of suitably experienced post EIA follow up practitioners

1. Do you think the various role players possess a sufficient skill set to undertake all facets associated with post EIA follow up (aka construction-site environmental management)? Please explain

   ……
   ……
   ……
   ……
   ……

2. In the event of “no” (above), do you think there is sufficient mentorship and training for; and appropriate industry acceptance of post EIA follow up practitioners? Please explain.

   ……
   ……
   ……
   ……
   ……

E. EIA Process

1. Do you think that once the EIA process is concluded, that it holistically informs the inclusion of sustainability criteria into evolving designs (associated within the subsequent engineering design process)?

   ……
   ……
   ……
   ……..

2. Would the inclusion of environmental practitioners during this critical aspect (engineering design) of a development provide towards improved sustainable development? Please define.

   ……
   ……
   ……
   ……..

3. Please define your own and perceived industry involvement on a scale of one to ten (with one being limited and ten being extensive) in the below aspects associated with the EIA process:

Process aspect	Your involvement	Perceived industry involvement
Environmental Planning		
EIA		
Environmental in design		
EMPr / EA implementation		
EMPr / EA compliance monitoring		
Environmental auditing		

4.
4.

F. Post EIA follow-up and associated monitoring

1. Please describe which role-player(s) is/are prescribed to implement, ensure and assure the conditions of the environmental management programme / environmental authorization are upheld?

   ……
   ……
   ……
   ……..

2. Please describe the afore-mentioned role-players' roles and responsibilities as defined within the South African context?

   ……
   ……
   ……
   ……..

3. In the event that the roles and responsibilities are not clearly defined within the South African context, do you think this lack of definition results in the undertaking of conflicting responsibilities for appointed roles? Please define.

   ……
   ……
   ……
   ……..

4. Is post EIA follow up compliance monitoring seen as a value add to the EIA process?

   ……
   ……
   ……
   ……..

5. Do you believe the manner in which compliance monitoring is currently being undertaken in South Africa, informs future EIA processes in an iterative manner resulting in sustainable development? Please define.

   ……
   ……
   ……
   ……..

B. Focus Group Presentations

smith ndlovu summers

ROLES AND RESPONSIBILITIES OF ENVIRONMENTAL CONTROL OFFICERS: THE LEGAL CONTEXT

NICHOLAS SMITH
Smith Ndlovu & Summers Attorneys
5th Floor, Poyntons Building, 24 Burg Street, Cape Town, 8001
Tel: +27 (0)21 424 5826 · Fax: +27 (0)21 424 5825

29 November 2016

1

Chapter 2: Bill of Rights in the Constitution

- **Just administrative action**
  - Section 33 of the Constitution
    - s33(1) – Everyone has the right to administrative action that is lawful, reasonable and procedurally fair.
    - Everyone whose rights have been adversely affected by administrative action has the right to be given written reasons.

2

Chapter 2: Bill of Rights in the Constitution

- S33(3) – National legislation must be enacted to give effect to these rights, and must –
  - (a) Provide for the review of administrative action by a court or where appropriate, an independent and impartial tribunal;
  - (b) Impose a duty on the state to give effect to the rights in subsections (1) and (2); and
  - (c) Promote an efficient administration.

3

The provisions of PAJA

- The constitutional right to just administrative action is thus given effect by virtue of the provisions in the Promotion of Administrative Justice Act ("PAJA")
- PAJA is the 'sister statute' to PAIA, which gives effect to the constitutional right to access to information required to exercise one's constitutional rights.

4

PAJA Definitions

- '*Administrative action*' (as defined in PAJA) "*means any decision taken, or any failure to take a decision, by – (a) an organ of state, when (i) exercising a power in terms of the Constitution or a provincial constitution; or (ii) exercising a public power or performing a public function in terms of any legislation; or*

5

PAJA Definitions

(b) a natural or juristic person, other than an organ of state, when exercising a public power or performing a public function in terms of an empowering provision, which adversely affects the rights of any person and which has a direct, external legal effect, but does not include …" [9 categories of exclusion including law-making functions, judicial functions of a judicial officer, certain JSC decisions, and others]

6

PAJA Definitions

- The wide framing of the definition of *"decision"* in PAJA – *"... means any decision of an administrative nature made, proposed to be made, or required to be made, as the case may be, under an empowering provision, including a decision relating to....* [and includes the issue of, or refusal to issue, licences, authorities or other instruments; and the imposition of a condition or restriction].

7

The Constitutional Context

- Why is the constitutional context important?
  - Because it situates us properly in the legal context for the grant of EAs and accordingly, the rights, roles and responsibilities of ECOs.
  - As such, it is our compass / route-marker for a proper consideration of an ECO's rights, roles and responsibilities.

8

ECO Liability in Private Law

- What are the ways an ECO can attract liability?
  - In private law, *contractually* (for example, if there is a breach of the ECO's agreed roles and responsibilities and by virtue of the ECO being a contractor rather than an employee, and the other party suffers damage as a result of the breach)
  - Possibility of *delictual liability* (e.g. an MVA by the ECO with another person while on site)

9

ECO Liability in Public Law

- In *public law*, and in the context of causing a breach of the conditions of the EA which could have (among others) public law implications (for example, if the competent authority then suspends the EA by virtue of the breach and the decision to suspend is challenged by way of an administrative appeal/judicial review application).

10

ECO Liability in Criminal Law

- Possible liability in criminal law and in terms of conduct that is criminalised under NEMA
  - Stark wording one often finds in the opening pages of an EA: *"Non-compliance with a condition of this* [EA] *may result in criminal prosecution or other actions provided for in the* [NEMA] *and the EIA Regulations"*

11

ECO as distinct from EAP

- The distinction between an ECO's responsibilities (principally in terms of an EA and the conditions imposed in it); as distinct from those of the EAP during the assessment process (Regulation 17 substantive expertise and independence criteria); as distinct from the responsibilities of the holder of the EA

12

EA provisions pertaining to ECOs

- Some of the provisions one might reasonably expect to find in an EA in respect of ECOs:
  - *"The holder of the authorisation must appoint an experienced independent ECO for the construction phase of the development, who will have the responsibility to ensure that the mitigation/rehabilitation measures and recommendations referred to in this EA are implemented and to ensure compliance with the provisions of the approved EMPr."*

13

EA provisions pertaining to ECOs

- The ECO must be appointed before commencement of any authorised activity.
- Once appointed, the name and contact details of the ECO must be submitted to the [Director: Compliance Monitoring] in the competent authority/department.
- The ECO must keep record of all activities on site, problems identified, transgressions noted and a task schedule of tasks undertaken by the ECO.

14

EA provisions pertaining to ECOs

- The ECO must remain employed until all rehabilitation measures, as required for implementation due to construction damage, are completed and the site is ready for operation.

15

The "grey areas"

- Confluence / dissonance in EA responsibilities?
  - *"The holder of the EA must, for the period during which the EA and EMPr remain valid, ensure that project compliance with the conditions of the EA and the EMPr are audited, and that the audit reports are submitted to the [Director: Compliance Monitoring] in the competent authority"*

16

The "grey areas"

- *"All documentation e.g. audits / monitoring / compliance reports and notifications, required to be submitted to the Department in terms of this* [EA] *must be submitted to the [Director: Compliance Monitoring] in the CA."*

17

The "grey areas"

- *"A written notification of commencement must be given to the competent authority not later than 14 days prior to commencement of the activity. Commencement for the purposes of this condition includes site preparation."*

18

Delineating roles & responsibilities

- How does one ensure that there is appropriate clarity between the ECO and the holder of the EA in respect of roles and responsibilities? For example, an experienced ECO would contract with holder of the EA on the basis that ECO would want to satisfy him/herself as to compliance with conditions that go to the proper provision of audit reports and the like

19

Case Study

- Case study –

  "The mystery of the missing ECO"

20

Concluding Remarks

- Questions / Feedback

21

Focus Group Participant 4

Western Cape Government
Environmental Affairs and Development Planning
BETTER TOGETHER.

DEA&DP PERSPECTIVE ON THE COMPLIANCE AND MONITORING ROLE OF AN ECO

IAIAsa Western Cape:
"The Roles & Responsibilities Of Environmental Control Officers"

H. Fotuin & B. Niemand

1

Introduction

- An EIA predicts and provides a measure of potential impacts.
- The ECO monitors actual impacts.
- The EMPr is a dynamic document, and should respond to these actual environmental changes.
- It is therefore also be the responsibility of the ECO to inform the Holder of the EA and the Competent Authority on how the EMPr is meeting the management objectives for the proposed development, namely:
  - Does the EMPr need to be amended to accommodate impacts that were not anticipated in the EIA;
  - Does it need improvement so that it addresses performance and compliance better; and
  - Are there any other aspects of the EMPr that need to be amended, e.g. further clarification of roles.

2

Purpose and Role of the ECO

- The primary role of the ECO is to act as an (independent*) control & monitoring "agent" for all environmental concerns and associated environmental impacts. (*depends on nature of appointment)
- An experienced & qualified ECO monitors and reports on compliance to the Holder's commitments in an approved EMPr & the EA.
- Once the EA is issued, the ECO is the lead agent in ensuring that these commitments are realised in practice.

3

Responsibilities (1)

- Control activities on site to ensure compliance with EMPr/method statements & conditions of an EA.
  - Conduct site inspections.
  - Attend regular site meetings.
  - Ensure proper record keeping.
  - Promotes environmental awareness.
  - Communicate with relevant stakeholders (e.g. state departments, public/surrounding communities) to ensure that any environmental problems are pre-empted & addressed.
  - Advise Project Manager & other relevant management members on best environmental practice.
- Report issues of poor management & non-compliance, and advise on corrective measures.

4

Responsibilities (2)

- Compile (internal*) audit reports that are made available to the Project Manager, Competent Authorities etc. (* depends on nature of appointment)
- Submit (internal*) audit reports to Competent Authority (frequency determined by the EMPr/EA) that highlight any areas of non-compliance and poor environmental performance, and recommend corrective measures (including amendments to the EMPr). (*depends on the nature of the appointment)
- Establish partnership with Competent Authority, rather than ECO doing compliance on his/her own, with feedback to DEA&DP.
- Update the EMPr as and when required.

5

Legal landscape for an ECO

- EIA regulations only refer to content requirements (measures/actions & objections/outcomes) of EMPRs, and amendment processes.
- EIA regulations don't refer to ECOs, but do refer to environmental auditing and environmental auditors.
- An ECO is appointed in terms of the environmental authorisation, to monitor and manage impacts on the environment.
- The brief for the ECO is limited to the scope of the Environmental Authorisation, EMPr and, if applicable, the Waste Management Licence (WML).
- NEMA S28 Duty of Care always applies.

6

Duration of ECO appointments

- The frequency and duration of ECO reporting will be specified in the EMPr and EA. This is project specific, and depends on the sensitivity of the receiving environment - nature/significance of the impacts, scale of the proposed development, level of public concerns etc....
- The ECO should be appointed prior to commencement of any on-site works.
- ECOs can monitor pre-construction, construction & post-construction as well as during the operational phase (EMC). Ensure continual monitoring of on-site works, either weekly, monthly or bi-monthly depending on the type of development.

7

Interaction with EAP and Competent Authority (CA)

- Establish a good working relationship with the EA Holder and the EAP
- CA conducts regular compliance audits to ensure continued compliance with the conditions in the EA and EMPr.
- The EAP and CA must both be specific about the roles and responsibilities of an ECO, when required, in the EMPrs and EAs.
- The EAP and CA must ensure that mitigation measures in EMPrs and conditions in the EA are enforceable (Action-specific & Outcomes-based). There is often issue with the practicality of measures in an EMPr, e.g., dust suppression measures and water hosing.
- The ECO must ensure that amendments (i.t.o. of compliance &/or performance) to the EMPr & EA are timeously applied for, and once approved, effected.
- While an ECO may recommend that the EA Holder apply for amendment of an EMPr and/or EA, an Environmental Auditor must, as part of the audit process identify shortcomings in the EMPr and identify the need for any changes, in which case the holder must, when submitting the environmental audit report to the CA, submit recommendations for amendment of the EMPr (Reg 34).

8

Compliance with EMP

- Penalties/Offences – Who pays the penalties (Holder of the EA or Contractor).
- Frequency of ECO report vs audit report:
  - ECO report: set in the content of the EMPr (weekly, monthly, quarterly);
  - Audit report: Set as condition in EA (annually, biannually).
- Content requirements of an ECO report are currently not regulated. Would depend on the requirements set out in the EMPr.

9

Recommendations

- Appoint appropriately qualified & experienced ECO.
- Open communication between EAP, ECO & the EA Holder.
- Law reform to support the functions and roles of ECOs.
- Regular compliance & performance monitoring by CAs.
- Timeous review of environmental auditing reports by CA, with regular auditing inspections.

10

Thank you

Henri Fortuin
Directorate: Development Management
Tel: +27 (0)21 483 5842 Fax: +27 (0)21 483 3633
Henri.Fortuin@westerncape.gov.za
www.westerncape.gov.za

11

Focus Group Participant 5

CITY OF CAPE TOWN
ISIXEKO SASEKAPA
STAD KAAPSTAD

Expectations on the compliance monitoring role of ECOs

Environmental Resource Management Department

Making progress possible. Together.

1

City of Cape : Local Authority

- As Local Authority receive direct impact
- Approval through NEMA: EIA regs process
- Approval through Planning approvals

2

City of Cape Town : Ideal situation

3

City of Cape Town : Ideal situation

- Minimal impact to natural environment
- Minimal impact to people
- Maximum benefit to society and economy

4

City of Cape Town : Ideal situation

- ECOs being eyes and ears on site
- Ensuring full compliance
- Dealing with public complaints

➢ ☺ Relieve City staff from intervening ☺

5

Expectations vs. Reality

6

Expectations by the City

- Qualification/ Experience
- Independence
- Frequency site inspections
- Communication authorities
- Relationship RE/Contractors

7

Expectations

- To understand:
  - the proposed works
- To assist:
  - with method statements
- To advise:
  - advise Contractors

8

Expectations

- To understand:
  - EMPr, various approvals
- To assist:
  - project and drafting EMPr
- To advise:
  - on Legislative triggers/penalties

9

Reality experienced by the City

- Role of the ECO poorly defined - EMP's
- capabilities of the ECO Limited
- Experience of ECO
- Challenges – certification/qualifications
- Independence

10

Reality

- Quality of EMPr
- Frequency of site inspections
- Communication with authorities
- Reporting

11

Reality

- Focus – EMPr/existing approvals/On site issues
- Input too late into EMPr/ method statements
- Timeous appointment
- Relationships – RE, Contractor/Authorities
- Assistance from Authorities.

12

13

- Terminology - eso, esm, eco, dso etc.
- Definition of ECO - Environmental Control Officer, a suitably qualified independent environmental manager to be appointed by the Applicant, who oversees the implementation of the CEMP on site.

14

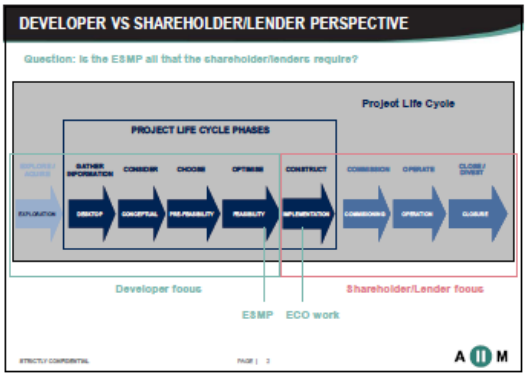
- Certification/qualification
- EAPS vs. ECO's
- Independence
- Frequency of visits
- Quality of EMP's
- Penalties?

15

16

Focus Group Participant 6

1



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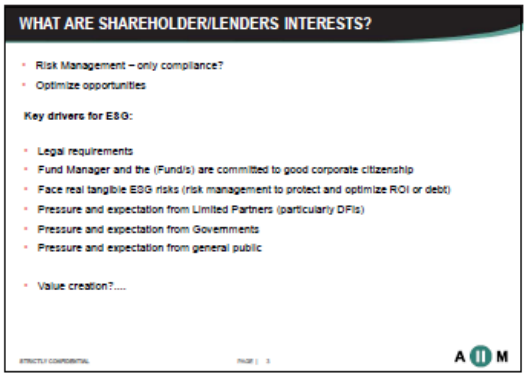

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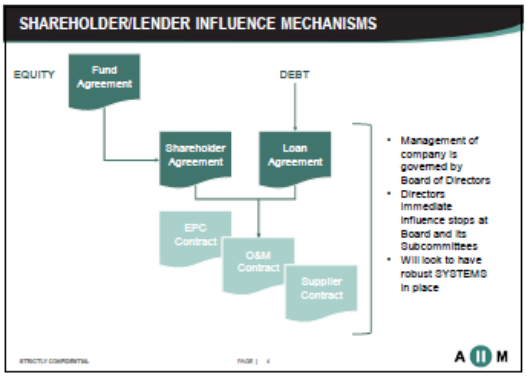

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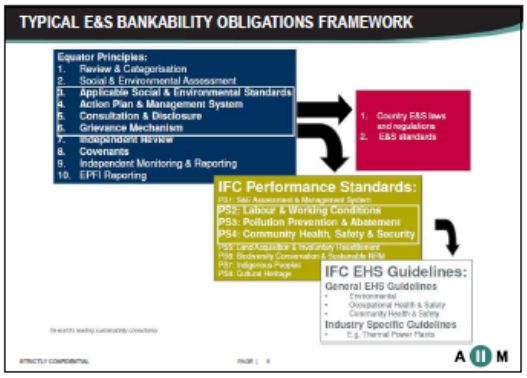

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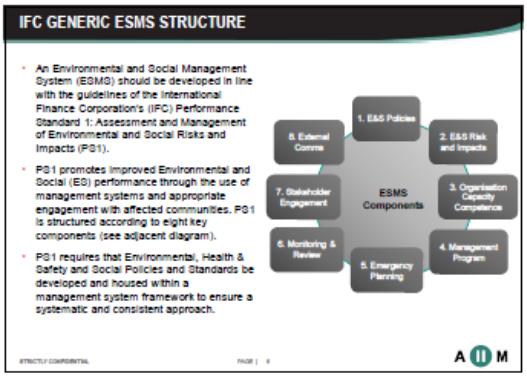

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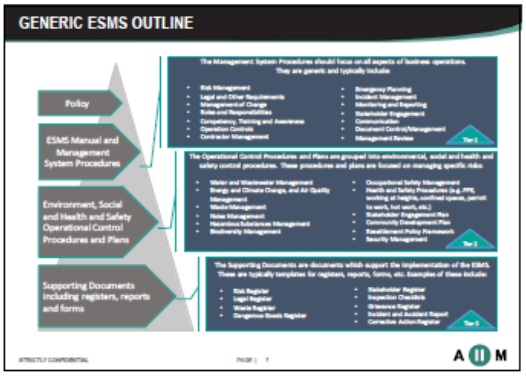
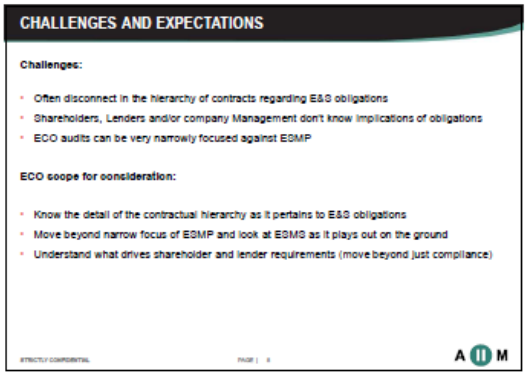

GENERIC ESMS OUTLINE
Policy
ESMS Manual and Management System Procedures
Environment, Social and Health and Safety Operational Control Procedures and Plans
Supporting Documents including registers, reports and forms
A M

7


CHALLENGES AND EXPECTATIONS
Challenges:
Often disconnect in the hierarchy of contracts regarding E&S obligations
Shareholders, Lenders and/or company Management don't know implications of obligations
ECO audits can be very narrowly focused against ESMP
ECO scope for consideration:
Know the detail of the contractual hierarchy as it pertains to E&S obligations
Move beyond narrow focus of ESMP and look at ESMS as it plays out on the ground
Understand what drives shareholder and lender requirements (move beyond just compliance)
A M

8


A M

9

IAIAsa ECO Practice workshop Nov 2016

Brandon Pretorius

1

Roles and Responsibilities

2

Primary role

To **independently** provide the services of;

- **Compliance assurance** with the project EA, EMPr, licenses, permits and applicable environmental legislation. (Permissions)
- **Advisory role** in highlighting potential challenges /conflict between the development design, construction methods, interpretation and implementation of the requirements set in the permissions.
- Liaise with the relevant authorities regarding compliance.

3

Construction Monitoring

4

How we do it..

The ECO is required to conduct;

- **Formal compliance audits –** follow a recognised audit procedure; e.g. ISO stds. Document review and visual verification of environmental monitoring data. Audit checklists must be relevant to the requirements of the permissions.
- **Ad Hoch site inspections / meetings –** to address specific concerns with Project management team, EM team, Authorities or EMC.
- Document compliance performance in audit reports. Maintain registers / records on performance data and concerns raised by I&APs.

5

Reporting and where we fit in..

6

Audit Report compilation and dissemination

- Verify distribution list for audit reports with Client, relevant authorities and I&AP's.
- Verify facts before finalising report.
- Reports should be concise and relevant to permissions.

Where we fit in

- Who do we report to? Authority, Client or EMC?

7

Authority and decision-making

8

The limits

The ECO's **authority** and **decision making** is limited to the responsibilities assigned to the position within the EA, EMPr or a Directive; e.g.:

- Approval of certain project method statements or procedures.
- Review of EMPr amendments before submission to authority for approval.
- Issuing of Non Conformances / defect notices for transgressions per the EMPr and project contractual procedures.
- Instituting of fines for transgressions per the EMPr and project contractual procedures.
- The ECO as a citizen of RSA must report activities that may result in a significant negative impact on the environment.

9

The limits cont.

- The ECO may not authorise a listed activity.
- The ECO may advise on appropriate corrective measures based on best practice.
- The ECO may advise on appropriate mitigation measures based on best practice.
- The ECO should review aspects of the development design that may have significant impact on the environment.

10

Positively influencing the project

11

Making a difference..

- Respect
- Positive attitude
- Educate / enlighten
- Learn / Question
- Show interest / participate
- Be innovative
- Be inclusive / team effort (ECO, EM, EO and SHE team)
- Get buy in
- Create awards for environmental achievements
- Don't be authoritarian

12


ncc
THANKS SO MUCH
brandonp@ncc-group.co.za
www.ncc-group.co.za
Tel: 021 702 2884

13

SLR
global environmental solutions

ROLES AND RESPONSIBILITIES OF ENVIRONMENTAL CONTROL OFFICERS

WESTERN CAPE ECO WORKSHOP

29 November 2016

1

OUTLINE

1. Project experience
2. Roles and responsibilities
   - 2.1. General
   - 2.2. Interactions
   - 2.2. ECO Authority and non-conformance
3. Challenges
4. Typical site issues
5. Key comments

2

1. Project experience

The presentation draws on the following projects:

- N7 Malmesbury
- N7 Okiep to Steinkopf
- GMQ Upgrade, Port of Saldanha
- Lourens River Flood Alleviation
- Richmond Development Park
- Saldanha Bay IDZ

3

2. Roles and responsibilities

In addition to the legislated requirements of an ECO discussed earlier today, the following are important to consider:

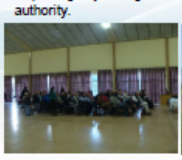
2.1. General

- Interface between the EIA recommendations, EA conditions and operations on site – providing continuity between the assessment process and the construction phase.
- Eyes for the environment.
- Creating environmental awareness.

4

2.2. Interactions

- Voice for both the client and interested and affected parties.
- Establishment and facilitating EMC, which consist of various interested and affected parties.
  - Lourens River Flood Alleviation project.
- Regular communication and interaction with onsite project team, particularly with the RE and Contractors EO / DEO.
- Reporting any transgressions of the EA and EMP to the authority.



5

2.3. ECO authority and non-conformance

- Key is on good relationship with the RE in terms of 'buy-in' into environmental management.
- Do ECOs have authority on site?
  - Cannot issue direct instructions.
  - Recommend items to RE.
  - RE issues site instruction to Contractor to correct issue.
- How to deal with repeat non-conformance?
  - Determine significance and severity.
  - Follow the project communication structures – last resort is to notify the authority.
  - Toolbox talks to correct.
  - Fines!!!

6

3. Challenges

- Cost of implementing environmental mitigation measures is often higher than the Contractor expected – small environmental budget.
- Generally, the frequency of the site visits is determined by the client.
- Environmental requirements fulfilled to 'tick boxes'.
- Qualification, experience and authority of onsite DEO / EO.

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7

3. Challenges cont.

- Several stakeholders in construction team fulfilling different roles – often no feedback.
- Practicality of recommendations in EIA.
- ECO not involve in planning and design phase of project.
- The ECO is appointed at short notice.
- Misconception that the ECO is a specialist and labelled as a 'Greenie'.
- No standardized system of fines.

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4. Typical site issues

- Dust management
- Fuel spill control
- Social challenges
  - Traffic accommodation, public, livestock
- Waste management
  - General, wastewater, hazardous
- Water quality management
  - Sedimentation, access, turbidity

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5. Key comments

- Essential to foster environmental awareness amongst the project team.
- Involve ECO in design phase of the project. Particularly with construction related recommendations.
- Better dialogue between the stakeholders in the construction team – focus on building a "team" instead of working in silos.
- Create a registration process for ECO's.
- ECOs are not policemen or policewomen, rather we should be seen as facilitators in achieving a sustainable and environmentally conscious construction site.
- Provide the ECO with more authority on site.

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16

THANK YOU

FOR LISTENING!

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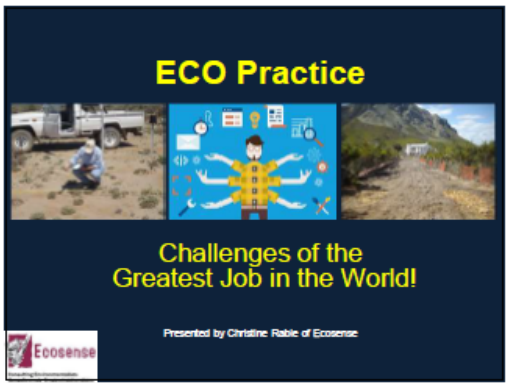
17


ECO Practice
Challenges of the Greatest Job in the World!
Presented by Christine Rable of Ecosense
Ecosense

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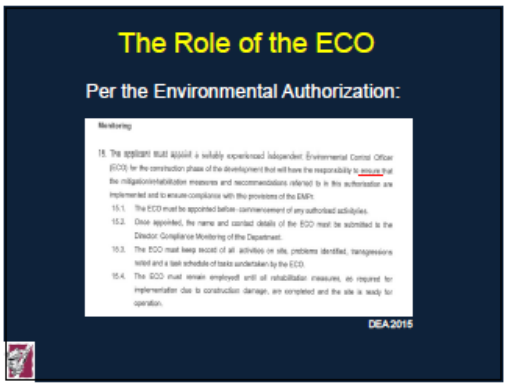
The Role of the ECO
Per the Environmental Authorization:
DEA 2015

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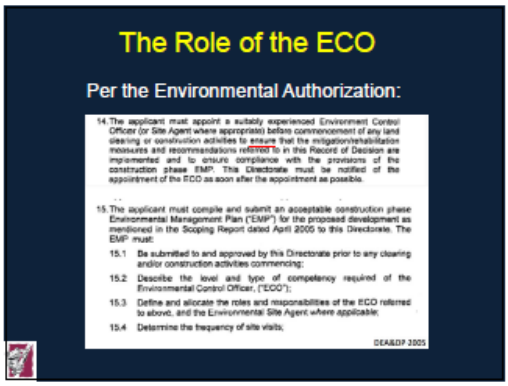
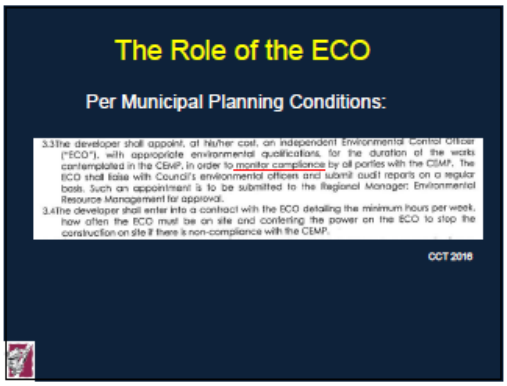

The Role of the ECO
Per the Environmental Authorization:
14. The applicant must appoint a suitably experienced Environment Control Officer (or Site Agent where appropriate) before commencement of any land clearing or construction activities to ensure that the mitigation/rehabilitation measures and recommendations referred to in this Record of Decision are implemented and to ensure compliance with the provisions of the construction phase EMP. This Directorate must be notified of the appointment of the ECO as soon after the appointment as possible.
15. The applicant must compile and submit an acceptable construction phase Environmental Management Plan ("EMP") for the proposed development as mentioned in the Scoping Report dated April 2005 to this Directorate. The EMP must:
15.1 Be submitted to and approved by this Directorate prior to any clearing and/or construction activities commencing;
15.2 Describe the level and type of competency required of the Environmental Control Officer, ("ECO");
15.3 Define and allocate the roles and responsibilities of the ECO referred to above, and the Environmental Site Agent where applicable;
15.4 Determine the frequency of site visits;
DEA&DP 2005

3


The Role of the ECO
Per Municipal Planning Conditions:
3.3 The developer shall appoint, at his/her cost, an independent Environmental Control Officer ("ECO"), with appropriate environmental qualifications, for the duration of the works contemplated in the CEMP, in order to monitor compliance by all parties with the CEMP. The ECO shall liaise with Council's environmental officers and submit audit reports on a regular basis. Such an appointment is to be submitted to the Regional Manager: Environmental Resource Management for approval.
3.4 The developer shall enter into a contract with the ECO detailing the minimum hours per week, how often the ECO must be on site and conferring the power on the ECO to stop the construction on site if there is non-compliance with the CEMP.
CCT 2016

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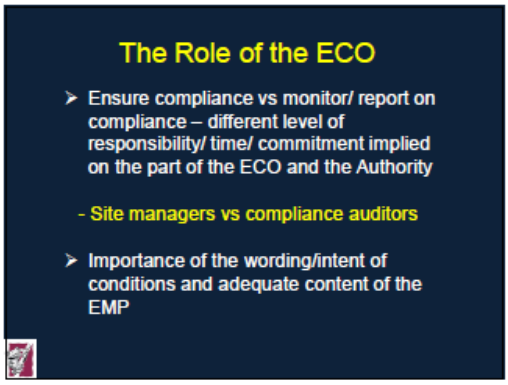
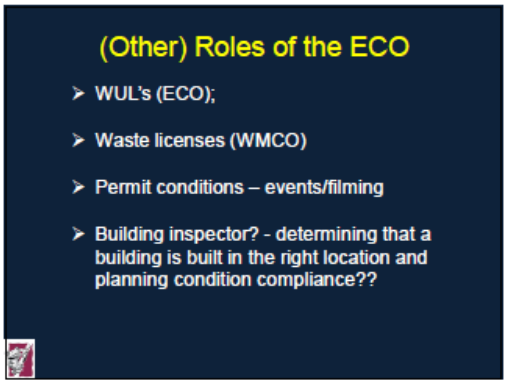

The Role of the ECO
Ensure compliance vs monitor/ report on compliance – different level of responsibility/ time/ commitment implied on the part of the ECO and the Authority
- Site managers vs compliance auditors
Importance of the wording/intent of conditions and adequate content of the EMP

5


(Other) Roles of the ECO
WUL's (ECO);
Waste licenses (WMCO)
Permit conditions – events/filming
Building inspector? - determining that a building is built in the right location and planning condition compliance??

6

Challenge #3

- Poorly Capacitated Contractors
  - No E in SHE
  - ECO is not on site all the time
- Solutions?
  - Improved training, capacitation and support of Contractor staff
  - ECO is in a position to assess and recommend
  - EMP can provide requirements
  - Working group could assist with Client Agent and Authority policy on minimum requirements for contractor staff environmental representatives?
  - Working Group organized workshops for contractors

13

Challenge #4

- Enforcement
  - Lack of standard practice for issue of penalties/fines (fair and legally, contractually sound)
  - Poorly defined in EMP
  - Lack of understanding of contract/prosecution laws; what is to be enforced on project level and what is escalated to the authorities?
  - Lack of client/client representative/project manager and Authority support (e.g. where there are political or economic pressures)
  - Lack of teeth and thus ECO ineffective in "ensuring" compliance
- Solutions?
  - Working Group can assist in workshopping and agreeing industry standard that is legally sound and supported by the Authorities

14

Challenge #5

- Mandate overlaps
  - Project member mandate overlaps (e.g. ESO, ECO, Engineer)
  - H&S Agent mandate overlaps (e.g. fire fighting equipment, haz mat storage, ablutions, traffic)
  - Authority mandate overlaps (e.g. City/DEA&DP/DWS)
  - Sometimes this means no one is responsible! Too many cooks spoil the broth!
- Solutions?
  - EMP clearly specifies responsibilities and mandates
  - Authorities careful how they word conditions
  - Working Group can assist in providing industry guidelines with contract management input

15

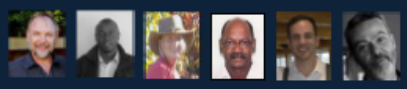
Challenge #6

- "Bad" EMPs
  - Exacerbates Challenges #1- #5
  - Difficulty/uncertainty in changing EMP's – too little vs too much info in the EMP, restricts professional ECO's discretion *vs* sinks projects with poorly capacitated ECO's and Contractors
- Solutions?
  - EMP to clearly specify ECO scope/responsibilities, mandates of various role players including authorities, reporting requirements, amendment procedures and enforcement protocols.
  - Working Group - provide guidelines of what an ECO needs from an EMP to guide consultants drafting EMPs and the Authorities approving them.

16

We support the need for a working group!

(Ecosense ECO's)



Thank You!

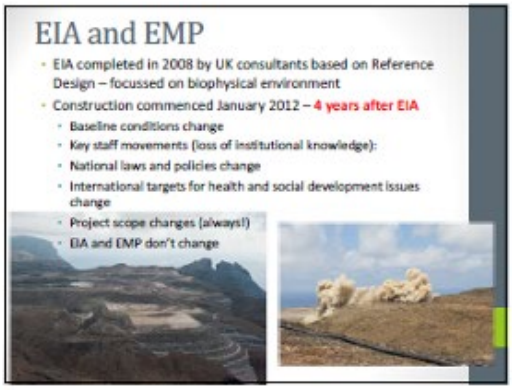
17

Focus Group Participant 15

1

2

3



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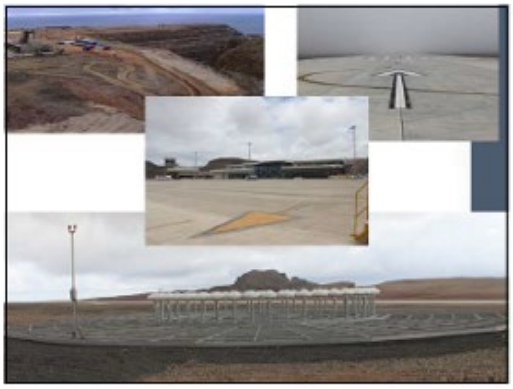


6

Challenges

- Distance
- Logistics "miss a day, miss a month"
- Shortage of suitable construction materials
- Telecommunications
- Few support services
- Shortage of experts
- Water supply
- Hazardous waste disposal
- Rugged terrain
- Environmental sensitivity
- Cultural Heritage issues
  - Fortifications and listed buildings
  - Freed African Slave graves




7

Environmental management systems: construction

- Dedicated Construction Environmental Control Officer (CECO) team (up to 10 people)
- Community Liaison Officer
- 24-hour hotline
- Contractor's Environmental Management Plan (updated every 6m)
- Weekly workplace inspections and audits
- Site walkovers/mini assessments prior to all new area development
- 6-month compliance monitoring and audits
- Annual environmental report

8

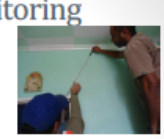
Environmental management contd.

- Incident reporting and corrective action system
- Weekly and monthly CECO reports
- Weekly and monthly environmental meetings with RE and Client
- Quarterly stakeholder meetings
- Environmental input into designs
- Ecological surveys and environmental monitoring

9

Environmental monitoring

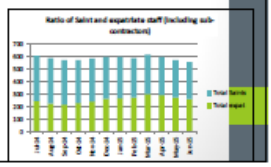
- We monitor:
  - Dust and inhalable particulates (PM10)
  - Noise and vibration
  - Building condition
  - Water used and water quality
  - Fuel and energy consumption
  - Waste
  - Wirebirds and seabirds
  - Endemic and invasive vegetation
  - Pests and predators
  - Invertebrates
  - Topsoil
  - Visual impact
  - Heritage and archaeology
  - Social




10

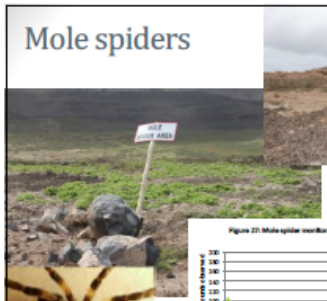
Social impacts

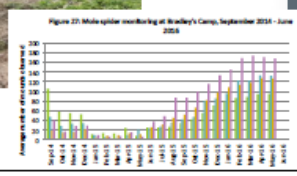
- As at end June 2015 a total of 560 persons were working on the project of which 297 were Saints:
  - 63 Saints returned from abroad to work on the project thereby contributing to the 10.1% population increase of the Island since 2011.
- Annual donations to charities of >£40,000
- Project has contributed £1.86 million in taxes, and paid £10.38 million in wages and salaries to Saints
- Extensive technical and health and safety training for all personnel
- Extensive use of local subcontractors and businesses
- Stakeholder engagement forum
- Community liaison



11

Mole spiders



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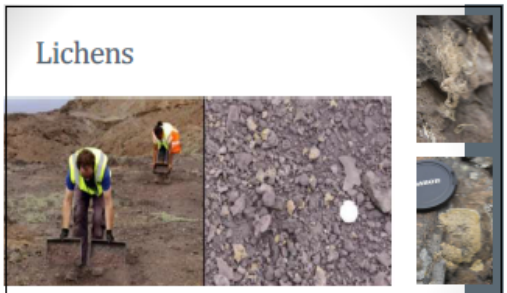
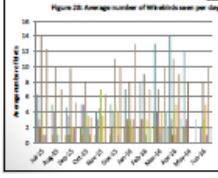
Lichens



- Pioneered techniques in lichen rescue, relocation and monitoring on construction site
- Worked closely with on-island ecologists and specialists

13

Wirebirds



14

Heritage: Freed African slave graves in Rupert's Valley

- Known slave grave sites were off-limits for construction
- Several random, unidentified or previously disturbed graves were found
- Strict protocol on management of all heritage and archaeological finds
- Watching brief on ground intrusive works in undeveloped, sensitive areas
- Designs altered to reduce the need for excavation and replace with fill; no skimming of topsoil
- Contractor worked closely with Museum Director

15

Archaeological surveys

16

Environmental management: airport operational phase

- Environmental Officer and 2 Assistant Environmental Officers
- Environmental Management System – compliant with ISO 14001
  - Risk assessment procedures and ratings
  - Airport fuel facility
  - Hazardous chemical management
  - Pest and predator control
  - Waste management
  - Water and effluent management
  - Monitoring of revegetated areas
  - Environmental monitoring and reporting (air quality, noise)
  - Access and traffic
- Wildlife Hazard Management Plan – one of the key components for airport certification
  - Protocol on monitoring, recording and reporting bird strikes

17

Lessons learnt

- EMP
  - Must be articulated as a proper plan setting out management actions, targets/goals, KPIs, responsible persons and timeframes to avoid confusion
  - Must be site-relevant and appropriate to situation
  - Must take account of local laws and international obligations
  - Must be auditable
  - Must allow for adaptive management as project changes
  - ***Most of the problems stemmed from the poorly scoped EIA and formulation of EMP***

18

Lessons learnt contd.

- Management
  - Need qualified CECO and team
  - Need sufficient budget to implement EMP
  - Need support and commitment from senior management
- Reporting lines
  - Good regular communication between Client, RE, Contractor and other stakeholders is critical
  - Importance of a ***qualified*** E&S officer in RE's team

19

Thank you!

20

C. Consent Letters

IAIAsa Secretariat
Tel +27(0)11 655 7183
Fax +27(0) 11 655 7011 or 086 662 9849
Address:
43 Birchwood Court, Montrose Street,
Vorna Valley, Midrand, 1618
Postal address:
PO Box 11666, Vorna Valley, 1686
Email: operations@iaiasa.co.za
Website: www.iaiasa.co.za

7 February 2019

Robin Swanepoel
9 Hadeda Street
Durbanville
7550

Sent via email to: robinswanepoel0@gmail.com

Dear Robin,

The IAIAsa Western Cape Branch hereby grants you permission to use information obtained at the one-day ECO Technical Workshop held on 29 November 2016 in Cape Town for your proposed MTech Environmental Management study, "An assessment of the monitoring aspect of the Environmental Impact Assessment procedure in Cape Town, South Africa".

IAIAsa looks forward to the outcomes of the study informing on-going professional development within the greater environmental management profession, within South Africa, and would appreciate it if the association is acknowledged in your write-up.

Please note it however remains your responsibility to obtain written permission from the individual workshop presenters should you use their presentations.

If you have any questions or concerns, please feel free to contact me on the above contact details.

Yours sincerely,

Mari de Villiers
IAIAsa Western Cape, Chairperson

Ecosense

Consulting Environmentalists
Konsulterende Omgewingskundiges

PO Box 1426
Knysna 6570
Western Cape
South Africa
Tel: 044 384 0849
Fax: 0866199277
Email: christine@ecosense.co.za
Web: www.ecosense.co.za
Based in Cape Town and Knysna

28 November 2019

Att: Robin Swanepoel

9 Hadeda Street

Durbanville

7550

Sent via email to: robinswanepoel0@gmail.com

Dear Robin,

I, Christine Rabie, hereby grant you permission to use information obtained at the one-day ECO Technical Workshop held on 29 November 2016 in Cape Town for your proposed MTech Environmental Management study, "An assessment of the monitoring aspect of the Environmental Impact Assessment procedure in Cape Town, South Africa".

I look forward to the outcomes of the study informing on-going professional development within the greater environmental management profession, within South Africa.

If you have any questions or concerns, please feel free to contact me on the above contact details.

Yours sincerely,

Christine Rabie
Director: Environmental Management
083472 8635

Members: M. B. Sasman, M.I. Sasman, K.Myburgh, C. Rabie
CC Registration: 1998/022840/23

Att: Robin Swanepoel
9 Hadeda Street
Durbanville
7550

Sent via email to: robinswanepoel0@gmail.com

Dear Robin,

I, Dean Alborough, hereby grant you permission to use information obtained at the one-day ECO Technical Workshop held on 29 November 2016 in Cape Town for your proposed MTech Environmental Management study, "*An assessment of the monitoring aspect of the Environmental Impact Assessment procedure in Cape Town, South Africa*".

I look forward to the outcomes of the study informing on-going professional development within the greater environmental management profession, within South Africa.

If you have any questions or concerns, please feel free to contact me on the above contact details.

Yours sincerely,

Dean Alborough

OLDMUTUAL ALTERNATIVE INVESTMENTS

02 December 2019

Att: Robin Swanepoel

9 Hadeda Street

Durbanville

7550

Sent via email to: robinswanepoel0@gmail.com

Dear Robin,

I, Jonathan Crowther, hereby grant you permission to use information obtained at the one-day ECO Technical Workshop held on 29 November 2016 in Cape Town for your proposed MTech Environmental Management study, "*An assessment of the monitoring aspect of the Environmental Impact Assessment procedure in Cape Town, South Africa*".

I look forward to the outcomes of the study informing on-going professional development within the greater environmental management profession, within South Africa.

If you have any questions or concerns, please feel free to contact me on the above contact details.

Yours sincerely,

Jonathan Crowther

SLR Consulting (South Africa) (Proprietary) Limited

Registered Address: Unit 7, Fourways Manor Office Park, 1 Macbeth Avenue, Fourways, 2191
Postal Address: PO Box 1596, Cramerview, 2060, South Africa

Reg. No: 2007/005517/07
Vat No: 4630242198

Directors: R Hounsome, F Fredericks, D Jurak

Fourways Office: Physical Address: Unit 7 & 9, Fourways Manor Office Park, 1 Macbeth Avenue, Fourways
Postal Address: PO Box 1596, Cramerview, 2060 +27 11 467 0945 +27 11 467 0978

Cape Town Office: Physical Address: 5th Floor, Letterstedt House, Newlands on Main, Cnr Main and Campground Roads, Newlands, Cape Town
Postal Address: PO Box 10145, Caledon Square, 7905 +27 21 461 1118 +27 21 461 1120

slrconsulting.com

NICHOLAS SMITH ATTORNEYS
ENVIRONMENTAL LAW SPECIALISTS

Att: Robin Swanepoel
9 Hadeda Street
Durbanville
7550

Sent via email to: robinswanepoel0@gmail.com

27 November 2019

Dear Robin,

I, Nicholas Smith, hereby grant you permission to use information obtained at the one-day ECO Technical Workshop held on 29 November 2016 in Cape Town for your proposed MTech Environmental Management study, "*An assessment of the monitoring aspect of the Environmental Impact Assessment procedure in Cape Town, South Africa*".

I look forward to the outcomes of the study informing on-going professional development within the greater environmental management profession, within South Africa.

If you have any questions or concerns, please feel free to contact me on the contact details below.

Yours faithfully,
NICHOLAS SMITH ATTORNEYS
Per:

NICHOLAS SMITH

Nicholas Smith - BA (Hons) LLB ADL LLM (Marine & Environmental Law)

T:+27 (0) 21 424 5826 | F:+27 (0) 21 424 5825 | C:+27 (0) 82 375 0905
nicks@nsmithlaw.co.za | www.nsmithlaw.co.za | 2nd Floor, 114 Bree Street, Cape Town.

Western Cape Government
Environmental Affairs and Development Planning

Directorate: Development Facilitation

9 Hadeda Street
Durbanville
7550
Attention: Mr Robin Swanepoel Cell: 082 428 5855

Dear Sir

PERMISSION GRANTED TO USE THE INFORMATION CONTAINED IN THE DEA&DP PRESENTATION "COMPLIANCE MONITORING ROLE OF AN ECO, DEA&DP'S PERSPECTIVE" AS PRESENTED BY HENRI FORTUIN AT THE ECO WORKSHOP HELD ON 29 NOVEMBER 2016 AT THE ESKOM OFFICES IN BRACKENFELL

1. The Department of Environmental Affairs and Development Planning (DEA&DP) hereby grants you permission to use the DEA&DP presentation and information obtained at the one-day ECO Technical Workshop held on 29 November 2016 for your proposed MTech Environmental Management study, *"An assessment of the monitoring aspect of the Environmental Impact Assessment procedure in Cape Town, South Africa"*.

2. The DEA&DP looks forward to the outcomes of the study informing on-going professional development within the greater environmental management profession, within South Africa. Furthermore,

3. If you have any questions or concerns, please feel free to contact Bernard Niemand at the contact details in the footer below.

Yours faithfully

GERHARD GERBER - DIRECTOR: DEVELOPMENT FACILITATION
DEPARTMENT OF ENVIRONMENTAL AFFAIRS AND DEVELOPMENT PLANNING
06/02/2019

11th Floor, 1 Dorp Street, Cape Town, 8001
Tel: +27 21 483 2776 Fax: +27 21 483 8311
Email: bernard.niemand@westerncape.gov.za

Private Bag X9086, Cape Town, 8000
www.westerncape.gov.za/eadp

Bryony Walmsley & Associates
Environmental Consultants
Reg No.: 2004/031035/23

30 November 2019

Att: Robin Swanepoel
9 Hadeda Street
Durbanville
7550

Sent via email to: robinswanepoel0@gmail.com

Dear Robin,

I, Bryony Walmsley, hereby grant you permission to use information obtained at the one-day ECO Technical Workshop held on 29 November 2016 in Cape Town for your proposed MTech Environmental Management study, "*An assessment of the monitoring aspect of the Environmental Impact Assessment procedure in Cape Town, South Africa*".

I look forward to the outcomes of the study informing on-going professional development within the greater environmental management profession, within South Africa.

If you have any questions or concerns, please feel free to contact me on the above contact details.

Yours sincerely,

Bryony Walmsley, PrSciNat
Sole Member of cc

PO Box 380, Noordhoek, 7979 Tel: +27 (0)21-789-0251 Fax: +27 (0)21-789-0257 Email: bwa@saiea.co.za

PO Box 10335, Centurion, 0046
TCTA, Tuinhof Building, Stinkhout Wing,
265 West Avenue, Centurion
Tel: +27 12 683 1200 | Fax: +27 12 683 1361
Email: info@tcta.co.za | Website: www.tcta.co.za

Robin Swanepoel
robin.swanepoel@aecom.com

Dear Robin,

Re: IAIASA ECO Workshop Presentation

I have confirmed with a representative of the TCTA Knowledge Management and Strategy Division that you are welcome to use the IAIA SA ECO Workshop Presentation as research reference material for towards your Master's degree.

All the best with your study. I look forward to seeing your findings.

Regards

Gwen Gosney
Environmental Manager EMS&Q

CITY OF CAPE TOWN
ISIXEKO SASEKAPA
STAD KAAPSTAD

ENERGY, ENVIRONMENTAL AND SPATIAL PLANNING
ENVIRONMENTAL RESOURCE MANAGEMENT

Natalie Newman
Senior Professional Officer

T: +27 21 487 2123 F: 086 576 1790 M: 072 495 9715
E: Natalie.newman@capetown.gov.za

2019-11-26

Robin Swanepoel
9 Hadeda Street
Durbanville
7550

Sent via email to: robinswanepoel0@gmail.com

Dear Robin,

I, Natalie Newman, hereby grant you permission to use information obtained at the one-day ECO Technical Workshop held on 29 November 2016 in Cape Town for your proposed M-Tech Environmental Management study, "An assessment of the monitoring aspect of the Environmental Impact Assessment procedure in Cape Town, South Africa".

I look forward to the outcomes of the study informing on-going professional development within the greater environmental management profession, within South Africa.

If you have any questions or concerns, please feel free to contact me on the above contact details.

Yours sincerely,

Natalie Newman