Evaluating screening within Environmental Impact Assessment (EIA) in the Western Cape Province, South Africa

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Abstract

South Africa has seen four different Environmental impact assessment (EIA) regimes since the mandatory introduction of EIA in 1997. Each new regime resulted in the refinement of the screening mechanism in order to address any challenges and shortcomings experienced. The screening mechanism in South Africa has been criticised for leading to too many EIAs being conducted, putting a strain on administrative capacity as well as causing costly delays.

A previous study conducted by Retief *et al*. (2011) compared the performance of screening between the 1997 and 2006 EIA regimes in order to determine the improvement of screening in South Africa. The aim of this research was to build on the existing research and evaluate the screening mechanism in South Africa since 2006. Data were obtained from the Western Cape Department of Environmental Affairs and Development Planning on the types of activities that required EIAs in the Province between the 2006 and 2014 regimes.

In order to achieve the overall aim of the research, which is to critically evaluate the screening mechanism within the EIA practice in the Western Cape Province, three research questions had to be answered. These research question is 1) What are the challenges facing screening within the EIA process; 2) What types of activities triggered EIAs in the Western Cape Province; and 3) How has screening evolved from the previous EIA regimes? To answer these research questions, a mixed method research design was used.

In order to answer the first research question, a literature study was conducted to identify what challenges screening is facing within EIA. Research question two was answered by means of a data analysis involving qualitative research and an activity breakdown analysis. Research question three was answered through conducting semi-structured interviews to gather quantitative data which was used to evaluate the results from the activity breakdown analysis.

The results from the activity breakdown analysis identified five types of activities prominently triggered throughout all the regimes (2006 National Environmental Management Act (NEMA); 2010 NEMA and 2014 NEMA). These activities include construction within a watercourse or the construction of a dam; the transformation of land or clearance of indigenous vegetation; the construction of roads; the transportation or treatment of sewage, water and storm water; and the handling or storage of dangerous goods. Research conducted by Welman (2009) and the results from the interviews, suggested that activities found most prominent in other provinces of South Africa correlate positively with the results from the activity breakdown analysis.

The overall results shown that the number of EIA applications had a significant decrease from 1997 ECA to 2014 NEMA, whilst still triggering those activities with the potentially most significant impacts.

Key words: Screening; Environmental Impacts Assessment; NEMA Act no 107 of 1998; Sustainable Development; Challenges; EIA Regimes.

Opsomming

Suid-Afrika het sedert die instelling van verpligte omgewingsinvloed bepaling (OIE), vier verskillende OIE regimes gehandhaaf. Elke nuwe instelling het gelei tot die verbetering van die sifting meganisme om sodoende enige uitdagings en tekortkominge, wat ervaar was gedurende die vorige instelling, aan te spreek. Die sifting meganisme in Suid-Afrika was gekritiseer dat dit gelei het tot teveel OIE wat uitgevoer word, wat dus onnodige druk op die administratiewe kapasiteit sit en duur vertragings veroorsaak.

'n Vorige studie wat uitgevoer was deur Retief *et al.* (2011), het die prestasie van die sifting meganisme tussen die 1997 en 2006 OIE instelling vergelyk om die verbetering van die sifting meganisme in Suid-Afrika vas te stel. Die doel van die studie is om te bou op die reeds bestaande studie en om die OIE siftings-meganisme in Suid-Afrika te evalueer vanaf 2006. Die data gebruik in die studie was verskaf deur die Departement van Omgewingsake en Ontwikkelingsbeplanning in die Wes-Kaap. Dit sluit in die tipes aktiwiteite wat OIEs vereis het in die provinsie tussen die 2006 en 2017 regimes.

Die algehele doel van die studie is om die uitvoering van sifting binne die OIE instelling in die Wes Kaap krities te evalueer. Om hierdie doel te bereik, was dit nodig om drie navorsingsvrae te beantwoord. Die vrae is: 1) Wat is die struikelblokke van sifting binne die OIE instelling; 2) Watter tipe aktiwiteite het OIEs in die Wes Kaap vereis; en 3) Hoe het die uitvoering van sifting ontwikkel vanaf die vorige regimes? Om hierdie vrae te beantwoord, was daar van 'n gemengde metode navorsingsontwerp gebruik gemaak.

Om die eerste vraag te beantwoord was 'n literatuur studie uitgevoer om vas te stel wat die struikelblokke van sifting in OIE is. Navorsingsvraag twee was beantwoord deur middel van 'n dokumentasie oorsig wat kwantitatiewe navorsing en 'n aktiwiteit afbreek analise ingesluit het. Die derde vraag was beantwoord deur middel van semi-gestruktureerde onderhoude om sodoende kwalitatiewe data te versamel wat gebruik was om die resultate van die aktiwiteit afbreek analise te evalueer.

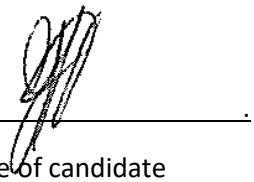
Die resultate van die aktiwiteit afbreek analise het vyf tipes aktiwiteite geïdentifiseer wat mees prominent gedurende al die regimes (2006 Nasionale Omgewingsbestuur Wet (NEMA); 2010 NEMA; 2014 NEMA) voorgekom het. Die aktiwiteite sluit in konstruksie binne 'n waterloop of die konstruksie van 'n dam; die verandering van land of die verwydering van inheemse plantegroei; die konstruksie van paaie; die vervoer of behandeling van afval, water of stormwater; en die hantering of storing van gevaarlike goedere. Navorsing gedoen deur Welman (2009) asook die resultate van die onderhoude het 'n positiewe korrelasie getoon tussen die aktiwiteite wat mees prominent voorgekom het in ander provinsies van Suid Afrika en die resultate van die aktiwiteit afbreek analise.

Die algehele resultate het 'n aansienlike daling in die aantal OIE aansoeke getoon vanaf die 1997 Omgewingsbewaring Wet (ECA) tot die 2014 NEMA, onderwyl voldoende maatreëls steeds toegepas word vir die projekte wat 'n OIE benodig.

Sleutelwoorde: Sifting; Omgewingsimpakstudies; Nasionale omgewingsbestuurs wette (NEMA); Volhoubare ontwikkeling; Uitdagings; OIE Regimes.

Declaration

I declare that this research report, apart from the contributions mentioned in the acknowledgements, is my own, unaided work. It is being submitted for the Degree Master of Environmental Management at the North-West University, Potchefstroom Campus. It has not been submitted before for any degree or examination at any other university.



Signature of candidate

7 February 2018

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First and foremost, I would like to thank our great and loving God for presenting me with the opportunity to conduct this research and providing me with the ability and support to complete this research.

> *"For I know the plans I have for you," says the Lord. "They are plans for good and not for disaster, to give you a future and a hope." Jeremiah 29:11 NLT*
>
> *All glory to God, who is able, through His mighty power at work within us, to accomplish infinitely more than we might ask or think. Ephesians 3:20 NLT*

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List of Acronyms

Acronym	Description
BA	Basic Assessment
BAR	Basic Assessment Report
CA	Competent Authority
DEAT	Department of Environmental Affairs and Tourism
DWAF	Department of Water Affairs and Forestry
EAP	Environmental Assessment Practitioner
ECA	Environmental Conservation Act, no 73 of 1989
EIA	Environmental Impact Assessment
EIR	Environmental Impact Report
EMF	Environmental Management Framework
EMPr	Environmental Management Program
EU	European Union
IAIA	International Association for Impact Assessment
I&APs	Interested and Affected Parties
MDGs	Millennium Development Goals
NEAS	National Environmental Assessment System
NEMA	National Environmental Management Act, no 107 of 1998
NEM:BA	National Environmental Management Biodiversity Act
NEM:WA	National Environmental Management Waste Act
OIE	Omgewingsinvloed Bepaling
PP	Public Participation
S24G	Section 24G
S/EIA	Scoping and Environmental Impact Assessment
UN	United Nations
WC DEADP	Western Cape Department: Environmental Affairs and Development Planning

CHAPTER 1: INTRODUCTION

This chapter describes the research by presenting the problem statement, research aim and research questions. This chapter concludes with an outline of the structure of the dissertation.

The following is a framework of the sections contained in this chapter:

A background to the research is provided in Section 1.1 concluding with the problem statement. Section 1.2 then introduces the research aim and research questions. This chapter concludes with an outline of the structure of the dissertation in Section 1.3.

1.1 Background and Problem Statement

As part of the best practise principles for impact assessments, screening is the first step of the Environmental Impact Assessment (EIA) process, used to determine whether a proposed development requires an environmental assessment and if so the intensity of the environmental assessment by focusing on those activities which may have the most potential significant impacts (IAIA, 1999; DEAT, 2002:7). As a developing country, it is essential for South Africa to strive towards sustainable development and thus cannot afford to have an ineffective screening mechanism that triggers activities with insignificant impacts.

By implementing a screening process, applications for an EIA can distinguish between those projects which may have significant environmental impacts and those that won't (Glasson *et al*., 2012:5). Tysk and Eklund (2002:129) states that the practice of EIA can be seen as "*a useful tool for the promotion of sustainable development, because it includes many components that facilitate intra- and inter-generational equity*". It is universally accepted that the purpose of an EIA is to provide an analysis in terms of a methodical process to identify potential significant environmental and social impacts associated with proposed activities such as major development in order to communicate this information to decision-makers as well as the broader public before such activity can be implemented. The overall aim of an EIA is thus to identify and assess all potential environmental impacts at the forefront of the development and to investigate mitigation measures. This contributes to a more informed competent authority during the decision-making process (Wood, 2008:22; Retief *et al.,* 2011:155).

Wood and Becker (2005:350) states that studies conducted on screening are more limited in comparison to other aspects of EIA, in addition, studies conducted on screening demonstrates diverse approaches. This is a result of the diversity of the screening practice. An example of this is that even though "*all countries in the European Union (EU) operates under the same EIA Directive, there remains a wide variation in screening practice*" (Weston, 2011:91; Pinho *et al*., 2010:91). The roots of this diversity among screening practices lay within the use of different thresholds for EIA (Weston, 2011:91).

The EU relies on fixed thresholds in order to provide activities covering all major projects which may have a significant impact on the environment. According to Pinho *et al*. (2010:91) there are reasonable doubts about the effectiveness of the fixed thresholds currently used in the EU for Category 1 projects. These major projects, according to Pinho *et al*. (2010:97-98), include: "*Installations working with genetically modified organisms (GMOs) or pathogenic micro- organisms, such as laboratories, test facilities, trial areas; Military practice grounds; Redevelopment of contaminated land; and Golf courses*". Furthermore, the approach for screening Category 2 projects (projects which may lead to significant impacts, but not major significant impacts) seems to be disorganized and lacking the ability to pinpoint the remaining categories of projects which may lead to significant impacts. Two other weaknesses regarding EU EIAs are firstly, the variations in the screening criteria between Member States of the EU, leading to projects being subject to an EIA in one Member State but not in the other, and secondly, the likeliness of misinterpretations in day to day practice due to unclear definitions (Pihno *et al.,* 2010:91-92).

According to Wood (2003:9) many developing countries also lack in the screening process due to "*the screening of actions for the applicability of EIA is not undertaken satisfactorily*". Environmental agencies also have little power within developing countries which weakens the screening process. Since South Africa adopted the practice of EIA within the country's environmental legislation, it has experienced two decades of mandatory EIA practice. During this time four different EIA regimes with four different screening mechanisms were governed (Retief *et al.,* 2011:156).

One of the key shortcomings of the first governed regime was the failure of the screening mechanism which led to too many EIA's being conducted, placing escalating pressure on the capacity of the government as well as causing costly delays for the developer (Retief *et al.,* 2011:156; Welman, 2009:1). Since then South Africa has placed particular emphasis on the continual refinement and improvement of screening by amending the screening mechanism numerous times.

Retief *et al.* (2011:161) conducted a comparative analysis of screening between the 1997 ECA regime and the 2006 NEMA regime to determine the improvement of screening in South Africa. The study found that during the ECA 1997 regime the annual number of EIA applications in South Africa was estimated at more than 5000 applications per annum. This was significantly higher when compared to the number of EIAs conducted in other countries. The number of EIA applications falling under the 2006 NEMA regime did show a large decrease, with 3600 EIA applications per annum, confirming that the amendment of the screening mechanism was effective in reducing the number of EIA applications.

As an ineffective screening mechanism will significantly impact the effectiveness of the entire EIA process, it is necessary that the screening mechanism in South Africa should be evaluated in order to determine the extent to which the refinements (interventions) have evolved the screening mechanism. As the activities listed in the EIA regulations determine whether a proposed development requires an environmental assessment, it is critical to analyse which listed activities were triggered as the regimes evolved in order to identify gaps and/or shortcomings to further improve the screening mechanism within the EIA process. This study will evaluate the screening mechanism through a comparative analysis between the 2006, 2010 as well as the 2014 NEMA EIA regimes by focusing on the number of EIA application triggered as well as the listed activities triggered in the Western Cape.

1.2 Research Aim and Research Questions

In view of the problem statement described in Section 1.1, the overall aim of the research is:

> To critically evaluate the screening mechanism within the EIA practice in the Western Cape Province.

To address the above-mentioned research aim, the following research questions need to be answered:

1. What are the challenges for screening within the EIA process?
2. What types of activities triggered EIAs in the Western Cape Province?
3. How has screening evolved from the previous EIA regimes?

1.3 Structure of the research

To ease interpretation of results the research aimed to provide a clear linkage between the research questions, the methodology applied to answer the questions, the phases in the research process and ultimately the chapters relating to each research question. An illustration of the research structure (Table 1.1) follows this discussion.

In order to achieve the research aim (discussed in section 1.2) the following four phases were followed in the research process:

Phase 1: Introduction and methodology

Phase 1 provides the introductory chapter and defines the research methodology used in this research. Phase 1 includes the following chapters:

Chapter 1: Introduction

Chapter 1 describes the research by presenting the problem statement, research aim and research questions. This chapter concludes with an outline of the structure of the dissertation.

Chapter 2: Methodology

This chapter describes the research methodology applied to address the research aim introduced in Chapter 1.

Phase 2: Preparation and Debate

Phase 2 addresses research question 1, as stated in section 1.2, by conducting a literature review which included national legislation and policy documents, international and national peer reviewed articles, as well as a previous similar dissertation. Phase 2 includes the following chapter:

Chapter 3: Literature Review

Chapter 3 provides background of the EIA process and how screening fits into the EIA process. The focus of this chapter is to identify the challenges facing screening within EIA. This chapter further places emphases on screening as part of the EIA process in South Africa.

Phase 3: Collect, analyse and interpret

Phase 3 addresses research questions 2 and 3, as stated in section 1.2, by implementing qualitative as well as quantitative research methods. In this phase data was collected, analysed and results presented visually via tables and figures. Phase 3 includes the following chapter:

Chapter 4: Data Analysis

Chapter 4 begins with providing an introduction to how the data analysis chapter will commence (section 4.1). Section 4.2 defines how the Data Analysis was implemented where after the analysis commences in order to determine what types of activities triggered EIAs in the Western Cape Province. The chapter concludes in section 4.3 by comparing the findings of the Data Analysis and the Semi-structured interviews in order to determine how the screening mechanism has evolved.

Phase 4: Conclude and recommend

Phase 4 concludes the research and includes the following chapter:

Chapter 5: Conclusion and recommendations

Chapter 5 provides a summary of the research results followed by the final conclusions and recommendations.

<table>
<tr><th colspan="4">EVALUATING THE SCREENING MECHANISM WITHIN THE EIA PRACTICE
IN THE WESTERN CAPE PROVINCE, SOUTH AFRICA</th><td rowspan="5">Phase 1: Introduction and methodology</td></tr>
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Conclude and recommend</td><td>Chapter 5: Conclusion and recommendations</td></tr>
</table>

Table 1.1: Structure of the research

CHAPTER 2: METHODOLOGY

This chapter describes the research methodology applied to address the research aim introduced in Chapter 1, namely:

> To critically evaluate the screening mechanism within the EIA practice in the Western Cape Province.

Firstly, this chapter familiarizes the research design (section 2.1) undertaken in this study in order to introduce the outline of the process of the research. This is followed by the research methods used in the study, namely: the literature review (section 2.2.1), the data analysis (section 2.2.2) as well as semi-structured interviews (section 2.2.3) being explored in section 2.2. This chapter concludes with a discussion on the study area in section 2.3.

2.1 Research Design

According to Brar *et al.* (2014:63) a research study suggests that a process is being undertaken within a framework of a set of approaches, using procedures, methods and techniques that have been tested for their validity and reliability designed to be unbiased and objective. The first steps of the Planning phase of the research process, as indicated by figure 2.1, is to identify a research problem and to formulate a research question. This is set out in section 1.2 and section 1.3. These steps are followed by implementing a literature review (Chapter 3), including international and national peer reviewed articles; national legislation and policy documents; as well as a previous similar dissertation, in order to gain a better understanding and broad perspective on the issues at hand. The planning phase concludes with laying out a research design (section 2.1) and selecting a research method, or combination of methods, to answer the research questions as well as to achieve the overall research aim.

The implementation phase of the research process is divided into two sections. These sections are as follows: Data collection (section 2.2.2 and section 2.2.3) and Data analysis (Chapter 4). The data collection section describes how the data gathering process was conducted in order to assemble sufficient data, whereas Chapter 4 includes the data analysis and results. The final phase suggests the writing of the research report. Figure 2.1 below summarises the process used in this study.

To answer the research questions and achieve the overall aim of the research a mixed method approached was chosen for this study. Mixed method research has become an accepted third major research approach within the research paradigm, taking a place next to qualitative and quantitative research approaches (Johnson *et al.,* 2007:112). According to Pluye *et al.* (2009:541) the basis for implementing mixed methods research lies in merging the assets of both qualitative and quantitative studies.

The advantages of a mixed method approach, according to Caruth (2013:115), are that a broader range of research questions can be measured as the method does not limit a researcher to a single research design, encouraging a more forceful conclusion. The mixed method approach can add insight which might be missed by only one research design as this method motivates cross validation between qualitative

(words and narratives) and quantitative (numbers) research methods by words and narratives giving meaning to numbers and visa verse. Though the mixed method approach does not go without difficulties. As stated by Cronholm and Hjalmarsson (2011:88) mixed method research is more time consuming and can expose the risk for conflicting results between the qualitative and quantitative results.

Empirical studies that gather, analyse, and display data in numerical form are seen as quantitative research approaches (Given, 2008:713). The data analysis was conducted as a quantitative research method as numerical data was gathered and analysed (explained in section 2.2.2). Qualitative research methods according to Baškarada (2014:1), focuses on understanding the nature of the research problem through words and narratives. Qualitative data was collected during the semi-structured interviews (explained in section 2.2.3). Semi-structured interviews, also known as focused interviews were chosen for collecting the qualitative data as they are more flexible, allowing a researcher to better understand the perspective of the interviewees, according to Baškarada (2014:11).

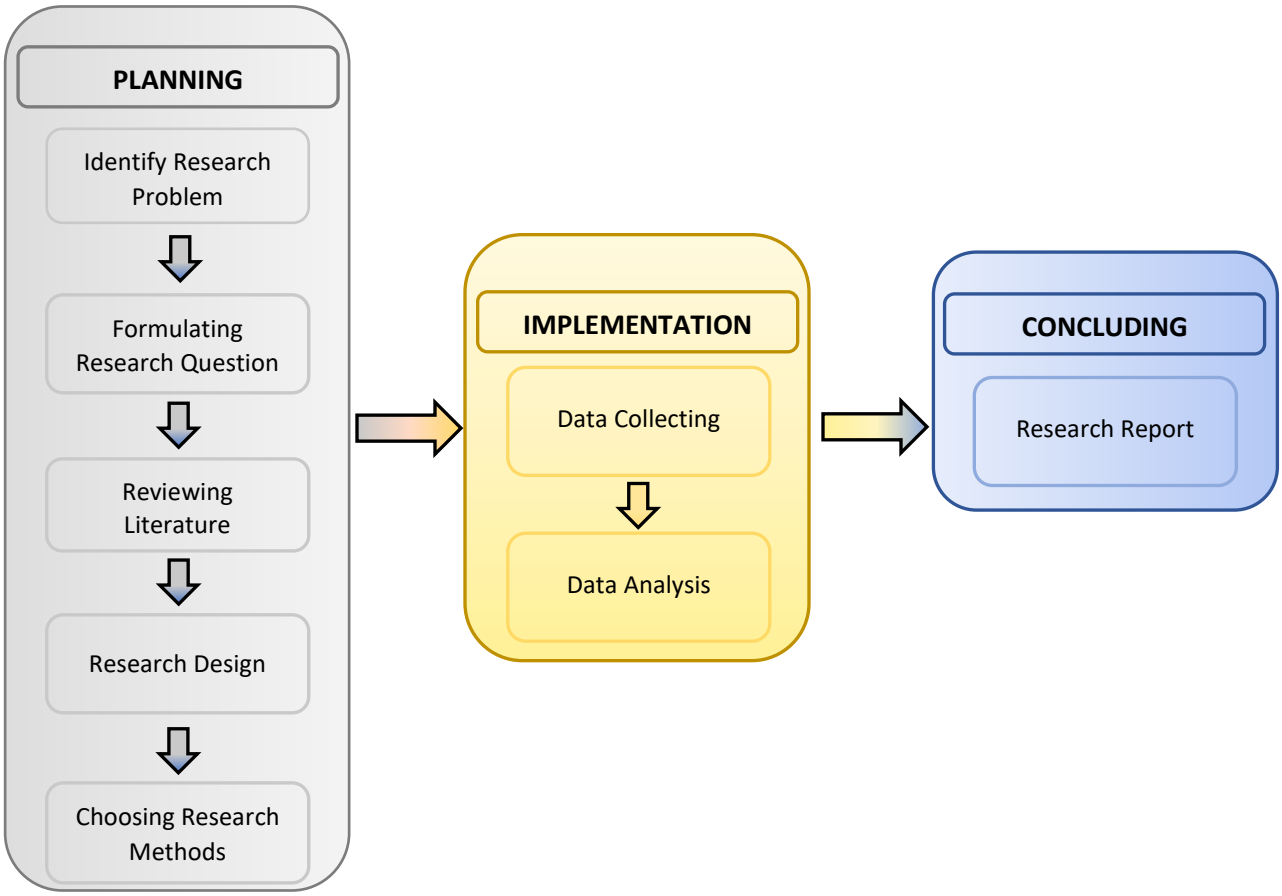


Figure 2.1: Research process

2.2 Research Methods

This section focusses on the research methods used in the study, namely: the literature review (section 2.2.1), the data analysis (section 2.2.2) as well as semi-structured interviews (section 2.2.3) being explored in section 2.2. This chapter concludes with an outline of the process of the research. The results obtained from the literature, data analysis and interviews were compared in order to determine how the different findings correspond. Figure 2.2 below illustrates the triangulation of research methods between the quantitative research (data analysis) and qualitative research (semi-structured interviews) methods used in this study along with the literature review.

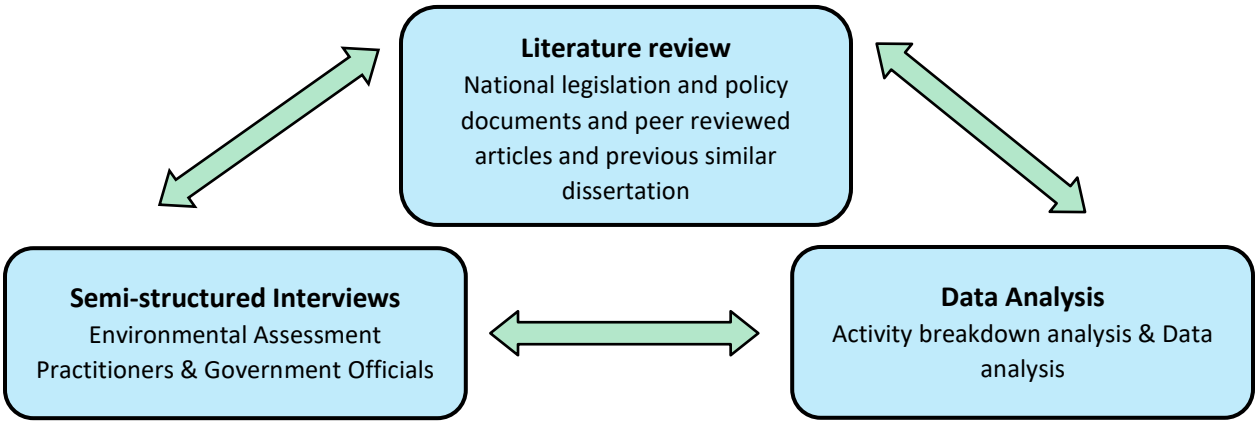


Figure 2.2: Triangulation of Research methods

2.1.1 Literature Review

The literature review was conducted to gain a better understanding on the importance of screening phase of the EIA process. The aim of the literature review was to answer research question 1:

1. What are the challenges facing screening within EIA?

A literature review was conducted using international and national peer reviewed articles as well as national legislation and policy documents in order to gain insight on how screening fits into the EIA process. The international and national peer reviewed articles as well as a previous similar dissertation was reviewed in order to determine the significance and challenges of screening within the EIA process.

Key words used in the literature search include: Screening; Environmental Impacts Assessment; NEMA Act no 107 of 1998; Sustainable Development; Challenges; EIA Regimes.

2.2.2 Data Analysis

A data analysis, including an activity breakdown analysis, was carried out from the information obtained from the WC DEADP database for the purpose of answering sub-research questions 2 and 3:

2. What types of activities required EIAs in the Western Cape?
3. How has screening evolved from the previous EIA regimes?

A data analysis was conducted from data obtained from the Western Cape Department of Environmental Affairs and Development Planning's (WC DEADP) database to determine what types of activities required EIAs in the Western Cape. The data contains a number of approximately 11000 case studies from 1997 ECA - to 2014 NEMA Regulations including Basic Assessment-; Scoping and Environmental Impact Assessment- and Section 24G applications. A comparative analysis, such as the number of EIAs conducted in the Western Cape for a specific period, was conducted between the results of the activity breakdown analysis and results of previous research in order to determine how the screening mechanism has evolved.

2.2.3 Semi-structured Interviews

Semi-structured interviews were used to gain insight on the perspectives of Environmental Assessment Practitioners (EAPs) and government officials regarding screening within EIA and to facilitate on answering sub-research question 3:

3.	How has screening evolved from the previous EIA regimes?

In an attempt to address the underlying research questions, the literature review was used as a framework to draft questions. Interviews with several EAPs and a government official were conducted to discuss and answer the questions. The results of the interviews were then compared to the findings from the data analysis as well as the literature review. The semi-structured interviews contributed by widening understanding on the challenges facing the EIA screening mechanism as well as how the present screening mechanism compares to the historical screening mechanisms through the perspectives of experienced environmental consultants, with first-hand experience with the new and previous EIA regimes.

The interviews covered the following questions:

- What do you perceive as challenges for the screening phase of the EIA process?
- In your opinion, how has the screening mechanism evolved?

In regard to EIA, the EAP is responsible for managing, planning, and co-ordinating EIAs. As such, the EAP determines the level of assessment applicable to the proposed activity by means of the screening proses. The officials on the other hand, ensure that planning tools and laws set by the local government are considered in the applications (Department of Environmental Affairs, s.a:2&6).

All participants chosen for the interviews had experience in more than one EIA regime and were based in various provinces of South Africa. First the EAPs were interviewed. The data collected after interviewing six EAPs throughout various provinces in South Africa, correlated strongly across the interviewees as well as the results gathered by the data analysis from this study. Thereafter, the Environmental Official was interviewed. The data collected from the interview with the official also correlated with the previous results. Thus, data saturation was achieved.

A total of 7 people participated in the semi-structured interviews of which 1 was an Official and 6 were EAPs. Combined they have more than 80 years of experience within the environmental field, covering all regulations from 1997 ECA to 2014 NEMA. See Appendix A for a detailed list of the participants.

2.3 Research Limitations

During the course of the research process some restrictions were met. These include:

- Due to the time period of the research and the enforcement of the Fifth NEMA regulations since early 2017, the 2017 NEMA Regulations were not included in this study.

- An overwhelming lack of response and willingness from potential participants to take part in the semi-structured interviews.

2.4 Study Area

This section will briefly introduce the study area used for this study. Firstly, in section 2.4.1, there will be a short discussion regarding the environmental aspects of South Africa, followed by a discussion focusing on the Western Cape Province in section 2.4.2. This section will conclude with a locality map in section 2.4.3.

2.4.1 South Africa

South Africa is renowned for its diverse topography, natural beauty and cultural diversity (Mabin *et al*., 2017:2). The country is home to just short of 55.7 million people and holds one of the top three biggest economies in Africa (StatsSA, 2016:19; Ismail, 2016). Geographically, South Africa is situated at the most Southern tip of the Africa continent (See Figure2.3). The country's coastline stretches more than 2500 kilometres from the northwest corner, bordering Namibia along the Atlantic Ocean, around the south most peak of South Africa to the northeast corner that borders Mozambique alongside the Indian Ocean (Mabin *et al*., 2017:2; Byrnes, 1997:94; Brand SA, 2017). The total land area of South Africa is just over 1.2 million square kilometres.

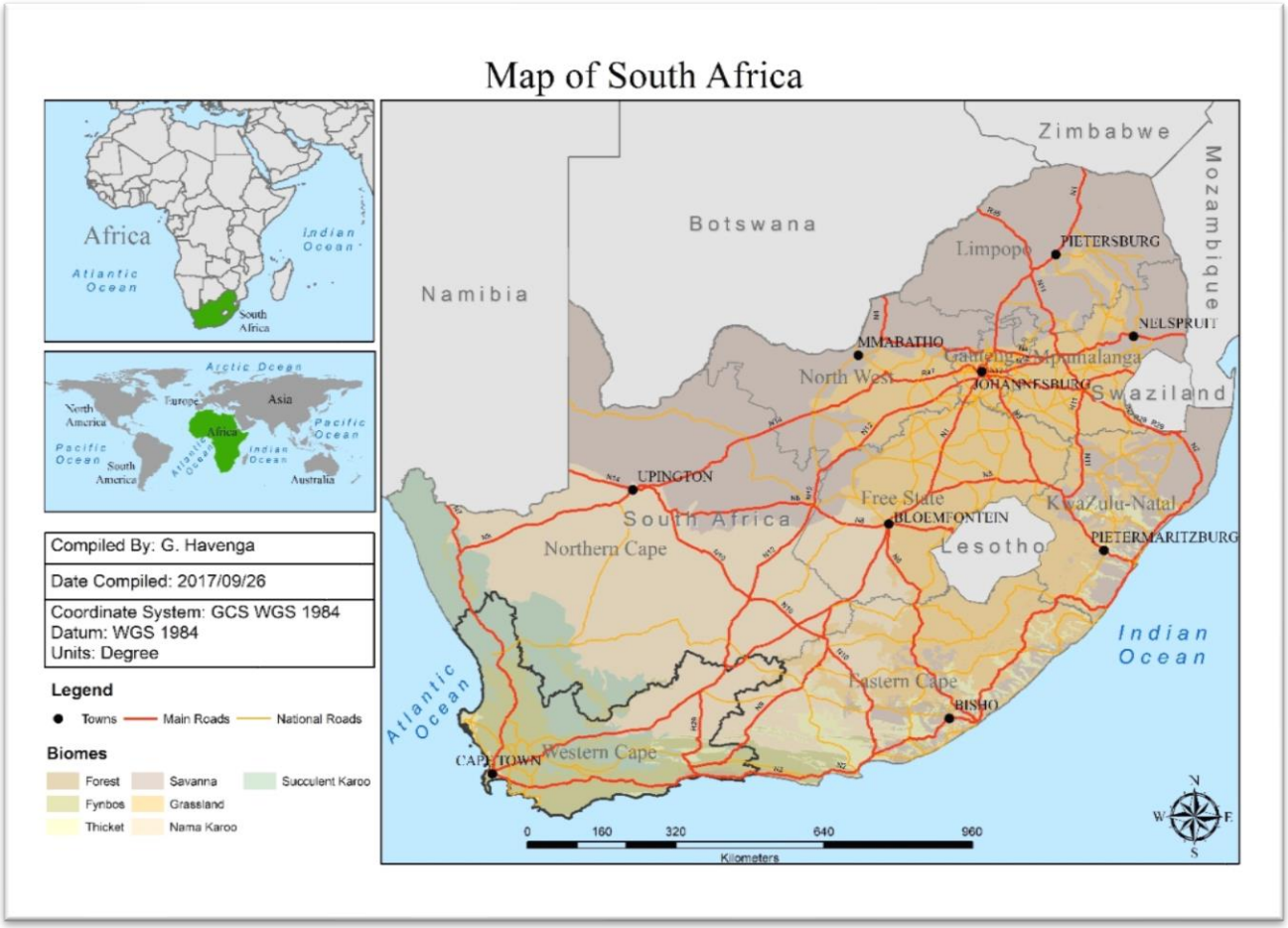


Figure 2.3: Map of South Africa

South Africa is a biologically diverse country, containing seven major terrestrial biomes (Turpie, 2003:199). These biomes include: Forest; Fynbos; Thicket; Savanna; Grassland; Nama Karoo and Succulent Karoo biomes (refer to Figure 2.3). Of these, the Fynbos Biome stands out in terms of its "*species richness and levels of endemism and rarity*" (Turpie, 2003:199).

The Fynbos Biome is the dominant component of the Cape Floristic Region (which consists mainly of the Western Cape Province and a small area stretching over the Eastern Cape Province). Due to the plant diversity and endemism, the Cape Floristic Region is recognised as one of the world's 'hottest biodiversity hotspots' (Turpie, 2003:199; Lombard *et al*., 1996:1102-1103).

Figure 2.4 illustrates that the Western Cape Province consists of major endangered and/or critically endangered areas. The Cape Floristic Region is recognised as a global priority for conservation due to the high concentration of endemic species (Cowling *et al*., 2003:192).

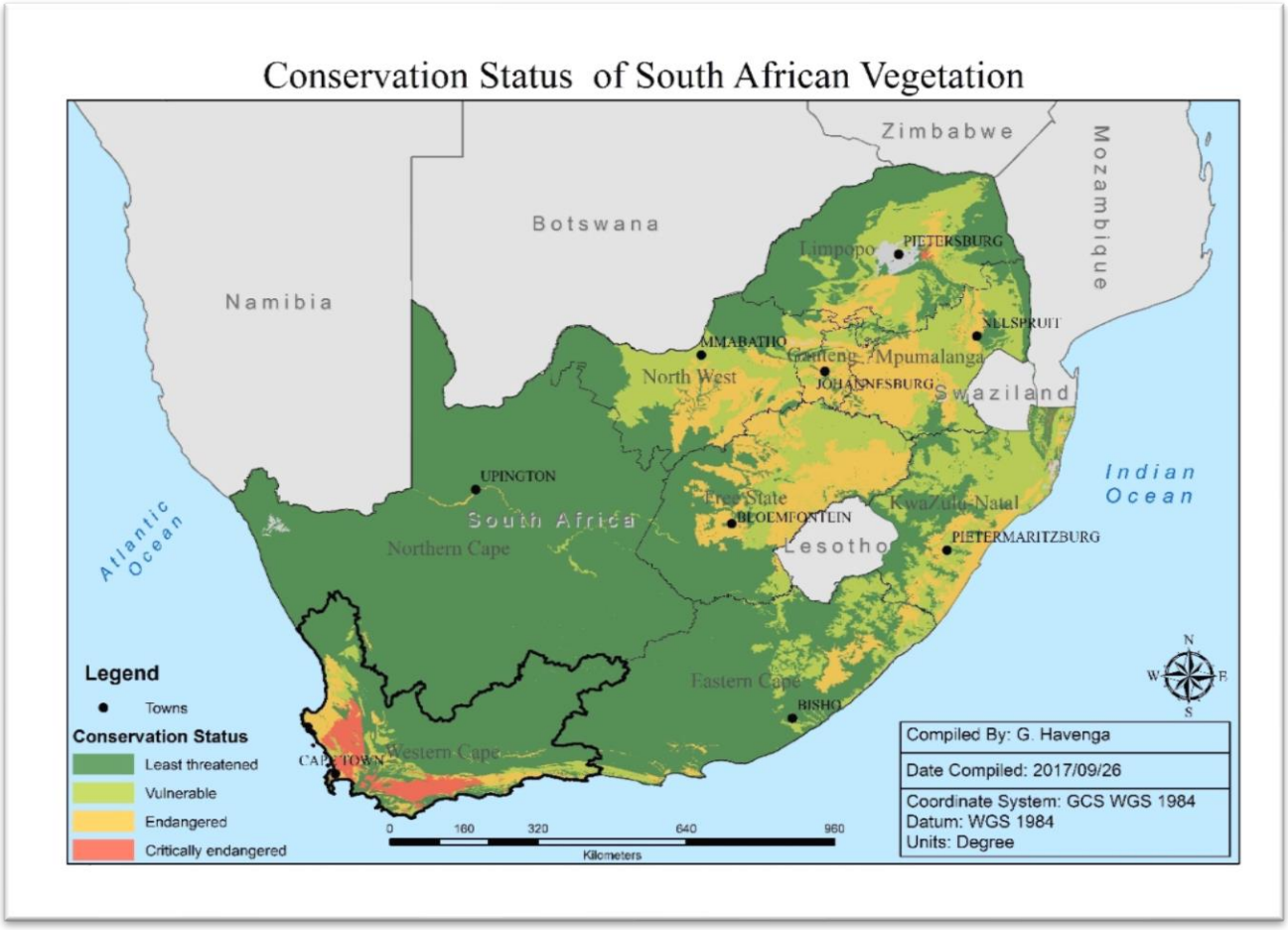


Figure 2.4: Conservation Status of South African Vegetation

2.4.2 Western Cape Province

With a population of just short of 6.3 Million people, the Western Cape Province houses just over 11% of the total population of South Africa. The Province also houses the countries legislative capital, Cape Town, as well as various tourist attractions (StatsSA, 2016:18; Brand SA, 2017; Byrnes, 1997:240).

Geographically, the Western Cape Province is located at the southwest corner of South Africa. The Western Cape province is blessed with natural beauty with botanical gardens stretching over 520 hectares, the garden route, a wealth of various flora and fauna and the 7th Wonder of Nature, Table Mountain (SA Specialist, 2017).

The Table Mountain National Park includes part of the Cape Floristic Region. With an area of 90 000 square kilometres, the Cape Floristic Kingdom is the smallest of six world floristic kingdoms (Charters, 2015a). According to Jarman (1986:1), it is the richest known flora in the world, with 3 times the number of species per unit area than its nearest competitor in the Amazon Basin. The Cape Floristic Region consists less than 0.04% of the earth's land surface, but contains almost 4% of the world's species (Charters, 2015b).

Of all the endemic families located in southern Africa, only two, the Greyiaceae and Stangeriaceae, do not occur in the Cape Region (Goldblatt, 1978:380). Within the Cape Floristic Region, regions such as the Agulhas Plain is located within the lowlands, supporting 1751 plant species (Lombard *et al.,* 1997:1103). There are 9000 fynbos in the Western Cape Province, of which 2000 types are located on Table Mountain alone.

Moll and Bossi (1984:357) calculated that 34% of the natural vegetation of the fynbos biome has been removed due to farming and other human activities, a number which surely increased since then. According to Charters (2015b), three quarters of the flora listed in the South African Red Data Book are located within the Cape Floristic Region. Therefore, it is essential to protect these endangered species.

Furthermore, two of South Africa's most threatened ecosystems are wetlands and vleis. According to Lombard (1997:1107), the wetlands within the Western Cape holds an "*extraordinarily high diversity of aquatic plants and invertebrates and are considered of international importance*". It has been estimated that in South Africa more than 50% of the wetlands ecosystems have been lost mainly through agricultural development and poor land management according to Sandham *et al., (*2008:155).

According to Lawrence (1997:34), "*sensitive and significant environments such as parks, wetlands, and habitats for unique, rare, or endangered environmental features tend to trigger EIA requirements*". Research conducted by Kidd & Retief (2009) found that the provinces where the most EIA application were submitted during the ECA regime were Gauteng, KwaZulu-Natal and the Western Cape.

It is therefore of great importance to ensure the preservation of a unique biodiverse country and more specific, province such as the Western Cape. The implementation of an effective EIA system will ensure this one of a kind landscape to be enjoyed and admired by future generations.

2.4.3 Locality Map

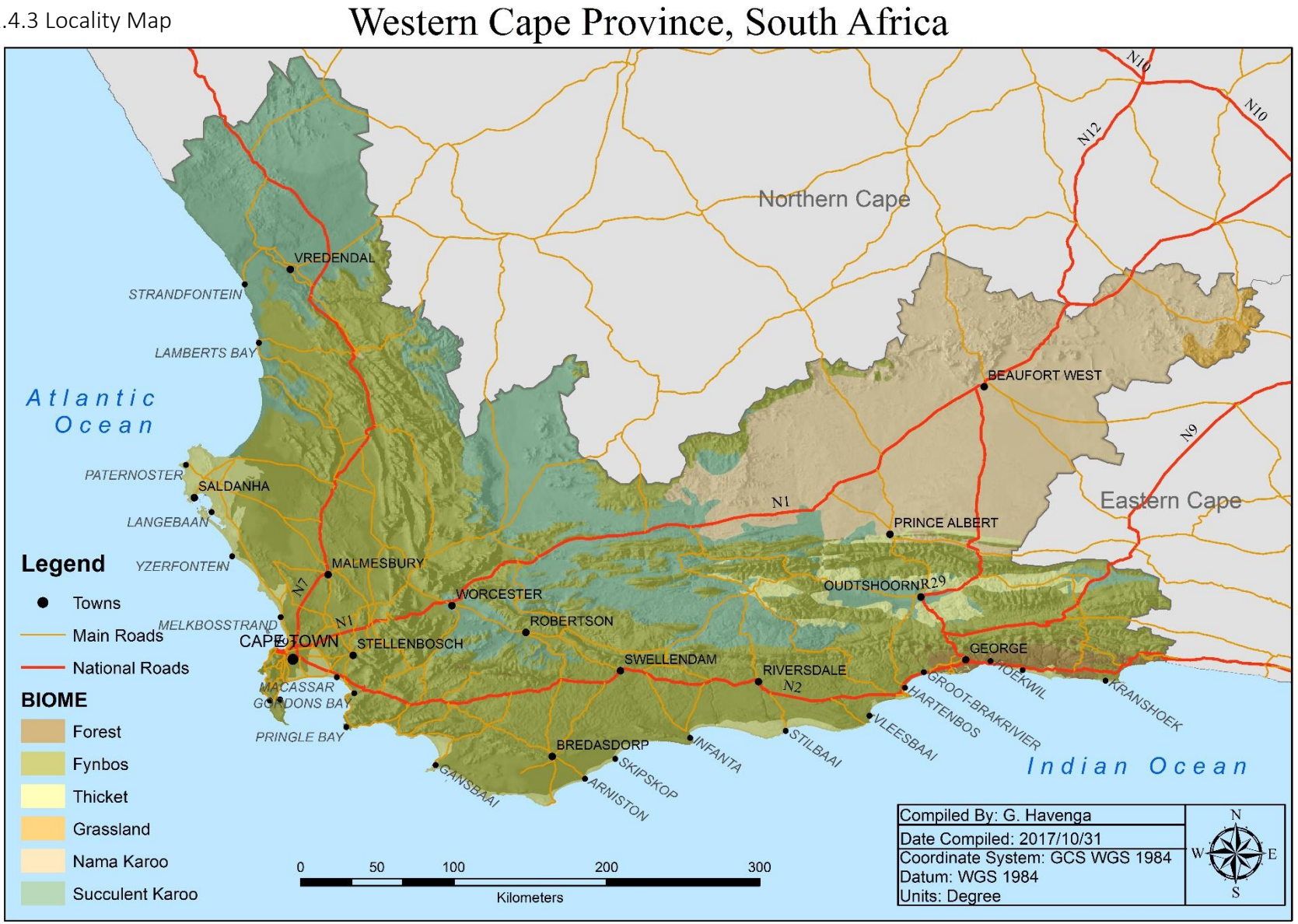


Figure 2.5: Map of Western Cape Province, South Africa

CHAPTER 3: LITERATURE REVIEW

This chapter aims to answer research question 1 by means of a Literature review.

The question to be addressed in this section is:

1. What are the challenges facing screening within EIA?

Firstly, in order to address the question mentioned above, background on the concept of EIA will be provided (Section 3.1). The background will commence with a brief description of what EIA is in Section 3.1.1. Thereafter, in Section 3.1.2, a discussion will commence on where screening fits into the EIA system followed by the challenges facing screening within the EIA system in Section 3.2. Section 3.3 provides a discussion on the South African EIA (Section 3.3.1) and Screening within the South African EIA (Section 3.3.2). This chapter concludes in Section 3.4.

3.1 Introduction and Background

In a constantly developing world, human activity has always had an impact on the physical environment. Human activities such as farming and mining date back to very early times, causing environmental degradation which includes deforestation and the salinization and loss of fertility of soil. As human societies grew more complex and population kept rising, the scope and scale of environmental issues multiplied (Middleton, 2013:519; Du Pisani, 2006:85). People began to recognise that if these issues were to increase and progress it was bound to threaten the basis of human existence. This, according to Du Pisani (2006:89), altered peoples' perspectives, suggesting the responsible use of natural resources in the interest of present and future generations. Du Pisani (2006:89) stated that "*Fears that the present and future generations might not be able to retain their living standards encouraged a way of thinking that would inform discourses which prepared the way for the emergence and global adoption of sustainable development*". Sustainable development refers to development "*likely to achieve lasting satisfaction of human needs and the improvement of the quality of human life*" (Allen, 1980:23). Sustainable development is a tool which can achieve sustainability through planning, implementation and decision-making, ensuring present and future generations access to sufficient renewable and non-renewable resources (Goodland & Ledec, 1987:37).

> *Sustainability implies people on earth living well and at the same time using resources in steady demands in order not to compromise the quality of life for future generations, ensuring the indefinite survival of human kind all over the world (Brown et al., 1987:717; Jucker, 2003:85; Barrow, 2006:11). Thus sustainability is the long term goal to reduce human impacts on the environment and keeping the quantity of resources constant without restricting the basic needs of people.*

Today sustainability is seen as one of the world's main priorities by the United Nations (UN). Sustainability has formed part of one of the eight Millennium Development Goals (MDGs) as set out by the UN. Goal seven of the MDGs is to ensure environmental sustainability. The aim of this goal is to integrate principles of sustainable development into country legislation as well as reversing the loss of environmental resources and reducing biodiversity loss (UN, 2014:40-46).

The growing interest of sustainability and the improvement of management for developing in harmony with the environment led to countries introducing new legislation aimed to influence the relationship between development and the environment. Environmental impact assessment (EIA) is a significant instrument which can be used to promote sustainable development in public as well as private decision-making (Glasson *et al.,* 2005:2; Lawrence, 1997:23).

As a developing country, it is essential for South Africa to strive towards sustainable development. In the past, there was a very high occurrence of projects being developed in developing countries without EIA studies or any effort to predict or mitigate any potential environmental impacts. This was due to the lack of interest by central government and developers who saw the EIA process as "*yet another costly and time-consuming constraint on development*" (Glasson *et al.,* 2005:2). As a result, these projects became destructive to the environment, endangering the very basis on which sustainable development depends. This emphasised the necessity of a system such as EIA within developing countries (Appiah-Opoku, 2001:59).

3.1.1 Environmental Impact Assessment

In a comprehensive sense, EIA is an investigatory process applied to determine the environmental impacts that could arise from specific proposed activities by means of assigned criteria. The process requires an EAP to be appointed by the developer in order to conduct the EIA and submit an environmental impact report (EIR) to the relevant competent authority. It is a planning and managing tool used to enable sustainable development by providing decision makers with sufficient information regarding the magnitude of the impacts as well as the suitable manner to avoid or mitigate those impacts. Thus, focusing on social, economic as well as environmental aspects during the final decision-making process in order to encourage the movement toward optimal sustainability (George, 1999:187; Nielsen *et al*., 2005:35; Sandham *et al.,* 2008:156; Sandham *et al*., 2005:51; Weston, 2000:185).

EIA is not a decision-making process on its own, but rather an instrument assisting decision-making. In essence, EIA pursues to advise the competent authority about the possible impacts of an activity It provides an early indication of the likely restriction or requirements that would be placed on a project by the authorities. (Welman, 2009:10; Weston, 2000:185).

EIA launched approximately four decades ago in the United States by adopting the National Environmental Management Act (National Environmental Policy Act of 1970) (NEPA) (Bond *et. al*., 2009:6). After the launch of the NEPA in 1969, the recognition of the importance of environmental issues began to spread worldwide, with both developed- as well as developing countries commencing with the developing and implementing of environmental evaluation procedures (Sowman *et al.,* 1995:48). Morrison-Saunders and Retief (2012:34) states that EIA is being practiced in almost all countries of the world and further states that 191 of the 193 member states of the UN signed legislation or other forms of international legal instrument referring to the use of EIA.

The assessment consists of aspects such as analysis, synthesis, management, coordination and consultation, that said, most EIA systems include the following general components: screening, scoping, public participation, consideration of alternatives and mitigation, assessment of impact significance,

authorisation and post-decision monitoring (Lawrence, 1997:31). Tysk and Eklund (2002:129) states that when an EIA is executed properly it can be seen as "*a useful tool for the promotion of sustainable development, because it includes many components that facilitate intra- and inter-generational equity*".

3.1.2 Screening within Environmental Impact Assessment

As mentioned in Chapter 1, screening is the first phase of the EIA process, aiming to filter the projects in order to emphasise those activities which may have the most potential significant impacts (IAIA, 1999). Screening is a two-step decision-making process that takes place in the early stages of a project's life cycle (DEAT, 2002:3). Determining whether a proposed development requires an environmental assessment is the first step of the screening process. If the results of the first step suggest that an environmental assessment is needed, the second step is to determine the intensity of the environmental assessment (DEAT, 2002:7). To optimise the decision-making process, screening aims to provide sufficient information in regards to the activities of the development as well as the environment where the development wishes to be commenced (DEAT, 2002:15).

Generally, there are three broad methods of screening. The development-centred or threshold, also known as the input approach, "*where the decision is based on the nature and location of the project*"; the environment-centred or case-by-case, also known as the output approach, "*where the decision is based on the likelihood of the project having a significant impact on the environment*" and a mixed approach including both the input and output approach, reflecting criteria for project type, project size, or/and environmental/locational factors (Macintosh & Waugh, 2014:1; Rocha & Fonseca, 2017:215).

According to the Department of Environmental Affairs and Tourism (DEAT, 2002:15), collecting information during the screening process involves the following: "*the consideration of development alternatives and identifying the key issues considering specialist expertise, preliminary assessment of possible impacts, the assignment of impact significance, consideration of mitigation options, reporting of preliminary environmental information as well as preliminary engagement with stakeholders*" (DEAT, 2002:15). It should be noted that although the information required for screening is similar to those of an environmental assessment, the difference between the two is largely the higher level of detail required for a full environmental assessment.

Welman (2009:17) and Nielsen *et al*. (2005:39) state that, in short, screening speeds the flow of applications through the system for the purpose of ensuring that valuable governmental resources are primarily used for projects with a significant environmental impact. Countries which do not apply a conventional screening mechanism within the EIA process, present a much higher number of EIA applications per year than those countries by which a structured screening mechanism is built into the EIA process, consequently adding to the cost, duration and ultimately the lowering the quality of the projects (Jones, 1999:234). According to Retief (2006) screening aims to resolve just that. By applying the screening mechanism at the forefront of considering the need for an EIA and determining the feasibility, the EAP can assist the applicant to potentially bring the project to a standstill, before commencing with an unnecessary EIA process and as a result save the applicant time and money.

The importance of a screening mechanism at/before the launch of an EIA process is thus clear. Figure 3.1 illustrates an outline of a typical EIA process as suggested by the Secretariat of the Pacific Regional Environment Programme (SPREP), where it is shown that the proposed development undergoes a screening process by the EIA administrator, government agencies and stakeholders prior to the decision whether an EIA is required or not.

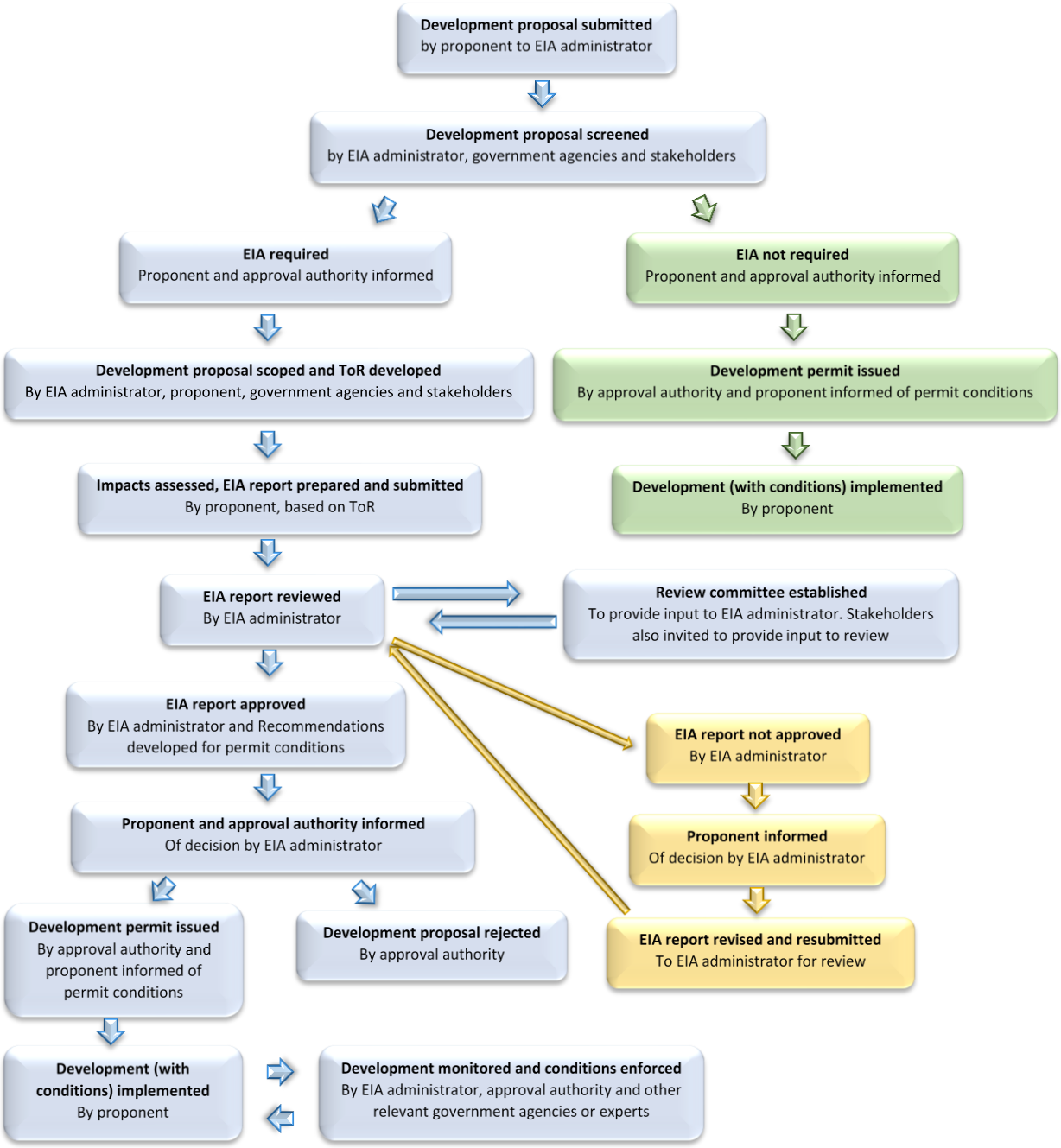


Figure 3.1: Outline of a typical EIA process (Source: SPREP, 2016:17)

3.2 Challenges facing screening within Environmental Impact Assessment

This section focuses on the challenges facing the screening mechanism within the EIA process. Firstly, there will be looked at the screening challenges faced at an international level in section 3.2.1, followed by a discussion focussing on the screening challenges faced within the South African EIA process in section 3.2.2.

3.2.1 International Challenges

In order for an EIA process to work efficiently, according to Kennedy (1988:262), "*there is a specific legal requirement for its application, where an environmental impact statement is prepared, and where authorities are accountable for taking its results into consideration in decision-making*". Kennedy (1988:262) further states that EIA should be successfully integrated in the project planning process by "*applying procedures for screening, scoping, external review and public participation*".

It is well known that legislation is the critical indicator to a successful EIA system, in both developing as well as developed countries and while around 70 developing countries adopted EIA legislation, in most developing countries this usually only forms part of a general environmental law rather than a structured EIA process (Wood, 2003:8). Although the legislative foundation of an EIA process is essential, Wood (2003:8) suggests that "*the legal basis of EIA systems in many developing countries may be weak, non-mandatory or non-existent*".

In practice, screening in developing countries is weak because environmental agencies have little power (Wood, 2003:9). This can be bypassed when foreign development agencies insist that an EIA must be undertaken in order to meet their aid requirements (Wood, 2003:9). Although, this rises another weakness in the legal provisions for EIA in developing countries. Due to the "*absence of, or shortcomings in, environmental planning and pollution control systems*", often the unrealistic is expected from developing countries to resolve environmental problems (Wood, 2003:8).

The World Bank (1999) also revealed a list of projects that will usually require environmental assessment in order to facilitate developing countries with the screening process. But although screening commonly includes details on the location, type and size of a proposed project (Prasad & Biswas, 1999), "*it is more the significance of the impacts on a specific location and not the type of project that determines whether EIA is necessary or not, and what type of EIA should be employed*" (Wood, 2003:10). Briffett (1999:160) for example reported that "*screening criteria based on the sensitivity of the location worked better in countries in east Asia than those based on the size of projects*". Thus, a hybrid approach including both a combination of lists and thresholds as well as an element of location is considered the most efficient form of screening (Wood, 2003:10).

Because the locality of a proposed development is so important to consider during an EIA, there is no universally applicable EIA model. It is thus essential for each country to design an EIA system to cover all types of activities which may have a potential significant environmental impact in the local environment (Wood, 2003:9). This is why it is difficult for countries, relatively new to EIA, to have a sufficient screening mechanism (Wood, 2003:9). Other elements such as the training of competent officials are also location based because of the specific environment as well as social/cultural differences (McCormick, 1993:726).

The consideration of alternatives including the no-action alternative are frequently weak and often not a viable choice in developing countries where the mitigation of poverty and starvation may be the main goal, resulting in the environmentally preferable alternative not being considered. In African countries such as Tanzania, it has been reported that the EIA process has very little impact on decision-making and claimed that EIA had not resulted in the cancellation of projects (Wood, 2003:9; Kakonge, 1999; Mwalyosi & Hughes, 1997:73). According to Lohani *et al.* (1997), developing countries such as India neglect certain impacts such as landscape and visual impacts within EIA reports.

The lack of political will and vision, limited resources and the economic status are without a doubt the key challenges to an effective EIA system in developing countries (Briffett, 1999:163; Weaver & Sibisi, 2006; Brito & Verocai, 1999:201). Bisset, (1992:217) states that too many examples exist indicating the little or no effect which EIA have in developing countries. So much so that most EIAs appear to only justify a decision that has already been made in order to avoid remedial measures. In other countries, the volume of work required to conduct an EIA exceeds the number of qualified personal as well as the technical knowledge (Weaver & Sibisi, 2006).

According to Jones, (1999), to avoid wasting "*scarce resources on the EIA of projects with minor impacts*", it is "*essential in developing countries to have a simple and effective screening system*" within the EIA process. Thus, the valuable resources are focused to assess the projects with significant impacts.

In countries such as Thailand, Indonesia, and Malaysia, according to Boyle (1998:95), the "*environmental agencies are virtually powerless compared with economic development agencies"* due to the lack of political and business support. Whereas in South America the impact of EIA decisions is limited due to the fact that a lack of investment is considered as a threat to political stability which depends on economic growth (Brito & Verocai, 1999:201).

Another challenge facing the screening within developing- as well as developed countries rises from the fact that the EIA process is still relatively new in numerous countries (Ayomide, 2013:2). Glasson *et al.* (1999, 352) mentioned that not only are various countries new to the EIA process, but that the companies and/or officials and practitioners responsible for implementing EIA requirements in those countries are also frequently new. As a result, those agencies still lack in status and political rank, whilst their influence are greatly limited due to an absence of information sharing.

The screening mechanism as a tool used to indicate whether a proposed activity is subject to an EIA and if so, the extent of the EIA. Lee (2000:172) stated that the efficiency of the screening mechanism and in broad the EIA process is highly reliant on the "*degree of success in integrating assessment findings into decision-making in the planning and project cycle*". According to Lee (2000:172), in countries relatively new to the EIA process, this is a weak point as the implementation of screening commences too late, resulting in poor links with the overall project implementation.

It should be noted that although there are numerous differences between countries (Glasson *et al.,* 1999), many of these weaknesses are parallel to those reported in the EIA systems in South Africa (Wood, 2002), in various Mediterranean countries (George *et al.,* 2001), as well as Egypt, Tunisia and Turkey (Ahmad & Wood, 2002).

3.2.2 Challenges facing screening within South Africa

The concept of EIA is universally still fairly new in a sense that the range of various forms of practice are ever-expanding, containing new literature and additional body of practitioners, often followed by unclear relationships between all other areas of practice (Pope *et al*., 2013:15). Although significant contributions to the screening literature have been made, there is still no consensus about the best approaches (Morgan, 2012:9). And although additional guidance from other countries is regarded as being valuable (Wood, 1999b), it also stands to say that "*too much guidance can actually be a hindrance to practitioners who must try and assimilate multiple and lengthy sources*" (Waldeck *et al*., 2003).

According to the DEAT (2002:17), "*imported screening methodologies may be too complex and or inappropriate to be applied effectively in developing countries such as South Africa*". Guidance does in this case not necessarily correlate with good practice as many countries consists of insufficient information on impact assessment causing a large gap between the policy assessment system and assessment practice (Morgan, 2012:11; Adelle & Weiland, 2012:26).

Pope *et al.* (2013:15) suggests that the number of the various forms of impact assessment existing within the literature and practice possibly exceeded manageable levels leading to confusion for practitioners, regulators and decision-makers as a result of overlaps and gaps in regulatory requirements and guidance.

The guideline-based approach also limits the efficiency of impact assessment due to the excessive use of checklists, protocols and standards which reduces the flexibility during decision-making. This has been the reason behind some amendments to the EIA legislation in South Africa as a result of the "*lack of capacity by regulators to apply professional discretion in making decisions*" (Pope *et al*., 2013:16; Kidd & Retief, 2009).

In addition to the guideline-based approach causing difficulties, the insertion of a list-based screening mechanism, unique to a specific country, is no simple task (DEAT, 2002:3). As no two activities or projects are identical in size, plant requirements, process and layout, the significance of their impacts will almost always vary. Thus, the effectiveness of a list base screening mechanism rests fundamentally on thresholds. The lack of such thresholds "*lists merely add to the administrative burden of the decision–maker*" (Jones, 1999). This however raises the issue of assigning impact significance and determining thresholds (DEAT, 2002:3).

According to the DEAT (2002:18), "*the lack of universally accepted criteria to determine the significance of impacts makes it impossible to guarantee consistency in decision-making*". The concern of ineffective thresholds is the lack in ability to screen out potentially harmless activities, creating unnecessary burdens, such as additional financial costs and delays for the developer (Wood & Becker, 2005:366), or on the other hand, to screen out harmful activities and not conducting a necessary EIA (Macintosh & Waugh, 2014:1).

The DEAT (2002:18) provides a very good example of this by stating that if a threshold was implemented on housing developments to be subject to an EIA at 100 residential units, the difference in the impact significance between 99 units and 100 units are obviously very little, although the 99 units then would not be subject to an EIA. In addition, this practical weakness could result in development proponents formulating their proposals to fall just outside of the threshold and consequently not being subject to an EIA (DEAT, 2002:18). The DEAT (2002:18) thus suggests that the cumulative effect (the overall impact of an activity, combined with the impacts of all activities associated with that activity) is thus overlooked when authorizing a number of such proposals.

In addition to cumulative effects, a recent study on land take ("*the loss of important habitats or sterilisation of land from former land uses*") conducted by Geneletti *et al*., (2017:122), emphasised the importance of the screening mechanism being capable of accounting for the potential cumulative effects on land take in a given region. The result of the study found that although land take, from projects not triggering full EIAs was significant, it was not considered during the decision making, as more attention was given to projects with larger land take impacts (Geneletti *et al*., 2017:122).

Another challenge facing screening which commences from legislation, is the unclarity of distinction between screening, scoping and the assessment of environmental impacts, which weakens the EIA process, due to proponents attempting to avoid undertaking a full EIA by including an abundance of unnecessary information into the screening phase. (DEAT, 2002:18) According to the DEAT (2002:18) screening is usually undertaken with little or no prior engagement with stakeholders, "*leading to the risk of key issues being overlooked as incorrect assumptions are made regarding the concerns of affected stakeholders regarding the proposal*".

Poor quality of practice and the inability to undertake effective and adequate screening, due to continued capacity constraints by decision-making- and environmental authorities are also a major challenge in South Africa (Pope *et al*., 2013:15; DEAT, 2002:3). This is a fundamental problem associated with the screening process and even more so where screening approaches are unsuitable or flawed (DEAT, 2002:17). According to the DEAT (2002:18), insufficient resources to handle the large volume of applications, runs the risk of an increase in "*proposals that might have a significant impact being overlooked and approved without adequate environmental safeguards attached to the development authorization*". VanDeveer and Dabelko (2001) state that the lack in capacity and the time it takes to develop and establish the proper skills and institutions are linked to the gap between the mandated system and practice.

The input of the local government also has a significant impact on the effectiveness of the screening mechanism. According to Glasson *et al*. (2005:2), the introduction of EIA had many developers as well as the government unenthusiastic as they saw to process as "*yet another costly and time-consuming constraint on development*". An example of the opinion regarding the EIA process of some governmental bodies of South Africa, Macleod (2006), quoted a statement made by the Minister of housing Lindiwe Sisulu in February 2006, stating:

> *"We cannot forever be held hostage by butterfly eggs that have been laid, because environmentalists would care about those things that are important for the preservation of the environment, while we sit around and wait for them to conclude the environmental studies." (Sisulu, 2006)*

This is considered as a major challenge as it is found to be a trend for the accountability for EIA to be allocated to governments more concerned with development than environmental protection (Pope *et al*., 2013:16), causing additional problems when "*the screening requirements of the national government vary from those of international funding agencies*" (DEAT, 2002:17). An example of South African EIA legislation being bias towards development for economic benefits is the fact that mining projects falls directly under the mining ministry. And as the controlling institution shapes the approach to impact assessment the development interests are higher than the environmental and sustainability mandates (Pope *et al*., 2013:17).

Although this sounds harsh, it should be noted that many countries are faced with complicated and conflicting choices between "*the short term need to alleviate poverty and protection of environment for long term sustainability*" (Rajaram & Das, 2011:141). And as far as economic status goes, this too provides hurdles for the screening process, especially in developing countries. Screening naturally requires devoted institutional capacity, time and resources from the project proponents to be carried out, causing an economic burden on small enterprises (Rajaram & Das, 2011:141).

As a closing remark, screening can be regarded as a preliminary measure of the significance of impacts of a proposed development (Marais *et al*., 2015:84), and without appropriate significance determination the EIA fails in its core purpose, and the environment and society are made vulnerable. The inability to implement effective screening results in the under or over assessment of development proposals (Clarke & Menadue, 2016:552). Such challenges usually originate due to the confusion during the screening process when determining whether a project with seemingly low significant environmental impacts should be subject to an EIA which leads to a large number of EIAs conducted in different countries (Arabadjieva, 2016:163). This is also the case in South Africa, where the lack of detailed thresholds within the screening mechanism have resulted in a very large number of EIAs being conducted (Retief *et al.,* 2011), in comparison to European countries (Kidd & Retief, 2009).

3.3 Screening as part of Environmental Impact Assessment in South Africa

This section focuses on the origin of EIA in South Africa and how the screening mechanism have been modified throughout the four different EIA regimes.

3.3.1 Environmental Impact Assessment in South Africa

South Africa's experience with EIA practice dates back to the mid-1970's when a "less-structured" British-style EIA was being implemented for some large scale and often unique or controversial projects (Saidi, 2010:2; Wood, 1999b:52). That said, it was only in 1989 when South Africa first enacted legislation which provided for the regulation of an environmental policy (Sowman *et al*., 1995:46). Since South Africa adopted the practice of EIA within the country's environmental legislation, the country has experienced two decades of mandatory EIA practice. During this time, four different EIA regimes were governed (Retief *et al.,* 2011:156). Table 3.1 indicates the four different EIA Regimes Governed from 1997 to 2017.

No.	EIA Regulation	Effective Dates
1	1997 EIA Regulations (ECA)	8 Sep. 1997 – 2 July 2006
2	2006 EIA Regulations (NEMA)	3 July 2006 – 1 Aug. 2010
3	2010 EIA Regulations (NEMA)	2 Aug. 2010 – 7 Dec. 2014
4	2014 EIA Regulations (NEMA)	8 Dec. 2014 – 6 April 2017

Table 3.1: EIA Regimes Governed from 1997 to 2017 (Source: Steenkamp, 2016)

"*The failure of South African politicians to recognize the importance of environmental issues in the planning and decision-making process has delayed the development of environmental expertise in the country*" (Sowman *et al.,* 1995:54). This lead to a momentous occasion in 1979 where non-governmental organisations (NGOs), government, academia, business and the general public gathered at the "*Shaping our Environment*" symposium in order to "incorporate EIA principles into planning guidelines" (Sowman *et al.,* 1995:48). During the symposium "*the value of environmental assessment as an aid to the management of the environmental change*" and the consideration of various EIA methods were emphasised (Sowman *et al.,* 1995:48). The first regime was directed by the South African Environment Conservation Act (ECA), 73 of 1989 from 8 September 1997 up until 2 July 2006. "*A White Paper and subsequent draft bill formed the basis for the ECA*" (Welman, 2009:11). Table 3.2 indicates the evolution of screening within the EIA process.

The South African EIA regulations adopted a list-based threshold approach to screening (Marais *et al*., 2015:83), using sets of listed activities that would require environmental authorisation. As part of the screening mechanism, these listed activities are used to determine whether or not a proposed development requires an environmental assessment, and if so the magnitude of the assessment required. The listed activities are thus used as a filter in order to only conduct impact assessment on projects which could have a significant impact on the environment.

	ECA	NEMA		
	1997 EIA Regulations	2006 EIA Regulations	2010 EIA Regulations	2014 EIA Regulations
List-based approach with activities	Yes	Yes	Yes	Yes
Activity descriptions	Very broad	Detailed	Detailed	Detailed
Thresholds	Few	Comprehensive	Comprehensive	Comprehensive
Listing Notices	1	2	3	3
Classification according to area sensitivity	None	None	Yes	Yes
Number of activities	10	35	107	122
Process	S&EIR	BA & S&EIR	BA & S&EIR	BA & S&EIR

Table 3.2: Evolution of screening in EIA (Source: Steenkamp, 2016)

3.3.2 1997 ECA Regulations

The ECA regulations, according to Welman (2009:1), contributed greatly to South Africa, assisting competent authorities in making informed decisions regarding developing activities and often making the process more cost effective. The 1997 ECA regime ensured that negative environmental impacts were proactively identified, prevented or mitigated through management, as well as enforced the potentially affected public to participate in the process, making their voices heard in regard to proposed projects, known more commonly as public participation (PP). The 1997 ECA regime lacked an efficient screening mechanism which lead to an overload of EIAs being conducted. This placed escalating pressure on the capacity of the government as well as resulted in costly delays for the developer (Retief *et al*., 2011:156; Welman, 2009:1). The ECA regime contained one listing notice with ten activities triggering a S/EIA process. The screening mechanism had very broad descriptions with few thresholds as indicated in Table 3.2.

3.3.3 2006 NEMA Regulations

On 19 April 2006 Marthinus van Schalkwyk, Minister of Environmental Affairs and Tourism, addressed the need for new EIA regulations after nine years of ECA regulations. Table 3.3 indicates the number of EIA applications submitted per annum between South Africa and other countries. Looking at Table 3.3 it is clear that in comparison to other countries, South Africa with more than 5000 applications had a much higher number of EIA applications during the 1997 ECA regime (Welman, 2009:53). Van Schalkwyk (2006) argued that "*too often has our existing EIA system been bogged down by over exhaustive work on relatively minor applications*".

A study by Retief *et al*. (2011) identified that within the Free State Province the majority of EIA's under the 1997 ECA regime were triggered by five of the 27 listed activities. This include (from most triggered to less triggered): communication network structures; change of agricultural land use; storage of dangerous or hazardous substances; development of public and private resorts; and electricity infrastructure. Nationally numerous communication network activities referring mainly to masts for mobile networks. In the Gauteng Province alone, a staggering number of 2000 EIA applications were received for upgrades to or construction of telecommunication masts (Retief *et al,* 2011:63). Retief *et al.* (2011:163) also identified

that due to the lack of a threshold regarding the storage of dangerous or hazardous substances, numerous unnecessary EIA's were triggered for the storage of very small amounts of petrol or diesel.

Van Schalkwyk (2006) explained that the new regulations (2006 NEMA) will divide the listed activities into two categories according to the significance of the activities. Category 1 activities will only be subject to a Basic Assessment (BA) process whereas category 2 activities will require a thorough Scoping and Environmental Impact Report (S/EIA). Figures 3.2 and 3.3 indicates the typical BA and S/EIA processes and where the screening mechanism fits into the broad EIA process.

The second regime, dating from 3 June 2006 to 1 August 2010, was governed by the National Environmental Management Act (NEMA), Act No. 107 of 1998. This regime focused mainly on the screening mechanism by revising activity descriptions in order to reduce the number of EIA applications. Using comprehensive thresholds, the screening mechanism was divided into two listing notices with a combined number of 35 detailed activities. Listing notice R386 included twenty-five activities subject to a BA and ten activities under listing notice R387, subject to a full S/EIA. This was done to ensure that time and resources are being focused more on such projects that are likely to have significant environmental and/or social impacts (Retief *et al.,* 2011:156; Welman, 2009:1).

Country	Number of EIA applications per year
Denmark	60
Netherlands	70
United Kingdom	500
Germany	1000
Kazakhstan	3000
Russia	3000
South Africa (2006 NEMA)	3600
South Africa (1997 ECA)	>5000

Table 3.3: Number of EIA applications per year (Source: Compiled by Welman, (2009:53) from Glasson *et al.* (1997:455), Jones (1999:234), Nielsen *et al.* (2005:35), Kidd and Retief (2009:56)).

The number of EIA applications under the 2006 NEMA regime did show a large decrease in comparison with the 1997 ECA regime, with an average annual number of 3600 applications per annum (Welman, 2009:53). Confirming that a more formal screening mechanism does have a major effect on the number of EIA applications. However, even with this decrease of applications, the number of average annual EIA applications under the 2006 NEMA regime was still too high and significantly so in comparison with the other countries (Retief *et al.,* 2011:161).

It is important to identify the activities frequently triggered for projects with a low significance of environmental impact. Chapter 4 will look at the various activities triggered in the Western Cape Province during the 2006 NEMA and compare the results to the results of the study by Retief *et al.* (2011) as well as the changes between the activities triggered from 2006 NEMA to 2014 NEMA.

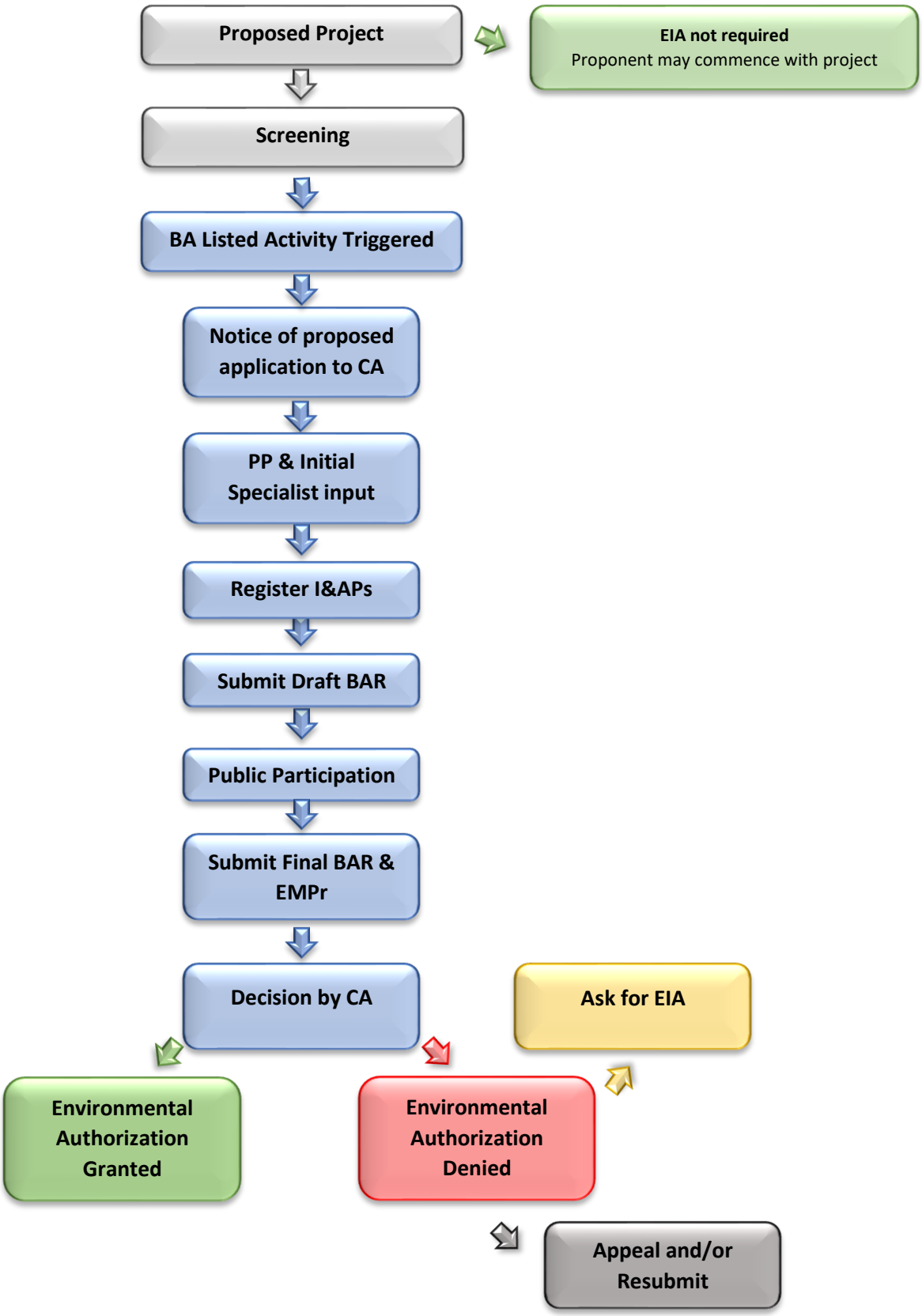


Figure 3.2: Flow diagram of a South African BA process (Source: SADC, 2012:335; CHAND, 2015:5)

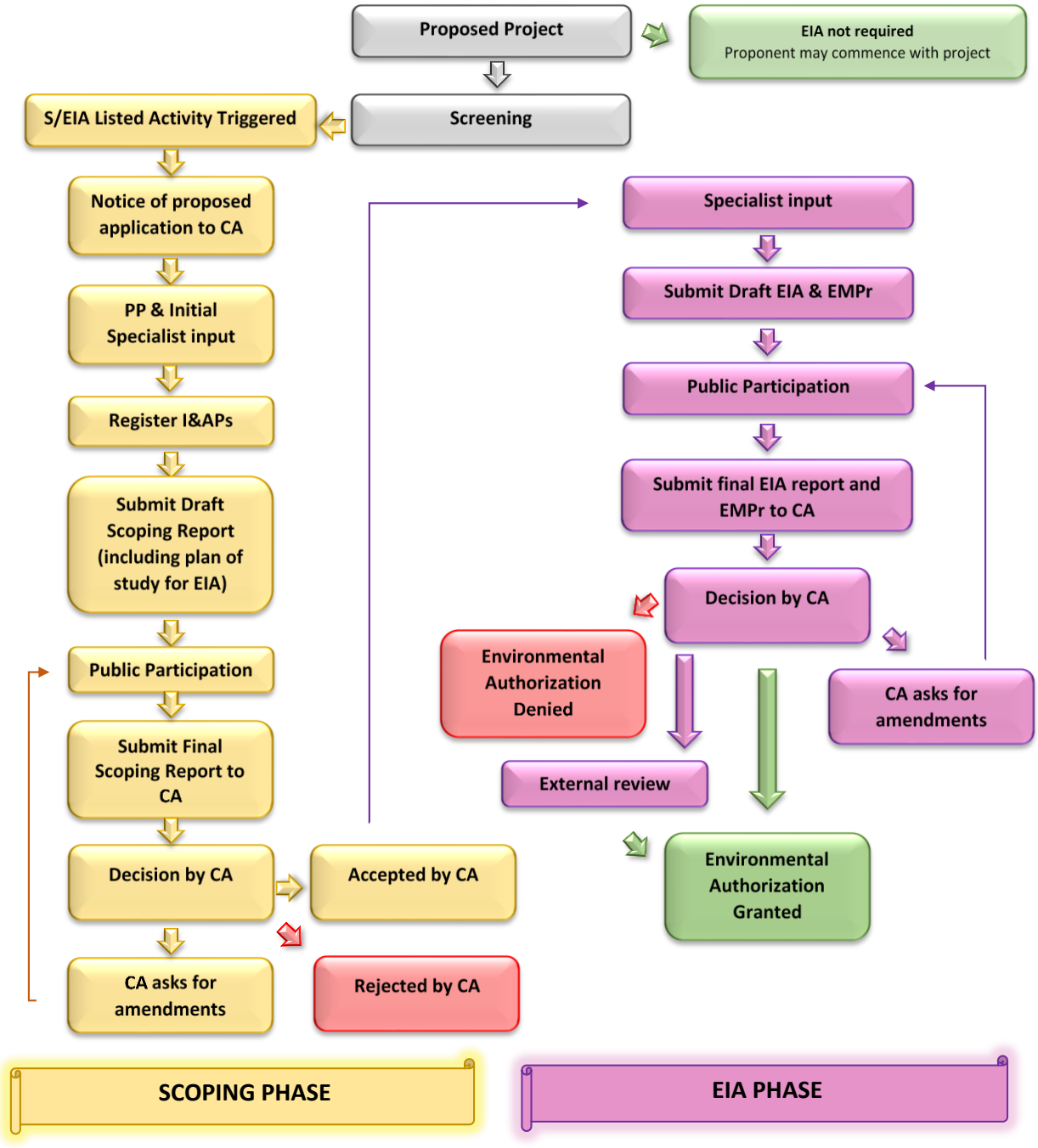


Figure 3.3: Flow diagram of a South African S/EIA process (Source: SADC, 2012:338; CHAND, 2015:6)

3.3.4 2010 NEMA Regulations

Retief *et al.* (2011:162) argued that by reducing EIA applications with 27% the 2006 NEMA regime did achieve its benchmark of decreasing EIA applications with 20%. However, it still would not have been enough in order for national administrative capacity, at that time, to cope with the applications. The third regime, also governed by NEMA, commenced in 2 August 2010 by promulgation of revised regulations (Retief *et al.,* 2011:156). This regime structured an even more specified and user-friendly screening mechanism. The 2010 Regulations included three Listing Notices containing 107 detailed activities. Listing notice R544 included 56 activities subject to a BA and listing notice R545 included 25 activities subject to a full S/EIA. Listing notice R546 initiated a new aspect of the screening mechanism, including 26 activities subject to a BA if carried out in specified geographical areas in regard to environmental sensitivity. Also included in the 2010 NEMA Regulations, is an Environmental Management Framework (EMF) Regulation (R547), in order to guide the process of developing EMFs, what the content should be as well as the approval and adoption process (Walmsley & Patel, 2011:326). The 2010 NEMA Regulations were enforced until 7 December 2014.

3.3.5 2014 NEMA Regulations

On 8 December 2014, the fourth regime, also governed by NEMA commenced, replacing the 2010 Regulations. Much like the 2010 Regulation, this structure also focused on strengthening the screening mechanism, containing three lists with a combined number of 122 activities. The Listing Notices included in the 2014 Regulations are much more detailed in order to make the screening process even more sufficient. Listing notice R983 includes 67 activities subject to a BA, listing notice R984 includes 29 activities subject to a full S/EIA and listing notice R985, much like listing notice R546 under the 2010 NEMA regulations, includes 26 activities subject to a BA if carried out in specified geographical areas in regard to environmental sensitivity.

In addition to BA and S/EIA applications, this research will also include Section 24G (S24G) applications. S24G enables an applicant, which has already commenced with an activity which is subject to an EIA without authorization from a competent authority, to apply for environmental authorization. If the application is successful, it enables the applicant to lawfully continue with the listed activity and/or legalise an otherwise unlawful structure.

Retief *et al.* (2011:162) stated that: "*A reduction of around 50% in the total number of EIA applications would provide better alignment with the current administrative capacity and also present a more comparable international profile*". Chapter 4 will confirm whether this was the case in the Western Cape and whether or not the evolution of the screening mechanism is moving towards this target.

3.4 Conclusions

As societies grew more complex and population kept rising in a constantly developing world, the scope and scale of environmental issues multiplied (Middleton, 2013:519; Du Pisani, 2006:85). As such sustainability remains one of the world's main priorities (UN, 2014:40-46), leading to global adoption of sustainable development (Allen, 1980:23) as a tool for achieving sustainability (Goodland & Ledec, 1987:37). This emphasised the necessity of an EIA system in developing countries such as South Africa in order to avoid development to become destructive to the environment (Appiah-Opoku, 2001:59), as EIA can be used as a significant instrument to promote sustainable development (Glasson *et al*., 2005:2; Lawrence, 1997:23).

In a comprehensive sense, EIA is an investigatory process applied to determine the environmental impacts that could arise from specific proposed activities by means of assigned criteria. EIA pursues to advise the competent authority about the possible impacts of an activity. It provides an early indication of the likely restriction or requirements that would be placed on a project by the authorities (George, 1999:187; Nielsen *et al*., 2005:35; Sandham *et al.,* 2008:156; Sandham *et al*., 2005:51; Welman, 2009:10; Weston, 2000:185). Most EIA systems include the following general components: "*screening, scoping, public participation, consideration of alternatives and mitigation, assessment of impact significance, authorisation and post-decision monitoring*" (Lawrence, 1997:31).

Screening is the first phase of the EIA process, aiming to filter the projects in order to emphasise those activities which may have the most potential significant impacts (IAIA, 1999). To determine whether a proposed development requires an environmental assessment is the first step of the screening process. If the results of the first step suggest that an environmental assessment is needed, the second step is to determine the intensity of the environmental assessment (DEAT, 2002:7). Generally, there are three broad methods of screening. The development-centred or threshold approach, the environment-centred or case-by-case approach and a mixed approach.

DEAT (2002:15) stated that it should be noted that although the information required for screening is similar to those of an environmental assessment, the difference between the two is largely the higher level of detail required for a full environmental assessment. Welman (2009:17) and Nielsen *et al*. (2005:39) states that, in short, screening speeds the flow of applications through the system for the purpose of ensuring that valuable governmental resources are primarily used for projects with a significant environmental impact.

As the practice of EIA is still relatively new to many countries, it goes without mentioning that many countries, including South Africa still faces numerous difficulties or challenges within the EIA process and more specifically, within its screening mechanism. These challenges include most developing countries adopting environmental legislation within a general environmental law rather than a structured EIA process (Wood, 2003:8); environmental agencies having little power (Wood, 2003:9); unrealistic expectations from developing countries (Wood, 2003:8); EIA having very little impact on decision-making due to the mitigation of poverty and starvation being the main goal for many countries (Wood, 2003:9; Kakonge, 1999; Mwalyosi & Hughes, 1997:73); and the lack of political will and vision, limited resources and economic status (Briffett, 1999:163; Weaver & Sibisi, 2006; Brito & Verocai, 1999:201).

Challenges facing the screening mechanism within the South African EIA process include:

- The range of various forms of practice are ever-expanding, containing new literature and additional body of practitioners, often followed by unclear relationships between all other areas of practice (Pope *et al*., 2013:15).
- The guideline-based approach also limits the efficiency of impact assessment due to the excessive use of checklists, protocols and standards which reduces the flexibility during decision-making. (Pope *et al*., 2013:16; Kidd & Retief, 2009).
- The determination and implementation of sufficient thresholds to screen out projects without potential significant environmental impacts and/or to screen in projects with potential significant environmental impacts (DEAT, 2002:18; Wood & Becker, 2005:366; Macintosh & Waugh, 2014:1).
- The lack of screening in small projects with potential significant cumulative impacts (Geneletti *et al*., 2017:122).
- Issues being overlooked due to screening taking place prior to engagement with stakeholders (DEAT, 2002:18).
- Poor quality of practice and the inability to undertake effective and adequate screening due to continued capacity constraints by decision-making- and environmental authority (Pope *et al*., 2013:15; DEAT, 2002:3).
- The lack of enthusiastic involvement from the government (Glasson *et al*., 2005:2).

It is clear that numerous challenges still face the screening mechanism both internationally and within the South African EIA process and that these challenges should be addressed in order to guarantee an optimal screening mechanism and to ensure the best possible decision-making.

Since South Africa adopted the practice of EIA within the country's environmental legislation, the country has experienced two decades of mandatory EIA practice. During this time, four different EIA regimes were governed (Retief *et al.,* 2011:156). The South African EIA regulations adopted a list-based threshold approach to screening (Marais *et al*., 2015:83), using sets of listed activities that would require environmental authorisation. The first regime was directed by ECA 73 of 1989 from 8 September 1997 up until 2 July 2006.

The ECA regulations contributed greatly in making informed decisions regarding developing activities, but was not without challenges. The 1997 ECA regime lacked an efficient screening mechanism which lead to an overload of EIAs being conducted (Retief *et al*., 2011:156; Welman, 2009:1). This lead to the second regime, dating from 3 June 2006 to 1 August 2010, which was governed by the National Environmental Management Act (NEMA), Act No. 107 of 1998. The 2006 NEMA regulations focused mainly on the screening mechanism by revising activity descriptions in order to reduce the number of EIA applications.

The third regime, commenced on 2 August 2010 and was enforced until 7 December 2014 (Retief *et al.,* 2011:156). The 2010 NEMA Regulations included more detailed listed activities and thresholds and introduced an additional third category including projects subject to a BA if carried out in specified geographical areas in regard to environmental sensitivity. The fourth regime commenced on 8 December 2014 and also focused on strengthening the screening mechanism. Similar to the 2010 Regulations, the 2014 NEMA Regulations included three lists categorising activities based on impact significance and locality of projects. However, the activity lists contained more activities which were much more detailed.

It is clear that the screening process in South Africa had come a long way since the first regime. That said, it is still critical to monitor how the screening mechanism evolved. Retief *et al.* (2011:162) mentioned that "*a reduction of around 50% in the total number of EIA applications would provide better alignment with the current administrative capacity and also present a more comparable international profile*". Chapter 4 aims to see whether this was the case in the Western Cape and whether or not the evolution of the screening mechanism is moving towards this target.

CHAPTER 4: DATA ANALYSIS

In order to achieve the Aim of this study, this chapter aims to answer research questions 2 and 3 by means of a Data Analysis.

The questions to be addressed in this section is:

2.	What types of activities required EIAs in the Western Cape?
3.	How has screening evolved from the previous EIA regimes?

4.1 Introduction

With eyes set on sub-research question 2, this chapter will continue with the data analysis in section 4.2. The data analysis will include an activity breakdown analysis of EIAs that were undertaken in the Western Cape since the 2006 NEMA Regime to the 2014 NEMA Regime. A comparative analysis will be conducted between the results of the activity breakdown analysis and results of previous research conducted by Welman (2009).

Section 4.3 will commence the discussion on the results of the semi-structured interviews. The semi-structured interviews conducted with EAPs and government official will provide first-hand knowledge and experience with the NEMA regimes. The results of the interviews will be compared to the results of the activity breakdown analysis and results of previous research in order to determine how the screening mechanism has evolved.

4.2 Data Analysis

This section will commence the data analysis. The data provided by the WC DEADP will be used to indicate the number of projects requiring an EIA from 2006 NEMA to 2014 NEMA in section 4.2.1. Thereafter the activity breakdown analysis will commence in section 4.2.2. The comparative analysis (section 4.2.3) will include the results of previous research as mentioned in section 3.3.2. The data received from the WC DEADP includes all EIA applications during the 2006 NEMA, 2010 NEMA as well as the 2014 NEMA regime.

4.2.1 Number of EIAs

4.2.1.1 Number of EIA Applications

Firstly, the research will look at the number of applications received by the WC DEADP throughout the 2006; 2010 and 2014 NEMA regimes in order to indicate how the number of EIA applications differ with the evolution of the screening mechanism.

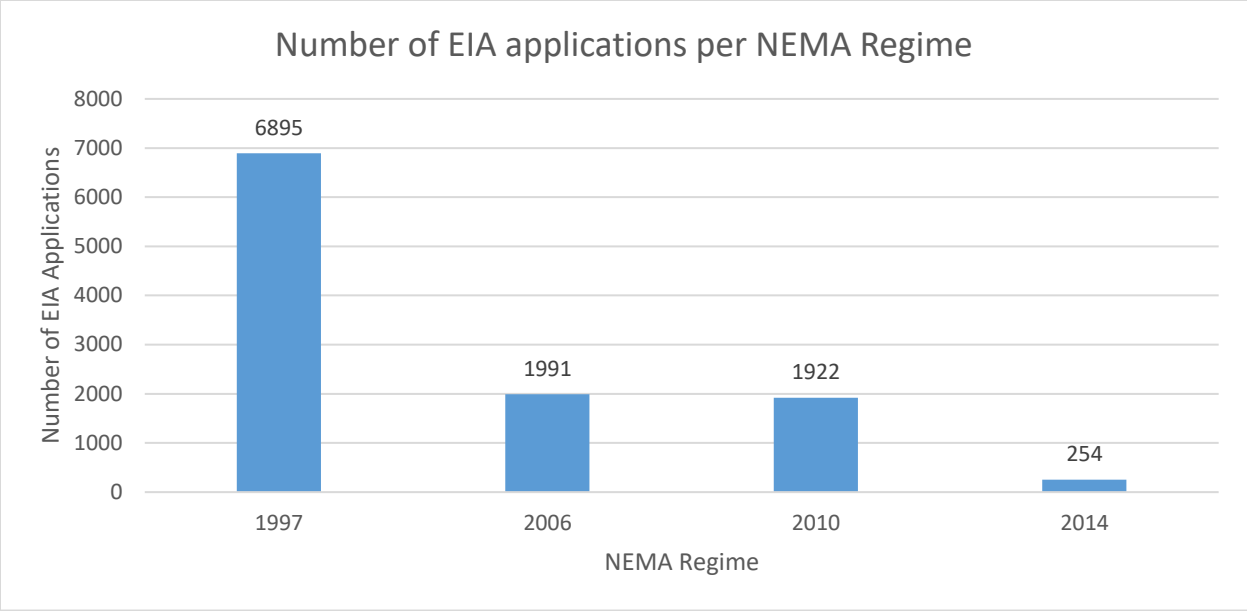


Figure 4.1: Decline in the number of EIA applications since the ECA to NEMA Regimes

Figure 4.1 displays the number of EIA Applications received by the WC DEADP since the 1997 ECA Regulations up until the end of the 2014 NEMA Regulation. From the graph, it is clear to see that there was a significant drop in the number of EIA applications received between the 1997 ECA regulations and the NEMA regulations as a whole. In approximately 10 Years, 8695 applications were received under the ECA regulations in comparison to the 4167 applications received over approximately 12 Years during the NEMA regulations. These results directly reflect the information as showed in Table 3.3 in the sense that as the EIA regulations evolved from the ECA regulations, which had very broad descripted and only a hand full of listed activities, to the NEMA regulations, which included a larger number of detailed listed activities. Thus, providing concrete support that the larger and detailed screening mechanism of the NEMA regulations acted as a much more sufficient filtering tool between the projects that required an impact assessment than those which do not require an impact assessment. It should be noted however, that there might also be other factors, such as the economic status of a country which influenced this decrease. However, the 2014 NEMA regulations state that applications of national importance such as applications for activities contemplated in section 24C (2) of the NEMA, are submitted to the National DEA and not the WC DEADP. Thereby also reducing the number of applications in the province, indicating that this result does not necessarily reflect the absolute reduction in number of EIA applications.

The graph furthermore indicates that between the 2006 NEMA regulations and 2010 NEMA regulations there was only a slight decrease in the number of EIA applications received. In addition to the slight decrease, it is important to note that 1991 applications were received during a 49-month period under the 2006 NEMA regulations and only 1922 applications were received under the 2010 NEMA regulations during a 54-month period. Thus, showing a decrease in the number of applications during a longer time period. This indicates an average of 40.63 applications per month during the 2006 NEMA regulations in comparison to an average of 35.59 applications per month during the 2010 NEMA regulations.

One may ask that if the number of EIA applications between the 1997 ECA regulations and 2006 NEMA regulations decreased so rapidly after introducing more detailed and a larger number of activities, why is there only such a slight decrease between the 2006 NEMA regulations and the 2010 NEMA regulations after introducing an abundance of activities? According to VanDeveer and Dabelko (2001), this can be the result of the time period it took for the participating parties (institutions, officials and practitioners) to get accustomed to the variety of new activities and thresholds.

When comparing the 2010 NEMA regime to the 2014 NEMA regime it is abundantly clear that the 2014 regime provided a screening mechanism resulting in the apparent reduction of EIA applications. There should however be noted that where the 2010 NEMA regulations have much more applications than the 2014 NEMA regulations, the 2010 regulations stipulates data of a 54-month period whereas the 2014 regulations only stipulates applications over a 28-month period. That said, the 2014 NEMA regulations thus indicates an average of 9.07 EIA applications per month whereas the 2010 regulations have a much higher average of 35.59. Figure 4.2 indicates a projection of the 2014 NEMA regulation to the same time period than the 2010 NEMA regulations.

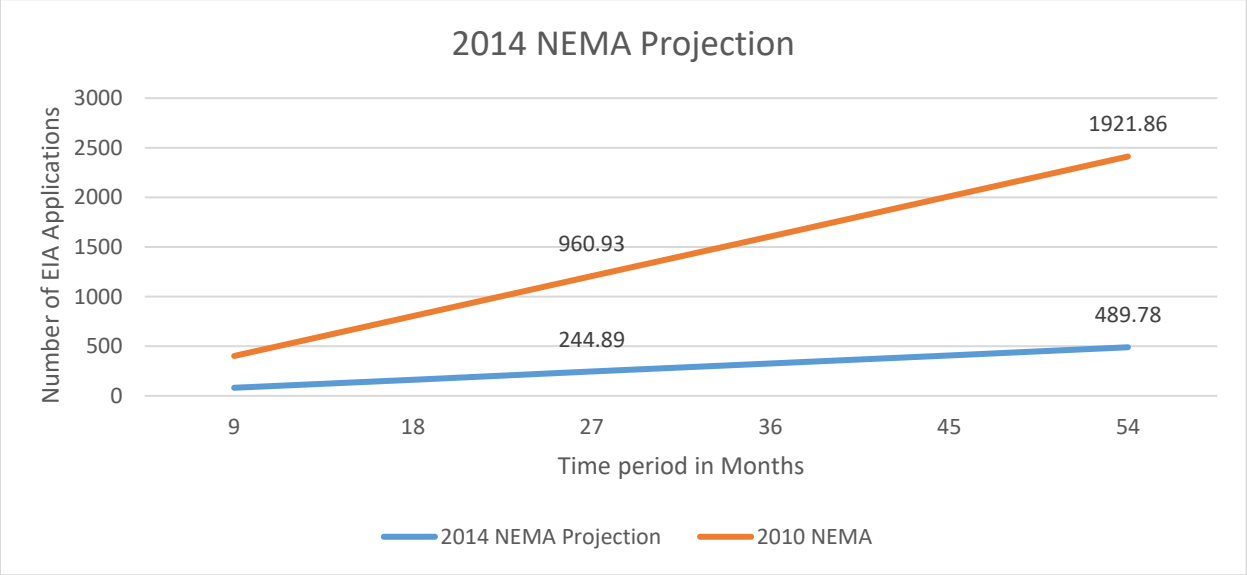


Figure 4.2: 2014 NEMA Projection

Figure 4.2 shows an estimation of the number of EIA applications expected under the 2014 NEMA regime, should the regime apply for the same period as the 2010 NEMA regime. It should be noted that this estimation is solely based on the number of previous EIA applications, and that other attributes such as economic growth may cause fluctuations. This shows a probability of 490 EIA applications under the 2014 NEMA regulations, in comparison to the 1922 applications of the 2010 NEMA regulations.

When considering the threshold attributes of both regimes, in terms of activity descriptions, number of activities and overall layout regarding the listed activities, the only difference between the regimes is that the 2014 NEMA regulations consists of more descriptive thresholds and 15 more listed activities than the 2010 regulations. The possible reasons for these reductions will be discussed in section 4.3.

4.2.1.2 Distinguishing the number of EIA Applications per year

The following discussion will distinguish between the number of EIA applications received by the WC DEADP throughout the 2006; 2010 and 2014 NEMA regulations.

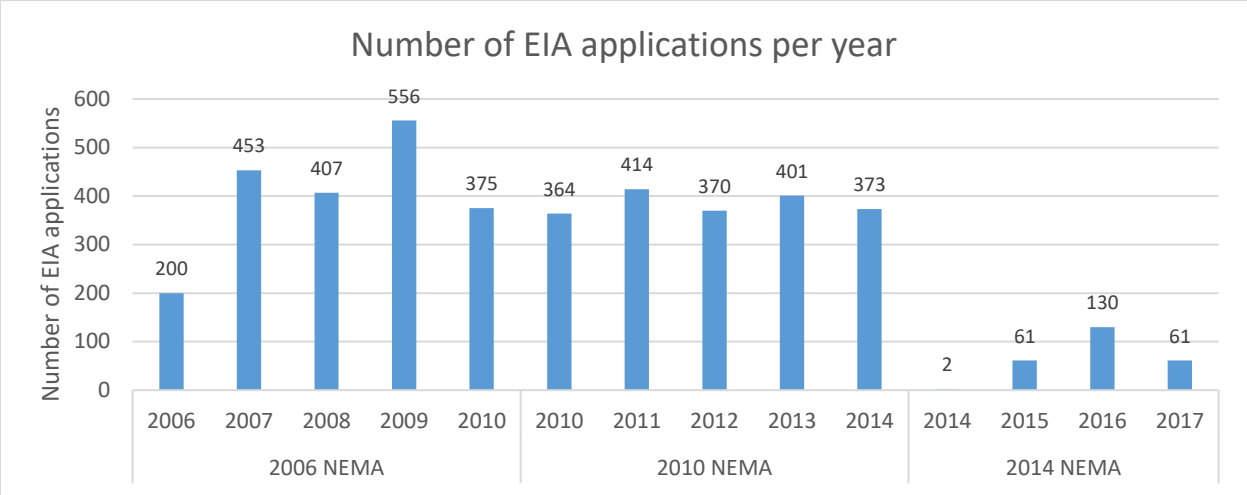


Figure 4.3: Number of EIA applications per year

Figure 4.3 shows the number of EIA applications per year between the three different EIA regimes. When looking at the figure 4.3 as a whole there is no clear pattern. It is thus essential to break it down and investigate separate stages between the regime evolution. First of all, it should be noted that the year 2006 marks the transition of the 1997 ECA regulation to the 2006 NEMA regulations on the 3 July of 2006 and thus only accounts for six months. Year 2014 only accounts for one month as the 2014 NEMA regime commenced on the 7 December 2014. These years will thus not be analysed in this section.

When looking at the fluctuating pattern of the graph it should be noted that not only screening, but also various other factors such as the developing rate of South Africa and economic status of each year also contribute to the number of proposed developments which may require an EIA application. In section 4.2.1.1 it was determined that during the 2010 NEMA regime there were, in a longer time period, fewer EIA applications than during the period of the 2006 regime. Keeping in mind that the years 2006 and 2010 under the 2006 regime only consists of 6 months each, looking at the individual years in figure 4.3 there can be observed that the 2010 NEMA regime experienced an overall reduction of applications in comparison to the 2006 NEMA regime. As a result, this correlate positively to the results seen in section 4.2.1.1 that the 2010 NEMA consisted of a screening mechanism apparently more effective in reducing the number of applications.

Looking at the number of applications during the years 2015, 2016 and 2017 which took place under the 2014 NEMA regulations, it is clear to see the correlation between the results of the analysis in section 4.2.1.1 and the results of figure 4.3 that the screening mechanism of the 2014 NEMA regime decreased the number of EIA applications. With a combined number of 254 EIA applications from 2014 to 2017, it is still fewer than any one of the previous years.

4.2.1.3 Number of applications subject to Section 24G

The discussion that follows focuses on the number of applications subject to S24G applications.

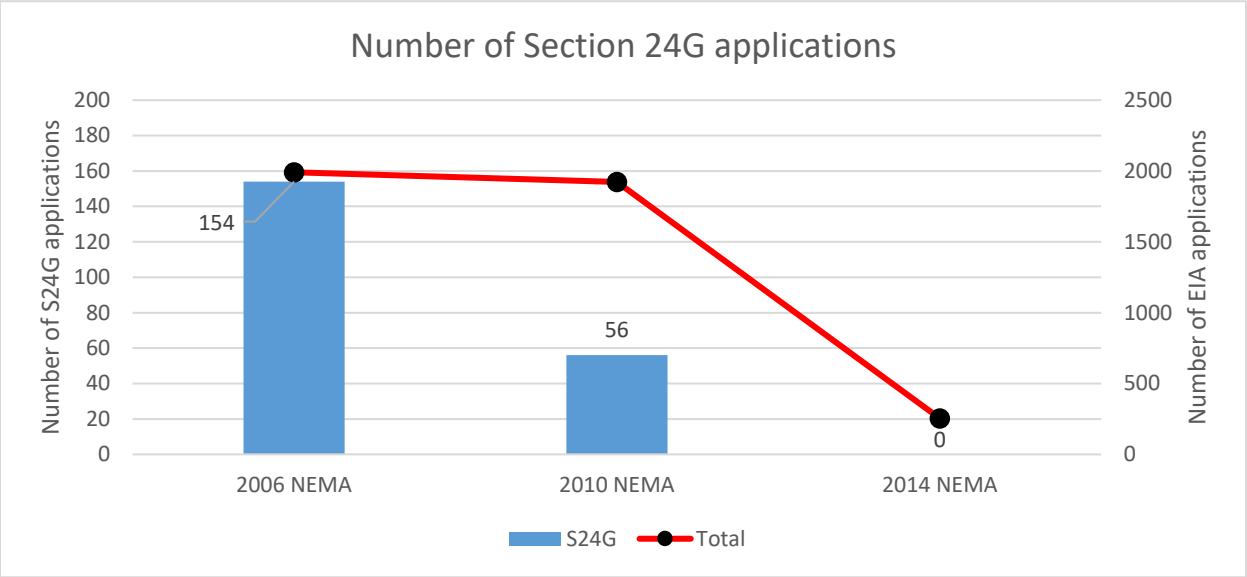


Figure 4.4: Number of Section 24G applications

Figure 4.4 indicates the number of S24G applications during the 2006 NEMA, 2010 NEMA and 2014 NEMA regulations. The data suggests that there were no applications captured which were subject to S24G throughout the 2014 NEMA regulations. The results of figure 4.4 indicates a fair decrease in applications subjected to S24G from the 2006 NEMA regulations to the 2014 NEMA regulations. The possible reasons for this decrease will be further discussed in section 4.3.

4.2.1.4 Number of Basic Assessments vs Scoping and EIRs

The following discussion will distinguish between the number of applications that were subject to Basic assessments (BA) and Scoping & EIA reports (S/EIA) throughout the 2006 to 2014 NEMA regulations.

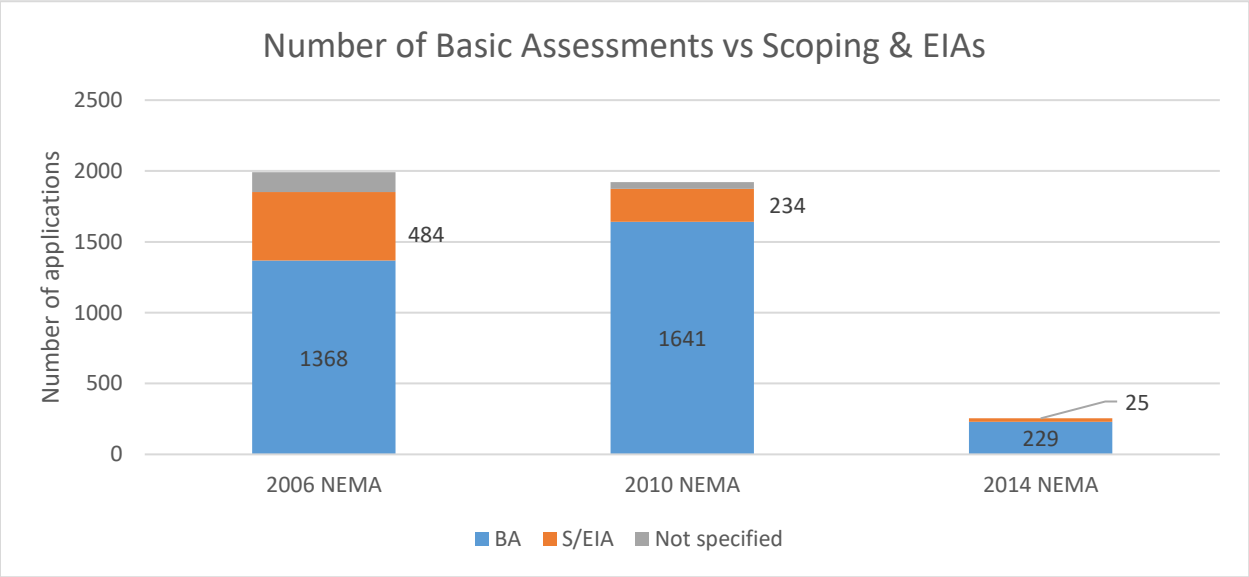
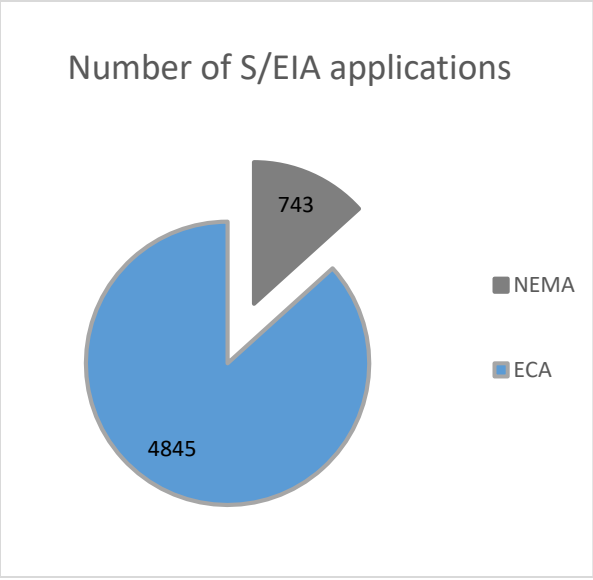


Figure 4.5: Number of Basic Assessments vs Scoping & EIAs

Figure 4.5 illustrates the number of applications that were subject to BA reports to those that required a full S/EIA report during the 2006 to 2014 NEMA regimes. Firstly, it is necessary to mention that the 1997 ECA regulations consisted of only the one S/EIA process, meaning that any application received under the 1997 ECA regulations was subject to a full S/EIA.



This of course implies that during the ten years the 1997 ECA regulations was in effect, a staggering number of 4845 applications were subject to a full S/EIA, in comparison to the total of 743 applications subjected to S/EIA during the entire twelve-year of the NEMA regulations. However, it should be noted that for many applications under the ECA Regulations provision were made for a decision after the scoping process, thus not carrying out a full EIA. Figure 4.6 indicates this significant difference. It is clear that the NEMA regulation has provided an effective screening mechanism to successfully filter all applications and distinguish between activities with higher and lower potential for significant environmental impact.

Figure 4.6: Number of S/EIA applications

The results of figure 4.5 show a decrease in the number of applications that were subject to S/EIAs from 2006 to 2014 NEMA regulations. The percentage of S/EIA applications decreased from 24.31% during the 2006 NEMA regime, to 12.18% during the 2010 NEMA regime and 9.84% during the 2014 NEMA regime. Section 4.3 will further discuss the possible reasons behind this decrease in the number of S/EIA applications.

4.2.1.5 Summary of the number of EIAs

Although there are few differences between the years of the 2006 and 2010 NEMA regulations, there is a clear drop in number of applications per regime since the 1997 ECA to 2014 NEMA regime. The number of S24G applications has also shown a dramatic drop from 1997 ECA to 2014 NEMA. The number of projects subject to a S/EIA dropped substantially from ECA regulations to NEMA regulations. Finally, the BA to S/EIA ratio during the NEMA regulations, displayed a decreasing trend in S/EIA to BA applications from 2006 to 2014.

4.2.2 Types of activities requiring EIAs in the Western Cape Province

4.2.2.1 Activity breakdown analysis

The activity breakdown analysis will include an in-depth analysis of all the activities triggered within a specific NEMA regime. Each NEMA regime will be analysed separately starting with 2006 NEMA in section 4.2.2.2 followed by 2010 NEMA in section 4.2.2.3 and 2014 NEMA in section 4.2.2.4. Section 4.2.2.5 will discuss the comparison between the three NEMA regimes.

4.2.2.2 Activity breakdown analysis 2006 NEMA Regulations

This section will commence the activity breakdown analysis of the activities requiring EIAs in the Western Cape Province during the 2006 NEMA regime.

4.2.2.2.1 General pattern of activities triggered

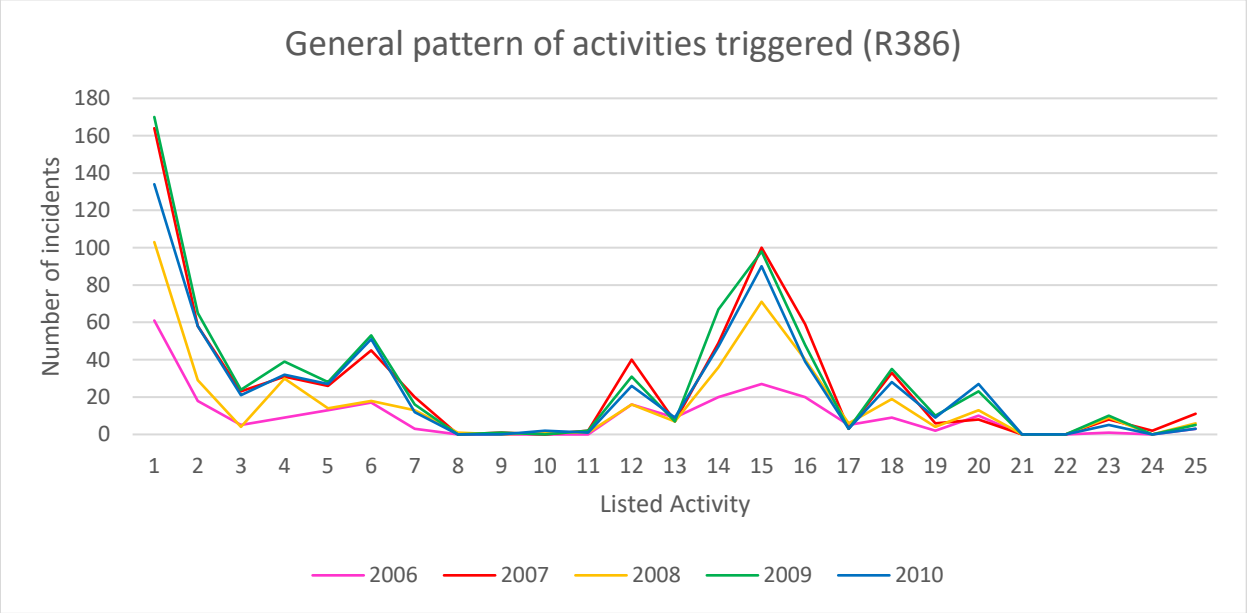


Figure 4.7: General pattern of activities triggered under Listing notice R386 (Activities subject to a BA)

Figure 4.7 demonstrates the general pattern of activities triggered under listing notice R386 during the 2006 NEMA regime. The results of figure 4.7 indicate a clear pattern between the types of activities triggered throughout 2006 – 2010. Listed activities 1 and 15 shows spikes in each year, indicating a large number of projects being subject to a BA due to these activities. It is important to note that activity 1 has a high number of subcategories included in the activity. Figure 4.8 below indicates the general pattern of activities triggered under activity 1. Listed activities 2; 4; 5; 6; 12; 14; 16; 18 and 20 also indicate a fairly high number of incidences during the 2006 NEMA regime term. These activities will be discussed in depth in section 4.2.2.2.2. Listed activities with very few or no occurrences include activities 8; 9; 10; 11; 21; 22 and 24.

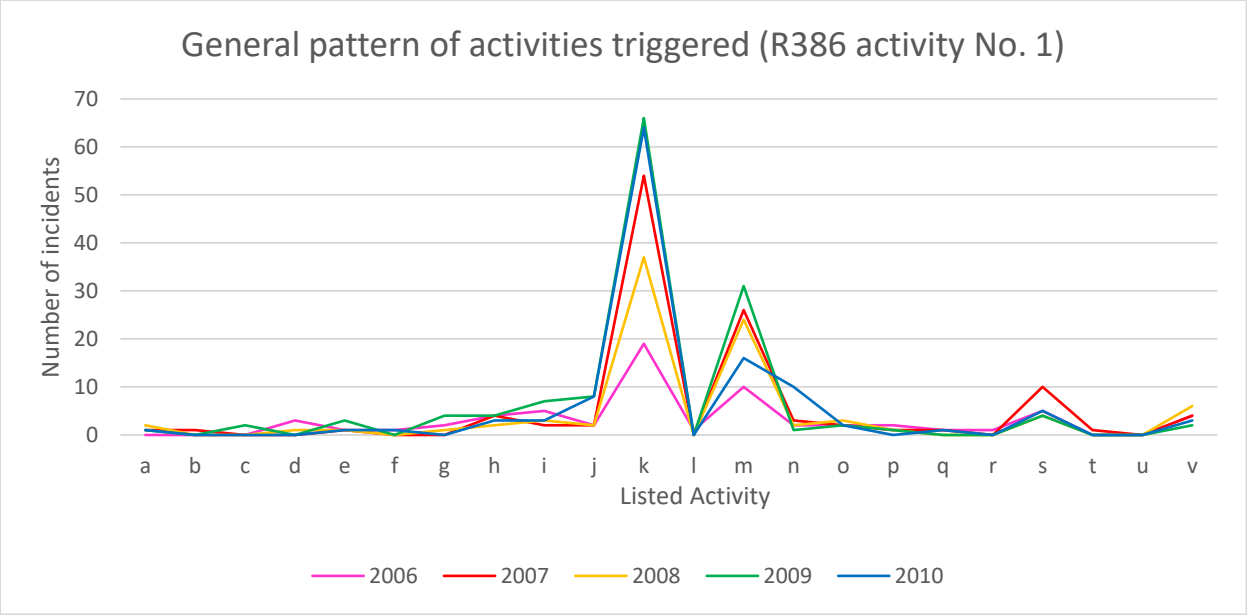


Figure 4.8: General pattern of activities triggered under activity 1, Listing notice R386

Figure 4.8 demonstrates the general pattern of activities triggered under activity No. 1 listing notice R386 during the 2006 NEMA regime. The results of figure 4.8 indicate a clear pattern between the types of activities triggered throughout 2006 – 2010. Listed activities 1(k) and 1(m) shows spikes in each year, indicating a large number of projects being subject to a BA due to these activities. These activities will be discussed in depth in section 4.2.2.2.2. Listed activities with very few or no occurrences include activities 1(b); 1(c); 1(f); 1(l); 1(r); 1(t) and 1(u).

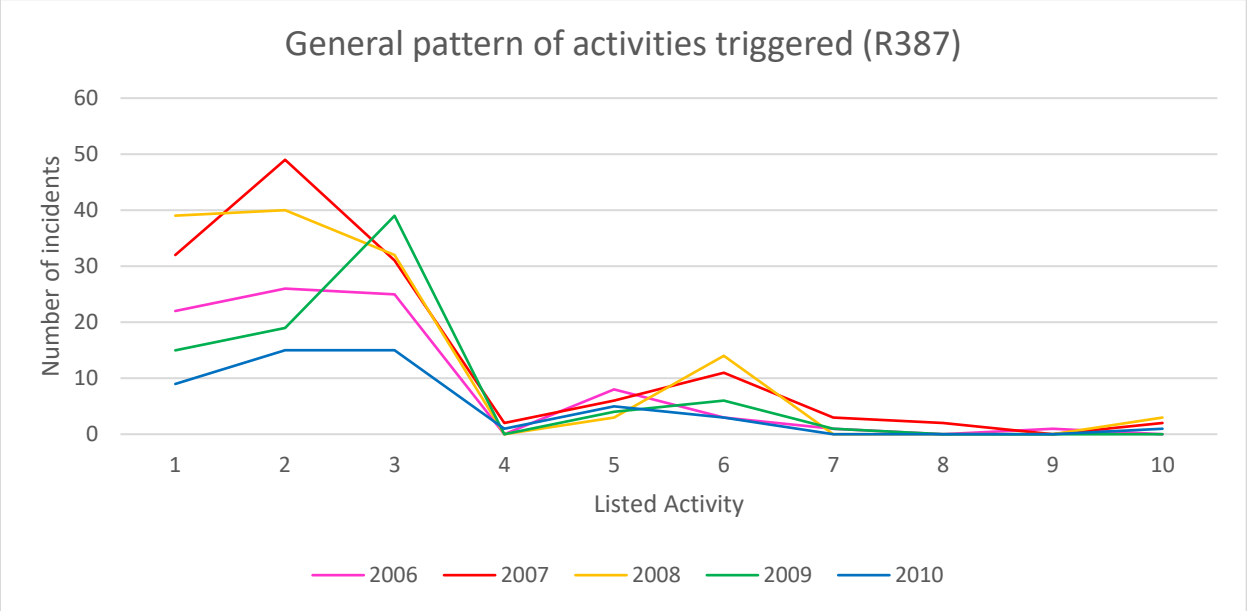


Figure 4.9: General pattern of activities triggered under Listing notice R387 (Activities subject to a S/EIA)

Figure 4.9 demonstrates the general pattern of activities triggered under listing notice R387 during the 2006 NEMA regime. When looking at the results of figure 4.9, a general pattern can be identified, although some differences do occur between the years. The results show that during the 2006 NEMA regime, listed activities 1; 2 and 3 were more often than not the reason an application was subject to a S/EIA. Listed activities 5 and 6 also indicate a fairly high number of incidences during the 2006 NEMA regime. These activities will be discussed in more detail in section 4.2.2.2.2. It is important to note that activity 1 has a high number of subcategories included in the activity. Figure 4.10 below indicates the general pattern of activities triggered under activity 1. Listed activities 4; 7; 8; 9 and 10 occurred very seldom during the five-year term of 2006 NEMA.

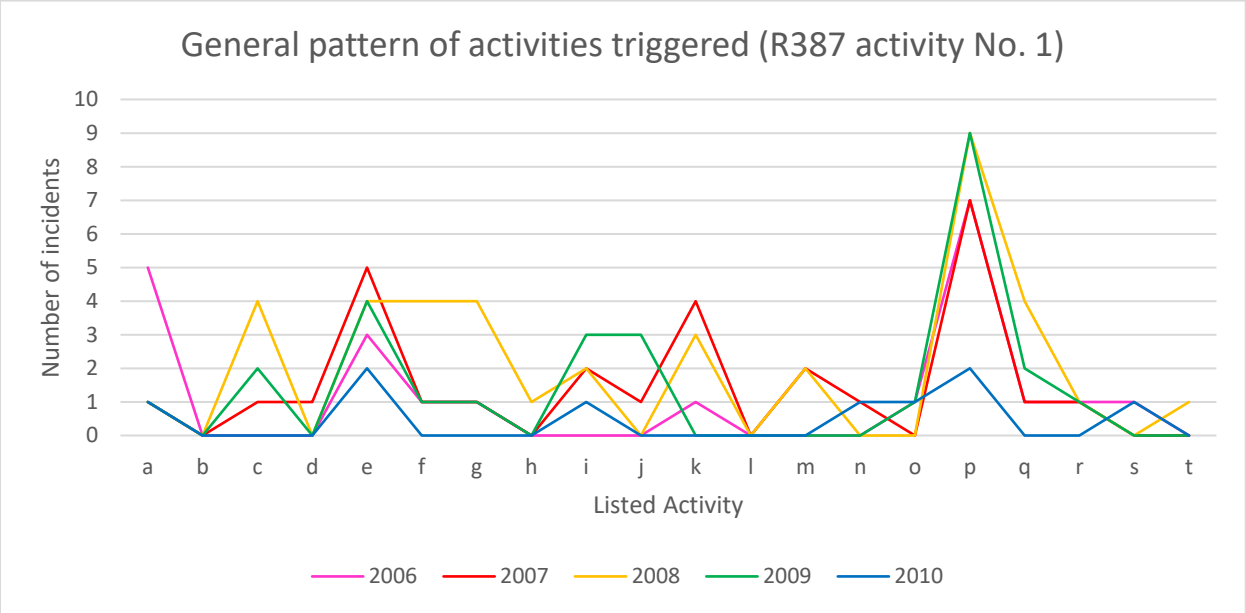


Figure 4.10: General pattern of activities triggered under activity 1, Listing notice R387

Figure 4.10 demonstrates the general pattern of activities triggered under activity No. 1 listing notice R387 during the 2006 NEMA regime. When looking at the results of figure 4.10, a general pattern can be identified, although some differences do occur between the years. The results show that during the 2006 NEMA regime no activity under activity No. 1 spiked in regard to the whole listing notice, however, listed activities 1(e) and 1(p) also indicate a fairly high number of incidences during the 2006 NEMA regime term. These activities will be discussed in more detail in section 4.2.2.2.2. Listed activities 1(b); 1(d); 1(h); 1(l) and 1(t) occurred very seldom during the five-year term of 2006 NEMA.

4.2.2.2.2 Activities most triggered during the 2006 NEMA Regulations

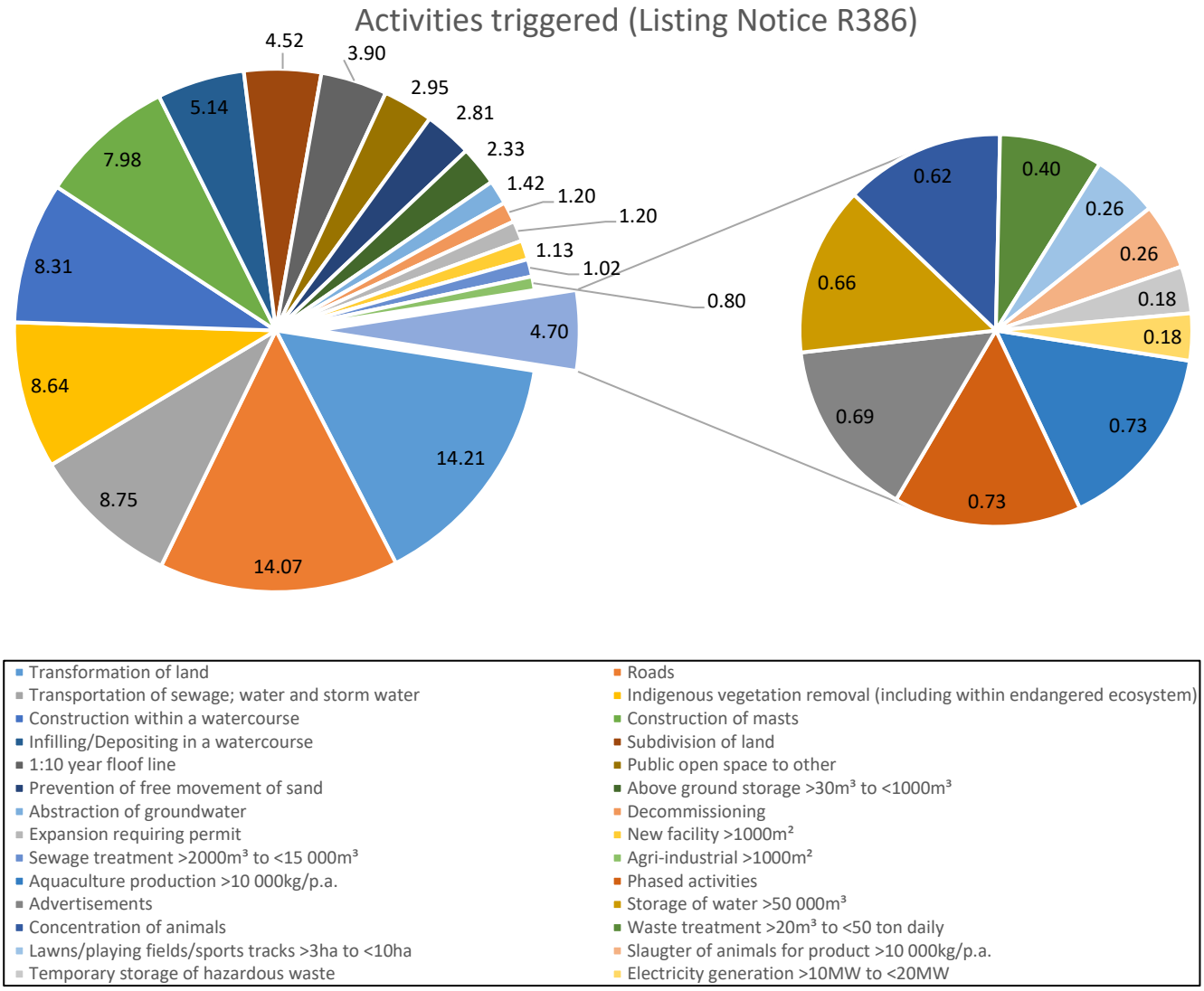


Figure 4.11: Activities triggered under Listing notice R386

Figure 4.11 displays the activities triggered under listing notice R386 during 2006 NEMA regulations. The results indicate that the transformation of land (14.21%); roads construction (14.07%); transportation of sewage, water and storm water (8.75%); indigenous vegetation removal (including within endangered ecosystem) (8.64%) and construction within a watercourse (8.31%) are the most triggered activities of listing notice R386.

NOTE: The legend of the pie graphs, starting top left, reads from left to right. Starting from the highest percentage, reading the chart clockwise.

Activities most triggered (Listing Notice R386)

Description	Percentage of incidents
Transformation of land	14.21
Roads	14.07
Transportation of sewage; water and storm water	8.75
Indigenous vegetation removal (including within endangered ecosystem)	8.64
Construction within a watercourse	8.31
	53.98%

Table 4.1: Activities most triggered under Listing Notice R386

Table 4.1 indicate the five most triggered activities under listing notice R386 during the 2006 NEMA regulations. These five activities out of the combined 25 activities listed in listing notice R386, are responsible for 58.46% of projects subject to a BA during the 2006 NEMA regime.

Figure 4.12 on the following page displays the activities triggered under listing notice R387 during 2006 NEMA regulations. The results indicate that development larger than 20 hectares (30.53%); the underground storage of dangerous goods (29.10%); construction of a dams (7.58%); sewage treatment with an annual throughput capacity of 15 000 cubic metres or more (6.97%) and route determination of roads and associated physical infrastructure (5.33%) are the most triggered activities of listing notice R387.

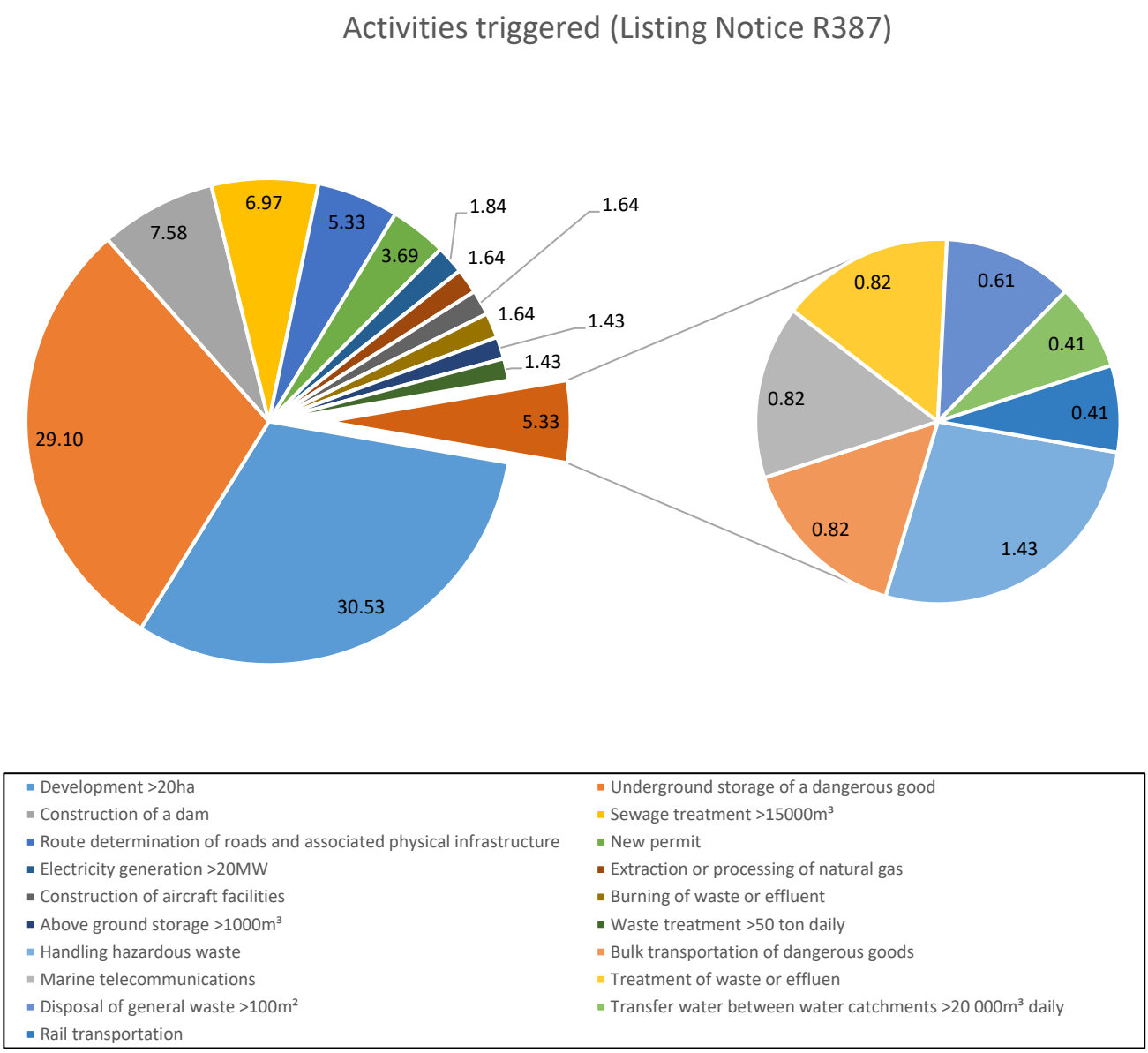


Figure 4.12: Activities triggered under Listing notice R387

Activities most triggered (Listing Notice R387)

Description	Percentage of incidents
Development >20ha	30.53
Underground storage of a dangerous good	29.10
Construction of a dam	7.58
Sewage treatment >15000m³	6.97
Route determination of roads and associated physical infrastructure	5.33
	79.51%

Table 4.2: Activities most triggered under Listing Notice R387

Table 4.2 indicate the five most triggered activities under listing notice R387 during the 2006 NEMA regulations. These five activities are responsible for 79.51% of projects subject to a S/EIA during the 2006 NEMA regime.

4.2.2.3 Activity breakdown analysis 2010 NEMA Regulations

This section will commence the activity breakdown analysis of the activities requiring EIAs in the Western Cape Province during the 2010 NEMA regime.

4.2.2.3.1 General pattern of activities triggered

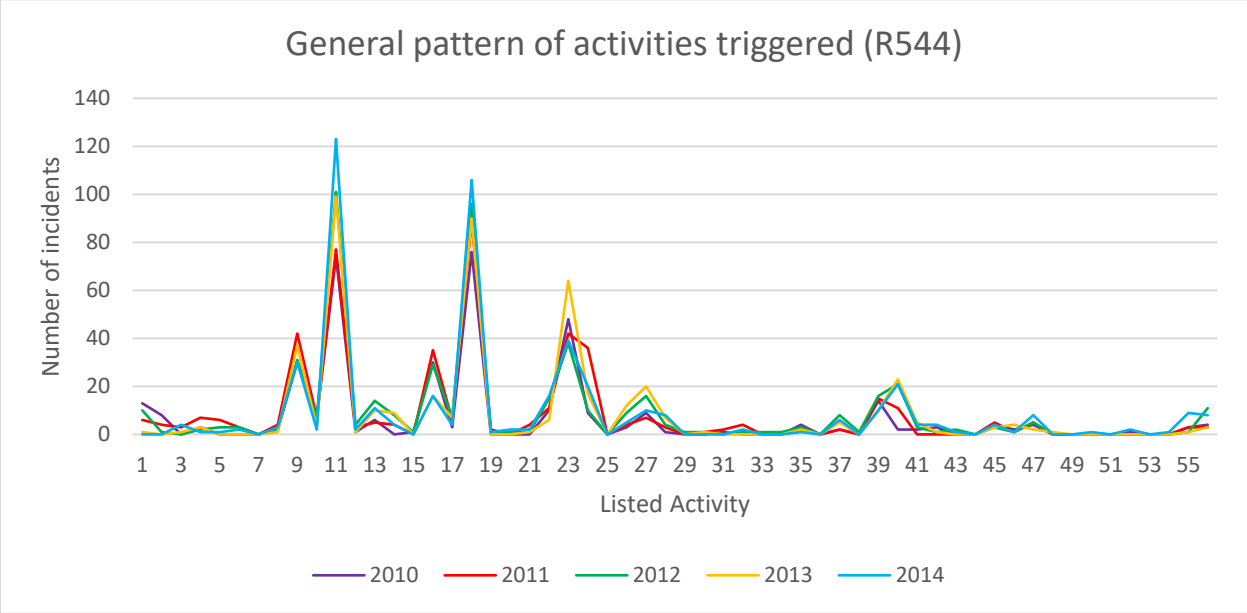


Figure 4.13: General pattern of activities triggered under Listing notice R544 (Activities subject to a BA)

Figure 4.13 demonstrates the general pattern of activities triggered under listing notice R544 during the 2010 NEMA regime. The results of figure 4.13 indicate a clear pattern between the types of activities triggered throughout 2010 - 2014. Listed activities 11 and 18 shows spikes in each year, indicating a large number of projects being subject to a BA due to these activities. Listed activities 9; 16; 23 and 24 also indicate a fairly high number of incidences during the 2010 NEMA regime term. These activities will be discussed in depth in section 4.2.2.3.2. Listed activities with very few or no occurrences include activities 7; 15; 25; 29; 33; 34; 36; 38; 44; 48; 49; 50; 51; 53 and 54.

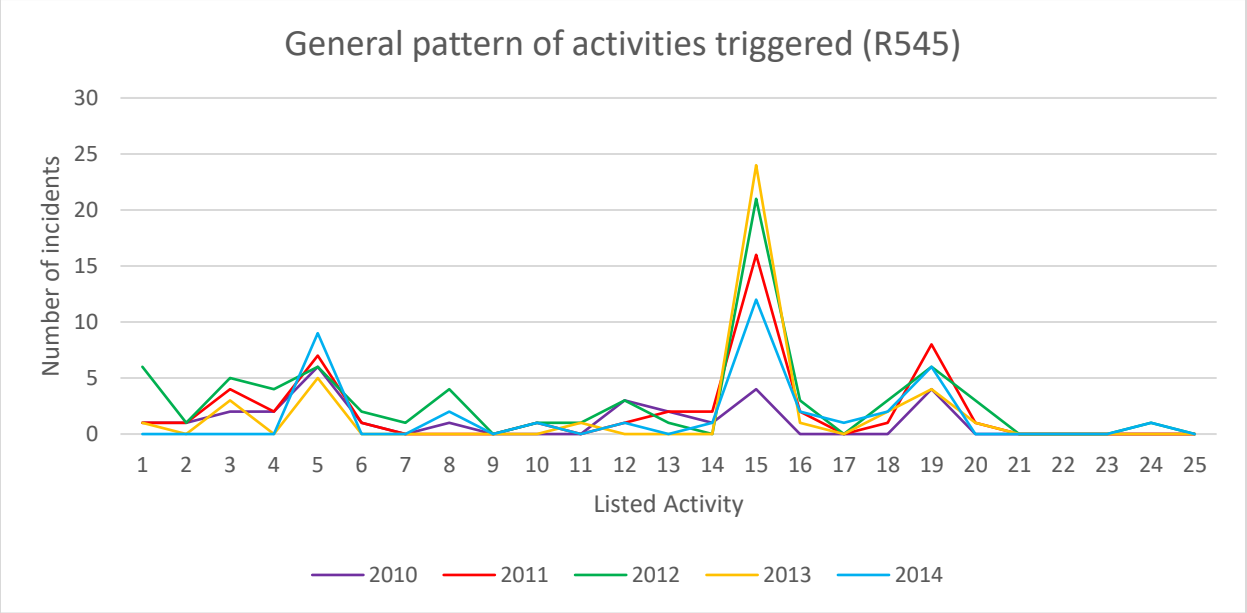


Figure 4.14: General pattern of activities triggered under Listing notice R545 (Activities subject to a S/EIA)

Figure 4.14 demonstrates the general pattern of activities triggered under listing notice R545 during the 2010 NEMA regime. When looking at the results of figure 4.14, a general pattern can be identified. The results show that during the 2010 NEMA regime, listed activities 5; 15 and 19 were more often than not the reason an application was subject to a S/EIA. These activities will be discussed in more detail in section 4.2.2.3.2. Listed activities 7; 9; 11; 17; 21; 22; 23; 24 and 25 occurred very seldom during the five-year term of 2010 NEMA.

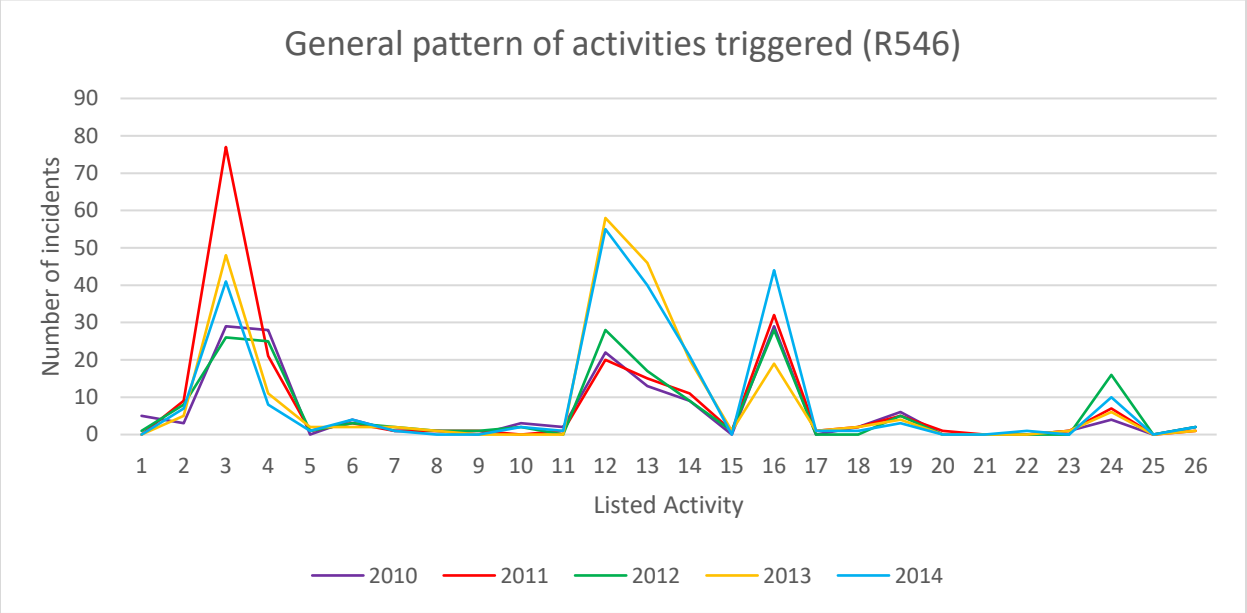


Figure 4.15: General pattern of activities triggered under Listing notice R546 (Activities subject to a BA)

Figure 4.15 demonstrates the general pattern of activities triggered under listing notice R546 during the 2010 NEMA regime. The results of figure 4.15 indicate a clear pattern between the types of activities triggered throughout 2010 - 2014. Listed activities 3; 12; 13 and 16 shows spikes in each year, indicating a large number of projects being subject to a BA due to these activities. These activities will be discussed in depth in section 4.2.2.3.2. Listed activities with very few or no occurrences include activities 9; 20; 21; 22 and 25.

4.2.2.3.2 Activities most triggered during the 2010 NEMA Regulations

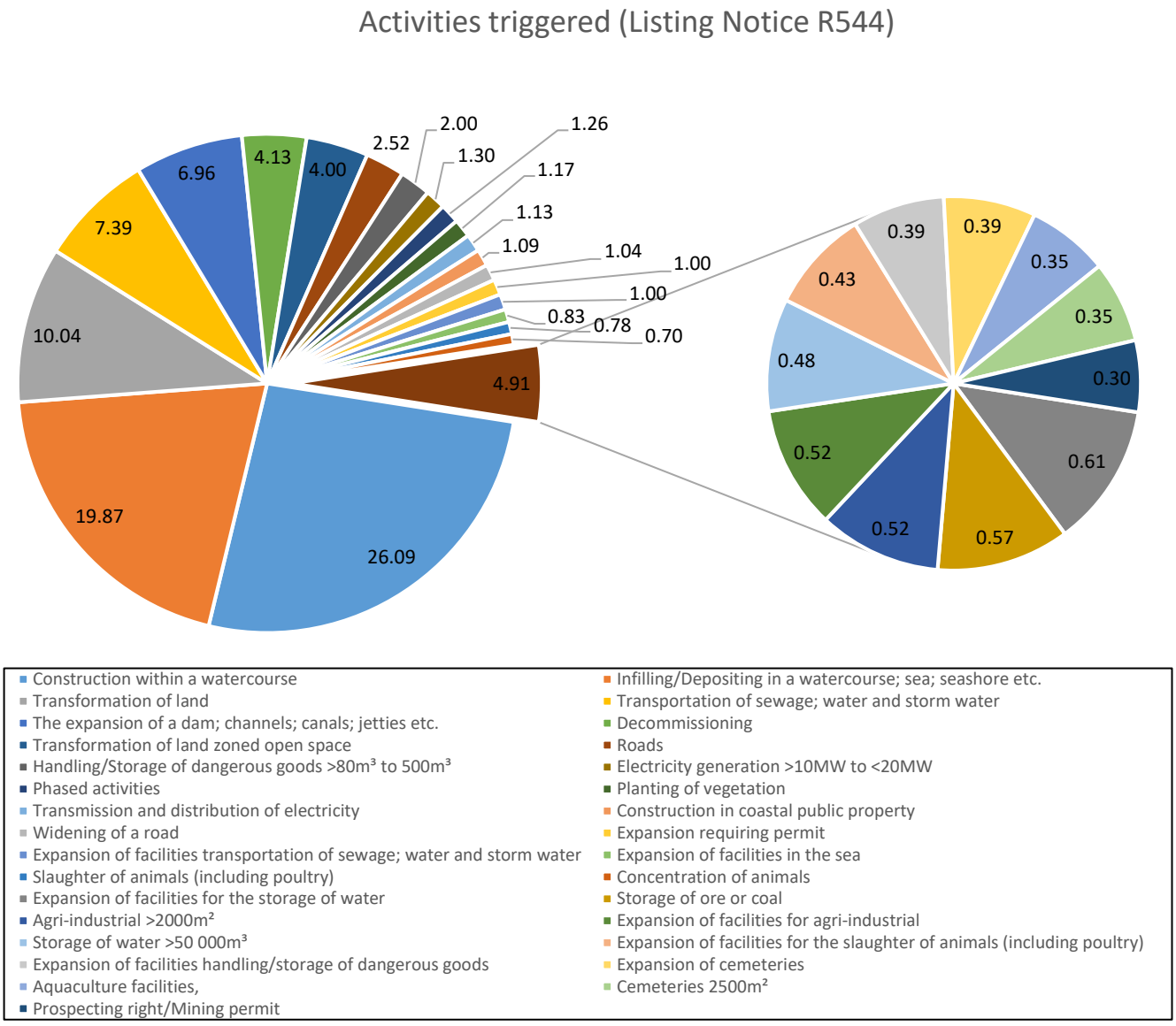


Figure 4.16: Activities triggered under Listing notice R544

Figure 4.16 displays the activities triggered under listing notice R544 during 2010 NEMA regulations. The results indicate that the construction within a watercourse (26.09%); infilling/depositing in a watercourse, sea, seashore etc. (19.87%); transformation of land (10.04%); transportation of sewage, water and storm

water (7.39%) and the expansion of a dam; channels; canals; jetties etc. (6.96%) are the most triggered activities of listing notice R544.

Activities most triggered (Listing Notice R544)

Description	Percentage of incidents
Construction within a watercourse	26.09
Infilling/Depositing in a watercourse; sea; seashore etc.	19.87
Transformation of land	10.04
Transportation of sewage; water and storm water	7.39
The expansion of a dam; channels; canals; jetties etc.	6.96
	70.35%

Table 4.3: Activities most triggered under Listing Notice R544

Table 4.3 indicate the five most triggered activities under listing notice R544 during the 2010 NEMA regulations. These five activities are responsible for 70.35% of projects subject to a BA during the 2010 NEMA regime.

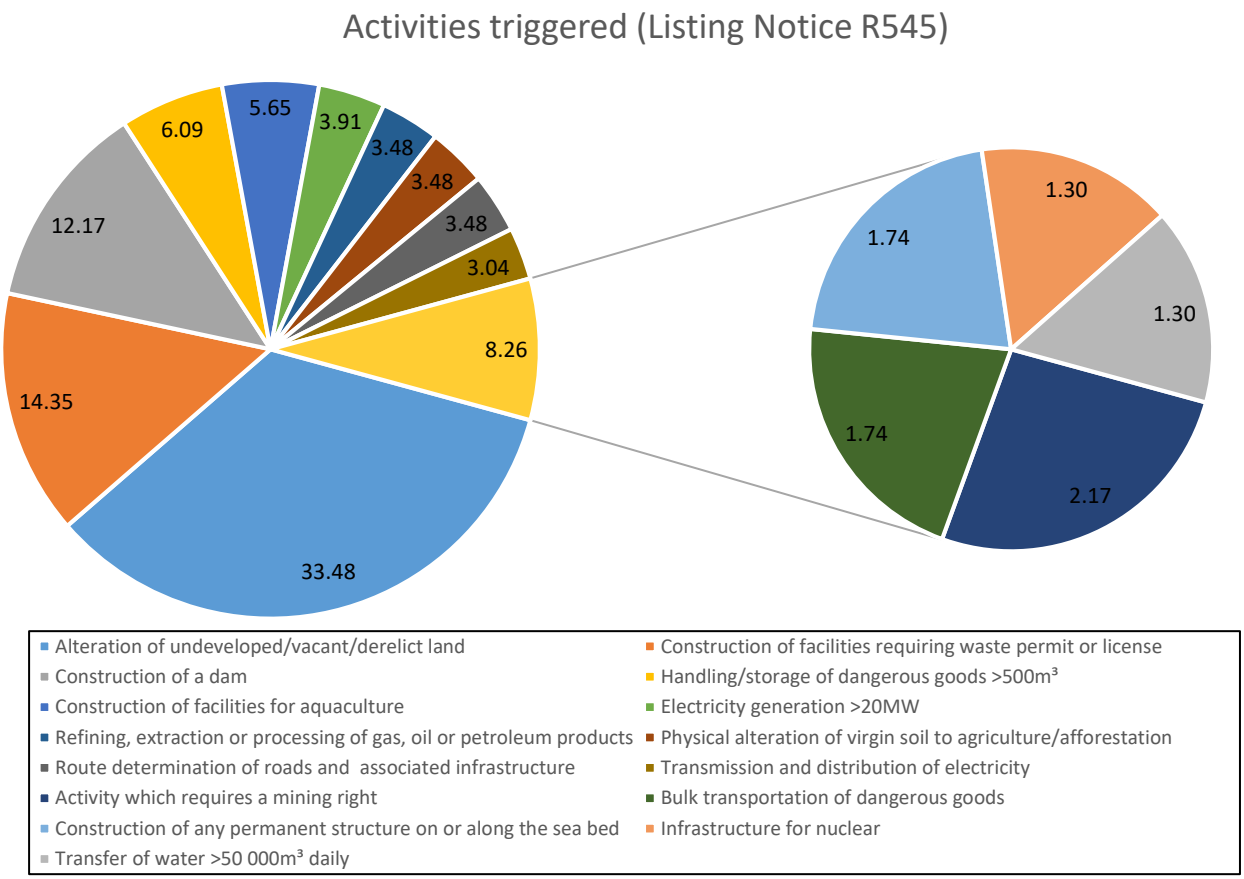


Figure 4.17: Activities triggered under Listing notice R545

Figure 4.17 displays the activities triggered under listing notice R545 during 2010 NEMA regulations. The results indicate that the alteration of undeveloped/vacant/derelict land (33.48%); construction of facilities requiring waste permit or license (14.35%); construction of a dam (12.17%); handling/storage of dangerous goods >500m³ (6.09%) and the construction of facilities for aquaculture (5.65%) are the most triggered activities of listing notice R545.

Activities most triggered (Listing Notice R545)

Description	Percentage of incidents
Alteration of undeveloped/vacant/derelict land	33.48
Construction of facilities requiring waste permit or license	14.35
Construction of a dam	12.17
Handling/storage of dangerous goods >500m³	6.09
Construction of facilities for aquaculture	5.65
	71.74%

Table 4.4: Activities most triggered under Listing Notice R545

Table 4.4 indicate the five most triggered activities under listing notice R545 during the 2010 NEMA regulations. These five activities are responsible for 71.74% of projects subject to a S/EIA during the 2010 NEMA regime.

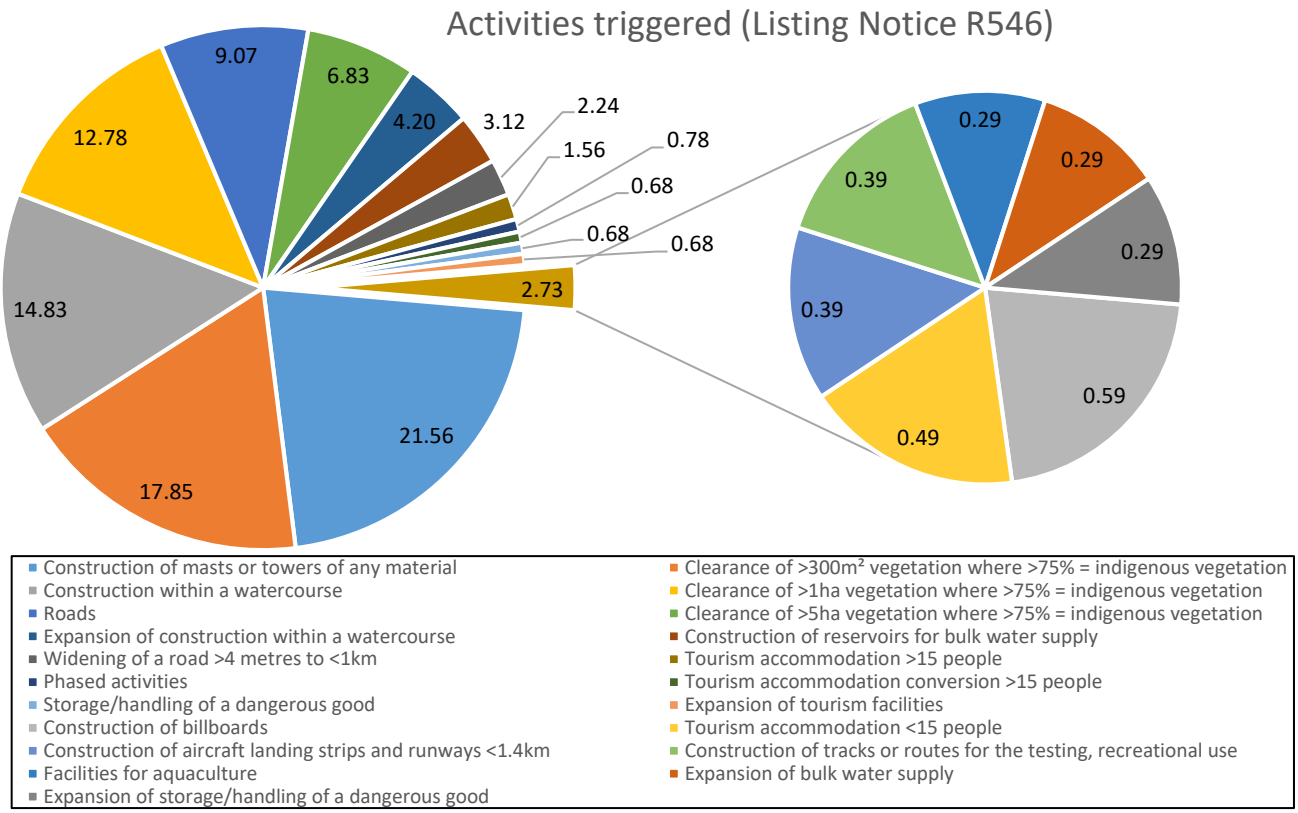


Figure 4.18: Activities triggered under Listing notice R546

Figure 4.18 displays the activities triggered under listing notice R546 during 2010 NEMA regulations. The results indicate that the construction of masts or towers of any material (21.56%); clearance of more than 300m² vegetation where more than 75% consists of indigenous vegetation (17.85%); construction within a watercourse (14.83%); clearance of more than 1ha vegetation where more than 75% consists of indigenous vegetation (12.78%) and the construction of roads (9.07%) are the most triggered activities of listing notice R545.

Activities most triggered (Listing Notice R546)

Description	Percentage of incidents
Construction of masts or towers of any material	21.56
Clearance of >300m² vegetation where >75% = indigenous vegetation	17.85
Construction within a watercourse	14.83
Clearance of >1ha vegetation where >75% = indigenous vegetation	12.78
Roads	9.07
	76.10%

Table 4.5: Activities most triggered under Listing Notice R546

Table 4.5 indicate the five most triggered activities under listing notice R546 during the 2010 NEMA regulations. These five activities are responsible for 76.10% of projects subject to a BA during the 2010 NEMA regime.

4.2.2.4 Activity breakdown analysis 2014 NEMA Regulations

This section will commence the activity breakdown analysis of the activities requiring EIAs in the Western Cape Province during the 2014 NEMA regime.

4.2.2.4.1 General pattern of activities triggered

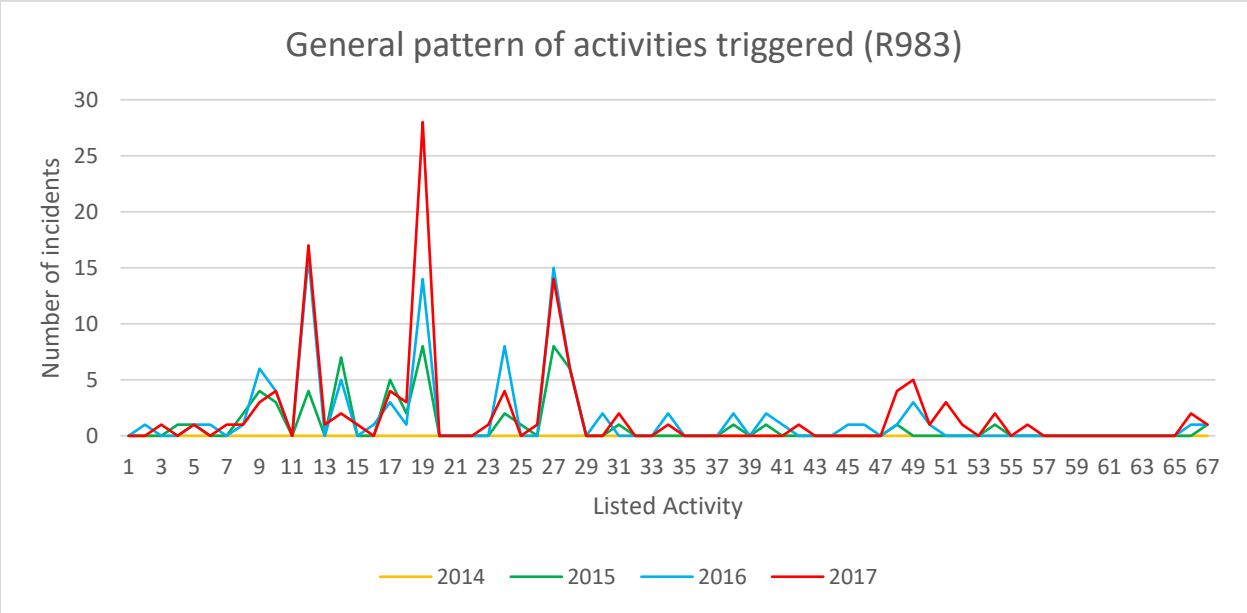


Figure 4.19: General pattern of activities triggered under Listing notice R983 (Activities subject to a BA)

Figure 4.19 demonstrates the general pattern of activities triggered under listing notice R983 during the 2014 NEMA regime. The results of figure 4.19 indicate a clear pattern between the types of activities triggered throughout 2014 – 2017. It should be noted that the year 2014 only included two EIA applications under the 2014 NEMA regulations and that the data did not state the activities triggered. Listed activities 12; 14; 19; 24; 27 and 28 shows spikes in each year, indicating a large number of projects being subject to a BA due to these activities. These activities will be discussed in depth in section 4.2.2.4.2. There is a very large number of listed activities with very few or no occurrences.

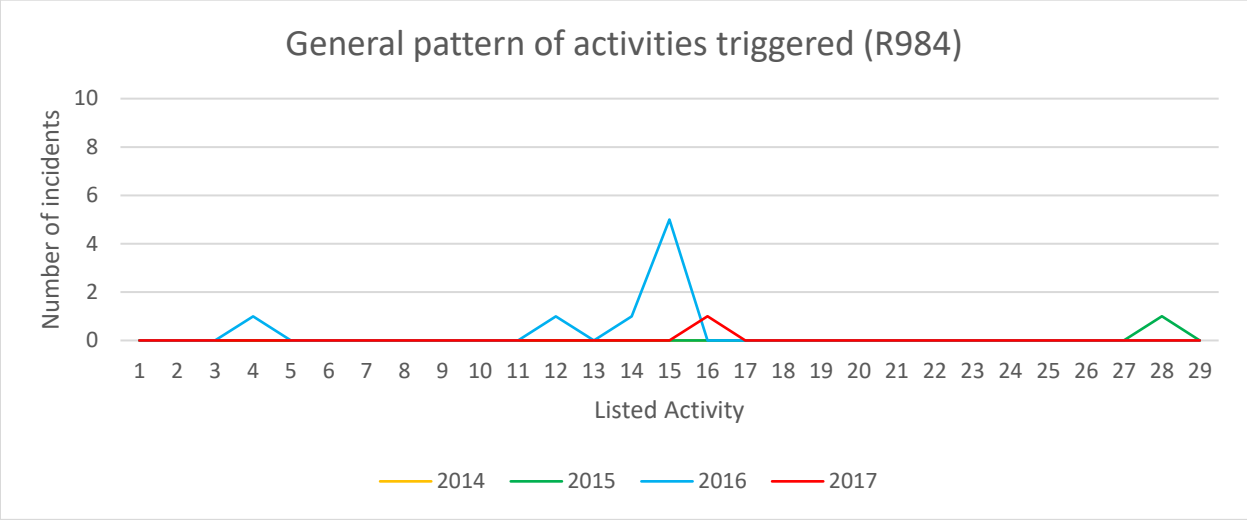


Figure 4.20: General pattern of activities triggered under Listing notice R984 (Activities subject to a S/EIA)

Figure 4.20 demonstrates the general pattern of activities triggered under listing notice R984 during the 2014 NEMA regime. When looking at the results of figure 4.20, it is clear that very few activities were triggered. The results show that during the 2014 NEMA regime, only listed activities 4; 12; 14; 15; 16 and 28 were triggered during the 2014 NEMA regime. These activities will be discussed in more detail in section 4.2.2.4.2. There is a large number of listed activities with no occurrences.

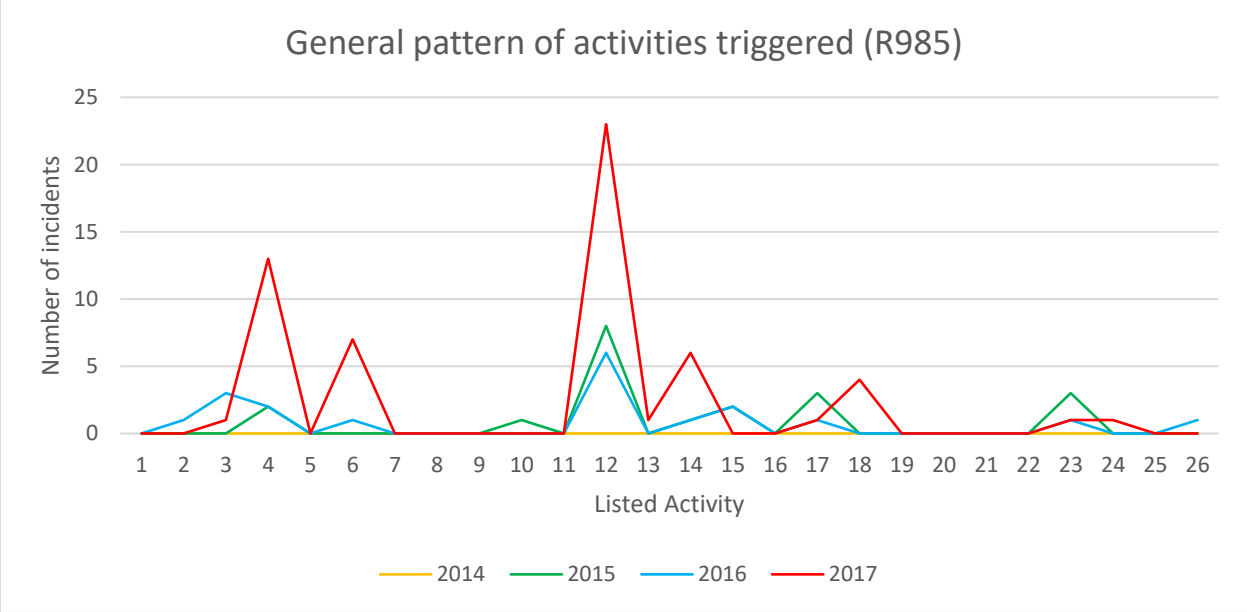


Figure 4.21: General pattern of activities triggered under Listing notice R985 (Activities subject to a BA)

Figure 4.21 demonstrates the general pattern of activities triggered under listing notice R985 during the 2010 NEMA regime. The results of figure 4.21 indicate a clear pattern between the types of activities triggered throughout 2014 - 2017 although some differences do occur between the years. Listed activities 4; 8; 12; 14; 15; 17 and 23 shows spikes in each year, indicating a large number of projects being subject

to a BA due to these activities. These activities will be discussed in depth in section 4.2.2.4.2rr. There is a large number of listed activities with no occurrences.

4.2.2.4.2 Activities most triggered during the 2014 NEMA Regulations

Figure 4.22 displays the activities triggered under listing notice R983 during 2014 NEMA regulations. The results indicate that the infilling/depositing in a watercourse; sea; seashore etc. (17.99%); clearance of >1ha to <20ha indigenous vegetation (13.31%); construction within a watercourse (13.31%); transformation of land (6.47%); expansion of construction within a watercourse (5.04%); storage/handling of dangerous goods >80m³ to <500m³ (5.04%) and construction of roads (5.04%) are the most triggered activities of listing notice R983.

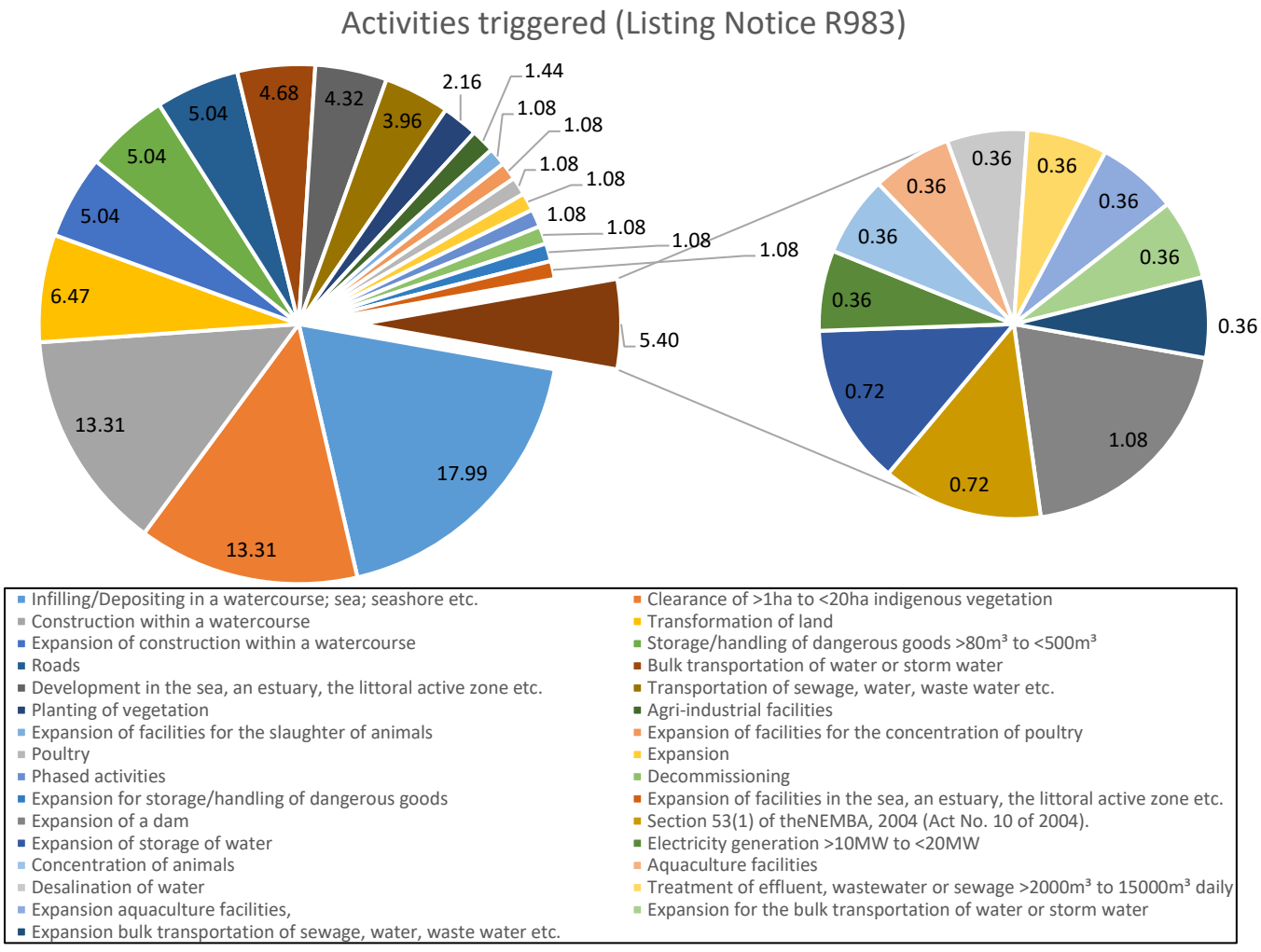


Figure 4.22: Activities triggered under Listing notice R983

Activities most triggered (Listing Notice R983)

Description	Percentage of incidents
Infilling/Depositing in a watercourse; sea; seashore etc.	17.99
Clearance of >1ha to <20ha indigenous vegetation	13.31
Construction within a watercourse	13.31
Transformation of land	6.47
Expansion of construction within a watercourse	5.04
Storage/handling of dangerous goods >80m³ to <500m³	5.04
Construction of roads	5.04
	66.19%

Table 4.6: Activities most triggered under Listing Notice R983

Table 4.6 indicate the seven most triggered activities under listing notice R983 during the 2014 NEMA regulations. These seven activities are responsible for 66.19% of projects subject to a BA during the 2014 NEMA regime.

Activities most triggered (Listing Notice R984)

Description	Percentage of incidents
Clearance of >20ha indigenous vegetation	50
Development of a dam	10
Activity requiring an atmospheric emission license	10
Handling/storage of dangerous goods >500m³	10
Development of railway lines	10
Development of an island or other structure on, below or along the sea bed	10
	100.00%

Table 4.7: Activities most triggered under Listing Notice R984

Due to the lack of variety of activities triggered under R984, no pie chart will be drawn up. Table 4.7 indicate the six activities that were triggered under listing notice R984 during the 2014 NEMA regulations. These activities are: the clearance of >20ha indigenous vegetation (50%); development of a dam (10%); activities requiring an atmospheric emission license (10%); handling/storage of dangerous goods >500m³ (10%); development of railway lines (10%) and development of an island; anchored platform or other structure on, below or along the sea bed (10%). These six activities are responsible for 100% of projects subject to a S/EIA during the 2014 EMA regime.

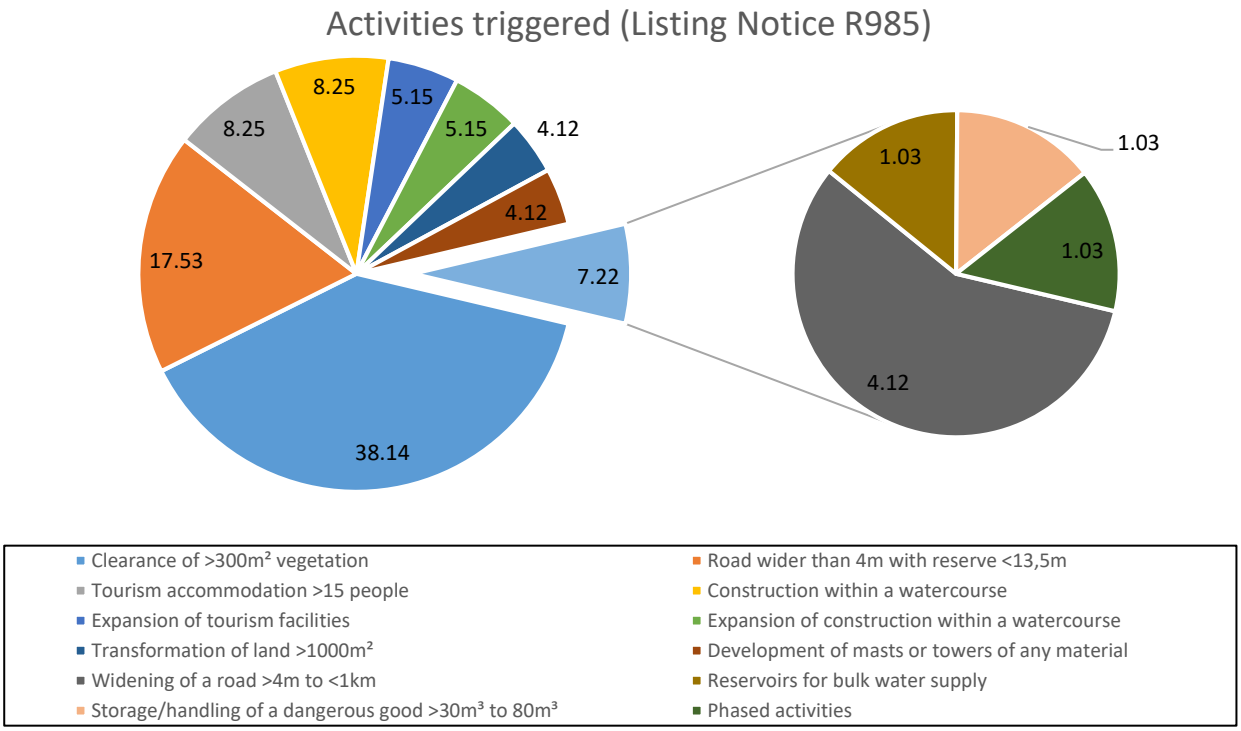


Figure 4.23: Activities triggered under Listing notice R985

Figure 4.23 displays the activities triggered under listing notice R985 during 2014 NEMA regulations. The results indicate that the clearance of >300m² vegetation (38.14%); development of a road wider than 4m with reserve <13,5m (17.53%); tourism accommodation >15 people (8.25%); construction within a watercourse (8.25%); expansion of tourism facilities (5.15%) and expansion of construction within a watercourse (5.15%) are the most triggered activities of listing notice R985.

Activities most triggered (Listing Notice R985)

Description	Percentage of incidents
Clearance of >300m² vegetation	38.14
Road wider than 4m with reserve <13,5m	17.53
Tourism accommodation >15 people	8.25
Construction within a watercourse	8.25
Expansion of tourism facilities	5.15
Expansion of construction within a watercourse	5.15
	82.47%

Table 4.8: Activities most triggered under Listing Notice R985

Table 4.8 indicate the six most triggered activities under listing notice R985 during the 2014 NEMA regulations. These six activities are responsible for 82.47% of projects subject to a BA during the 2014 NEMA regime.

4.2.2.5 Differences in the prominent activities between the NEMA regimes

This section focuses on the differences in the activities most triggered during each NEMA regime. Table 4.9 on page 60, displays a combined table of the most activities triggered in each regime. The five most prominent activities triggered throughout all regimes can be categorised as:

- 1 - Construction within a watercourse/Construction of a dam
- 2 - Transformation of land/Clearance of indigenous vegetation
- 3 - Construction of roads
- 4 - Transportation/Treatment of sewage; water and storm water
- 5 - Handling/Storage of dangerous goods

A discussion on these five categories follow.

4.2.2.5.1 Construction within a watercourse/Construction of a dam

It is clear that during all regimes an abundance of projects triggered activities regarding the construction within a watercourse or the construction of a dam. Activities subject to a BA regarding construction within a watercourse were prominently triggered through all regimes. Activities including the construction of a dam were triggered prominently in each regime, subjecting projects to a S/EIA. Both listing notices regarding activities subject to a BA based in sensitive areas, indicate that activities including the construction within a watercourse were prominent.

4.2.2.5.2 Transformation of land/Clearance of indigenous vegetation

The transformation of land and clearance of indigenous vegetation feature prominently in all the regimes. 2006 NEMA show a higher percentage of activities regarding the transformation of land or clearance of indigenous vegetation being triggered and subject to a BA. Looking further at table 4.9 it can be seen that during the 2006, 2010 and 2014 NEMA regulations, activities regarding the transformation of land or clearance of indigenous vegetation that were subject to a S/EIA, were triggered prominently.

Furthermore, activities regarding the transformation of land or clearance of indigenous vegetation were also triggered prominently during the 2010 and 2014 NEMA regulations, subjecting projects to a BA, by both the activity as well as the locality of a proposed development.

4.2.2.5.3 Construction of roads

The construction of roads was prominent in triggering activities subject to a BA throughout all NEMA regimes. However, regarding listing notice 1 of each NEMA regime, the construction of roads was much more prominent during the 2006 NEMA than 2010 and 2014 NEMA regimes. The reason for this can be as a result of the activity description and alteration of the thresholds between the 2006 NEMA and 2010 and 2014 NEMA regulations. The 2006 NEMA thresholds were a road wider than 4 meters or a reserve wider than 6 meters, whereas the 2010 and 2014 NEMA thresholds referred to a road wider than 4 meters or a reserve wider than 13.5 meters. The 2010 and 2014 NEMA also included additional activities within listing notice 3 regarding the construction of roads.

The only prominent activity subject to a S/EIA regarding roads was triggered during the 2006 NEMA regulations. This activity includes the route determination of roads and associated physical infrastructure and was not prominent during the other two regimes. 2010 and 2014 NEMA regulations both saw "*roads wider than 4 meters or a reserve wider than 13.5 meters*" as a prominent trigger in sensitive areas.

4.2.2.5.4 Transportation/Treatment of sewage; water and storm water

With an 8.75% occurrence during the 2006 NEMA regime, 7.39% in 2010 and 4.68% during the 2014 NEMA regime, the transportation or treatment of sewage, water and storm water occurred prominently in all regimes with a decreasing slope. As an activity subject to a BA the thresholds and descriptions regarding the transportation of sewage, water and storm water varied between the 2006 NEMA regulations and 2010 and 2014 NEMA regulations. All regimes indicate the thresholds of pipelines with an internal diameter of 0,36 metres or more; or a peak throughput of 120 litres per second or more. In addition to this, the 2010 and 2014 NEMA regulations also included the specification of facilities or infrastructure exceeding 1000 metres in length and the exclusion of facilities or infrastructure inside a road reserve and construction occurring within urban areas but further than 32 metres from a watercourse, measured from the edge of the watercourse.

During the 2006 NEMA regime the treatment of effluent, wastewater or sewage with an annual throughput capacity of 15 000 cubic metres or more were a prominent activity subject to a S/EIA with 6.97% occurrences. The 2006 NEMA regulations had a much broader approach to waste in general with an activity stating "*the construction of facilities or infrastructure for any process or activity which requires a permit or license in terms of national or provincial legislation governing the generation or release of emissions, pollution or effluent*". This activity resulted in 14.35% of activity subject to a S/EIA during the 2010 NEMA regime. In the 2014 NEMA regulations an activity identical to the one listed in 2006 was reintroduced and had no occurrences during the 2014 NEMA regime. The 2014 regulations also had an additional activity similar to the activity listed in 2010 regarding the "*development of facilities or infrastructure for any process or activity which requires a permit or licence in terms of national or provincial legislation governing the generation or release of emissions, pollution or effluent*". This activity also had no occurrences during the 2014 NEMA regime. Looking at the results of all three regimes, it appears to be the better option to include separate detailed activities than a single broad activity.

4.2.2.5.5 Handling/Storage of dangerous goods

The Handling/Storage of dangerous goods were found prominent during all regimes regarding activities subject to a S/EIA. However, the 29.10% triggered during the 2006 NEMA regime is much higher than the 6.09% during the 2010 NEMA and 10.00% during the 2014 NEMA regimes. The reason for this can be as a result of the activity description. The 2010 and 2014 NEMA regulations describes the activity as "*the construction of facilities or infrastructure for the storage, or storage and handling of a dangerous good, where such storage occurs in containers with a combined capacity of more than 500 cubic metres*", whereas the 2006 NEMA regulations had a much broader description stating "*the construction of filling stations, including associated structures and infrastructure, or any other facility for the underground storage of a dangerous good, including petrol, diesel, liquid petroleum gas or paraffin*". Not only does the 2010 and 2014 NEMA consist of a more specified description and additional thresholds to the size of the storage units, but both regulations also have additional activities regarding the refining, extraction or processing of gas, oil or petroleum products.

	2006 NEMA		2010 NEMA		2014 NEMA	
	Description	*%*	*Description*	*%*	*Description*	*%*
BA Process	Transformation of land	14.21	Construction within a watercourse	26.09	Infilling/Depositing in a watercourse; sea; seashore etc.	17.99
	Construction of roads	14.07	Infilling/Depositing in a watercourse; sea; seashore etc.	19.87	Clearance of >1ha to <20ha indigenous vegetation	13.31
	Transportation of sewage; water and storm water	8.75	Transformation of land	10.04	Construction within a watercourse	13.31
	Indigenous vegetation removal (including within endangered ecosystem)	8.64	Transportation of sewage; water and storm water	7.39	Transformation of land	6.47
	Construction within a watercourse	8.31	The expansion of a dam; channels; canals; jetties etc.	6.96	Expansion of construction within a watercourse	5.04
					Storage/handling of dangerous goods >80m³ to <500m³	5.04
					Construction of Roads	5.04
S/EIA Process	Development area >20ha	30.53	Alteration of undeveloped/ vacant/derelict land	33.48	Clearance of >20ha indigenous vegetation	60.00
	Underground storage of a dangerous good	29.10	Construction of facilities requiring waste permit or license	14.35	Development of a dam	20.00
	Construction of a dam	7.58	Construction of a dam	12.17	Activity requiring an atmospheric emission license	20.00
	Sewage treatment >15000m³	6.97	Handling/storage of dangerous goods >500m³	6.09	Handling/storage of dangerous goods >500m³	10.00
	Route determination of roads and associated physical infrastructure	5.33	Construction of facilities for aquaculture	5.65	Development of railway lines	10.00
					Development of an island or other structure on, below or along the sea bed	10.00
BA Sensitive Areas			Construction of masts or towers of any material	21.56	Clearance of >300m² vegetation	38.14
			Clearance of >300m² vegetation where >75% = indigenous vegetation	17.85	Road wider than 4m with reserve <13,5m	17.53
			Construction within a watercourse	14.83	Tourism accommodation >15 people	8.25
			Clearance of >1ha vegetation where >75% = indigenous vegetation	12.78	Construction within a watercourse	8.25
			Road wider than 4m with reserve <13,5m	9.07	Expansion of tourism facilities	5.15
					Expansion of construction within a watercourse	5.15

Table 4.9: Activities most triggered (2006 NEMA to 2014 NEMA)

4.2.2.6 Comparative analysis

This section will conduct a comparative analysis between the types of activities requiring EIAs during the 2006 NEMA Regulation in the Western Cape province and the results of previous studies as discussed in section 3.3.2, conducted by Welman (2009) focussing on screening in the Free State province between the 1997 and 2006 EIA Regulations. The following activities were found to be prominently triggered in the Free State Province under the 2006 NEMA regulations.

Activities prominently triggered under listing notice R386 include:

- The transformation of land
- Construction of masts
- Concentration of animals
- Construction of roads

Activities prominently triggered under listing notice R387 include:

- Development bigger than 20 hectares
- Underground storage of a dangerous good
- Sewage treatment more than 15000 m^3 per annum

Firstly, the prominent activities during the 2006 NEMA regime in the Free State province, that did not occur prominently in the Western Cape province are the construction of masts and the concentration of animals. The concentration of animals is linked to a more rural/farm-based environment, thus it is safe to say that it is an understandable result that the activity was less prominent in the Western Cape province. Although the construction of masts was not identified as one of the five most prominent activities triggered in the Western Cape Province, it was however the sixth most triggered activity within the province during the 2006 NEMA regime. It should also be noted that with the third listed activity introduced by the 2010 NEMA regime, the listed activity regarding the construction of masts or towers were removed from the first listing notice and included into listing notice three, only triggering EIAs in sensitive areas.

During the 2006 NEMA regime, the activities regarding the transformation of land and construction of roads were prominent in both the Western Cape and Free State provinces. Activities subject to a full S/EIA that were prominent in the Free State province during the 2006 NEMA regime correlate very closely to those activities prominently triggered in the Western Cape province at that time.

Although the activities prominently triggered within Western Cape province are more or less similar during the other two regimes, due to the lack of information for the Free State province regarding the 2010 NEMA and 2014 NEMA regulation it is not clear how the prominent activities changed throughout the evolution of the regimes. One can assume that the Free State province could reflect similar changes such as the Western Cape province, but doing so without sufficient data will introduce the possibility of inaccurate statements. It will thus be beneficial to launch similar studies in other provinces in order to accurately evaluate the screening mechanism within South Africa.

4.2.2.7 Summary of activities triggered

Section 4.2.2 focused on the types of activities that were triggered during the 2006, 2010 and 2014 NEMA regimes. Each NEMA regime demonstrated a consistent general pattern of activities triggered per year under each listing notice. This indicates a general pattern within the developmental needs for the Western Cape province during the regimes. However, a number of activities were found to not have been triggered once or very seldom during a NEMA regime.

During the regimes, activities frequently triggered together were also identified. These common trigger combinations revealed activities often walking hand in hand. It was found that during all NEMA regimes, activities regarding the construction within a watercourse or the construction of a dam; transformation of land or clearance of indigenous vegetation; the construction of roads; the transportation or treatment of sewage; water and storm water and the handling or storage of dangerous goods were triggered prominently. A positive correlation was found between the activities prominently triggered during the 2006 NEMA regulations in the Western Cape province and the activities prominently triggered in the Free State province.

The prominent occurrence of a few activities throughout all regimes indicate that although the number of EIA applications (and the percentage of projects subject to a full S/EIA) decreased after the screening mechanism experienced evolution regarding the types, number and description of activities and thresholds within the listing notices, a small number of activities still triggers the majority of EIAs. This is clear evidence of positive growth of the screening mechanism from the 2006 NEMA to 2014 NEMA regulations.

4.3 How has the screening mechanism evolved

This section will focus on how the screening mechanism has evolved from the 2006 NEMA Regulations to the 2014 Regulations in order to address research question 3, namely:

3. How has screening evolved from the previous EIA regimes?

The results from the semi-structured interviews as discussed in Chapter 2, will be incorporated into this discussion in order to fill the gaps that were identified during the data analysis and activity breakdown analysis in section 4.2.1 and section 4.2.2. Firstly, section 4.3.1 will evaluate the number of EIAs followed by a discussion regarding the evaluation of the types of activities triggered in section 4.3.2. This section concludes with some closing remarks from the participants in section 4.3.3.

4.3.1 Evaluating the number of EIAs

4.3.1.1 Number of EIA Applications

Section 4.2.1.1 identified a major decrease in the number of EIA applications from the ECA to 2006 NEMA regime. Although this could indicate that the larger and more detailed screening mechanism of the NEMA regulations acted as a much more sufficient filtering tool as to the ECA regulations, numerous other reasons could be assigned to this decrease. According to Elston (2017), this could have been the direct result of the amendment of the listed activities. 2006 NEMA introduced thresholds which only if exceeded the activity became listed. Many activities listed under ECA also were no longer listed under NEMA. Jones (2017) stated that the decrease was primarily due to the better understanding of the types of development and activities requiring EIA and environmental approval within the 2006 NEMA regulations.

However, decision-making authorities started to reject applications that did not by law require authorisation by them (Jones, 2017). This could be directed to the introduction of other legislations at that time. For example, with the introduction of the National Environmental Management Waste Act (NEM:WA) most waste related activities no longer required an Environmental Authorisation in terms of NEMA, they now required a waste license in terms of the NEM:WA (Elston, 2017).

The NEMA regulations according to Nel (2017) clearly defined grey areas in ECA. Municipalities also understood the regulations better and projects without the necessary EIA process were less. Screening was made much clearer when compared to ECA, although it still required a lot of input from the Environmental Authorities (Nel, 2017).

Another finding in regard to the number of EIA applications indicated that between the 2006 NEMA regulations and 2010 NEMA regulations there was only a slight decrease in the number of EIA applications received. The question was asked: if the number of EIA applications between the 1997 ECA regulations and 2006 NEMA regulations decreased so rapidly after introducing more detailed and a larger number of activities, why is there only such a slight decrease between the 2006 NEMA regulations and the 2010 NEMA regulations after introducing an abundance of activities?

According to Nel (2017) the 2010 NEMA regulations still had challenges such as gaps in the wording of some listed activities. 2010 NEMA marked the introduction of the third list of activities, regarding sensitive

areas. The third list of activities also represented activities which were included in the previous regulations, but only applied to certain geographical areas, thus reducing the need for authorisation for many activities (Rodgers, 2017). However, the sensitive areas were generally not well defined, so in many cases this probably led to a lot more unnecessary application (Jones, 2017). According to Anon (2017b) many of the EIA applications for 2010 NEMA could also be directed to expansions of activities rather than new projects. This explains why there were only a slight decrease in the number of EIA applications between the 2006 NEMA regulations and 2010 NEMA regulations

The number of applications between the 2010 NEMA regime and the 2014 NEMA regime decrease dramatically. This leads to the question, why were there a larger decrease in applications between 2010 NEMA and 2014 NEMA than 2006 NEMA and 2010 NEMA although more amendments were made to the 2010 listed activities? According to Jones (2017) and Nel (2017) this dramatic decrease was the result of more specific activities, clearly defined thresholds and the removal of activities regarded as unnecessary, which in effect resulted in projects with insignificant environmental impacts being able to go ahead without an EIA process. This is a clear indication that it is not just mere the number of activities listed, but the thresholds assigned to the activities that affect the manner by which the activities are triggered. It may be argued that the improvement of terminology in the 2014 NEMA regulations guided the participating parties to a better understanding of the thresholds. This can also be the result of small adaptations from the 2010 to 2014 NEMA regulations, thus not presenting the participating parties with unnecessary challenges during the transition between the two regimes (Jones, 2017; Nel, 2017; Anon, 2017b).

Other contributors to this decrease, according to Rodgers (2017), can include the introduction of the application fees, which lead applicants to think more carefully before applying for an EIA. Another factor to consider is confusion regarding timeframes which lead to the lapse of applications, resulting in the resubmission of an application and thus increasing the number of applications. One should also consider that in a developing country such as South Africa, development does not take place at a consistent rate, but rather at a rate that increases and decreases according to the economic status of certain time periods etc. (Rodgers, 2017). Anon (2017b) added that the economic depression resulted in a slowdown of development in the country, therefore less projects required EIAs.

4.3.1.2 Number of applications subject to Section S24G

The data analysis indicated a fair decrease in the number of applications subjected to a S24G from the 2006 NEMA regulations to the 2014 NEMA regulations. The most recognised explanation for this decrease is the greater awareness by developers of the need for EIAs and environmental authorisation, as well as more severe fines and alternative implications such as criminal charges for not obtaining authorisation (Jones, 2017; Anon, 2017a; Anon, 2017b; Nel, 2017; Elston, 2017). According to Nel, (2017), EIAs were previously seen as huge stumbling blocks and wasting a lot of time by developers, now more streamline EIA processes and set timeframes have also helped with compliance and the screening process has certainly assisted with this. The better-defined regulations played a big role in assisting whether a project should apply for an EIA or not (Nel, 2017). The decrease in the number of S24G applications can be a result of a more effective screening process that reduces the number of projects with potential significant impacts that slip through.

4.3.1.3 Number of Basic Assessments vs Scoping and EIAs

A decrease was evident in the number of applications that were subject to S/EIAs from 2006 to 2014 NEMA regulations, meaning that more applications are subject to a BA than a S/EIA. The question however is whether this result indicates that less projects with lower potential significant impacts are subject to a S/EIA or are there projects with higher potential significant impacts not receiving the necessary S/EIA? According to Jones (2017), one of the main reasons for this decline is authorities recognizing that the impacts of many developments can be assessed through a simpler BA, and that only really complex projects, with a wide range for potentially significant impacts, or the potential to raise substantial public concern would require a more extensive S/EIA process. Nel (2017) stated that although the number of S/EIAs are less, some BAs are now just more inclusive and in depth and most projects can be assessed by a BA adequately (Anon, 2017b). Rosenthal (2017) states that while there are now more basic assessments than EIA's the amount of work required to do a Basic Assessment with all the regulatory requirements is now often more than a full EIA was in the early days, which rather defeats the object of a Basic Assessment.

Screening made it much easier to distinguish between projects which may have higher or lower significant environmental impacts with clearly defined listed activities and thresholds that are more selective and included more widely within the regulations to determine which process must be followed for authorisation (Nel, 2017; Anon, 2017b; Elston, 2017). The screening mechanism has been positively refined in order to accurately divide environmental assessments into BAs and/or S/EIAs (Anon, 2017a). The changes in listed activities has aimed to streamline the EIA process while focusing on those activities which are most likely to have significant impacts on the environment, but also exclude activities that are less likely to have significant impacts on the environment. According to Jones (2017) over time, more exclusions have been introduced, resulting in certain infrastructure no longer triggering an EIA if for example inside an urban area. Other listed activities have been rephrased to be more specific and thus "*eliminating the number of applications required on a technicality*" (Jones, 2017).

Another reason for the decrease in S/EIAs also include applicants trying to "*avoid doing an S/EIA by developing just under the specified threshold* (Rodgers, 2017). For example, "*In the rural areas where municipal planning requirements are mostly disregarded, developments are considered one stand at a time, instead of planning an industrial site with appropriate infrastructure, each new owner tries to remain under a threshold*" (Rodgers, 2017). Elston (2017) suggests that one should also keep in mind that projects associated with waste activities and air emissions for example are no longer regulated under NEMA but needs to be authorised by additional legislation. This resulted in many activities requiring only a licence rather than environmental authorisation in terms of NEMA.

4.3.2 Evaluating the types of activities triggered

4.3.2.1 Activities triggered in the Western Cape Province

The data analysis identified five activities triggered most prominent within the Western Cape Province throughout all regimes, these activities include:

- Construction within a watercourse/Construction of a dam;
- Transformation of land/Clearance of indigenous vegetation;
- Construction of roads;
- Transportation/Treatment of sewage; water and storm water;
- Handling/Storage of dangerous goods.

Results from the comparative analysis between the types of activities requiring EIAs during the 2006 NEMA Regulation in the Western Cape province and the results of the study conducted by Welman (2009) focussing on screening in the Free State province between the 1997 and 2006 EIA Regulations indicated close similarity regarding the types of activities triggered during the 2006 NEMA regulations. According to the participants of the semi-structured interviews, these results also correlate positively to the activities triggered most prominently during their practise in other provinces such as the Northern Cape, Gauteng, North West and Limpopo Province (Elston, 2017; Rodgers, 2017; Nel, 2017; Anon, 2017a; Anon, 2017b).

The construction of masts was also identified as one of the most prominent activities triggered within the Western Cape and Free State Provinces during the 2006 NEMA regulations. According to Rodgers (2017) this was also the case within the Limpopo Province during the 2006 NEMA regulations.

The data analysis and the study conducted by Welman (2009) identified the transformation of land or clearance of indigenous vegetation for developments larger than 20 hectares as the most prominent activities resulting in projects being subject to a S/EIA process within the Western Cape and Free State Provinces during all regimes. According to Elston (2017), Rodgers (2017), Nel (2017) and Anon (2017a) the transformation of land or clearance of indigenous vegetation also occurred prominently during their practise within the Limpopo, Northern Cape, Gauteng and North-West Provinces. However, similar research should be conducted in other provinces to indicate whether this is in fact the case in other provinces.

According to the participants of the semi-structured interviews, these prominent triggered activities are in their opinion the activities most likely to have significant environmental impacts (Anon, 2017; Nel, 2017; Jones, 2017) and that "*with the changes within the screening mechanism over time, this is certainly moving in the right direction*" (Jones, 2017).

However, according to Rodgers (2017), the rate at which urban areas are expanding certain areas are running out of indigenous vegetation to support ecosystems. Considering the number of applications made within Critical Biodiversity Areas in the provinces such as the Limpopo Province there is little chance to meet conservation targets in the foreseeable future. This emphasises the need for screening to focus on cumulative impacts and regional specific activities which is currently not addressed in the screening mechanism.

4.3.2.2 State of the listed activities and thresholds under 2014 NEMA

Although not without challenges, the listed activities and thresholds within the screening mechanism under 2014 NEMA regime can be considered as more effective than in previous regimes (Nel, 2017; Anon, 2017; Rodgers, 2017; Anon, 2017; Elston, 2017; Jones, 2017). According to Nel (2017) the thresholds within the 2014 NEMA regulations are definitely better defined and more streamlined, but still contains a few mistakes. According to Rodgers (2017), another challenge includes the interpretation of some activities. Rodgers (2017) stated that "*the inclusion of "related operation" with certain activities, effectively introduces a significant requirement for compliance, which isn't implemented*".

A common thought by the participants of the semi-structured interviews revealed that the clarity of the thresholds within the 2014 NEMA regulations simplifies the screening process (Anon, 2017a; Elston, 2017). The thresholds make it much simpler to determine whether a listed activity is applicable or not, screening out projects that are less likely to have significant impacts and indicating the intensity of assessment required for a project by applying a standard to what types of activities require a BA and/or S/EIA (Anon, 2017a; Jones, 2017).

Some suggestions made by the participants of the semi-structured interviews to improve the screening process include: effectiveness

- The introduction of additional activities regarding developing technologies such as renewable energy (Jones, 2017);
- a clear definition of indigenous vegetation (Anon, 2017b);
- an interpretation guideline document by Department of Environmental Affairs (Nel, 2017);
- the establishment of screening as a mandatory process (Elston, 2017); and
- to consider mining activities in the exact same manner as other activities (Anon, 2017b).

4.3.3 Closing remarks from the participants

4.3.3.1 Current state of the screening mechanism

The screening mechanism is considered as a very effective and useful tool as part of a pre-application consultation and even more so with the introduction of geographical areas for certain activities that was a necessity (Nel, 2017; Anon, 2017a; Elston, 2017; Jones, 2017; Rodgers, 2017). According to Elston (2017) some consider screening only as additional cost and time consumption to the EIA process, so many choose to avoid the screening process. But especially now with an additional application fee, one may also save time and costs on a EIA process by screening beforehand to determine whether it is a good idea to proceed with the application. The screening mechanism within the 2014 NEMA regulations, had a positive effect on the costs of the EIA process, making it a bit more affordable in cases where only a BA is required where in the past a S/EIA would have been required (Anon, 2017a).

4.3.3.2 Challenges facing the current screening process

According to Rodgers (2017), the information on which decisions are made during the screening phase, is mostly on a scale that bears little relevance on site specific conditions such as "*the availability of ground water and the species present on site is hardly ever confirmed*". Rodgers (2017) further stated that the concept of thresholds is deliberately misused due to pressure from the government to approve

developments for job opportunities which overshadow any effective mitigation of impacts on the environment.

The introduction of the 2014 NEMA regulations had good intentions, but not all industries were taken into consideration during the evolution of the regulations. The lack of an interpretation document leaves room for mistakes and missing activities. Each province/municipality interprets the legislation differently (Nel, 2017).

The announcement of additional legislation has made the screening process more complex (Anon, 2017b). The screening process needs to consider other legislations as some listed activities are linked to other environmental legislation (Jones, 2017). For example, many practitioners as well as officials do not consider the threshold of 300m² of vegetation clearance within a critically endangered or endangered ecosystem contained within the National Environmental Management Biodiversity Act (NEM:BA) (Rodgers, 2017). Anon (2017b) states that in a way the 1997 ECA regulations was better because the whole project was authorised not only the listed activities.

The lack of announcement of screening as a mandatory process is also considered as an issue currently (Elston, 2017). According to Rosenthal (2017), informal screening for all BAs are now indirectly required as a formal pre-application process, but written into the regulations to make it seem as if it is not strictly required.

4.3.3.3 Concluding thoughts from the participants

The screening mechanism is changing for the better (Anon, 2017a). In previous regimes the screening tool was very seldom used, because the Draft Scoping Report served the same purpose and the developer could decide if he wanted to proceed with the EIA process based on the findings of this report (Elston, 2017; Jones, 2017). Screening Tool is being used more now under the 2014 Regulations as it can also be used to screen various site alternatives and produce a summary report on the environmental impacts of each site to recommend which are the preferred sites (Elston, 2017).

Since the introduction of timeframes, the screening mechanism was considered as an important tool. With only a certain number of days to submit a Final BAR or Final EIR once the application form is received by the Department, if the Final Reports are not submitted by the required date, the application lapses and will require the applicant to resubmit and start the EIA process again at high costs (Elston, 2017; Jones, 2017).

Because of this, now detailed screening is done by consulting with the public, authorities and specialists before submitting an application in order to reduce the risk of unresolved issues during the EIA process (Elston, 2017). By doing this the risk of costly and time-consuming delays are reduced by preventing an application from lapsing (Jones, 2017).

According to Rodgers (2017) planning considerations must in some way be incorporated whereby one would target the developments on a larger scale instead of only focussing on the listed activities that need to be assessed and authorised, one should rather focus on the whole project that they are a part of (Anon, 2017b). This will resolve issues such as the tendency of applicants breaking up projects into smaller parts in order to remain below the threshold, resulting in the cumulative impacts not being adequately addressed (Rodgers, 2017). This is therefore not a screening issue, but rather an issue of the integration of screening within the bigger EIA process.

A better integration of environmental law is required within South Africa. According to Rosenthal (2017), the over regulation within environmental legislation results in an unnecessary workload for consultants and the general slowing down of the economy. The integration gaps amongst the various legislation leads to projects which really do need an EIA "*slipping through the NEMA net*". Rosenthal (2017) states that: "*The lesson is that you can't regulate to perfection and at the end of the day, people need to use professional judgment and ethics*".

CHAPTER 5: CONCLUSION AND RECOMMENDATIONS

This chapter will focus on the final conclusions and recommendations made in regard to the overall aim of the research as stated in Section 1.2. This aim states:

> To critically evaluate the screening mechanism within the EIA practice in the Western Cape Province.

This chapter will demonstrate that the overall aim of the research has been achieved through answering the research questions mentioned in Chapter 1, namely:

1. What are the challenges for screening within the EIA process?
2. What types of activities triggered EIAs in the Western Cape Province?
3. How screening evolved from the previous EIA regimes?

Section 5.1 discusses were the screening mechanism fits into the EIA process, followed by the challenges facing the screening mechanism (which refers to research question 1), in section 5.2. Section 5.3 provides an overall conclusion on the screening mechanism within the Western Cape Province by summarising the results of research questions 2 and 3. This chapter concludes with recommendations for further research in section 5.4.

5.1 Screening within Environmental Impact Assessment

As sustainability remains one of the world's main priorities (UN, 2014:40-46), various countries adopted sustainable development as a tool for achieving sustainability (Allen, 1980:23; Goodland & Ledec, 1987:37). That said, EIA can be used as a significant instrument to promote sustainable development and in developing countries such as South Africa, the implementation of an EIA system is a necessity to avoid development to become destructive to the environment (Appiah-Opoku, 2001:59; Glasson *et al.,* 2005:2; Lawrence, 1997:23).

In a comprehensive sense, EIA is an investigatory process applied to determine the environmental impacts that could arise from specific proposed activities by means of assigned criteria. EIA pursues to advise the competent authority about the possible impacts of an activity. It provides an early indication of the likely restrictions or requirements that would be placed on a project by the authorities (George, 1999:187; Nielsen *et al*., 2005:35; Sandham *et al.,* 2008:156; Sandham *et al*., 2005:51; Welman, 2009:10; Weston, 2000:185). Screening is the first phase of the EIA process, aiming to filter the projects in order to emphasise those activities which may have the most potential significant impacts (IAIA, 1999).

The purpose of screening is to determine whether a proposed development requires an environmental assessment and the intensity of the environmental assessment (DEAT, 2002:7). Generally, there are three broad methods of screening. The development-centred or threshold approach, the environment-centred or case-by-case approach and a mixed approach. In short, screening speeds the flow of applications through the system for the purpose of ensuring that valuable governmental resources are primarily used for projects with a significant environmental impact (Welman, 2009:17 & Nielsen *et al*., 2005:39).

5.2 Challenges facing screening within Environmental Impact Assessment

In order to answer research question 1, a literature study was conducted on the challenges facing screening within the EIA process. The following challenges were identified.

5.2.1 Screening challenges faced internationally

International challenges facing screening identified during the literature review include:

- Developing countries adopting environmental legislation within a general environmental law rather than a structured EIA process (Wood, 2003:8);
- Environmental agencies having little power (Wood, 2003:9);
- Unrealistic expectations from developing countries (Wood, 2003:8);
- EIA having very little impact on decision-making due to the mitigation of poverty and starvation being the main goal for many countries (Wood, 2003:9; Kakonge, 1999; Mwalyosi & Hughes, 1997:73); and
- The lack of political will and vision, limited resources and economic status (Briffett, 1999:163; Weaver & Sibisi, 2006; Brito & Verocai, 1999:201).

5.2.2 Screening challenges faced within South African

South African challenges facing screening identified during the literature review include:

- The range of various forms of practice are ever-expanding, containing new literature and additional body of practitioners, often followed by unclear relationships between all other areas of practice (Pope *et al*., 2013:15);
- The guideline based approach also limits the efficiency of impact assessment due to the excessive use of checklists, protocols and standards which reduces the flexibility during decision-making. (Pope *et al*., 2013:16; Kidd & Retief, 2009);
- The determination and implementation of sufficient thresholds to screen out projects without potential significant environmental impacts and/or to screen in projects with potential significant environmental impacts (DEAT, 2002:18; Wood & Becker, 2005:366; Macintosh & Waugh, 2014:1);
- The lack of screening in small projects with potential significant cumulative impacts (Geneletti *et al*., 2017:122);
- Issues being overlooked due to screening taking place prior to engagement with stakeholders (DEAT, 2002:18);
- Poor quality of practice and the inability to undertake effective and adequate screening due to continued capacity constraints by decision-making- and environmental authorities (Pope *et al*., 2013:15; DEAT, 2002:3); and
- The lack of enthusiastic involvement from the government (Glasson *et al*., 2005:2).

The participants of the semi-structured interviews also identified some challenges within the screening mechanism under the 2014 NEMA regulation

Challenges facing the current screening process were identified as:

- Insufficient information gathered during the screening phase regarding the overall EIA (Redgers, 2017);
- The lack of an interpretation document in order to standardise the interpretation of activities amongst all provinces/municipalities (Nel, 2017);
- Activities within the NEMA regulations lapsing with those of additional legislation such as the NEMWA and NEM:BA (Anon, 2017b; Jones, 2017; Rodgers, 2017); and
- The lack of clarity regarding screening as a mandatory process (Elston, 2017; Rosenthal, 2017).

Some suggestions made by the participants of the semi-structured interviews to improve the screening process include:

- The introduction of additional activities regarding developing technologies such as renewable energy (Jones, 2017);
- a clear definition of indigenous vegetation (Anon, 2017b);
- an interpretation guideline document by Department of Environmental Affairs (Nel, 2017);
- the establishment of screening as a mandatory process (Elston, 2017); and
- to consider mining activities in the exact same manner as other activities (Anon, 2017b).

5.3 Overall Conclusion - The Current Screening Mechanism

Since South Africa adopted the practice of EIA within the country's environmental legislation, the country has experienced two decades of mandatory EIA practice. During this time, four (*now five*) different EIA regimes were governed (Retief *et al.,* 2011:156). The South African EIA regulations adopted a list-based threshold approach to screening (Marais *et al*., 2015:83), using sets of listed activities that would require environmental authorisation. Each new regime focused on strengthening the screening mechanism by adding additional and more detailed activities, refining thresholds and categorising activities by means of lists, indicating the intensity of environmental assessment required.

Although it is clear that the screening process in South Africa had come a long way since the first regime, it is still critical to monitor the evolution since the screening mechanism will influence the overall effectiveness of the EIA process. Retief *et al.* (2011:162) mentioned that "*a reduction of around 50% in the total number of EIA applications would provide better alignment with the current administrative capacity and also present a more comparable international profile*". This section will confirm whether this reduction was achieved in the Western Cape and whether or not the evolution of the screening mechanism is moving towards this target.

5.3.1 Number of Environmental Impact Assessments

5.3.1.1 Number of Applications

The number of EIA applications saw a dramatic decrease between the 1997 ECA regulations and 2006 NEMA regulations. There were found that the introduction of a large number of additional activities; more detailed thresholds (Elston, 2017; Jones, 2017); authorities not accepting applications that does not need to be authorised by them (Jones, 2017); the addition of legislation such as the NEMWA (Elston, 2017); and the familiarisation of the regulations by authorities could be allocated to the decrease of applications (Nel, 2017).

The data analysis also showed that between the 2006 NEMA regulations and 2010 NEMA regulations there was only a slight decrease in the number of EIA applications received. This slight decrease could be the result of gaps in the wording of some listed activities (Nel, 2017); a not well defined third list of activities leading to more unnecessary applications (Rodgers, 2017; Jones, 2017); and applications directed to activity expansions rather than new projects (Anon, 2017b).

Since the 2014 NEMA regulations were enrolled, the number of applications decreased tremendously. The data analysis and discussion revealed that more specific activities with more defined thresholds and the exclusion of unnecessary activities (Jones, 2017; Nel, 2017) was the major contributors leading to this decrease. Other aspects that may have had an effect on this decrease in applications were the introduction of application fees (Rodgers, 2017); confusion regarding timeframes; and economic depression (Anon, 2017b). It should be noted that the last mentioned can have a major impact on the number of applications, as the economic status of a country directly influences the rate of development.

Overall the number of EIA applications showed a significant decrease from 1997 ECA to 2014 NEMA with numerous indications that the evolution of the screening mechanism (and environmental legislation in general) was the reason for this decrease. This also stands as proof that, in the Western Cape Province, the reduction of around 50% in the total number of EIA applications was achieved by reducing the number of applications since the 2006 NEMA regulations by over 80% during the 2014 NEMA regulations. Meaning that the 2014 NEMA regulations provides a better alignment with the current administrative capacity and also present a more comparable international profile according to the statement made by Retief *et al.* (2011:162).

5.3.1.2 Reduction of Section 24G Applications

A fair decrease in the number of S24G applications from 2006 NEMA to 2014 NEMA indicated a better awareness of the environmental regulations and the necessity of environmental authorisation (Jones, 2017; Anon, 2017a; Anon, 2017b; Nel, 2017; Elston, 2017). However, there were indications that the decrease in the number of S24G applications can be the result of a more efficient screening process by preventing projects with potentially significant impacts from slipping through (Nel, 2017).

5.3.1.3 Reduction of Scoping and EIAs Applications

The number of S/EIA shown a decrease from the 2006 to 2014 NEMA regulations. Various possible reasons were identified for the result of this decrease, namely: authorities recognizing that the impacts of many developments can be assessed through a simpler BA (Jones, 2017); more inclusive and in-depth BAs (Nel, 2017; Rosenthal, 2017); clearly defined listed activities and more selective thresholds (Nel, 2017; Anon, 2017b; Elston, 2017); introduction of exclusions to listed activities (Jones, 2017); applicant applying for

projects falling just short of the thresholds in order to avoid triggering a S/EIA (Rodgers, 2017); and additional legislation for activities such as waste and air emissions now requiring a licence rather than environmental authorisations (Elston, 2017).

5.3.2 Types of activities requiring EIAs in the Western Cape Province

5.3.2.1 Activities triggered in the Western Cape Province

The data analysis revealed that each NEMA regime demonstrated a consistent general pattern of activities triggered per year under each listing notice, indicating a general pattern within the developmental needs for the Western Cape province during the regimes.

The data analysis identified five activities triggered most prominent within the Western Cape Province throughout all regimes, these activities include:

- Construction within a watercourse/Construction of a dam;
- Transformation of land/Clearance of indigenous vegetation;
- Construction of roads;
- Transportation/Treatment of sewage; water and storm water;
- Handling/Storage of dangerous goods.

Results from the comparative analysis and the evaluation of activities triggered in the Western Cape Province showed a positive correlation between these activities and the activities found to be most prominently triggered in other provinces such as the Northern Cape, Gauteng, North West and Limpopo Province. However, it should be noted that the correlation with other provinces were obtained from only a handful of participants with experience in a specified province and for more accurate data it is necessary to conduct similar research in other provinces.

The conclusion was made that activities regarding the transformation of land or clearance of indigenous vegetation larger than 20 hectares are the most prominent activities resulting in projects being subject to a S/EIA process within the Western Cape.

According to the participants of the semi-structured interviews, these prominent triggered activities are in their opinion the activities most likely to have significant environmental impacts (Anon, 2017; Nel, 2017; Jones, 2017).

5.3.2.2 State of the listed activities and thresholds under 2014 NEMA

The discussion in section 4.3.2.2 regarding the effectiveness of the listed activities and thresholds under 2014 NEMA, revealed a consensus from the participants of the semi-structured interviews that the listed activities and thresholds within the screening mechanism under 2014 NEMA regime can be considered as more effective than in previous regimes. This is due to the clarity of the thresholds making it much simpler to determine whether a listed activity is applicable or not (Nel, 2017; Anon, 2017; Rodgers, 2017; Anon, 2017; Elston, 2017; Jones, 2017).

5.3.3 Evolution of the screening mechanism

The screening mechanism has evolved into useful tool during the EIA process, making the EIA process more cost effective and less time consuming by effectively identifying whether a proposed activity requires an EIA or not and determining whether a project should be subject to a BA or an S/EIA (Nel, 2017; Anon, 2017a; Elston, 2017; Jones, 2017; Rodgers, 2017).

The screening mechanism was used much more during the 2014 NEMA regime than during the 2006 and 2010 NEMA regimes (Elston, 2017; Jones, 2017), as it resolved issues which were considered as some of the major challenges during previous NEMA regimes. The use of screening to research alternatives, conducting public participations and consulting with the authorities and specialists before submitting an application, reduced the risk of costly and time-consuming delays and also the need for resubmission as a result from an application lapse (Retief *et al.,* 2011:161; Elston, 2017; Jones, 2017).

The final conclusion is that the evolution of screening up to the 2014 NEMA regime resulted in an effective screening mechanism, lowering the number of EIA applications, whilst still triggering those activities with the potentially most significant impacts. That said, the main challenge now is not in regard to the screening mechanism itself, but rather the integration of screening within the bigger EIA process (Rodgers, 2017; Anon, 2017b).

Better integration of environmental law and focusing on developments on a larger scale is required within South Africa. In order to avoid projects that require an EIA from slipping through the NEMA net, legislation should provide EAPs, officials and other authority with the ability to not only use the listed activities but also professional judgment and ethics (Rosenthal, 2017).

5.4 Recommendations for improvement and further research

- Researchers, EAPs, officials and other governing parties should work in collaboration and launch similar studies in other provinces of South Africa in order to accurately evaluate the screening mechanism within South Africa.

- When conducting studies regarding screening, it would be beneficial to also include research regarding alternatives and cumulative impacts.

- Screening should focus on cumulative impacts and regional specific activities in order to avoid projects being authorised due to the activity or threshold without considering the effect of additional land take.

- Future research could also determine the reduction in the number of EIAs in the Western Cape (or other Provinces) while also taking into account the number of EIAs conducted in terms of other legislation.

- More enhanced research should be done regarding other attributed that contribute to the number of EIA applications such as the economic status of a country and the rate of development associated with this status.

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Appendix A

Table of interview participants

Participant	Organization	Occupation	Experience	Date of interview
Elston, Lauren	Sharples Environmental Services cc	Environmental Assessment Practitioner	10 Years	5 June 2017 13:40
Jones, Sharon	SRK Consulting	Environmental Assessment Practitioner	19 Years	11 June 2017 17:30
Nel, Guillame	Guillaume Nel Environmental Consultants	Environmental Assessment Practitioner	15 Years	14 June 2017 12:00
Rodgers, Melinda	Limpopo Department of Economic Development, Environment and Tourism	Environmental Officer	18 Years	9 June 2017 16:40
Rosenthal, Philip	Rosenthal Environmental	Environmental Assessment Practitioner	21 Years	26 June 2017 17:40

*Excluding anonymous participants