The quality of EIA reports for housing developments in the Nkangala district of the Mpumalanga province, South Africa.

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ABSTRACT

South Africa and other countries are using Environmental Impact Assessment (EIA) as one of the Environmental management tools. The EIA process is reliant on the information presented in the Environmental Impact Report (EIR).

The quality of information supplied by the developers in the EIR, plays an integral role in the whole decision making process done by the authorities; to approve and disapprove the EIR. If approved, a record of decision (ROD) is issued to the developers stipulating the conditions that they must adhere to, during the implementation of the project.

Using the South African modified Lee Colley review package this dissertation presents the results of research done on the assessment of quality of the EIR's for housing development in the Nkangala district of Mpumalanga province.

The results reveal that 73% of Environmental Impact Reports of housing developments in the Nkangala district are of satisfactory quality. However, there were some omissions and inadequacies on alternatives and mitigation which are discussed in detail in this dissertation. The dissertation ends with a conclusion and recommendations.

Keywords: EIA; EIR; quality review; housing development; South Africa

OPSOMMING

Suid-Afrika en ander lande, gebruik omgewingsinvloedstudies (OIB's) as deel van hulle omgewingsbestuur-hulpmiddels. Die OIB proses is afhanklik van die inligting wat vervat word in die omgewingsinvloedverslag (OIV).

Die kwaliteit van die inligting wat verskaf word deur die ontwikkelaars in die OIB, speel 'n integrale rol in die besluitnemingsproses van die owerhede, in hul keuse om die OIV goed te keur of nie. Indien die OIV goedgekeur word, word 'n rekord van besluitneming uitgereik aan die ontwikkelaars, met 'n duidelike uiteensetting van voorwaardes wat gehoorsaam moet word gedurende the implimentering van die projek.

Deur gebruik te maak van die Suid-Afrikaanse aangepaste "Lee Colley Review Package" verskaf die verhandeling die resultate van 'n ondersoek na die kwaliteit van 'n steekproef van OIVs vir behuisingsprojekte in die Nkangala-distrik van Mpumalanga-provinsie.

Die resultate van die navorsing onthul dat:

- Die kwaliteit van 73% van die verslae vir behuisingsprojekte in die Nkangala distrik was bevredigend.
- Tekortkominge ten opsigte van onvoldoende praktyke, alternatiewe en mitigerende maatreëls is in verskeie verslae geïdentifiseer.

Bogenoemde word in detail in die verhandeling bespreek.

Sleutelwoorde: OIV; OIB; kwaliteit verskaf; behuisingsprojekte; Suid-Afrika.

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ABBREVIATIONS

DEAT: Department of Environmental Affairs and Tourism

ECA: Environment Conservation Act

EIR: Environmental Impacts Report

EIA: Environmental Impact Assessment

IEM: Integrated Environmental Management

NEMA: National Environmental Management Act

SAIEA: Southern African Institute for Environmental Assessment

SOER: State of the Environment Report

PREFACE

For this dissertation the North West University (NWU) manual for Postgraduate Studies was used. The dissertation contains the following:

Chapter 1 contains the introduction to the study and background of Environmental Impact Assessment (EIA), the problem statement and subsequently the main objective of the study.

Chapter 2 contains the literature review on what has been done both locally and internationally.

Chapter 3 contains data collection and analysis. It describes the study area, the case studies that were selected and the description of the review methodology.

Chapter 4 presents results of the quality review of the EIRs, interpretation and discussion of what is revealed by the results.

Chapter 5 contains the concluding remarks of the dissertation and recommendations thereof.

References are cited at the end of Chapter 5, according to the NWU referencing style.

The Appendices are attached at the end of the references:

Appendix A –The South African modified review package

Appendix B –The review category results per EIR

Appendix C–The review sub-category results

CHAPTER 1: INTRODUCTION AND PROBLEM STATEMENT

1.1 ENVIRONMENTAL IMPACT ASSESSMENT (EIA)

The environment is defined in the National Environmental Management Act (NEMA) as " the surroundings within which humans exist and that is made up of:

a) The land, water and atmosphere of the earth;
b) Micro-organisms, plant and animal life;
c) Any part or combination of (a) and (b) and the interrelationships among and between them;
d) And the physical, chemical, aesthetic and cultural properties and conditions of the foregoing that influence human health and well-being" (South Africa, 1998b). This definition also includes the resources of symbolic significance known as the cultural heritage (Glazewski, 2005).

Even though the environment is essential to life for the benefit of present and future generations, there are threats that affect the overall function of the environment. These threats include forces that exert pressure on the environment, resulting in significant impacts such as air pollution, depletion of natural resources, deforestation, acid rain, land degradation and water pollution (South Africa, 1998b).

In order to avoid or mitigate these adverse environmental effects, appropriate environmental management tools must be employed. One such tool is Environmental Impact Assessment (EIA). This tool aims at protecting the environment from the threats mentioned above. An EIA is used with the common goal to consider environmental impacts of a proposed development and ensure minimal impacts on the environment (Lee *et al.*, 1999; Sandham *et al.*, 2008b; Wood 2003).

EIA's are currently used globally during the planning of developments to determine and manage possible detrimental impacts that may arise from a project or development. The EIA is subjected to a decision from a competent authority that either grants or refuses authorisations to developers, with the aim to promote sustainable development (Lee *et al.*, 2000; Rafique Ahammed *et al.*, 2006; Wood, 2003).

EIA's have evolved over the years since 1970; it has been legally mandated by many countries as an environmental instrument for planning projects. Some of these countries include California, Australia, New Zealand, Columbia, Thailand, Germany, Netherlands and South Africa (Wood, 2003). Ultimately there has been great interest in effectiveness of an EIA on whether it achieves the desired results of environmental management (Fuller, 1999; Wood, 1999). Sadler (1998, p37) noted: "Above all there is an evident requirement to use effectiveness reviews as an integral strategy for building quality control and assurance throughout the environmental assessment". It is therefore apparent that research is needed to evaluate effectiveness of an EIA. Though effectiveness of an EIA depends on various factors (Fuller, 1999; Hoffman 2007; Lee *et al.*, 1994; Ross, 1987), this dissertation focuses on the role of the environmental impact report (EIR), also known as the environmental impact statement (EIS).

The EIR is a report that presents the identified environmental impacts with proposed mitigation methods which is then subjected to a decision from a competent authority, on whether the development can go ahead (Glazewski, 2005). It is evident that the EIR is of paramount importance in the EIA process. Therefore it is crucial to ensure that EIA reports are of good quality (DEAT, 2004; Fuller, 1999). One practice used to determine the quality of EIRs, is to conduct a quality review of the EIR.

The review of the quality of the EIR is undertaken to ensure that the information presented in the report is credible and sufficient to enable sound decision making

(Fuller, 1999; Lee *et al.*, 1999; Pinho *et al.*, 2006; Rafique Ahammed *et al.*, 2006 Wood, 2003). EIR reviews are normally conducted on completed EIRs using specific methods. One such method is a checklist or review package, developed by the EIA Centre at the University of Manchester, to check adequacy of environmental impact reports against the requirements of EIA best practice. It comprises a seven-part rating scale, directions on its use and a collation sheet for recording findings on EIA components, such as baseline information, impact prediction and consideration of alternatives (European Commission, 2001; Lee *et al.*,1992). Lee *et al.*, (1992) also indicated that matrices are another methodology that can be employed to conduct the EIR quality review.

There has been significant interest in determining the quality of EIRs. This is evident from the number of countries that have already embarked on a review process, with the goal to determine EIA effectiveness (Petts, 1999). These countries include Belgium, Denmark, Germany, Greece, Ireland, Portugal and Spain (Canelas *et al.*, 2004; European Commission, 1996; Lee and Colley, 1992; Pinho, 2006). Findings on these studies will be dealt with in Chapter 3 of this dissertation.

1.2 EIA IN SOUTH AFRICA

EIA's as a voluntary procedure originated in the 1960s, when South Africa like other countries adopted the practice as initiated by the National Environmental Policy Act (NEPA) in the USA (Fuggle *et al.*, 2000; Glazewski, 2005; Lee *et al.*, 2000). Subsequently, the Integrated Environmental Management (IEM) concept was introduced in the late 1980's, aimed at ensuring environmental concerns that arose from developments were adequately taken into consideration in the planning process (DEAT, 2004; Fuggle *et al.*, 2000; SAIEA, 2003; Wiseman, 2000).

South Africa introduced EIA's as a mandatory procedure in 1997 through promulgation of regulations in terms of the Environment Conservation Act, (ECA) Act No 73 of 1989 (South Africa, 1989). These regulations listed the activities that may have substantial detrimental effect on the environment thus require an EIA (Regulation 1182). Housing development was one of the listed activities in terms of activity 2 of Regulation1182 which states "A change in land use from:

a) residential use to industrial or commercial use[1];
b) light industrial use to heavy industrial use[1];
c) agricultural or zoned undetermined use, to any other land use;
d) use for grazing to any other form of agricultural use; and
e) use for nature conservation or zoned open space to any other land use".

The steps of the EIA process under the1997 regulations are shown in **Figure 1.1**.

[1]These two sections of the activity were suspended under the Government Notice No R 18783 of 27 March 1998

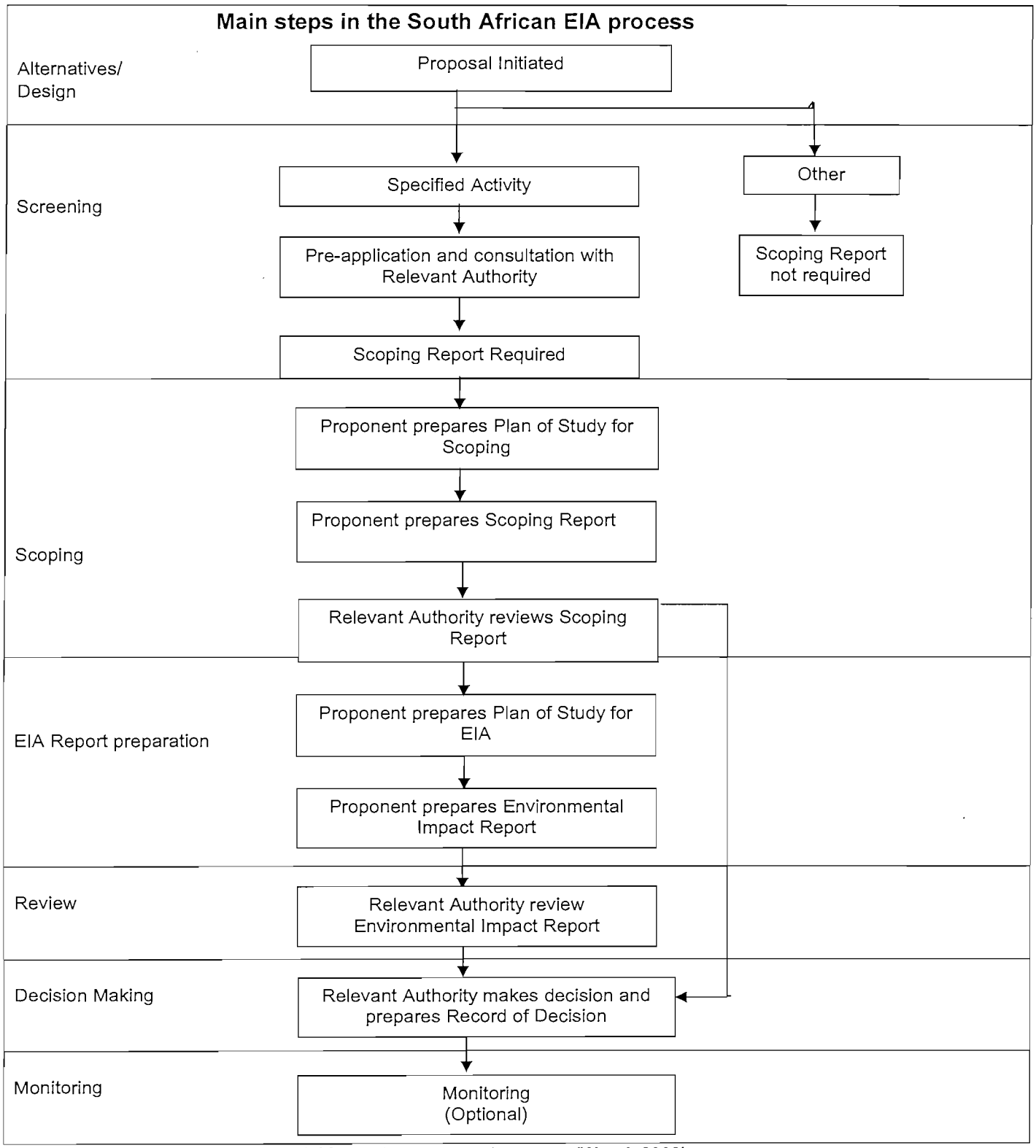

Figure 1.1 The environmental impact assessment process (Wood, 2003)

Following the inception of mandatory EIA's in the Environment Conservation Act (ECA) of 1989, the National Environmental Management Act (NEMA) of 1998 came into effect and partially repealed the ECA (South Africa 1998b). The NEMA was an improvement in the EIA process as it bestowed integrated environmental management principles to be considered during the EIA process (Glazewski, 2005; Wood, 1999).

In 2004 the National Environmental Management Act was amended. This amendment paved the way for new EIA regulations promulgated in 2006, and repealed fully the 1997 EIA regulations (South Africa, 2006). According to the minister of the Department of Environmental Affairs and Tourism (DEAT) the new EIA regulations still aims for environmental protection, but more "quicker, simpler and better" for South Africa (DEAT, 2006).

In the evolution of mandatory EIA's in South Africa, there has been great interest in measuring EIA effectiveness, emphasising the need for research in this subject. However, in South Africa there has been limited research on EIA effectiveness and in the Mpumalanga province with respective districts in particular, no research has been published regarding the quality of EIRs.

Due to this, the theoretical basis and understanding of EIR quality has been severely neglected. Subsequently there is a need for research to assess and evaluate the quality of EIRs in general. This dissertation will focus on the quality of EIRs for housing development in the Nkangala district of the Mpumalanga province of South Africa.

1.3 AIM OF THE STUDY

The main aim of this study is to assess and evaluate the quality of EIRs for housing developments in the Nkangala district in the Mpumalanga province of

South Africa, and to recommend possible strategies for improvement of EIA practice in this sector and district, in the context of the new EIA regulations.

The research results will establish baseline data that will allow comparison between the old and the new legislation, as the new regulations still require a mandatory EIA for housing development in terms of section 24 and 24d of NEMA, Act No 107 of 1998 RSA, (South Africa, 2006). Regulation 387 Section 2 states: "any development activity, including associated structures and infrastructure, where the total area of the developed area is or intended to be 20 hectares or more".

The research objectives are as follows:

- Evaluate the quality of a selected number of environmental impact reports for housing projects in the Nkangala district of Mpumalanga.
- Establish a baseline of environmental impact report quality for the first era (1997 – 2006) of EIA practice for housing EIA's in South Africa, against which environmental impact reporting quality under the new EIA regulations can be compared to for housing projects.
- Provide recommendations for improving the quality of environmental impact reports for housing projects under the 2006 NEMA regulations.

1.4 DISSERTATION STRUCTURE

The dissertation is structured as follows: it starts by discussing the reviewed literature, thereafter describing the study area and the research methodology used. This is followed by the presentation of research results with discussion and key findings of the results. This dissertation ends with a conclusion of the overall study and recommendations on EIR quality. The summary of the dissertation structure is outlined in **Figure 1.2** below:

DISSERTATION STRUCTURE

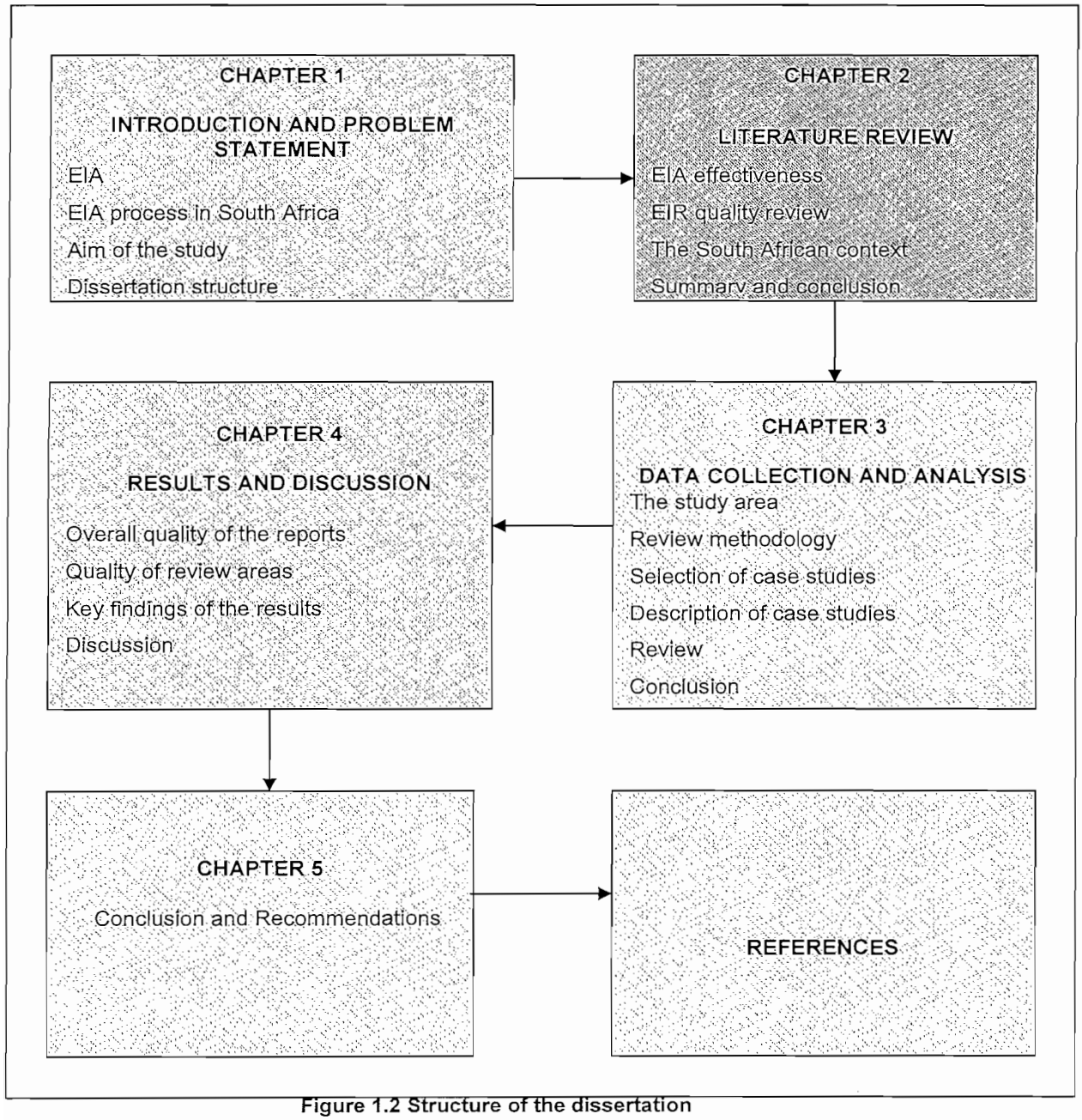

Figure 1.2 Structure of the dissertation

CHAPTER 2: LITERATURE REVIEW

2.1 ENVIRONMENTAL IMPACT ASSESSMENT EFFECTIVENESS

EIA effectiveness is defined as the extent to which the goal of environmental protection and management is achieved (Morrison-Saunders, 1996). Based on this, there has been considerable debate internationally on what makes an EIA an effective environmental management tool. These arguments are directed at appropriate criteria to determine effectiveness of EIA's (Wood, 2003), mainly because an EIA consists of different stages including consideration of alternatives, screening of actions, scoping of impacts, EIA report preparation, an EIA report review, decision making, monitoring and auditing of impacts. It is apparent that the success of an EIA depends upon various factors, creating difficulties in reaching an overall reliable quantification of EIA effectiveness (Wood, 2003).

The other problem facing the measurement of EIA effectiveness is the implication of the multifaceted interpretation by EIA stakeholders (Cashmore *et al.*, 2004). This denotes that the analysis of EIA effectiveness by a stakeholder is assumed to be dependent upon the particular interest of the stakeholder. For instance the developer's view on an EIA is generally assumed as unnecessary and causing delays. Thus the developer's view on EIA effectiveness would be different from that of a non-governmental organisation, whose view with respect to an EIA is assumed to be more on the accountability of the decision makers (Cashmore *et al.*, 2004). These problems in overall quantification of EIA effectiveness have resulted in different opinions on what determines EIA effectiveness. Other authors have established a framework to measure effectiveness of EIA's represented in a cycle (Sadler, 1996). This framework focuses on the overall performance of four aspects; these include practice, proficiency, performance and purpose (Baker and McLelland, 2003). Countries like Columbia have already

used this framework to measure EIA effectiveness using development case studies.

Rafique Ahammed *et al.*, (2006) and Wood (2003) on the other hand suggested monitoring and auditing as a key role in examining effectiveness of an EIA. This stage was suggested as it provides feedback on environmental management of the project. Various authors have also concurred with this view of examining EIA effectiveness; in fact a wide spread of international literature reveals this aspect as a global weakness of EIA's (Fuller, 1999; Petts, 1999; Rafique Ahammed *et al.*, 2006; Sadler, 1998; Wood, 2003).

Petts (1999) and Wood (2003) also identified criteria that could be employed to evaluate the effectiveness of an EIA system. Amongst others, the review of the quality of the Environmental Impact Report (EIR) forms part of the criteria. Fuller (1999); Sandham and Pretorius (2008a); Sandham *et al.*, (2008c); Wood (1999) concurred with this view of quality of EIR being a constituent to verify EIA effectiveness. The said criterion is the approach employed in this dissertation to assess the quality of EIRs as part of the effectiveness of EIA in the Mpumalanga province of South Africa.

2.2. EIR QUALITY REVIEW

The Environmental Impact Report (EIR) plays an important role in EIA effectiveness, i.e. to inform the stakeholders and decision makers about the environmental impacts of the proposed development (Fuller, 1999; Morrison-Saunders *et al.*, 2001). As such the EIR is considered to be the essential document of the EIA process (DEAT, 2004).

Internationally, quality review of EIR's has been a focus for research in determining EIA effectiveness (Canelas *et al.*, 2004; Lee *et al.*, 1999; Pinho *et al.*, 2006; Ross, 1987). This interest is based on the crucial role of the EIR in the EIA

process. One fact being that the authorities can refuse a proposed development based on the inadequacies and omissions in the EIR (Fuller, 1999; Pinho *et al.*, 2006). It is therefore apparent that the poor quality of EIR's affects the effectiveness of EIA's (Sandham and Pretorius, 2008a) based on the theory that poor reports can result from a good EIA process, but a good report is unlikely to result from a poor EIA process and that can affect the effectiveness of the EIA (Fuller, 1999). To this effect, various quality review packages were developed to assess the quality of the EIR's.

2.2.1 EIR Quality review packages

Quality review packages are mechanisms that are employed to conduct an EIR quality review. These review packages comprise of a number of questions grouped according to the structure of a generic or mandated EIA process. These questions are answered by allocating a score according to a specific rating scale. It also usually includes directions on its use and a collation sheet for recording findings (European Commission, 2001; Lee and Colley, 1992).

These review packages, normally referred to as review checklists, were developed as a method to check the adequacy of environmental impact reports against the requirements of best practice, as well as the legal requirements of the EIA system under which the EIRs are produced.

To this end there are various review packages available internationally, that can be adopted and adapted (Lee and Colley, 1992; European Commission, 1996; Glasson, 1996; Retief, 2007). One such review package is the Southern African Institute for Environmental Assessment (SAIEA) package (SAIEA, 2003).

The SAIEA review package is subdivided into the following sections

- Methodology utilised in compiling the EIA report
- Description of the project
- Assessment of alternatives to the project

- Description of the environment
- Description of impacts
- Consideration of measures to mitigate impacts
- Non-technical summary
- General approach

The review methodology:

1. For each question, the reviewer considers whether the information is relevant to the project. If not, the question is ignored and the reviewer proceeds to the following question.
2. If the information is relevant, that section of the EIA report is read to establish whether the information provided is:
    - Complete (C): All information required for the decision-making is available. No additional information is required even though more information might exist.
    - Acceptable (A): the information presented is incomplete, but the omissions do not prevent the decision-making process from proceeding.
    - Inadequate (I) information presented contains major omissions. Additional information is necessary before the decision-making can proceed (DEAT, 2004).

Another review package is the Impact Assessment Unit's (IAU) Environmental Impact Statement (EIS) review package. The IAU review package was developed by the Oxford Brookes University, and is divided into eight sections where within each section there are number of individual review criteria (Glasson *et al.*, 2005).

During the assessment, each section is awarded an overall grade. The grade is allocated a symbol, from grade (A) to indicate tasks that are well performed with no important omissions, to grade (F) indicating very unsatisfactory performance with important tasks poorly done or not attempted. From the grades given to each section an overall grade for the EIR is then awarded.

The Lee and Colley review package (1992) is another package that can be employed in EIR quality review. This review package is arranged in a hierarchical (or pyramidal) structure where during evaluation the reviewer commences at the lowest level i.e. the floor of the pyramid which contains the review of sub-categories. Then, the reviewer progresses to the second level applying more complex criteria to broader tasks i.e. the second level of the pyramid contains the review categories. The reviewer then progresses to the third level of the pyramid which contains the review areas that are the core criteria for the assessment of EIR's i.e. Review Area 1- description of project; Review Area 2- identification and evaluation of key impacts; Review Area 3- alternatives and mitigation and Review Area 4- communication of results. This process is followed until the overall assessment of the EIR is completed i.e. the last level of the pyramid. The pyramidal structure is illustrated in **Figure 2.1.**

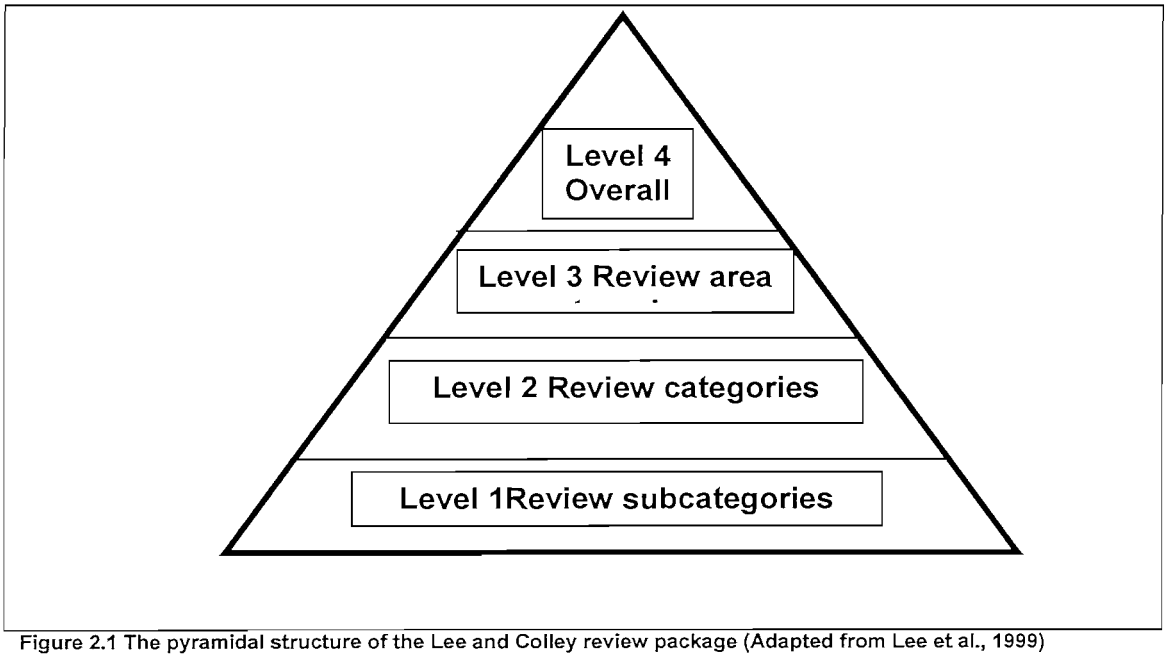

Figure 2.1 The pyramidal structure of the Lee and Colley review package (Adapted from Lee et al., 1999)

During the assessment of EIR's under these review criteria, the results are recorded on the collation sheet, using score grades. These score grades are

allocated a symbol rather than numbers to discourage reviewers from crude aggregation to obtain assessments at the higher levels in the pyramid.

Differences exist between these EIR quality review packages. These include the structure of the review package, not all review packages are a pyramidal structure. The number of score grades that is used to assess the EIR differs i.e. other packages only used three assessment score grades whereas the others use more than three score grades.

Internationally, there has been wide-spread and successful application of the Lee and Colley (1992) review package (Canelas *et al.*, 2004; European Commission, 1996; Lee and Colley, 1992). The widespread use is evident from the number of EIR quality studies that were done in the following countries using the review package:

- Portugal and Spain: The quality review of environmental impact statements (EIS) were done for small hydropower projects - a study by Canelas et al., (2004). The findings of this study revealed satisfactory EIS for both countries with good quality information on the description of the environment likely to be affected by the impacts. Shortcomings were identified on the consideration of alternatives and the communication of results.

- United Kingdom (UK): The review of environmental statements and environmental appraisals by Lee *et al.*, (1992), revealed satisfactory EIS in the UK with better quality on the description of the environment likely to be affected by impacts and shortcomings on the consideration of alternatives and communication of results.

- European Union (EU): The quality of environmental statements for Belgium, Denmark, Germany, Greece, Ireland, Portugal and Spain studied by the European Commission, (1996), revealed satisfactory

quality of EIS for all the countries with great improvement when compared to the results of the past years (1988-1992).

- In South Africa, there are various studies on EIR quality focusing on different sectors and provinces.

Based on these studies it can be concluded that the Lee and Colley (1992) review package is probably the most well-known and widely applied quality review package (Canelas *et al.*, 2004; European Commission, 1996; Glasson, 1996; Lee and Colley, 1992; Sandham and Pretorius, 2008a; Sandham, *et al.*, 2008b, 2008c; Retief, 2007). This can be ascribed to the easy adaptation of the package for application, to suit specific EIA processes and regulations. A detailed description of this review package is presented in Chapter 3.

2.3 THE SOUTH AFRICAN CONTEXT

It can be argued that research of EIA effectiveness has been at best, partially addressed in South Africa, when looking at the attempted studies to evaluate the effectiveness of EIA's. Wood, (2003) evaluated the South African EIA system using the legal requirements as criteria. The study revealed the EIA report review, centrality of the full range of impacts, decision making, impact monitoring, public participation, and EIA system monitoring as the main weaknesses of the EIA system. However, Dewar (2003) revealed the integration of environmental law and public participation as the strengths of the South African system, contrary to Wood's findings. Based on the findings it is evident that more research to determine EIA effectiveness in South Africa is an absolute necessity.

To fill the gap of limited research in the EIA practice, studies were conducted focusing on different aspects of the EIA. These include focus on the procedural compliance of EIA's in the Limpopo province. These procedural aspects included baseline information, specialist studies and the duration taken for projects to be authorised. The findings revealed the quality of these procedural aspects as

satisfactory with the exception of social baseline information, the EIA practice in Limpopo being compliant to the EIA regulations and guidelines. This was evident from the proactive undertaking of the specialist studies when they were not required by the authorities (Sandham *et al.*, 2005). Similar studies were also conducted in the Free State and Northern Cape (Kruger and Chapman, 2005).

Further research to expand the scope of EIA effectiveness was done on the EIR quality review. These studies included a review of EIA report quality in the North West province (Sandham and Pretorius 2008a), the quality review of EIR's for projects with the potential of affecting wetlands (Sandham *et al.*, 2008b) and the quality of mining EIA projects (Sandham *et al.*, 2008c).

There were however problems in the methodology to be employed when conducting a quality review in South Africa, since the South African EIA regulations do not make provision for a specific methodology to be followed when conducting a quality review (DEAT, 2004). This resulted in the development of a quality review package that is methodologically sound, practically viable and tailored to the South African context by Pretorius (2007). The package was based on the Lee and Colley review package with modifications to allow alignment to the EIA guidelines and regulations for South Africa. This South African modified package has been employed successfully to assess the quality of EIR's in the North West province as described by Sandham and Pretorius (2008a).

So far the research findings reveal that EIA practice in South Africa has produced EIRs of generally satisfactory quality. The general areas of weakness are the identification and evaluation of key impacts, as well as the alternatives and mitigation measures. The areas of strength on the other hand are the project and environmental description and communication of results.

In comparison to other countries these findings reveal in terms of EIR quality, the EIA practice in South Africa to be on par with international findings. Although

South African EIA's have produced EIRs of satisfactory quality, there are other sectors and provinces that still lack empirical research. One such is the housing sector in the Mpumalanga, KwaZulu Natal and Gauteng provinces. Looking at the evolutionary EIA regulations in South Africa research from these provinces and sector is essential to provide with baseline data. As mentioned previously, the new EIA regulations were promulgated in July 2006 (South Africa, 2006) creating a need for baseline data, which future EIA practice can be measured against.

2.4 SUMMARY AND CONCLUSION OF LITERATURE REVIEW

It can be concluded that there is no single methodology to evaluate the overall EIA effectiveness, due to the multifaceted aspects that must be implemented for a successful EIA. Though these difficulties exist, evaluation of EIA effectiveness remains essential to advance and improve its performance (Baker and McLelland, 2003; Wood, 2003). Literature reveals various methodologies that can be employed to evaluate effectiveness of EIA. One such is to review the quality of Environmental Impact Reports (EIRs). Though there are various EIR quality review methodologies, the Lee and Colley (1999) EIR review package remains the well known successfully applied package. This is mainly due to the easy adaptation and application of the package.

In the South African context, there has been some research work undertaken to determine EIA effectiveness. However, no research has been published to asses the quality of the housing sector in the Mpumalanga province, such research is needed to fill the gap. To this end the quality of EIRs for housing development in the Nkangala District of Mpumalanga province was assessed in this dissertation. The description of the study area, the methodology followed and the EIR samples used are described in Chapter 3.

CHAPTER 3: DATA COLLECTION AND ANALYSIS

3.1 THE STUDY AREA

The study area is within the Nkangala district and it is located in Mpumalanga province. Its western boundary is situated approximately 130km East of Johannesburg (Gauteng province). The Mpumalanga province comprises of three districts namely: Enhlanzeni, Gert Sibande and Nkangala. The Nkangala district comprises of six local Municipalities as depicted in **Figure 3.1**. These Municipalities with their respective towns and areas are as follows:

- Emalahleni Municipality including: Witbank, Balmoral, Clewer, Coalville, Hlalanikahle, Kendal, Kriel, KwaGuqa, Lynnville, Matla, Minnaar, New Largo, Ogies, Paxton, Phola, Rietspruit, Thubelihle, Van Dyk's Drift and Wilge.

- Delmas Municipality including: Arbor, Argent and Lionelton.

- Steve Tshwete Municipality including: Middleburg, Arnot, Blinkpan, Douglas, Gloria, Hendrina, Hendrinakrag, Lammerkop, Mhluzi, and Selonsriver.

- Emakhazeni Municipality (formerly Highlands) including: Belfast, Dullstroom, Airlie, Dalmanutha, Kwaggaskop, Laersdrif, Machadodorp, Nederhorst, Stoffberg, Waterval Boven and Wonderfontein.

- Thembisile Municipality including: Boekenhouthoek, Seringokop, Sybrandskraal and Witnek.

- Dr JS Moroka Municipality including: Bamokgoko, Dikgwale, Ga-Maria, KwaPhake, Lefiso, Maboko, Mapoch, Masobe, Matshiding, Moteti, Phake, Siyabuswa and Vaalbank.

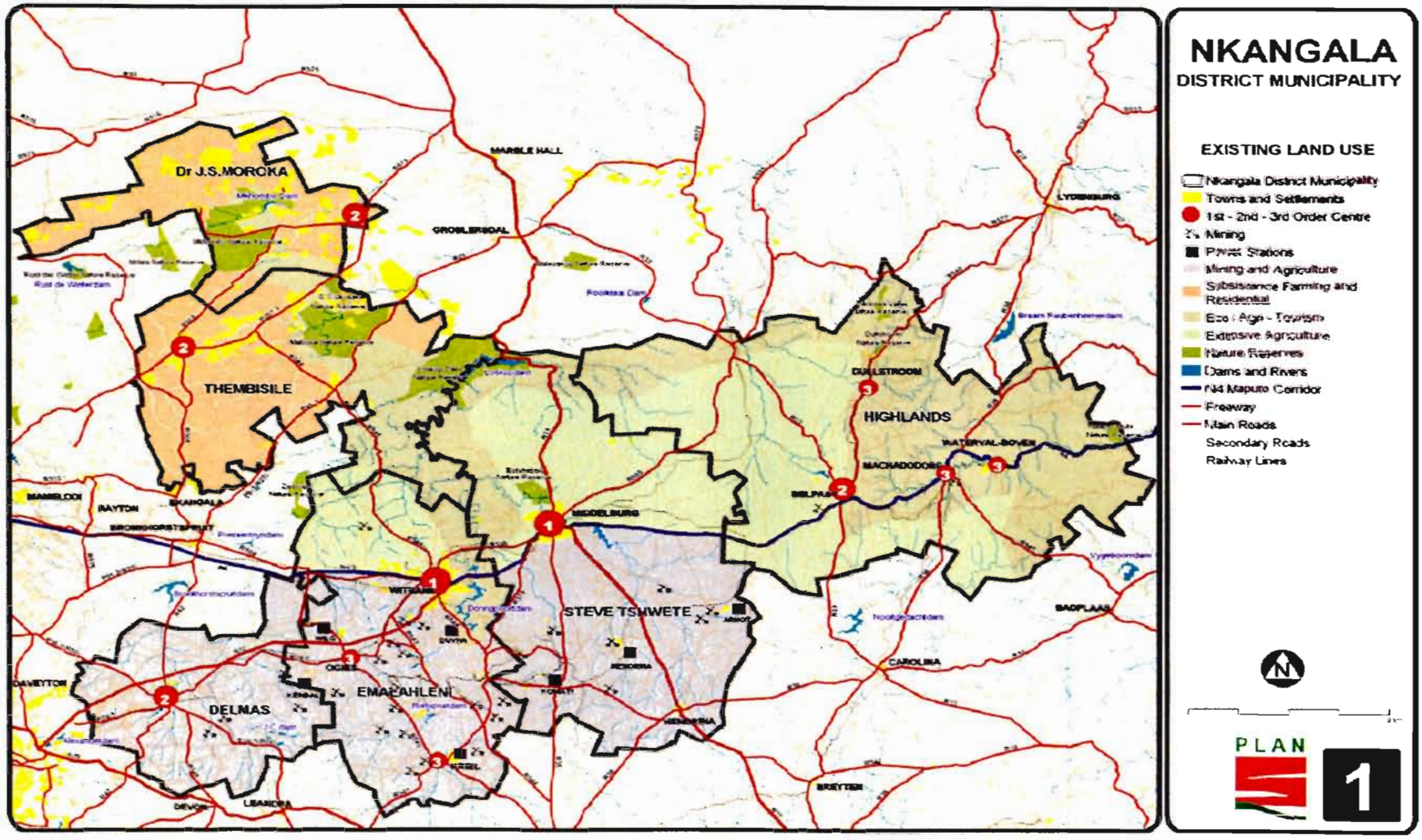

Figure 3.1 Layout of Municipalities within the Nkangala district

The Nkangala district comprises of various land uses, from agriculture and farming associated activities, to tourism, mining and forestry activities as well as urban developments. The district contributes significantly to the economy of the region, this is evident from the economic growth rate of 3% average per year between 1996-2003, compared to 2% of the Mpumalanga province and the national average of 2,5% (Mpumalanga top business portfolio, 2007). The main contributor to this economic growth is the coal and steel industry. All of these developments demand housing projects i.e. residential, resorts, golf courses etc. which require EIA's, and the main aim of this research study is to assess the quality of the Environmental Impact Reports (EIR's) of a selection of these EIA's.

3.2 REVIEW METHODOLOGY

As shown in Chapter 2, a review package adapted from the Lee and Colley package was developed to suit the South African context. This modified review package was used in this study, but for the purpose of this dissertation, one further modification was made to the South African review package, i.e. the addition of the requirement of a non-technical summary, as found in the original Lee and Colley review package. Although this was not required by the 1997 EIA regulations, it was included in the review package as an indication of good practice in EIA's. Details of the package are listed in **Appendix A.**

3.2.1 Package use

The package is built around four review areas:

- Review area 1: Description of the development, the local environment and the baseline conditions;
- Review area 2 : Identification and evaluation of key impacts;
- Review area 3 Alternatives and mitigation measures; and
- Review area 4: Communication of results.

The package is arranged as a series of questions structured in a hierarchical structure with review sub-categories in the lowest level, then review categories in the next level followed by review areas with the EIR as a whole at the top, as illustrated in **Figure 3.2.**

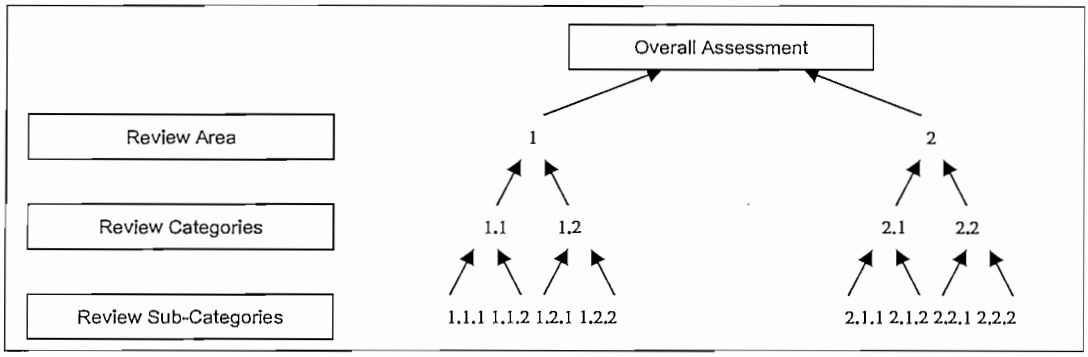

Figure 3.2 Hierarchical structure of the Lee and Colley (1999) EIR review package
Level 4 – Overall assessment EIR; Level 3 – Assessment of review areas; Level 2 – Assessment of review categories; Level 1 – Assessment of review sub-categories.

During the assessment a grading symbol is allocated to each of the questions at the respective levels, and ultimately the overall quality of the EIR is established. The grading symbols are awarded based on how well the task was performed and then recorded on a collation sheet. The grading symbols range from A-F. Symbols are used rather than numbers, to discourage reviewers from obtaining a cumulative total at the higher levels in the hierarchy (Lee *et al.*, 1999). The detail description of the score grades is indicated in **Table 3.1** and a brief description of the review criteria is indicated in **Table 3.2.**

A review commences by reviewing the contents of the EIR at the lowest level (sub-category) of the hierarchy which contains simple criteria. Then the review is progressively conducted to higher levels in the hierarchy i.e. the second level (review categories) and third level (review areas) which assesses the implementation of broader, more complex tasks. Then, drawing upon these assessments, from lower to higher levels, the overall assessment of the EIR is

achieved. The results are recorded in a collation sheet, from which strengths and weaknesses of the EIR can be described.

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

Table 3.1 Description of score grades (Lee *et al.*, 1999)

Review area 1: Description of the development and the environment	Review area 2 : Identification and evaluation of key impacts
1.1 Description of the development	**2.1 Definition of impacts**
1.1.1 Identification of applicant	2.1.1 Description of effects of project on the environment
1.1.2 Purpose and objectives of development	2. 1.2 Identification and description of interaction of effects on the environment
1.1.3 Description and nature of activity or development	2.1.3 Impacts arising from non-standard operating procedures
1.1.4 Description of the site	2.1.4 Impacts arising from deviation from base-line conditions
1.1.5 Site plan	
1.1.6 Diagrammatic description of processes and technology employed	**2.2 Identification of impacts**
1.1.7 Expected rate of production	2.2.1 Assessment of Impacts from 4 distinct phases
1.1.8 Raw materials used during different phases	2.2.2 All the possible impacts from each phase identified
1.1.9 Source and availability of water and materials	
1.2 Site description	**2.3 Scoping**
1.2.1 Site Plan	2.3.1 Example of notice in published in media
1.2.2 Description and demarcation of land use areas	2.3.2 On-site notice
1.2.3 Estimated duration of different phases	2.3.3 Identify affected people by the proposed development
1.2.4 Expected number of workers and visitors	2.3.4 Identification interested people
1.2.5 Access to site and likely means of transport	2.3.5 Description of procedures whereby affected and interested parties (I&AP) can participate
1.2.6 Infrastructure required	2.3.6 Provision for interest and affected parties to express their views
	2.3.7 List of issues identified
1.3 Waste and residuals	2.3.8 Notification criteria
1.3.1Estimated types and quantities of waste and disposal routes	2.3.9 A record of all the views as an addendum to the report
1.3.2 Proposed handling/treatment and disposal of wastes and residuals	2.3.10 Evidence that Interest and affected parties were approached
	2.3.11 Key impacts identified for further investigation
1.4 Environmental description	
1.4.1 Indication of likely area to affected	**2.4 Prediction of impact magnitude**
1.4.2 Biophysical description of the site	2.4.1 Predictions of impact magnitude
1.4.3 Biological description	2.4.2 Quantification of impact magnitude predictions
1.4.4 Social characteristics	
1.4.5 Cumulative impacts	
	2.4.5 Proposed method of assessing significance
1.5 Baseline conditions	**2.5 Assessment of impact significance**
1.5.1 Important components of the affected environment	2.5.1 Description of significance of impact to affected community
1.5.2 Interaction and effect of project activities on the environment	2.5.2 Significance of impact (nature, intensity, duration, probability and extent)
	2.5.3 Proposed method of assessing significance and ranking

Review area 3: Alternatives and mitigation	Review area 4: Communication of results.
3.1 Feasible alternatives should have been considered	**4. 1 Layout of the statement**
3.1.1 Description of methods used to identify alternatives	4.1.1 Introduction briefly describing the project
3.1.2 Description of analyses of range of alternatives	4.1.2 Logical arrangement of information
3.1.3 Investigation of at least (2) alternatives	4.1.3 External sources acknowledged
3.1.4 Discussion and reasons for final choice	
3.2 Scope and effectiveness of mitigation measures	**4. 2 Presentation**
3.2.1 Description of mitigation measures and it's influence	4.2.1Presentation of information
3.2.2 Mitigation measures considered	4.2.2 Statement as an integrated whole
3.2.3 Mitigation measures clearly defined	**4.3 Emphasis (Info should be represented without bias)**
3.2.4 Indication of effectiveness of mitigation measures	4.3.1 Emphasis given to severe impacts
	4.3.2 EIR should be unbiased
	4.4 Non-technical summary
	4.4.1 Summary of environmental impact report

Table 3.2 A brief description of the review criteria – See Appendix A for full review package

3.3 SELECTION OF CASE STUDIES

In accordance with international best practice, the South African 1997 EIA regulations refer to the scoping report as a report that describes the process of identifying the significant issues, alternatives and decision points, and includes a preliminary assessment (DEAT, 1998). However, in South Africa the unique practice of a "beefed up" scoping report occurred under the 1997 EIA regulations in terms of the Environment Conservation Act, (ECA) Act No 73 of 1989 (South Africa, 1989), in which the scoping reports included both the identification and evaluation of significant impacts, and various other issues that do not belong in a true scoping report. This was done to fast track the lengthy EIA process (Wood, 2003), especially for relatively small projects.

The use of "beefed up" scoping reports had become so common that a study conducted in the Limpopo province revealed that there were no full EIAs in over 100 applications (Sandham *et al.*, 2005) and a similar predominance of these scoping reports was found in an EIA study in the North West province (Sandham and Pretorius, 2008a). It appears that this resulted in the formalisation of these beefed up scoping reports in the new NEMA 2006 regulations by the creation of the Basic Assessment process.

In this dissertation 15 "beefed up" scoping reports were assessed[2].

[2]This dissertation focuses on the EIRs quality for the first era (1997 – 2006) of EIA practice for housing projects in South Africa, in order to establish a baseline against which environmental impact reporting quality under the new EIA regulations can be compared to for housing projects.

The EIR's were obtained from the Mpumalanga Department of Agriculture and Land Administration (MDALA). The selection of scoping reports was based on meeting all of the following requirements:

- It should be a housing development activity;
- It should be from the first era of mandatory EIAs (1997-2006);
- It should be compiled by different consultants;
- It should be an EIA that has been granted authorisation; and
- It should be from the Nkangala district.

3.3.1 Access to case studies

Permission to access the EIR's was granted by the MDALA and the Nkangala district study area was chosen as the offices are located in Witbank, which optimised access to the sample for the researcher. Initially, 20 EIR's were selected, but due to the incompleteness of some of the EIR's, such as the absence of certain components of the reports, the final sample was reduced to 15.

3.4 DESCRIPTION OF CASE STUDIES

The reports for the housing development projects that were approved by MDALA included the following housing developments:

- Resort establishments and luxury golf estates, especially around the Emakhazeni Municipality.
- Low cost housing, new establishment and extension of residential areas were the housing developments projects that were dominant in the district. The selected housing development case studies are described in **Table 3.3** and their geographic location is depicted in **Figure 3.1.**

REPORT NUMBER	DESCRIPTION	DATE OF COMPILATION
Report 1	Housing Development- resort development in Dullstroom area.	2005
Report 2	Housing development- the proposed development includes rezoning from a golf course to a resort in Belfast.	2004
Report 3	Housing development- resort development in Witpoort.	2005
Report 4	Housing development- Country Estate development in Machadodorp area.	2006
Report 5	Housing development- establishment of a residential area situated in KwaZamokuhle.	2004
Report 6	Housing development- establishment of a resort and residential area.	2005
Report 7	Housing development- the proposed development is for extension of residential area in Machadodorp.	2005
Report 8	Housing development in Ogies- establishment of a residential area.	2002
Report 9	Housing development -establishment of a resort in Belfast area.	2005
Report 10	Housing development- residential development in Kroomdraai, an area in Witbank.	2003
Report 11	Housing development -- establishment of a resort in Dullstroom area.	2002
Report 12	Housing development - the proposed development includes rezoning from a golf course to a resort in Machadodorp.	1998
Report 13	Housing development- residential development in Emakhazeni Municipality.	2006
Report 14	Housing development - the proposed development includes rezoning from agriculture to residential area in Ogies.	2004
Report 15	Housing development- establishment of a residential area located in Klarinet, an area in Witbank.	2002

Table 3.3 Description of case studies

3.5 REVIEW

The review was initially done by an experienced reviewer along with the author to "calibrate" the author's review judgement, since it was impossible to obtain personnel to conduct an independent review as recommended in the Lee and Colley review package (Lee and Colley 1992). The review of the EIR was conducted independently and then the reviewers compared the results, discussed differences and then agreed on consensus scores, at all four levels of the review hierarchy. Based on this, further reviews were conducted by the author as single reviewer.

The detail scores for all levels of the assessment package for the 15 case studies are included in **Appendix B,** and a discussion of the scores follows in Chapter 4.

3.6 CONCLUSION

It can be concluded that the Nkangala district contributes greatly to the economy of the Mpumalanga province and the country, due to the various land uses that dominates the district. That inevitably led to demand of housing projects, a listed activity that requires an EIA. A sample of 15 "beefed up" scoping reports of these housing developments produced under the old EIA regulations (1997-2006) were reviewed to determine their quality status using the Lee and Colley review package. This review package contains review criteria, assessment symbols and a collation sheet to record the scores.

Although South Africa, including other countries, have published research on EIR quality review, no work has been published for quality reviews of housing developments to assess EIA effectiveness. This dissertation presents results and findings of the quality assessment of 15 EIR's for housing developments in Nkangala district of Mpumalanga province. These results are presented and discussed in detail in Chapter 4.

CHAPTER 4: RESULTS AND DISCUSSION

4.1 INTRODUCTION

The Lee and Colley review package was applied to EIR's for EIA's of 15 housing projects from the Nkangala district. The main aim of the study was to assess and evaluate the quality of EIR's. This Chapter presents the results. The sample revealed very similar results to that of the other South African studies.

The results of the overall scores, review areas, review categories and review sub-categories of the EIRs that were evaluated are presented in **Table 4.1.** The rest of the discussion in this Chapter will refer to these values, and the graphs will be representing the data in this table.

	Summary of category grades	A	B	C	D	E	F	% A-C	% A-B	% C-D	% E-F
1.1	Description of the development	7	5	3	0	0	0	100	80	20	0
1.2	Site description	0	1	12	2	0	0	87	67	93	0
1.3	Waste and residuals	4	2	9	0	0	0	100	40	60	0
1.4	Environmental description	7	3	5	0	0	0	100	67	33	0
1.5	Base line condition	4	3	6	2	0	0	87	47	53	0
2.1	Definition of impacts	0	2	11	0	2	0	87	13	73	13
2.2	Identification of impacts	6	4	3	2	0	0	87	67	33	0
2.3	Scoping	9	4	2	0	0	0	100	87	13	0
2.4	Prediction of impact magnitude	4	7	2	2	0	0	87	73	27	0
2.5	Assessment of impact significance	1	5	6	3	0	0	80	40	60	0
3.1	Alternatives: Feasible alternatives considered	2	4	6	3	0	0	80	40	60	0
3.2	Scope and effectiveness of mitigation measures	4	7	1	1	2	0	80	73	13	13
4.1	Layout of the statement	2	10	1	2	0	0	87	80	20	0
4.2	Presentation	5	5	5	0	0	0	100	67	33	0
4.3	Emphasis	7	2	4	2	0	0	87	60	40	0
4.4	Executive (non technical) summary	0	2	8	5	0	0	67	13	87	0
	Summary of review area grades										
1	**Description of development and the environment**	**4**	**8**	**3**	**0**	**0**	**0**	**100**	**80**	**20**	**0**
2	**Identification and evaluation of key impacts**	**2**	**8**	**5**	**0**	**0**	**0**	**100**	**67**	**33**	**0**
3	**Alternatives and mitigation**	**0**	**8**	**4**	**1**	**2**	**0**	**80**	**53**	**33**	**20**
4	**Communication of results**	**2**	**8**	**3**	**2**	**0**	**0**	**87**	**80**	**20**	**0**
	Overall EIR grades	**1**	**4**	**6**	**4**	**0**	**0**	**73**	**33**	**66**	**0**

Table 4.1 Results of quality review: Overall EIR, Review Area and Review Category grades, and percentage of EIRs in various grade groupings at these review levels

Keys to grades: A - Well performed, B – Generally satisfactory, C – Just satisfactory, D –Just unsatisfactory, E – Poor attempt, F – Did not attempt, N – Not applicable, % Satisfactory (A-C). % Boundary grades (C-D)

4.2 OVERALL QUALITY OF THE REPORTS

A summary of the results gained from the application of the review package to the 15 housing development EIR's can be seen in **Table 4.1.** The analysis of the overall quality of EIRs (**Table 4.1**) shows that 73% of the sample was rated as satisfactory (A-C). One of the EIR's was rated as well performed (A), 27% (four reports) were rated as satisfactory with minor omissions (B), and another 40% (six reports) rated as just satisfactory despite omissions and/or inadequacies (C). Four reports (27%) were rated as just unsatisfactory (D), and none were rated as a poor attempt (E) or not attempted (F). The most common grade was C (satisfactory), followed by B (generally satisfactory) and D (just unsatisfactory.) No reports received the worst performance (E-F) (see **Figure 4.1).** The results indicate that in general the quality of EIRs for housing developments were satisfactory.

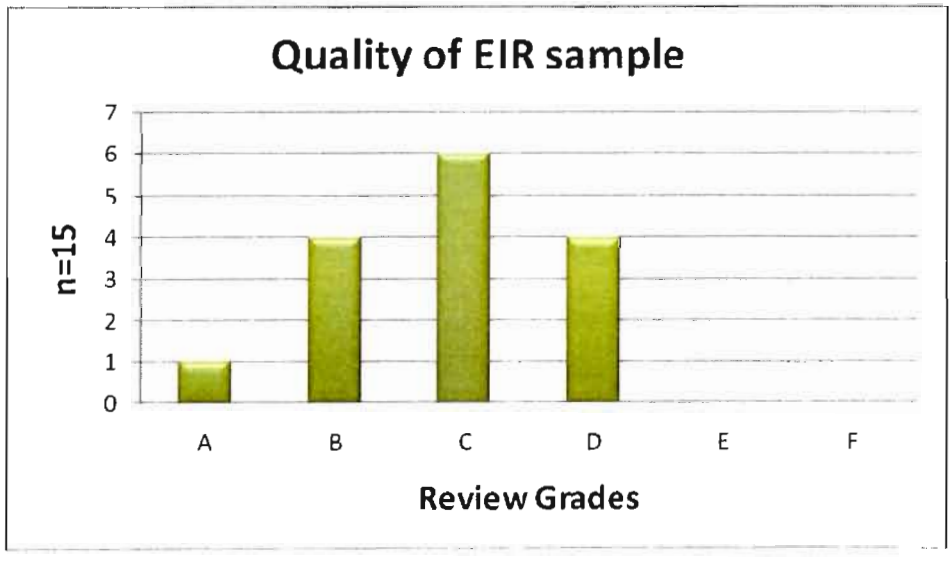

Figure 4.1 Overall EIR's score grades

4.3 QUALITY OF REVIEW AREAS

The EIR's addressed Review Area 1 (Description of development and the environment) and Review Area 4 (Communication of results) to a satisfactory degree, achieving 100% and 96% satisfactory grades respectively **(Figure 4.2).** The identification and evaluation of key impacts (Review Area 2) was also addressed satisfactorily, obtaining 100% satisfactory score grades, and alternatives and mitigation (Review Area 3) with 80% satisfactory scores; although the EIR's had relatively high satisfactory scores in this Review Area (3) this was the only Review Area where the EIR's also received the highest frequency (20%) of unsatisfactory (D-F) grades.

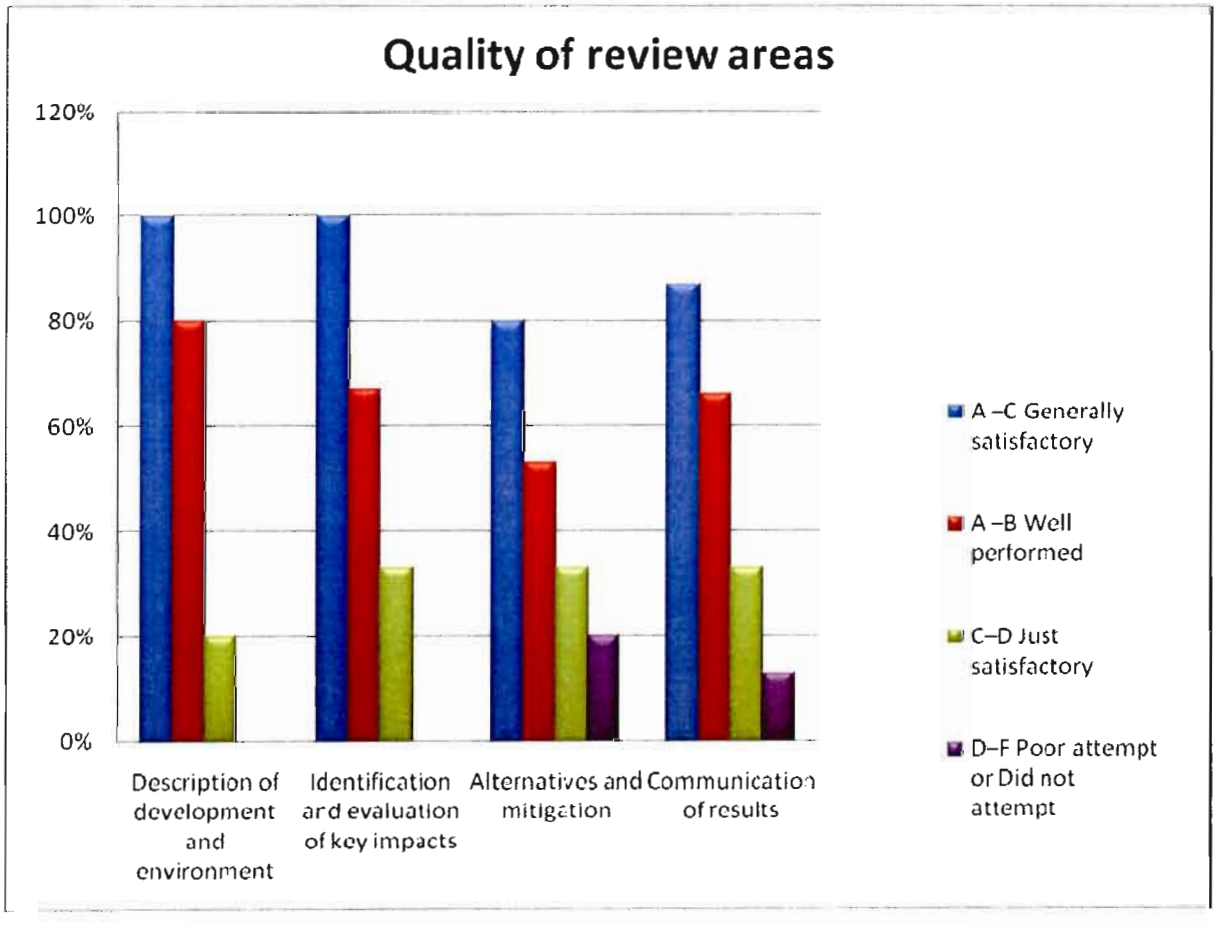

Figure 4.2 Qualities of Review Areas

4.3.1. Review Area 1: Description of development and the environment

The purpose of this Review Area is to evaluate the performance of the EIR's in dealing with the purpose and objectives of the development, the existing baseline conditions and the site that will be affected by the development and waste management during phases in the life cycle of the project.

The EIR's that were reviewed revealed that 100% of the sample does address the requirements of Review Area 1 (Description of development and the environment) to a satisfactory degree (A-C). Furthermore 80% of the reports received the highest grade (A-B) and the other 20% of the reports contained just satisfactory (C) despite omissions and or inadequacies. None of the reports were rated as unsatisfactory (D), a poor attempt (E) or no attempt (F). The most common grade was B (well performed), followed by C (satisfactory with minor omissions). Several of the categories within this Review Area also displayed high percentages of satisfactory grades (A-C), i.e. description of the development (1.1), waste (1.3) and environmental description (1.4) with no unsatisfactory grade (D-F). Description of the development (1.1) received 80% of the highest grade (A-B) making this the best performed review area in this entire review **(see Table 4.1).**

The other two categories also had high percentages (87%) of satisfactory grades (A-C), with two EIR's obtaining unsatisfactory (D) grades, i.e. site description (1.2) and baseline conditions (1.5). The weaknesses and omissions were related to several sub-categories, i.e. the expected rate of production (1.17) was not described, estimated duration of different phases (1.2.3) was omitted, the number of expected workers and visitors (1.2.4) was not always indicated, the infrastructure required (1.2.6) was omitted. The raw materials that will be used during the different phases (1.1.8) were not described and the site plan (1.2.1) was not included. The description of access to the site and likely means of transport (1.2.5) and important components of the affected environment (1.5.1)

could have been performed better. The description of these sub-categories is found in **Appendix A** and their detailed results are found in **Appendix C.**

4.3.2 Review Area 2: Identification and evaluation of key impacts

The aim of this review area is to clearly outline how well certain tasks relating to the methodology used to identify, predict and assess environmental impacts have been done. The majority of the EIR's reviewed obtained satisfactory (A-C) 87% for definition of impacts (2.1), 100% (A-C) for the identification of impacts (2.2) and for scoping (2.3). Scoping (2.3) performed the best within this review category. However, a quarter of the EIRs evaluated achieved an unsatisfactory score for the definitions of impacts (2.1). Particular problem areas were related to impacts arising from non-standard operating procedures (2.4.1), expressing predictions of impacts (2.4.2) and description of significance of impacts to the affected community (2.5.1).

4.3.3 Review Area 3: Alternatives and mitigation

The aim of this review area is to evaluate how the EIRs addressed the consideration of alternatives and mitigation measures. The results again revealed that most of the EIR's reviewed achieved satisfactory descriptions of feasible alternatives that should have been considered. Similarly, for the effectiveness of mitigation measures and its influence, 80% of the EIRs obtained a satisfactory score (A-C) in these two categories. However, 13% of the EIRs assessed revealed unsatisfactory scores (D-E). The inadequacies and omissions were related to the description of the alternatives (3.1.1) i.e. the alternative site for the housing projects was omitted and although mitigation measures were identified, the phases when the mitigation measures should be implemented were not discussed. The indication of effectiveness of mitigation measures was not clearly outlined, making this the weakest performing Review Area. The detailed results of these sub-categories are found in **Appendix C.**

4.3.4 Review Area 4: Communication of results

This review area evaluates how well the results of EIA's were communicated in the final reports. The results indicate that 87% of the reports were rated as just satisfactory, making this a satisfactory performed review area. The results obtained indicate that 80% of the EIR's contained a satisfactory layout of the statement (4.1), 100% for the presentation (4.2), 87% for emphasis (4.3) and 67% for non-technical summary. However, there were omissions in this Review Area; i. e. 13% of the EIR's revealed unsatisfactory (D-E) quality with omissions and deficiencies in the emphasis review category (4.3) and 33% for the non-technical summary (4.4) review category. The omissions and deficiencies were related to bias statements (4.3.3) contained in the EIR's and not acknowledging external sources. Refer to **Appendix A** for the description of these sub-categories and their detailed results in **Appendix C**.

4.4 KEY FINDINGS OF THE RESULTS

The review category and sub-category grades in each Review Area allowed strengths and weaknesses to be determined. The quality of the categories were generally high, accordingly there are no categories that can be regarded as significantly weak. The weak category reflects the least strong areas.

Categories that obtained a percentage of highest grade (A-B), higher than 50%, were regarded as strengths, and are listed below, starting from the best performed:

- Scoping (2.3) (Best performed) 87%
- Description of the site (1.1) 80% and layout of the report (4.1) 80%
- Prediction of impacts (2.4) 73% and scope and effectiveness of mitigation measures (3.2) 73%
- Identification of impacts (2.2) 67%, environmental description (1.4) 67%, presentation (4.2) 67% and site description (1.2) 67%

- Emphasis (4.3) 60%

There were no categories with (F) grades; nor any with more than 50% (E) grades. The categories with poorest grades are listed, starting from the worst performed (E):

- Non-technical summary (4.4) 33%
- Scope and effectiveness of mitigation measures (3.2) 20%, assessment of impact significance (2.5) 20% and feasible alternatives considered (3.1) 20%
- Site description (1.2) 13%, baseline conditions (1.5) 13%, and prediction of impacts (2.4) 13% ,
- Definition of impacts (2.1) 13%, identification of impacts (2.2) 13%, layout of the report (4.1) 13% and emphasis (4.3) 13%.

It is evident from the rankings of 100% satisfactory grades (A-C) and the highest (A-B) scores that Review Area 1, Review Area 2 and Review Area 3 are the strengths of the EIRs. In some areas categories received scores that allowed them to be considered as both strengths and weaknesses. In these categories a percentage of (A-B) grades higher than 50%, and frequency of (E-F) scores were achieved, making these fall in both weak and strengths categories.

The rankings also reveal that some of the categories were weak in Review Area 3. However, areas of significant weaknesses were found in several review sub-categories with 50% and higher percentages of (E-F) categories. These sub-category areas are listed below and their detailed results are included in **Appendix C**.

In Review Area 1: – Starting from the weakest sub-category:

- Expected rate of production – (1.17) 100%, estimated duration of different phases – (1.2.3) 100%, expected number of workers and visitors – (1.2.4) and infrastructure required – (1.2.6) 100%. In this case 100% indicate that none of the EIR's addressed the review sub-category in a satisfactory manner. However, this is normally not reflected in the higher levels of the

assessment since the EIR's tend to perform better in other review sub-categories and thus not affect the final score of the review area.

- Raw materials used during different phases – (1.1.8) 50%, site plan - (1.2.1) 50% and access to site and likely means of transport – (1.2.5) 50%.

In Review Area 2:

- Description of interaction of effects of projects on the environment – (2.1.2) 67%, Quantification of impact magnitude predictions – (2.4.2) 67%, and the description of significance of impacts to the affected community – (2.5.1) 67%.

In Review Area 3:

- The serious weaknesses were in the description of the alternatives. Description of analysis of range of alternatives – (3.1.2) 67%, investigation of at least two alternatives – (3.1.3) 67% and indication of effectiveness of mitigation measures – (3.2.4) 67%.

In Review Area 4:

- External sources were not adequately acknowledged – (4.1.3) 67% and inclusion of non-technical summary – (4.4.1) 33%.

Key findings

- More than 70% of EIR's reviewed were found to be of satisfactory quality
- The overall Review Area scores presented are higher than the reviewed score of categories and sub-categories. Some of the review sub-categories were poorly addressed by the EIR's but could not be reflected through the final review score, since the EIR's tend to address better the review category and thus obtain a good final score. The categories that were best performed were found in Review Area 1 (Description of development and the environment), Review Area 2 (Identification and evaluation of key impacts) and Review Area 4 (Communication of results).

- The categories where most of the EIR's performed poorly (D-E) were in Review Area 3 (Alternatives and mitigation) and Review Area 2 (Identification and evaluation of key impacts).

The findings of the EIR's quality for EIA for housing developments revealed strengths and weaknesses, and also established a baseline for the quality of EIR's from the 1997 EIA regulations (South Africa, 1998b). Comparison of similar work is essential to determine trends and patterns of the quality of the Environmental Impact Reports (EIRs) produced by the South African EIA system.

4.5 DISCUSSION

The Lee and Colley review package has been used to evaluate the quality of a number of samples of South African environmental impact reports (EIRs). These samples include EIA's with the potential of impacting on Wetlands, EIA's from the North West province and EIA's for mining projects (Sandham and Pretorius, 2008a; Sandham *et al.*, 2008b; Sandham *et al.*, 2008c).To obtain the trends and patterns of the quality of South African Environmental Impact Reports (EIRs), the findings of these studies that were published in South Africa were compared. The comparison of the studies is tabulated in **Table 4.2** below.

The findings reveal that the South African EIR's produced thus far, are of satisfactory quality (Sandham and Pretorius, 2008a; Sandham *et al.*, 2008b; Sandham *et al.*, 2008c). The findings in **Table 4.2** again revealed scoping, description of the site, and layout of the report as the strengths in the South African EIA system. The quality of specialist studies was also found to be satisfactory (Sandham *et al.*, 2005). The areas that require more focus are the assessment of impacts and significance, scope and effectiveness of mitigation measures, prediction of impacts and investigation of alternatives. Sandham *et al.*, (2005) and Du Pisani *et al.*, (2005) also revealed the quality of baseline information as poor, needing more attention.

The findings amongst the various sectors are interesting especially at category levels. The sectors that are related to economic growth have similar patterns of quality. The other miscellaneous sectors i.e. water supply or projects with the potential to impact wetland, etc. indicated similar quality of worst categories (**Table 4.2**).

GENERAL FINDINGS	Quality of Housing EIR in Nkangala district	Quality of mining EIR in South Africa[1]	Quality of EIRs in the North West Province[2]	Quality of EIR with potential to harm wetlands[3]
FINDINGS OF OVERALL EIR	EIRs were found to be of satisfactory quality.	EIRs were found to be of satisfactory quality.	EIRs were found to be of satisfactory quality.	EIRs were found to be of satisfactory quality.
FINDINGS OF REVIEW AREA	Review Area 1, Review Area 2 and Review Area 4 were found to be the Strengths with Review Area 3 as the poorest performed	Review Area 1 and Review Area 4 were found to be the Strengths with Review Area 3 as the poorest performed	The EIRs graded higher Review Area 1 and Review Area 4 and lower In Review Area 3.	Review Area 1 and Review Area 4 were found to be the Strengths
BEST PERFORMED CATEGORIES	Scoping (2.3), description of the site (1.1), layout of the report (4.1), prediction of impacts (2.4), and mitigation measures (3.2) and Identification of impacts (2.2).	Description of the site (1.1), scoping (2.3), layout of the report (4.1) waste (1.3) baseline conditions (1.5) and non-technical summary (4.4)	Presentation (4.2) emphasis (4.3), layout of the report (4.1) and description of the site (1.1).	Environmental description (1.4) and presentation (4.2) description of the site (1.1), baseline conditions (1.5), emphasis and lack of unbiased information (4.3) and the layout of the report (4.1).
WORST PERFORMED CATEGORIES	Non-technical summary (4.4), scope and effectiveness of mitigation measures (3.2), assessment of impact significance (2.5), prediction of impacts (2.4), baseline conditions (1.5) and layout of the report (4.1), definition of impacts (2.1), identification of impacts (2.2) and scope and effectiveness of mitigation measures (3.2).	Prediction of Impacts (2.4), consideration of alternatives (3.1), description of the site (1.2) and baseline conditions (1.5).	Assessment of impact significance (2.5) and consideration of alternatives (3.1), scope and effectiveness of mitigation measures (3.2), prediction of impacts (2.4), Identification of impacts (2.2) and waste (1.3).	Identification of impacts (2.2), waste (1.3), site description (1.2), assessment of impact significance (2.5) definition of impacts (2.1), and prediction of impacts (2.4).

Table 4.2 Comparison to similar studies conducted in South Africa

[1] Sandham *et al.*, 2008c

[2] Sandham and Pretorius, 2008a

[3] Sandham *et al.*, 2008b

4.5.1 What does this say about EIA's for housing developments?

The results reveal that EIA practice in the Nkangala District of Mpumalanga province in South Africa has produced EIR's for housing activities of satisfactory quality. Their quality strengths and weakness are as discussed in section 4.4.

The findings on the poor quality of EIRs i.e. Review Area 3: alternatives and mitigation, revealed similar trends to those results of South African studies (Sandham and Pretorius, 2008a; Sandham *et al.*, 2008b and 2008c) (**Table 4.2**) as well as studies abroad (Canelas *et al.*, 2004; European Commission, 1996; Lee and Colley, 1992).

The poorer performance in Review Area 3 can be ascribed mostly to the limited alternatives that can be considered for low cost housing, due to the nature of developments. The fact that low cost housing projects are part of the development programmes for the district, limit alternatives for the location of the development. For country estates and resorts projects, different reasons for poor alternatives apply. This leads to a battle of environmental issues versus social and political issues. The role of low income housing projects are deemed to be of significant social importance. Thus the low cost housing projects can get away with poor quality EIR's because of political pressure for housing. The leisure resorts on the other hand which are seen as luxury accommodation face stiff opposition from the competent authority. This is of serious concern especially if the housing projects form part of development programmes and are located within a sensitive area. Will EIAs for low cost housing projects be conducted as part of a formality and disregard the significance of sustainable development and environmental protection especially in selecting alternatives. Another factor that could contribute to the poor performance of the alternatives and mitigation measures could be the misinterpretation of the legislation. The legislation does not give a clear description of whether the developer should provide an

alternative with respect to site location or an alternative with regards to the substitution of a project although there is more clarity in the guidelines.

The good performance of description of the development and the environment indicates that the developers, consultants and competent authorities used the pre-consultation phase of the EIA process to properly plan the project ensuring all requirements of the stakeholders are taken into account in the EIR (see **Figure 1.1** for pre-consultation phase 1 of the EIA process).

The good performance of the scoping category is caused mainly by the unique South African "beefed up" scoping reports that incorporate information that is required in the full EIA phase and that of the plan of study (Wood, 2003). This finding is similar to that of other studies conducted in South Africa (**Table 4.2**). These results confirm the finding that scoping is a strong feature of EIA practice in South Africa (Sandham *et al.*, 2008b and 2008c; Sandham and Pretorius, 2008a; Wood, 1999 and 2003).

The unexpectedly good performance is the 66% of EIR's containing non-technical summaries which were not required by the 1997 South African EIA system. This is an indication that EIA practice in the Nkangala District is matching best practice elsewhere.

There was also generally satisfactory performance of waste management. This is in contrast to the finding of the State of the Environment Report for Mpumalanga (2008) which pointed out waste management as the key environmental issue for the Nkangala district (DALA, 2008). The high values for waste on the EIR's reflects how well the requirements to implement waste management were addressed, but due to poor implementation the actual waste management is poor, as reflected in the State of the Environment Report (DALA, 2008).

4.6 CONCLUSION

While assessing the quality of the EIR for housing projects, key conclusions were highlighted. The EIA process is working well for housing projects, however, there were shortcomings identified. These include the consideration of alternatives and mitigation measures. Although other research studied revealed the similar results this is significant, since the main aim of an EIA in the planning stage of the project is to identify environmental impacts that will be detrimental to the environment and put in place mitigation measures that will minimise the harm to the environment. Furthermore there is little evidence to suggest that the use of EIA as an environmental management tool for low cost housing and luxurious housing projects is receiving the same focus by the competent authorities and the developers. This could probably limit EIA effectiveness and defeat the powerful role played by the EIA's in the planning of projects. Though the cause of this could be politically motivated, it could have serious implications on the environment, since the environmental impacts for housing projects occur in all types of housing projects and in all stages of the life cycle of the project: construction, operation, maintenance and demolition. If EIA's are then done as a formality the purpose of EIAs to identify and minimise adverse environmental impacts can be defeated.

The quality review of housing EIR's also highlighted improvements of the South African EIA process. These were evident in the number of EIRs that contained a non-technical summary which is best practice, but not required by the South African legislation. The good performance achieved in the description of the site and communication of results is on par with the results nationally and internationally. This denotes that the quality of EIRs for housing developments in Nkangala district matches best practice elsewhere.

Though there are various aspects that must be considered to establish EIA effectiveness. The method that was used herein focused in the quality review of Environmental Impact Reports (EIRs) for housing developments in Nkangala district.

CHAPTER 5: CONCLUSION AND RECOMMENDATIONS

5.1 CONCLUSION

The main aim of this study was to assess and evaluate the quality of EIR's for housing developments in the Nkangala district in the Mpumalanga province of South Africa, and to recommend possible strategies for improvement of EIA practice in this sector and district. The overall research results indicate that the quality of 73% of Environmental Impact Reports for housing developments in Nkangala district was satisfactory. However, the remaining 27% of reports were of unsatisfactory quality, pointing towards areas of improvement, particularly regarding alternatives and mitigation. The results are in general on par with other studies done in South Africa.

Whilst the quality of description of development and the environment, identification and evaluation of impacts and communication of results was mainly good and satisfactory, however, there were portions of the reports with poor quality in consideration of alternatives and mitigation measures. These issues are a matter of concern for EIA effectiveness, considering that the goal of an EIA is to consider environmental impacts of a proposed development and ensure minimal impacts on the environment. Though some issues are politically motivated and beyond the role of the competent authorities due to the social economic value, adverse environmental impacts must be taken into account and be mitigated to ensure sustainable development.

In order to more fully investigate the effectiveness of EIA, future research should be expanded to include monitoring and auditing of approved EIA projects to determine the level of adherence to mitigation measures and authorisation conditions. It appears that this aspect of the EIA is being addressed by the Law

Enforcement Department and provisions that came into effect under the new EIA regulations promulgated in terms of NEMA in July 2006, but structured research is necessary in the context of EIA effectiveness.

The findings of this research can then serve as baseline data to allow comparison between the new and old regulations towards an improved understanding of EIA effectiveness and improvements to South African EIA.

5.2 RECOMMENDATIONS

- In addition to the current EIA guideline documents the South African quality review package should be utilised as a review method by the authorities and as a guideline by the EIA practitioners. This should contribute to ensuring that the quality of information required is adhered to by the applicant. This in turn could assist the authorities to improve the response time with regards to the issuing of a record of decision, which will be an improvement in the EIA system as the processing time for applications is currently longer, creating backlog problems in the EIA system and causing unnecessary delays (SAIEA, 2003). However, the new EIA regulations have made provision for simpler, quicker and better EIA by introducing activities that only requires a basic assessment. Current research is investigating whether this is happening.
- The environmental experts (the competent authority and consultants) should form part of stakeholders that are involved in allocating areas for low cost and luxurious housing developments, so that they can advise on the sensitive areas that require protection and in turn assist with the selection of alternative sites.
- Further research should be conducted on other listed activities undertaken under the 1997 EIA regulations. This will allow comparison and establishment of quality trends from different sectors within the same province and also comparison of the same activities to other provinces in South Africa. The

results will serve as a base-line of EIR quality and identify weak points of EIA reports across sectors, to be used as part of training for EIA practitioners, and to assess improvements under the 2006 NEMA EIA system.

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APPENDICES

Appendix A -The South African Modified Review Package

Sub Category			Well performed	Satisfactory, minor omissions	Satisfactory, omissions, inadequacies	Unsatisfactory	Poor Attempt	No Attempt	Not Applicable
	Review Area 1: Description of development and the environment	Yes/no	A	B	C	D	E	F	N/A
1.1	**DESCRIPTION OF THE DEVELOPMENT**								
1.1.1	Identification of Applicant								
	Name								
	Address								
1.1.2	Purpose and objectives of Development								
	Purpose								
	Objectives								
1.1.3	Description and nature of activity/development								
	Description								
	Nature								
1.1.4	Description of the site								
	Plans								
	Design								
	Size and scale								
	All relevant phases								

1.1.5	Site plan: siting of project wrt:								
	Existing Infrastructure								
	Adjacent land uses								
	Important environmental features								
1.1.6	Diagrammatic description of Processes and Technology employed								
	Processes								
	Technology								
1.1.7	Expected rate of production								
1.1.8	Raw materials used during different phases								
	Construction Phase : Nature of raw material								
	Quantity of raw material								
	Production Phase: Nature of raw material								
	Quantity of raw material								
1.1.9	Source and availability of water and materials								
	Raw Materials : Sources								
	Availability								
	Water : Sources								
	Availability								
	Totals		0	0	0	0	0	0	0
	Preliminary Grade								
	Review Area 1	Yes/no	A	B	C	D	E	F	N/A
1.2	**SITE DESCRIPTION : Description of onsite land requirements and duration of each land use**								
1.2.1	Site Plan								
	Location of exist buildings & facilities								

	proposed components								
	Infrastructure								
1.2.2	**Description and demarcation of Land use areas**								
	Description of land use								
	Demarcation of different land use areas								
1.2.3	**Estimated duration of different phases**								
	Construction phase								
	Production Phase								
	Decommissioning Phase								
1.2.4	**Expected number of workers and Visitors**								
	Number of workers : Construction phase								
	Production Phase								
	Number of visitors : Construction phase								
	Production Phase								
1.2.5	**Access to site and likely means of transport**								
	Workers : Access to site								
	Means of transport								
	Visitors : Access to site								
	Means of transport								
1.2.6	**Infrastructure required to**								
	Service the project								
	Means of transporting raw material & products								
	approximate quantities								
	TOTAL		0	0	0	0	0	0	0
	Preliminary Grade								

1.3	**WASTES AND RESIDUALS**									
1.3.1	**Estimated types and quantities of waste and disposal routes**									
	Solids : Household									
	Industrial									
	Liquid effluent : Contaminated									
	Sewerage									
	Gaseous emissions									
	Wasted energy									
	Wasted heat									
	Noise									
1.3.2	**Proposed handling/treatment and disposal of wastes and residuals**									
	handling									
	treating									
	disposal									
	TOTAL		0	0	0	0	0	0	0	
	Preliminary Grade									
	Review Area 1	Yes/no	A	B	C	D	E	F	N/A	
1.4	**Environment description: Area and location likely to be affected by development**									
1.4.1	**Indication of likely area to affected**									
	Map									
	Location shown									
	Area shown									
1.4.2	**Biophysical description of the site :**									
	Landscape features									
	dynamics									
	patterns									
1.4.3	**Biological Description of:**									
	ecological processes and functions									
	species presence and seasonality									

	species interrelationships								
	habitat								
1.4.4	**Social characteristics:**								
	patterns of land use								
	resources use								
	present land uses								
	patterns of other human disturbance								
1.4.5	**Cumulative impacts should be included**								
	caused by : Dispersion of pollutants								
	Infrastructural requirements								
	Traffic								
	Effects on human health								
	Socio-economic conditions								
	Physical resources								
	Cultural resources								
	TOTAL		0	0	0	0	0	0	0
	Preliminary Grade								
1.5	**Baseline conditions**								
1.5.1	**Important components of the effected environment**								
	Identified								
	Described.								
1.5.2	**Interaction and effect of project activities on the environment**								
	Identify potential links between project and exist environment								
	How does activities interact								
	Where will activities interact								
	When will they interact								
	Effect on environment								
	TOTAL		0	0	0	0	0	0	0
	Preliminary Grade								

	SUMMARY OF PRELIMINARY GRADES	A	B	C	D	E	F	
1.1	Description Of development	0	0	0	0	0	0	
1.2	Site plan	0	0	0	0	0	0	
1.3	Waste	0	0	0	0	0	0	
1.4	Environmental description	0	0	0	0	0	0	
1.5	Base Line condition	0	0	0	0	0	0	
	FINAL GRADE REVIEW AREA1							

	Review Area 2 Identification and Evaluation of key impacts		A	B	C	D	E	F	N/A
2.1	**Definition of impacts:**								
2.1.1	**Description of effects of project on environment**								
	Direct effects								
	Indirect "								
	Secondary "								
	Cumulative "								
	Short term								
	Medium term								
	Long term								
	Permanent								
	Temporary								
	Positive								
	Negative								
2.1.2	**Identify and describe the effect and interaction of effects on**								
	Human beings								
	Flora and fauna								
	Soils								
	Water								
	Air								
	Climate								
	Landscape								

	Material assets								
	Cultural heritage								
	Architectural heritage								
	Archaeological heritage								
2.1.3	**Impacts arising from non-standard operating procedure**								
	Accidents								
	Adverse weather								
2.1.4	**Impacts arising from deviation from Base Line conditions**								
	Difference between conditions if development do not proceed								
	Those predicted to prevail as a consequence of it								
	TOTAL		0	0	0	0	0	0	0
	Preliminary Grade								
	Review Area 2		A	B	C	D	E	F	N/A
2.2	**Identification of Impacts (all significant impacts must be identified)**								
2.2.1	**Assess Impacting activities from 4 distinct phases**								
	Pre-Construction Phase								
	Construction -								
	Operational -								
	Decommissioning --								
2.2.2	**All the possible impacts from each phase must be identified**								
	Pre-Construction Phase								
	Construction -								
	Operational -								
	Decommissioning --								
	TOTAL		0	0	0	0	0	0	0
	PRELIMINARY GRADE								

	Review Area 2		A	B	C	D	E	F	N/A
2.3	Scoping								
2.3.1	**Supply example of notice in published in media to contact**								
	General public								
	Special interest groups								
2.3.2	**Onsite Notice**								
	Description of onsite Notice								
2.3.3	**Identify people affected by proposed development**								
2.3.4	**Identify people that have an interest in**								
	Proposals								
	Environment								
2.3.5	**Describe Procedures whereby affected parties can participate**								
	opportunities to participate								
	participate at all appropriate stages								
2.3.6	**provision for interested and affected parties to express their views**								
	stated time period								
	about scope of environmental impact								
	alternatives								
	issues								
2.3.7	**List of issues identified as of concern to**								
	Interested parties								
	Concerned parties								
2.3.8	**Notification criteria which entails**								
	Reasons for participation in various stages of the process								
	Where the report can be obtained								
	Where it can be examined								
	Where and to whom comments on reports should be send								
	Specified period for receiving comments								

2.3.9	**A record of all the views as an addendum to the report**								
	views of and correspondence with interested parties								
	views of and correspondence with affected parties								
	Addendum to the report.								
2.3.10	**Evidence that**								
	Interested parties where approached for comments								
	Was done within the stated period								
2.3.11	**Key impacts**								
	should be identified								
	should be selected								
	for more intense investigation.								
	TOTALS		0	0	0	0	0	0	0
	PRELIMINARY GRADE								

Review Area 2			A	B	C	D	E	F	N/A
2.4	**Prediction of impact magnitude** (should be described in exact terms where possible)								
2.4.1	**Prediction of impact magnitude**								
	standard method - (guideline document)								
	nature of impact								
	extend								
	duration								
	intensity								
	probability								
	Other criteria								
2.4.2	**Express predictions of impact in**								
	measurable quantities								
	with ranges								
	and/or confidence limits								
	TOTAL		0	0	0	0	0	0	0

	PRELIMINARY GRADE								
	Review Area 2		A	B	C	D	E	F	N/A
2.5	Assessment of impact significance								
2.5.1	Description of significance of impact to affected community								
	Effects on public health								
	Risk of life								
	Size of affected community								
2.5.2	Significance of impact in terms of local and national societal values								
	Assessed								
	Take account of nature								
	Duration								
	Intensity								
	Extent								
	Probability								
2.5.3	Proposed method of assessing significance								
	Rating and ranking of impacts to attach impact values								
	TOTAL		0	0	0	0	0	0	0
	PRELIMINARY GRADE								

	SUMMARY OF PRELIMINARY GRADES REVIEWING AREA 2	A	B	C	D	E	F
2.1	Definition of impacts:	0	0	0	0	0	0
2.2	Identification of Impacts	0	0	0	0	0	0
2.3	Scoping	0	0	0	0	0	0
2.4	Prediction of impact magnitude	0	0	0	0	0	0
2.5	Assessment of impact significance	0	0	0	0	0	0
	TOTAL	0	0	0	0	0	0
	FINAL GRADE REVIEW AREA 2						

	Review Area 3.1: Alternatives and Mitigation	A	B	C	D	E	F	N/A
3.1	**Feasible alternatives should have been considered**							
3.1.1	**Description of methods used to identify alternatives**							
	Discussions with authorities (examples)							
	Overlay maps							
	Brainstorming							
	Delphi technique							
3.1.2	**Description of analyses of range of alternatives**							
	Decide which will be carried out for further investigation							
	Which ones will be discarded							
	Analysis must be described							
3.1.3	**Minimum of two (2) alternatives should be investigated**							
	in further detail							
3.1.4	**Discussion and reasons for final choice**							
	Main environmental advantages and disadvantages							
	Extend and significance							
	possibility for mitigation of these alternatives							
	Reasons for final choice							
	TOTAL	0	0	0	0	0	0	0
	PRELIMINARY GRADE REVIEW AREA 3.1							
	Review Area 3.2	**A**	**B**	**C**	**D**	**E**	**F**	**N/A**
3.2	**Scope and effectiveness of mitigation measures**							
3.2.1	**Description of mitigation measures and it's influence**							
	on significance of each impact							
	Status of each impact							
3.2.2	**Mitigation measures considered should include**							
	alternative ways of meeting the need							
	Improving monitoring and management							

	monetary compensation								
	replacing of e.g. wetlands by constructing others								
	relocating villages or displaced people								
	rehabilitating sites								
	changes in planning and design								
	provision of alternative facilities								
	pollution control								
3.2.3	**Mitigation measures must be clearly defined**								
	When								
	How it should be done								
3.2.4	**Indication of effectiveness of these measures**								
	TOTAL		**0**	**0**	**0**	**0**	**0**	**0**	**0**
	PRELIMINARY GRADE REVIEW AREA 3.2								

	SUMMARY OF PRELIMINARY GRADES- REVIEWING AREA 3	**A**	**B**	**C**	**D**	**E**	**F**
3.1	Feasible alternatives should have been considered	**0**	**0**	**0**	**0**	**0**	**0**
3.2	Scope and effectiveness of mitigation measures	**0**	**0**	**0**	**0**	**0**	**0**
	TOTAL	**0**	**0**	**0**	**0**	**0**	**0**
	FINAL GRADE REVIEW AREA 3						

	Review Area 4 COMMUNICATION OF RESULTS	**Yes/no**	**A**	**B**	**C**	**D**	**E**	**F**	**N/A**
4.1	**Layout of the statement**								
4.1.1	**Introduction**								
	Briefly describing the project								
	The aims of the environmental assessment								
	How those aims are to be achieved								

4.1.2	**Arrangement of information**								
	Logically in sections/ chapters								
	Whereabouts of important data clearly defined								
4.1.3	**External Sources**								
	Original source must be acknowledged at that point in text								
	and in reference								
	TOTAL		0	0	0	0	0	0	0
	PRELIMINARY GRADE REVIEW AREA 4.1								
	Review Area 4.2	**Yes/no**	**A**	**B**	**C**	**D**	**E**	**F**	**N/A**
4.2	**Presentation**								
4.2.1	**Presentation of information**								
	Comprehensible to non specialist								
	Appropriate tables, graphs and other devices								
	Unnecessary technical language avoided								
	Unnecessary obscure language avoided								
4.2.2	**Statement as an integrated whole**								
	Summaries of data presented in separately								
	bound appendices should be introduced in main body of text.								
	TOTAL		0	0	0	0	0	0	0
	PRELIMINARY GRADE REVIEW AREA 4.2								
	Review Area 4.3	**Yes/no**	**A**	**B**	**C**	**D**	**E**	**F**	**N/A**
4.3	**Emphasis (Info should be represented without bias)**								
4.3.1	**Prominence and emphasis given to**								
	potentially severe and adverse impacts								
	substantially favorable environmental impacts								
4.3.2	**Statement must be unbiased**								
	should not lobby for any particular point of view								

	adverse impacts should not be disguised by								
	euphemisms or platitudes								
TOTAL			0	0	0	0	0	0	0
PRELIMINARY GRADE FOR REVIEW AREA 4.3									
Review Area 4.4		Yes/no	A	B	C	D	E	F	N/A
4.4	Non-Technical Summary								
4.4.1	Summary of Environmental Impact Report								
	Does the report contains brief description of the project								
	Should include main findings and mitigation measures								
TOTAL			0	0	0	0	0	0	0
PRELIMINARY GRADE FOR REVIEW AREA 4.3									
SUMMARY OF PRELIMINARY GRADES- REVIEWING AREA 4			A	B	C	D	E	F	
4.1	Presentation		0	0	0	0	0	0	
4.2	Emphasis		0	0	0	0	0	0	
TOTAL			0	0	0	0	0	0	
FINAL GRADE REVIEW AREA 4									
SUMMARY OF ALL REVIEW AREAS			A	B	C	D	E	F	
1	Description of Project		0	0	0	0	0	0	
2	Identification and Development of key impacts		0	0	0	0	0	0	
3	Alternatives and Mitigation		0	0	0	0	0	0	
4	Communication of results		0	0	0	0	0	0	
TOTAL			0	0	0	0	0	0	
FINAL GRADE REVIEW FOR EIA									

APPENDIX B: The Review Category Results per EIR

RESULTS FOR REPORT 1

Best Performance	Review Category number	Score
Description of the development	1.1	B
Scoping	2.3	A
Scope and effectiveness of mitigation measures	3.2	B
Prediction of impacts	2.4	B
Layout of statement	4.1	B
Presentation	4.2	B
Satisfactory performance		
Site description	1.2	C
Waste	1.3	C
Environmental description	1.4	C
Definition of impacts	2.1	C
Identification of impacts	2.2	C
Baseline conditions	1.5	C
Emphasis	4.3	C
Worst Performance		
Assessment of impact significance	2.5	D
Feasible alternatives that should have been considered	3.1	D
Non Technical summary	4.3	D

RESULTS FOR REPORT 2

Best Performance	Review Category number	Score
Description of the development	1.1	A
Waste	1.3	A
Environmental description	1.4	A
Scoping	2.3	A
Prediction of impacts	2.4	B
Assessment of impact significance	2.5	B
Presentation	4.2	A
Emphasis	4.3	A
Satisfactory performance		
Site description	1.2	C
Baseline conditions	1.5	C
Definition of impacts	2.1	C
Layout of statement	4.1	C
Non Technical summary	4.4	C
Worst performance		
Scope and effectiveness of mitigation measures	3.1	D
Feasible alternatives that should have been considered	3.2	D

RESULTS FOR REPORT 3

Best Performance	Review Category number	Score
Description of the development	1.1	A
Site Description	1.2	B
Waste	1.3	A
Environmental description	1.4	B
Baseline conditions	1.5	A
Identification of impacts	2.2	A
Scoping	2.3	A
Prediction of impacts	2.4	A
Assessment of impact significance	2.5	B
Scope and effectiveness of mitigation measures	3.2	B
Layout of statement	4.1	A
Presentation	4.2	A
Emphasis	4.3	B
Satisfactory performance		
Definition of impacts	2.1	C
Feasible alternatives that should have been considered	3.2	C
Non Technical summary	4.4	C
Worst Performance		
No allocation of D-E in this report		

RESULTS FOR REPORT 4

Best Performance	Review Category number	Score
Scoping	2.3	A
Feasible alternatives that should have been considered	3.1	B
Layout of statement	4.1	B
Scope and effectiveness of mitigation measures	3.2	B
Satisfactory performance		
Description of the development	1.1	C
Site Description	1.2	C
Waste	1.3	C
Environmental description	1.4	C
Baseline conditions	1.5	C
Definition of impacts	2.1	C
Prediction of impacts	2.4	C
Assessment of impact significance	2.5	C
Presentation	4.2	C
Emphasis	4.3	C
Non Technical summary	4.4	C
Worst Performance		
Identification of impacts	2.1	D

RESULTS FOR REPORT 5

Best Performance	Review Category number	Score
Description of the development	1.1	B
Waste	1.3	B
Environmental description	1.4	A
Identification of impacts	2.2	A
Scoping	2.3	B
Prediction of impacts	2.4	B
Scope and effectiveness of mitigation measures	3.2	B
Layout of statement	4.1	B
Presentation	4.2	A
Satisfactory performance		
Site Description	1.2	C
Baseline conditions	1.5	C
Definition of Impacts	2.1	C
Assessment of impact significance	2.5	C
Feasible alternatives that should have been considered	3.1	C
Emphasis	4.3	C
Non Technical summary	4.4	C
Worst Performance		
No allocation of D-E in this report		

RESULTS FOR REPORT 6

Best Performance	Review Category number	Score
Description of the development	1.1	A
Waste	1.3	A
Environmental description	1.4	A
Identification of impacts	2.2	B
Scoping	2.3	B
Prediction of impacts	2.4	A
Assessment of impact significance	2.5	A
Scope and effectiveness of mitigation measures	3.2	A
Layout of statement	4.1	B
Presentation	4.2	A
Emphasis	4.3	B
Satisfactory performance		
Site Description	1.2	C
Baseline conditions	1.5	C
Definition of Impacts	2.1	C
Feasible alternatives that should have been considered	3.1	C
Non Technical summary	4.4	C

Worst Performance

No allocation of D-E in this report

RESULTS FOR REPORT 7

Best Performance	Review Category number	Score
Description of the development	1.1	A
Environmental description	1.4	B
Baseline conditions	1.5	B
Identification of impacts	2.2	A
Scoping	2.3	A
Prediction of impacts	2.4	B
Feasible alternatives that should have been considered	3.1	A
Layout of statement	4.1	B
Presentation	4.2	B
Emphasis	4.3	A
Satisfactory performance		
Site Description	1.2	C
Waste	1.3	C
Definition of Impacts	2.1	C
Assessment of impact significance	2.5	C
Worst Performance		
Scope and effectiveness of mitigation measures	3.2	E
Non Technical summary	4.4	D

RESULTS FOR REPORT 8

Best Performance	Review Category number	Score
Description of the development	1.1	B
Waste	1.3	A
Environmental description	1.4	A
Baseline conditions	1.5	B
Definition of Impacts	2.1	B
Identification of impacts	2.2	A
Scoping	2.3	A
Prediction of impacts	2.4	A
Assessment of impact significance	2.5	B
Layout of statement	4.1	B
Emphasis	4.3	A
Satisfactory performance		
Site Description	1.2	C
Scope and effectiveness of mitigation measures	3.2	C
Presentation	4.2	C

Non Technical summary	4.4	C

Worst Performance

Feasible alternatives that should have been considered	3.1	D

RESULTS FOR REPORT 9

Best Performance	Review Category number	Score
Description of the development	1.1	B
Environmental description	1.4	B
Baseline conditions	1.5	A
Definition of Impacts	2.1	B
Identification of impacts	2.2	A
Scoping	2.3	A
Prediction of impacts	2.4	A
Scope and effectiveness of mitigation measures	3.2	A
Layout of statement	4.1	A
Presentation	4.2	A
Emphasis	4.3	A

Satisfactory performance

Site Description	1.2	C
Waste	1.3	C
Assessment of impact significance	2.5	C
Feasible alternatives that should have been considered	3.1	C

Worst Performance

Non Technical summary	4.4	D

RESULTS FOR REPORT 10

Best Performance	Review Category number	Score
Description of the development	1.1	A
Environmental description	1.4	A
Baseline conditions	1.5	A
Identification of impacts	2.2	B
Prediction of impacts	2.4	B
Assessment of impact significance	2.5	B
Scope and effectiveness of mitigation measures	3.2	A
Layout of statement	4.1	B
Presentation	4.2	B
Emphasis	4.3	A

Non Technical summary	4.4	B
Satisfactory performance		
Site Description	1.2	C
Waste	1.3	C
Scoping	2.3	C
Feasible alternatives that should have been considered	3.1	C
Worst Performance		
Definition of Impacts	2.1	E

RESULTS FOR REPORT 11

Best Performance	**Review Category number**	Score
Description of the development	1.1	A
Environmental description	1.4	B
Baseline conditions	1.5	B
Identification of impacts	2.2	A
Scoping	2.3	A
Prediction of Impacts	2.4	B
Layout of statement	4.1	B
Presentation	4.2	B
Emphasis	4.3	A
Satisfactory performance		
Site Description	1.2	C
Waste	1.3	C
Definition of Impacts	2.1	C
Assessment of impact significance	2.5	C
Worst Performance		
Feasible alternatives that should have been considered	3.1	E
Scope and effectiveness of mitigation measures	3.2	E
Non Technical summary	4.4	D

RESULTS FOR REPORT 12

Best Performance	**Review Category number**	Score
Description of the development	1.1	B
Scoping	2.3	B
Feasible alternatives that should have been considered	3.1	B

Scope and effectiveness of mitigation measures	3.2	B
Satisfactory performance		
Waste	1.3	C
Environmental description	1.4	C
Definition of Impacts	2.1	C
Identification of impacts	2.2	C
Presentation	4.2	C
Worst Performance		
Site Description	1.2	D
Baseline conditions	1.5	D
Prediction of impacts	2.4	D
Assessment of impact significance	2.5	D
Layout of statement	4.1	D
Emphasis	4.3	D
Non Technical summary	4.4	D

RESULTS FOR REPORT 13

Best Performance	**Review Category number**	Score
Description of the development	1.1	B
Scoping	2.3	B
Feasible alternatives that should have been considered	3.1	B
Scope and effectiveness of mitigation measures	3.2	B
Satisfactory performance		
Waste	1.3	C
Environmental description	1.4	C
Definition of Impacts	2.1	C
Identification of impacts	2.2	C
Presentation	4.2	C
Worst Performance		
Site Description	1.2	D
Baseline conditions	1.5	D
Prediction of impacts	2.4	D
Assessment of impact significance	2.5	D
Layout of statement	4.1	D
Emphasis	4.3	D
Non Technical summary	4.4	D

RESULTS FOR REPORT 14

Best Performance	Review Category number	Score
Description of the development	1.1	A
Environmental description	1.4	A
Baseline conditions	1.5	A
Identification of impacts	2.2	B
Prediction of impacts	2.4	B
Assessment of impact significance	2.5	B
	3.2	B
Scope and effectiveness of mitigation measures	4.1	B
Layout of statement	4.2	B
Presentation	4.3	A
Emphasis		
Satisfactory performance		
Site Description	1.2	C
Waste	1.3	C
Scoping	2.3	C
Feasible alternatives that should have been considered	3.1	C
Worst Performance		
Definition of Impacts	2.1	E
Non Technical summary	4.4	D

RESULTS FOR REPORT 15

Best Performance	Review Category number	Score
Scoping	2.3	A
Feasible alternatives that should have been considered	3.1	B
Scope and effectiveness of mitigation measures	3.2	B
Layout of statement	4.1	B
Satisfactory performance		
Description of the development	1.1	C
Site Description	1.2	C
Waste	1.3	C
Environmental description	1.4	C
Baseline conditions	1.5	C
Definition of Impacts	2.1	C
Prediction of impacts	2.4	C
Assessment of impact significance	2.5	C
Presentation	4.2	C

Emphasis	4.3	C
Non Technical summary	4.4	C
Worst Performance		
Identification of impacts	2.2	D

APPENDIX C- The Review Sub-category Results

1.1 Description of the development	% A-C	% A-B	% C-D	% E-F
1.1.1 Identification of Applicant	100	67	33	0
1.1.2 Purpose and objectives of development	50	100	0	0
1.1.3 Description and nature of activity/development	100	50	50	0
1.1.4 Description of the site	50	50	50	0
1.1.5 Proposed location	0	50	50	0
1.1.6 Description of processes and technology employed	0	50	50	0
1.1.7 Expected rate of production	0	0	0	100
1.1.8 Raw materials used during different phases	0	50	0	50
1.1.9 Source and availability of water and materials	50	0	100	0
1.2 Site description				
1.2.1 Site plan	50	0	50	50
1.2.2 Description and demarcation of land use areas	100	50	50	0
1.2.3 Estimated duration of different phases	0	0	0	100
1.2.4 Expected number of workers and visitors	0	0	0	100
1.2.5 Access to site and likely means of transport	50	0	50	50
1.2.6 Infrastructure required	0	0	0	100
1.3 Waste and residuals				
1.3.1 Types and quantities of waste and disposal routes	50	0	100	0
1.3.2 Proposed handling and disposal of wastes	50	0	100	0
1.4 Environmental description				
1.4.1 Indication of likely area to affected	67	100	0	0
1.4.2 Physical description of the site	67	33	67	0
1.4.3 Biological description	67	0	67	33

1.4.4 Social characteristics	67	0	67	33
1.4.5 Cumulative impacts	33	33	33	33
1.5 Baseline Conditions				
1.5.1 Important components of the affected environment	67	0	67	33
1.5.2 Interaction and effect of project on the environment	67	0	100	0
2.1 Definitions of impacts				
2.1.1 Description of effects of project on environment	33	33	67	0
2.1.2 Description of interaction of effects en environment	33	0	33	67
2.1.3 Impacts from non-standard operating procedure	67	0	100	0
2.1.4 Impacts from deviation from Base Line conditions	67	0	100	0
2.2 Identification of impacts				
2.2.1 Project divided into distinct phases	67	0	100	0
2.2.2 All possible impacts from each phase identified	67	0	100	0
2.3 Scoping				
2.3.1 Example of notice published in media	100	100	0	0
2.3.2 On-site notice	100	100	0	0
2.3.3 Identify affected people	67	100	0	0
2.3.4 Identify interested people	33	100	0	0
2.3.5 Procedures whereby I&A parties can participate	0	100	0	0
2.3.6 Provision for I&A parties to express their views	33	100	0	0
2.3.7 List of issues identified	0	100	0	0
2.3.8 Notification criteria	33	33	67	0
2.3.9 A record of all the views as an addendum	33	100	0	0
2.3.10 Evidence that I&A parties were approached	67	100	0	0
2.3.11 Key impacts identified for further investigation	67	33	67	0
2.4 Prediction of impact magnitude				
2.4.1 Prediction of impact magnitude	33	33	33	33

2.4.2 Quantification of impact magnitude predictions	0	33	0	67
2.5 Assessment of impact significance				
2.5.1 Significance of impact on affected community	33	0	33	67
2.5.2 Significance of impact (nature, intensity, duration, probability, extent)	0	0	67	33
2.5.3 Method of assessing significance and ranking	0	0	67	33
3. Alternatives and mitigation				
3.1.1 Description of methods used to identify alternatives	0	33	33	33
3.1.2 Description of analysis of range of alternatives	0	33	0	67
3.1.3 Investigation of at least 2 alternatives	33	33	0	67
3.1.4 Discussion and reasons for final choice	67	33	33	33
3.2 Mitigation				
3.2.1 Description of mitigation measures	0	66	0	33
3.2.2 Mitigation measures considered	0	67	33	0
3.2.3 Mitigation measures clearly defined	67	33	67	0
3.2.4 Indication of effectiveness of mitigation measures	0	0	33	67
4. Communication of results				
4.1 Layout				
4.1.1 Introduction briefly describing the project	0	33	0	33
4.1.2 Logical arrangement of information	0	33	0	33
4.1.3 External sources acknowledged	0	33	0	67
4.2 Presentation				
4.2.1 Comprehensible to non-specialist	100	67	33	0
4.2.2 Presented as an integrated whole	67	67	33	0
4.3 Emphasis				
4.3.1 Emphasis given to severe impacts	67	0	100	0
4.3.2 EIR should be unbiased	0	0	100	0

4.4 Non-Technical Summary				
4.4.1 Non-Technical Summary	33	33	67	0