



Reviewing the quality of EIA follow-up reports for platinum mines in South Africa

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ABSTRACT

Literature has shown that there is increasing interest in EIA follow-up, accompanied by the development of EIA regulations to provide for monitoring and evaluation of projects during their construction and operational phases. To date, the practice of EIA follow-up has predominantly focused on the biophysical impacts of individual developments at the project level. The evolution of EIA follow-up beyond discrete projects and with a biophysical focus, through to Socio-economic- and Strategic Environment Assessment (SEA) follow-up, paves the way to think even further about extending the follow-up concept to sustainability assurance. However, the implementation of EIA follow-up seems to be a worldwide challenge in the sense that emphasis is put on follow-up only during the EIA- and project construction phases. It is clear from the literature that the practice of EIA follow-up still leaves much room for improvement. In many jurisdictions, little, if any, follow-up is done, or it is not provided for in a rigorous or structured manner. This raises a need for a more consistent and structured application of EIA follow-up.

This study aims to review the quality of EIA follow-up reports for follow-ups conducted during the operational phase post-EIA for platinum mines in South Africa. To achieve this, a Modified International Best Practice Principles for Follow-Up (IBPPFU-M) framework for the review of the quality of EIA follow-up reports in South Africa was developed as part of the study and applied to follow-up reports from selected platinum mines in South Africa. An evaluation criterion was adapted from the well-established Lee and Colley review package developed in the United Kingdom and the IBPPFU-M review package has been adopted from the IBPPFU, which has been modified using the revised 15 International Best Practice Principles (IBPP) of 2021, as well as the National Environmental Management Act (NEMA) Environmental Impact Assessment (EIA) Regulations, as amended. Data was collected based on the three main objectives of the study, which were to develop a framework for reviewing the quality of 25 EIA follow-up reports sampled from South Africa's selected platinum mines, apply the framework to the selected EIA follow-up reports and identify strengths and weaknesses thereof.

The study revealed that the EIA follow-up reports prepared in 2020 and 2021 performed better than the reports prepared in 2019. The EIA follow-up reports compiled in 2019 were mainly based on the requirements of the NEMA Regulations, 2014, as amended, and not Record of Decision (ROD), now referred to as Environmental Authorisation (EA) conditions, when compared to the follow-up reports prepared in 2020 and 2021. It appears that formulation of the ROD conditions and clear legislation have implications on the quality of EIA follow-up reports. This has been

depicted through the identification of recorded similarities in a number of strengths and weaknesses which appeared to have been influenced by mandatory requirements.

The results discussed in this research are a starting point to improving EIA follow-up in the South African context.

Keywords: EIA follow-up, Quality Review, Quality of EIA Follow-up Reports, Monitoring, South Africa, Platinum Mines.

ABBREVIATIONS AND ACRONYMS

AEL	Atmospheric Emission Licence
IA	Impact Assessment
DAEA	Department of Agriculture and Environmental Affairs
DME	Department of Minerals and Energy
EA	Environmental Authorisation
EAPs	Environmental Assessment Practitioners
ECA	Environmental Conservation Act
ECO	Environmental Control Officers
EIA	Environmental Impact Assessment
EMPr	Environmental Management Programme
GRI	The Global Reporting Initiative
IAIA	International Association for Impact Assessment
IBPP	International Best Practice Principles
IBPPFU	International Best Practice Principles for Follow-Up
IBPPFU-M	Modified International Best Practice Principles for Follow-up Review Package
MPRDA	Petroleum Resources Development Minerals
NDP	National Development Plan
NEMA	National Environmental Management Act
NSW	New South Wales
RA	Review Area
ROD	Record of Decision
SA	South Africa
SDG	Sustainable Development Goals
SEA	Strategic Environment Assessment
UN	United Nations
WUL	Water Use Licence

KEY DEFINITIONS

Environmental impact assessment “means a systematic process of identifying, assessing and reporting environmental impacts associated with an activity and includes basic assessment and S&EIR” (South Africa, 2014).

Environmental Impact Assessment (EIA) follow-up means “monitoring and evaluation of the impacts of a project or plan (that has been subject to EIA) for management of, and communication about, the environmental performance of that project or plan” (Morrison -Saunders *et al.*, 2021).

Impact assessment (IA) follow-up “is defined as: Understanding the outcomes of projects or plans subject to impact assessment” (Morrison-Saunders and Arts, 2022).

Sustainable Development means “development that meets the needs of the present without comprising the ability of future generations to meet their own needs” (UN,1987).

The “Triple Bottom Line” is a concept that puts forward the idea that the corporate sector should not focus solely on the financial bottom line of profit, but also consider social bottom lines and environmental bottom lines and incorporate these into accounting structures (DEA, 2004:7).

Proponents are private businesses or governmental agencies that create a project. In the same way, proponents in an EIA are typically in charge of project management and impact mitigation, they are also frequently expected to handle the majority of follow-up tasks (Marshall *et al.*, 2005).

EIA regulators, “sometimes referred to as competent authorities, are government- or financing agencies like the World Bank, or government agencies in charge of administering and implementing EIA processes” (Marshall *et al.*, 2005).

The community. This term designates a group that includes members of the general public or other independent individuals. This group can include those who are directly impacted by a proposal or others who are interested, such as academics, non-governmental organisations (NGOs) and the larger scientific community (Marshall *et al.*, 2005).

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CHAPTER 1.. INTRODUCTION

1.1 Background

Impact assessment (IA) follow-up is defined as: understanding the outcomes of projects or plans subject to impact assessment. The Environmental Impact Assessment (EIA) process involves several steps, including post-decision monitoring and auditing (known as EIA follow-up), which is the focus of this study (Glasson et al., 2005). EIA follow-up refers to the “*monitoring and evaluation of the impacts of a project or plan (that has been subject to EIA) for management of, and communication about, the environmental performance of that project or plan*” (Morrison - Saunders et al., 2021). The term monitoring and auditing have been used interchangeably (Arts et.al., 2001). The focus of this study is reviewing compliance monitoring done, as referred to in Regulation 34 of NEMA, 2014 as amended (South Africa, 2014). The EIA regulations require that the owner of an Environmental Authorisation (EA) issued following the EIA process must appoint an independent person with the relevant environmental auditing expertise; to conduct an environmental compliance audit post-EIA during the time which the Environmental Management Programme (EMPr), EA and closure plan where applicable are still valid (South Africa, 2014). This is to ensure compliance with the EA conditions, applicability of the management measures proposed in the EMPr and closure plan, and to effect more relevant mitigation measures if necessary (South Africa, 2014; Gwimbi, 2014). The regulations further require an audit report (follow-up report) referred to in Regulation 34 of the EIA regulations to be submitted to the relevant authority. Without follow-up, EIA may be little more than a paper-based exercise to obtain project approval (Morrison-Saunders et al., 2001). Arts *et al.* (2001) argue that the EIA post-monitoring approach attempts to focus on the timely prevention, restriction or remediation of environmental damage and that the strategy identifies the pollution source instead of only evaluating the impact on the state of the environment and thus may avoid some serious environmental problems.

EIA, initially introduced in the United States of America in 1969 (Hoffmann, 2007), is being used globally as a tool to proactively consider the impacts of projects (Alers, 2016). EIA is defined in the NEMA EIA Regulations of 2014, as amended, as “*a systematic process of identifying, assessing and reporting environmental impacts associated with an activity and includes basic assessment and scoping and environmental impact reporting (S&EIR)*” (South Africa, 2014). It is the most successful conventional assessment technique which is backed in many countries by legislation and institutional frameworks (Hariram, 2015).

Emphasis has been mainly focused on pre-decision analysis, with little understanding as to whether EIA achieved its goals for environmental protection and management post EIA (Morrison-

Saunders et al., 2001). Communicating and reporting of environmental monitoring data to the public is a priority issue for strengthening EIA post-decision monitoring and could be assured and improved using indicators (Morrison Saunders et al., 2001). There is increasing interest in communicating the findings of EIA follow-ups to the general public effectively and, perhaps more importantly, in actively engaging community stakeholders and the affected public in EIA follow-up programmes directly (Morrison Saunders et al., 2001).

Any development must aim for a balance in environmental-, economic- and social growth. The balance between environmental-, social- and economic goals is defined as sustainable development (UN,1987; Gibson et al., 2005). The United Nations, 1987 (UN), describes sustainable development as a “development that meets the needs of the present without comprising the ability of future generations to meet their own needs”. It was the sustainability agenda that birthed the EIA process (UN,1987). South African legislation focuses on EIA as being the key tool to achieve sustainable development for all its citizens (Morrison-Saunders & Retief; 2012).

Any EIA monitoring regulation or procedure that fails to connect with aspects of sustainability will not be helping the broad developmental agenda of sustainability (Ramos et al., 2004). Mineral resource activities affect all environmental media, as well as the human environment, for example: individual health and safety, local community lifestyles, cultural survival, social order and economic well-being. The environmental impacts caused by mining can be national-, trans-boundary- and/or global environmental problems (Choudhary, 2015). Moreover, platinum mining operations have impacts on the environment throughout the lifespan of a mine (Benchmarks Centre for Corporate Social Responsibility, 2007). Mining has played a significant role in the economy over hundreds of years (Muswaka, 2014). Notwithstanding the significant contribution of mining to the economy, the detrimental impacts of mining activities, as mentioned above, are inherited by the community and the environment, rather than the companies that generated them, even decades after the operations have ceased (Muswaka, 2014). This can cause economic growth to co-exist with poverty (UN, 1987). The use of non-renewable resources such as minerals in this case platinum, should not degrade the environment beyond reasonable recovery (UN,1987). In other words, the adequacy of environmental- and social safeguards must be ensured at all stages of a mining operation, ranging from exploration, construction and operation to the closure of the mining operation (Choudhary, 2015).

1.2 Problem statement and rationale for the study

Existing literature (to be discussed in Chapter 2) has shown that there is increasing interest in EIA follow-up, accompanied by the development of EIA regulations to provide for monitoring and evaluation of projects during their construction- and operational phases (Morrison-Saunders *et al.*, 2012). The practice of EIA follow-up has predominantly focused on the biophysical impacts of individual developments at the project level (Morrison-Saunders and Arts, 2004). The evolution of EIA follow-up beyond discrete projects and with a biophysical focus, through to Socio-economic and Strategic Environment Assessment (SEA) follow-up, paves the way to think even further about extending the follow-up concept to sustainability assurance (Morrison-Saunders & Arts, 2004). However, the implementation of EIA follow-up seems to be a worldwide challenge in a sense that the emphasis is only during the EIA and project construction phase (Cele, 2016; Morrison-Saunders *et al.*, 2001). In countries where EIA follow-up is implemented either by mandatory requirements, self-regulation or public pressure, the implementation of EIA follow-up has been rather difficult to measure due to a lack of adequate techniques, standard systems and resources (Morrison-Saunders and Arts, 2004). As a result, it also receives less attention in the literature than other aspects of the EIA process (Morrison-Saunders *et al.*, 2001). A more thorough evaluation of the EIA follow-up evidence is required, as is public education regarding the efficacy of the mitigation strategies put in place to safeguard the environment and public health from platinum mining-related activities (Gwimbi and Nhamo, 2016).

Challenges related to EIA follow-up are evident in an investigation completed by Hulett and Diab (2002) on the status of follow-up in the South African context. This revealed that most Environmental Assessment Practitioners (EAPs) believed follow-up to be the implementation of the EMPr during the construction phase (Alers, 2016). Furthermore, in the study done in 2015 on critical analysis of the inclusion of EIA follow-up as a condition in the EA, it was revealed that the majority of EAs did not include the requirement of EIA follow-up as a mandatory requirement for projects done in the Mpumalanga region (Ndlovu, 2015). Although conducting follow-up reports and submissions of these EIA reports during the construction phase was specified in all the EAs assessed, none of the EAs included submission of the EIA follow-up report to the authorities (Ndlovu, 2015). Developments have been made in South Africa to regulate EIA follow-ups through the EIA regulations, which came into effect in 2014, also requiring post-EIA follow-up and reporting to be done during the operational phase of the project (NEMA, 2014 as amended; Morrison-Saunders *et al.*, 2001).

Unfortunately, EIA follow-up still leaves much room for improvement. In many jurisdictions, little, if any, follow-up is done, or it is not provided for in a rigorous or structured manner (Morrison-Saunders and Arts, 2004). This raises a need for a more consistent application of follow-up (Morrison-Saunders and Arts, 2004). While the report quality of EIA for various projects has also

been adequately investigated in South Africa (see Hoffmann, 2007; Kruger, 2012; Mbhele, 2009; Pretorius, 2006 Sandham *et al.*, 2008, Sandham *et al.*, 2013; Simpson, 2000), the quality of follow-up reports is not fully understood, since research on EIA follow-up has only recently emerged in the South African context (Alers, 2016). In South Africa mining activities are included in the NEMA Regulations of 2014, as amended, as activities requiring EIA (South Africa, 2014). This study seeks to review the quality of EIA follow-up reports for platinum mines in South Africa.

According to Alers (2016) the quality of follow-up reports is the first step in the implementation of management measures. It allows the responsible parties (proponent and/or competent authorities) to take appropriate measures to mitigate or prevent negative impacts on the environment, thereby giving essential feedback to improve the EIA process (Ramos *et al.*, 2014). Several authors have endorsed the need for a systematic review of EIA follow-up report quality as the main component of effective Environmental Authorisation (EA) (Marais *et al.*, 2015).

1.3 Research aim and objectives

The aim of this research is to review the quality of EIA follow-up reports for platinum mines in the Northwest and Limpopo provinces within South Africa. To reach the aim of the research the objectives were:

- To develop a framework for the review of the quality of EIA follow-up reports in South Africa.
- To apply the framework to follow-up reports from selected platinum mines in South Africa.
- To identify strengths and weaknesses in EIA follow-up reports.

A sample of 25 audit reports provided by independent EAPs in line with Appendix 7 of the NEMA Regulations of 2014, as amended, were reviewed with the related EAs and EMPs.

1.4 Potential contribution of the research

The research contributes to the literature on the quality of EIA follow-up reports by developing a review framework for EIA follow-up reports and reviewing the quality of EIA follow-up reports of platinum mining projects that have undergone an EIA process. Furthermore, the framework will be universally applicable considering the International Best Practice Principles but notwithstanding differences in EIA culture and applications around the world (Morrison-Saunders *et al.*; 2019).

1.5 Structure and outline of the dissertation

Chapter 1 – Introduction and problem statement: Introduction of key terms, background to the research topic, problem statement, research aim and objectives as well as potential contribution to the research will be discussed.

Chapter 2 – EIA follow-up: Available literature on EIA follow-up dimensions, benefits and challenges of EIA follow-up will be reviewed. The literature on the quality of EIA follow-up reports to determine best practices in relation to the quality of EIA follow-up reports with South African mandatory requirements, guidelines and the revised IBPP for follow-up recommended by IAIA (Morrison-Saunders *et al.*; 2021) will be discussed. The development of a modified International Best Practice Principles for Follow-up review package (IBPPFU-M) adapted from IBPPFU review package is an outcome of this chapter.

Chapter 3 – Research methodology: The methodology used to address the research objectives and associated assumptions and shortcomings for the research are described. The approach on the selection of sample size and types of documents for the study is also presented in this chapter.

Chapter 4 –Data analysis results: The results of the selected EIA follow up reports are analysed and interpreted based on the developed review package (IBPPFU-M. A cross-case analysis as well as highlights on strengths and weaknesses are discussed for each review area.

Chapter 5 - Conclusion and recommendations: The final chapter provides a conclusion based on the analysis and results of the study as well as recommendations for future research.

CHAPTER 2.. LITERATURE REVIEW

2.1 Introduction

In order to determine the best practice for EIA follow-up reports, it is important to review and consider the international best practice guidelines and -principles as well as the regulatory requirements for EIA follow-up in South Africa. The international best practice principles, guidelines and SA legal requirements for EIA follow-up reports are presented in this chapter, with a purpose of developing an EIA follow-up review package that encompasses all the significant and legal requirements included in these guidelines, principles and SA legislation.

The chapter further discusses the implementation and enforcement of EIA follow-up in South Africa, along with the legislative requirements. It also provides potential challenges faced by proponents and authorities during the implementation and enforcement of EIA follow-up, as drawn from the literature. South Africa's environmental legislative framework and sustainable development, including corporate governance, highlighting the need for EIA follow-up are also part of the discussion in this chapter.

2.2 EIA Follow-up dimensions

The definition of EIA follow-up articulated in Chapter 1 is centred around four dimensions, which are monitoring, evaluation, management and communication. The management dimension has been split into two categories: governance, which deals with managing the follow-up process, and management, which deals with managing the impacts themselves (Pinto *et al.*, 2019). In order to truly assess EIA follow-up, a criterium that can act as a yardstick for achieving these objectives must be in place (Pinto *et al.*, 2019). As Wood (2003) puts it: *“evaluation criteria are, in essence, shorthand versions of principles for EIA and, if carefully expressed, have great advantages in terms of brevity and clarity”*. Consequently, EIA follow-up dimensions have been introduced for the purpose of deriving an evaluation criterium with the objective to deliver on best practices (Pinto *et al.*, 2019). The relevance of these different dimensions to criteria development is presented in Annexure C. The five dimensions of EIA follow-up are explained by Pinto *et al.* (2019) as follows:

- Monitoring: Gathering environmental and activity data prior to (baseline monitoring) and following (compliance and impact) the implementation of an activity.
- Evaluation: This refers to the assessment of the activity's environmental performance in addition to its compliance with standards, forecasts or expectations.

- Management: Deciding what to do and how to respond to problems that arise from the monitoring and assessment process.
- Communication: Updating the stakeholders on the outcomes of the EIA follow-up so that they may offer input on the execution of the project or plan and on the EIA process.
- Governance: The systems and procedures that guarantee that the first four dimensions will be implemented and that the necessary procedures are in place and operating.

This conceptualisation of EIA follow-up has subsequently been adopted in numerous research publications (Alers, 2016; Wessels, 2013; Jalava *et al.*, 2015) and no alternative definition in common use is recognised (Morrison-Saunders *et al.*, 2021; Alers, 2016). For the purposes of this study, the focus will be on adequate communication or reporting in a form of an EIA follow-up report which will encompass the management and governance thereof. The following section will discuss the industry benefits of EIA follow-up, which are based on international case studies.

2.3 The benefits of EIA follow-up

Monitoring for conformance is one of the most common reasons proponents and regulators need to conduct EIA follow-ups (Marshall, 2005). Morrison-Saunders & Art (2004), describe the following seven distinct benefits (as adapted from the identified key follow-up activities in section 2.1 (Art *et al.*, 2001)) of EIA follow-up for a proactive proponent:

- Monitoring compliance -This refers to the collection of data and comparison with legal requirements, standards, predictions or expectations to provide proof of operational technical management and control against specific requirements or self-governance. A structured EIA follow-up monitoring- or management system can serve as a link between the EIA and final development construction and provide a guarantee that mitigation measures are carried out.
- Monitoring compliance post-decision_- This refers to monitoring development activities to demonstrate how conditions issued by various collective stakeholders or voluntary measures will be complied with. Conditions for environmental mitigation measures are worthless if they are not carried out after the EIA approval. The EIA-planning process will only have proven its worth in preserving environmental impact if a proponent complies with mandated conditions or voluntary mitigation. It takes efficient management to translate what is intended as mitigation into compliant activities. This is ensured via EIA follow-up, implemented through environmental management systems (EMS).

- Evaluation for future knowledge - The appraisal of impacts and mitigation measures thereof against standards, predictions or expectations for the current development that can provide information on impacts for future EIAs. While the primary focus of EIA follow-up is monitoring and control of environmental impacts, in certain instances, information obtained, or lessons learned through follow-up may be applied to future developments.
- Management for future consent and licences - This refers to the monitoring and evaluation of activities for permitting purposes during EIA. Environmental- and operational industrial activities are rarely governed by a single integrated permitting process in other countries, such as the UK. Instead, several separate legislative licenses are required. Proponents should evaluate whether they may reduce the amount of time, money and effort required to gather data for their regulatory duties by identifying and coordinating the EIA and EIA follow-up procedures in light of their future commitments.
- Management to avoid liability - This refers to monitoring and evaluating EIA activities that may result in future liability or compensation risks. When developed and integrated with operations, monitoring through EIA follow-ups can serve as a safeguard to protect the company from liability in the event of adverse impacts.
- Communication for consent pre-decision - This refers to proposals for managing, evaluation and monitoring of predicted impacts for submitted to regulators for pre-decision. It's critical to maintain community acceptability and -understanding for projects that have significant environmental impact and are very visible in the community. EIA follow-up for communication regarding consent closure might act as a steering mechanism to initiate pre-decision and facilitate the resolution of such concerns. The challenge for the proponent is to foresee these issues in advance and work proactively to build follow-up solutions that satisfy all parties involved.
- Stakeholder Communication - This refers to informing stakeholders during the EIA process of pre-emptive concerns and objectives thereby strengthening the relationship with such interested parties. EIA follow-up could pre-empt and reassure stakeholder concerns, while preserving the company's reputation and community relations.

Follow-up encourages optimal and sustainable utilisation of natural resources, thus improving the environmental quality. A follow-up programme which is designed and implemented adequately can enhance an industry's environmental performance on both national- and international level (Art *et al.*, 2001). Proper documentation of environmental compliance can be achieved through follow-up (Marwa *et al.*, 2020), thus, providing concrete evidence of environmental performance

(Arts& Morrison-Saunders, 2004). Moreover, it enables practitioners and stakeholders to move from impact prediction during the proposal stage to the actual management of real project impacts during the project phase (Arts& Morrison-Saunders, 2004). Best practice principles for EIA follow-up

The International Association for Impact Assessment (IAIA) published the 17 International Best Practice Principles (IBPP) for EIA follow-up with the aim of guiding capacity development amongst practitioners resulting in improving EIA outcomes (Morrison-Saunders *et al.*, 2007). These principles have been grouped into five elements, namely, monitoring, evaluation, participation or communication and governance as explained in section 2.1 (Pinto *et al.*, 2019). IAIA (2000) is of the opinion that EIA procedures that adhere to these guidelines will yield positive results. The principles define appropriate objectives for various aspects of EIA follow-up concepts, procedure and practice, with the aim of defining best practice (Marshall *et al.*, 2005). The 17 IBPP are presented in four categories of WHY, WHAT WHO and HOW? Principles within the WHY category are principles 1-3 which present core values. The WHAT category principles (4-6) address the nature of EIA follow-up and principles 7-11 relate to the WHO or roles and responsibilities. Lastly, how EIA follow-up should be conducted is addressed by principles 12-17. Annexure C presents the relevance of the categories to the principles. Improvements to the 17 IBPP were made based on the objectives raised at the IAIA workshop which were that EIA follow-up should include accountability and transparency and should allow for an opportunity to rectify a poor EIA (Morrison-Saunders *et al.*, 2021). These objectives resulted in the recommendation made to the 17 IBPP, leading to a revision of 17 to 15 IBPP. The revisions made to the IBPP seem to be relevant in attempting to address some of the key areas of improvement in the follow-up process identified by Morrison-Saunders and Arts (2004) which include:

- Better scoping of follow-up programmes and including more of socio economic, health and cumulative impacts amongst other things in the EIA follow-up.
- The application of methods and techniques which are more rigorous but practicable.
- More proactive remedial management action that blends into regular modes of operation.
- Better involvement of local communities and their knowledge.
- Most importantly for this study, better documentation and reporting of findings to enhance learning from experience from one project to the next and from one proponent to another (Morrison-Saunders & Arts, 2004).

The 15 IBPP have replaced the 17 IBBP. This study will focus on the new recommended 15 IBPP which will be used to update the IBPPFU which was developed in line with the old 17 IBPP principles. Table 2-1 below provides a summary of the 15 IBPP principles as recommended by the IAIA (Morrison-Saunders *et al.*, 2021).

Table 2-1 Recommended 15 IBPP (Morrison-Saunders *et al.*, 2021)

Revised EIA follow-up best practice principles	IBPP explained
A: State the objective of each EIA follow-up activity and the overall program.	EIA follow-up should be objective-led and goal-oriented.
B: Be tailored to context	For all facets of EIA practice, follow-up needs to be suitable given the local context and culture.
C: Commence early in the EIA process (e.g. during screening and scoping stages).	Assessment of follow-up should start early in the EIA process (for example, during the screening and scoping stages)
D: Be carried out throughout the plan/project life-cycle.	EIA Follow-up should be undertaken throughout construction, operation, and, where relevant, the decommissioning phases of the project as needed subsequently.
E: Be transparent.	This principle pertains to both the process communication clarity and the accessibility of EIA data. Follow-up requires transparency and accountability for community monitoring and -engagement, and for community collaboration in follow-up, particularly in cases where indigenous people are affected.
F: Be accessible to all EIA stakeholders.	EIA follow-up information should be easy to access and to understand. As a minimum, stakeholders should be informed about follow-up activities and outcomes, and to be provided with opportunities to give input or feedback.
G: Provide clear accountability for EIA follow-up responsibilities.	This principle is related to the governance aspect of EIA follow-up where it's indicated that proponents accept responsibility for the follow-up process and accountability for the environmental impacts of the development. It also includes the role of EIA regulators and other stakeholders.
H: Provide clear, pre-defined and well-justified performance criteria.	EIA follow-up should include metrics through which success (or failure) is established.
I: Specify enforcement provisions.	EIA approvals should include conditions related to follow-up requirements. Enforcement of consequences for non-compliance post-approval should also be identified.

Revised EIA follow-up best practice principles	IBPP explained
J: Promote continuous learning from experience to improve future practice.	This principle promotes learning from experience, as it is fundamental to EIA follow-up. The results of any follow-up and monitoring program should be available for integration into subsequent sustainability assessments, cumulative assessments, regional assessments or subsequent Project-specific EIAs'.
K: Facilitate adaptive environmental management.	EIA follow-up should be prompt and inform adaptable management measures. Monitoring data must be accessible to guide management strategies in the most proactive manner possible.
L: Be flexible according to emerging needs.	The EIA follow-up procedures themselves must be adaptable and dynamic so that they can be changed as needed.
M: Inform and be informed by follow-up for other relevant activities at different levels of decision-making (tiering).	EIA follow-up for a particular development activity should not sit in isolation; rather, it should inform other EIA processes. Individual projects can inform future plans and other strategic initiatives.
N: Consider cumulative effects.	Biophysical impacts and socio-economic factors and cumulative effects consistent with the concept and principles of sustainable development" should be addressed by EIA processes. Such efforts should reflect and be proportional to impact significance". Recognising that there is substantial research that must be done on the difficulties in conducting cumulative.
O: Consider the overall effects of the proposal.	follow-up should provide a holistic perspective of the project or plan outcomes, taking into account how each of the individual effects of a project or plan interact with each other to contribute to sustainable development.

2.4 The need for EIA follow-up in South Africa

The need for EIA follow-up arises when stakeholders require controlling frameworks for mitigation or when there is inherent uncertainty in impact assessment that necessitates supplementation (Marshall, 2005). The Regulator's need for follow-up is driven by the desire to control compliance, reduce uncertainty, verify predictions and ultimately improve decision management in future EIA processes (Marshall, 2005). On the other hand, an individual or community's desire for follow-up will focus on managing issues of concern. In both cases, proponents will accept follow-up if it leads to developmental consent without incurring unfavourable financial consequences (Marshall, 2005). This section discusses the need for EIA follow-up in South Africa.

The following points provide the need for EIA follow-up in South Africa.

2.4.1 Corporate governance and sustainable development

King IV defines corporate governance as the exercise of ethical and effective leadership towards the achievement of ethical culture, good performance, effective control and legitimacy within an organisation or a group of organisations that form a legal entity, excluding national or political governance (Institute of Directors South Africa, 2016). If one word could be used to summarise King IV, transparency would be fitting (PWC, 2016). There is a shift in the corporate world which encompasses certain fundamental voluntary principles of King IV, which are as follows (Institute of Directors South Africa, 2016):

- Ethical leadership - A corporate entity must be ethical and effective.
- Corporate citizenship - The organisation must be seen as a responsible corporate citizen that is creating value for its citizens and the organisation. The organisation has an obligation to society as promoted in the Constitutional Bill of Rights that states that *“everyone has the right to an environment that is not harmful to their health or well-being”*.
- Sustainable Development - The organisation must ensure that its risk and opportunities, sustainable development, business strategy and performance are all inseparable elements. Sustainable Development is fitting to the value of corporate citizenship.
- Stakeholder inclusivity - The organisation must consider the needs and interests of stakeholders. The organisation must further ensure that it enables stakeholders to make meaningful and informed assessment about its performance and short-, medium- and long term business prospects.
- Integrated thinking and reporting – Integrated reporting exists through integrated thinking. An organisation must ensure integrated reporting which encompasses reporting on financial statements, environmental sustainability and other legal requirements. Furthermore, a disclosure must be made on these integrated reports, including the legal compliance and sustainability reporting, similar to a disclosure made on financial reporting. An EIA follow-up report would be relevant in this context.

A system of corporate governance has developed over time in South Africa and in many jurisdictions, and some of the good practices have been legislated parallel with King IV. However, where conflict exists between the two, legislation prevails (Institute of Directors South Africa, 2016). In South Africa, JSE listed companies are expected to implement King IV principle in addition to complying with legislation which governs their business activities within their jurisdiction. In this report the five dimensions of EIA follow-up explained by Pinto *et al.* (2019) are discussed. One of them is “governance”, which ensures monitoring-, evaluation-, management- and reporting activities on the environmental impacts of a project post-EIA are undertaken, thus,

fulfilling the principles of corporate governance as mentioned above. The following point discusses another dimension of sustainable development which is “*sustainable mining*”.

2.4.2 Sustainable development in mining

The Global Mining Initiative called the “*Mining, Minerals and Sustainable Development Project*”, established by mining companies in 1998, investigated how mining can contribute to sustainable development, which led to the term “*sustainable mining*” (Muswaka, 2017). This term calls for an interdependency of the three pillars, namely economic development, social equity and environmental protection (Muswaka, 2017 & South Africa, 2019).

South Africa adopted the 2030 Agenda for Sustainable Development in 2015 (Muswaka, 2017). Subsequently, South Africa developed a National Development Plan (NDP) which aims to support the Agenda 2030 and at the same time addresses the Sustainable Development Goals (SDG) developed in the United Nations (UN) Conference held in Rio de Janeiro, Brazil in 2012 (South Africa, 2019). The SDG are described in detail in the report named “*Sustainable Development Goals, Country Report 2019 - South Africa*”. The SDGs focus on sustainable ecosystems which aim to promote sustainable mining (Muswaka, 2017). In view of the EIA follow-up definition discussed in Chapter 1, EIA follow-up is necessary to promote sustainable development for it to proactively prevent environmental damage (Choudhary, 2015; Morrison and Arts, 2004), more when there is a communication or public participation element incorporated (Arts *et al.*, 2000). Moreover, the use of EIA as a sustainable tool has been emphasised by incorporating it in the principles of the sustainable development world summit held in Johannesburg in 2002 (Arts *et al.*, 2000). Efficiency of EIA can be done through EIA follow-up since it serves as an aid to identify the real impacts (actual understanding and knowing of the real situation once projects are implemented) rather than just predicted impacts identified during EIA (Subane, 2015), thus, promoting effective mitigation measures to be implemented in order to control or contain impacts (Morrison and Art, 2004). Furthermore, EIA follow-up enables learning from experience to pro-actively prevent future environmental impacts by incorporating feedback into the process (Morrison and Art, 2004). The feedback process allows for strengthening transparency and promotes public awareness which is beneficial to the authorities and proponents during the decision-making process (Morrison-Saunders & Arts, 2004).

2.4.3 Penalties or withdrawal of Environmental Authorisation

One of the intended outcomes of EIA follow-up is legal compliance (South Africa, 2014). Section 34 (1) (a)(b) of EIA regulations requires that a holder of a valid EA and EMPr, and, where applicable, the closure plan, ensures that the compliance with the conditions of the EA and the EMPr, and, where applicable, the closure plan, is audited and a follow-up report submitted to the relevant competent authority (South Africa, 2014). Not conforming to these requirements would mean non-compliance. In terms of section 34 of NEMA, 1998, as amended, non-compliance may lead to authorisations or permits being suspended or withdrawn, or even to financial implications (such as fines) or imprisonment, depending on the severity of the non-compliance (South Africa, 1998). A company convicted of a Section 34 offence can be liable to a fine of up to R10 million or imprisonment of up to 10 years or both in accordance with the National Environmental Management: Waste Act of 2008 or, as prescribed by the court in terms of Section 34 of NEMA 1998 as amended.

An example can be drawn from the case of Golfview Mining (Pty) Ltd which was convicted by the Ermelo Regional Court in Mpumalanga on 17 October 2012 due to numerous contraventions of the National Environmental Management Act, No. 107 of 1998 and the National Water Act, No. 36 of 1998 (Piek, 2019). It is important to note that Section 34 of NEMA, 1998, as amended, makes provision for both companies and their directors (including board members, executive committees or other managing bodies of companies or members of close corporations or of partnerships) to be held liable in their personal capacities for environmental crimes (South Africa, 1998). This personal liability also applies to managers, consultants or employees who have done or omitted to do an allocated task, while acting on behalf of their employer (Nel, 2022).

2.4.4 Clean-up costs of non-conformance

Section 28 of the National Environmental Management Act 107 of 1998 ('NEMA') poses a general duty on all persons to take reasonable measures to avoid, or to minimise and rectify, significant harm to the environment, known as the duty of care principle (South Africa, 1998). This means that a government official can issue a directive to the polluter to clean up or remedy the environmental damage caused by non-compliance. In the context of mining, Section 24 of NEMA, 1998, as amended, requires the holder of mineral- or exploration rights to submit a closure cost guarantee on the application for the mineral- or exploration rights (South Africa, 1998 as amended). EIA regulations require this to be part of the EMPr supplementary document (South Africa, 2014). The closure or rehabilitation cost of a mine must be updated and submitted annually to the responsible authority. Thus, an increase in the closure cost can be seen annually if no or minimal management measures or monitoring to prevent environmental damage are implemented. Section 24 of NEMA, 1998, as amended, further gives the Minister the right to use

a portion or all the closure cost to remedy the environment should the holder of the rights fail to avoid, prevent or remedy the environmental damage. The cost of rework related to non-implementation of management measures may attribute to 10% to 20% of project costs (Piek, 2019).

As previously explained in the discussion on need for follow-up for sustainable development, effective mitigation measures can be put into place through follow-up actions to control or limit environmental impacts (Morrison and Art, 2004), thereby limiting environmental clean-up costs or closure costs.

2.5 The legal mandate for EIA follow-up

An overview of the South African Environmental Legislative Framework and sustainable development goals supporting the need for EIA follow-up are discussed in this section.

In some parts of the world, EIA follow-up may either be regulatory or institutional, which includes legal requirements and administrative frameworks (Morrison-Saunders & Art, 2004). There are many institutional EIA follow-up frameworks practised around the world and these include, among others, proponent self-regulatory or voluntary commitment for monitoring and reporting of EIA follow-up outcomes through Environmental Management Systems (EMS), command and control through permits, standards legal requirements and enforcements by the regulators as well as public pressure by community and stakeholders through lobbying by interested groups, media attention and public concern (Morrison-Saunders & Art, 2004).

Voluntary- and self-regulation have been used effectively in UK (Morrison-Saunders *et.al.*, 2003). The efficacy of the planning processes and developers' excellent practices are key factors of a successful EIA follow-up in the UK (Morrison-Saunders *et.al.*, 2003). The EMS is one crucial instrument that has been effectively utilised to promote EIA follow-up actions. On the contrary, Hong Kong represents a strong and comprehensive legislation for EIA follow-up (Morrison-Saunders & Art, 2004). The EIA regulations in Hong Kong are in their fourth generation, with increasing demand for EIA follow-up (Morrison-Saunders & Art, 2004).

2.5.1 The legal mandate for EIA follow-up in South Africa

EIA follow-up practice in South Africa is governed by the EIA regulations (South Africa, 2010). EIA in South Africa was first developed as a support tool for sustainable development, as discussed above. The first formal procedure for EIA was developed under the Environmental Conservation Act (ECA) (Act 73 OF 1998) after which EIA regulations were developed under the

National Environmental Management Act (NEMA), 1998 (Act. No 107 of 1998) to regulate a procedure for decision making and protecting the environment (DEAT, 2010). The NEMA repealed most of the ECA and, since then, NEMA has been amended several times to make the EIA process more effective (DEAT, 2010).

The regulations promulgated under ECA (No. 73 of 1998) were repealed by the EIA regulations of 2006 to ensure corporative environmental governance and to ensure integrated environmental activities (Cele, 2016). The amendment to the 2006 regulations took place in April 2010 (South Africa, 2010). These amendments outlined the need for monitoring and auditing, that is, a follow-up process for projects with EA. This demonstrated an improvement in the South African EIA since the ECA did not provide for EIA follow-up (Cele, 2016). Subsequent amendments were made to the 2010 regulations in 2014 (South Africa, 2014). These amendments resulted in the new NEMA regulations of 2014 which aim at making the EIA process more flexible for efficient decision making in approval of any development (Cele, 2016). Part of these changes include certain listed activities which were not part of the NEMA activities, such as mining, and most importantly the current NEMA Regulations of 2014, as amended, aim to prescribe and give guidance on the EIA follow-up reporting, under the content of Section 34 and Appendix 7 of the Regulations, which are the subjects of this study (South Africa, 2014). Below are the important amendments made in the NEMA Regulations which relate to this study (South Africa, 2014).

Mining was one of the activities identified as requiring an EIA (South Africa, 1997). However, mining was included in a separate set of legislation, the Minerals Act, Act 50 of 1991 (South Africa, 1991) and authorised by the Department of Minerals and Energy (DME) as the lead authority. Similarly, the Minerals Act has since been repealed by the Petroleum Resources Development Minerals Act (MPRDA), Act 28 of 2002 (2007). Mining activities have since been included in the NEMA Regulations of 2014, as amended, as activities requiring EIA (South Africa, 2014).

In terms of Sections 34 (1) and (2) of NEMA Regulations of 2014, as amended (South Africa, 2014), the holder of an EA must, for the duration of the EA, EMPr and, if applicable, closure plan, ensure that compliance to the conditions and commitments of the aforementioned documents are followed up on, and a follow-up report submitted to the authority.

Public participation during the follow-up process has been made mandatory in Section 34 (6) of NEMA Regulations of 2014, as amended (South Africa, 2014). This section requires that the holder of the EA notifies all interested and affected parties (I&APs) of the follow-up report and make such a follow-up report publicly available on the website where a holder has such a website.

Section 34 (7) provides the requirements of a follow-up report prescribed in Appendix 7 of the Regulations, 2014 as amended.

Provisions for learning from experience and rectification of inadequate management measures and impact predictions identified during the EIA stage have been made in Section 37 (4)(a)(b) of NEMA Regulations of 2014, as amended (South Africa, 2014). The holder of an EA can submit, together with the outcome of the follow-up report, recommendations to amend the EMPr to rectify the shortcomings identified in the EMPr and closure plan during the follow-up.

2.6 EIA Follow-up challenges

Possible challenges drawn from literature that could be faced by proponents and authorities with regards to the implementation and enforcement of EIA follow-up are discussed in this section. There are various challenges that can hinder the success of EIA follow-up in any country in the world. These can be associated with EMPr and EA deficiencies, lack of understanding of- or awareness on what the EIA follow-up entails, lack of legislation regulating EIA follow-up and enforcement and, where there is legislation, lack of human and financial resource (Cele, 2016; Hullet & Diab, 2002; Morrison & Art, 2004). Hullet and Diab (2002) add to these challenges a lack of interest by the consultant, believing that it is not financially viable for their business, or lack of understanding by the developers of the importance of EIA follow-up and who still perceive the EIA as a showstopper, rather than an enabler, that must be completed merely because it is a legal requirement.

In the study done by Morrison-Saunders *et.al.* (2003) on lessons from practice towards successful EIA follow-up, Highway projects in the Netherlands were prepared to undertake EIA follow-up but was awaiting direction from the appropriate authority due to lack of practical experience, which necessitated straightforward techniques to be implemented. Nonetheless, the "wait-and-see" approach appeared to be connected to apprehension over unlocking "Pandora's Box". Consequently, the results of follow-up activities were primarily focused on local issues and solutions. This resulted in potentially costly remedial works being avoided through avoiding engagement in follow-up. This case highlights challenges faced by EIA regulatory bodies in carrying out follow-up even in the presence of legal requirements in Netherlands (Morrison-Saunders *et.al.*, 2003). The UK example discussed in the previous section shows how self-regulation can be used to supplement existing government regulations for EIA follow-up in order to address any gaps or weaknesses (Morrison-Saunders *et.al.*, 2003).

In a SA context, EMPr forms a link between the EIA and conditions of the EA, thus it provides mitigation measures and monitoring that needs to be implemented to meet the conditions of the

EA. Thus, EMPr and EA form part of the scope of EIA follow-up (South Africa, 2014; Tsehlo, 2003). There are considerable documented deficiencies of EMPs regarding the monitoring- and mitigation measures as well as impact predictions which have been highlighted during EIA follow-up studies (Hullet & Diab, 2002). Moreover, EIA follow-up conditions are seldomly thoroughly included in the EA, if any. In most cases, the follow-up conditions only refer to a follow-up done by an ECO during a construction phase, and not the operational phase (Alers, 2016). Prior to recent legislative requirements, most environmental practitioners believed follow-up to be the implementation of an EMPr during the construction phase (Hullet & Diab, 2002). In addition to this requirement for EIA follow-up, emphasis had been on the actual EIA process itself with reduced focus on the follow-up, unless it was specified as part of the EA (Hullet & Diab, 2002).

The following points of discussion provide an overview of some of the specific challenges of EIA follow-up faced in South Africa

2.6.1 Lack of understanding

Many of the EIA follow-up challenges reflect similar problems with the implementation of EIA. In the study done by Hullet & Diab (2002) on EIA follow-up in South Africa, views on who should take responsibility for EIA follow-up reflected possible confusion about the distinction between the actual follow-up activities and the enforcement thereof. The majority (73%) believed it to be the responsibility of either the provincial- or local authority, yet at the same time emphasised that environmental consultants are best suited to conduct follow-up activities. These uncertainties don't necessarily go away, they continue and may cause difficulties during EIA follow-up (Morrison-Saunders & Arts, 2004), although South Africa has prescriptive regulations on EIA follow-up (South Africa, 2014). Moreover, there are clear guidelines and best practice principles on EIA follow-up provided by IAIA and Morrison-Saunders and Art, 2004, as discussed in Section 2.3. Capacity building on EIA follow-up, especially in countries with little experience, is required (IAIA, 2004).

2.6.2 Lack of legislation, implementation and enforcement

Legislative deficiency in relatively few jurisdictions is part of the reason why there is minimal guidance on EIA follow-up (Morrison-Saunders & Arts, 2004). South African environmental legislation was lacking insofar as EIA follow-up is concerned (Cubitt, 2001). Before 2017, the National Environmental Management Act (107 of 1998) only provided partial consideration of follow-up, by requiring the "investigation and formulation of arrangements for the monitoring and management of environmental impacts" (South Africa, 2014). Another legal constraint was that EMPs were also not mandatory in South Africa, unless they were specifically stipulated as a

binding condition of approval (Cubitt, 2001). Lack of capacity in the Department of Agriculture and Environmental Affairs (DAEA) in KwaZulu Natal (KZN) was identified as the most important constraint to EIA follow-up in the case study done for KZN on EIA follow-up in KZN (Cubitt, 2001). EIA listed activities are now regulated under NEMA regulations of 2014, as amended (South Africa, 2014).

Although the NEMA Regulations seem to be the ideal solution for EIA follow-up in South Africa, the implementation thereof remains a challenge as shown in the study done by Alers (2016) on *“a review package for South African EIA follow-up performance”*. Alers (2016) found that the primary area of weakness seems to be adequate consideration of cumulative impacts and sustainability in the EIA follow-up. Only 14% of EIA follow-up considered cumulative impacts. Although the requirement determining the cumulative impacts of multiple projects is clearly stated in the NEMA regulations (Alers, 2016). The challenge noted is related to a failure to address strategic issues on a project-specific level (Alers, 2016).

The enforcement effort in South Africa is dispersed mostly along environmental different spheres of governing authorities, and there is frequently substantial overlap and redundancy between the governing and enforcement authorities (Nel and Wessels, 2010). It may occasionally be advantageous for enforcement mandates to overlap and duplicate one another. The issue is the disjointed state of environmental enforcement, with some agencies stepping up enforcement while others either ignore their duties to enforce the laws under their purview or merely pay *“lip service”* to them (Nel and Wessels, 2010). Thus, certain mandates, environmental media, and even economic sectors have a bias in South Africa's efficient and effective environmental enforcement landscape (Nel and Wessels, 2010). The fragmented enforcement was proven in the study done by Nel and Wessels (2010) on *“how to use voluntary, self-regulatory and alternative environmental compliance tools”*. The study found that the requirements stipulated in the ROD and WUL differed. The WUL concentrated far more on site-specific water and effluent management conditions, while the EA focused more on waste and biodiversity management.

The other challenge is with the implementation of EA conditions due to ambiguity in the conditions of the EA related to environmental impact monitoring (Ndlovu, 2015). This was revealed by Ndlovu (2015) in the study done on a critical assessment of EIA follow-up conditions formulated for Environmental Authorisations in Mpumalanga Province. The results of the study show that the approved conditions for environmental compliance monitoring demonstrate that compliance monitoring is not feasible to execute because certain requirements, particularly those meant to lessen the negative environmental effects, were overly general and ambiguous and did not apply to the particular projects or activities that were approved.

2.6.3 Lack of resources

EIA follow-up can require a considerably long period of time, staff and money to be implemented (Morrison-Saunders & Arts, 2004; Madlome, 2016; Cele, 2016). Until the long-term cost saving benefits of EIA follow-up are more recognised, this challenge will continue. The benefits of EIA follow-up should outweigh the challenge of costs. A cost effective and -efficient follow-up programme plan is therefore important (Morrison-Saunders & Arts, 2004).

Nevertheless, except for financial constraints, none of the other issues should be sufficient to hinder EIA follow-up. If a willingness to conduct EIA follow-up and a culture of follow-up existed, it could proceed despite the constraints mentioned above (Hullet & Diab, 2002). EIA follow-up can be voluntary or be made part of the business EMS as illustrated in the UK case discussed in the previous section. However, in this approach, public participation might be eliminated, and this would not make the EIA follow-up a sustainable process, since public participation would be a proponent's choice to include in the follow-up process, unlike when it is mandatory (Cele, 2016). In the case study done for KZN on the status of EIA follow-up, the regulatory authority recognised the need for EIA follow-up to become a mandatory process in order for it to be a success, stating that it was insufficient to rely on the integrity and good intentions of developers and consultants (Cele, 2016). However, at the same time, the need to progress towards a self-regulatory approach was stressed, where a follow-up requirement could be a fixed condition of the EA in addition to incorporating it into an EMP, which could become legally binding (Hullet & Diab, 2002).

The South African legislation stipulates the requirements of EIA follow-up under Section 34 and Appendix 7 (South Africa, 2014). The existence of this legislation has been shown to be working effectively for specific sectors, such as waste management and mining (Hullet & Diab, 2002). However, it is worth noting that the regulatory authorities in South Africa are understaffed and struggle to deal with EIA applications let alone the EIA follow-up requirements post EIA (Cubitt, 2001; Madlome, 2016).

2.6.4 Lack of communication

Communication or reporting on EIA follow-up has been touched on in Section 2.1 as one of the key activities of EIA follow-up. EIA follow-up reporting is one of the mandatory activities of EIA follow-up that has been included in the amended NEMA: EIA regulation of 2014 (South Africa, 2014) yet it is still a challenge. In the study conducted by Alers (2016) the findings under NEMA 2010 point to a minor decline in the standard of educating the stakeholders about the consequences of an activity. When comparing the performance under NEMA 2006 to the real involvement of the I&AP in follow-up operations a decline in quality is noted. It is clear that there

is room for improvement in the way the results are communicated to the I&AP. The ECO reports were only shared with the relevant authorities and individuals within the proponent's organisation in the majority of the case studies, which consequently excluded the transparency aspect of a follow-up process.

The NEMA: EIA regulation of 2014, as amended requires that a follow-up report be published on a publicly available website. In South Africa this is likely to be a challenge, due to the poor economic state and educational level within the North West Province (McLeod, 2017). It has been proven that access to internet declines as income declines (McLeod, 2017). Moreover, a study done by World Wide Wox (2017) proved that lack of education is a barrier to internet access, with less than 20% access among communities that have below Grade 7, 40% for those with a Grade 11 education and for those with a post-matric qualification, it reaches a high 71.6%. This brings a challenge to the less educated and lower-earning population of South Africa (World Wide Worx, 2017).

The following sections provide a discussion from literature on EIA follow-up reporting, as well as a review package of the EIA follow-up report quality.

2.7 Reporting on EIA follow-up

Communication or reporting is a key tool in decision-making processes, as well as in promoting understanding of EIA and its outcomes amongst interested and affected communities and groups (Pinto *et al.*, 2019). The focus of EIA follow-up has shifted from monitoring and evaluating the accuracy of environmental impact predictions to communication about environmental performance with stakeholders (Angus Morrison-Saunders & Arts, 2005).

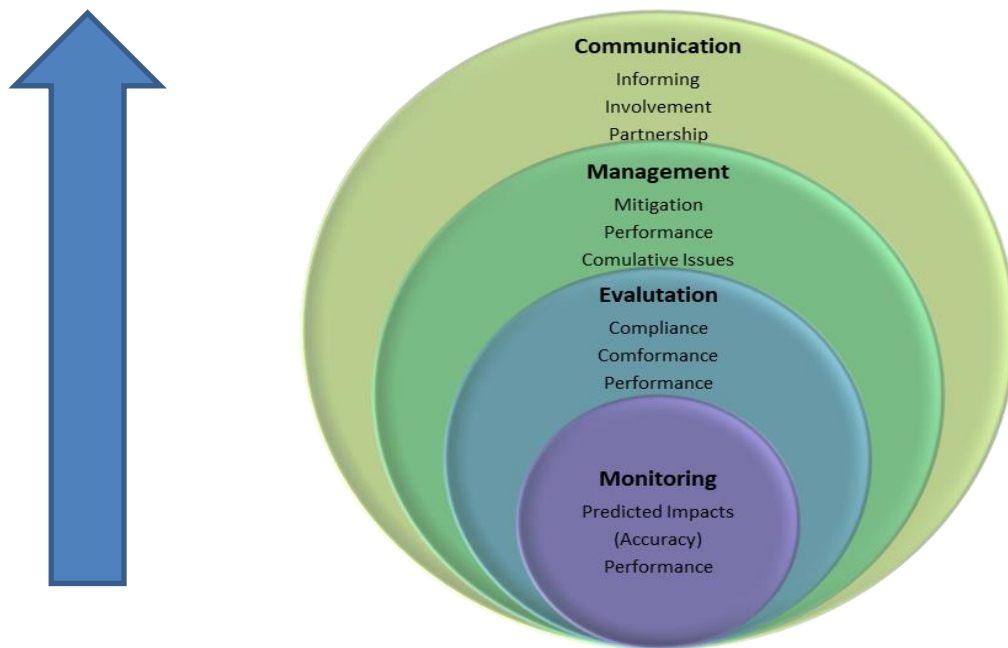
2.7.1 Sustainable EIA Follow-up Reporting

Auditing guidelines for sustainability auditing have been developed to measure and monitor "Triple Bottom Line" performance (GRI, 2002). The Global Reporting Initiative (GRI) guidelines provide the corporate sector with a model for "Triple Bottom Line" accounting and business organisation. Included in these guidelines is a procedure for auditing compliance to the sustainability model.

In view of economic evolution, the quality of environmental disclosure is seen as a key value for an organisational growth (Marwa *et al.*, 2020). Companies are encouraged to provide better quality environmental disclosure to build a favourable reputation and help the public and investors make the right investment decision (Marwa *et al.*, 2020). Internationally there is an increase in

environmental disclosure influenced by law on the new economic regulations of 2001 and the adoption of GRI (Global Reporting Initiatives) founded in 1997 (Marwa *et al.*, 2020). This requirement is accompanied by an increase in several reports and, proven by a study done by Marwa *et al.* (2020) on the impact of environmental auditing and quality of disclosure of environmental information for French listed companies (Marwa *et al.*, 2020). French listed companies are required to integrate social and environmental disclosure in their annual report in the effort to enforce transparency in the quality of disclosed information, thereby increasing reliability on environmental reporting (Marwa *et al.*, 2020). In 2013 the GIR implemented a new version of reporting requirements which insists on information reliability, relevance and standardisation in assessing opportunities and environmental risks which are relevant in the context of this study (Marwa *et al.*, 2020). Figure 2-1 below illustrates the evolving trend of EIA follow-up and communication being at the top of the hierarchy as it is with the sustainability reporting.

Sustainability Reporting



EIA Follow-up

Figure 2-1 Evolving Trends in EIA Follow-Up (Adapted from Morrison-Saunders and Art, 2005)

The importance of good communication in EIA follow-up is also reflected in principle IBPP, namely E (be transparent) and F (be accessible to all stakeholders) of the EIA follow-up previously discussed in Section 2.3. The term Communication might imply a somewhat passive method of involvement in follow-up in the spectrum of public participation (Pinto *et al.*, 2019). The community should be involved in the EIA follow-up process to encourage active involvement of members of the community, directly affected by a project, in follow-up processes. Involving the community in environmental monitoring/evaluation of the plan or projects can assist in better understanding residual impacts (if any) and their ongoing management whilst enhancing understanding and acceptance of the development activity (Morrison-Saunders *et al.*, 2001), as reflected in Principle E and F. EIA follow-up should be able to involve stakeholders, with the minimum requirement for open and transparent communication with affected persons to allow EIA follow-up outcomes to be understood (Pinto *et al.*, 2019). Involving affected communities in the EIA follow-up process may be advantageous, in that indigenous environmental knowledge can be used in the context of follow-up (Pinto *et al.*, 2019). It is recommended that information pertaining to EIA follow-up should be in a form that non-experts can understand, to allow for participation in the decision-making processes, thereby promoting learning and influencing of future EIA projects (Pinto *et al.*, 2019). Such information can be communicated through online media outlets to allow majority of affected communities access to the information. Information should be appropriately transparent in nature and promote continuous learning opportunities (Morrison-Saunders *et al.*, 2007). In Hong Kong, a web-based reporting system for follow-up is used (Morrison-Saunders and Arts, 2004). In this way the communication between the industry and community is successfully obtained and subsequently encourages awareness in the society (Ingole, 2012). Experience gained from the USA Glen Canyon Dam project and the offshore oil and gas development in the Gulf of Mexico furthermore indicates that community involvement and -capacity in follow-up activities are improved through better and regular communication between the local community and project team about the projects (Arts *et al.*, 2001). Transparency, reporting and participation in follow-up is paramount in strengthening follow-up practices (Arts *et al.*; 2001).

In Portugal, both national and regional environmental agencies have experienced difficulties in dealing with the additional work since EIA follow-up was introduced in 2000 (Morrison-Saunders *et al.*, 2012). This is likely to be experienced by many countries implementing EIA follow-up practices. Similarly, EIA follow-up is inadequate if there is no effective enforcement by the authorities due to lack of adequate resources. In such cases there are greater reliance on professional quality standards to ensure expected EIA follow-up outcomes are met (Morrison-Saunders *et al.*, 2012). EIA follow-up programmes must be based on scientific approaches that have been well described by many authors such as Morrison- Saunders *et al.* (2001) and van

London and Arts (2002), who provide simple and effective approaches to follow-up (Morrison-Saunders *et al.*, 2012: 48- 50). A lack in scientific integrity may result in poor communication and deprives the opportunity to learn from experience in EIA follow-up (Morrison-Saunders *et al.*, 2012). It can be concluded from the discussion above that the quality of follow-up reports is essential for effective communication on environmental risks to stakeholders and investors (Pinto *et al.*, 2019).

2.7.2 EIA Follow-up Reporting in South Africa

The Department of Environmental Affairs and Tourism (DEAT) (2004) recognises the broadening of the scope of environmental auditing to include “Triple Bottom Line” or sustainability auditing as a relatively recent development. The “Triple Bottom Line” concept puts forward the idea that the corporate sector should not focus solely on the financial bottom line of profit, but also consider social bottom lines and environmental bottom lines, and incorporate these into their accounting structures (DEA, 2004:7). As stated in Section 2.4, South African (JSE) listed companies are required to disclose to their investors on environmental impact risks related to climate change and sustainability, in line with GRI or SDG, amongst other global initiatives. The rationale of EIA follow-up in the context of sustainable development and SDG has also been discussed in Section 2.4 above. This brings relevance to the fact that transparency and reporting, amongst other issues, are paramount for strengthening follow-up practices (Arts *et al.*, 2012).

Specific follow-up reporting requirements for projects should be determined by the regulator, proponent and community as required (Morrison-Saunders & Arts, 2004). As a minimum, the regulator should request the proponent to submit a follow-up report for each project phase, that is construction, operational and decommissioning (Morrison-Saunders & Arts, 2004). An annual follow-up report is recommended for long term projects (Morrison-Saunders & Arts, 2004; Ingole, 2012). Follow-up should report on those components of the EIA to which the proponent, community and regulator have agreed upon, focusing on the extent to which follow-up objectives have been met, and on the successful and non-accomplished implementation of mitigation measures (Morrison-Saunders and Arts, 2004).

The reporting should enable any unexpected findings to be acted upon quickly, thus allowing for early warning signs of problems to be dealt with proactively, thereby building on existing knowledge and improving on the quality of future EIAs (Morrison-Saunders and Arts, 2004). In other words, follow-up reports should ensure that management actions (or lack thereof) are reported by the proponent to the regulatory and affected public (Morrison-Saunders and Arts, 2004 & Morrison Saunders *et al.*, 2012).

The format and content of environmental audit reports vary according to the scope of the audit, the requirements of the client and the context of the audit (ISO19011, 2004). The most basic of audit reports consists of two columns named “Findings” and “Recommendations” and each finding is linked to a specific question or heading taken from the audit protocol, such as a legal requirement and, in a South African context, it would be the conditions of EA and EMPr commitments (DEA, 2004; South Africa, 2014). This can be summarised by including an executive summary at the beginning and the detail can be provided in report (DEA, 2004). Table 2-2 below provides an example of the generic- and regulated contents of EIA follow-up reports as adopted from Morrison-Saunders and Arts, 2004 & NEMA, 2014, as amended). There appears to be similarities between the general content advised by Morrison-Saunders and Arts (2004) and the EIA Regulations of 2014, as amended, which contain the legally mandated EIA follow-up report content. A combination of the two together with the 15 IBPP will be used to formulate a review framework for the EIA follow-up report.

In the study done by Alers (2016) on the follow-up reports prepared during the construction phase by the ECO for non-mining activities approved under the ECA, NEMA 2006 and NEMA 2010 in the Limpopo-, Mpumalanga- and the Eastern Cape Provinces, the overall quality of documents was adequate.

Table 2-2 below illustrates a comparison between the follow-up report content as stipulated in the South African EIA regulations and generic content provided by Morrison-Saunders and Arts (2004).

Table 2-2 Morrison-Saunders and Arts (2004) Generic VS SA regulated contents of EIA follow-up reports (South Africa, 2014)

NEMA Regulated Content of EIA follow-up Report (NEMA, 2014, as amended. Appendix 7	Generic Content of EIA follow-up Report (Morrison-Saunders and Arts, 2004)
1.2 Content of environmental audit report (1) An environmental audit report prepared in terms of these Regulations must contain: (a) details of the: (i) independent person who prepared the environmental audit report;	Not Provided for.

NEMA Regulated Content of EIA follow-up Report (NEMA, 2014, as amended. Appendix 7	Generic Content of EIA follow-up Report (Morrison-Saunders and Arts, 2004)
(ii) expertise of the independent person that compiled the environmental audit report. (b) a declaration that the independent auditor is independent in a form as may be specified by the competent authority;	Not provided for.
(c) an indication of the scope of-, and the purpose for which, the environmental audit report was prepared;	• Purposes of the follow-up
(d) a description of the methodology adopted in preparing the environmental audit report;	• Implementation of the follow-up (mechanisms used to operationalise the programme).
(e) an indication of the ability of the EMPr, and, where applicable, the closure plan to: (i) sufficiently provide for the avoidance, management and mitigation of environmental impacts associated with the undertaking of the activity on an on- going basis; (ii) sufficiently provide for the avoidance, management and mitigation of environmental impacts associated with the closure of the facility; and (iii) ensure compliance with the provisions of environmental authorisation, EMPr, and, where applicable, the closure plan;	• Issues identified • results (data, information) • data analysis and evaluation • Management steps that have been undertaken. • further management steps proposed to be taken to deal with outstanding issues effectively.
(f) a description of any assumptions made, and any uncertainties or gaps in knowledge;	• Not provided for

NEMA Regulated Content of EIA follow-up Report (NEMA, 2014, as amended. Appendix 7	Generic Content of EIA follow-up Report (Morrison-Saunders and Arts, 2004)
• Not provided for	• Lessons learned through the follow-up process and recommendations for future EIAs and follow-up programmes.
(g) a description of any consultation process that was undertaken during the course of carrying out the environmental audit report;	• Not provided for
(h) a summary and copies of any comments that were received during any consultation process; and	• Not provided for
(i) any other information requested by the competent authority.	• Not provided for

2.8 Review packages for South African EIA follow-up reports

The review package for the quality of follow-up reports in SA is discussed in this Section. Alers (2016) developed a review package for South African follow-up reports, namely the International Best Practice Principles for EIA follow-up (IBPPFU), as discussed in Chapter 1. The IBPPFU was used to evaluate the quality of EIA follow-up reports prepared by ECOs. The Lee-Colley review package adopted in the methodology for this study and discussed in Chapter 3, was used as a guiding tool to develop the IBPPFU review package included in Annexure A (Alers, 2016). The 17 IBPP principles, which have been revised by IAIA as discussed above and illustrated in Annexure C, were also used as review categories or evaluation topics for the IBPPFU (Alers, 2016). Similarly, to the Morrison-Saunders and Arts (2004) generic EIA follow-up report content, the South African legislation seems to be aligned with the revised 15 IBPP of 2021. Table 2-3-1 illustrates the alignment of the 15 IBPP of 2021 with the regulated content of the EIA follow-up report.

A comparison of the new 15 IBPP of 2021 with the EIA regulations is illustrated below in Table 2-3 to identify synergies between the 15 IBPP and SA regulatory requirement. It appears that the requirements of EIA follow-up reporting stipulated in the NEMA EIA regulations of 2014, as

amended, are aligned with the requirements of the 15 IBPP. Both the NEMA EIA regulations of 2014, as amended and the 15 IBPP put emphasis on the provision of adequate resource to conduct EIA follow-up and reporting; stating the objectives of EIA follow-up activity; indicating the scope of the EIA follow-up; stating accountability and enforcement; consideration of cumulative impacts and transparency.

Table 2-3 Alignment of the revised EIA follow-up best practice principle based on IAIA recommendation dated 2021 with South Africa Legislative requirements.

Revised IBBP as recommended in Table 2-1 (Morrison-Saunders <i>et al.</i> , 2021)	Regulated Content of EIA follow-up Report (NEMA, 2014 as amended. Appendix 7)
I: Specify enforcement provisions. Adequate resources such as time, staff and capacity must be appropriately provided for in advance in a cost-effective manner.	(1) An environmental audit report prepared in terms of these Regulations must contain: (a) details of the (i) independent person who prepared the environmental audit report; (ii) expertise of the independent person that compiled the environmental audit report; (b) a declaration that the independent auditor is independent, in a form as may be specified by the competent authority;
A: State the objective of each EIA follow-up activity and the overall program.	The objective of the environmental audit report is to: (a) report on: (i) the level of compliance with the conditions of the environmental authorisation and the EMPr, and, where applicable, the closure plan; and (ii) the extent to which the avoidance, management and mitigation measures provided for in the EMPr, and, where applicable, the closure plan achieves the objectives and outcomes of the EMPr and closure plan; (b) identify and assess any new impacts and risks as a result of undertaking the activity; (c) evaluate the effectiveness of the EMPr, and, where applicable, the closure plan; (d) identify shortcomings in the EMPr, and, where applicable, the closure plan; and (e) identify the need for any changes to the avoidance, management, and mitigation measures provided for in the EMPr, and, where applicable, the closure plan.
B: Be tailored to context.	3(c) an indication of the scope of, and the purpose for which, the environmental audit report was prepared.
C: Commence early in the EIA process (e.g., during screening and scoping stages).	This requirement is not specified in S34 and Appendix 7 of the EIA Regulations, as content that must form part of a follow-up report. However, it should be noted that Section 26 (d) (iv) of EIA Regulations 2014, as amended, requires the authority to include in the EA a condition relating to the avoidance, management, mitigation, monitoring and reporting of the impacts of the activity on the environment throughout the life of the activity, additional to those contained in the approved EMPr, and, where applicable the closure plan, as well as the frequency of auditing of compliance with the conditions of the environmental authorisation and of compliance with the approved EMPr, and, where applicable the closure plan.
D: Be carried out throughout the plan/project life cycle. Principles C and D have replaced principle 16 of IBPP as stated in Table 2-1 above.	

Revised IBBP as recommended in Table 2-1 (Morrison-Saunders <i>et al.</i>, 2021)	Regulated Content of EIA follow-up Report (NEMA, 2014 as amended. Appendix 7)
E: Be transparent (new principle replacing principle 2 as per the recommendations discussed earlier).	(g) a description of any consultation process that was undertaken during the course of carrying out the environmental audit report;
F: Be accessible to all EIA stakeholders (new principle replacing principle 2 as per the recommendations discussed earlier).	(h) a summary and copies of any comments that were received during any consultation process.
G: Provide clear accountability for EIA follow-up responsibilities.	Not a legal requirement to be part of the content of an EIA follow-up report. However, it should be noted that Section 34 (1) (a) of the NEMA, 2014, as amended, stipulates the holder of an environmental authorisation (EA) as a responsible person to implement the mitigation measures stipulated in the EMPr (Department of Environmental Affairs, 2017:238).
H: Provide clear, pre-defined and well-justified performance criteria.	(d) a description of the methodology adopted in preparing the environmental audit report.
I: Specify enforcement provisions.	Enforcement is provided in Section 34(b) of the NEMA regulations 2014, as amended. The holder of EA must submit an environmental audit report to the relevant competent authority (Department of Environmental Affairs, 2017: 238).
J: Promote continuous learning from experience to improve future practice. Replacing principle 11.	(f) a description of any assumptions made, and of any uncertainties or gaps in knowledge.
K: Facilitate adaptive environmental management. Replacing principle 6 of IBPP as stated in the recommendations table above.	(e) an indication of the ability of the EMPr, and, where applicable, the closure plan to: (i) sufficiently provide for the avoidance, management and mitigation of environmental impacts associated with the undertaking of the activity on an on-going basis; (ii) sufficiently provide for the avoidance, management and mitigation of environmental impacts associated with the closure of the facility; and (iii) ensure compliance with the provisions of environmental authorisation, EMPr, and, where applicable, the closure plan; (f) a description of any assumptions made, and any uncertainties or gaps in knowledge.
L: Be flexible according to emerging needs.	Appendix 7: The environmental audit report must provide for recommendations regarding the need to amend the EMPr, and, where applicable, the closure plan.
M: Inform and be informed by follow-up for other relevant activities at different levels of decision-making (tiering).	This requirement is not provided for in Appendix 7 of NEMA, 2014, as amended.
N: Consider cumulative effects.	Section (4) (b) of NEMA aims at promoting sustainability (Alers, 2016: 23)
O: Consider the overall effects of the proposal.	(i) any other information requested by the competent authority.

2.9 Modification of IBPPFU follow-up review package

An (IBPPFU) developed by Alers (2016) (see Annexure A) was adapted for this research, using the NEMA audit report (refer to EIA follow-up report in this research) requirements stipulated in Regulation 34, Appendix 7 of the 2014 EIA regulations, as amended in 2021, to include requirements on the content of the audit report as well as the revised IBPP of 2021. The adaptation and integration of the IBPPFU and revised IBPP with current legislative requirements resulted in a review package called the International Best Practice Principles for Follow-Up Modified (IBPPFU-M). This tool was used as a framework to assess the quality of EIA follow-up reports in South Africa. Each document was reviewed according to the assessment symbols as defined by Lee and Colley review methodology. Table 2-4 below illustrates the abbreviated IBPPFU-M review package.

Table 2-4 Modified Abbreviated IBPPFU-M review package

IBPPFU-M Review Package			
Criteria	Justification	Criteria	Justification
1. State the objective of each EIA follow-up activity and the overall program (IBPP A) (WHY?)	Morrison - Saunders <i>et al.</i> , 2021	3.1.1 Development of key performance criteria through well-defined methodologies or approaches to monitoring, evaluation, management, and communication. (IBPPFU 4.4.2).	Alers, 2016
1.1. Controlling of activities and their environmental impacts. (IBPPFU 4.2.1).	Alers, 2016	3.1.2. Producing useful information and outcomes through follow-up actions.	Alers, 2016
1.1.1. Maintaining decision-making flexibility and promoting an adaptive management approach to EIA and project management (IBPPFU 4.2.2).	Alers, 2016	3.1.3 Monitoring and auditing of significant impacts and aspects against the existing management plan. (IBPPFU 4.4.4).	Alers, 2016
1.1.2. Improving scientific and technical knowledge (IBPPFU 4.2.3).	Alers, 2016	3.1.4. Implementation and improvement of findings and recommendation follow up audits. (IBPPFU 4.4.5).	Alers, 2016
1.1.3 Improving community awareness and acceptance of projects (IBPPFU 4.2.4).	Alers, 2016	3.1.5. Communication of results of the monitoring reports and audit reports to all stakeholders (IBPPFU 4.4.6).	Alers, 2016

IBPPFU-M Review Package			
Criteria	Justification	Criteria	Justification
1.1.4 Integrating with other information i.e., state of the environment reports or EMS (IBPPFU 4.2.5).	Alers,2016	3.1.6. Review of objectives and targets that result from monitoring and audit reports (IBPPFU 4.4.7).	South Africa, 2017
1. 2. Be tailored to context (IBPP B)	South Africa, 2017	3.2. Provide recommendations regarding the need to amend the EMP, and, where applicable, the closure plan. (NEMA, 2014, as amended, Appendix 7, S1	South Africa, 2017
1.2.1. Indicate the scope of, and the purpose for which, the environmental audit report was prepared. (NEMA, 2014 as amended, Appendix 7, s3(1)(a))	Morrison - Saunders <i>et al.</i> , 2021	3.2.1. State the level of compliance with the conditions of the environmental authorisation and the EMP, and, where applicable, the closure plan. (NEMA, 2014, as amended, Appendix 7, s2(a)(i)).	South Africa,2017
1.3 Commence early in the EIA process (e.g., during screening and scoping stages (IBPP C)	Alers,2016; South Africa, 2017	3.2.2. State the extent to which the avoidance, management and mitigation measures provided for in the EMP, and where applicable, the closure plan achieves the objectives and outcomes of the EMP, and closure plan. (NEMA, 2014, as amended, Appendix 7, s2(a)(ii)).	South Africa,2017
1.3.1. Incorporation of EIA follow-up into the EMP. (IBPPU 2.1.1; s26(d)(iv) NEMA,2014 as amended).	Alers,2016; South Africa, 2017	3.2.3. Identify and assess any new impacts and risks because of undertaking the activity. (NEMA, 2014, as amended, Appendix 7, s2(b)).	South Africa,2017
1.3.2. Incorporation of EIA follow-up elements in the Environmental Authorisation (ROD/EA). (IBPPU 2.1.2 s26(d)(iv) NEMA,2014 as amended;)	Alers,2016	3.2.4. Evaluate the effectiveness of the EMP, and where applicable, the closure plan. (NEMA, 2014, as amended, Appendix 7, s2(c)).	South Africa,2017
1.3.3. Incorporation of other mechanisms of EIA follow-up. (IBPPFU 2.1.3).	Morrison - Saunders <i>et al.</i> , 2021	3.2.5. Identify shortcomings in the EMP, and, where applicable, the closure plan. (NEMA, 2014, as amended, Appendix 7, s2(d)).	South Africa, 2017
1.4. Be carried out throughout the plan/project life cycle (IBPP D)	Alers,2016	3.2.6. Identify the need for any changes to the avoidance, management and mitigation measures provided for in the EMP, and, where applicable, the	South Africa, 2017

IBPPFU-M Review Package			
Criteria	Justification	Criteria	Justification
		closure plan. (NEMA, 2014, Appendix 7, s2(e)).	
1.4.1. Determination of the need for, and content of EIA follow-up during the screening and scoping phase of the EIR preparation. (IBPPU 4.5.1).	Morrison - Saunders <i>et al.</i> , 2021	4. Specify enforcement provisions (IBPP I)	South Africa 2017
1.4.2. EIA follow-up actions or programs cover the entire life cycle of the activity. (IBPPFU 4.5.2; s26(d)(iv) NEMA, 2014 as amended).	Alers, 2016	4.1 Determining and ensuring the need for EIA follow-up by the regulators. (IBPPFU 3.2.1; NEMA, S34, 2014, as amended).	South Afrca, 2017
1.4.3. Consideration of long-term and short-term environmental changes for the EIA follow-up program (IBPPFU 4.5.3).	Alers, 2016, South Africa, 2017	4.1.1. Regulating follow-up requirements (IBPPFU 3.2.2; NEMA, S34, 2014, as amended).	South Africa, 2017
2. Be transparent (IBPP E)	Alers, 2016	4.1.2. Appointment of an independent EAP. (IBPPU 3.2.7; S34(2)(a), NEMA, 2014, as amended).	Morrison - Saunders <i>et al.</i> , 2021
2.1. Identification of stakeholders and allowing feedback on the EIA process. (IBPPFU 1.2.1)	Alers, 2016	4.1.3. Submission of EAP compliance reports to the competent authority throughout the life cycle of the project. (IBPPFU 3.2.6; S34(1)(b), NEMA, 2014, as amended)	Alers, 2016; South Africa, 2017
2.1.1 Informing the stakeholders of the implications of the commencement of activities	Morrison - Saunders <i>et al.</i> , 2021	4.1.4. Distinguishing the competing roles of developer, funder, provider, and decision-maker to avoid conflict (Regulator has the same function as proponent). (IBPPFU 3.2.7)	Alers, 2016; South Africa, 2017
2.1.2. Transparency and communication of actions and decisions resulting from EIA follow-up to stakeholders	Morrison - Saunders <i>et al.</i> , 2021	4.2. Promote continuous learning from experience to improve future Practice. (IBPP J)	Alers, 2016; South Africa 2017
2.1.3 Providing stakeholders with a genuine opportunity to engage in follow-up activities.	Morrison - Saunders <i>et al.</i> , 2021	4.2.1. Actively addressing EIA follow-up findings throughout the activity as part of the management system implemented. (IBPPFU 3.5.1)	Alers, 2016; South Africa, 2017

IBPPFU-M Review Package			
Criteria	Justification	Criteria	Justification
2.1.4 A summary and copies of any comments that were received during any consultation process (Appendix 7 s3(h) NEMA, 2014, as amended).	South Africa, 2017	4.2.2 Feedback to stakeholders about lessons learned. (IBPPFU 3.5.2).	Alers,2016
2.2 Be accessible to all EIA stakeholders. (IBPP F)	Morrison - Saunders <i>et al.</i> , 2021	4.2.3 The contribution made by lessons learned, or the contribution made by certain non-conformances or incidents related to changes in procedure or policy. (IBPPFU 3.5.3)	Morrison - Saunders <i>et al.</i> , 2021
2.2.1 Description of any consultation process that was undertaken while carrying out the environmental follow-up report (Appendix 7 s3(g) NEMA, 2014, as amended).	South Africa, 2017	4.3. Facilitate adaptive environmental management (IBPP K)	Alers,2016
2.3.1. Details of the independent person who prepared the environmental audit report (Appendix 7, s3(1)(a)(i), NEMA, 2014, as amended).	South Africa,2017	4.3.1. Indication of the adequacy of the EMPr, and, where applicable, the closure plan (Appendix 7, s3 (e)(i), (ii), (iii), NEMA, 2014, as amended).	Alers,2016
2.3. Provide clear accountability for EIA follow-up responsibilities (IBPP G)	Morrison - Saunders <i>et al.</i> , 2021	4.4.1. A description of any assumptions made, and any uncertainties or gaps in knowledge (Appendix 7, s3(f), NEMA,2014, as amended).	Morrison - Saunders <i>et al.</i> , 2021
2.3.2. Expertise of the independent person that compiled the environmental audit report. (Appendix 7, s3(1)(a)(ii), NEMA, 2014, as amended).	South Africa, 2017	4.4. Be flexible according to emerging needs (IBPP L)	Alers,2016
2.3.3. A declaration that the independent auditor is independent, in a form as may be specified by the competent authority.	South Africa, 2017	4.4.2. Provide for recommendations regarding the need to amend the EMPr, and, where applicable, the closure plan (Appendix 7, s (1), NEMA, 2014, as amended).	Morrison - Saunders <i>et al.</i> , 2021 South Africa, 2017

IBPPFU-M Review Package			
Criteria	Justification	Criteria	Justification
(Appendix 7, s3(1)(b), NEMA, 2014, as amended).			
2.3.4. Consideration of consequences by the proponent. (IBPPFU 3.1.1)	Alers, 2016	4.5. Inform and be informed by follow-up for other relevant activities at different levels of decision-making (tiering) (IBPP M).	South Africa, 2017
2.3.5. Responsibility of the proponent for the mitigation of adverse effects and for the communication of follow-up results to stakeholders. (IBPPFU 3.1.2)	Alers, 2016	4.5.1. Application of follow-up outcomes beyond the project level. (IBPPFU 2.2.2).	Morrison - Saunders <i>et al.</i> , 2021
2.3.6. Taking advantage of the benefits of EIA follow-up as a project management instrument. (IBPPFU 3.1.3)	Alers, 2016	4.6. Consider cumulative effects (IBPP N)	Alers, 2016
2.3.7. Consideration of cost benefit in mitigation measures throughout the life cycle of the activity. (IBPPFU 3.1.4)	Alers, 2016	4.6.1. Dealing with cumulative effects of multiple developments and sustainability issues. (IBPPFU 2.2.1).	Morrison - Saunders <i>et al.</i> , 2021 Alers, 2016
3. Provide clear, pre-defined and well justified performance criteria. (IBPP H)	Morrison - Saunders <i>et al.</i> , 2021	4.7 Consider the overall effects of the proposal (IBPP O)	Morrison - Saunders <i>et al.</i> , 2021
3.1 Developing performance criteria that reflects best practice in the EIA follow-up actions or program. (IBPPFU 4.4.1).	Alers, 2016	4.7.1. Any other information requested by the competent authority (Appendix 7, s3(d)(i), NEMA, 2014, as amended).	South Africa, 2017

2.10 Conclusion

This chapter provided literature on the international best practice principles, guidelines and SA legal requirements for EIA follow-up reports. EIA follow-up review package that encompasses the guidelines, principles and SA legislation was developed.

The chapter further discussed the implementation and enforcement of EIA follow-up in South Africa, along with the legislative requirements. It also provided potential challenges faced by proponents and authorities during the implementation and enforcement of EIA follow-up, as drawn from the literature.

As explained in this chapter, follow-up is needed and can provide benefits to the EIA process for proponents, regulators, and the community. The EIA follow-up concept is based on five dimensions or activities, namely monitoring, evaluation, management, communication, and governance. These follow-up activities help in monitoring compliance, evaluating future knowledge, managing future consent and licenses, avoiding liability, and ensuring stakeholder communication. Nevertheless, follow-up appears to be the weakest phase in the EIA process. This is shown through challenges drawn from literature on follow-up actions. Both the proponents and EAPs require clear guidelines on the follow-up activities. The IBPP provide a clear guideline on best practices in follow-up and can act as a reference. By adhering to these principles, EIA follow-up can lead to improved environmental performance and better outcomes for all involved parties.

Alers (2016) developed the IBPPFU, a review package for follow-up reports in South Africa where the 17 IBPP principles served as review topics (Alers, 2016) used to review the quality of follow-up reports. In his study it was found that EIA follow-up conditions are often not thoroughly included in EAs, despite the adequate quality of the follow-up reports (Alers, 2016).

Similarly, the IBPPFU was adapted in developing the IBPPFU-M framework presented in this chapter. The IBPPFU was modified to include requirements from the NEMA Regulation 34, as amended and the 15 IBPP of 2021. When there is uncertainty in the legislation, the created IBPPFU-M framework can be used as a self-governance tool and as a tool for quality monitoring EIA follow-reports.

The next chapter describes the methodology used in collecting data and assessing it for the review of the quality of EIA follow-up reports using the IBPPFU-M framework.

CHAPTER 3 ..METHODOLOGY

3

3.1 Introduction

Evaluation of EIA follow-up requires criteria that can serve as the benchmark for success in delivering the EIA follow-up objectives (Pinto *et al.*, 2019). “Evaluation criteria are, in effect, shorthand versions of principles for EIA and, if carefully articulated, have considerable advantages in terms of conciseness and clarity” (Pinto *et al.*, 2019). This chapter provides the methodology used to derive such criteria from the Principles and EIA legal framework, and the selection of data sample which was used to evaluate the quality of EIA follow-up reports used in this study.

Internationally, report quality review has been performed using so-called review packages that has been the main methodological approach to report quality review (Sandham *et al.*, 2008). In this research, an evaluation criterion has been adapted from the well-established Lee-Colley review package developed in the United Kingdom (Lee *et al.*, 1999), and the review package has been adopted from the IBPPFU developed by Alers (2016). This was modified using the current EIA Regulations, 2014, as amended, and the revised 15 IBPP of 2021, as well as other literature and understanding of the objectives of EIA follow-up, in order to reflect the essential elements and legal requirements (Annexure C) for EIA follow-up reports (NEMA, 2014, as amended).

A qualitative research methodology was applied to this study, which includes data collection in a form of online documents to generate a theoretical conclusion on the status of the quality of EIA follow-up reports for platinum mines in SA (Merriam & Tisdell, 2016:162). Data as indicated in section 3.3 below was collected based on the three main objectives of the study discussed in Chapter 1, as well as a modified review package (IBPPFU-M) discussed in Chapter 2

3.2 Data collection and selection criteria

This section details the data selection method for this study. According to Merriam & Tisdell (2016:103) “a sample is enough when it allows for ‘a point of saturation’ in the review; that is reflecting the same outcome repeatedly and providing a probability of the status quo”. Thus, a sample size of 25 EIA follow-up reports referred to as audit reports in the NEMA Regulations of 2014, as amended, was carefully considered for this study to allow for a point of saturation. thereby enabling a conclusive review outcome.

Data was condensed into document type and in relation to the study objectives and review package (Miles *et.al.*, 2020:12-14). Specific factors contributing to document selection were the year in which follow-up was undertaken, NEMA regulatory regime under which the follow-up was undertaken, NEMA regulatory regime under which the EA was issued, NEMA regulatory regime under which the EMPr was compiled, legislative requirements on the content of EIA follow-up report, IBPPFU-M evaluation criterion illustrated in Table 2-4 above.

3.3 Document review

3.3.1 Study Reports

Based on the factors and method presented in the introduction section above, the following documentation and selection criteria formed part of this study:

- Environmental Authorisation (EA)
- Environmental Management Programme Report (EMPr)
- Independent Follow-up Report

The sample selection criteria applied and considerations are as follows:

- A sample of 25 EIA follow-up reports. Only 25 reports for the selected mines were available on the website.
- The selected reports include various infrastructure activities undertaken by four platinum mines located in the Northwest and Limpopo provinces in South Africa which consist of:
 - Open cast mining
 - Underground mining
 - Mining complex and -associated infrastructure i.e., roads, railway lines, powerlines, dams etc.
 - Concentrator and tailings.
 - Smelter.
 - Process operation.
 - Diesel storage.
 - Chrome plant.
 - Vent shaft.
 - Rehabilitated open pit.
- A geographic focus area for this study was taken into consideration.
- The reports were compiled by six different EAPs in line with the 2014 NEMA Regulations, as amended – reports for various infrastructure projects within the platinum mines

compiled by different EAPs were considered, to allow for objectivity in the study results. The reports must have been compiled based on the same EIA regime to provide consistent outcome relevant to the evaluation criteria.

- The sample only includes final follow-up reports published on company website for public review. The follow-up reports must have been final reports published on the website for public access and submitted to the relevant authority or regulator to provide conclusive study results.

Data was categorised based on the EAP, year of an audit report, and activity/project as illustrated in Table 3-1 below.

Table 3-1 Description of Data Collected

Summary of selected sample Consultant	Number of Follow-up Reports	Audit Date	Regulatory Regime (2017)
A	4	2019 – 2021	EIA Regulations 2014, as amended.
B	3	2019 – 2021	EIA Regulations 2014, as amended.
C	5	2019 – 2021	EIA Regulations 2014, as amended.
D	4	2019 – 2021	EIA Regulations 2014, as amended.
E	4	2019 – 2021	EIA Regulations 2014, as amended.
F	5	2019 – 2021	EIA Regulations 2014, as amended.

3.4 Data analysis

The International Best Practice Principles for Follow Up review package (IBPPFU) developed by Alers (2016) was adapted using the NEMA audit report requirements stipulated in Section 34, Appendix 7 of the 2014 EIA regulations, as amended, to include legal requirements on the content of the audit report as well as other literature. The outcome of this adaptation was the IBPPU-M. This tool was used as a framework to assess the quality of EIA follow up reports in South Africa.

3.4.1 Data analysis approach

An interactive and cyclical three phased data analysis process, namely data condensation, data display and conclusion drawing was applied (Miles *et.al.*, 2020:13-14). Data condensation formed part of the grouping of data based on what should go into the review criteria (IBPPU-M). Data review outcomes were populated (data display) in different review categories (Figure 3-1) with scoring symbols (Figure 3-2) as adapted from Lee and Colley, 1992. Preliminary comments or conclusions were made as the review criteria was being completed (Miles *et.al.*, 2020:13-14). A final theoretical conclusion was drawn at the end of the data display process. Table 3-2 below illustrates the alignment of this study objectives with the data collection and analysis method applied.

Table 3-2 Summary of data collected and analysis method

No.	Phase	Research Objectives	Data Collection Method
1	Data condensation	To develop a framework for the review of EIA follow up reports in South Africa.	Literature review: (IBPP) 15 International Best Practice Principles. - NEMA, 2014 as amended Follow-up report requirements. - IBPPU International Best Practice Principles for Follow-Up EIA reports.
2	Data display	To review selected follow up reports from selected platinum mines in South Africa.	Document review: - Lee and Colley scoring symbols. - IBPPFU-M review package. - Use of graphs and tables.
3	Conclusion drawing	To identify strengths and weaknesses in EIA follow up reports.	Data analysis - A qualitative method for data collection, analysis, interpretation and report writing. - Lee and Colley scoring symbols using modified IBPPFU review package.

3.4.2 Lee-Colley review categories and scoring symbols

The Lee and Colley (1999) review package has been widely used to review the report quality of various projects' EIA reports for, amongst others, housing, national parks, mining, wetlands (Mbhele (2009); Sandham *et al.*, 2020; Sandham *et al.*, 2008^a; Sandham *et al.*, 2008^b; Pretorius, 2006; Moloto, 2005), Environmental Authorisations (EAs) (Cockrell, 2018 ; Lee and Colley, 1999; Simpson, 2001), Environmental Management Frameworks (Marais *et al.*, 2014), Social Impact Assessment (SIA) (Hildebrandt & Sandham ,2014) and follow-up reports (Alers, 2016). The package is adaptable to specific countries' legislation or industry and the criteria are clear and concise (Lee *et al.*, 1999; Sandham & Pretorius, 2006).

The Lee-Colley review topics are arranged into four hierarchical levels illustrated in figure 3-1 below, namely (Lee *et al.*, 1999):

- Level 1 – Review area: Presents the main areas of the requirements which a follow-up report must conform to, and are preceded by a one digit in the list of review topics e.g., 1. In the list of review topics.

- Level 2 – Review Categories: contains several review categories e.g., 1.1 in the list of review topics.
- Level 3 – Review Sub-Category: These represent several review topics, e.g., 1.1.1 in the list of review package.
- Level 4 – Overall assessment: This represents the overall assessment. The final assessment symbol of the overall performance is then concluded by taking into consideration the performance of the different review areas, categories, and sub-categories.

This package was considered to categorise and sub-categorise the data into different levels and scores adapted from Lee and Colley, 1999 and symbols that range from A to F were assigned, as indicated in Figure 3-2 below. These scores, rather than numbers, are used to arrive at the overall score for a higher level rather than average (Lee *et al.*,1999).

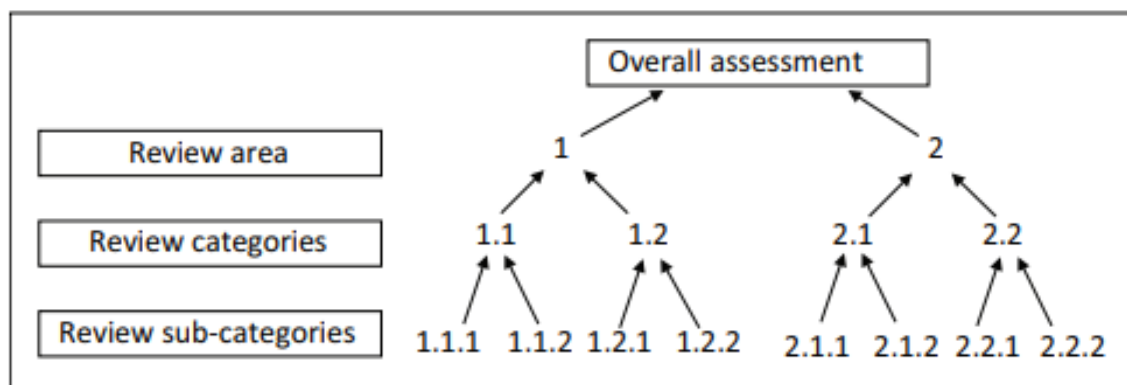


Figure 3-1 Hierarchical structure of the Lee and Colley Environmental Impact Assessment report review package (Lee and Colley,1992)

Table 3-3 List of assessment symbols adopted from Lee and Colley, 1992

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

Results were interpreted using the symbols that are grouped as follows:

- *% symbols A – B*: This group indicates a percentage number of follow-up reports that was of a “well” to “generally well” quality standards with regards to the 2021 IBPP and NEMA Regulations, 2014, as amended, for follow-up. This grouping can be regarded as best practice.
- *% symbols A – C*: This grouping of symbols indicates a percentage number of follow-up reports that is of a satisfactory quality standard with regards to the 2021 IBPP and NEMA Regulations, 2014, as amended, for follow-up.
- *% symbols C – D*: This grouping indicates marginal performance which means that the quality of follow-up reports is either just satisfactory (despite of omissions and/or inadequacies) or just not satisfactory (because of omissions and/or inadequacies).
- *% symbol E – F*: This grouping indicates poor performance and can be regarded as a weakness in the quality of follow-up reports.

3.5 Methodological assumptions and limitations

This section describes the assumptions made in relation to sample selection and limitation thereof.

- Assumptions
 - It is assumed that the sample selected is enough to provide a replica of the status of quality of sampled EIA follow-up reports for platinum mines in SA, with lessons which may be valuable to a broader audience or industries in SA.
 - The sample is enough to provide a probability of the quality of EIA follow-up reports specifically for any project within a platinum mine in SA.
 - The selected sample represents the average platinum mine found in SA and associated EIA listed activities of a wide variety of projects not limited to mining, for example, roads, railway lines, diesel storage facility etc. Thus, the IBPPFU-M review package is adaptable to evaluate the quality of any EIA follow-up report completed for any EIA approved development in SA.
- Limitations
 - A total number of 25 follow-up reports published during 2019-2021 will be considered. Only 25 follow-up reports were available for the platinum-selected mines.
 - The selected documents are limited to the 4 platinum mines of the same mining company in the Northwest and Limpopo provinces, South Africa.
 - The reports will only be based on one sector i.e., Mining. However, various listed infrastructure activities which formed part of the EIA approval process for mining operations formed part of the review in this study.

3.6 Conclusion

This chapter describes a qualitative methodology which was used to evaluate the quality of EIA follow-up reports for platinum mines in South Africa. The evaluation criteria were adapted from the Lee-Colley review package, which has been used to review the report quality of various projects' EIA reports, and the IBPPFU, which was modified using the current EIA Regulations, 2014, as amended, and the revised 15 IBPP of 2021. The data was collected online, based on

the study objectives and a modified review package (IBPPFU-M). The sample size of 25 EIA follow-up reports was carefully considered enabling a conclusive review outcome.

The chapter further describes the development of the IBPPFU-M review package, the process of selecting a sample, and how the Lee and Colley (1999) review package ratings were applied in the analysis of data. This chapter also concludes the assumptions and limitations. The results obtained by applying the methodology described in this chapter are provided in the following chapter (Chapter 4)

CHAPTER 4.. RESULTS AND DISCUSSION

4.1 Introduction

This chapter provides the results of the selected EIA follow up reports analysed and interpreted based on the developed review package (IBPPFU-M. A cross-case analysis as well as highlights on strengths and weaknesses are also discussed for each review area.

The performance of the selected samples is based on the assessment symbols discussed in Chapter 3 and the review criteria included in Annexure D. Assessment scores are presented using symbols A-F rather than numbers, as explained in Chapter 3. A grouping of symbols A-C indicates that the follow-up report was at a satisfactory standard regarding the IBPPFU-M. A grouping of symbols A-B indicates that a follow-up report was well to generally well performed with regards to the IBPPFU-M. This group can be regarded as indicating good performance. Symbols C-D indicate marginal performance. It indicates performance which is just satisfactory or just not satisfactory because of omissions or inadequacies. Lastly, symbols E-F indicate a poor performance, which indicates weakness in the follow-up report.

A full summary of scores for each of the review areas is discussed below and includes a series of graphs which have been derived from tabulated data indicating several follow-up reports reviewed and the year in which those follow-up reports were completed. In the next section, the quality of follow-up reports is discussed by interpreting the results of the different review areas.

4.2 Overall assessment results

The results of this study are consistent with the distribution pattern seen in the studies conducted by Alers (2016), and Ndlovu (2015) with regard to monitoring of cumulative impacts, and stakeholder participation as discussed in Chapter 2. This pattern has proven to be consistent in this study despite the prescriptive requirements on EIA follow-up in terms of the amended NEMA EIA regulations of 2014.

The overall quality of EIA follow-up reports for platinum mines in South Africa showed a general improvement in 2020 and 2021. 51% of the follow-up reports graded B and higher in 2020 and 51% of follow-up reports graded C and higher in 2021, as compared to 47% percent of the 2019 EIA follow-up reports that graded C and higher as illustrated in Figure 4-1 below. These results were based on the assessment done using the IBPPU-M framework. Higher performance was revealed in the assessment conducted using the IBPP of 2021. Table 4-2 illustrates that 53% of the EIA follow-up reports performed well (A-B).

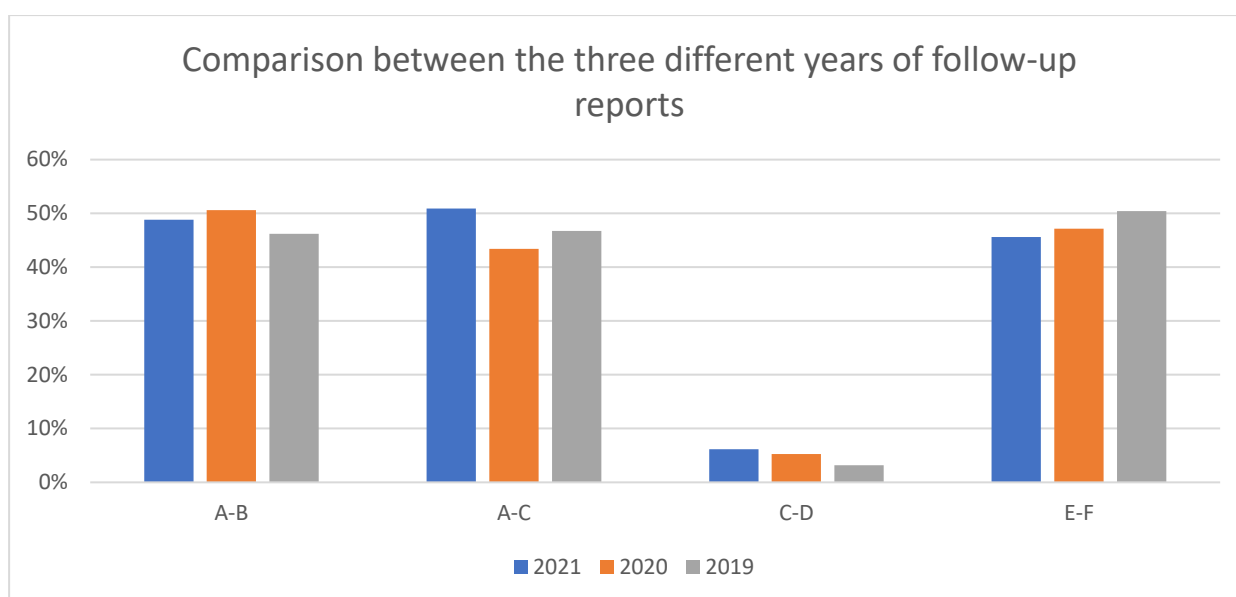


Figure 4-1 Overall performance of EIA Follow-up reports of 2019,2021 and 2022 based on IBPPU-M

4.2.1 Strengths and weaknesses

Review areas 1 and 2 appeared to be the strongest performing areas and review area 3 and 4 appeared to be the weakest performing areas. Review area 1 is related to stating the objectives or EIA follow-up tailored for societal text. Area 1 also requires that an EIA follow-up be conducted early in the project process and throughout the life cycle of the project. Tracking of long-term and short-term cumulative impacts being the focus of the follow-up process throughout the life cycle of a project. Review area 2 requires a clear accountability and independency of the EAP. Transparency and stakeholder engagement are key in this review area. Review area 3 requires that a clear performance criterion be included in the follow-up report and shortcomings of EMP to be identified. Review area 4 focuses on enforcement of EIA follow-up and the responsibility of the EAP, regulator and proponent. Review area 4 also focus on adaptive and flexible environmental management measures. Figure 4-2 below provides summary of results per review area. Performance based on the revised IBPP appeared to be stronger than the performance based on the IBPPU-M framework. Table 4-1 below provides an overall performance based on the revised IBPP of 2021. A detailed performance on IBPPF-M is included in Annexure F and it is discussed in the following sections.

Table 4-1 A Summary overall performance based on the IBPP of 2021

Review Areas	A v e r a g e o f A :	A v e r a g e o f B :	A v e r a g e o f C :	A v e r a g e o f D :	A v e r a g e o f E :	A v e r a g e o f F :	A - B	A - C	C - D	E - F
1. IBPP A: State the objective of each EIA follow-up activity and the overall program.	18	2	1	0	0	4	80%	84%	4%	16%
2. IBPP B: Be tailored to societal context.	24	0	0	0	0	1	96%	96%	0%	4%
3. IBPP C: Commence early in the EIA process (e.g., during screening and scoping stages)	23	0	0	0	0	2	92%	92%	0	8%
4. IBPP D: Be carried out throughout the plan/project life cycle.	16	2	0	3	1	2	76%	76%	12%	12%
5. IBPP E: Be transparent.	0	0	23	1	1	0	0%	96%	96%	4%
6. IBPP F: Be accessible to all EIA stakeholders	0	25	0	0	0	0	0	100%	0%	0%
7. IBPP G: Provide clear accountability for EIA follow-up responsibilities.	25	0	0	0	0	0	100%	100%	0%	0%
8. IBPP H: Provide clear, pre-defined and well justified performance criteria.	25	0	0	0	0	0	100%	100%	0%	0%

Review Areas	A v e r a g e o f A :	A v e r a g e o f B :	A v e r a g e o f C :	A v e r a g e o f D :	A v e r a g e o f E :	A v e r a g e o f F :	A - B	A - C	C - D	E - F
9. IBPP I: Specify enforcement provisions.	25	0	0	0	0	0	100%	100%	0%	0%
10. IBPP J: Promote continuous learning from experience to improve future practice.	0	2	0	2	0	21	8%	8%	8%	84%
11. IBPP K: Indicate the adequacy of the EMP, and, where applicable, the closure plan.	19	0	0	0	0	6	76%	76%	0	24%
12. IBPP L: Be flexible according to emerging needs.	9	1	0	0	1	14	40%	40%	0%	60%
13. IBPP M: Inform and be informed by follow-up for other relevant activities at different levels of decision-making (tiering).	2	0	0	0	0	23	8%	8%	0%	92%
14. IBPP N: Consider cumulative effects.	0	0	0	0	0	25	0%	0%	0%	100%
15. IBPP O: Consider the overall effects of the proposal (additional information requested by authorities).	5	0	0	0	0	20	20%	20%	0%	80%
Total							53%		11%	36%

Although all reports appeared to have done well on specifying the objectives of the EIA follow-up report, not all aspects of EIA follow-up reporting, such as assessing cumulative impacts and evaluating performance on the implementation of EA conditions and closure plans were included.

Most EAPs specified these two aspects (cumulative impacts and evaluating performance on the implementation of EA conditions and closure plans) to be exclusions from their scope of work issued by their clients (proponent). Follow-up on the implementation of commitments made in the EMPr was included in all reports, however, most follow-up reports did not include the shortcomings identified in the EMPr. Although all follow-up reports were submitted to authorities and published on a publicly available website as part of stakeholder involvement, none of the reports included record of stakeholder consultation meetings undertaken, moreover, access to the publicised reports on the website was not considered effective for public engagement, in the context of the surrounding communities, since the mining communities affected are in remote areas and access to the internet may not be possible for a majority of the community members.

A detailed discussion on the performance on all four review areas, as well as their strengths and weaknesses, will be presented in the following sections for 2021, 2020 and 2019 EIA follow-up reports.

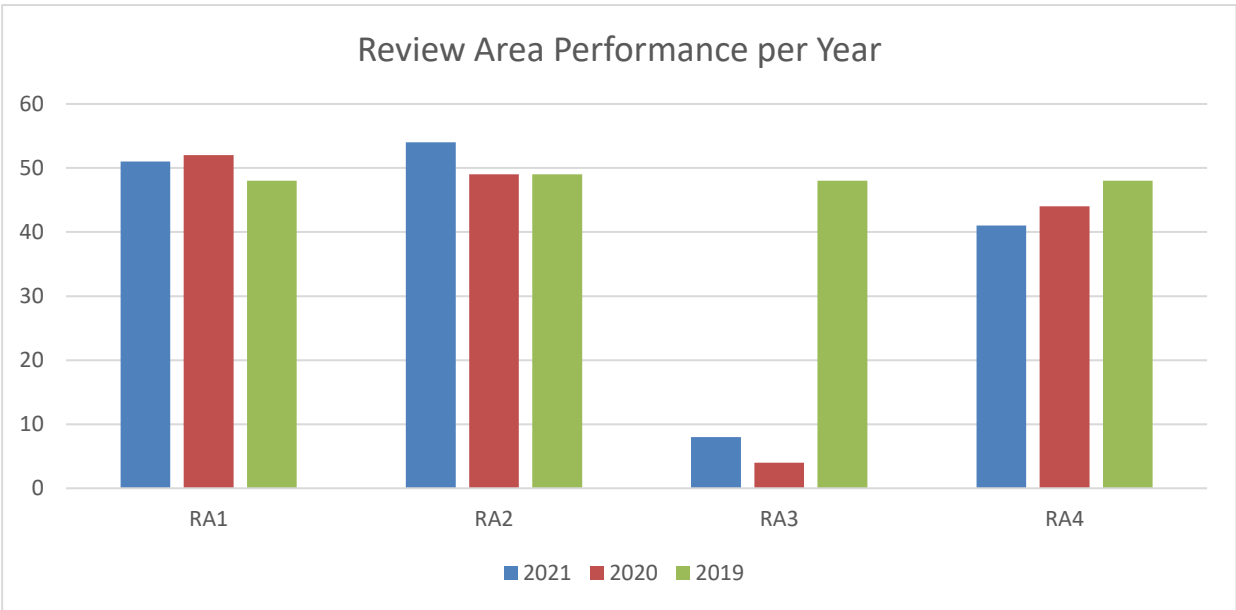


Figure 4-2 Summary results of review areas per year

Although the quality of EIA follow-up reports shows an improvement from the year 2020 to 2021 and a well and satisfactory performance in those two years respectively, the overall quality of EIA follow-up reports for platinum mines is between well and poor mainly due to omission in legislative requirements. With 49% of EIA follow-up reports graded A-B and 48% graded E-F, mostly due to omissions and inadequacies as shown in Figure 4-4 below.

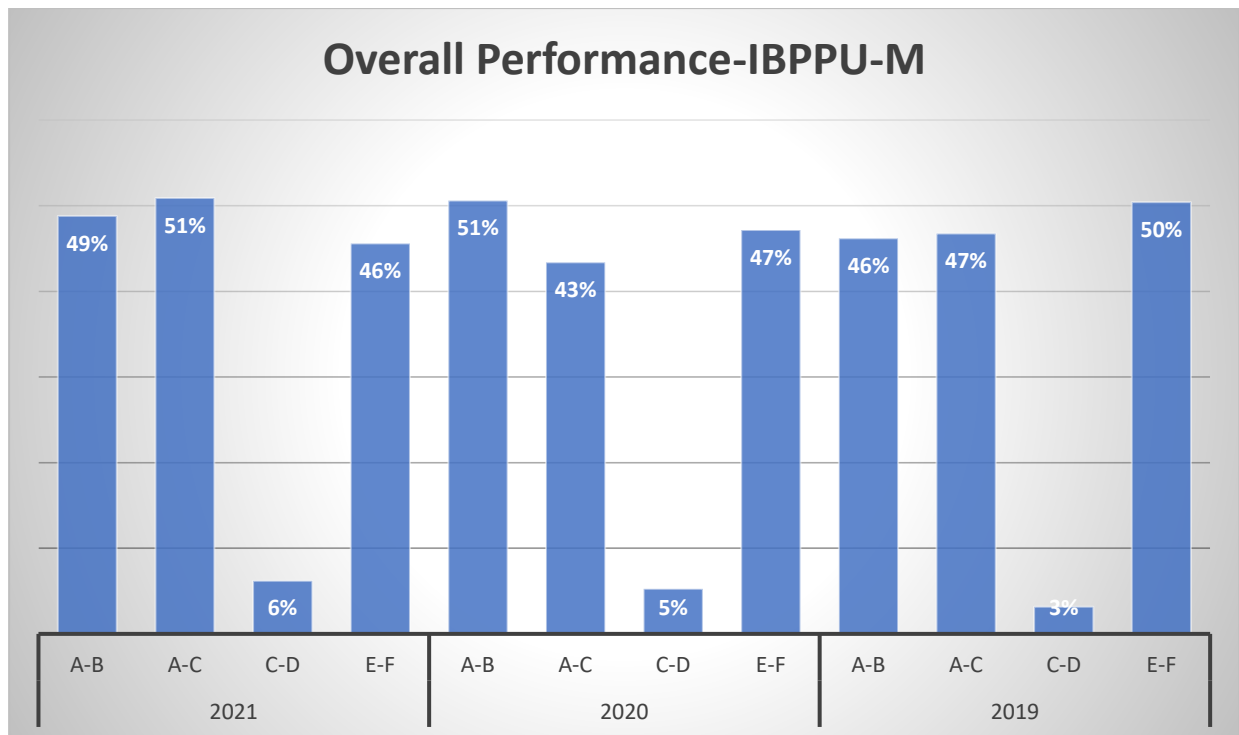


Figure 4-3 A comparison of overall summary of results between 2021,2020 and 2019 based on IBPPU-M

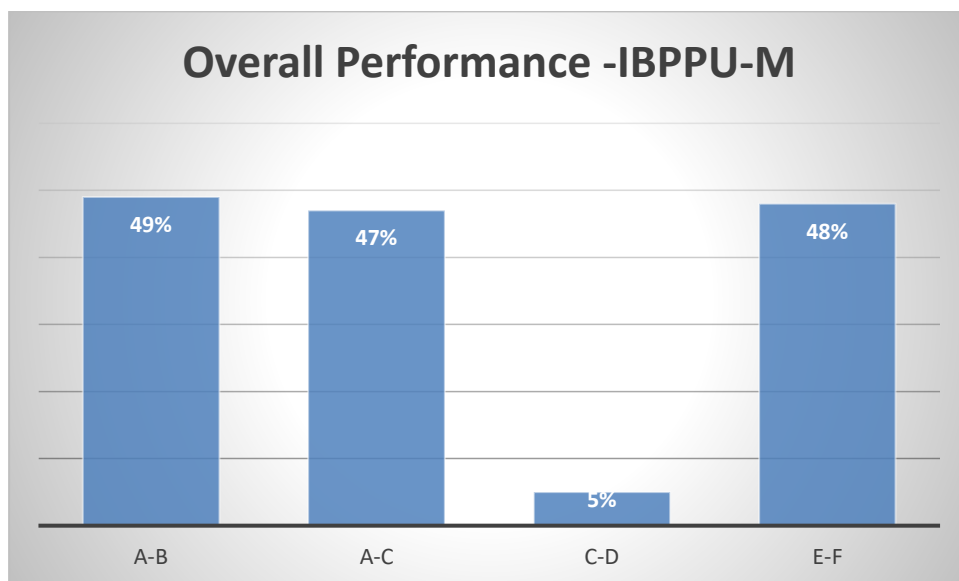


Figure 4-4 Overall summary of results based on IBPPU-M

4.3 Performance Results related to Review Area (RA) 1

As illustrated in the IBPPU-M review in, the Chapter 2, RA1 covers the requirements A-D of the IBPP of 2021, which includes a description of the objective, scope and context of a follow-up report and summarises 4 review subcategories which are, controlling of activities and their environmental impacts; societal context, and commencement of EIA follow-up at an early stage and carrying out follow-up throughout the plan/project lifecycle. These elements are also the requirements covered by IBPPU 2.1.1-2.1.3; and 4.2.1-4.2.5 and S3(1)(a) of NEMA,2014, as amended.

RA1 was addressed to a satisfactory level in follow-up reports compiled in 2020 and 2021, with over 50% of the reports graded A-B. The follow-up reports prepared in 2019 had 49% of the reports graded E-F. The performance of RA 1 is included in Table 4-2 below.

Table 4-2 Results indication performance for RA1

Year of Follow-up Report	2021				2020				2019			
Assessment Symbols	A-B	A-C	C-D	E-F	A-B	A-C	C-D	E-F	A-B	A-C	C-D	E-F
Overall Performance RA1	51%	56%	10%	39%	57%	52%	4%	40%	49%	49%	2%	49%
1. (IBPP A)	60%	80%	20%	20%	86%	86%	0%	14%	85%	85%	0%	15%
1.1.	20%	0%	20%	60%	57%	57%	0%	43%	23%	23%	0%	77%
1.1.1	0%	0%	20%	80%	43%	43%	14%	43%	8%	8%	15%	77%
1.1.2	0%	0%	20%	80%	0%	0%	0%	100 %	0%	0%	0%	100 %
1.1.3	20%	20%	0%	80%	14%	14%	0%	86%	8%	8%	0%	92%
1.1.4	0%	40%	40%	60%	29%	29%	0%	79%	8%	8%	15%	77%
1.2 (IBPP B)	100 %	100 %	0%	0%	100 %	100 %	0%	0%	92%	92%	0%	8%
1.2.1	100 %	100 %	0%	0%	100 %	100 %	0%	0%	92%	92%	0%	8%
1.3 (IBPP C)	100 %	100 %	0%	0%	100 %	100 %	0%	0%	85%	85%	0%	15%
1.3.1	60%	100 %	0%	40%	71%	71%	0%	29%	31%	31%	0%	69%
1.3.2	60%	60%	0%	40%	71%	71%	0%	29%	62%	62%	0%	38%

Year of Follow-up Report	2021				2020				2019			
Assessment Symbols	A-B	A-C	C-D	E-F	A-B	A-C	C-D	E-F	A-B	A-C	C-D	E-F
Overall Performance RA1	51%	56%	10%	39%	57%	52%	4%	40%	49%	49%	2%	49%
1.3.4	0%	0%	20%	80%	0%	0%	0%	100%	15%	15%	0%	85%
1.4. (IBPP D)	60%	60%	20%	20%	57%	57%	29%	14%	85%	85%	0%	15%
1.4.1	80%	80%	0%	20%	100%	0%	0%	0%	92%	92%	0%	8%
1.4.2	100%	100%	0%	0%	71%	71%	0%	29%	85%	85%	0%	15%
1.4.3	60%	60%	0%	40%	14%	29%	14%	71%	15%	15%	0%	85%

Detailed results on the quality of reports related to RA1 are discussed below with consideration of all three different years in which the reports were prepared by various consultants, with their strengths and weaknesses, starting with the year 2021 followed by the year 2020 and lastly year 2019.

4.3.1 Quality of 2021 EIA follow-up reports: RA1

Five follow-up reports for the South African platinum mines, prepared in 2021 by 5 different consultants (consultant A, B, C, D and E), were reviewed. EIA activities related to these follow-up reports varied from a mining complex comprising of various EIA listed activities, such as opencast- and underground mining with associated infrastructure, smelter and concentrator.

51% of the reports assessed were graded A-B with majority (56%) of the follow-up reports graded A-C. These results suggest that the quality of the majority of follow-up reports prepared in the year 2021 in terms of the NEMA Regulations, 2014, as amended, is satisfactory. It shows a general decline as compared to the follow-up reports prepared in 2020. Most reports (60%-80%) scored the lowest for IBPPFU-M A 1.1 to 1.1.4 (an indication in the follow-up report of the controlling of environmental impacts by promoting adaptive management approach and improving

scientific and technical knowledge by integrating other scientific information such as the specialist monitoring reports other than the baseline reports compiled during the EIA application phase) and IBPPUF-M 1.3.3 (looking at other mechanisms of EIA follow-up used). 60%-100% of the reports scored the highest in IBPPFU-M 1;1.2 to 1.3.2;1.4 to1.4.2 (stating the objectives and scope of EIA follow-up, early commencement of EIA follow-up during screening and scoping phase of the project, incorporating EIA follow-up requirement in EMPr and EA, conducting EIA follow-up throughout the project life cycle of an activity). The objective and scope of the EIA follow-up was clearly stated, and the reports were tailored to suit the context of the community in which the activity took place. The scoring under this review area revealed that most EIA follow-ups were undertaken at an early stage as part of the EIA process. The incorporation of EIA follow-up in the conditions of the EA was evident. Reports compiled by consultants A, B, C and D scored the highest and reports compiled by consultant E scored the lowest (E-F), more specifically on stating the objectives of follow-up and inclusion of activities and their environmental impact. The poor result from the follow-up report prepared by consultant E affected the overall good performance of 2021 follow-up reports by 6%, as compared to the follow-up reports prepared in 2020 by consultant A, B, C and D.

4.3.2 Strengths

The objectives and context of follow-up reports were clear. It was evident that the follow-ups were initiated at an early stage during the EIA phase by identifying baseline environmental impacts during construction the construction. Section 23(4) of the EIA regulations of 2014, as amended, regulates the content of EMPr, as stated in Appendix 4 of the regulations. The content of the EMPr should include a description of environmental impacts per activity in different phases (planning and design, construction, operation and closure) of the projects. It should also include mitigation measures and follow-up mechanisms for the identified impacts, as well as implementation of control measures. The 2021 follow-up reports were strong on the inclusion of activity, impacts and mitigation measures, since the EMPrs were in alignment with the legislative requirements when it comes to this aspect. This is because all mining EMPr in 2021 were compliant to the NEMA Regulation of 2014 after the requirement of EMPr conversion that had to take place when mining activities were taken out of the MPRDA and included in the EIA Regulations of 2014 (South Africa, 2014). All the individual EMPrs compiled under the MPRDA were consolidated and converted to comply with the requirements of the NEMA EIA regulations in relation to the content of EMPr and follow-up requirements.

4.3.3 Weaknesses

Although most reports scored the highest in the description of objectives and scope of EIA follow-up, not all reports looked at all EIA follow-up aspects, especially the implementation of EA conditions and closure plans. The objectives were mainly focussed on follow-up on the implementation of EMPr commitments. Sections 34(1)(a) of NEMA, 2014, as amended, requires follow-up to be inclusive of the EA, EMPr and closure plan where applicable for as long as the EA, EMPr and closure plan remain valid. Follow-up on EA seemed to have been done separately during the construction phase, in line with the EA conditions of specific projects, and the findings thereof were not integrated into the EMPr follow-up reports. Some consultants indicated in the follow-up reports that the EA was excluded from the scope of work issued to them by their clients. This weakness in the performance follows a similar trend shown in the research done by Ndlovu, 2015 on EIA follow-up for EAs in Mpumalanga Province, where most EAs made provision for EIA follow-up to be undertaken in line with the NEMA EIA Regulations of 2010. The requirement for compliance monitoring focused more on the construction related environmental impacts and paid very little attention to the operational- and decommissioning environmental impacts. Moreover, none of the EA conditions required that an EA follow-up report be submitted to the authorities during the operational phase. The gap in the inclusion of EA follow-up in the scope of the EIA follow-up reports is assumed to be caused by the fact that EA follow-up has been understood to be a responsibility of the ECO, that is appointed in line with the EA condition, to conduct follow-up for construction activities (Alers, 2016).

Another weakness identified was related to a consideration of other mechanism and specialist data to monitor progressive environmental impacts. None of the follow-up reports included a trend analysis or integration of scientific monitoring information identified in various specialist monitoring reports (air, water, biodiversity etc.) and integration of information that could be obtained from the surrounding communities on developing impacts, although the EMPr commitments and EA conditions specified periodic monitoring of environmental impacts by specialist studies. This exercise was costly and time-consuming, according to some consultants, who indicated it as part of limitations of the follow-up report. According to Morrison-Saunders & Arts (2004), EIA follow-up can require a considerably long period of time, staff and money to be implemented and, until the long-term cost saving benefits of EIA follow-up are more recognised, this challenge will continue. The benefits of EIA follow-up should outweigh the challenge of costs. A cost effective and efficient follow-up programme plan is therefore important (Morrison-Saunders & Arts, 2004). Furthermore, there was no indication of any effort made in community awareness. There is a need for capacity building on EIA follow-up in communities, in order to benefit more by learning from experience (IAIA, 2004). Effectively involving the community in the monitoring and follow-up on the environmental impact of projects can assist in better understanding residual

impacts (if any) and their ongoing management, whilst enhancing understanding and acceptance of the development activity (Morrison-Saunders *et al.*, 2001). This gap resulted in poor scoring on the consideration of cumulative impacts and inclusion of specialist study reports in the follow-up reports, of which the scoring is discussed as part of the performance for RA3 and RA4.

4.3.4 Quality of 2020 EIA follow-up reports: RA1

Seven follow-up reports for the South African platinum mines, prepared in 2020 by 5 different consultants (A, B, C, D and E) were reviewed. EIA activities related to these follow-up reports varied from a mining complex comprising of various EIA listed activities such as opencast- and underground mining with associated infrastructure, smelter and concentrator. The majority of EIA follow-up reports were follow-up reports updated in 2021.

The majority (57%) of the follow-up reports assessed were graded A-B with 52% of follow-up reports graded A-C. These results suggest that the quality of the majority of follow-up reports prepared in terms of the NEMA Regulations, 2014, as amended, in the year 2020 are satisfactory. It also shows a slightly better performance than reports done in 2021. There was no follow-up report compiled by consultant E assessed and this may suggest the slight improvement that is shown in the performance of the quality of reports for 2020. It is important to note that the performance shows a similar trend to that of 2021 in all assessment criteria. The discussion of strengths and weaknesses will not be repeated in this section as they are related to the above-mentioned strengths and weaknesses.

4.3.5 Quality of 2019 EIA follow-up reports: RA1

Thirteen EIA follow-up reports compiled by six different consultants (consultant A, B, C, F, G, H) in 2019 were assessed. EMPs for these follow-up reports were mainly for individual mining infrastructure activities such as tailings, railway extension, diesel generator, vent shaft and rehabilitated pit. A few of them were related to a whole mining complex. The quality of reports done in 2019 was poor, with 49% graded E-F and 2% graded C-D and were the lowest when compared to the reports compiled in 2020 and 2021. The quality of 2019 reports was the worst in the areas related to conducting EIA follow-up at an early stage and incorporating it into the EMP commitments, when compared to the performance of the quality of follow-up reports compiled in 2020 and 2021.

4.3.6 Strengths of RA1

Although 69% of follow-up reports were not supported by a commitment in the associated EMPs reports, a follow-up was nonetheless conducted. It is evident that legislation has influenced this particular result, as the NEMA EIA Regulations of 2017 included strict requirements for EIA follow-ups to be conducted for all valid EA and EMPs. The influence of legislation on follow-up was also evident in the study done by Macharia (2005) for BHPB Diamond mine in Canada. The study found that the BHPB follow-up program was heavily dependent on the Environmental Agreements between the authorities and the mine, as well as on the licences and permits. A follow-up report related to the open pit rehabilitation scored high (A-B) in the consideration of cumulative impacts and inclusion of a closure plan in the scope. Appendix 5 of NEMA EIA Regulations of 2014, as amended, requires that a closure plan includes the proposed mechanisms for monitoring compliance and performance assessment against the plan. This requirement is clearly an indication of what influenced a well performed score for the open pit closure plan EIA follow-up report. The content of the closure plan, which is considered an environmental agreement between the authorities and client, provided a clear guideline in this performance criteria.

4.3.7 Weaknesses of RA1

None of the follow-up reports attempted to improve any technical and scientific knowledge regarding the environmental impacts of the activities involved. This strongly affected performance on the inclusion of cumulative impacts in the follow-up reports. No existing specialist monitoring reports were considered in the follow-up reports, which resulted in a lack of the assessment of cumulative- impacts in 85% of the EIA follow-up reports. This result was influenced by the fact that the EA-related general infrastructure activities were found not to include a condition for continual monitoring of different environmental aspects (water, air, biodiversity noise) post the construction phase unless the infrastructure is within an identified sensitive environment, as identified in the baseline studies (Ndlovu, 2015). As discussed in the above section, enforcement through EA and environmental agreements seems to be crucial in the full implementation of EIA follow-up, as legislation on its own can be open-ended about the limits of the follow-up programs. The relevant parties must ensure that all the significant impact predictions can be followed up with post-implementation monitoring (Macharia, 2005). The performance of the 2019 follow-up reports indicate that learning from experience was not realised (Morrison-Saunders *et al.*, 2007).

4.3.8 Concluding remarks on the performance of RA1

Considering the different environmental legislations governing mining activities in South Africa, although fragmented, environmental monitoring and follow-up is conducted extensively. Different environmental authorisations (Water Use Licence, Waste Licence etc.) issued under NEMA and

the National Water Act by the Departments of Water Affairs, -Environmental Affairs and -Mineral Resources include periodic environmental monitoring of different environmental aspects (water, air, noise and biodiversity) as a requirement (South Africa, 2014; South Africa, 1998). Regrettably, the results for RA1 indicate that the opportunity for integrating the different specialist monitoring results into the EIA follow-up reports compiled between 2019-2021 was missed. The lack of integration of scientific information and use of other mechanisms was the weakest performed category (IBPP A). Performance under IBPP B (stating the objective of each follow-up activity), C (commencing EIA follow-up early in the EIA process) and D (carrying out EIA follow-up throughout the project life cycle) was satisfactory.

4.4 Performance Results related to RA 2

Review Area (RA) 2 of the IBPPU-M summarises the assessment of transparency in a follow-up report, stakeholder engagement in the follow-up process, as well as provision of clear accountability for a follow-up process. These requirements are covered in the IBPP E-G, IBPPU 1.2.1; and s3 (a), (b), (h) and (g) of Appendix 7 of NEMA EIA Regulation, 2014, as amended.

RA2 was performed to a satisfactory level, with 47% of reports prepared between the year 2019-2021 graded A-C, with 49% of 2021 follow-up reports graded A-C and 46% of 2019 and 2020 follow-up reports graded A-C.

Table 4-3 Results indication performance for RA2

Year of Follow-up Report	2021				2020				2019			
Assessment Symbols	A-B	A-C	C-D	E-F	A-B	A-C	C-D	E-F	A-B	A-C	C-D	E-F
Average Performance for RA2	43%	49%	14%	44%	39%	46%	13%	48%	44%	46%	11%	45%
2. (IBPP E)	0%	100%	100%	0%	0%	100%	100%	0%	0%	85%	92%	8%
2.1	0%	0%	100%	0%	0%	0%	100%	0%	0%	0%	54%	46%
2.1.1	20%	20%	0%	80%	0%	0%	0%	100%	8%	8%	0%	92%

Year of Follow-up Report	2021				2020				2019			
Assessment Symbols	A-B	A-C	C-D	E-F	A-B	A-C	C-D	E-F	A-B	A-C	C-D	E-F
Average Performance for RA2	43%	49%	14%	44%	39%	46%	13%	48%	44%	46%	11%	45%
2.1.2	0%	0%	0%	100 %	0%	0%	0%	100 %	8%	0%	0%	92%
2.1.3	0%	0%	0%	100 %	0%	0%	0%	100 %	0%	0%	0%	100 %
2.1.4	0%	0%	0%	100 %	0%	0%	0%	100 %	0%	0%	0%	100 %
2.2 (IBPP F)	100 %	100 %	0%	0%	100 %	100 %	0%	0%	100 %	100 %	0%	0%
2.2.1	40%	40%	0%	60%	29%	29%	0%	71%	38%	0%	0%	62%
2.3. (IBPP G)	100 %	100 %	0%	0%	100 %	100 %	0%	0%	100 %	100 %	0%	0%
2.3.1	100 %	100 %	0%	0%	100 %	100 %	0%	0%	100 %	100 %	0%	0%
2.3.2	100 %	100 %	0%	0%	100 %	100 %	0%	0%	100 %	100 %	0%	0%
2.3.3	100 %	100 %	0%	0%	100 %	100 %	0%	0%	100 %	100 %	0%	0%
2.3.4	0%	0%	20%	80%	0%	0%	0%	100 %	23%	23%	15%	62%
2.3.5	100 %	100 %	0%	0%	100 %	100 %	0%	0%	100 %	100 %	0%	0%
2.3.6	20%	20%	0%	80%	0%	0%	0%	100 %	23%	23%	0%	67%
2.3.7	0%	0%	0%	100 %	0%	0%	0%	100 %	0%	0%	8%	92%

All follow-up reports assessed performed the weakest in IBPP E (transparency) and the strongest in IBPP F (accessibility) and G (accountability). Strengths and weaknesses on RA 2 are discussed below.

4.4.1 Strengths of RA 2

All (100%) of the EIA follow-up reports reviewed were published on a publicly available website, meeting the requirement of Section 34 of the NEMA regulation and IBPPU-M 2.3. Results were communicated to the public in this way. Furthermore, all of the follow-up reports had a clear declaration of independency of the consultants and accountability of the proponents. This requirement was fulfilled to a satisfactory level in terms of the legal requirements stated in section 34 (NEMA EIA regulations of 2014, as amended, and IBPPU-M 2.3 -2.3.3).

4.4.2 Weakness of RA 2

Although all the follow-up reports were published on a publicly available website, accessibility to the internet by a majority of community members surrounding the platinum mines in South Africa was likely to be a challenge, due to the poor economic state and educational level within the North West Province (McLeod, 2017). It has been proven that access to internet declines as income declines (McLeod, 2017). Only 32.1% of population in the North West Province have access to internet (McLeod, 2017). Moreover, a study done by World Wide Wox (2017) proved that lack of education is a barrier to internet access. This confirms the assumption that the communication method of the follow-up results to the community members and transparency thereof was not effective, since none of the consultants had a public consultation meeting or involvement of the community members in the follow-up process. This resulted in poor performance on review criteria IBPPU-M 2,2.1-2.1.4 in line with IBPP E. In addition to a lack of stakeholder engagement, 64% of the consultants did not include a description of a public participation process undertaken during the follow-up process or a stakeholder identification list. The 36% that included a description of the consultation process undertaken, described a consultation process undertaken with their client and a publication of the follow-up report (IBPPU-M 2.1;2.21).

NEMA EIA Regulation 34(6) (a)(b) requires the proponent to notify all potential and registered interested and affected parties of the submission of that report and make such report immediately available to anyone on request and on a publicly accessible website, where the holder has such a website. Section 34 further refers to Appendix 7 of the EIA Regulation which Section 3(h) thereof relates to public consultation. However, it only requires that a description of any consultation process that was undertaken during follow-up process and comments received during the consultation be included in the report (South Africa,2014). This legislative requirement is an open-

ended requirement. It does not make public consultation meetings a mandatory requirement. All follow-up reports reviewed were compliant to the minimum requirement described in Section 34 (b) and not Section 3(h) of Appendix 7 of the regulations which is included in the IBPPU-M 2.1 (stakeholder identification). This follows the same pattern which was identified in the study done by Cubitt (2001); Chigwanhire (2021), where an assessment of the status of EIA follow-up reports in KwaZulu Natal was done, and is yet another indication of adherence to legislative requirements rather than a genuine attempt to implement best practices when attempting to fulfil the purpose of EIA follow-up. The results of the status of KwaZulu Natal EIA follow-up reports found that 60% of environmental consultants interviewed proceeded into the EIA follow-up stage, and very few mentioned the importance of effective communication and public participation in the EIA follow-up process. Alers (2016) also revealed that there was a lack of active engagement of stakeholders or community members and communication of the follow-up outcomes to the affected communities was not effectively carried out in his study on a review package for South African EIA follow-up process.

Although 100% of follow-up reports included a declaration of the independence of consultants and proponents' responsibility, 81% of the follow-up reports did not include consideration of the consequences by the proponent's failure to implement the EMP (IBPPU-M 2.3.4). Furthermore, there was no mention of EIA follow-up being considered as a project management instrument (IBPPU-M 2.3.6). It is also perceived from the results that the cost benefits of the implementation of environmental mitigation measures throughout the project life cycle in the EIA report were not included in any of the reports (IBPPU-M 2.3.7). Results on RA3 discussed below highlight the performance level of the follow-up report in relation to the assessment of a compliance level on the implementation of mitigation measures.

4.4.3 Concluding remarks on the performance of RA2

RA2 revealed a notable improvement in the performance of follow-up reports in 2021 as illustrated in figure 4-4 below.

All follow-up reports assessed performed well on IBPP F (accessible to stakeholders) and IBPP G (accountability). This is an indication of a positive effect of a prescriptive legislation. Likewise, the results of a weak performance on the involvement of community members in the follow-up process (IBPP E) by all reports is an indication of ambiguous legislative requirements.

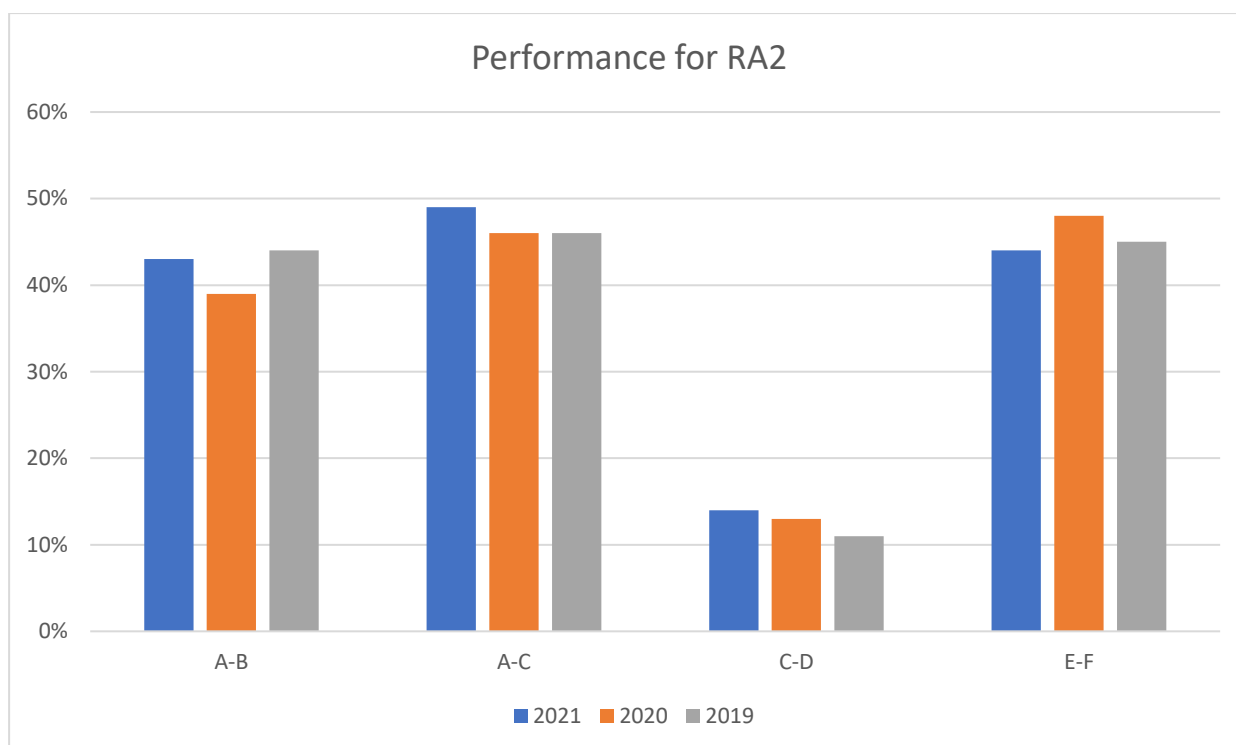


Figure 4-4 Comparison of performance of EIA follow-up reports between the three different years

4.5 Performance Results related to Review Area (RA) 3

RA3 focuses on the assessment of the evaluation criteria for the implementation of environmental mitigating measures included in the EMPr, EA conditions and closure plans (IBPP H), and the effectiveness of the EMPr as per the requirement of Section 1, Appendix 7 of NEMA Regulations, 2014, as amended.

All in all, the reports performed well in the legal and standard requirements of IBPP H and NEMA, 2014. IBPPU-M 3.1.6, which requires the inclusion of the environmental scientific monitoring reports and the objectives and targets thereof in the follow-up report, appeared to be lacking in all the follow-up reports. None of the follow-up reports included new impacts and risks identified during a follow-up process (IBPPU-M 3.2.3). This performance was expected, as the results for RA1 has shown that no other scientific monitoring reports were considered in the follow-up process. Progress on the implementation of improvements and recommendations of previous findings was not included in all the follow-up reports assessed (IBPPU-M 3.1.4).

A summary of RA3 results is illustrated in Table 4.4 below and details of strength and weakness are discussed in the following sections.

Table 4-4 Results indication performance for RA3

Year of Follow-up Report	2021				2020				2019			
	A-B	A-C	C-D	E-F	A-B	A-C	C-D	E-F	A-B	A-C	C-D	E-F
Assessment Symbols												
Average Performance for RA3	61%	59%	1%	37%	61%	57%	0%	39%	52%	52%	1%	47%
3. (IBPP H)	100 %	100 %	0%	0%	100 %	100 %	0%	0%	100 %	100 %	0%	0%
3.1	100 %	100 %	0%	0%	100 %	100 %	0%	0%	100 %	100 %	0%	0%
3.1.1	100 %	100 %	0%	0%	100 %	100 %	0%	0%	100 %	100 %	0%	0%
3.1.2	40%	40%	0%	60%	71%	71%	0%	29%	30%	30%	8%	62%
3.1.3	100 %	100 %	0%	0%	100 %	100 %	0%	0%	62%	62%	0%	38%
3.1.4	0%	0%	0%	100 %	0%	0%	0%	100 %	0%	0%	0%	100 %
3.1.5	0%	0%	0%	100 %	57%	0%	0%	43%	31%	31%	0%	69%
3.1.6	0%	0%	0%	100 %	0%	0%	0%	100 %	0%	0%	0%	100 %
3.2 (NEMA, 2014)	100 %	100 %	0%	20%	86%	86%	0%	14%	77%	77%	0%	23%
3.2.1	100 %	100 %	0%	0%	71%	71%	0%	29%	23%	23%	0%	77%
3.2.2	80%	80%	0%	20%	86%	86%	0%	14%	62%	62%	0%	38%
3.2.3	20%	20%	0%	80%	0%	0%	0%	100 %	15%	15%	0%	85%

Year of Follow-up Report	2021				2020				2019			
Assessment Symbols	A-B	A-C	C-D	E-F	A-B	A-C	C-D	E-F	A-B	A-C	C-D	E-F
Average Performance for RA3	61%	59%	1%	37%	61%	57%	0%	39%	52%	52%	1%	47%
3.2.4	40%	60%	0%	40%	57%	57%	0%	43%	62%	62%	0%	32%
3.2.5	60%	0%	20%	20%	0%	0%	0%	100%	62%	62%	0%	38%
3.2.6	80%	80%	0%	20%	86%	80%	0%	14%	62%	62%	0%	38%

4.5.1 Strengths of RA3

The compliance performance criteria (A-B) were well described in all the follow-up reports and used to evaluate the performance of the implementation of the EMPr, EA and closure plans where applicable. Most consultants used compliant or non-complaint as a rating criterion, and 65% of follow-up reports performed well (A-B) on the inclusion of the overall compliance performance score (IBPPU-M 3.2.1). This provided a clear indication whether a mitigation measure was fully implemented or not. The effectiveness of mitigation measures included in the EMPr was also indicated to a satisfactory level (60%) in the EIA follow-up reports. The indication of the level of adequacy of the EMPr was also satisfactory (A-C) (IBPPU-M 3.2.4). 88% of follow-up reports indicated the need to amend the EMPr. This performance also satisfied the clearly defined requirements of NEMA, Regulations of 2014, as amended.

4.5.2 Weaknesses of RA3

Three sub-categories under RA3 performed the lowest. These were IBPPU-M 3.1.4 (implementation and improvement of findings and recommendation of previous follow up), IBPPU-M (communication of results of the monitoring reports done as part of the communication of the follow-up report) and IBPPU-M- 3.1.6 (a review of objectives and targets that result from monitoring and audit reports).

Although all the follow-up reports included a compliance evaluation criterion which was used to evaluate the performance of the implementation of individual mitigation measures and EA conditions as well as closure plan, there was no indication of performance of follow-up on results of previous follow-ups done. This was identified as a gap in transparency and did not provide stakeholders with an assurance that progress is being made in the effort of mitigating environmental impacts caused by the mining activities. Moreover, the information or outcome of the specialist monitoring reports compiled as part of ongoing monitoring was not the follow-up report. This finding confirms the poor performance in RA1 related to the identification of stakeholders and allowing feedback on the EIA follow-up process (IBPPU-M 1.1.2). None of the follow-up reports provided a review of objectives and targets of the monitoring reports, thus providing no information on the improvement or degradation of the environment within which the activity is undertaken.

4.5.3 Concluding remarks on the performance of RA3

Part of the purpose of the follow-up report is to demonstrate transparency to- and provide stakeholders with valuable information related to the effectiveness and success level of mitigating measures that are being implemented to improve the environment. The results of RA3 show that this main objective was not met by most of the follow-reports. RA3 was the worst performed area when compared to RA1, -2 and -4. Similar to PPP, communication of valuable and meaning information, such as monitoring reports, to the I&AP is an integral part of the follow-up process. Without progressive monitoring reports and EMPr, the purpose of follow-up and promotion of sustainable EIA is defeated.

4.6 Performance Results related to Review Area (RA)4

In RA4 the provision of specific enforcement (IBPP I) on follow-up was assessed together with the consideration of cumulative effects and other information requested by the authorities in the follow-up report (IBPP N and IBPP O), the promotion of learning from experience to improve future practice (IBPP J), the application of follow-up outcomes beyond the project level (IBPP M) as well as facilitation of adaptive environmental management (IBPP K) and being flexible according to emerging needs (IBPP L).

The majority of the follow-up reports performed well on IBPP I and on IBPP K. All the follow-up reports performed the lowest on the other assessment criteria. The results of RA4 are included in table 4.5 below and strengths and weakness are discussed in the sections below.

Table 4-5 Results indication performance for RA4

Year of Follow-up Report	2021				2020				2019			
Assessment Symbols	A-B	A-C	C-D	E-F	A-B	A-C	C-D	E-F	A-B	A-C	C-D	E-F
Average Performance for RA4	49%	51%	6%	46%	51%	43%	5%	47%	46%	47%	3%	50%
4. (IBPP I)	100 %	100 %	0%	0%	100 %	100 %	0%	0%	100 %	100 %	0%	0%
4.1	100 %	100 %	0%	0%	100 %	100 %	0%	0%	100 %	100 %	0%	0%
4.1.1	100 %	100 %	0%	0%	100 %	100 %	0%	0%	100 %	100 %	0%	0%
4.1.2	100 %	100 %	0%	0%	100 %	100 %	0%	0%	100 %	100 %	0%	0%
4.1.3	100 %	100 %	0%	0%	100 %	100 %	0%	0%	100 %	100 %	0%	0%
4.1.4	0%	0%	0%	100 %	0%	0%	0%	100 %	0%	0%	0%	100 %
4.2.(IBPP J)	0%	0%	20%	80%	0%	0%	0%	100 %	15%	15%	8%	77%
4.2.1	20%	20%	0%	80%	0%	0%	0%	100 %	0%	0%	0%	100 %
4.2.2	0%	0%	0%	100 %	0%	0%	0%	100 %	8%	8%	0%	92%
4.2.3	0%	0%	0%	100 %	0%	0%	0%	100 %	0%	0%	0%	100 %
4.3.(IBPP K)	80%	80%	0%	20%	71%	0%	0%	29%	46%	46%	0%	54%
4.3.1	80%	80%	0%	20%	100 %	0%	0%	0%	62%	62%	0%	38%

Year of Follow-up Report	2021				2020				2019			
Assessment Symbols	A-B	A-C	C-D	E-F	A-B	A-C	C-D	E-F	A-B	A-C	C-D	E-F
Average Performance for RA4	49%	51%	6%	46%	51%	43%	5%	47%	46%	47%	3%	50%
4.4.(IBPP L)	80%	80%	0%	60%	57%	0%	0%	43%	31%	31%	0%	69%
4.4.1	20%	20%	0%	80%	86%	0%	0%	14%	92%	92%	0%	8%
4.4.2	80%	80%	0%	20%	86%	0%	0%	14%	69%	69%	0%	31%
4.5. (IBPP M)	0%	0%	0%	100 %	0%	0%	0%	100 %	15%	15%	0%	85%
4.5.1	0%	0%	0%	100 %	0%	0%	0%	100 %	15%	15%	0%	85%
4.6. (IBPP N)	0%	0%	0%	100 %	0%	0%	0%	100 %	0%	0%	0%	100 %
4.6.1	0%	0%	0%	100 %	0%	0%	0%	100 %	0%	0%	0%	100 %
4.7 (IBPP O)	20%	20%	0%	80%	43%	0%	0%	57%	8%	8%	0%	92%
4.7.1	20%	20%	0%	80%	43%	43%	0%	57%	8%	8%	0%	92%

4.6.1 Strengths of RA4

All the follow-up reports performed well on IBPP K, and 80% (2021) and 71% (2020) follow-up reports were graded (A-B) on IBPP K. The 2019 follow-up reports had less (46%) reports that were graded (A-B) on IBPP K. This indicates a significant increase in performance in 2020 and 2021 in this area. All follow-up reports were prepared in terms of the EIA Regulation 37 of NEMA, 2014, as amended, fulfilling the review criteria IBPP I. The Regulations require an EIA follow-up to be undertaken by an independent Environmental Assessment Practitioner (EAP) and be

submitted to the relevant authorities. All follow-up reports adhered to the requirement of Appendix 7 of NEMA Regulations in relation to the above-mentioned requirements. The EIA regulations also require that the follow-up report provide an indication of the adequacy of the EMPr and closure plan where applicable, as well as submit recommendations to amend the EMPr should the EMPr be found not to be adequate. The results for criteria IBPP K suggest that most EAPs demonstrated their facilitation of adaptive management measures by assessing during the follow-up process and confirming the adequacy of the EMPr in the follow-up report. This further suggest that the EMPrs which were considered inadequate were revised following a follow-up, thereby promoting an adaptive management measure.

4.6.2 Weaknesses of RA4

Although most reports performed well on the IBPP I and a declaration of the independence of an EAP as shown in RA2 (IBPP-M 2.3.3), none of the follow-up reports included the roles of developer, funder and decision-maker to avoid conflict (IBPP-M 4.1.4). The following additional weaknesses were identified:

- The main areas of weakness were in the area IBPP J: promotion of continuous learning from experience to improve future learning. Only 15% of follow-up reports were of a satisfactory quality and 28% of the report were just satisfactory.
- 20% of the reports performed well (A-B) by including progress on the implementation of actions resulting from previous EIA follow-up.
- All follow-up reports performed poorly on providing feedback to stakeholders about lessons learned, as there was no mention of contribution made by lessons learned related to changes in procedures and policies.
- There was no evidence in the follow-up reports that the follow-up outcome was used to inform other relevant activities for different levels of decision making (IBPP M). Only 15% of the follow-up reports performed well (A-B). Other permits, such as biodiversity permits, needing approval by different authority were identified during follow-up and recommended by the EAP in the follow-up report.
- There appeared to be failure in using follow-up reporting to inform future projects.
- The impact influence of other projects was not assessed by the EAP during follow-up, resulting in failure to include cumulative impacts in the follow-up reports. Environmental monitoring, such as water balance, water quality and biodiversity monitoring, were done during different monitoring programs by different environmental specialists. This information was not integrated in the EIA follow-up process and reports.

- 20% of the follow-up reports confirmed that there was no other information requested by the authorities. The remainder of follow-up reports did not include any additional information requested by the authorities nor did they mention if there was any.

4.6.3 Concluding remarks on the performance of RA4

The main objective of RA4 is to promote learning from experience through the outcome of EIA follow-up. As stated by Morrison-Saunders & Arts (2005), better documentation and reporting of EIA follow-up findings enhances learning from experience from one project to the next and from one proponent to another. The results for RA4 revealed that there was poor documentation and reporting of information such as cumulative impacts, and as a result the EIA follow-up undertaken did not result in any learnings for future projects and development. This result resembles Alers' (2016) study results, where principle "BPP 5: cumulative effects and sustainability" was partially addressed. The EAPs mostly limited the information to regulatory requirements.

4.7 Conclusion

The chapter analyses selected EIA follow-up reports for Platinum Mines in Limpopo and Northwest provinces using the IBPPFU-M review package. The strongest performing areas are areas 1 and 2 related to relevant EIA context and project life cycle consideration, while areas 3 and 4 which focus on stakeholder engagement and cumulative impacts are the weakest performing areas.

The following Chapter presents a conclusion on the study conducted as well as recommendation and area of future research.

CHAPTER 5..CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This Chapter provides a conclusion based on the analysis and results of the study as well as a recommendation for future research. The Chapter will conclude the study by highlighting the strengths and weaknesses of the quality review outcome as outlined in objective 3.

5.2 Overview of research objectives

The overall following objectives of the study as described in Chapter 1 were achieved:

- Objective 1: To develop a framework for the review of the quality of EIA follow-up reports in South Africa.
- Objective 2: To apply the new framework to review the quality of follow-up reports from selected platinum mines in South Africa.
- Objective 3: To identify strengths and weaknesses in EIA follow up reports.

5.2.1 Objective 1 - Developing a framework for the review of the quality of EIA follow-up reports in South Africa

This objective was achieved through developing a framework for the review of EIA follow-up in South Africa as described in Chapter 2. This was done by modifying the IBBPFU using the new recommended 15 IBPP's guidelines developed by Morrison -Saunders *et al.* (2021) and the NEMA EIA regulations of 2014, as amended. Mandatory requirements and best practice principles were explored and synergies drawn between the two requirements were presented in Chapter 2. This resulted in the new follow-up review package named IBBPFU-M. The provisions made for EIA follow-up in the SA regulatory requirements and International Best Practice Principles appears to align, in particular on the overall objectivity of the EIA follow-up. The IBBPFU-M was divided into four review areas namely:

- the objectives of EIA follow-up report
- transparency
- performance criteria and
- enforcement provision.

These review areas were further divided into four hierarchical levels or categories and six to seven sub-categories. The sub-categories included guidelines developed by Morrison-Saunders *et al.*

(2021) over and above the mandatory South African requirements and the international best practice principles.

The use of the new review package was instrumental in achieving the second objective, which was to assess the quality of EIA follow-up reports for different EIA activities undertaken by platinum mines in South Africa.

5.2.2 Objective 2- Applying the new framework to review the quality of follow-up reports from selected platinum mines in South Africa

The application of the new review framework, aimed at reviewing the quality of EIA follow-up reports using a new review package, was achieved. IBPPFU-M was successfully used to assess the quality of the EIA follow-up reports from selected platinum mines in South Africa and the results thereof were discussed in detail in Chapter 4. This new review package is considered to be applicable not only to the EIA follow-up reports of platinum mines, but to a broader list of activities that have undergone an EIA process, since the framework is mainly based on EIA regulations and IBPP's applicable to any development and EIA listed activity in terms of the NEMA Regulations.

In the study done by Alers (2016) the IBPP were also used in the review package (IBPPFU) that was used to appraise the EIA follow-up reports of case studies drawn from various sectors, such as waste, housing recreation, tourism and infrastructure. Moreover, a sufficient sample of follow-up reports was selected for this case study as described in Chapter 3. The selected follow-up reports for this study are related to various mining- and surface infrastructure activities associated with mining activities. These surface infrastructure activities could also be applicable to other infrastructure related economic development projects which are established outside the mining industry. Thus, any follow-up report can be assessed using the new review package (IBPPFU-M). The following activities formed part of the selected sample in this study:

- Open cast mining
- Underground mining
- Mining complex and -associated infrastructure i.e., roads, railway line, powerlines, dams etc.
- Concentrator and tailings
- Smelter
- Process operation
- Diesel storage

- Chrome plant
- Vent shaft
- Rehabilitated open pit
- Greenfields mining

In terms of the new review package IBPPFU-M, almost half (49%) of the EIA follow-up reports for platinum mines in South Africa is of a quality standard deemed “well” and 47% of follow-up reports is of a poor quality standard. Although almost 50% of the EIA follow-up reports performed well and reflected that the EIA Regulations were generally adhered to, just enough is being done in terms of the IBPPs.

5.2.3 Objective 3 – Identifying strengths and weaknesses in EIA follow up reports

Objective 3 was achieved by determining the strengths and weakness of the EIA quality reports prepared over the three different years (2019, 2020 and 2021). The overall strengths and weaknesses of the EIA follow-up reports prepared for SA platinum mines are discussed below.

5.3 Conclusion

It appears that EIA follow-up reports prepared in 2020 and 2021 performed better than the reports prepared in 2019. The EIA follow-up reports compiled in 2019 were mainly based on the requirements of the NEMA Regulations, 2014, as amended, and not under ROD conditions when compared to the follow-up reports prepared in 2020 and 2021. As discussed in Chapter 2, formulation of the ROD conditions has a clear implication on the compliance of EIA follow-up reports (Ndlovu,2015). Nevertheless, there were similarities in a number of strengths and weaknesses identified which were influenced by mandatory requirements.

The study revealed that weaknesses include a lack of transparency in EIA follow-up reporting due to ambiguity between Appendix 7 and Section 34 of the NEMA EIA regulations, as well as failure to consider cumulative impacts in the report. This shortcoming could be attributed to information disintegration and legislative ambiguity. The majority of follow-up reports failed to examine the projects' cumulative impacts. Appendix 7, which is intended to give a prescriptive description of the content of the EIA follow-up report, requires the identification and assessment of any additional impacts and hazards as part of the report's objectives. However, it fails to include these new impacts and hazards in the EIA follow-up report. Furthermore, the specialists' impact monitoring reports, such as water and air quality monitoring needed as part of licence requirements other than the EA, were not taken into account in the follow-up. This could be related to the disintegration of statutory requirements across different domains of authority.

The public participation process undertaken by the consultants during a follow-up process only satisfied the requirements of Section 34 of the NEMA regulation, which only requires the publication of the final follow-up report on a publicly available website, notwithstanding the effectiveness of that approach to the surrounding less advantaged communities, which are found in most Platinum mining communities. The fact that Section 34 of the NEMA EIA Regulations requires a follow-up report to be submitted to the authorities before being published on the website may give the interested and affected parties the impression that their comments and participation in the follow-up process are optional. Nonetheless, Appendix 7 simply requires a summary of a public involvement process, as well as comments received during any consultation process, to be included in a follow-up report, leaving ambiguity about the requirements of a public participation process for EIA Follow-up. This is regarded as an open-ended statement that could be construed differently by consultants and holders of EMPs, EIA, or closure plans in terms of the need for meaningful public engagement. These weaknesses identified in this study are similar to the results found by Alers (2016) and Ndlovu (2015) identified in the literature review of this study.

Although transparency and sharing of information through EIA follow-up reporting was identified as a weakness, the reports performed generally well when it came to compliance with the requirements of the NEMA EIA Regulations. All of the EIA follow-up reports reviewed were published on a publicly available website, meeting the requirement of Section 34 of the NEMA regulation and IBPPU-M 2.3. Results were communicated to the public in this way. All consultants involved were competent and independent. The quality of EIA follow-up reports measured against the 15 IBPPs showed that 53% of follow-up reports were of a “well” quality standard, this is in contradiction with literature reviews dated 2016 and earlier.

69% of follow-up reports were not supported by a commitment in the associated EMPs reports, however, follow-ups were conducted on an annual basis and throughout the project lifecycle. It would appear that legislation has influenced this particular result, as the NEMA EIA Regulations of 2017 included strict requirements for EIA follow-ups to be conducted for all valid EAs and EMPs. The outcome of this study on regular follow-up differs from that of Alers (2016). In his study, Alers (2016), it is indicated that follow-up is only conducted by ECOs during the project construction phase. Furthermore, all of the follow-up reports had a clear declaration of independency of the consultants and accountability of the proponents. This requirement was fulfilled to a satisfactory level in terms of the legal requirements stated in section 34 (NEMA EIA regulations of 2014, as amended, and IBPPU-M 2.3 -2.3.3.). It appears that the improvement and revision of the South African legislation (NEMA, EIA Regulation of 2017) had a significant impact on the follow-up practices in the SA context. Although there are more opportunities for improvements to further strengthen the quality of follow-up reports in South Africa.

The next section provides recommendations for areas of improvement.

5.4 Recommendations

The following recommendations are meant to improve the quality of EIA follow-up reports in South Africa.

- Clearly give a prescriptive EIA follow-up Public Participation Process in Section 34 of NEMA, EIA Regulations of 2014, as amended, to allow for genuine and adequate community involvement in the follow-up process and reporting.
- The environmental medium-specific line functions that operate within the three realms of government in South Africa are vertically divided among themselves and horizontally divided among the three domains of government in relation to enforcement dispensation. The issue is the patchy enforcement of environmental laws, with certain agencies stepping up enforcement while others either don't do anything at all or merely give lip-service to their responsibilities to enforce the 'laws under their purview (Nel & Wessels, 2010). The main action should be to combine the different spheres of environmental authorities in order to address a fragmented enforcement of follow-up reporting by consolidating pieces of legislation that relate to EIA follow-up i.e., Water Use Licence (WUL) and Atmospheric Environmental Air Quality Licence (AEL). The WUL and AEL give specific requirements and timing for ongoing scientific environmental monitoring. This should allow for a more efficient integration of new scientific monitoring results and cumulative impacts thereof into the EIA follow-up report.
- Alignment of EA conditions with the objectives of EIA follow-up as stipulated in Section 34 of the NEMA, EIA Regulation of 2014, as amended, to provide a more clearly defined application of EIA follow-up i.e., specific requirements for ongoing environmental monitoring, not only during the construction phase, but throughout a project life cycle (operation and decommissioning phase).
- EIA follow-up must include follow-up ongoing rehabilitation plans aligned to the approved closure plan and not only the implementation of a closure plan on closure or decommissioning of a mine as described in Regulations 19 of NEMA, EIA Regulations of 2014 as amended.

5.5 Area of future research

The results discussed in this research are a starting point into improving EIA follow-up in platinum mines in the South African context. More research on investigating the effectiveness of adaptive

management of unforeseen impacts, identified during the follow-up process is required to ensure continual improvement on impact management.

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ANNEXURES

Annexure A: Complete set of IBPPFU review package developed by (Alers,2016)

List of Evaluation topics	
1.	Presentation of core values of EIA follow-up ("Why")
1.1. (BPP.1)	Describing Follow-up to determine EIA (or SEA) outcomes.
1.1.1	Have Objectives and Targets been set to minimize the negative consequences of the development and to maximize the positive outcomes?
1.1.2	Has a programme, with the emphasis on action to be taken, been developed to reach the defined objectives and targets?
1.2. (BPP.2)	The importance of transparency and openness in EIA follow-up is highlighted
1.2.1	Have stakeholders been identified and allowed feedback on the EIA process?
1.2.2	Have the stakeholders been informed about the implications of the commencement of activities during the public participation process?
1.2.3	Have the actions and decisions resulting from EIA follow-up been fair, transparent and communicated directly to stakeholders?
1.2.4	Have Stakeholders been provided with the genuine opportunity to engage in follow-up activities?
1.3. (BPP.3)	Inclusion of commitment to follow-up
1.3.1	Has a clear commitment to undertake EIA follow-up been made, and are all parties held accountable for their actions?
1.3.2	Has a follow-up program been provided for in the pre-decision EIA process, and is it being carried out post decision?
1.3.3	Do the Follow-up commitments relate to program preparation and the implementation of monitoring, evaluation, management and communication?
2.	Addressing the nature of EIA follow-up ("What")
2.1. (BPP.4)	Follow-up should be appropriate for the EIA culture and societal context
2.1.1	Have EIA follow-up elements been incorporated into the EMPr, i.e. development and implementation of a outcome based monitoring programme?
2.1.2	Have EIA follow-up elements been incorporated into the Environmental Authorisation (ROD/EA)?
2.1.3	Are any other mechanisms of EIA follow-up, for example environmental management systems (ISO 14001 based system) or state of environment reporting, incorporated into the specific case study?
2.2. (BPP.5)	EIA follow-up should consider cumulative effects and sustainability
2.2.1	Has the EIA follow-up application considered dealing with the cumulative effects of multiple developments and sustainability issues?
2.2.2	Have the follow-up outcomes been applied beyond the project level, i.e. on a strategic level assisting towards SEA and EMF's?
2.3. (BPP.6)	EIA follow-up should be timely, adaptive and action orientated
2.3.1	Have environmental issues been tackled in an adaptive and pro-active way?
2.3.2	Have monitoring data collection and evaluation activities been sufficiently frequent, so that the information generated is useful to stakeholders, but not so frequent as to be a burden to those implementing the process?
2.3.3	Have effective actions been taken to meet the defined goals of EIA follow-up programs?
3.	Designation of roles and responsibilities ("Who")
3.1. (BPP.7)	The proponent of change must accept accountability for implementing EIA follow-up
3.1.1	Has the proponent (as the polluter) been paying careful consideration to the consequences of their actions and the necessity of EIA follow-up?
3.1.2	Has the proponent been held responsible for the mitigation of adverse effects and for the communication of follow-up results to stakeholders?
3.1.3	Is there evidence that the proponents took advantage of the benefits of EIA follow-up as a project management instrument?
3.1.4	Has the proponent considered the cost benefit of mitigation measures throughout the life cycle of the activity?
3.2. (BPP.8)	Regulators should ensure that EIA is followed up
3.2.1	Have regulators determined the need for EIA follow-up and are they ready to ensure that it is implemented by incorporating requirements into the EA?
3.2.2	Is the regulator ensuring that regulatory requirements are met, i.e. references to legal requirements in the environmental authorisation?
3.2.3	Has the regulator ensured a secure balance between the interests of both the proponent and the community?
3.2.4	Has the regulator ensured the proponent's compliance and promoted learning from the experience?
3.2.5	Has the appointment of an ECO been set as a requirement in the environmental authorisation?
3.2.6	Has ECO compliance reports been submitted to the competent authority throughout the life cycle of the project?
3.2.7	Where the regulator is also the proponent, have the competing roles of developer, funder, provider and decision-maker been distinguished to avoid conflicting interests?
3.3. (BPP.9)	The community should be involved in EIA follow-up
3.3.1	Has the community been informed about the EIA-follow-up outcomes?
3.3.2	Has the community been provided with the opportunity to directly participate in the follow-up program design and implementation?
3.3.3	Has the project benefited from community involvement in the follow-up process, i.e. sharing of special local knowledge, focused program design, building trust and partnerships?
3.4. (BPP.10)	All parties should seek to co-operate openly and without prejudice in EIA follow-up
3.4.1	Have the proponent, regulator and community participated in initiating a practical and reasonable EIA follow-up programme?
3.4.2	Have all parties shared a sense of purpose to avoid, reduce, or remedy adverse environmental effects?
3.4.3	Has a consensus been reached by all participants on the procedural and methodological approach?

3.4.4	Have the roles and task of parties been identified in terms of EIA follow-up?
3.4.5	Has a commitment been made by parties to carry out their required tasks and to respond constructively to the findings of EIA follow-up?
3.5. (BPP.11)	EIA follow-up should promote continuous learning from the experience to improve future practice
3.5.1	Have EIA follow-up findings been actively addressed throughout the activity as part of the management system implemented?
3.5.2	Have lessons learned been communicated to stakeholders i.e. for example the consultant, the regulator and the I&AP?
3.5.3	Has the lesson learnt or certain non-conformances or incidents contributed to changes in procedures or policies?
4.	Description of method of how EIA follow-up should be conducted ("How")
4.1. (BPP.12)	EIA follow-up should have a clear division of roles, tasks and responsibilities
4.1.1	Has a set of clearly divided roles, tasks and responsibilities been identified in the pre-decision EIA documentation and subsequent EIA approvals and management systems?
4.1.2	Have the outlined tasks and responsibilities been clearly defined within and between the different parties?
4.1.3	Are all practitioners involved competent for their tasks?
4.2. (BPP.13)	EIA follow-up should be objective-led and goal orientated
	Have the following objectives or goals for EIA-follow-up been defined?
4.2.1	(i) Controlling of activities and their environmental impacts, i.e. has an impact aspect register highlighting management plans implemented for each aspect and impact been developed?
4.2.2	(ii) Maintaining decision-making flexibility and promoting an adaptive management approach to EIA and project management
4.2.3	(iii) Improving scientific and technical knowledge
4.2.4	(iv) Improving community awareness and acceptance of projects
4.2.5	(v) Integrating with other information, i.e. state of the environment reports or EMS
4.3. (BPP.14)	EIA follow-up should be "fit for purpose"
4.3.1	Has the EIA follow-up requirements been appropriate to the anticipated environmental effects?
4.3.2	Has the EIA follow-up program been designed specifically in terms of design, location and affected stakeholders?
4.3.3	Has the EIA follow-up program been tailored to be practicable and feasible, focusing on the "art of the possible"?
4.3.4	EIA follow up should undergo ongoing scoping
4.4. (BPP.15)	EIA follow-up should include the setting of clear performance criteria
4.4.1	Has performance criteria reflecting best practice been developed in the EIA follow-up actions or programs?
4.4.2	Has the key Performance criteria been enacted through well-defined methodologies or approaches to monitoring, evaluation, management and communication?
4.4.3	Have actions of EIA follow-up produced useful information and outcomes which were easily measured, and unambiguously appraised against clear criteria?
4.4.4	Have significant impacts and aspects been monitored and audited against the existing management plan?
4.4.5	Have findings and recommendations been implemented and shown improvement on follow-up audits?
4.4.6	Have the results of the monitoring reports and audit reports been communicated to all stakeholders?
4.4.7	Have Objectives and targets been reviewed as a result from monitoring and audit reports?
4.5. (BPP.16)	EIA follow-up should be sustained over the entire lifecycle of the activity
4.5.1	Has the need for and content of EIA follow-up been determined during the screening and scoping phase of the EIR preparation?
4.5.2	Have EIA follow-up actions or programs covered the entire life cycle of the activity (i.e. design, construction, operation and decommissioning)?
4.5.3	Has long term and short term environmental changes been considered for the EIA follow-up program?
4.6. (BPP.17)	Adequate resources should be provided for EIA follow-up
4.6.1	Have provisions been made to appropriately provide for time, staff and capacity, ensuring cost-effective, efficient and pragmatic EIA follow-up?
4.6.2	Has EIA follow-up been implemented to best practice standards, ensuring that real actions are taken adequately when needed?

Annexure B: Revised IBPP for Follow-up adapted from Morrison-Saunders, Arts, Bond, Pope, Retief (2021)

EIA follow-up should:

A: state the objective of each EIA follow-up activity and the overall program.

B: be tailored to context.

C: commence early in the EIA process (e.g. during screening and scoping stages).

D: be carried out throughout the plan/project life-cycle.

E: be transparent.

F: be accessible to all EIA stakeholders.

G: provide clear accountability for EIA follow-up responsibilities.

H: provide clear, pre-defined and well-justified performance criteria.

I: specify enforcement provisions.

J: promote continuous learning from experience to improve future practice.

K: facilitate adaptive environmental management.

L: be flexible according to emerging needs.

M: inform and be informed by follow-up for other relevant activities at different levels of decision-making (tiering).

N: consider cumulative effects.

O: consider the overall effects of the proposal.

Annexure C: Old and New EIA follow-up principles with dimensions and grouping

Group	Headline EIA Follow-up Principle (Morrison-Saunders et al., 2007)	Revised Principle (Morrison-Saunders et al., 2021)	Relevance of different follow-up dimensions to Criteria Development (drawn from explanatory text in Morrison-Saunders et al., 2007)
WHY?	1. Follow-up is essential to determine EIA (or SEA) outcomes.	Removed principle (addressed in the revised follow-up definition.)	Governance – “application of our criteria means that follow-up is taking place.” Management – the emphasis of follow-up should be “action taken” to “minimise the negative consequences of development and maximise the positive”.
	2. Transparency and openness in EIA follow-up is important.	New principles E and F: E: Be transparent. F: Be accessible to all EIA stakeholders.	Communication – “all stakeholders have a right to feedback on the EIA process” and “active engagement of stakeholders in follow-up processes is preferable with genuine opportunities for involvement”.
	3. EIA should include a commitment to follow-up.	Removed principle	Governance – “a clear commitment to undertake EIA follow-up is needed” (i.e. similar to Principle 1) and “all parties should be accountable for their actions”.
WHAT?	4. Follow-up should be appropriate for the EIA culture and societal context.	New principle B: Be tailored to context.	Governance – “EIA follow-up... should be custom-made for the legislative and administrative, socio-economic and cultural circumstances; and dovetail with existing planning, decision-making and project management activities”. To allow comparability across jurisdictions, international best practice should be the benchmark, notwithstanding that legal compliance locally may be less or more stringent than this.

	5. EIA follow-up should consider cumulative effects and sustainability.	New Principles N and O: N: Consider cumulative effects. O: Consider the overall effects of the proposal.	Monitoring – “Application of EIA follow-up at the individual project level is intrinsically limited in terms of dealing with cumulative effects of multiple developments and sustainability issues. This may necessitate application beyond the individual project level; for example, strategic level or area-oriented approaches”. We have assigned this principle to Monitoring, notwithstanding the fact that the measuring function of monitoring is fundamental to action being taken in the other dimensions.
	6. EIA follow-up should be timely, adaptive and action oriented.	New Principle K: Facilitate adaptive environmental management.	Monitoring – “monitoring data collection and evaluation activities should be sufficiently frequent that the information generated is useful”. To avoid repetition, we did not also assign this to the Evaluation element. Management – the principle embodies the notion of adaptive management in the headline. “Actions must be efficacious to meet the defined goals of EIA follow-up programs”.
WHO?	7. The proponent of change must accept accountability for implementing EIA follow-up.	New Principle G: Provide clear accountability for EIA follow-up responsibilities.	Governance – “As the polluter, proponents must pay careful consideration to the consequences of their actions and the necessity of EIA follow-up”.
	8. Regulators should ensure that EIA is followed up.	Addressed in principle J: Promote continuous learning from experience to improve future practice.	Governance – “Regulators should determine the need for EIA follow-up and ensure that it is implemented well”.
	9. The community should be involved in EIA follow-up.	Removed Principle	Communication – “At the very least, the community should be informed of EIA follow-up outcomes, but direct community participation in follow-up program design and implementation is desirable”. We note that there is a close

		relationship with Principle 2 here.
	10. All parties should seek to co-operate openly and without prejudice in EIA follow-up.	Removed principle Governance – “EIA follow-up will be successful when a shared sense of purpose to avoid, reduce or remedy adverse impacts is acknowledged”.
	11. EIA follow-up should promote continuous learning from experience to improve future practice.	New Principles J and M: J: Promote continuous learning from experience to improve future practice and learning from experience. M: Reflecting that follow up activities and outcomes should inform and be informed by follow-up activities at other levels of decision-making (tiering).
	12. EIA follow-up should have a clear division of roles, tasks and responsibilities.	Removed Principle Governance – “The roles in EIA follow-up should be identified in pre-decision EIA documentation and subsequent EIA approvals and management systems. This should be set down as a series of clearly defined steps outlining tasks and responsibilities...”.
HOW?	13. EIA follow-up should be objective-led and goal oriented.	New Principle A: State the objective of each EIA follow-up activity and the overall Program. Management – “EIA follow-up should seek to achieve defined objectives or goals, which may include: (i) Controlling of projects and their environmental impacts (ii) Maintaining decision-making flexibility and promoting an adaptive management approach to EIA and project management (iii) Improving scientific and technical knowledge (iv) Improving community awareness and acceptance of projects

		(v) Integrating with other information (e.g., state of the environment reports or EMS)". We assigned this principle to Management as the best fit, notwithstanding relevance also to the other follow-up dimensions.
14. EIA follow-up should be "fit-for-purpose."	New Principle L: Be flexible according to emerging needs.	Monitoring – "EIA follow-up must be commensurate with the anticipated environmental effect". Governance – "EIA follow-up programs [must] be tailored to the proposed activity, its stages and dynamic context", be "practicable and feasible—to focus on the 'art of the possible.'".
15. EIA follow-up should include the setting of clear performance criteria.	New Principle H: Provide clear, pre-defined and well-justified performance criteria.	Evaluation – "Performance criteria used in EIA follow-up actions or programs should be rigorous and reflect best practice. This should be enacted through well-defined methodologies or approaches to monitoring, evaluation, management and communication. Such actions should produce useful information and outcomes which can be easily measured, and unambiguously appraised against clear criteria". The (repeated) emphasis on performance criteria in the headline principle and explanatory text alike was our key reason for assigning it to the Evaluation element, notwithstanding explicit mention of the other dimensions of follow-up.
16. EIA follow-up should be sustained over the entire life of the activity.	New Principles C and D C: Commence early in the EIA process (e.g. during screening and scoping stages).	Governance – "EIA follow-up actions or programs should cover not only the design and construction of a development, but also the operation and where relevant the decommissioning phase".

	D: Be carried out throughout the plan/project life-cycle.	Management – “EIA follow-up must also be responsive to long-term and short-term environmental changes”. We note that there is close relationship with Principles 6 and 13 regarding adaptive management here.
17. Adequate resources should be provided for EIA follow-up.	New Principle I: Specify enforcement provisions.	Governance – “EIA follow-up must be cost-effective, efficient and pragmatic”. The linkage with being fit for purpose in Principle 14 is noted. Management – “EIA follow-up should be done to best practice standards and should ensure that real actions are taken adequately when needed”. There is apparent linkage with Principles 6, 13 and 16 regarding adaptive management here.

Annexure D: Regulated Follow-up Report Content (EIA Regulations, 2014 as amended, Appendix 7)

The environmental audit report must provide for recommendations regarding the need to amend the EMPr, and where applicable, the closure plan.

The objective of the environmental audit report is to—

(a) report on—

(i) the level of compliance with the conditions of the environmental authorisation and the EMPr, and where applicable, the closure plan; and

(ii) the extent to which the avoidance, management and mitigation measures provided for in the EMPr, and where applicable, the closure plan achieves the objectives and outcomes of the EMPr, and closure plan.

(b) identify and assess any new impacts and risks as a result of undertaking the activity.

(c) evaluate the effectiveness of the EMPr, and where applicable, the closure plan.

(d) identify shortcomings in the EMPr, and where applicable, the closure plan; and

(e) identify the need for any changes to the avoidance, management, and mitigation measures provided for in the EMPr, and where applicable, the closure plan.

(1) An environmental audit report prepared in terms of these Regulations must contain—

(a) details of the—

(i) independent person who prepared the environmental audit report; and

- (ii) expertise of the independent person that compiled the environmental audit report.
- (b) a declaration that the independent auditor is independent in a form as may be specified by the competent authority.
- (c) an indication of the scope of, and the purpose for which, the environmental audit report was prepared.
- (d) a description of the methodology adopted in preparing the environmental audit report.
- (e) an indication of the ability of the EMPr, and where applicable, the closure plan to–
 - (i) sufficiently provide for the avoidance, management and mitigation of environmental impacts associated with the undertaking of the activity on an on-going basis;
 - (ii) sufficiently provide for the avoidance, management and mitigation of environmental impacts associated with the closure of the facility; and
 - (iii) ensure compliance with the provisions of environmental authorisation, EMPr, and where applicable, the closure plan;
- (f) a description of any assumptions made, and any uncertainties or gaps in knowledge;
- (g) a description of any consultation process that was undertaken during the course of carrying out the environmental audit report;
- (h) a summary and copies of any comments that were received during any consultation process; and
- (i) any other information requested by the competent authority

Annexure E: IBPPFU-M Evaluation Sheet

	Project	Consultant
	Mining Complex	Consultant A
	Open cast Mining Complex	Consultant B
	Smelter	Consultant C
	Concentrator	Consultant D
	Underground Mine	Consultant E
	Process operations	Consultant A
	Mining Complex	Consultant D
	Concentrator and tailings and Greenfields	Consultant D
	Smelter	Consultant C
	Opencast Mining Complex	Consultant B
	Mining Complex	Consultant A
	Mining Complex	Consultant D
	Process Operations	Consultant B
	Metallurgical Complex	Consultant F
	Vent Shaft	Consultant G
	Concentrator and Tailings	Consultant G
	Oil and Diesel storage	Consultant G
	Greenfields	Consultant A
	Smelter	Consultant C
	Opencast Mining Complex	Consultant B
	u/g and o/c Mining Complex	Consultant H
	Chrome Plant	Consultant H
	Plant Railway Extension	Consultant H
	Diesel generator	Consultant H
	Rehabilitated Pit	Consultant H
WHY?	1. (IBPP A)	A
	1.1.	F
	1.1.1	E
	1.1.2	F
	1.1.3	F
	1.1.4	F
	1.2 (IBPP B)	A
	1.2.1	A
	1.3 (IBPP C)	A
	1.3.1	E
	1.3.2	F
	1.3.3	E
	1.4. (IBPP D)	D
	1.4.1	A
	1.4.2	A
	1.4.3	F
WHO?	2. (IBPP E)	C

HOW?	Project	Consultant																								
		Mining Complex	Open cast Mining Complex	Smelter	Concentrator	Underground Mine	Process operations	Mining Complex	Concentrator and tailings and Greenfields	Smelter	Opencast Mining Complex	Mining Complex	Mining Complex	Process Operations	Metallurgical Complex	Vent Shaft	Concentrator and Tailings	Oil and Diesel storage	Greenfields	Smelter	Opencast Mining Complex	u/g and o/c Mining Complex	Chrome Plant	Plant Railway Extension	Diesel generator	Rehabilitated Pit
	2.1	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	F	D	F	F	F	F	D	F	D
	2.1.1	F	F	F	B	F	F	F	F	F	F	F	F	F	F	F	B	F	F	F	F	F	F	F	F	F
	2.1.2	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	B	F	F	F	F	F	F	F	F	F
	2.1.3	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F
	2.1.4	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F
	2.2 (IBPP F)	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
	2.2.1	F	F	F	A	A	F	F	A	F	F	F	A	F	F		A	A	A	F	F	F	F	A	A	A
	2.3. (IBPP G)	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	F	A	A	A	A
	2.3.1	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
	2.3.2	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
	2.3.3	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
	2.3.4	F	F	F	F	D	F	F	F	F	F	F	F	A	F	D	A	A	D	F	F	F	F	F	F	F
	2.3.5	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
	2.3.6	F	F	F	B	F	F	F	F	F	F	F	F	F	F	B	B	F	F	F	F	B	F	F	F	F
	2.3.7	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	D	F	F	F	F	F	F	F	F	F
	3. (IBPP H)	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
	3.1	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
	3.1.1	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
	3.1.2	E	E	E	B	B	A	B	A	B	F	E	B	B	E	A	A	E	E	E	E	D	E	B	E	E

	Project	Consultant
	Mining Complex	Consultant A
	Open cast Mining Complex	Consultant B
	Smelter	Consultant C
	Concentrator	Consultant D
	Underground Mine	Consultant E
	Process operations	Consultant A
	Mining Complex	Consultant D
	Concentrator and tailings and Greenfields	Consultant D
	Smelter	Consultant C
	Opencast Mining Complex	Consultant B
	Mining Complex	Consultant A
	Mining Complex	Consultant D
	Process Operations	Consultant B
	Metallurgical Complex	Consultant F
	Vent Shaft	Consultant G
	Concentrator and Tailings	Consultant G
	Oil and Diesel storage	Consultant G
	Greenfields	Consultant A
	Smelter	Consultant C
	Opencast Mining Complex	Consultant B
	u/g and o/c Mining Complex	Consultant H
	Chrome Plant	Consultant H
	Plant Railway Extension	Consultant H
	Diesel generator	Consultant H
	Rehabilitated Pit	Consultant H
	3.1.3	A
	3.1.4	F
	3.1.5	E
	3.1.6	F
	3.2	F
	3.2.1	B
	3.2.2	F
	3.2.3	F
	3.2.4	F
	3.2.5	F
	3.2.6	F
	4. (IBPP I)	A
	4.1	A
	4.1.1	A
	4.1.2	A
	4.1.3	A
	4.1.4	F
	4.2.(IBPP J)	F
	4.2.1	B
	4.2.2	F

	Project	Consultant																																
		Mining Complex	Open cast Mining Complex			Smelter	Concentrator	Underground Mine	Process operations	Mining Complex	Concentrator and tailings and Greenfields		Smelter	Opencast Mining Complex		Mining Complex	Mining Complex	Process Operations	Metallurgical Complex		Vent Shaft	Concentrator and Tailings		Oil and Diesel storage		Greenfields		Smelter	Opencast Mining Complex	u/g and o/c Mining Complex	Chrome Plant	Plant Railway Extension	Diesel generator	Rehabilitated Pit
Consultant		Consultant A	Consultant B	Consultant C	Consultant D	Consultant E	Consultant A	Consultant D	Consultant D	Consultant C	Consultant B	Consultant A	Consultant D	Consultant B	Consultant F	Consultant G	Consultant G	Consultant A	Consultant C	Consultant B	Consultant H	Consultant H	Consultant H	Consultant H	Consultant H	Consultant H	Consultant H	Consultant H	Consultant H	Consultant H	Consultant H	Consultant H	Consultant H	
4.2.3		F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F
4.3.(IBPP K)		F	A	A	A	A	A	A	A	F	F	A	A	A	A	A	A	F	A	A	F	F	A	A	F	F	F	A	F	F	A	F	F	F
4.3.1		F	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	F	A	A	F	F	F	F	F	F	F	F	F	F	F	F	F	A
4.4.(IBPP L)		F	A	B	F	F	A	A	F	F	F	A	A	A	A	A	A	F	F	F	F	F	F	F	E	F	F	F	F	F	F	F	F	F
4.4.1		A	A	C	A	A	A	A	A	F	A	A	A	A	A	A	A	A	F	A	A	A	A	A	A	A	A	F	A	A	A	A	A	A
4.4.2		F	A	A	A	A	A	A	A	A	F	A	A	A	A	A	A	F	A	A	A	A	F	A	A	A	A	A	A	A	F	F	F	F
4.5. (IBPP M)		F	F	F	F	F	F	F	F	F	F	F	F	F	F	A	F	F	F	F	F	F	F	F	A	F	F	F	A	F	F	F	F	
4.5.1		F	F	F	F	F	F	F	F	F	F	F	F	F	F	A	F	F	F	F	F	F	F	F	A	F	F	F	F	F	F	F	F	
4.6. (IBPP N)		F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	
4.6.1		F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	
4.7 (IBPP O)		A	F	F	F	F	A	F	F	F	F	A	A	F	F	F	F	A	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F
4.7.1		A	F	F	F	F	A	F	F	F	F	A	A	F	F	F	F	A	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F

Annexure F: Detailed Performance based on the IBPPFU-M on the Quality of EIA Follow-up Reports for platinum mines in SA

Year of Follow-up Report	2021				2020				2019			
%	A-B	A-C	C-D	E-F	A-B	A-C	C-D	E-F	A-B	A-C	C-D	E-F
Overall Performance	49	51	6	46	51	43	5	47	46	47	3	50
1. (IBPP A)	60	80	20	20	86	86	0	14	85	85	0	15
1.1.	20	0	20	60	57	57	0	43	23	23	0	77
1.1.1	0	0	20	80	43	43	14	43	8	8	15	77
1.1.2	0	0	20	80	0	0	0	100	0	0	0	100
1.1.3	20	20	0	80	14	14	0	86	8	8	0	92
1.1.4	0	40	40	60	29	29	0	79	8	8	15	77
1.2 (IBPP B)	100	100	0	0	100	100	0	0	92	92	0	8
1.2.1	100	100	0	0	100	100	0	0	92	92	0	8
1.3 (IBPP C)	100	100	0	0	100	100	0	0	85	85	0	15
1.3.1	60	100	0	40	71	71	0	29	31	31	0	6
1.3.2	60	60		40	71	71	0	29	62	62	0	38
1.3.4	0	0	20	80	0	0	0	100	15	15	0	85
1.4. (IBPP D)	60	60	20	20	57	57	29	14	85	85	0	15
1.4.1	80	80	0	20	100	0	0	0	92	92	0	8
1.4.2	100	100	0	0	71	71	0	29	85	85	0	15
1.4.3	60	60	0	40	14	29	14	71	15	15	0	85
2. (IBPP E)	0	100	100	0	0	100	100	0	0	85	92	8
2.1	0	0	100	0	0	0	100	0	0	0	54	46
2.1.1	20	20	0	80	0	0	0	100	8	8	0	92
2.1.2	0	0	0	100	0	0	0	100	8	0	0	92
2.1.3	0	0	0	100	0	0	0	100	0	0	0	100
2.1.4	0	0	0	100	0	0	0	100	0	0	0	100

Year of Follow-up Report	2021				2020				2019			
2.2 (IBPP F)	100	100	0	0	100	100	0	0	100	100	0	0
2.2.1	40	40	0	60	29	29	0	71	38	0	0	62
2.3. (IBPP G)	100	100	0	0	100	100	0	0	100	100	0	0
2.3.1	100	100	0	0	100	100	0	0	100	100	0	0
2.3.2	100	100	0	0	100	10	0	0	100	100	0	0
2.3.3	100	100	0	0	100	100	0	0	100	100	0	0
2.3.4	0	0	20	80	0	0	0	100	23	23	15	62
2.3.5	100	100	0	0	100	100	0	0	100	100	0	0
2.3.6	20	20	0	80	0	0	0	100	23	23	0	67
2.3.7	0	0	0	100	0	0	0	100	0	0	8	92
3. (IBPP H)	100	100	0	0	100	100	0	0	100	100	0	0
3.1	100	100	0	0	100	100	0	0	100	100	0	0
3.1.1	100	100	0	0	100	100	0	0	100	100	0	0
3.1.2	40	40	0	60	71	71	0	29	30	30	8	62
3.1.3	100	100	0	0	100	100	0	0	62	62	0	38
3.1.4	0	0	0	100	0	0	0	100	0	0	0	100
3.1.5	0	0	0	100	57	0	0	43	31	31	0	69
3.1.6	0	0	0	100	0	0	0	100	0	0	0	100
3.2 (NEMA, 2014 as amended, Appendix 7, S1)	100	100	0	20	86	86	0	14	77	77	0	23
3.2.1	100	100	0	0	71	71	0	29	23	23	0	77
3.2.2	80	80	0	20	86	86	0	14	62	62	0	38
3.2.3	20	20	0	80	0	0	0	100	15	15	0	85
3.2.4	40	60	0	40	57	57	0	43	62	62	0	32

Year of Follow-up Report	2021				2020				2019			
3.2.5	60	0	20	20	0	0	0	100	62	62	0	38
3.2.6	80	80	0	20	86	80	0	14	62	62	0	38
4. (IBPP I)	100	100	0	0	100	100	100	100	100	100	0	0
4.1	100	100	0	0	100	100	0	0	100	100	0	0
4.1.1	100	100	0	0	100	100	0	0	100	100	0	0
4.1.2	100	100	0	0	100	100	0	0	100	100	0	0
4.1.3	100	100	0	0	100	100	0	0	100	100	0	0
4.1.4	0	0	0	100	0	0	0	100	0	0	0	100
4.2.(IBPP J)	0	0	20	80	0	0	0	100	15	15	8	77
4.2.1	20	20	0	80	0	0	0	100	0	0	0	100
4.2.2	0	0	0	100	0	0	0	100	8	8	0	92
4.2.3	0	0	0	100	0	0	0	100	0	0	0	100
4.3.(IBPP K)	80	80	0	20	71	0	0	29	46	46	0	54
4.3.1	80	80	0	20	100	0	0	0	62	62	0	38
4.4.(IBPP L)	80	80	0	60	57	0	0	43	31	31	0	69
4.4.1	20	20	0	80	86	0	0	14	92	92	0	8
4.4.2	80	80	0	20	86	0	0	14	69	69	0	31
4.5. (IBPP M)	0	0	0	100	0	0	0	100	15	15	0	85
4.5.1	0	0	0	100	0	0	0	100	15	15	0	85
4.6. (IBPP N)	0	0	0	100	0	0	0	100	0	0	0	100
4.6.1	0	0	0	100	0	0	0	100	0	0	0	100
4.7 (IBPP O)	20	20	0	80	43	0	0	57	8	8	0	92
4.7.1	20	20	0	80	43	43	0	57	8	8	0	92