The quality of mine closure and financial provision disclosure in corporate reporting for the South African mining sector

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Dissertation accepted in partial fulfilment of the requirements for the degree *Master of Science in Environmental Management* at the North-West University

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Graduation May 2020

20026463

ACKNOWLEDGEMENTS

I would like to thank my supervisors, Carli Steenkamp and Professor Angus Morrison-Saunders, for their helpful comments and assistance in completing this dissertation.

ABSTRACT

The transparency of mine closure and financial provision disclosure aims to reflect the performance of a mining organisations' ability to meet its environmental liabilities at the end of closure. Corporate entities discloses information annually in their corporate reports, each reflecting its mandatory and voluntary obligation duties. By applying a qualitative research approach which is based on the thematic content analysis methodology and social constructivist approach to textual analysis, the research aims to evaluate the change in mine closure and financial provision disclosure quality in the mining sector by using four publically listed gold or coal producers with major operations in South Africa. Through performing a qualitative review of disclosure between the periods 2016 to 2018, the research reflected that disclosures are primarily presented to meet the organisation's disclosure obligations in terms of mine closure and financial provisions rather than presenting a holistic or transparent view of the performance. By using the argument from McHenry, Morrison-Saunders, Gorey, Rita Sequeira, Mtegha and Doepel (2015) the current disclosures only provide a pieces of information, presented in a series of financial reporting and management disclosure formats, resulting in a disorientation of information to provide a clear reflection the organisations true ability to achieve the desired mine closure outcomes. Due to the significant influence of disclosure guidance on the information reflected in corporate reports, it is recommended that there should be development in more robust guidance on the nature and extent of information being disclosures in order to address the apparent lack in quality disclosures with regards to mine closure and financial provisions.

Key terms: mine closure, financial provision, disclosure, corporate reporting, South Africa

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ABBREVIATIONS

AACE	Association for the Advancement of Cost Engineering
AASB	Australian Accounting Standards Board
AEL	Air Emissions Licence
AFR	Annual Financial Reporting
AFS	Annual Financial Statements
AMD	Acid Mine Drainage
AR	Annual Report
ARLMP	Annual Rehabilitation and Land Management Plan
ASX	Australian Securities Exchange
BAP	Biodiversity Action Plans
CDP	Carbon Disclosure Project
CE	Closure Estimate
CER	Centre for Environmental Rights
CFS	Company Financial Statements
DEA	Department of Environmental Affairs
DMR	Department of Mineral Resources
EA	Environmental Authorisation
EIA	Environmental Impact Assessment
EITI	Extractive Industries Transparency Index
EMPr	Environmental Management Programme
EMS	Environmental Management System
EMT	Environmental Management Tool
FR	Financial Report
G4	Guideline Four
GCP	Glencore Corporate Practice
GFL	Gold Fields Limited
GHG	Greenhouse Gas Protocol
GRI	Global Reporting Initiative
HIA	Heritage Impact Assessments
HSEC	Health, Safety, Environment and Compliance
IAR	Integrated Annual Report
IAS	International Accounting Standard
ICMM	International Council on Mining and Metals
IDPs	Integrated Development Plans

IEM	Integrated Environmental Management
IFC	International Financial Corporation
IFRS	International Financial Reporting Standards
IIRC	International Integrated Reporting Council
ILM	Intelligent Land Management
ILO	International Labour Organisations
IR	Integrated Report
IRR	Internal Rate of Return
ISO	International Organisation for Standardization
JORC	Australia and New Zealand Joint Ore Reserves Committee
JSE	Johannesburg Stock Exchange
KOSH	Klerksdorp, Orkney, Stilfontein and Hartebeesfontein
KPI	Key Performance Indicator
LoA	Life of Asset
LoM	Life of Mine
LTIFR	Lost Time Injury Frequency Rate
LSE	London Stock Exchange
MCC	Mine Closure Cost
MCP	Mine Closure Plan / Planning
ML	Maturity Level
MPRDA	Minerals and Petroleum Resources Development Act
NEMA	National Environmental Management Act
NGO	Non-profit Organization
NNRA	National Nuclear Regulator Act
NPV	Net Present Value
NWA	National Water Act
NYSE	New York Stock Exchange
OECD	Organisation for Economic Co-operation and Development
OEMS	One Environmental Management System
PGMs	Platinum group metals
PY	Percentage disclosure score, per year
RP	Reporting Period
SAEC	South African Energy Coal
SAMREC	South African Code for Reporting Exploration Results, Mineral Resources and Mineral Reserves
SARS	South African Revenue Service

SASB	Sustainability Accounting Standard's Board
SEC	Securities and Exchange Commission
SGL	Sibanye Gold Limited
SIMPs	Social Impact Management Plans
SLP	Social Labour Plans
SMME	Small, Medium and Micro-sized Enterprise
SR	Sustainability Report
TCFD	Task Force on Climate-related Financial Disclosures
TRIFR	Total Recordable Injury Frequency Rate
UN	United Nations
UNEP	United Nations Environmental Programme
UNGC	United Nations Global Compact
UNGP	United Nations Guiding Principles on Business and Human Rights
UN SDG	United Nations Sustainable Development Goals
USA	United States of America
US$	United States Dollar
US GAAP	United States Generally Accepted Accounting Principles
VAT	Value Added Tax
WBCSD	World Business Council for Sustainable Development
WUL	Water Use Licence
ZAR	South African Rand

CHAPTER 1 INTRODUCTION

1.1 Introduction

Mine closure, one of the material requirements of sustainable mining (Carneiro & Fourie, 2019; ICMM, 2019c; Moomen, Bertolotto, Lacroix & Jensen, 2019), remains a universal obligating duty of a mining company (Alberts, Wessels, Morrison-Saunders, McHenry, Rita Sequeria, Mtegha & Doepel, 2017; ICMM, 2019c; Sturdy & Cronje, 2017) and financial provisioning is one of the tools used to regulate this fundamental commitment (Fraser Institute, 2012; Laurance, 2011; Peck & Sinding, 2009; WWF, 2012). Despite the apparently paradoxical nature of the expression 'sustainable mining' which is frequently questioned by scholars (Laurence, 2011; Whitemore, 2006), there remain an ever increasing amount of global initiatives to promote this ideal (Fonseca, 2010; Moomen *et al.*, 2019) mainly aimed at providing investor comfort (Du Toit, Van Zyl & Schutte 2017) and a social licence to operate (Azapagic, 2004). The sustainable closure of mining operations are frequently highlighted in publications in response to the ongoing reported impacts on human rights violations, corruptions scandals, tailings dam incidents, community displacement and extensive environmental degradation (Fonseca, 2010; GSSB, 2013; ICMM, 2019c; Moomen *et al.*, 2019; Peck *et al.*, 2009; Sturdy *et al.*, 2017). Stakeholder concerns over mine closure has been a driving factor in the sector for decades from addressing common disputes (Stacey, Naude, Hermanus & Frankel, 2010; Peck *et al.*, 2009) to addressing more integrated issues associated with physical, social and economic matters across the mine's life cycle (Azapagic, 2004; Dienes, Sassen & Fischer, 2016). According to Baboukardos (2018) and Diens *et al.* (2018) it has become a business imperative for mines to provide a level of disclosure to stakeholders over performance relating to sustainability matters. Security exchange requirements has also evolved from historically only requiring financial performance disclosure to more broad disclosure over governance and sustainability performance (Dienes *et al.*, 2016; Du Toit *et al.*, 2017). According to Diens *et al.* (2018: 154) "*the aim of sustainability performance management is, firstly, to link environmental and social management with business competitive strategy management and, secondly, the integration of environmental and social information with economic business information and sustainability reporting*". The measurement and disclosure of sustainability performance, also termed as non-financial performance and include environmental performance, has been recognised as a key valuation measurement by investors (IIRC, 2013 as cited by Baboukardos, 2018) and are evolving to become a regulated requirement in certain countries such as France (Baboukardos, 2018). Baboukardos (2018) also found that there is a positive reaction from investors over environmental performance with firms that recognised an environmental provision on their balance sheet.

According to Du Toit *et al.* (2017) investors and stakeholders rely on high-quality integrated reports to obtain social, environmental and ethical information for decision-making and Azapagic (2004) noted that transparency in mining has become the requirement to secure a social license to operate. In response to the continued concerns raised against the industry by stakeholders, the mining sector together with international Non-Governmental Organisations (NGOs), proposed and implemented measures to promote transparency over mining activities and performance criteria to address sustainability related challenges (Azapagic, 2004; Moomen *et al*., 2019).

According to Stacey *et al.* (2010) the guiding rationale for mine closure stems from the concept of sustainable development and therefore form part of sustainable management and performance criteria (GSSB, 2013), together with financial provisions which, according to Peck *et al.* (2009), encompasses instruments that provide assurance to protect governments and the public in the event a mining company cannot meet its reclamation or rehabilitation obligations.

Mine closure and financial provisions are not only considered as part of the company's voluntary commitments towards sustainable development but is a mandatory requirement, regulated through policies, laws and regulations, in most jurisdictions (Fraser Institute, 2012; ICMM, 2019c). The laws governing mine closure and financial provisions in South Africa has undergone significant transformation since it was first introduction in 2002 through the promulgation of the Mineral Petroleum Resource Development Act (MPRDA) (Alberts *et al.,* 2017; Swart, 2003; WWF, 2012). In 2014, as part of a reform of environmental policies that govern mining activities in the country, mine closure and financial provision policy were promulgated under the National Environmental Management Act (NEMA) (Alberts *et al.*, 2017), followed in 2015 by the publication of specific regulations to govern mine closure and financial provisions (Alberts *et al.*, 2017; South Africa, 2015).

The requirements for mine closure planning and management as well as financial provision recognition in South Africa are robust, however in 2018 the Centre for Environmental Rights (CER) reported that the instruments that govern company disclosure over these subjects fail to provide the necessary transparency and accountability (CER, 2018). McHenry, Morrison-Saunders, Gorey, Rita Sequeira, Mtegha and Doepel (2015) concluded that mine closure disclosure in the mining industry is not transparent but rather reflect selective disclosure. Building from these publications, this study aims to critically evaluate the nature of mine closure and financial provision disclosure in the South African mining sector by evaluating the disclosures over a three year period using a case study sample of four public listed entities, as these entities are not just subject to legislated disclosure requirements but also disclosure obligations associated with their filings.

1.2 Rationale for this study

The imperative for mine closure planning and management has been highlighted in numerous publications, due to the adverse effects mine closure can have on the socio-economic and environmental landscape when mining seizes to exist (ICMM, 2019c; Laurence, 2011; Laurens, 2007; Moomen *et al.* 2019; Stacey *et al.*, 2010). Scholars have focused on the various adverse impacts of mine closure from many viewpoints, such as the socio-economic effects on host communities (Stacey *et al.*, 2010), environmental degradation caused during closure which ranges from mine abandonment (Mhlongo & Amponsah-Dacosta, 2016), remediation of high volumes of waste, Acid Mine Drainage (AMD) and pollution of natural resources (Dennis, Dennis, Mokadem, Smith, 2020; McCarthy, 2010; Mentis, 2019; WWF, 2012). The primary reasons for mine closure, according to Laurence (2011) included criteria such as resource depletion, high cost and low [commodity] prices, geological or technical issues, low grades, production difficulties but also unconventional reasons such as environment, safety or mining activities which does not fit the company strategy anymore. From the evidence presented by Laurens (2011) it's noted that mine closure is not always a planned process but can occur anytime, as a result of changes in market, environmental or strategic business decisions, and the impact thereof can be far reaching.

Scholars have also emphasised the imperative to secure adequate funding for mine closure, as a consistent shortcoming to achieve a sustained closure outcome (Mhlongo *et al*., 2016; Peck *et al.*, 2009). In 2012, the Fraser Institute reported that lack of mine closure related funding is associated with unplanned events such as bankruptcy or corporate dissolution. Mhlongo *et al.*, (2016) argued that mine abandonment in South Africa is directly associated with lack of funding coupled with high variability of cost to be incurred to achieve the desired closure state. According to Espinoza and Morris (2017b) sustainability in the mining sector starts with recognising all potential future liabilities throughout the life of mine (LoM) and ensuring that sufficient funds are available to address these liabilities.

Continued mine closure planning, implementation and management are continually reiterated in best practice literature to secure a sustainable closure outcome of mining operations. The International Council on Mining and Metals (ICMM), an organisation who is established to assist the global mining sector in implementation and management of sustainability matters, reasons that mine closure costs can only be reliably estimated if mine closure planning and implementation are conducted throughout the LoM because the adequacy of the cost estimates are directly reflective of the availability of adequate and reliable information (ICMM, 2019c). Mine closure planning and management, which includes the evaluation of appropriate funding for closure, is based on the concept of the Deming Cycle (plan, do, check and act), in a similar manner as Integrated Environmental Management (IEM) principles (Department of Environmental Affairs, 2014; ICMM, 2019c; Morrison-Saunders & Retief, 2012) and the mine closure plan and financial provisions can be classified as environmental management tools (EMTs) developed to derive to the desired sustainable outcome (Nel & Wessels, 2010) which, in this context, is to achieve sustained mine closure. Corporate reporting can similarly be defined as a civil based EMT which according to Nel *et al.* (2010) reflects measure to empower, inform educate and co-opt civil society to be involved in the enforcement process.

Similar to the mine closure topic, there are extensive research conducted over corporate reporting and disclosure in the mining sector, with varying results. Corporate reporting which is a collective term used in this study to define the various reporting formats presented by organisations annually and includes Integrated Reports (IRs), Annual Reports (ARs) and Sustainability Reports (SRs) and any related publication which forms part of a company's annual disclosure series. Research performed over SRs specifically noted that mining companies are not fully accounting for their sustainability impacts, according to Lodhia and Hess (2014) but that reporting practices are evolving. A similar view was presented by Tost, Hitch, Chandurkar, Moses and Feiel (2018) which reflected over the mining sector's considerations of environmental and sustainability matters, with an additional view that the sector's disclosure practices are at risk of falling behind societal expectations. Hellman, Carenys, Gutierrez (2018) concluded that there is increased reliance on entities to act in '*good faith*' when complying with corporate disclosure requirements and Rezaee and Tuo (2017) reported that the extent and type of disclosures depends on disclosure related costs, corporate governance, executives personal backgrounds and sustainability performance. Although very limited research were performed over mine closure and financial provision disclosure in corporate reports, one study conducted by Sturdy *et al.* (2017) found that disclosure of mine closure obligations were inconsistent and not sufficient for stakeholder to evaluate the performance of the company.

The transparency over mine closure performance and specifically the assurance over sufficient funding of closure measures remains a key concern to regulators, investors, and civil society (CER, 2018; McHenry *et al.*, 2015; Sturdy *et al.*, 2017; WWF, 2012). In the 2016 study performed by Morrison-Saunders, McHenry, Rita Sequeira, Gorey, Mtegha and Doepel (2016), highlighted that transparency over mine closure planning and financing provisions are one of the key challenges limiting disclosure quality. These authors further emphasized that current disclosure practice falls short of the expectations of civil society with either selecting reporting, overwhelming and complex reporting or limited reporting as results to their conclusion reached (Morrison-Saunders *et al.*, 2016). The need for transparency in mine closure is also evident from the increase in regulatory requirements which governs mine closure, as seen in the South African context with the proposed NEMA Financial Provision Regulations which specifically require disclosure (Alberts *et al.*, 2017; South Africa, 2015; South Africa, 2019) as well as increased NGO focus on mine closure planning and disclosure practices seen from organisations such as the Global Reporting Initiative (GRI) and ICMM (GSSB, 2013; ICMM, 2019c).

It is summarised that the imperative of this study is embedded in the growing concerns associated with unsustainable mine closure practices coupled with the known challenges associated with transparency in corporate disclosure specifically in providing adequate information to ensure for successful discharge of the mine's obligating duties for closure.

1.3 Research objective

This study aims to evaluate the quality of mine closure and financial provision disclosure in corporate reports and uses the South African mining sector as a case study. The research builds from the work performed by McHenry *et al.* (2015), where it was argued that disclosure does not always reflect transparency as it only provides selective disclosure and therefore fails to reflect true performance. The term quality in this research therefore aims to reflect over the transparency of disclosures over mine closure and financial provision in order to ascertain whether current disclosure practice provide sufficient information to enable stakeholders to form a holistic understanding of the performance of the organisation and its ability to achieve sustained mine closure. The research distinguishes itself from previous studies by investigating mine closure and financial provision disclosure quality over a three year period, namely 2016 – 2018, which has not been performed previously.

The research objective is defined as critically evaluating the quality of mine closure and financial provision disclosure in corporate reporting for the South African mining sector over a three year period, by responding to the following research question:

> *How has the quality of mine closure and financial provision disclosure changed in corporate reporting for the South African mining sector between 2016 and 2018?*

Quality is defined as the transparency of disclosure, as defined by McHenry *et al.* (2015) to provide a clear reflection of how the organisation will meet sustainable closure of their mining operations through planning and providing for adequate financial provisions. This literature review reflect further over corporate reporting, mine closure and financial provision theories and driving forces in order to support the general discussion and recommendations in this study.

1.4 Structure of the dissertation

The dissertation is structured in the following format. Chapter two reflects on relevant literature concerning mine closure disclosure, financial provisions as well as the driving forces for corporate disclosures. Chapter 3 documents the methodology used to perform the critical analysis to evaluate the quality of mine closure and financial provision disclosure in the South African mining sector by use of a case study of four South African based and JSE listed mining companies for the period 2016 – 2018. Particular attention is given to performing qualitative text analysis as described by Merkl-Davies, Brennan and Vourvachis (2011) as well as data analysis approach to review quality of corporate disclosure over a period, adopted from research by Du Toit, Van Zyl and Schutte (2017) and Solomon and Maroun (2012).

Chapter 4 presents the results of the data analysis from the four mining entity's corporate disclosure on mine closure and financial provisions. Chapter 5 documents the general discussion of the current issues regarding mine closure and financial provisions and discuss how the current disclosure frameworks can improve over these topics. Chapter 6 concludes the dissertation with recommendations for best practice corporate disclosure over mine closure and financial provision in the South African environment.

1.5 Conclusion

This chapter summarised the introduction to the research being conducted which is to critically evaluate the quality of mine closure and financial provision disclosure quality. The chapter provides a rationale to motivate for reasons to perform this research, specifically in the context of the South African environment with imminent legislation pending as well as societal views on mine closure and financial provision practices and policies. Furthermore, the structure of the dissertation has been outlined with reference to significant matters in each chapter.

CHAPTER 2 LITERATURE REVIEW

2.1 Introduction

The importance of transparency over business processes and performance have become a critical requirement to secure a social licence to operate (Azapagic, 2004). Mine closure and funding of appropriate rehabilitation approaches are considered critical to stakeholders such as regulators, host communities and civil society, in response to the legacy impacts and effects of mining on the current environment (ICMM, 2019C; Morrison-Saunders*,* Gorey, Doepel, Mtegha & McHenry, 2014). This chapter provides a comprehensive discussion over the theoretical driving forces associated with corporate disclosure and its relation to mine closure and financial provisions and secondly reflects over the specific mine closure and financial provision requirements in the South Africa mining environment. The chapter is concluded by presenting a discussion over mine closure and financial provision disclosure quality to support the data analysis and results presented in the chapters to follow.

2.2 Disclosure diving forces

In light of the research being performed, this section provides an outline of the driving forces associated with corporate reporting, mine closure and financial provisions as a basis for the data analysis and general discussion provided in this report.

2.2.1 Driving forces for corporate disclosure

According to Acar and Ozkan (2017) disclosure is used as a tool in accounting and corporate governance platforms as a measure to reduce irregularity and improve financial reporting, which further lead to the evolution of corporate reporting namely Annual Reports (ARs), Sustainability Reports (SR) and Integrated Reports (IRs) all aiming to provide "*a comprehensive report intended to give information to shareholders and other interested people about a company's activities and financial performance throughout the preceding year"* according to the Governance Professionals of Canada (2016:par 1). Nel *et al.* (2010) defines corporate reporting as a civil based EMT, where an EMT is defined as a framework process which can be followed in order to ensure that informed decision can be taken (Department of Environmental Affairs, 2014a), where various EMTs are used to achieve IEM. IEM in turn is based on the Deming Cycle and reflects a process of reiteration to achieve a desired outcome (Department of Environmental Affairs, 2014a), and further discussed in section 2.2.4. below.

Nel *et al.* (2010) argued that defining all available EMTs are not possible because the tools are not uniform across international regions, interlinked in some cases and ever changing, as seen in corporate reporting. Command and control based EMTs, which was originally used to enforce the implementation of environmental considerations in decision making are gradually replaced by voluntary tools defined as either agreement based instruments or commitment-based instruments, as it was found that command and control tools does not necessarily change behaviour of decision-makers (Nel *et al.*, 2010). Corporate reporting, in this context, can be classified as commitment-based instruments which became mandatory requirement in selected jurisdictions. South Africa became the first country to require Integrated Reporting as a mandatory requirement for Johannesburg Stock Exchange (JSE) filers as part of the adoption of King III Report with was replaced in 2016 with King IV report (Eccles & Kruz, 2015; Tlili, Othman & Hussainey, 2019). The King Commission on Corporate Governance, through its release of the king reports, not only promoted integrated reporting but also enforced the integration of sustainability into business strategy and required that companies combine both financial and non-financial data into a single report (Eccles *et al.*, 2015; Tlili *et al.*, 2019). Tlili *et al.* (2019) also noted that voluntary adoption of the IR framework by firms also include a voluntary declaration to the GRI.

The Integrated Reporting framework as published by the International Integrated Reporting Council (IIRC) is considered to become the future format of corporate disclosure (Fasan, 2013) as it links or integrate traditional financial reporting contained in ARs with non-financial related matters such as environmental, social and governance topics to provide stakeholders with a holistic view of the entity's performance (Tlili *et al.*, 2019). Integrated reporting aim to present a "*concise communication about an organization's strategy, governance, performance and prospects, in the context of its external environment, lead to the creation of value of short, medium and long term*" (IIRC, 2013 as cited by Tlili *et al.*, 2019: 642). According to Wachira, Berndt and Romero (2019:ch.1, par.1), SRs are "*instruments used by companies to summarise key economic, environmental, personnel, social and community impacts relevant to the organization*" and the GRI Reporting Standards (GRI Standards) have been university adopted and considered as the global standard for SR (Wachira *et al.*, 2019). The GRI Standards provides guidance to any organisation to report over their impacts on the economy, the environment and society (GSSB, 2016b) and is presented in a set of interrelated, modular standards (GSSB, 2016a) but is not the only guidance provided. International bodies such as the United Nations Global Compact (UNGC), United Nations Environmental Programme (UNEP) Finance initiative, Organisation for Economic Co-operation and Development (OECD) guidelines and the World Business Council for Sustainable Development (WBCSD) also offer guidance towards sustainability reporting (Wachira *et al.*, 2019).

There exists extensive literature over corporate reporting and is evolution in the international business environment which shed light on the driving forces of reporting by organisations. According to the Governance Professionals of Canada (2016) annual corporate reports are mandatory in most jurisdictions either through legislation or through public listings. It is also widely viewed that corporate reporting, specifically reporting on social and environmental matters is deemed as a measure to legitimise a company's actions to its stakeholders and greater society (Solomon *et al.*, 2012; Wachira *et al.*, 2019). Solomon *et al.* (2012:7) summarised the views of authors by stating that "*sustainability reporting may be perceived as the outcome of 'social constructivism' where the discourse within the accounts is constructed for rhetorical and political purposes*". Building investor confidence is also seen as a key driver towards seeking holistic disclosure of performance of business beyond financial information only (IRCSA, 2011 cited by Solomon *et al.,* 2012).

The views of academics can be classified as voluntary, mandatory or most often becomes a combination of the two factors which drive disclosure at corporate entity levels (Acar *et al.*, 2017; Lodhia *et al.*, 2014; Solomon *et al*., 2012). Research on corporate disclosure are more focused on the wider review of environmental, social and governance related disclosure (Eccles *et al.*, 2015; Lodhia *et al.*, 2014; Solomon *et al.*, 2012; Wachira *et al.*, 2019), with the exception of the 2017 study conducted by Sturdy *et al.* (2017) defined two drivers specific to mine closure and rehabilitation related disclosure as macro and sub-macro drivers. Macro drivers, according to Sturdy *et al.* (2017) include factors such as the nature of the company's mining portfolio, the financial accounting and reporting framework used by the organisation and internal policy that is used to govern the organisation's practices. Sub-macro drivers are summarised as the mandatory disclosure requirements which is derived from local legislative requirements, public listing requirements coupled with the sensitivity of the physical environment in which the mine operates (Sturdy *et al.*, 2017). Acar *et al.* (2017) argued that disclosure in financial reporting is driven to reduce litigation claims.

Although most of the research conducted looks at the wider spectrum of sustainability in corporate reporting, this research focuses specifically on financial provisions and mine closure disclosure in corporate reports. Most noticeably, financial provision disclosure is seen as a mandatory disclosure requirement and forms part of financial performance disclosure of the company (Acar *et al.*, 2017; ICMM, 2019b) whereas mine closure is seen as a non-financial metric and would therefore form part of sustainability related disclosure (GSSB, 2013) and can either be imposed on a voluntary or mandatory platform.

South African has been considered as a pioneering country when considering public disclosure by public listed companies on the JSE to comply with the King IV requirements on corporate governance (Du Toit *et al.*, 2017). Other international security exchange commitments also exist such as the South African Code for Reporting of Exploration Results, Mineral Resources and Mineral Reserves (SAMREC) (AACE, 2019; ICMM, 2019c).

Based on the argument above the driving forces for corporate reporting can be classified as mandatory or voluntary in nature, where the reports is seen as monitoring and reporting related instruments which ultimately seeks to achieve sustainable development objectives (Department of Environmental Affairs, 2014; GSSB, 2016b; Nel *et al.*, 2010) These reports, through its presentation of organisational responses to the management and reporting of the company's social and environmental issues, can also be classified as an EMT (Lodhia *et al.,* 2014). The next section specifically reflect on mine closure planning and management and thereafter financial provisions in the context of IEM and EMTs.

2.2.2 Diving forces for mine closure planning and management

The Fraser Institute (2012) simply defined mine closure as the process of shutting down mining operations on a temporary or permanent basis and the ICMM defines this as "*actions planned for and implemented when a mine cases operation or a portion of the mine (or mine facility) is permanently removed from use for mining purposes, including rehabilitation or reclamation, remediation, decommissioning, demolition and/or dismantling*" (ICMM, 2019b:5).

Mine closure is not just incurred at the end of the mine's planned life cycle (also referred to as the LoM), but can be incurred in a progressive nature (referred to as progressive rehabilitation) or unexpectedly (also referred to as unplanned or sudden closure) (ICMM, 2019; Morrison-Saunders *et al.,* 2016; WWF, 2012). Best practice mine closure considers the subject as an integrated and iterative process which considers environmental, social and economic factors from the first states of the mine's life cycle (ICMM, 2019c). Figure 2-1 below presents an outline of a mine's closure liability and the various factors considered when evaluating mine closure.

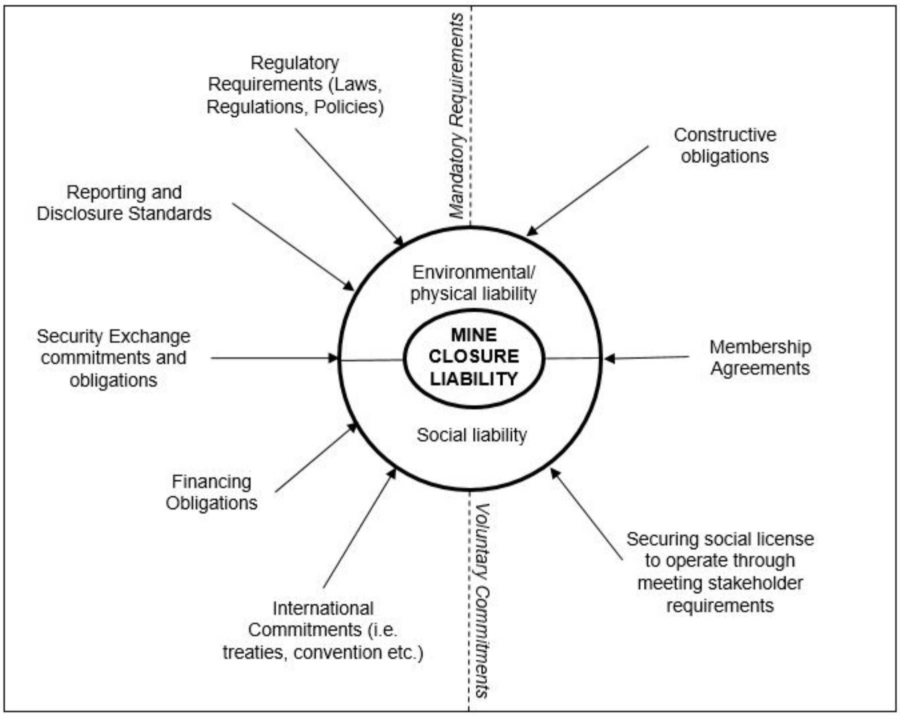


Figure 2-1: Mine closure liability and associated requirements which can give rise to a mine closure liability (Garcia, 2008; Golder Associates Africa, 2004; ICMM, 2019c; WWF, 2012)

Mine closure liability, which reflects an organisation's obligation to close a mine, can be defined through voluntary and/or mandatory commitments, as outlined in figure 2-1. Most scholars define mine closure liability to arise from legislative requirements for closure (Gonzales, 2018; ICMM, 2019c; WWF, 2012) however according to the AACE (2019) and Garcia (2008) and ICMM (2019c), there are various international commitments which can lead to mine closure liability.

According to Morrison-Saunders *et al.* (2016) best practice mine closure planning share similar features as an Environmental Impact Assessment (EIA) process, where similarities in the two processes includes the importance of ongoing assessment of environmental and social impacts and proposal of mitigation, management and monitoring thereof as well as stakeholder engagement and transparency. The mine closure planning process is affected by the policies that govern mining activities in various jurisdictions (Morrison-Saunders *et al.*, 2016), but according to best practice the key features of the process includes closure vision, principles and objectives; post-closure land use; identifying and assessing risks and opportunities; specify specific closure activities as well as ongoing stakeholder engagement (ICMM, 2019c). To achieve a sustainable outcome for closure, the ICMM (2019c) further advocate the integration of mine closure practice into the business operations, specifically the LoM plans and continually assess the performance of closure to develop a comprehensive knowledge base during the course of the mine's operational cycle which will further inform the closure practices being conducted.

As outlined above, mine closure liability is often defined by more than one commitment and it is therefore recommended as best practice to develop an integrated mine closure plan which define the extend of the mine's closure liabilities and associated actions to be taken to address these liabilities (AngloAmerican, 2013; ICMM, 2019c; WWF, 2012). Morrison-Saunders *et al.* (2016) reflected over the mine closure approaches in the broad context of sustainable development and noted that, likewise to the EIA practice, some jurisdictions and practitioners focus in large measure on the biophysical factors while other increasingly considers socio-economic factors. This trend in closure planning is further discussed in Chapter 5, however, despite the viewpoint taken, mine closure planning (MCP) can be classified in the context of IEM as a 'command and control based' EMT (Department of Environmental Affairs, 2014a, ICMM, 2019c; Nel *et al.*, 2010) which is defined as "*environmental policy that relies on regulations which includes permission, prohibition, standards and enforcement, as opposed to financial incentives*" (UN, 1996:16), where the driving forces around MCP can be mandatory, voluntary or inclusive of both mandatory and voluntary factors.

2.2.3 Driving forces on financial provision

The mine closure cost (MCC) refers to the estimation of cost of all aspects of closure, and is considered a key part of MCP, according to the ICMM (2019c). The importance of adequate estimation and disclosure of the cost estimate for closure is highlighted continuously in literature.

The ICMM (2019c) reflected on the importance of MCC by indicating its significance to the book value of companies and Espinoza *et al.* (2017b) noted that cost estimates are increasingly prepared to prevent unfunded environmental legacies being imposed on future generations of taxpayers who derive no benefit from the years of active mining. Government's interest in closure costs has increased in the past decade in an attempt to prevent harmful environmental and social impacts, according to Stacey *et al.* (2010). Morrison-Saunders *et al.* (2016) refer to the need for closure cost to avoid exposure to unreasonable risk in the event of premature closure. Baboukardos (2018) found in research investors positively react to financial provision disclosures by recognising the disclosure as an enhancement to the reliability of environmental performance information.

The fiscal element to mine closure, as noted in literature, can be defined in various forms and it's important to understand these interpretations in order to evaluate the quality of disclosed information. The ICMM (2019b, 2019c) specifically distinguish between the types of MCC estimates that can be used in the context of MCP. Firstly the ICMM (2019c), recognise that the estimation and reporting of costs for mine closure are based on a number of assumptions and can be presented as one of the following closure cost types: Life of Asset (LoA)-, Financial liability, Sudden closure- and Regulatory cost estimates, each representing a difference in the interpretation of the MCC and related assumptions, as summarised in table 2-1 below. It is acknowledged that there is more to be understood about the determination of MCCs, the assumptions used and the general accuracy of the estimates, which is discussed in Chapter 5 of this report.

Table 2-1: Types of closure cost estimates as defined by the ICMM (ICMM, 2019b)

Closure cost estimate types	**Characteristic of closure cost type**
LoA (or LoM) cost estimate	A forecast of the full cost to closure a mine to meet all closure obligations for the restoration of the mine site during all phases of its operation, assuming that the site operates until the end of its current planned mine life. The cost can also be referred to as planned closure cost and can be used for public financial reporting as well as regulatory reporting. The cost estimate considers the total cost from inception to relinquishment to future land owner(s).
Financial liability cost estimate	The cost estimate reflect the applicable accounting requirements associated with the required financial liability accounting obligations and reporting principles, i.e. International Accounting Standard 37 (IAS37). The cost estimate represents the public disclosure to support accounting and reporting requirements as defined by the mine owner's relevant financial reporting standard and based on any legal obligation, liability or compliance requirements. The cost estimate is represents a Net Present Value (NPV) estimation for the closure and rehabilitation of current disturbed footprint and decommissioning of the mine infrastructure at the time of reporting (usually annually).

Sudden closure cost estimate	The estimate presents the cost to close the mine in its current state and also referred to unplanned closure cost.
Regulator cost estimate (financial assurance)	The cost estimate forms the basis of a guarantee provided to a regulating body and is required by law to be included in financial assurance against either sudden/unplanned closure. The regulatory closure cost estimate is used by the regulator to establish a financial assurance, bond, bank guarantee or other financial mechanism as required by the regulation in place at the time. According to ICMM (2016b), the regulator cost estimate will be different to the LoA closure cost estimate, the financial liability closure cost estimate and the sudden closure cost estimate due to the applicable laws and rules and different purposes of these other cost estimates and the cost to be included is dependent on the regulatory requirements within that jurisdiction.

The term 'financial provision' is often used in the context of mine closure and MCC estimates. Financial provisions reflects the use of a financial mechanism which cover closure remediation costs and is used interchangeably in both accounting and non-accounting literature (Acar *et al.*, 2017; Baboukardos, 2018; Morrison-Saunders *et al.*, 2016; Peck *et al.*, 2009; Sturdy *et al.*, 2017; WWF, 2012). Non-accounting literature generally reflect financial provision requirements in the context of policies and refer to the financial mechanisms imposed to secure funding for mine closure (Morrison-Saunders *et al.* 2016; Peck *et al.*, 2009; WWF, 2012) and while many definitions exist, Miller (1998 as cited by Peck *et al.*, 2009:229) stated that the most universal reference to the term include "*application of a guarantee issued by bonding entities such as insurance companies, banks or other financial institutions, agreeing to hold itself liable for the acts or failures of a third party*".

Mine closure policy is therefore seen as the driving force for the quantification of the financial provision in this context. The specific policy requirements varies between countries as it's based on country specific legislation, but Morrison-Saunders *et al.* (2016) noted that bonds were found to be the most commonly used financial mechanism used in sampled African countries. Financial provisions is therefore argued to be seen as a market or fiscal based instruments or EMT to promote IEM (Nel *et al.*, 2010), where a fiscal instrument is defined as "*economic of fiscal instruments are categorised on providing economic incentives and disincentives to incorporate* *environmental costs and benefits and its applied to encourage environmental protection during any production or consumptive activity*" (UN, 1997:26).

The term 'financial provision' is also adopted in the accounting literature and is defined as liabilities or uncertain timing or amount which should be recognised only when an entity has a present obligation as a result of a past event; it's probable that an outflow of resources embodying economic benefits will be required to settle the obligation, and a reliable estimate can be made of the amount (Acar *et al.*, 2017; IASB, 2011). According to Ball (2006 as cited by Acar *et al.*, 2017) there is a difference between the recognition of a financial provision and financial provision disclosure form an accounting viewpoint, where recognition is incorporating information in the financial statements and disclosure is information presented to investors as footnotes in the financial statements or related disclosure platforms such as the annual report. In Acar's *et al.* (2017) study, environmental provisions was seen as one of the types of provision that can be recognised under IAS37 and included "*provisions for restructuring costs …such as environmental liability provisions for restructuring expenses; provisions for land restructuring; provisions for asset retirement obligations; rehabilitation of the mine sites and shut down of mine; and provisions for site restoration*" (Acar *et al.*, 2017:59).

The driving forces over financial provision disclosure is therefore argued to include the mandatory financial reporting and disclosure obligations, as imposed on companies through national and filing policies and regulations (Acar *et al.*, 2017; ICMM, 2019c; IFRS Foundation, 2014). The accounting based financial provisions arises from financial reporting and disclosure commitments such as the International Financial Reporting Standards (IFRS) or the United States Generally Accepted Accounting Principles (US GAAP) (ICMM, 2019c) which require the measurement and disclosure of a financial provision based on obligations which gave rise to such liability (IFRS Foundation, 2014). Financing obligations are also well documented commitments which give rise to mine closure liability, the most noticeable being the implementation of the International Financial Corporation (IFC) performance standards as part of financial institution's Equator Principle commitments. These frameworks require implementation and reporting over environmental and social management actions linked to funded projects (Garcia, 2008; ICMM, 2019c; IFC, 2002). Legislatively, mining companies are subject to estimate and report over their financial provision, as discussed in this section, but such estimates would be based on quantification guidelines as imposed by the regulations in that specific jurisdiction. Most noticeably, the financial provision value, is derived to reflect the defining requirements of the frameworks which guides its presentation and if compared against another framework, will most likely not present the same value.

2.2.4 Consolidation of driving forces in the context of sustainable mine closure

As discussed in the sections above, all three areas of consideration in this study can be defined as an EMT to promote IEM and ultimately sustainable development (Department of Environmental Affairs, 2011, Morrison-Saunders *et al.*, 2016; Morrison-Saunders & Retief, 2012). IEM can be defined as a philosophy or way of thinking to ensure that environment is integrated into development planning and decision-making processes (Department of Environmental Affairs, 2011). IEM is interpreted through application of the Demining Cycle (Department of Environmental Affairs, 2014a) on a proposal, where a proposal in this context referrers to any activity, project, plan or programme, for example mining (Department of Environmental Affairs, 2014a). According to Nel *et al.* (2010) and Department of Environmental Affairs (2014a) the range of EMT are developed based on the concept of '*fit for purpose*' and as seen in this context and presented in figure 2-2, can be applied to various stages of the mining project.

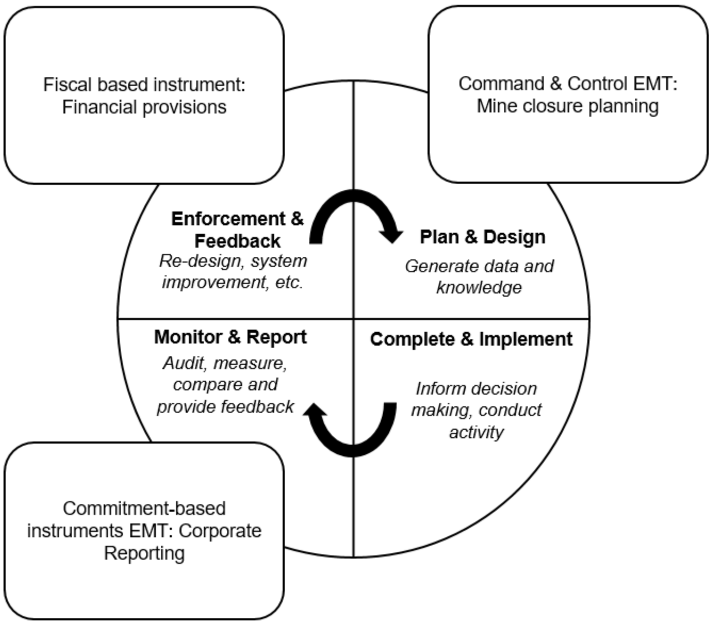


Figure 2-2: Corporate reporting, MCP and financial provisions, reflected as EMT application based on the Deming Cycle approach (Department of Environmental Affairs, 2014a; Nel *et al.* 2010)

The next section discusses corporate reporting, mine closure planning and financial provisions in the South African context specifically.

2.3 Regulatory requirements for mine closure and financial provisions in South Africa

As this study focus on South Africa as a case study, the detailed literature review on regulatory requirements for mine closure and financial provisions are discussed further in the context of the South African regulatory environment only, but it should be recognised that countries vary considerably in terms of mine closure regulations and regulatory requirements (ICMM, 2019c). According to Walmsley and Patel (2011), the mining sectors requires a highly regulated environment through policies and requirements for its operation in order to establish sustainable mining practices, which is true for the South African environment (Alberts *et al.*, 2017; Department of Environmental Affairs, 2014a). The mining industry in South Africa today are faced by numerous and onerous environmental legislative requirements which regulates environmental, social and economic impacts of the industry, throughout a mine's life-cycle (Alberts *et al.*, 2017; Creamer, 2015; Seggie, 2015).

Mining activities are primarily regulated through the MPRDA to secure legal authorisation for the extraction of minerals (South Africa, 2002; Van Druten & Bekker, 2017), however as part of the legal reform of environmental law in 2014 with the introduction of One Environmental Management System (OEMS) (Department of Environmental Affairs, 2014b), the NEMA also became one of the primary policies to regulate mining activities and mining impacts (South Africa, 2002; Van der Walt, 2017; Van Druten *et al.*, 2017). The NEMA is the framework policy in South Africa which governs sustainable development objectives for the country and includes the mandated principles, roles and responsibilities to give effect to IEM and environmental governance to ultimately ensure sustainable development goals can be achieved (Department of Environmental Affairs and Tourism, 2004 & Morrison-Saunders *et al.*, 2012). Mining right holders are subject to the South African EIA regulations to obtain Environmental Authorisation (EA) and an approved Environmental Management Programme (EMPr) (Van der Walt, 2017) however prior to enforcement of the OEMS in 2014 mining entities were still required to complete an EIA and EMPr in accordance with the MPRDA (Marias, 2013; Van Druten *et al.,* 2017) and through the transitional arrangements MPRDA approved EMPs are deemed to be an approved EA (Van der Walt, 2017). Section 24 of the NEMA specify in more detail the requirements of an EMPr context to document management measures for the "…*mitigation, protection or remedial measures that will be undertaken to address the environmental impacts…*" (South Africa, 1998:s24N(2)(a)) for all phases of a project including the decommissioning, rehabilitation and closure phases and Section 24(P) of NEMA, titled "*Financial provision for remediation of environmental damage*" (South Africa, 1998:s24P), obligates the mine right applicant to annually assess the entity's environmental liability and adjust the cost estimate accordingly and independent audit requirements to assess the adequacy of the financial provision (Alberts *et al.*, 2017; South Africa, 1998; Van der Walt, 2017).

In 2014, the Department of Environmental Affairs (DEA) published the first draft proposal for implementation of new regulatory requirements for financial provisioning in South Africa (South Africa, 2014). The NEMA Financial Provision Regulations, as its collectively known today, has since undergone a number of proposed amendments with the aim to be transitionally enforced from February 2020 onwards (South Africa, 2019). Even through there has been a mandatory requirement for remediation and rehabilitation as well as measurement of financial provision in South Africa since the promulgation of the MPRDA in 2002, the NEMA Financial Provision Regulations outline new procedures for the quantification, reporting, auditing and disclosure of a financial provision, which was not previously prescribed in environmental law. The NEMA Financial Provision Regulations aim to minimise the liability to the state and to facilitate environmentally sustainable mining practices in the country (South Africa, 2015; South Africa, 2019).

Disclosure of information to enforce transparency over mine closure and financial provision practices are also introduced in the NEMA Financial Provision Regulations, by requiring that the financial provisions should be publically accessible (South Africa, 2015; South Africa, 2019). The South African environmental policy define an environmental provision as a financial instrument and include (South Africa, 1998):

> financial provision means the insurance, bank guarantee, trust fund or cash that applicants for an environmental authorisation must provide in terms of this Act [NEMA] guaranteeing the availability of sufficient funds to undertake the-
>
> (a) Rehabilitation of the adverse environmental impacts of the listed or specified activities;
> (b) Rehabilitation of the impacts of the prospecting, exploration, mining or production activities, including the pumping and treatment of polluted or extraneous water;
> (c) Decommissioning and closure of the operations
> (d) Remediation of latent or residual environmental impacts which become known in the future;
> (e) Removal of building structures and other objects; or
> (f) Remediation of any other negative environmental impact (s.1(1))

In terms of NEMA, the environment has a holistic definition which includes physical, social and cultural environments as well as the interaction between such environments (South Africa, 1998).

It is summarised that the primary duty for mine closure in South Africa is legally governed by NEMA and its extended regulatory requirements, but is not the only regulatory requirements in the country. Other policy requirements includes legislation which govern biodiversity, energy, air quality, water, waste, heritage resources, land use planning and radiation pollution (Alberts *et al.*, 2017). Of particular importance is the requirements associated with water resource management, namely the National Water Act (NWA), which focuses on the sustainable management of water through demand management of the available resources (Braune, 2000 as cited by Dennis *et al.*, 2020). According to Alberts *et al.* (2017:270), the NWA "*regulates the protection of water resources and the use of water on inter alia mining areas. Furthermore contains provision relevant to mine closure with regards to water resource protection from pollution and environmental degradation*".

The importance of the water resource management to mine closure can be coupled with the extensive impact of mining on the scare resources in the country (Dennis *et al.*, 2020). Gold and coal mining are one of the key sectors which contributes to extensive pollution and degradation of the country's water resources (Frost & Sullivan International, 2011; McCarthy, 2010). The occurrence of AMD in South Africa has been a phenomenon that griped the nation's headlines since 2010 (McCarthy, 2010) and is further discussed in Chapter 5 as part of the general observations in mine closure and financial provision disclosure.

From a business perspective, mine closure is also governed by the Companies Act which, according to Albets *et al.* (2017) refers to the registration and liquidation of companies and in such regulates liabilities with regards to mine closure. The Companies Act, however defines the duties to prepare annual financial statements (AFS) in accordance with IFRS, if classified as a profit company, where a profit company includes public companies listed on the JSE (South Africa, 2008). The Companies Act however only apply to entities who are registered in South Africa, but the environmental policies are applicable to any organisation with mining operations in South Africa. Chapter 5 discusses the difficulties between the financial statement's provision disclosures of a company group structure as a result of consolidation of financial performance.

2.4 Quality of mine closure and financial provision disclosure

The quality of disclosure refer to transparency of the disclosed information. In the 2015 study performed by McHenry *et al.* (2015), the authors specifically reflected over this concept. The authors viewed transparency as disclosing information that "*should enable all relatively well-educated interested or affected parties to assess information about an operation*" (McHenry *et al.*, 2015:402), and transparency and accountability in corporate disclosure were argued to not be the same concept. Transparent disclosures, is seen as disclosure that can be understood by civil society by presenting a completed view of information, rather than only presenting limited performance results or pieces of the overall performance of the organisation (McHenry *et al.*, 2015). This is true in the context of South Africa, as reported by CER in 2018 over mine closure and financial provision disclosure:

> Neither the law, nor the accounting standards governing company disclosures, ensure the necessary transparency and accountability about financial provisions for environmental rehabilitation. The information disclosed by mining companies… is inconsistent, unclear in some cases unreliable, and not comparable…. Therefore impossible for shareholders or taxpayers to hold the companies or regulators to account. (p. 2)

In this study the CER (2018) specifically reviewed the following information as principles for transparent disclosure in this regard:

- Cost of rehabilitation of the environmental damage caused
- Value to funds set aside to remediate the environmental damaged caused in accordance with South African legislation

McHenry *et al.*, (2015) defined five mine closure disclosure principles, which in their view, will enable transparent disclosure, as summarised in the table below.

Table 2-2: Five mine closure planning disclosures required to achieve transparent disclosure (McHenry *et al.*, 2015)

1. *What the activity is at the site (i.e. tenement, mine-site, downstream processing, infrastructure, pollution such as acid mine drainage, etc.) versus the company*
2. *The level of environmental disturbance over time, any incentives to minimize disturbance and/or promote effective rehabilitation, and how success of rehabilitation activities will be determined/measured*
3. *Actual historical performance of correcting disturbance*
4. *Social data, including affected people are consulted and know of decisions, consultation about final post-mining land use and progression towards it, with the social data being available to interested third parties to enable the assessment of fairness*
5. *Financial flows and transfer of money such as royalties, taxes, any other payments from mining companies to government or community on an individual mine site basis*

The quality or transparency of disclosure can be affected by various trends such as compliance, best-practice, and guiding standards for disclosure (McHenry *et al.*, 2015) and voluntary disclosure does not necessarily relate to better performance but according to Iatridis (2013, as cited by McHenry *et al.*, 2015) would more likely result in selective disclosure. The study was proposed in the context of Western Australia and in relation to the policies and practices within that state, but principles from the study were used to inform the quality of disclosure of mine closure and financial provision disclosures evaluated in this dissertation.

2.5 Conclusion

This chapter has presented an extended discussion on the literature on mine closure, financial provisions and corporate disclosure with specific reference to the South African mining industry. The discussion in this chapter contextualise the importance of mine closure and financial provisions in the mining sector and of corporate disclosure as well as contextualise how quality of disclosure is viewed in terms of transparency of the information presented. There is reference made to past research conducted over mine closure and financial provision disclosure specifically highlighting the work of Acar *et al.* (2017), Baboukardos (2018), CER (2019), Morrison-Saunders *et al.* (2016), Peck *et al.* (2009), Sturdy *et al.* (2017) and WWF (2012). Most research conducted over corporate disclosure focuses largely over more generalised sustainability matters such as environmental and social quality in corporate reports, with the exception of work performed by Peck *et al.* (2009) and Sturdy *et al.* (2017) which provided a more focused opinion over mine closure disclosure. The chapter highlights that there are various driving forces that lead to corporate reporting, mine closure and financial provisions which can be grouped into a mandatory or voluntary classes. Corporate reporting, mine closure planning and financial provisions can also be defined as EMTs to promote sustainable development goals. The next chapter discusses the formulation of the methodology used to perform the critically evaluation over the specific corporate disclosures.

CHAPTER 3 RESEACH METHODOLOGY

3.1 Introduction

The research methodology is based on review of the quality of selected disclosed information, over time, for a selected case study (Beattie, McInnes & Fearnley, 2004; Du Toit *et al.*, 2017; Walliman, 2011). This qualitative research approach is based on the thematic content analysis methodology (refer to figure 3-1) to provide a holistic form of content analysis where the whole text is analysed (Beattie *et al.,* 2004), and has been widely used in the quality review of narrative information such as corporate reports (Beattie *et al*., 2004; Du Toit *et al.,* 2017; Solomon *et al.*, 2012).

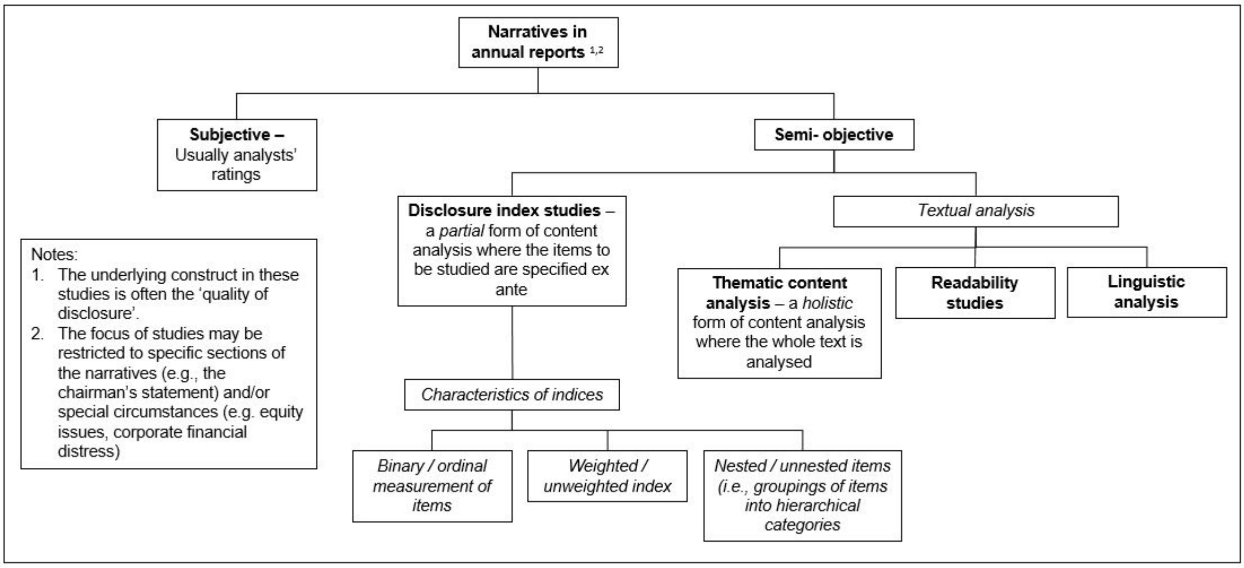


Figure 3-1: Approaches to the analysis of narratives in annual reports as presented by Beattie *et al.* (2004).

The research adopted an interpretive/ critical approach to analyzing the content of corporate reports of the selected mining companies for content relating to mine closure as well as financial provisions across a three year period from 2016 to 2018.

Merkl-Davies *et al.* (2011) describe the methodology for context analysis for corporate reports as a social science research methodology for analyzing textual data. It involves "*drawing references from data by systematically identifying charateristics within the data*" (Clatworthy & Jones, 2001 as cited by Merkl-Davies *et al.*, 2011:1) and is based on three paradigms in accounting research literature which include (a) context analysis or positivist paradigm, (b) interpretive text analysis or social constructivist paradigm, and (c) critical text analysis or critical paradigm (Merkl-Davies *et* *al.*, 2011). Critical text analysis, as adopted methodology for this research, provide an abductive approach therefore providing for the development of parameters relevant to the topic under investigation (Merkl-Davies *et al.*, 2011).

It is acknowledged that review of disclosure quality can be defined as the analysis of language used in corporate documents or analysis of a particular aspect of disclosure (Merkl-Davies *et al.*, 2011), where the latter is applied in this research methodology and where the aspect of disclosure includes mine closure and financial provision.

3.2 Sampling and data collection

Corporate reports of four companies listed on the JSE were reviewed to evaluate how the companies' disclosure changed over time with regards to mine closure and financial provisions. The companies were selected to represent two of the major mining commodities in South Africa namely, gold and coal (Chamber of Mines, 2017). Two companies of each commodity was selected to draw a comparison between disclosures across the same commodity as well as comparison with other commodities. All four companies fall within the top 100 companies on the JSE according to market capitalisation. According to Merkl-Davies *et al.* (2011) and Solomon *et al.* (2012), critical text analysis does not require large samples to be analysed in order to respond to general research question.

The corporate reports for the respective periods, 2016 – 2018, were obtained from each company's website. The corporate reports are classified as secondary data sources and where applicable other secondary data were also used in the event where such information could be obtained publically on the company's website as any shareholder or interested party would have access to.

A summary of each company, which provides further operating context and extent of mining operations, is provided in section 3.5.

3.3 Data analysis

Evaluation criteria or principles are particularly important for qualitative text analysis methodology which is based on specific knowledge-constituting assumptions (Merkl-Davies *et al.*, 2011) and formulation of the evaluation criteria, also referred to as content analysis categories, should "*reflect the purpose of the research, be exhaustive, be mutually exclusive, independent, and be derived from a single classification principle*" (Holsti, 1969 as cited by Merkl-Davies *et al.*, 2011:21).

To respond effectively to the research question, corporate reports and where relevant other public information, were reviewed to find the presence of mine closure and financial provision related disclosure content. The information was reviewed against context analysis categories described below over a three year period to identify whether companies increased the level of disclosure over this period. The development of the evaluation criteria matrix is discussed in section 3.4. A total of 11 evaluation criteria were defined associated with mine closure and financial provision disclosure, making the total sum of the population *N=11*.

The context of the reports were scrutinised to establish the nature of the context (i.e. qualitative disclosure) around the mine closure and financial provision disclosure presented to stakeholders in the given reporting period. A detailed context search were performed as well as keyword search using the following relevant keywords: “mine closure”, “rehabilitation”, “provision”, “contingent liability”. For each category, the researcher then evaluated the quality of disclosure through identifying relevant context existence or presence of information in the suite of corporate reports for the given reporting period (Pivac, Vuko & Cular, 2017). Presence of disclosure where then ranked accordingly as either 1 or 0, where 1 = that disclosure was present, and 0 = disclosure was not present (Pivac *et al.*, 2017). This process was repeated across all of the corporate reports for the selected case studies for the three year period.

No weighting factors were assigned to the disclosure ranking, if the entity disclosed the matter in full, then an overall evaluation scope of N=11 will be presented to the period under review.

The results of the evaluation of disclosures were expressed as a percentage per year (PY) by applying the following simplistic equation:

$$Percentage\ disclosure\ per\ year\ (PY) = \quad [x/N]$$

Graphic representation of the results were developed to identify trends in disclosure quality as well as provide basis for results discussion. The data evaluation remained qualitative of nature and therefore less emphasis was placed on evaluating the data quantitatively to draw out concluding results. As argued by Beattie *et al.* (2004), the need for forward-looking information which goes beyond traditional backward looking financial performance results to be disclosed is either unquantified or unquantifiable. The emphasis in quality of disclosure is reflected in the narrative of disclosure as defined by Beattie *et al.* (2004:206) by stating “*Worldwide, narrative communication in annual reports is viewed as the crucial element in achieving the desired step-change in the quality of corporate reporting and regulators are focussing attention on the management discussion and analysis statement in the annual report*”. The evaluation of the narrative content of information presented in corporate reports is therefore more imperative to evaluate the quality of corporate disclosure, then to adopt a quantitative methodology (i.e. word counting) (Beattie *et al.*, 2004; Du Toit *et al.,* 2017; Solomon *et al.*, 2012).

3.4 Evaluation criteria

In order to evaluate how mine closure and financial provision disclosure quality increased over three year period in corporate reports, two methodological approaches could be defined. The first approach was based on Du Toit *et al.* (2017) and Solomon *et al.* (2012), who defined criteria based on the analysis of the report content and by interpretatively drawing out items of the related topic through a process of reading and re-reading all the reports, which resulted in an eventual list of specific items differed between companies which in turn also illustrated the difference in emphasis between the companies (i.e. the categories itself became a defining factor to assess the nature of reporting over time). This approach is based on analysis by interpretatively drawing out items of mine closure and financial provision related information reported by the companies, through process of reading and re-reading all the reports, which as defined by a social constructivist approach to textual analysis, relay on the researcher as the measurement instrument (Merkl-Davies *et al.*, 2011; Solomon *et al.*, 2012). According to Merkl-Davies *et al.* (2011) and Solomon *et al.* (2012), social constructivist approach to textual analysis does not require a large sample of data to draw conclusive outcome.

A second approach considered was to select a pre-defined list of related categories or *principles* based on industry guidance relating to mine closure and financial provision disclosure as used in studies performed by Acar *et al.* (2017), Pivac *et al.* (2017) and Sturdy *et al.* (2017). The advantages of this approach is to be able to evaluate quality of disclosure against best practice guidance and/or industry standards. Because there are not disclosure quality principles which presently exist over mine closure and financial provision disclosure specifically, the researcher had to draw on a series of guidance and other research performed over related matters in the context. The second approach is proposed to be more relevant to provide practical insight on how mine closure and financial provision disclosure changed over time in the South African mining industry and will also be able to guide industry on shortcoming, however, it applies a positivist research paradigm approach to content analysis (Merkl-Davies *et al.*, 2011) and thus provides for more subjective view to the analysis will place less reliance on the researcher's subjective view of the content.

In the light of lack of prior research conducted over mine closure and financial provision disclosure in corporate reports, both approaches were applied to create a criteria base for performing quality review. The argument in selecting each criterion is described in section 3.4.1. – 3.4.4.

3.4.1 Defining disclosure quality principles as evaluation criteria

Globally, the mining sector has been subject to addressing and reporting over sustainability related matters as material concept in their business operations (Davidson, Sachs & Sonesson, 2015; Laurens, 2011) with guidance from international bodies such as GRI, OECD, UNGC etc. (Siew, 2015; Sturdy *et al.*, 2017) but as reported by Siew (2015) the GRI is most commonly used.

In most guidance provided towards effective disclosure in corporate reporting, as seen in the Integrated Reporting Framework (IIRC, 2013), GRI guidance (GSSB, 2016a) as well as guidance on specific reporting aspects (i.e. Recommendations of the Task Force on Climate-related Financial Disclosures (TCFD) (TCFD, 2017)), define specific principles to aid in achieving effective disclosure of information. Although these principles are slightly different when compared, there remain consistent themes that can be drawn. The use of principles for reporting, rather than pre-defined criteria, is noted to be more useful and to promote the integration of information with the various themes of reporting and therefore enable the user to compare the information with peers (IIRC, 2013; TCFD, 2017). Similarly, the academic research on mine closure obligations conducted by Sturdy *et al.* (2017) also used principles to review effective disclosure of mine closure liabilities which was formulated from a combination of two sources namely, Deloitte's 2007 *improving the reporting of mine closure liabilities* report as well as the G4 sustainability reporting guidelines. Sturdy *et al.* (2017) defined three principles for disclosure which include (1) Clear description of the scope of liabilities covered by the provision; (2) Outline description of the process and parties involved in defining the scope of work and estimated cost of decommissioning works and (3) Provisions of supporting information to be provided in a standardised form. As discussed in Chapter 2, McHenry *et al.* (2015) provided five criteria for transparent mine closure disclosure and include (1) operating context of specific mines, (2) level of environmental disturbance, (3) concurrent rehabilitation performance, (4) social inclusiveness in the mine closure process, and (5) flow of cost to third parties in regard to mine closure.

This research applied principles for the above studies and further summarised in table 3-1 below as well as principles defined through international disclosure guidance, specifically the International Integrated Reporting Framework (IIRC, 2013), GRI guidance (GSSB, 2016a) and the *Recommendations of the Task Force on Climate-related Financial Disclosures* (TCFD, 2017) principles for disclosure for this research. The disclosure principles which were defined included:

(a) Materiality or significance
(b) Scope of information being reported
(c) Timeframe of disclosed information
(d) Reliability of information (accuracy / completeness)

(e) Presentation of information (format of disclosure and comparability)

These principles where then further defined to be specific to mine closure and financial provision disclosure and Appendix II provides reference to integration of these criteria to mine closure and financial provision disclosure.

Table 3-1: Evaluation criteria to be used to critically evaluate the level of mine closure and financial provision disclosure quality in corporate reports over a three year period

Disclosure principle	**Evaluation criteria (*N=11*)**	**Reference**
P1. Materiality or significance of mine closure and financial provision to corporate organisations	P1.1. Is mine closure considered material to the organisation by integrating the subject into the organisation's business model, strategy, material organisation risks and/or opportunities?	GSSB, 2013; GSSB, 2016a; IIRC, 2013.
P2. Mine closure planning and management	P2.1. Did the organisation make reference to the presence of mine closure plans for their operations?	ICMM, 2019c; Sturdy *et al.,* 2017.
	P2.2. Did the organisation disclose information around the periodic update of the mine closure plans for the purpose of refinement of the context of the plan and relevant environmental changes?	ICMM, 2019b; ICMM, 2019c; Sturdy *et al.,* 2017.
	P2.3. Did the organisation disclose information around compliance with relevant laws and regulations in terms of mine closure?	ICMM, 2019b; ICMM, 2019c; Sturdy *et al.,* 2017.

	P2.4. Did the organisation disclose the expected closure period of their assets, including assets currently based under care and maintenance or already closed but which still have present liabilities?	ICMM, 2019b; ICMM, 2019c.
	P2.5. Did the organisation disclosure their approach to engagement with stakeholders on mine closure planning and objectives?	Alberts *et al.*, 2017; ICMM, 2019b; ICMM, 2019c; McHenry *et al.*, 2015.
	P2.6. Did the organisation disclosure the use of key performance indicators (KPIs) to measure mine closure performance in the organisation?	GSSB, 2013; GSSB, 2016a; ICMM, 2019c; IIRC, 2013.
P3. Financial provision disclosure presence, scope and subjectivity	P3.1. Did the organisation disclose a financial provision estimate and/or contingent liability for mine closure / rehabilitation?	ICMM, 2019b; ICMM, 2019c; McHenry *et al.* 2015; Sturdy *et al.,* 2017.
	P3.2. Did the organisation disclose the scope of the financial provision estimate, in relation to describing the nature of cost being accounted for?	ICMM, 2019b; ICMM, 2019c; McHenry *et al.* 2015; Sturdy *et al.,* 2017.
	P3.3. Did the organisation disclose a breakdown of the financial provision per operation, to evaluate the completeness of the financial provision estimate?	ICMM, 2019b; ICMM, 2019c; McHenry *et al.* 2015; Sturdy *et al.,* 2017.
	P3.4. Did the organisation disclose how the financial provision estimate were determined in relation to independent assessment or independent review of the estimate?	Alberts *et al.*, 2017; ICMM, 2019c.

The rationale for the development of the criteria outlined in table 3-1 above is described in the sections below.

3.4.2 Materiality or significance of mine closure and financial provision to corporate organisations

Mine closure and financial provision are considered material to a mining organisation's business due to its impact on the performance of the business as well as on key stakeholders such as regulators, investors and host communities (ICMM, 2019c; McHenry *et al.*, 2015). The ICMM (2019c) specifically highlighted the significance of mine closure cost on the monetary value of a company and the importance of adequately accounting for closure during all phases of the mine's life-cycle.

The concept of materiality, in the context of corporate reporting, refer to the significance of specific matters (WBCSD, 2018) and is intended to "*generate information that is useful for decision-making by the reporting companies and intended audience*" (WBCSD, 2018:2). Most guidance considered materiality as a fundamental concept in the development of corporate reports specifically reporting on non-financial related information such as environmental, social and governance topics (WBCSD, 2018) but the interpretation of materiality varies across reports forms due to its differences in audience, purpose and scope (IFAC, 2015) as seen from the various definitions of materiality from various international organisations providing guidance on corporate reporting outlined in table 3-2.

Table 3-2: Definitions of materiality or significance as viewed from various reporting perspectives

GRI and RobescoSAM definitions of materiality in Sustainability Reporting (GRI & RobescoSAM, 2015: 6)	**Definition of materiality in Integrated Reporting (IFAC, 2015)**	**Definition of materiality in financial reporting (IASB, 2018: par.7)**	**Definition of significance in Environmental Impact Assessment**
GRI:	In Integrated Reporting, a matter is	"*Information is material if omitting, misstating*	Significance in the context of EIA

The report should cover aspects that: (a) reflect the organisation's significant economic, environmental and social impacts; and (b) substantially influence the assessment and decisions of stakeholders. *RobescoSAM:* *Financially material is any factor which might have a present or future impact on companies value drivers, competitive position, and thus on long term shareholder value creation.*	material if it could substantively affect the organization's ability to create value in the short, medium or long term.	*or obscuring it could reasonably be expected to influence the decisions that the primary users of general purpose financial statements make on the basis of those financial statements, which provide financial information about a specific reporting entity.*"	reflect the determination of impacts in relation to it's the nature, extent, likelihood of effects, magnitude of effects and mitigation options (Sadler and Fuller, 1997 cited by Abaza, Bisset & Sadler, 2004) 'Significance determination in EIA practice makes judgments about what is important, desirable or acceptable. (Lawrence, 2007)

There are extensive research conducted over the concept of significance and materiality from the various academic viewpoints (Ehrlich & Ross, 2015; Lawrence, 2007) where most of the authors highlight the importance of concept to the matter being assessed or reported (i.e. significance is fundamental to environmental impact assessment; or the determination or material matters is fundamental to the quality of integrated reporting etc.). Materiality or significance is defined in relation to the user of the information (i.e. investor, regulator, decision-maker etc.) therefore what is deemed material to one, may not be seen as material to another (Ehrlich *et al.*, 2015; Lawrence, 2007). Transparency around performance over mine closure, which include performance over the cost for closure, is a significant matter which affect a number of stakeholders (i.e. the impact of the liability on the financial performance of a business (ICMM, 2019c) or civil society to gain comfort over the organisation's ability to mitigate against impacts on the environment (CER, 2018)). Regulators can also require evidence that the company is effectively planning and mitigating mine closure impacts and will be able to fund the required actions timeously (CER, 2019; McHenry *et al.*, 2015; WWF, 2012).

This principle seeks to determine if the company considers mine closure and financial provisions material to their business in the reporting period and to evaluate how such matters are disclosed. As materiality also implies that it reflect matters that would influence the user's interpretation of the data and should reflect on the organisation's ability to create value over time which depends on many factors such as the strategy, business model, governance, sustainability of financial, social, economic and environmental systems, relationship with stakeholders as well as the various exposed risks and opportunities (GSSB, 2013; GSSB 2016a), this principle seeks to evaluate the significance and integration of mine closure and financial provision in organisation, based on disclosures made in their corporate reports.

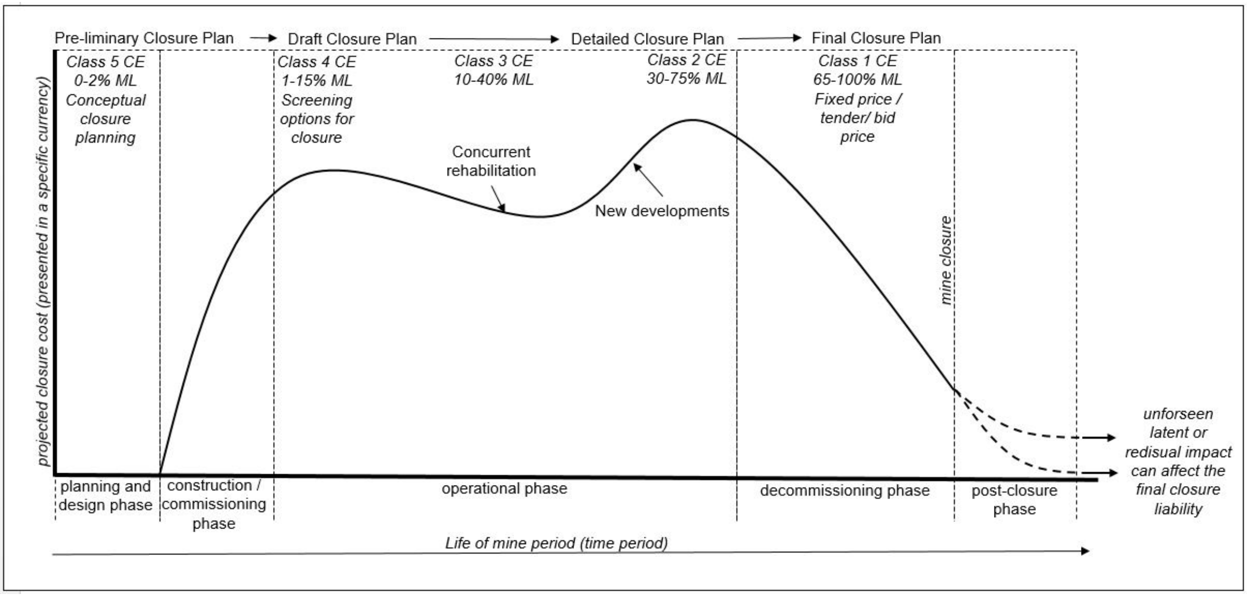
This evaluation was performed by reviewing whether the company recognised and disclosed the following, as derived from GSSB, 2013; GSSB, 2016a; ICMM, 2019c; IIRC, 2013:

— Mine closure or rehabilitation considered a primary activity of the organisation
— The organisation's strategy incorporates reference to mine closure, including organisational strategies relating to sustainability or environmental management
— The company's material topics incorporates mine closure or rehabilitation related topics
— If there were reference made to mine closure related matters in one of the management statements or management disclosures around past performance and strategic future objectives relating to mine closure (i.e. chairman's statement etc.)

If only part of the information was disclosed (i.e. only reference made to a strategy which incorporates mine closure but fails to recognise mine closure as a primary activity) then a score of *0* were assigned.

3.4.3 Mine closure planning and management

Mine closure is not just incurred at the end of the mine's planned life cycle but can be incurred in a progressive nature or unexpectedly (ICMM, 2019; WWF, 2012) and can be presented in a temporal scale, as presented in Figure 3-2.

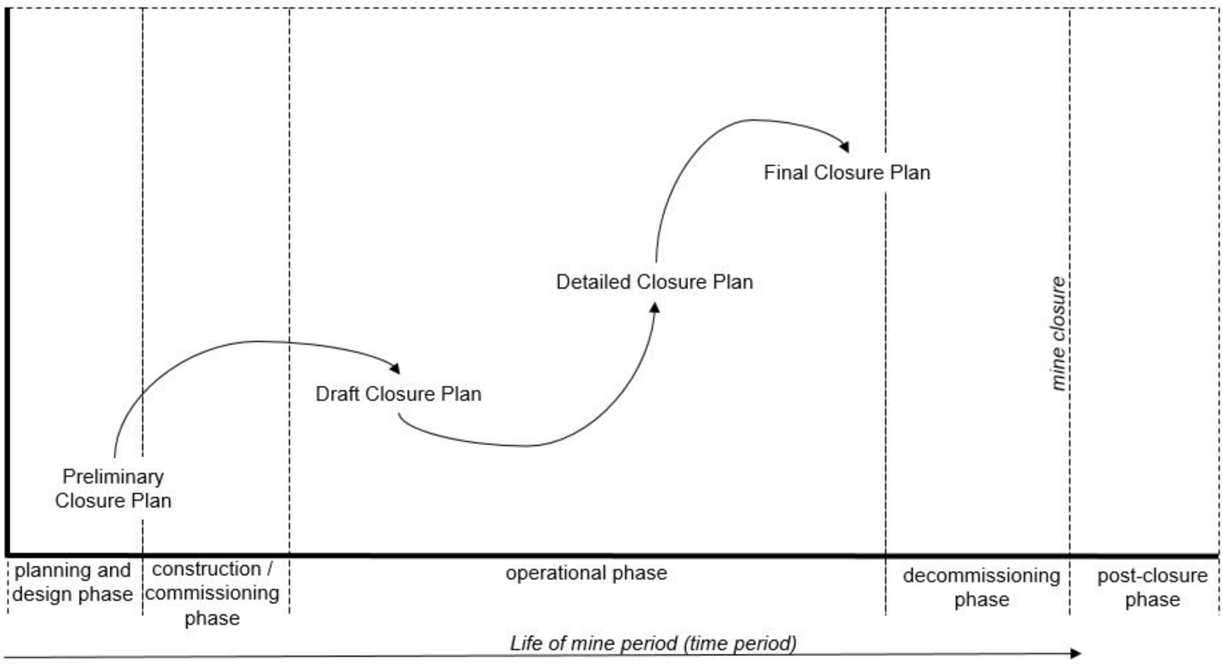


Legend:
CE: Closure Estimate
ML: Maturity level of project definition deliverables, expressed as % of complete definition
Class 1 – 5: AACE Classification System Guideline to mining and metals industry for capital projects (AACE, 2019)
Preliminary closure plan, draft closure plan, detailed closure plan and final closure plan (ICMM, 20193; AngloAmerican, 2013)
The projected closure cost estimate curve over the life of mine period (Golder Associates Africa, 2004)

Figure 3-2: The various stages of the mine life cycle, closure planning process and associated closure cost estimate classes recommended for each stage. (AACE, 2019; Anglo American, 2013; Golder Associates Africa, 2004; ICMM, 2019)

The theoretical view presented above indicate how the closure cost of a mine will increase from the construction phase of the mine and decrease during the mine's decommissioning phase. The closure cost can be reduced during the course of the operational life cycle if concurrent rehabilitation is implemented or if alternative measures is defined to reduce the mine's closure liability (i.e. handing over some of the liability to a third party etc.). Post-closure cost can be based on unexpected events (i.e. seismic activity which can result in new liability) or unforeseen events where the impact is only materialised after closure (i.e. acid rock drainage, decanting after re-watering of mine works or community requirements etc.), which in the context of South Africa is referred to as latent and residual impacts.

Closure plans will vary in detail depending on the mine's evolution of its LoM according to the ICMM (2019c), and can be classified as conceptual, preliminary, detailed and final (Anglo American, 2013; ICMM, 2019c). The management plan used to govern closure activities is required to be amended over time, based on best practice guidance, to inform the closure of the mine and increase the level of detailed based on knowledge obtained during the course of the operation and through concurrent rehabilitation (Anglo American, 2013; ICMM, 2019c). The figure below graphically indicate the proposed requirements for updating the mine closure plan across the LoM. Some jurisdictions mandate the frequency of updating the mine closure plan (i.e. Western Australia) (ICMM, 2019c; Morrison-Saunders *et al.*, 2014) but the ICMM recommends an average update period of between three to five years (ICMM, 2019c). For the purpose of development of the evaluation principle, it is just considered that there should be a periodic update of the closure plan context to reflect new information and increase the level of detail which will be required when mine closure actions is implemented.



Legend:
Continued re-assessment through incorporation of new information (knowledge) from concurrent rehabilitation, change in environmental conditions and stakeholder engagement outcomes on mine closure objectives (ICMM, 20193; Anglo American, 2013; Jones, 2011; Morrison-Saunders *et al.*, 2014)

Figure 3-3: The mine closure planning process, performed over the life of mine, as proposed in best practice guidance on mine closure (Anglo American, 2013; Jones, 2011; ICMM, 2019c)

Given that it is perceived that the risks and liabilities for mine closure will increase over time, if not managed effectively during the course of the mine's operating period, it is deemed important for users to understand the temporal aspect of mine closure planning and the financial provision estimate.

As reflected in Chapter 2, the regulatory environment forms the critical basis of the organisation's environmental liability and civil society often want to reflect over the organisation's compliance to its obligating duties, as seen by the CER (2018) results. In order to understand the holistic view of mine closure performance, transparency is required over the nature of the obligations associated with each mining operation (CER, 2018; McHenry *et al.*, 2015). Mine closure planning processes also critically have to consider the social dimension of the process, as proposed by McHenry *et al.* (2015) and the ICMM (2019c), as their inputs defines the outcome of the process (i.e. proposed land use criteria) and in particular host communities are those stakeholders most affected by the closure process.

McHenry *et al.* (2015) and Sturdy *et al.* (2017) specifically reflected over the operating scope of an operation in terms of mine closure. Information such as number of mining operations under control of the company or nature of the activities on site identified as a key performance criteria to evaluate transparency in mine closure planning. Verifiable measurements, also referred to as key performance criteria (KPIs), is proposed in all of the best practice corporate disclosure guidance (GSSB, 2013; GSSB, 2016a). For the purpose of this study, the nature of KPIs were not considered but only whether companies are providing verifiable measurement criteria. This criteria can reflect any aspect of the mine planning scope for example extent of hectares rehabilitated. McHenry *et al.* (2015:404) however define specific KPI to be disclosed which included "*actual historical performance of correcting disturbances"*, however it can also be argued that this is not a relevant performance indicator in all mining areas as underground mining's operational footprint is limited but the extent of its mine closure priorities rather reflect community, latent or residual impacts.

Based on the theoretical discussion, the disclosure quality principles which are defined for evaluating the quality of disclosure performance relating to mine closure planning and management as outlined in table 3-1.

3.4.4 Financial provision disclosure presence, scope and subjectivity

The fiscal element of mine closure is reflected as MCCs, as discussed in Chapter 2 and can be presented in various formats (i.e. financial provisions, sudden closure cost, LoM closure cost etc.) and can be used for various purposes. The principle seek to understand how transparent the current financial provision disclosure is in practice, through evaluating principle elements that would be required to provide holistic comfort over the adequacy of the presented estimates. The principle firstly seek to understand if there were disclosure of a financial provision and what guidance framework were used to disclosure such provision. Thereafter the principle seek to gain understanding of disclosure over the scope of the financial provision in relation to the methodology used, nature of cost provided for by the organisation as well as operations covered by the closure cost provision.

The nature of disclosed information should be presented in sufficient detail for the user of the information to gain an understanding of the adequacy and completeness of the disclosed estimate, where completeness and adequacy reflect whether the company's estimate would be sufficient to achieve a sustained mine closure outcome. The principle also aimed to reflect over the independent assessment or verification of financial provisions, which stems from the argument that the valuation methods applied in closure costing is complex and require competent evaluators to quantify a reliable estimate. Due to the complexity of the process, additional assurance over the adequacy and completeness of the provisions can be obtained if the estimates were either derived or reviewed by an independent expert.

The principle therefore only focused on main items that will provide a holistic view in disclosure of financial provisions. The last criteria aim to evaluate the level of assurance of the adequacy of the provision estimates, by reviewing whether the estimates were derived or reviewed by independent specialists. This principle specifically reflects to evaluate one of the mine closure planning issues as defined by Alberts *et al.* (2017) which highlighted the lack of in-house competencies in mine closure planning.

Based on the theoretical discussion, the disclosure quality principles which are defined for evaluating the quality of disclosure performance relating to financial provisions is presented in table 3-1.

3.5 Case study selection

The research reporting boundary was limited to organisations in South African mining industry, with the following quilting criteria:

- Organisations had to be public listed entities on the JSE as either primary or secondary listing
- Organisations had to have specific operational representation or footprint in South Africa, and therefore subject to South Africa's legislative requirements
- Organisations selected as representative of either gold or coal commodities. It was acknowledged that the nature of organisations which represent the minerals and mining sector on the JSE often has a diversified portfolio of commodities across a wide jurisdiction. It was therefore not viewed as a qualifying criteria to select a company which only represented the

sample commodity exclusively, but rather at least have operational presence of the selected commodity in South Africa.

A company can have a dual-listing in two different exchange platforms in order to enable the company to raise capital in markets other than the market opened up through its primary listing, but a company will be regulated through its primary listing (JSE, 2019b). The listing order of the companies were not considered as a criteria for selection of the case study but it was noted where there were variance in primary listing by the company as a factor of consideration in the research analysis.

There are 17 mining companies which are represented on the JSE top 100 index, as graphically outlined in the figure 3-4 (SAShares, 2019). The mining companies represent both primary and secondary filers to the JSE, where a primary filer is regulated by the JSE and dual listing with secondary filers can trade on the JSE but is regulated by the organisation's primary listing regulatory requirements (JSE, 2019b; PWC, 2018; SAShares, 2019).

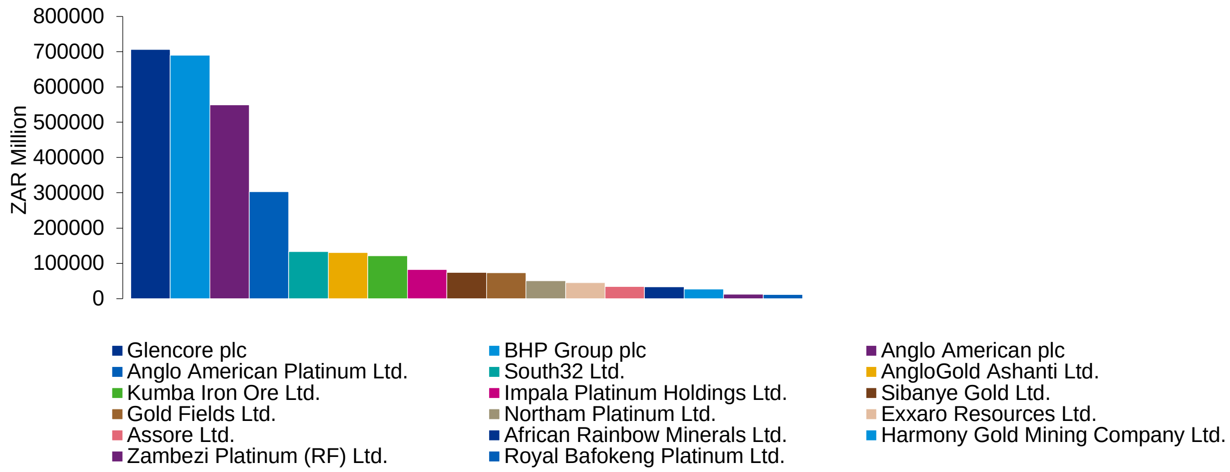


Figure 3-4: Mining companies represented on the JSE top 100 index per market capitalisation (SAShares, 2019)

According to PWC (2018), the first four companies with the greatest market capitalisation namely Glencore, BHP Billiton, South32 and Anglo America plc are considered global mining companies due to their extensive international footprints, but for the purpose of this study, these companies were not excluded as they still represent a significant contributors to the South African coal sector (Minerals Council South Africa, 2019). Of the 33 major coal collieries located in the country, the diagram below outlines the extent of mining operations in South Africa per operation (Minerals Council South Africa, 2019).

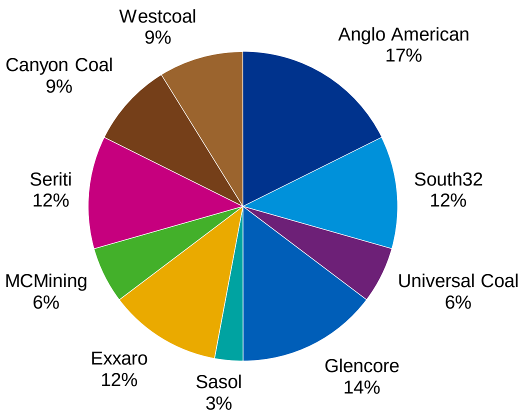


Figure 3-5: Number of colliers per organisation, expressed in percentage (Minerals Council of South Africa, 2019)

The top South African gold producers, based on market capitalisation are reported to be AngloGold Ashanti Limited, Sibanye Gold Limited (SGL), GoldFields Limited, Harmony Gold Mining Company Limited (Harmony) as they are included in the JSE top 100 (PWC, 2018; SAShares, 2019). DRDGold also represent gold mining on the JSE, however is below the top 100 listed companies (PWC, 2018; SAShares, 2019).

For the purpose of this research, four companies were selected, two to represent the gold sector and two to represent the coal sector. The table below presents a summary of organisations selected and related information.

Table 3-3: Companies selected as case study in this research and related information

Company name	Representing Commodity[1]	Primary exchange listing
Sibanye Gold Limited (SGL) trading as Sibanye-Stillwater	Gold mining	JSE

Harmony Gold Mining Company Limited (Harmony)	Gold mining	JSE
South32 Limited (South32)	Coal mining	Australian Securities Exchange (ASE)
Glencore plc (Glencore)	Coal mining	London Stock Exchange (LSE)

Note 1: Some of the companies represent diversified commodities however a large portion of the company's operations include the extraction and beneficiation of the selected commodity.

A description of the selected organisations and nature of their operations is presented below:

3.5.1 Sibanye Gold Limited

Sibanye Gold Limited (SGL) trading as Sibanye-Stillwater is an independent global precious metals mining company producing a mixture of platinum group metals (PGMs) and gold (JSE, 2019; Sibanye-Stillwater, 2019b) and in 2018, SGL noted that they were the second largest gold producer in South Africa (Sibanye-Stillwater, 2019a). The company were formed in February 2013 as SGL following the unbundling by Gold Fields Limited (GFL) for three of its subsidiary companies which owned the Kloof, Driefontein and Beatrix underground gold mines, located in South Africa (Sibanye-Stillwater, 2019a). Following the completion of the transaction with GFL, the company listed primarily on the JSE and as a secondary listing on the New York Stock Exchange (NYSE) (JSE, 2019b; Sibanye-Stillwater, 2019a).

In 2018, the company had surface and underground gold operations across the Witwatersrand gold basin as well as PGM operations in South African and the United States of America (USA). The gold operations includes the underground gold mines of Beatrix, Driefontein, Kloof, Burnstone and Cooke with surface operations for the reclamation of tailings material located at Rand Uranium (Sibanye-Stillwater, 2019a). In 2018, the company closed an agreement with DRDGold to establish an industry-leading surface mining tailings retreatment partnership in South Africa (Sibanye-Stillwater, 2019a).

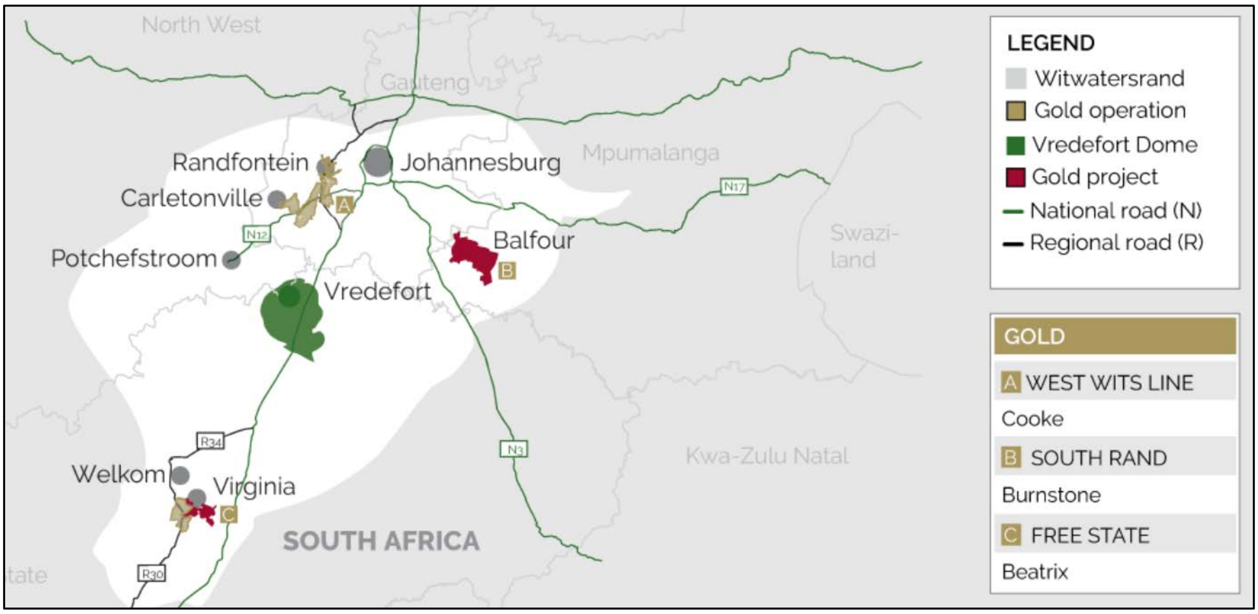


Figure 3-6: Location of SGL gold mining operations in South Africa (Sibanye-Stillwater, 2019b)

During the course of 2016 to 2018, the company completed a number of major transactions to acquire gold and platinum assets in South Africa and the USA, which resulted in a significant change in profile of the company during this period (Sibanye-Stillwater, 2019a). The company is subject to a number of mandatory reporting requirements such as the JSE listing requirements, King Report on Governance for South Africa which includes compliance to the International Integrated Reporting Council's Framework (IR framework), SAMREC Code, South African Companies Act, 71 of 2008 and IFRS, as well as a number of voluntary reporting commitments such as the GRI Guideline 4 (G4), ICMM sustainability principles, UNGC, Greenhouse Gas Protocol (GHG) and Sustainability Accounting Standards Board's (SASB) Standards (Sibanye-Stillwater, 2019b).

The company also disclosed that their corporate disclosure reflect over regulatory reporting commitments such as Broad-Based Social-Economic Empowerment Charter for South African Mining and Minerals Industry, also referred to as the Mining Charter, and related amendments as well as Social and Labour Plans (SLPs) performance in terms of the requirements of the MPRDA (Sibanye-Stillwater, 2019b).

The company produced a number of corporate reports for the period under review (2016 – 2018) as summarised in the table below.

Table 3-4: Sibanye Gold Limited corporate reports issued in period 2016 – 2018 (Sibanye-Stillwater, 2019b)

<table>
<tr><th>Report title</th><th>Description of context</th><th>2016 RP</th><th>2017 RP</th><th>2018 RP</th></tr>
<tr><td>Integrated Annual Report (IAR)</td><td>IR prepared in terms of International Integrated Reporting Framework.</td><td>Yes</td><td>Yes</td><td>Yes</td></tr>
<tr><td>Annual Financial Reporting (AFR)</td><td rowspan="2">The report provides detailed information around the company's financial performance and associated governance processes. The key difference in the AFR and CFS is the inclusion of a five year overview of financial performance and additional shareholder information which are included in the AFR.</td><td>Yes</td><td>Yes</td><td>Yes</td></tr>
<tr><td>Company Financial Statements (CFS)</td><td>Yes</td><td>Yes</td><td>Yes</td></tr>
<tr><td>Reference to GRI reporting index</td><td>Reference guideline to compliance with the GRI G4 guidelines as adopted by SGL. The guideline only reference to relevant management disclosures and performance results were presented in the IAR. No separate sustainable development reports were prepared, as the company notes that all relevant information is presented in the integrated report.</td><td>Yes</td><td>Yes</td><td>Yes</td></tr>
</table>

Note to table: RP refers to reporting period. SGL also provided other reports such as Mineral Resource and Reserve reports and Notice of Annual General Meeting which was not used in this study and therefore not reflected in the table above.

3.5.2 Harmony Gold Limited

Harmony Gold Mining Company Limited (Harmony) reported that it's the second largest gold producer in South Africa in 2016 with gold mines in South Africa and Papua New Guinea (HGMCL, 2019a; HGMCL, 2019b). The company was established in 1950 in South Africa and is listed primarily on the JSE and as a secondary listing on the NYSE (HGMCL, 2019b).

Harmony's gold mining operations in South Africa comprise of a number of underground operations, one opencast gold mine and a number of tailings dam reclamation operations (referred to as surface operations) (HGMCL, 2019c), as presented in figure 3-7 below. The only transaction completed during the review period was for the acquisition of Moab Khotsong underground gold mine from AngloGold Ashanti in 2018 (HGMCL, 2019b; HGMCL, 2019c).

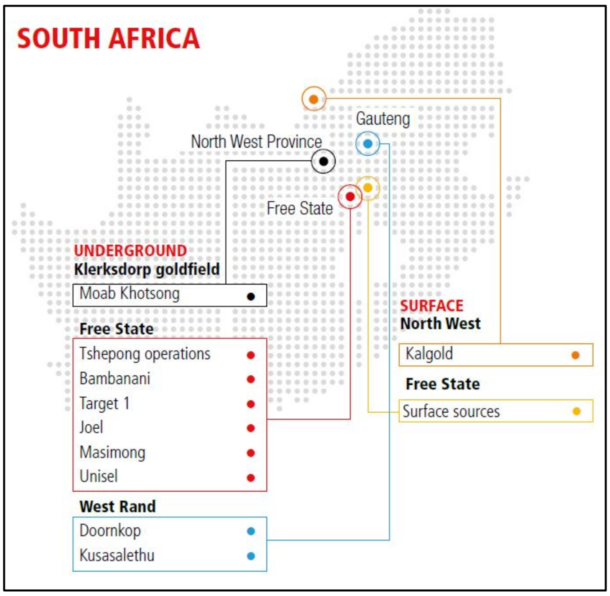


Figure 3-7: Location of Harmony Gold mining operations in South Africa. (HGMCL, 2019c)

Similar to SGL, Harmony's primary listed on the JSE and therefore subject to JSE listing requirements (HGMCL, 2019c). The company has prepared a number of corporate reports during the period of 2016 – 2018, as summarised in table 3-5. The reports reflects compliance to mandatory reporting requirements such as IR framework, King Report of Corporate Governance in South Africa and JSE listing requirements as well as voluntary reporting guidance from the GRI G4 guidelines (HGMCL, 2019c). Other mandatory disclosure requirements are also presented in the corporate reports such as compliance to SAMREC Code, Australia code for reporting of Minerals Resources and Mineral Reserves and Industry guide 7 of the United States Securities and Exchange Commission (SEC) (HGMCL, 2019c).

Table 3-5: Harmony Gold Mining Company Limited corporate reports issued in period 2016 - 2018. (HGMCL, 2019c)

Report title	Description of context	2016 RP	2017 RP	2018 RP
Integrated Annual Report (IAR)	IR prepared in terms of International Integrated Reporting Framework.	Yes	Yes	Yes
Financial Report (FR)	The FR reflects on the company's financial performance in the reporting period and associated governance and management disclosures. The report also reflects over a five year financial performance of the company.	Yes	Yes	Yes
Reference to GRI reporting index and/or scorecard	Reference guideline to compliance with the GRI G4 guidelines as adopted by Harmony. The document only reference to relevant management disclosures and performance results were presented in the IAR. No separate sustainable development reports were prepared, as the company notes that all relevant information is presented in the integrated report.	Yes	Yes	Yes
Supplementary documents	Other supplementary documents presented to provide additional context to the IAR and FR include: — Operations — Social-economic projects — Board and management — Glossary of terms	Yes	Yes	Yes

Note to table: RP refers to reporting period. Harmony also provided other reports such as Mineral Resource and Reserve reports, Report to Shareholders and Form-20F form which was not used in this study and therefore not reflected in the table above.

3.5.3 South32 Limited

South32 Limited (South32) is a global diversified mining company with operations in Australia and Southern Africa including South Africa (South32, 2019a). The company was established in 2015 as part of a demerger from the BHP Billiton group (South32, 2019a; Steyn, 2015) and has its primary listing on the Australian Securities Exchange (ASX) and secondary listings on the London Stock Exchange (LSE) and the JSE (South32, 2019a; Steyn, 2015). South32 operations includes the extraction and beneficiation of bauxite, alumina, aluminium, energy coal, metallurgical coal, manganese, nickel, silver, lead and zinc (South32, 2019a; South32, 2019c). The company has an extensive operating footprint in South Africa with the extraction and beneficiation of manganese, aluminium and energy coal and in 2018 the company reported that it was one of the largest coal exporters and domestic coal supplier in South Africa (South32, 2019a; South32, 2019c).

The South African Energy Coal (SAEC) business includes four operational coal colliers, mainly located in the coalfields of Mpumalanga, namely, Klipspruit colliery, Khutala colliery, Wolwekrans and Middelburg complex (Minerals Council of South Africa, 2019a; South32, 2019b) as well as a series of closed collieries which formed part of historic coal mining conducted by BHP Billiton across (Da Camara & Vivier, 2013; Gildenhuys; South32, 2019b), as outlined in figure 3-8 below.

The company presents a number of corporate reports annually (South32, 2019c), as summarised in the table below.

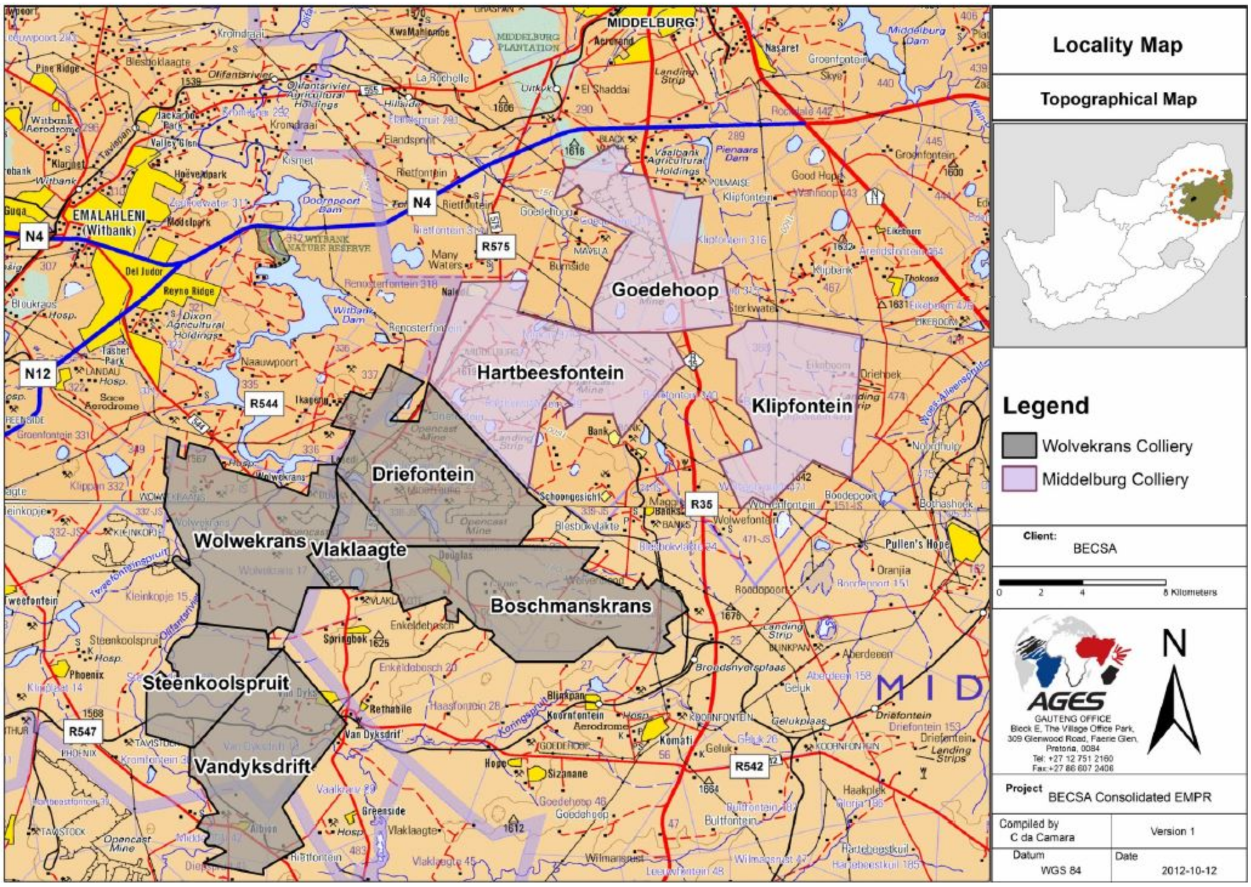


Figure 3-8: **Location of South32 South African Energy Coal Wolwekrans Middelburg complex in South Africa. (Gildenhuys, Da Camara & Vivier, 2013)**

Table 3-6: **South32 Limited corporate reports issued in period 2016 - 2018. (South32, 2019c)**

Report title	Description of context	2016 RP	2017 RP	2018 RP
Annual Report (AR)	The ARs provides a summary of South32's strategy, operations, activities, governance and performance. Performance includes both financial and business performance as well as a number of reflecting management disclosures. The report also reflect forward-looking statements around South32 business and operating environment.	Yes	Yes	Yes

Sustainability Reports (SR)	South32 presents supplementary reports to support context of the ARs, which includes a 'Report on the Environment' which reflects over the company's sustainability policies, governance structure and performance.	Yes	Yes	Yes
Reference to GRI reporting index and/or scorecard	Reference guideline to compliance with the GRI G4 guidelines as adopted by South32. The document only reference to relevant management disclosures and performance results were presented in the AR and related supplementary reports. The reference to this supplementary guideline changed during the three years under review, from reference to "Sustainability Data Tables" or "GRI Navigator	Yes	Yes	Yes
Supplementary documents	Other supplementary documents presented to provide additional context to the AR: — Community at South32 — Corporate Governance Statement — Health at South32 — Materiality — Modern Slavery and Human Trafficking Statement — People — Safety — Scope 3 Greenhouse Gas Emissions Methodology — Tax transparency report	Yes	Yes	Yes

Note to table: RP refers to reporting period.

South 32 are not regulated by the JSE listing requirements and are therefore not required to produce an Integrated Report in conformance with the IR framework (JSE, 2019a). As primary listing on the ASX, South32 report reflects disclosures compliance in line with this listing's requirements, such as the ASX Listing Rules (Chapter 5): Additional reporting on mining and oil and gas production and exploration activities and the Australian and New Zealand Joint Ore Reserves Committee (JORC) Code (South32, 2019c). The company is a member or signatory to a number of voluntary organisations which directs reported of non-financial data such as ICMM, UN Sustainable Development Goals and GRI G4 standard (South32, 2019c). Financial performance disclosure of South32 reflects compliance to the Australian Accounting Standards Board (AASB), IFRS as well as the IASB (South32, 2019c).

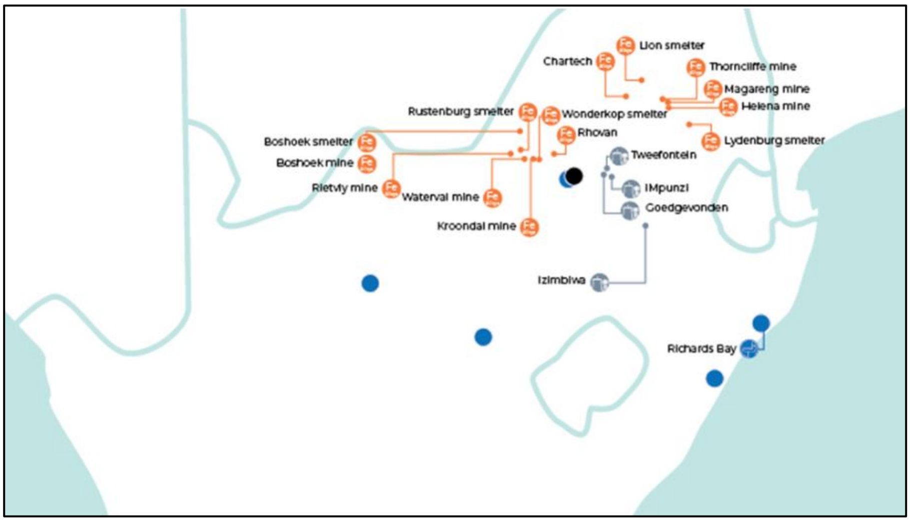
3.5.4 Glencore plc

Glencore plc (Glencore) is one of the world's largest diversified natural resource companies operations in fifty countries and business focus in metals and minerals, energy products and agriculture (Glencore, 2019c). The company's South African operations only extend to the extraction of coal which form part of the energy product business segment as well as ferroalloys production which form part of the metals and minerals business segment (Glencore, 2019a). Glencore is primarily listed on the LSE and secondary listing on the JSE (Glencore, 2019b).

The company's South African coal operations is located in the Mpumalanga coalfields and includes the Goedgevonden colliery, iMpuzi colliery, Izimbiwa colliery and Tweefontein colliery (Glencore, 2019a).

Although Glencore's South African based coal operations is considered small when compared with the other business operations in South Africa and internationally, the current South African based coal collieries of Glencore are seen as significant collieries to the South African coal sector (Chamber of Mines of South Africa, 2016 as cited by Ambrose, Hackley & Mead, 2019).

Glencore issues a number of corporate reports annually (Glencore, 2019b) as summarised in table 3-7 below.



Note to figure: the grey legend reflects the location of Glencore's coal operations, the orange legend reflects the location of Glencore's ferroalloys operations. The black legend reflect the location of the South Africa corporate office and the blue legend reflects the location of beneficiation and processing facilities.

Figure 3-9: Locations of the Glencore South African mining and processing operations (Glencore, 2019a)

Table 3-7: Glencore plc corporate reports issued in period 2016 - 2018. (Glencore, 2019b)

Report title	Description of context	2016 RP	2017 RP	2018 RP
Annual Report (AR)	The ARs provides a summary of Glencore's strategy, operations, activities, governance and performance. Performance includes both financial and business performance as well as a number of reflecting management disclosures. The report also reflect forward-looking statements around Glencore's business and operating environment.	Yes	Yes	Yes
Sustainability Reports (SR)	Glencore presents an annual SR which is an expansion of Glencore's sustainability aspects outlined in the ARs. The SRs reflects specifically over Glencore's sustainability policies,	Yes	Yes	Yes

	strategies, risks, opportunities and sustainability performance results. As part of the SRs, Glencore also publish supplementary reports or documents to support the context of the SR reports.			
Reference to GRI reporting index and/or scorecard	Reference guideline to compliance with the GRI G4 guidelines as adopted by Glencore to information contained in the ARs, SRs and supplementary documents published by Glencore. The GRI reference document also reflect on the nature of compliance to the specific performance indicators if the information if not reflected in the ARs, SRs or related documentation.	Yes	Yes	Yes
Supplementary sustainability performance documents	Other supplementary documents presented to provide additional context to the AR and SR include (Note 1): — Sustainability Highlights — Our approach to sustainability — Water report — GRI references — Payments to Governments Report — Modern Slavery statement — Climate change considerations for our business — List of Associations and Memberships	Yes	Yes	Yes

Note 1: RP refers to reporting period. Glencore does not produce the same supplementary information every year (i.e. a water report was only presented in 2018 and not for the preceding years under review). Consistent supplementary reports across the three years under review included sustainability highlights, GRI reference, and modern slavery statements.

Glencore, as with South32, is not regulated by the JSE requirements but rather primarily by the LSE reporting requirements in accordance with the UK Listing Authority and London Stock

Exchange's Admission and Disclosure Standards, and include publishing of annual reports detailing responsibility statements for relevant directors and audited financial statements (Glencore, 2019c; LSE & White Page Ltd, 2010). Furthermore, Glencore also voluntarily committed to a number of frameworks which guide disclosure of non-financial disclosure such as International Labour Organisation (ILO) declaration on Fundamental Principles and Rights at Work, UN Guiding principles on Business and Human Rights (UNGP), United Nations (UN) Universal Declaration of Human Rights, Voluntary Principles on Security and Human Rights; GRI standards; Extractive Industries Transparency Initiative (EITI); Carbon Disclosure Project (CDP) water programmes; UNGC and ICMM (Glencore, 2019a)

3.6 Conclusion

This chapter has focused on providing a detailed description of the methodology used to perform the critical evaluation over mine closure and financial provision disclosure in corporate reporting. The chapter discusses the qualitative research approach which is based on the thematic content analysis methodology to provide a holistic form of content analysis where the whole text is analysed. The chapter further outline the approach to defining the research principles which were used to perform the context analysis and based on the social constructivist approach to textual analysis where reliance is placed on the researcher as the measurement instrument. Care has been taken to present the methodology in its entirety so that these results can be easily replicated shout the need arise.

Eleven evaluation principles were defined as derived from a specific best practice and relevant literature sources on corporate reporting, mining closure and financial provisions, which were used to conduct the context analysis. The chapter then proceeded to provide relevant background over the selected case study organisations, specifically with regards to their operational environment, corporate reports published for the three years under review as well as reference to the listing of each of the companies. The results of the evaluation process performed is presented in the next chapter.

CHAPTER 4 RESULTS AND DISCUSSION

4.1 Introduction

This chapter discusses the results of the evaluation performed over mine closure and financial provision disclosure in corporate reporting of four South African based mining companies using the methodology discussed in the previous chapter. The chapter firstly discusses the evaluation results according to each principle for each company individually. The purpose of performing the quality review over a three year period is to reflect over changes in disclosure over three years. The detailed analysis of the corporate reports and associated score provided is attached in **Appendix I**.

4.2 Overall results of analysis

The overall results of the analysis performed to evaluate the quality of mine closure and financial provision disclosure is presented and discussed below. The overall average disclosure compliance score across all three reporting periods and the four case study organisations were 55%, indicating that there are some major deficiencies in reporting quality over mine closure and financial provisions in corporate reports for the three years under review. From a company performance perspective, it was observed that Harmony had the best performance score of 76% as an average score between 2016 and 2018. Glencore, had the worst average performance score with only 36% of disclosures made in the company's corporate report which adequately reflecting information over mine closure and financial provisions. The overall percentage performance, per company for the three year review period is presented in figure 4-1.

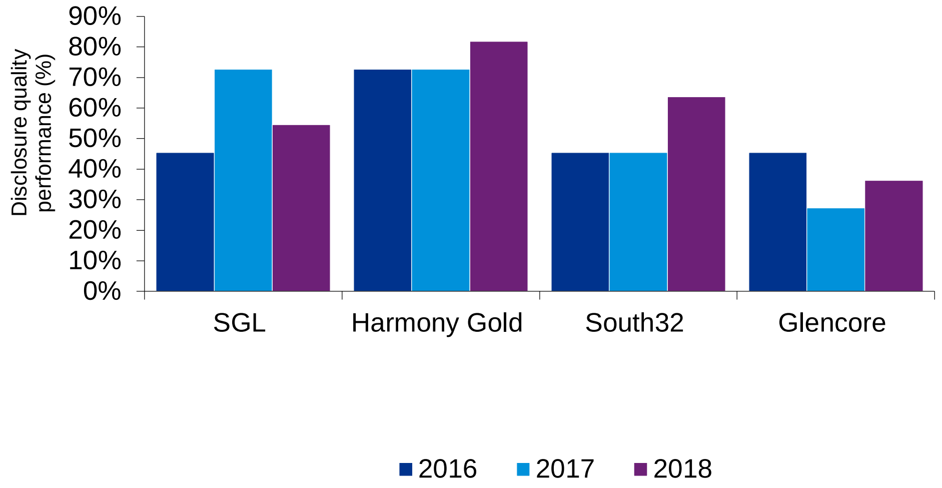


Figure 4-1: Results of quality of mine closure and financial provision disclosure analysis between 2016 – 2018 on four selected South African based mining organisations, representing the coal and gold mining industries

There is an average increase in disclosure quality when comparing 2016, 2017 and 2018, with 52% average disclosure quality in 2016, 55% average disclosure quality in 2017 and 59% average disclosure quality in 2018, as outlined in figure 4-2. Although the results reflect a slight increase in disclosure performance annually, it was also observed that the results per company where not consistent, for example SGLs best performance in disclosure quality and Glencore's worst performance in disclosure quality were both in 2017. Harmony and South32 had similar performance result trends where the companies had the same performance score in 2016 and 2017 but an increase in performance score in 2018 reporting periods.

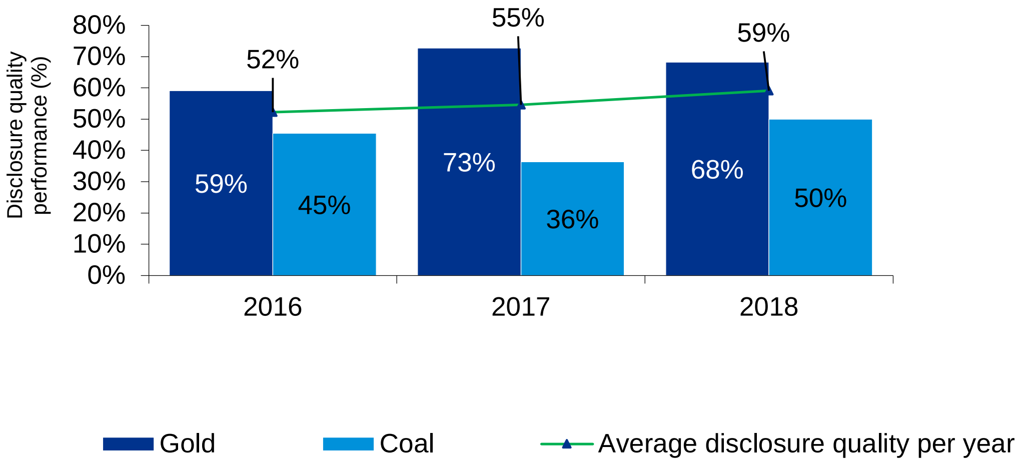


Figure 4-2: Average disclosure quality performance results, per commodity as well as average performance per year

The average performance per commodity reflected a significant difference between gold and coal commodities, as presented in figure 4-2. The gold sector have an average performance score of 67% and the coal sector an average performance score of 44%, based on results of the analysis. Both companies which represented the gold sector were primary listed on the JSE and therefore subject to the JSE listing regulations. The companies representing the coal sector where not primary listed on the JSE and therefore not subject to the JSE listing regulations. The performance results per commodity therefore also presents the performance results for primary and secondary listing status on the JSE.

Figure 4-3 presents the consolidated results of disclosure performance per principle. Each principle's performance results is discussed in further detail in section 4.3. below.

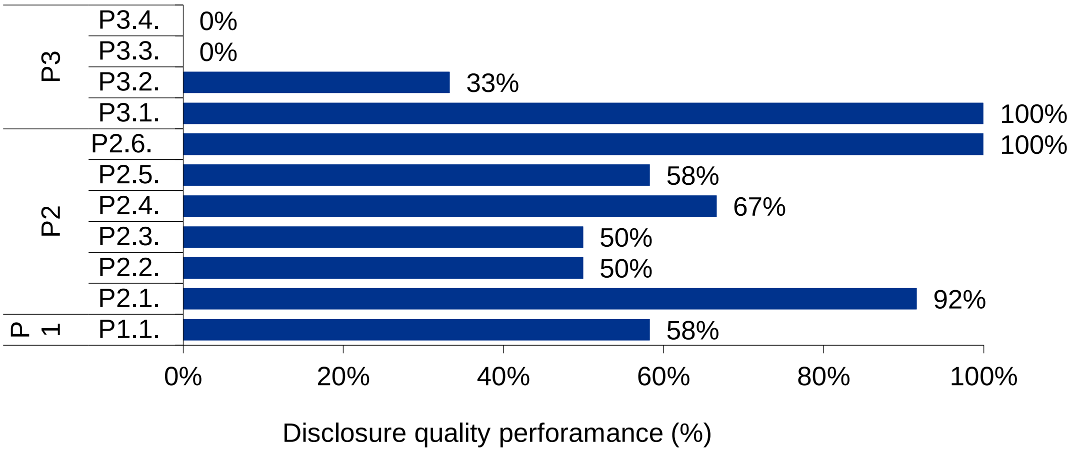


Figure 4-3: Results of quality disclosure, per principle across 2016 – 2018 based on data analysis performance over four selected South African base mining organisations

4.3 Discussion of results for each principle

4.3.1 Materiality or significance of mine closure and financial provision to corporate organisations (P1.1.)

The principle 1 disclosure quality performance results of the four selected case studies are presented in figure 4-4 below, with an average overall performance of 58% across all four companies. The organisations which represented the gold commodities both adequately disclosed the significance of mine closure to their business through the company's strategy, primary business activities, key material matters and future targets, objectives relating to mine closure as both companies have a 100% disclosure performance score, in comparison with the coal representing organisation. Glencore had a 0% disclosure quality performance score for this principle and South32 only had a score of 33% for adequate disclosure in 2018 reporting period.

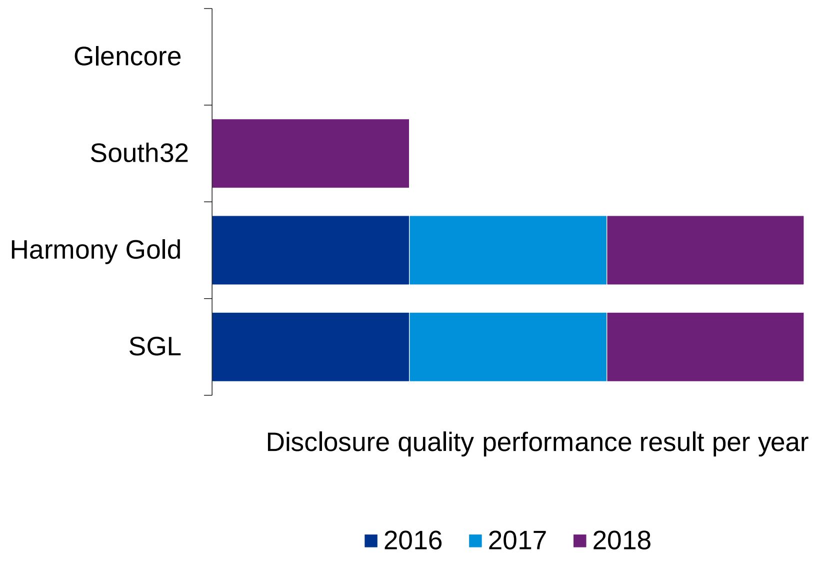


Figure 4-4: Principle 1 performance results, per organisation, for 2016 to 2018 reporting periods

All of the companies in the case study disclosed a business strategy in either their IR or ARs and all of the companies reported having an environmental or sustainability strategies which reflects the management of impacts on the environment. All of the sampled companies also reflected that they are members of, or align their business operations to international sustainable development principles which included the ICMM sustainable development principles, the UNGC and the United Nations Sustainability Development Goals (UN SDGs). From the data analysis is was noted that the companies strategies did not change significantly between the reporting periods and in most cases reflected the exact same narrative between the three years under review.

Although not clearly presented in the disclosure performance scores, with an exception of South32, the sampled companies generally improved over the nature of disclosed information in 2018, with the introduction of new strategies or change in the disclosed narratives. Each sample company's disclosure performance results over principle 1 are summarised below:

4.3.1.1 Overview of SGL strategic disclosure

SGLs strategic business objective trends reflect the company aggressive market strategy with new acquisitions reported every year. In 2016, the company's primary business footprint was located in South Africa but in 2017 the company expanded to obtain assets in the USA, and the company re-branded itself as Sibanye-Stillwater. Strategic disclosure with regards to environmental management and mine closure were heighted consistently in the company's IRs for 2016, 2017 and 2018; with an increase in focus on the matter in 2018.

In 2018, SGL introduced a new environmental policy for the business which specifically reflected over mine closure by including '*responsible concurrent rehabilitation planning and execution'* and *'effective socio-economic closure planning*' (Sibanye-Stillwater, 2018:130). The primary activities disclosed by SGL in 2016, 2017 and 2018 included development of mining operations and exploration which are reported to be integrated with environmental management and rehabilitation activities.

From the disclosed top 10 risks, SGL disclosed primary risks to reflect the impact of regulatory changes. The narrative around these risks changed slightly between the reporting periods from *'regulatory compliance with commitments in line with MPRDA*' (Sibanye, 2016:27) to '*maintain an operating licence*', '*impact of new emerging legislation' (*Sibanye-Stillwater, 2017:110*)* and *'change in regulatory requirements*' (Sibanye-Stillwater, 2018:43). In 2017, SGL's narrative descriptions focused significantly on concerns associated with the proposed NEMA Financial Provision Regulations and the proposed Mining Charter to be introduced in South Africa. Although regulatory risks does not specifically reflect over mine closure, SGL narratively included that these risks relate to the environmental policy environment and in turn to policy requirements such as the MPRDA and NEMA.

SGL disclosed future targets and objectives in all three reporting cycles which relates to mine closure. In 2016, the company outlined specific future targets in *'opportunities for optimisation will be identified and harnessed to reduce costs through innovation to offset our long-term closure liability. Sibanye will focus on.... mine closure management: develop mine-based and regional closure plans, considering innovative approaches with regard to socio-economic closure, and determine the water management cost of mine closure"* (Sibanye, 2016:98). The 2017 future targets outlined the company's aim to improve lives through responsible environmental practices which will include the following future business priorities: verifiable compliance, risk management, water and environment footprint development, all aimed at anticipation of post mining socio-economic closure. Reduction of SGLs closure liability through focused and cost-effective concurrent rehabilitation was outlined as a future target in the company's 2018 disclosure.

4.3.1.2 Overview of Harmony's strategic disclosure

Harmony disclosed the same business strategy in all three reporting periods and reflected over the company's business vision to create and sustain value. Mine closure is highlighted through the organisation's policies, management statements, business activities as well as setting future targets and objectives for closure in all three reporting cycles.

The board approved environmental policy of Harmony reflects its commitment to mine closure and include "*This policy outlines our commitment to responsible environmental stewardship and sustainable mining and closure"* (HGMCL, 2016:59; HGMCL, 2017:63; HGMCL, 2018:82), which was reiterated in both 2016, 2017 and 2018 discloses. The company's executive level statements also reflected over mine closure. In 2016, the chairman's statement and the social and ethics committee chairman's statements both reflected over Harmony's rehabilitation programme and its advances towards sustainable mine closure. In the 2017, similar reflection was disclosed by the social and ethics committee chairman's statement but not in the 2018 corporate reports.

The top-ten disclosed material issues in the 2016, 2017 and 2018 included '*managing the company's impact*' which narratively explained the company's obligation for responsible resource management and socio-economic rehabilitation planning. Strategically the company focuses significantly on seeking and implementing socio-economic and ecological developments during the operational phase of its assets which is primarily aimed at sustainable closure.

All three reporting cycles reflected future strategic focus around mine closure in some form. In the 2016 and 2017 reporting cycles, the company reflected significantly over the implementation and operation of its rehabilitation programme. In 2018, specific targets were outlined for the decommissioning of redundant shafts for combating illegal mining activities at its operations.

4.3.1.3 Overview of South32's strategic disclosure

South32 disclosed the same business strategy in all three reporting cycles which reflects the company's aim to invest and operate high-quality metals and mining operations. The company only provided an AR, with supplementary reports and documents in the 2016 to 2018 reporting cycles, which failed to provide disclosure over the company's primary business activities. The 2016 and 2017 reports reflected a similar narrative with regards to strategic matters in the company, whereas the 2018 disclosures were significantly amended.

The 2016 and 2017 strategic business focus areas included optimising the performance of existing operations, unlocking potential and identify new opportunities. In 2018, South32 disclosed seven strategic focus areas which reflected over safety, operational optimisation, technology and innovation advances, as well as environmental and social leadership. The company disclosed a significant amount of risks to their business in all three reporting cycles. The risks were categorised in terms of strategic, external, internal and operational risks. In 2016, one of the risks reflected regulatory uncertainty, and in 2016 and 2018 environmental risks were disclosed. Although these risks can be perceived to reflect mine closure, narratively the company explained that the risks were rather focused on water, waste and climate change.

South32 did not disclosure any information over future targets and objectives relating to mine closure in any of the three reporting cycles.

Through narrative review of the South32 corporate reports, narrative disclosures were presented over mine closure, in some form. The key difference between the 2016 and 2017 disclosures, when compared to the 2018 disclosure was South32's reflection over the company's strategic objective to create value through environmental and social leadership as a value driver. This newly introduced value driver in 2018 specifically addressed closure, both from a social and environmental perspective, by stating "*South32 will continuously find ways to reduce the land requirements, biodiversity impacts, waste, carbon and water usage. South32's climate change strategy will guide the organisation to ensure their business is resilient. South32 will progress initiatives in collaboration with host communities that will deliver enduring social, environmental and economic benefit*' (South32, 2018a:3). This strategic focus was further explained in the company's 2018 SR which provided disclosure over South32's governance framework (i.e. Environmental Management System (EMS)) and the revision thereof to include additional performance requirements which relate to:

— Water stewardship
— Land biodiversity
— Rehabilitation

4.3.1.4 Overview of Glencore's strategic disclosure

Glencore is considered the largest of all of the sampled companies, with a diversified portfolio of assets and activities in the mining, metals and agricultural sectors. The company has an extensive global footprint. Similar to South32, Glencore published an ARs as well as SRs for all three reporting cycles which formed part of this study.

Glencore's strategic business objective, as disclosed in 2016, 2017 and 2018 reflected growth and maintaining of the business assets for investors. Sustainability is considered as a strategic business objective to Glencore, as disclosed in all three reporting cycles, and includes the following matters: health, safety, environmental performance, human rights and development and maintaining the company's relationship with its stakeholders. Glencore provided a detailed explanation over the organisation's sustainability policies and programmes which are integrated into the business and referred to as the Glencore Corporate Practice (GCP).

In 2016 to 2018 corporate disclosure, Glencore outlined their primary business activities to include exploration, acquisition and development; extraction and production; processing and refinement; blending and optimisation; and logistics and delivery; therefore failing to recognise the closure of assets as primary business activity.

The material risks of the company, in all three years of reporting, included *'local community engagement and social commitment compliance*' which can imply social closure related practices although it was not narratively explained in this context. In 2017, Glencore also included '*laws, regulations, enforcement, permits and licences to operate'* which can also imply mine closure related policies.

Only one future target were disclosed in relation to mine closure in the company's 2018 corporate reports and included a specific target associated with Glencore's South African coal assets. The target included completing impact assessments for mine closure which will support the company's development of social programmes that deliver sustainable closure for communities.

Due to the extensive operating environment of Glencore, it was observed that the company provided very general disclosure statements as to reflect over all of its operations, business activities and jurisdictions in which it operates (e.g. compliance to laws and regulations) and failed to narratively specify specific matters pertaining to a topic (i.e. specific laws and regulations considered in the context).

4.3.2 Mine closure planning and management (P2.1. – P2.6)

The overall performance quality score for principle 2, across all four organisations in this study and across the three reporting periods, was 69%, as presented in figure 4-5 and figure 4-6 below. All four sampled companies provided information around mine closure planning in their corporate reports, but as seen from the results presented below, mine closure planning information is disclosed differently and reflect how each company plan for and execute mine closure.

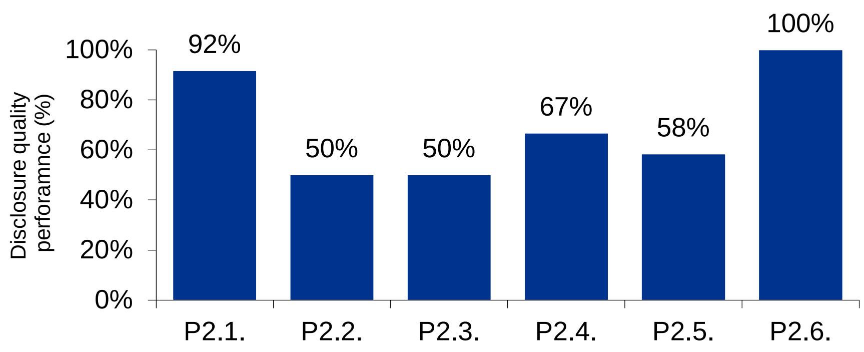


Figure 4-5: Overall disclosure quality performance results for Principle 2, per principle category

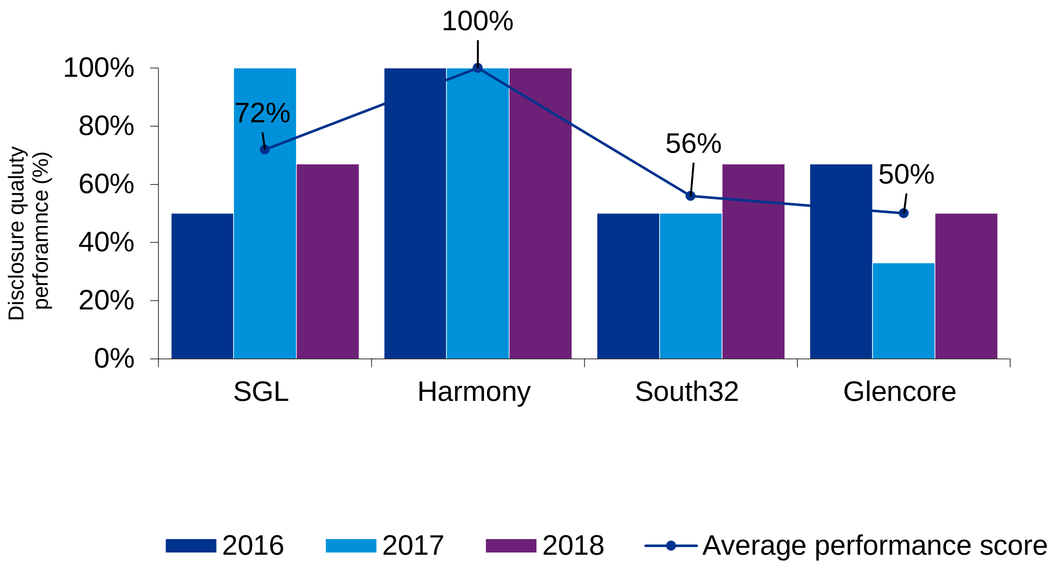


Figure 4-6: Overall disclosure quality performance results for Principle 2, per organisation

Through review of the results, per company over three years, it is noted that there were an inconsistent trend on performance, as presented in figure 4-6 above. The key tends noted from the principle 2 performance analysis are discussed in the following sections, per principle category.

4.3.2.1 Mine closure plans or mine closure objectives for all mining operations (P2.1.)

Almost all of the organisations disclosed that the company had implemented MCPs, with the exception of SGL in the 2016 reporting period. This result can be attributed to the application of the GRI reporting standards by all of the reviewed organisations. The GRI mining and metals supplement guideline specifically require disclosure over MCPs per operation.

4.3.2.1.1 SGL mine closure plan and mine closure objectives

SGLs disclosure around MCPs and objectives significantly increased in disclosure performance from 2016 to 2018. In 2016, mine closure planning was briefly mentioned by stating that the company will develop MCPs for their operations going forward and no reference is made to mine closure objectives. In 2017, SGL disclosed similar information as in 2016 with addition statements made over the proposed implementation of the NEMA financial provision regulations and actions taken by SGL to clarify, confirm and align their approach in accordance with the proposed policy. The 2017 reports also contained reference to mine closure objectives for SGLs operations by stating that the aim for planning around mine closure is to compile sustainable socio-economic closure solutions for their operations with due consideration of water management costs. The 2018 corporate reports reflected extensively over the subject, with narrative disclosure over EMPr related mine closure commitments and the focus of the company's mine closure planning initiatives included:

- The focus on the MCPs are specifically on redundant buildings and infrastructure as well as infrastructure under care and maintenance
- Finalisation of the MCPs is expected for 2019
- Development of a social closure framework which was finalised in 2018 but subject to stakeholder engagement to be performed in 2019

A new commitment on mine closure were also introduced in 2018, by stating *"Our concurrent rehabilitation and closure strategy considers the protection of land and biodiversity to ensure post-mining land uses acceptable to stakeholders*" (Sibanye-Stillwater, 2018:149) and an extensive narrative is presented over the company's actions in relation to water resource management and mine closure, with reference to specific projects and their aims.

From review of the narrative context of disclosures between 2016 and 2018, the drivers that were noted as a catalyst for increased disclosure on mine closure planning and objectives included:

— Proposed NEMA financial provision regulations and the potential impact thereof on the company's financial statements
— The closure of the Cooke mining operations, with closure of the Ezulwini shaft in 2017 and further closure of the remaining Cooke underground shafts in 2018. The closure of the Cooke mines had significant impact on SGLs understanding of mine closure practices and the impact of stakeholders, as derived from the corporate reports. As seen with the Cooke operations, SGL was forced to retain active pumping of the voids even after close of the operations due to objection of the neighbouring mines that re-watering of the voids will inherently affect the sustainability of their operations.
— Non-compliance to Water Use Licence (WUL) discharge limits at selected gold operations, which required detailed assessment and evaluation of water footprints during and after closure in order to address the non-compliances.

4.3.2.1.2 Harmony mine closure plan and mine closure objectives

In all three reporting periods, Harmony's disclosure around mine closure planning and objectives were extensive. In 2016, 2017 and 2018, Harmony refers to the implementation of EMPrs, which includes a MCP for each operation, and the company's integration of mine closure planning from the initial concept state of the mine. The strategic objective for mine closure includes creating beneficial post-mining land use, sustainable community livelihoods and progressive rehabilitation. According to Harmony's disclosure, the organisation also incorporates mitigation against environmental impacts which include climate change and water management aspects, with specific disclosure reference to AMD.

In 2018, Harmony expanded over existing disclosures made in 2016 and 2017 by adding an extensive narrative over progressive rehabilitation and development of final land uses. The company presented four applications for final land use criteria which forms part of the company's socio-economic development strategy and integrated into the SLPs, and included:

— Agriculture and agri-processing projects
— Alternative energy projects including bio-energy and solar projects
— Conservation initiatives
— Industry applications

It was noted that most of the narrative around mine closure planning and objectives disclosures remained almost identical between the three reporting periods, with additional information disclosed in 2018. From the review of the proposed change in disclosure, the following drivers were considered:

- The company completed a number of socio-economic projects related to land-use and the company wanted to present this positive information to its stakeholders
- The company obtained a new asset in 2018 which gave rise to new liabilities, specifically with regards to water resource management and AMD.

4.3.2.1.3 South32 mine closure plan and mine closure objectives

South32's narratives disclosures on mine closure planning and objectives are extensive. Most of the information was not presented in the AR but rather in additional supplementary report which was produced specifically to reflect over environmental performance. South32, in comparison with the other three sampled companies, provided the most relevant information on mine closure planning and performance.

In 2016, 2017 and 2018, South32 disclosed that the organisation maintains MCPs for each of their operation which includes specific closure and final land use criteria which covers health, safety, social aspects, environmental impacts and opportunities, and post-closure monitoring and maintenance. South32 indicated in their disclosure that rehabilitation is seen as an operational activity and incorporated into the life of mine plans of their operations. Concurrent rehabilitation is therefore scheduled in the same manner as normal mining activities. South32 also introduced an 'Intelligent Land Management' (ILM) programme as part of the company's climate strategy to seek opportunities to transform land into opportunities that increase climate resilience and general financial, social and economic value. The ILM is based on specific projects identified at specific locations and does not specifically address total mine closure. Mine rehabilitation and closure activities are specifically disclosed by South32 to include rehabilitating disturbed areas, decommissioning infrastructure, remediating contaminated sites, treatment and disposal of wastes, water resource management and post closure monitoring and maintenance.

The guiding mine closure principles, as disclosed by South32 and reflected in the MCPs include:

- Fit for purpose
- Consistent with regulatory requirements
- Fully integrated into business planning cycle

In reflecting over South32's disclosure on mine closure planning and objectives, it was noted that the narratives were similar for the three year's under review. The same information was presented and just packaged differently, but the information were robust and inclusive of the information needed to fully comprehend South32's mine closure planning objectives, actions and performance for each year.

4.3.2.1.4 Glencore mine closure plan and mine closure objectives

Glencore's disclosure over mine closure planning and objectives changed between the three reporting periods under review, except for consistent disclosure on having MCPs which are maintained for each operation. Most of the information over mine closure planning and objectives were presented in the SRs for each year under review. The SRs provided a definition of the MCP which include "*A formal document detailing a costed conceptual outline of how the operation will be closed, taking into account the options available to deal with prevailing social and environmental issues. We set aside funds specifically for site closure, including land rehabilitation, based on this document*" (Glencore, 2016b:122; Glencore, 2017b:112; Glencore, 2018b:120).

In 2016, Glencore disclosed that each site are required to prepare an annual rehabilitation and land management plan (ARLMP) which details the company's concurrent rehabilitation and proposal for further work to be conducted. No specific information was provided to specify the nature of rehabilitation, other than providing case study examples for completed rehabilitation at selected Glencore operations. The mine closure objectives, as disclosed in 2016, included to return the mine land to either self-sustaining native ecosystems, agricultural use or other purpose agreed by host governments in consultation with local communities. The 2016 SR also included reference to concurrent rehabilitation being performed.

In contrast to the 2016 disclosure, there were limited information presented in 2017 with no reference to the content of the mine closure plans or objectives. The company did provide disclosure over participation with the ICMM working groups on closure and socio-economic impacts on communities in 2017 but no further detail were provided in order to evaluate the impact or outcome of Glencore's participation.

In 2018, Glencore increased the level of disclosure slightly, when compared to 2017 by including that all of its coal operations have clear performance expectations on rehabilitation, but did not specifically note the nature of such performance expectations. Other additional disclosure noted in 2018 included:

- The company's mine closure planning processes includes treatment of final voids, including minimising the size or environmental impact of the final void and demonstrate beneficial re-use opportunities.
- The company also noted that it actively participate in industry research on improving the understanding of, and developing guidance on, final voids and post-mining land use.

— Glencore actively search for social transition opportunities for mine closure through development of rural development strategies, community strengthening initiatives and participating in the design of long-term regional development plans.

Glencore provided selected case studies in the 2016 and 2018 SRs to substantiate the company's performance over mine closure planning and implementation. The case studies were selected and did not reflect any of the South African operations. From review of the disclosures, it was unclear if the proposed initiatives were only performed at selected operations or consistent across all of Glencore's operating footprint.

It is unclear to evaluate the reasons for change in disclosure by Glencore between the three reporting periods. From the review it was noted that 2016 had the most comprehensive disclosure with information which provides transparency over mine closure planning whereas the other two reporting periods rather just focused on providing selected case studies which reflected over positive performance with no information to evaluate the overall performance of the company in this regard.

4.3.2.2 Reference made to periodic updates to mine closure plans to refine content (P2.2.)

The average performance score for principle 2.2. which measured disclosure performance relating to periodic updates to MCPs for refinement of the content, was 50%, with varying results across the four companies as presented in figure 4-7 below.

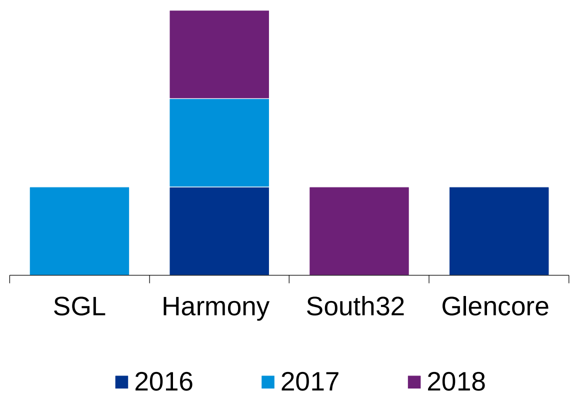


Figure 4-7: Disclosure performance over principle 2.2 on periodic update of MCPs to refine its context, per sample organisation for the period 2016 – 2018

The only relevant disclosure on proposed update of MCPs made by SGL, was noted in 2017, where the company reflected over completion of specific specialist assessment such as Heritage Impact Assessments (HIA) and Biodiversity Action Plans (BAP) at each of their operations for incorporation into the proposed MCPs to be developed in the next reporting cycle. SGL also reflected over the company's actions taken to incorporate the proposed requirements for mine closure plans as per the NEMA financial provision regulations in 2017. No disclosure on periodic updates of MCPs were noted in 2016 or 2018 reporting cycles.

Harmony provide the same narrative disclosure in the 2016, 2017 and 2018 reporting cycles by stating that MCPs are maintained as part of the approved EMPrs and detailed MCPs are developed for each operation, five years prior to planned closure of the specific operation.

South32 noted in 2018 that the company performs regular reviews of all potential closure risks to retain value for future generations. Although not specifically disclosed it was implied in the context that this actions are performed as part of maintaining the MCPs for each of their operations. Glencore reported in 2016 that the operational MCPs must be continuously maintained by each operation throughout its operational life-cycle with implied regular update of the documents, with no further disclosure on the matter in 2017 or 2018 reporting cycles.

4.3.2.3 Reference made to compliance with laws and regulations which give rise to mine closure liability (P2.3.)

Overall performance of principle 2.3., which reviewed disclosure in terms of compliance to laws and regulations which govern mine closure was 50%, with 100% score provided to both SGL and Harmony and a 0% score to South32 and Glencore. The nature of disclosure over compliance related matters were vastly different between the four companies but narratively the companies reflected over the same information annually, when comparing between the three reporting periods under review. A summary of the disclosed information per company is presented below:

4.3.2.3.1 SGL

SGL disclosed compliance results in relation to specific compliance matters and did not make reference to any compliance in terms of mine closure. In 2016, SGL only noted that the company conducted EMPr compliance reviews, with no results presented. Other specific non-compliance matters were raised in terms of water discharge limits not being met by the company and the challenges faced by the company in meeting the legal limits imposed. Of particular interest is SGLs disclose in this regard by stating:

> In line with the environmental management system, each gold operation has an approved EMPr, which is a formal contract between Sibanye, as the holder of the mining right, and the regulator, the DMR [Department of Mineral Resources], regarding impacts that may arise from mining operations, assessment of these impacts from a risk perspective, proposed measures to mitigate the impacts, and commitments or undertakings by the licence holder to implement mitigation measures (Sibanye, 2016:97)

however the company failed in this statement to recognise its obligations in terms of the NWA and how it would impact closure.

Similar to 2016, SGL again highlighted the non-compliance with regards to its water discharge in terms of their WUL in the 2017 corporate reports but further also provided a general statement which noted "*the company complies with all relevant legislation governing the use of resources and included water, responsible waste management, conservation of biodiversity and post-mining land use for socio-economic closure*" (Sibanye-Stillwater, 2017:108). Only water discharge compliance related disclosures were provided in 2018, in a percentage format per operation, and ranged from between 56% - 97% compliant.

Compliance related disclosure to financial provisions included disclosure over funding of the regulated financial provision and associated guarantees to be issued annually. In 2016, SGL briefly noted that the company received notice of intent to issue non-compliance notice in terms of their financial provision due to the exclusion of Value Added Tax (VAT) from their financial provision estimates. The same matter were raised again in the 2017 corporate reports where SGL transparently noted that the matter remained unresolved.

In 2018 disclosure, SGL specifically disclosed information with regards to NEMA financial provision regulations and its proposal to mandate the inclusion of VAT in financial provisions. Although not specifically stated in 2018, the VAT compliance requirement were raised in prior year reporting period as a notice of intent to be issued to SGL by the regulator. SGL however rather reflected over the onerous requirements proposed by the NEMA financial provision regulators and its estimate financial impact on the company if the VAT should be included in the cost estimates.

4.3.2.3.2 Harmony

Harmony's disclosure over environmental compliance were almost identical in all three reporting periods under review. The company disclosed that it is subject to specific legal requirements and highlights compliance to MPRDA, NEMA, NWA and the National Nuclear Regulator Act (NNRA) as the material policies in this regard in all three reporting periods. Harmony further also reflected that the company has approved EMPrs for each of their operations and further only provided disclosure over environmental incidents incurred during each reporting period but did not make any reference to compliance over mine closure related matters specifically.

In terms of financial provisions, Harmony reflected over the proposed NEMA financial provision regulators and its requirements to include cost for latent liabilities but did not further indicate if how this matter would impact the business. Harmony also noted in all three years of reporting under review, that the company's financial provision was fully funded via trust funds, insurance and bank guarantees.

4.3.2.3.3 South32

South32's disclosure with regards to compliance to laws and regulations governing mine closure were not available in 2016 and 2017 periods. In 2018, South32 briefly reflected over environmental compliance and major environmental incidents at selected operations. Certain of these incidents were applicable to South African operations but were relating to exceeding emission targets only.

4.3.2.3.4 Glencore

In the 2016 to 2018 corporate reports, Glencore reflects over the company's governance system which manages the company compliance to laws and regulations. The company noted that its operations are subject to compliance with an array of regulatory requirements which included bribery and corruption, tax, anti-trust, financial markets, management of natural resources, licences over resources, exploration production and post-closure reclamation. No specific details are provided over the disclosed regulatory requirements and it might be due to the large international footprint of the company, with operations in over 50 countries, according to the company' disclosures.

The company made brief reference to its contributions to controlled funds which were established for cost of restoration and rehabilitation, primarily in South Africa, as part of the 2017 and 2018 financial reports only, but failed to disclosure the nature of their legal obligation or whether the funds were adequate as required by law.

4.3.2.4 Disclosure over the remaining life of mine and management actions required to meet the closure objectives (P2.4.)

There were no disclosure made by any of the sampled companies, in any of the selected reporting periods, to specifically discuss the mine closure planning in context of the remaining LoM of the operations. The analysis reflected a result of 67% of the disclosures did present reference to the remaining LoM, for each of the operations, but this information was presented as part of the mineral reserve and resource statements only and therefore only reflected operations which still had remaining minerals to be extracted and inherently excluded operations under care and maintenance or closed sites. Mineral reserve and resource statements disclosures are regulated through listing obligations to specific disclosure practices such as SAMREC Code.

The information, however presented, was disconnected to the mine closure planning information. It is unclear to evaluate how the company is performing in terms of closure planning and how this is prioritised in relation to the remaining life of operations.

4.3.2.5 Stakeholder engagement on mine closure, specifically mine closure objective and final land use criteria (P2.5.)

The average performance of disclosure quality for principle 2.5. was 58% over the three years under review. The results varied significantly between the companies as well as between the reporting periods. Overall, it was observed that the companies who produced IRs provided more comprehensive information around stakeholder engagement which included, stakeholder groups, key stakeholder concerns and nature of stakeholder engagement performed; compared to companies who presented an AR. The difference in disclosure over stakeholder engagement can reflect the difference in reporting structure, where the IR framework specifically describe the manner in which a company should disclosure stakeholder engagement information. All four companies however considered stakeholder engagement and reflected, to some extent, over stakeholder engagement practices, however the content around stakeholder engagement for companies who presented IRs where far more robust and informative, comparing to the disclosures from ARs and SRs respectively. A summary of the disclosure per company is provided below:

4.3.2.5.1 SGL

SGL provided disclosure around the company's key stakeholder groups and the nature of engagement with these stakeholder (i.e. forums etc.) in all three reviewed periods, where key stakeholder groups included employees, regulators and government, communities, NGOs, peer groups and industry etc.

In the 2016 corporate reports, SGL had limited disclosure over stakeholder engagement in terms of mine closure. The company only disclosed information over future plans to include impacted mine land and infrastructure for local Small, Medium and Micro-sized Enterprise (SMMEs) as part of the company's closure strategy. Some reference were presented over the company's development of a social closure strategy but no specific content was provided further to evaluate the level of engagement with stakeholders in this regard. In contrast to 2016, SGLs 2017 disclosure over stakeholder engagement and mine closure were far more robust with specific reference to the stakeholder engagement over closure of their Ezulwini gold mine which included two rounds of public participation with inputs from neighbouring mines, communities, regulators and NGOs.

SGL also provided disclosure over the development of a social closure framework and associated Social Impact Management Plans (SIMPs) for all of SGLs operations, but no specific reference were made to engagement with stakeholders in development of this framework. The aim of the SIMPs, according to the 2017 disclosure, are to be used as guidelines to manage and mitigate the effects of mine closure on host communities. From the disclosure provided it was observed that the SIMPs were not yet developed and no reference were made to stakeholder engagement with regards to development of the SIMPs. In 2018, SGL disclosed that the company finalised the social closure framework and was planning to commence with stakeholder engagement in 2019. The proposed stakeholder engagement to be conducted in this regard included collaboration and strategizing with stakeholders such as municipalities as well as local and regional government, to align the plans with the regional Integrated Development Plans (IDPs).

The key stakeholder concerns were highlighted in 2017, as obtained through SGLs stakeholder engagement process. Of particular interest were the concerns which related to:

- Environmental impacts of mining concerns by communities and consultative forum
- Environmental compliance by regulators and government
- Issues of major concern to the industry which included the NEMA financial provision regulations by the Chamber of Mines and peers.

In 2018, SGL again disclosed key stakeholder concerns identified as part of the company's stakeholder engagement processes but no specific issues were noted which reflected mine closure in the specific reporting cycle.

4.3.2.5.2 Harmony

Harmony provided a comprehensive overview of stakeholder engaging in the business in all three reporting periods, similar to SGL. The company specifically highlighted its stakeholder engagement strategy and policies which were noted to be compliant with industry standards (i.e. International Organisation for Standardisation (ISO) 14001) and mine closure planning was also partially reflected in Harmony's strategic intent to stakeholder engagement which included:

- To improve the lives of host communities/stakeholders through appropriate programmes or projects
- To find solutions to the various challenges facing our society and host communities
- To find a balance between the expectations of shareholders and those of other stakeholders.

Similar to SGL, Harmony also provided the key stakeholder concerns identified for specific stakeholder groups as part of the company's stakeholder engagement processes, which included the following concerns in terms of mine closure:

- Developing and implementing initiatives to empower local communities to ensure sustainable economic activity once mining has ceased
- Inclusive engagement relating to land rehabilitation in the Free State and the creation of sustainable of economic activities independent of mining.

Narratively, there were no change in the content relating to stakeholder engagement and mine closure during the three years under review, as disclosed in the corporate reports by Harmony.

4.3.2.5.3 South32

South32's information with regards to stakeholder engagement and mine closure over the three reporting periods under review were very limited, resulting in an overall performance disclosure score of 0%. Stakeholder engagement is highlighted by South32 in the general context of the corporate reports by noting its importance but no reference to specific engagement policies, procedures or processes were provided in 2016, 2017 or 2018.

In 2016, South23 did provide some reference to community engagement by providing a very general statement which included "*building relationships with communities is performed through regular, open and honest dialogue*" (South32, 2016:32) and the company obtain feedback from local communities through conducting social baseline studies, social impact and opportunity assessments and performing community surveys, but no further information were disclosed to evaluate the nature or topics of engagement. In the 2018 corporate reports, South32 reflected over its stakeholder engagement processes conducted as part of the Intelligent Land Management (ILM) projects, for identifying and selection of projects, but again the company failed to provide disclosure over the nature of its engagement in relation to mine closure.

4.3.2.5.4 Glencore

Glencore's disclosure over stakeholder engagement varied between the three reporting periods under review. Most of the statements made by Glencore in terms of stakeholder engagement were generic (i.e. *…business continue to face a number of complex challenges, but company remain committed to maintaining open dialog and engagement with all our stakeholders*) (Glencore, 2016b:5).

Throughout the IR and SR, Glencore reflects over stakeholder engagement programmes that are performed and inclusion of stakeholder's issues into their business decisions, as disclosed "*we continuously incorporate feedback from key stakeholders both internal and external, into the strategy*" (Glencore, 2016b:26). The company does not provide a specific summary to outline the types of stakeholders and their matter issues as seen in IR. In 2016, Glencore disclosed that community relations is a significant matter to the business, specifically in the context of the company's impact on host communities. In the 2016 narrative, Glencore highlighted mine closure and acknowledge that some of the company's operations are located in remote areas where Glencore is the primary employer and the transition to closure in such locations is particularly challenging to the company.

In the 2017 disclosures, Glencore provided far less information over stakeholder engagement and mine closure, as compared with 2016 disclosures. In 2017, the only disclosure of relevance to this principle related to a stakeholder engagement process which was implanted at the South African coal operations and include the communities and regulators. This engagement aimed to address community upliftment initiatives, but from the disclosure it was unclear if these initiatives included matters relating to mine closure due to a lack of narrative description around the nature of the engagement processes.

The company's 2018 disclosure around stakeholder engagement and mine closure were more comprehensive when compared to 2017 disclosure. In 2018, Glencore provided disclosure over its key stakeholder groups which included employees, communities, governments, unions etc. Glencore noted that it has asset-based community engagement teams at all of their operations to build networks of contacts with local communities and decision-making authorities. These teams, according to 2018 disclosure, engage with local communities to share and obtain information over business activates, key risks and proposed control / mitigating measures. The nature of engagement with local communities is performed through open-house sessions, formal engagement, face-to-face discussions and local grievance mechanisms. The key community concerns, as disclosed in 2018, with regards to mine closure included:

— Local employment and procurement opportunities
— Local socio-economic development projects
— Environmental management
— Potential site closure

The potential site closure concerns where first disclosed as a matter by Glencore in 2018.

The nature of Glencore's disclosure included general statements which can be applied to all of its operations, and then proceed to provide specific case studies for selected operations to provide context to the statements made. This is also the approach to its Glencore's disclosure over mine closure projects and related stakeholder engagement in 2018. In this context, Glencore reflected on the company's proposed development of land management options that support sustainable post-mining land use which will be conducted by the company in 2019 at its South African coal assets.

4.3.2.6 Key performance indicators disclosure to measure closure management performance (P2.6)

All of the organisations presented specific KPIs relating to mine rehabilitation and/or closure during all of the reporting periods under review. Similar to the above observation, this result can be attributed to the application of the GRI reporting standards which specify KPIs in this regard.

The figure below presents the nature of KPIs disclosed by sampled organisations during 2016 – 2018.

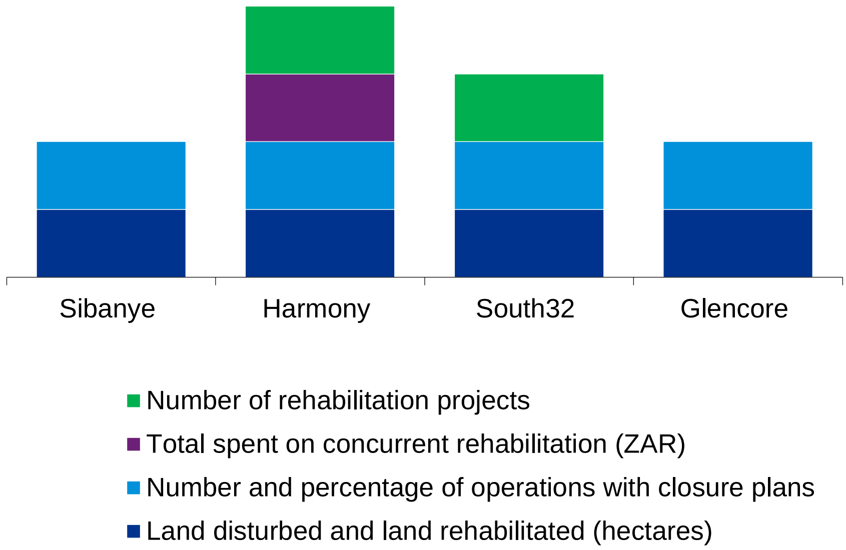


Figure 4-8: Type of KPIs disclosed by sampled companies in 2016 – 2018 reporting periods

The financial statements included the consolidated discounted financial provision as well as the financial guarantee amounts, as required in terms of South African policy for rehabilitation funding, which could also be considered as KPIs, although not always specifically disclosed as a KPI. All of the companies included the total land rehabilitation KPI in 2016 to 2018 disclosures.

KPIs are important to reflect over the past perforance of a company, and should therefore be comparible between reporting periods. Based on the evaluation of the reported KPIs, it was noted that there were slight differences in the disclosure narratives between companies, where some reflected total over the total land disturbed and total land rehabilitated in the specific year only, and other reflected over land rehabilitated in relation to total land under ownership or control of the company. Further discussion around disclosure of financial provisions is provided in section 4.3.3. below.

4.3.3 Financial provision disclosure presence, scope and subjectivity (P3.1. – P.3.4.)

This principle reflected over performance disclosure in terms of the cost estimate(s) associated with mine closure and its reliability, and the overall performance of this principle was 33%, with an average performance disclosure score of 25% for all of the sampled companies except for South32 which had an average performance score of 50%.

There was a 0% disclosure performance score for principles relating to number of operations covered by the financial provision estimate to verify the completeness of the estimate (P.3.3) and independent assessment or review of environmental provision estimates to verify the reliability of the information disclosed (P3.4).

Based on the analysis performed, the section below provides an overview of the results per performance principle:

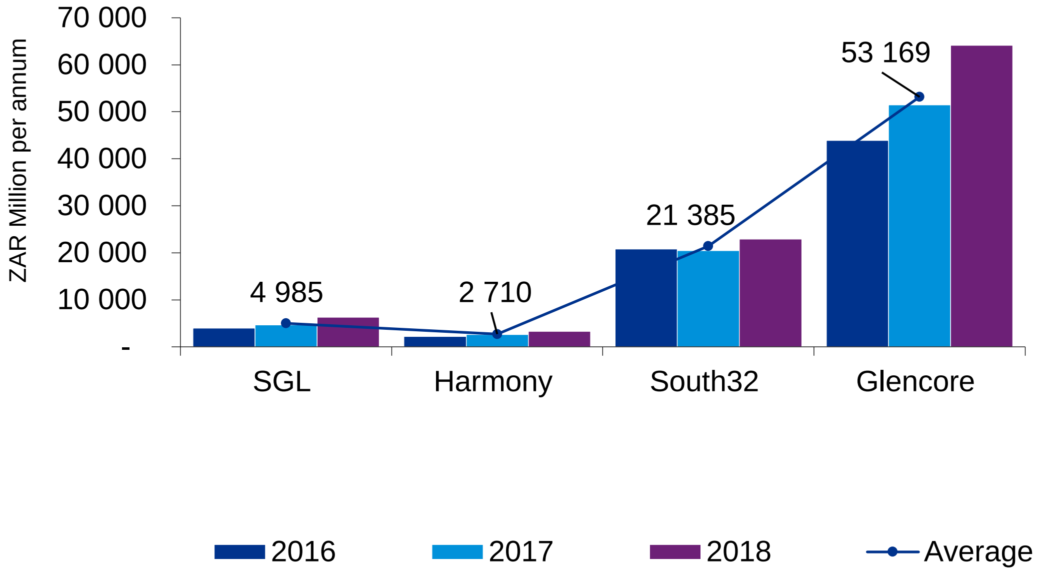
4.3.3.1 Financial provision estimate been disclosed in terms of Financial Reporting obligations (P3.1.)

The consolidated financial provision estimates, per company, is presented in the figure below. Each company disclosed a consolidated financial provision for the company for the given reporting period as part of the financial performance and all of the companies used IFRS and their reporting framework for their financial statements.

The graph reflects the difference in financial provisions for each company as well as the average provision estimate over the three year period, from 2016 to 2018.

As noted by the results, Glencore has the greatest financial provision estimate, followed by South32, then SGL and lastly Harmony. The results however is not a reflection of the nature of the estimate, but rather the size of the company and its operations. The disclosed financial provision estimates were discounted (NPV) estimates. Further discussion over the consolidation and NPV are included in Chapter 5.

Two of the sample companies disclosed a contingent liability as part of their financial performance which related to mine closure, namely SGL and Harmony. Both companies disclosed a contingent liability associated with water resource remediation (i.e. groundwater pollution and AMD), and Harmony also disclosed a contingent liability over the uncertainty of their obligation on water resource management due to the lack of approved WUL at some of their operations. The disclosure of these continent liabilities reflect over the completeness of the provision estimate of these companies, as no provision (cost) was accounted for to remediate these mine closure impacts.



Note to figure: Glencore and South32 financial provisions was reflected in United States Dollar (US$) in the respective Annual Reports for each year. For comparative purposes, the values were calculated in South African Rand (ZAR), using the following exchange rates for the respective periods. Glencore: 31 December 2016 US$/ZAR exchange rate 13.74310, 31 December 2017 US$/ZAR exchange rate 12.31220 and 31 December 2018 US$/ZAR exchange rate 14.39210. South32: 30 June 2016 US$/ZAR exchange 14.69940, 30 June 2017 US$/ZAR exchange rate 13.06240, 30 June 2018 US$/ZAR exchange rate 13.71300. Source of exchange rates: Treasury One, 2019.

Figure 4-9: Financial provisions for mine closure, as presented by the selected organisations for the period 2016 – 2018 and reflected in the companies' annual financial statements

4.3.3.2 Scope of the financial provision estimate in terms of a description of the cost included (P3.2.)

The overall performance score for this principle was 33%, with only South32 obtaining a 100% disclosure performance score for their disclosure on the scope of the financial provision estimate in their 2016 – 2018 corporate reports. All of the companies did provide a narrative around the financial provision estimate as part of the financial statements but the nature of the disclosed information varied significantly between the four sampled organisations.

4.3.3.2.1 SGL

In all three reporting periods, SGL only referred to the scope of the financial provision to reflect the company's long term environmental obligations in accordance with the approved EMPr, with no other information with regards to how the cost estimates were quantified, methodology used or assumptions applied.

The company also disclosed a contingent liability associated with long-term AMD and groundwater pollution and the company disclosed that it was unable to reliably quality an estimate associated with remediation of liability associated with AMD and groundwater pollution. This inherently reflect that the financial provision excludes costs for the rehabilitation and/or remediation of AMD and groundwater pollution.

4.3.3.2.2 Harmony

Harmony provided similar disclosure as seen at SGL with regards to the scope of the financial provisions and also disclosed contingent liability in all three reporting periods under review. Harmony noted that its operations are subject to extensive environmental laws and regulations and that the financial provisions are principally based on legal and regulatory requirements with no specific reference to define the applicable laws and regulations in this context.

The contingent liability of Harmony reflected three separate disclosures, other than SGL, although the context of the disclosures reflected remediation of water resource impacts and AMD, and included:

1. Potential liability associated with potential requirement for the remediation of groundwater and radiation
2. Potential liability associated with the flooding and decant of underground mines
3. Potential liabilities to be incurred at operations upon obtaining an approved WUL

4.3.3.2.3 South32

South32 were the only organisation included in this sample who provided specific disclosure over the context of the financial provision and other than the other three organisations in this sample, the nature of the disclosed information were not narratively exactly the same in each reporting period. South32 also provided additional disclosure over the financial provision scope in their SR report, which is different from the other companies who exclusively only provided some narrative around the scope as part of the financial statements or financial report.

In 2016, South32 disclosed that the financial provision was determined using the MCPs for each operation, where the MCPs context were specifically referenced to include: specific closure criteria for future land use, health, safety, social aspects, environmental impacts and opportunities as well as post closure maintenance and monitoring. It can therefore be interpreted by the reader that the financial provision includes cost estimates for those related criteria. In 2017, South32 made the same statement with regards to the MCPs forming the basis of their financial provision estimates, and in this reporting period included that the MCPs content specifically reflect over facility decommissioning and dismantling, removal or treatment of waste materials, and site and land rehabilitation.

The 2018 disclosure with regards to the scope of the financial provisions were the most comprehensive of the three years under review, where South32 noted that the content of the MCPs, which form the basis of the financial provision, included criteria and land use options, current and future shared economic, environmental and social value, requirements for rehabilitation of disturbed areas, decommissioning of infrastructure, remediation of contaminated sites, disposal of waste, monitoring of effectiveness of rehabilitation, as well as consideration to economic transition and sustainable communities.

In all three reporting periods under review, South32 specifically disclosed that it determined its financial provision according to the probability of alternative estimate cash flows. This inherently indicate that the company assessed their financial provisions inclusive of risk factors, assumptions or uncertainties in the quantification of the provision estimates. No further information was provided over the level of accuracy of the estimate and impact of the probabilistic evaluation, which would have been reflected in a form of a contingency value to be included in the cost estimate which would, in theory, address risk of misstatement of the provision.

4.3.3.2.4 Glencore

Glencore disclosed the same narrative around the financial provision scope in their financial statements in all three reporting periods. The company noted that the financial provision estimates are determined using the MCPs and further noted that the MCPs for each operation are maintained throughout the LoM. Further reference is made by Glencore by disclosing that the financial provisions are based on current studies of expected rehabilitation activities and timing and that the costs was quantified using third party contractor rates. The provision for future restoration, rehabilitation and decommissioning, according to Glencore’s disclosure, included assumptions with regards to relevant regulatory framework, magnitude of possible disturbance, timeframe, and extent and cost required for closure and rehabilitation activities.

An additional disclosure were presented in 2018, which reflected over the financial provision scope of the company's closed mine sites. Glencore disclosed that "*closure site rehabilitation costs relates to movements on restoration, rehabilitation and decommissioning estimate to sites that are no longer operational and thus classified as 'closed sites*'" (Glencore, 2018a:160). This statement however does not provide any further reference to the scope of the financial provision estimates.

4.3.3.3 The number of operations covered by the financial provision estimate to verify the completeness of the estimate (P3.3.)

None of the companies in the sample provided disclosure over the number of operations covered by the financial provision estimate. Some of the companies provided a partial breakdown of the cost estimates, per operating division or business unit, which included:

— SGL provided a partial breakdown of their financial provision per operating division, which was classified as 'Gold Division' and 'Platinum Division' in all three reporting periods. The disclosed values were presented as discounted (NPV) estimates only.

— South32 provided a partial breakdown of the financial provision estimate, per operating division in 2016 only, as presented in figure 4-10.

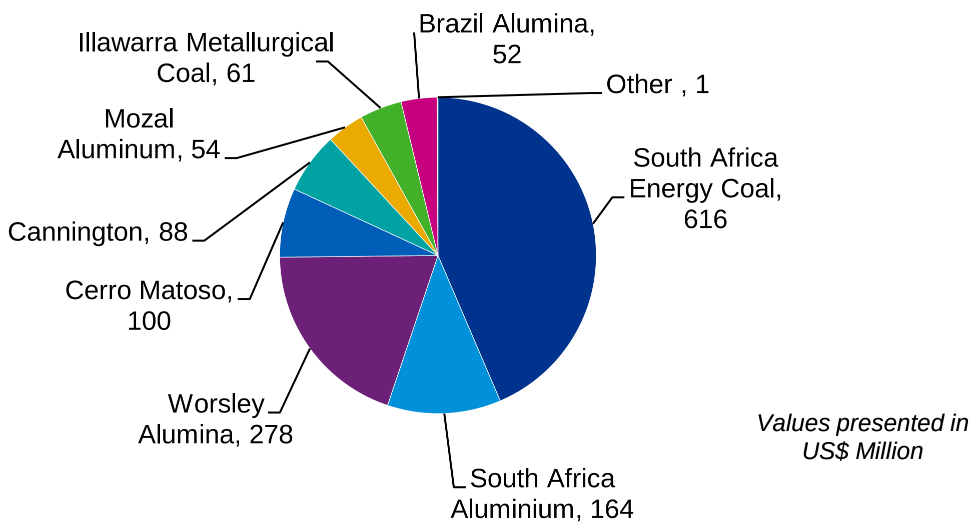


Figure **4**-10: Results of the partial breakdown of South32'**s** financial provision estimates, as disclosed in the 2016 corporate report

4.3.3.4 Independent assessment or review of financial provision estimates to verify the reliability of the information disclosed (P3.4.)

None of the sampled companies provided disclosure over independent evaluation of the financial provision estimate for any of the selected reporting periods. Some companies did provide reference disclosure around periodic review of the financial provision for example South32 stated in the 2016 corporate report that financial provisions are periodically reviewed of each site and financial provisions are annually adjusted for changes in the cost estimate. Harmony noted that cost are annually reviewed and adjusted for inflation, changes in estimate and physical changes are a result of concurrent rehabilitation.

4.4 Conclusion

This chapter discusses the results of the data analysis performed. The chapter highlights that the overall performance of disclosure quality in corporate reports relating to mine closure and financial provision disclosure was found to be poor with an average overall score of 55%. The results also indicated that the overall performance increased between 2016 to 2018, from 52 % to 59% and that the quality of disclosure between the two commodity groups varied, where the gold sector had better disclosure quality when compared with the coal sector disclosures in the same period.

The chapter provides a detailed analysis of performance results per principle, where it was found that the majority of the organisations did disclose information over mine closure and financial provisions but that those disclosures are not transparent as it only provide sections of the performance results and the information does not provide a holistic view to evaluate whether the organisations would achieve sustained mine closure. It was also noted that the principle criteria which was specifically guided by corporate disclosure standards (i.e. IFRS or the GRI guidelines) resulted in overall performance scores of 100%, whereas other criteria guided by best practice guidelines (i.e. ICMM mine closure planning guideline) did not result in adequate disclosure of performance. From a company performance perspective, it was observed that Harmony had the best performance score of 76% as an average score between 2016 and 2018. Glencore, had the worst average performance score with only 36% of disclosures made in the company's corporate report which adequately reflecting information over mine closure and financial provisions

The results discussed in this chapter have shown the level of quality in mine closure and financial provision disclosures in corporate reports, which have raised a number of important points over disclosure such as nature of disclosure format, narrative content of reports, completeness of disclosed content and level of influence of regulations which mandates disclosure of information. The next chapter discusses these observations further.

CHAPTER 5 GENERAL DISCUSSION AND RECOMMENDATIONS

5.1 Introduction

This chapter uses the conclusions drawn in the previous chapter and the large body of literature that was discussed in chapter two to discuss the significant mine closure and disclosure quality matters, most of which reflects observed concerns. In addition, recommendations are made and discussed in terms of addressing the concerns raised in the general discussion.

5.2 A partial view of mine closure and financial provision disclosure

The results of the analysis indicates that in all of the disclosures only a partial view of performance over mine closure and financial provisions are reflected, where critical information which is needed to evaluate performance transparently, was critically lacking. This mirrors the results from McHenry *et al.* (2015:403) which stated that "*present levels of disclosure clearly fall short of what might be broadly considered to be 'transparent' to civil society*". The information which was presented reflected compliance to the required reporting framework, rather than aiming to present a holistic view of performance, as seen in the results over disclosure of mine closure plans and key performance indicators but clear lack the information over the number of mines under operational control, defining the obligating requirements for mine closure, stakeholder engagement over mine closure as well as remaining planned LoM and performance measures to reflect the company's readiness to achieve their sustained mine outcome.

It was also noted that performance results that did reflect some of the criteria above, were presented for selected operations only thus reflecting the view of Iatridis (2013 as cited by McHenry *et al.*, 2015) in writing that voluntary reporting results in selective disclosure practice. The performance disclosures across the four selected sites where presented in various formats, where relevant information had to be drawn from different sections or different reports making an overall performance evaluation process onerous, therefore again reflecting the opinion of McHenry *et al*. (2015) which states that the current trends towards transparency in disclosure is more likely to generate complicating mass of disclosed information, which is inherently not transparent.

From international guidance, it can be concluded that the purpose of the corporate reports reflect performance of an organisation over a specific period, including in some cases forward looking reflection, in relation of what is viewed as significant to the company and its stakeholders (GSSB, 2013; IFAC, 2015; WBCSD, 2018). The corporate reports disclosures not only provide performance results (i.e. financial results for a given period), but also reflect over management's significant matters as contained in the form of chairman's statements, corporate strategy, risk management, stakeholder engagement and governance processes within the organisation (GSSB, 2013; IFAC, 2015; WBCSD, 2018). The emphasis of all the reports are primarily directed towards the interest of investors and shareholders and all four companies specifically disclosed their commitment towards the voluntary and mandatory disclosure requirements and how their report(s) reflect compliance to the specific reporting obligations (i.e. the JSE listing requirements specify the publication of an IR in accordance with the IIRF but the LSE only require disclosure of a report, referred to as the AR, with regulations over its content) (JSE, 2019b; LSE & White Page Ltd, 2010). It was derived that the primary aim of the corporate reports, primary audience, and compliance to disclosure regulations form the basis to which corporate reports are compiled and published. Mine closure and financial provision context provided in the corporate reports are primarily provided to ensure compliance to specific standards or guidance, (i.e. mine closure planning management disclosures were provided to conform to the GRI Standards or financial provision estimates were disclosed in accordance with IFRS).

Even though there were a slight increases in performance results between the three reporting years, the overall disclosure quality relating to mine closure and financial provisions remained an uncompleted 'jigsaw' (McHenry *et al.,* 2015) thus presenting a partial picture of overall performance in relation to mine closure planning processes, performance and adequacy of the costs for closure.

The following sections provides a detailed discussion over the principle performances.

5.3 Significance of mine closure to corporate organisations

Strategically, all corporate entities are focused on the economic viability of the company as reflected in the companies' strategy statements. The companies who produced IR reports had better disclosure performance results, when compared to the companies who produced AR reports, thus mirroring the views of Fasan (2013) and Tlili *et al.* (2019) over the future of corporate reporting. From the results it was noted that information over strategic focus areas, business activities and operational footprints are more comprehensively disclosed in IRs when compared to other reporting formats (i.e. SRs or ARs). However, in contrast to the above, it was also found that the content of the strategic disclosed information remained the same, and in some cases were narratively exactly the same in all three sampled periods.

5.4 Mine closure planning and management

Mine closure planning and management are inherently complex activities with a variety of facets associated with the process (Alberts *et al.*, 2017; ICMM, 2019c; McHenry *et al.*, 2015; Sturdy *et* *al.*, 2017). These facets are considered critical to the process to ensure achievement of a sustained closure outcome (Alberts *et al.*, 2017; McHenry *et al.*, 2015; Sturdy *et al.*, 2017) and includes the mine's liability, regulatory environment, ongoing management and rehabilitation, costing and stakeholder engagement, all conducted from the outset of the mining project and continue throughout the LoM and, in some cases, into perpetuity (ICMM, 2019c). According to McHenry *et al.* (2015) transparent disclosure includes the provision of a completed view of the process and all its facets, but as seen from the results of the analysis, current disclosure practice rather provided a partial view of the process, which inherently concludes that current practice is poor or obscure.

Alberts *et al.* (2017) provided a holistic view of the extent of mine closure liabilities in the South African context and specified six governance/ legislative challenges associated with mine closure in South Africa which included: perpetual liabilities which inhibit sustained closure; the current regulatory EMT governing mine closure, namely the EMPr, fails to provide a well-defined scope and objective towards achieving sustained closure; the quality of the EMPr is highly variable; lack of technical expertise in closure planning and management; as well as insufficient data to evaluate long-term mining impacts. Hewitson (2012), further mirrored the view of Alberts *et al.* (2017), over the variability of the quality of the EMPrs. Based on the analysis performed, it was found that most companies failed to adequately disclosure their environmental liability, as imposed through laws, regulations and standards, as well as failed to provide a holistic view of the mine's closure planning processes and how its conducted. From the partial information disclosed, it was found that mining companies reflected the same variability of scope as compared to the EIA process (Morrison-Saunders *et al.,* 2016), whereby some of the companies focused more on the biophysical aspects of mine closure and other considered the socio-economic factors. SGL provide extensive disclosure over the company's development of social MCPs, whereas Harmony rather reflected over the company's continued concurrent rehabilitation. Glencore in turn provide limited context around its planned stakeholder engagement over mine closure and South32 highlighted the company's LIM programme significantly in the disclosures which reflected a more sustained objective to mine closure but limited to specific projects rather than implementation thereof across all of the company's operations.

Furthermore, it was found that critical information required to provide a holistic view of mine closure planning and management was lacking from the presented disclosures such as number of mining operations, its associated environmental liabilities and representation over the remaining life of operations to evaluate establish the extent of the organisation's performance. The life of operations were considered significant as mine closure is more imminent for operations with a small remaining LoM and the impact of mine closure is more material than those operations with a longer life-span, in theory at least (Espinoza *et al.*, 2017b; GAA, 2004; ICMM, 2019c). The organisation's resilience against premature closure were not considered in this research, but has been highlighted by scholars such as Espinoza and Rajo (2017a) as a matter that could have significant impact on specific stakeholders such as investors and host communities.

Another key trend in disclosure of mine closure and planning, as seen from the corporate reports, resulted from the consolidated nature and structure of the companies. All companies selected in the case study represented an international footprint, and would therefore be subject to the legislative policies imposed in each jurisdiction. This resulted in companies providing more generalised disclosures around mine closure planning and management, with case study examples which provided context to the disclosures made. As seen from South32's disclosure over mine closure planning where specific ILM projects were highlighted to give context to the nature of the programme however, in this case the organisation failed to provide sufficient disclosures to attain whether the same performance, as per the case study, would apply to the entire operating footprint of the company. This result reflected similar views as raised Iatridis (2013 as cited by McHenry *et al.*, 2015) over selective disclosure practices stemming from voluntary disclosure.

The use of the GRI Standards as a voluntary reporting framework resulted in representation of disclosures as proposed by the standards (i.e management disclosures and KPIs). What was clear from the results in how each company had a variation in the interpretation of MCPs, as proposed for disclosure by the GRI, where Harmony considered their approved EMPrs as MCPs, which according to Alberts *et al.* (2017) should reflect sufficient mine closure planning measures but in practice are highly variable. South32 used the term MCPs and from the context of its disclosure it was derived that the plans are internally developed and separate from those which are legislatively approved, such as the EMPrs etc. SGLs interpretation of the plans changed between the three reporting periods, where the first reporting period reflected closure plans in a similar manner as Harmony, but the company then started to disclose its proposal to draft MCPs in terms of a broader organisational strategy around closure, which in the context reflected over SGLs internal programme which were removed from the regulated EMPrs. Glencore's disclosure over MCPs were very limited and only provided in the context of the GRI reference tables, thus implying disclosure compliance to the GRI Standard rather than proposing to provide holistic view of the company's mine closure planning and management performance.

From the evaluation of disclosure performance quality in terms of mine closure planning and management criteria it was concluded that the overall performance was poor and the organisations failed to provide a holistic view too adequately and transparently present the organisation's overall performance to achieve sustained closure.

5.5 Financial provisions

The primary aim of the financial provision principles were to evaluate the quality of disclosure relating to financial provision estimates aimed to provide assurance that the company has sufficient funds to achieve sustained closure of operations. This was conducted by firstly evaluating whether the company did provide disclosure of a financial provision, information around the scope of the financial provision in terms of the methodology used, scope of cost included and assumptions made; number of operations included in the financial provision as well as independent assessment or review of the financial provision. Based on the overall results of the analysis performed, it was noted that the current information did not provide sufficient disclosure in order to gain assurance that there would be sufficient financial provision to achieve sustained mine closure.

All of the organisations presentation of financial performance results in all of the corporate reports and the information was disclosed in the format of the required accounting standard which was used by the organisations, namely IFRS. IFRS, in particular IAS37, provides the framework where a company can recognise both financial provisions as well as contingent liabilities but in accordance with the framework's definitions.

According to Espinoza *et al.* (2017a), the most commonly used method for valuation in the mining sector is the NPV technique, followed by the internal rate of return (IRR). The analysis showed that all of the entities provided a consolidated discounted estimate and therefore followed the NPV method. Espinoza *et al.* (2017a) noted that these methods consist of reducing future cash flows by a single factor that grows exponentially over time and artificially reflect the value of cash flows occurring far in the future negligible and overemphasizes the value of earlier cash flows and thus ultimately reflecting misleading results. Financial provisions can be discounted over time in accordance with IAS37, using the expected period of when the cash flows will be incurred (i.e. the proposed date when demolition will be incurred etc.) due to the material effect on the financial position (Espinoza *et al.*, 2017a) that the discounting is considered material to the financial statement position. The financial provisions therefore do not reflect a current cost estimate should the mine be exposed to sudden or premature closure but rather a reduced cost to reflect the proposed planned closure timeline. In order to evaluate the difference between current cost estimates or undiscounted estimates, with discounted estimates, further information are required to understand the period used to reflect the future cash flows (i.e. what timeline was used to propose when the mine will be closed and therefore reflect what the entity assumed it will settle the required provision), but this information are not provided by the organisations in their disclosures.

What presents further complexity to the results, is that all of the companies presented a consolidated financial provision estimate, which is inclusive of the total discounted value of each operation separately, and it would be assumed that each operation's discounted period is unique to the required operation. According to Espinosa *et al.* (2017a), NPV methodologies provide high volatility in long lived mines which are comparable to the volatility of commodity spot prices but overreliance on the discounted values make it impossible to justify the company's resilience to withstand the effects of significant events (i.e. climate change, sudden closure, etc.).

Espinoza *et al.* (2017b) highlighted that the valuation of the long term of perpetual costs, often associated with post closure valuation (i.e. perpetual water treatment etc.) when discounted, can present a present value of distant future cost as virtually nil, because the methods used for discounting (i.e. NPV) combine the time value of money and risk in a single factor (i.e. the discount rate) and increased to account for risk, resulting in a misleading outcome. The use of assumptions to derive to the discount rate (i.e. period of discounting, risk adjustment factors etc.) as subject to the design and operational decision of the business (Espinoza *et al.*, 2017b) but can be detrimental to societies and shareholders alike. As seen in the example of South32, there were a reported decrease in the financial provision between 2016 and 2017 reporting periods which was disclosed to be as a result of changes in the discounting assumptions. IAS37 requires disclosure over the material assumptions used to derive to the presented financial provision, but in practice was that discounted rates were presented however no or limited information was provided to establish the means of how the rates were derived, making it impossible for the user to evaluate the extent of exposure of the presented financial provisions.

The ICMM (2019c) specifically discusses the use of risk adjustments in the quantification of closure cost estimates in relation to the accuracy of the estimates. The level of accuracy of the estimate is subject to the availability of information to formulate feasible closure measures, as defined in the mine's MCP's or related documents (Anglo American, 2013; ICMM, 2019c) as quoted by ICMM (2019c:47), by stating "*Closure plans establish a defined basis for closure cost estimates, which are based on the costs for carrying out closure activities*". The mine's MCP, according to best practice guidance, should be refined during the course of the mine life cycle (Anglo American, 2013; ICMM, 2019c) and as with any capital investment project, mine closure planning is seen as a similar project and will be refined in a similar manner (AACE, 2019; ICMM, 2019c). Closure cost estimates which are based on high level or unrefined closure plans, will have a higher risk of misstatement due to the uncertainties which still need to evaluated, assessed and/or refined by mine management (Anglo American, 2013; ICMM, 2019c). The level of the cost accuracy can be defined as an *accuracy class*. Although there are various approaches adopted by mines to define the accuracy class, the most known classification is adopted from the

Association for the Advancement of Cost Engineering (AACE) which define Class 1 to Class 5 cost estimates, with the highest accuracy expected for a Class 1 estimate (AACE, 2019; ICMM, 2019c), as graphically presented in figure 3-2 of this report.

Hewitson (2012) who's research focused on the assessment of variation of financial provisions noted that due to the variation across valuation indices (i.e. inflation factors), it is important to use a probability distribution of values to estimate a provision, rather than just a single value and proposes the use of the Monte Carlo simulation methodology. Hewitson (2012) stated that using distributions allows the calculation of the financial provisions to incorporate the impact of fluctuations in values because as proven by Hewitson (2012), the effects of uncertainty and escalation on closure cost estimates is significant and even minor fluctuations in the quantities and rates used to determine rehabilitation cost can have a profound impact on the accuracy of the estimates. From the disclosure performance perspective, there is almost no information presented by organisations to provide transparency around the accuracy of their estimates. South32 noted in the financial statement disclosures that their provision is based on probabilistic cash flows, which implies that the company did normalise the closure costs by using valuation indices but as with all other results, the disclosures failed to explain or provide more information over the process followed or assumptions applied in this regard. None of the other sampled organisation provided any information which describe the nature of the qualification process and therefore failed in providing assurance around the adequacy of the disclosed provision estimate.

The financial provision estimates disclosed in terms of IFRS also included the recognition of contingent liabilities, which inherently reflect environmental liabilities which could not be quantified reliably by the organisations (IFRS Foundation, 2014; KPMG International Standards Group, 2016). Both SGL and Harmony provided disclosure with regards to remediation of water resources, in particular AMD. The South African gold ore formations and coal operations are mainly associated with the production of acid drainage. Sulphide is present in the host rock which contains the mined mineral or metal and according to US EPA (1994), the generation of acid can occur rapidly, or it may take years or decades to reach its full potential. The rate of acid formation is based on the site specific conditions associated with the mine as well as the nature of the sulphide mineral present. Gold mining in South Africa are mainly conducted as underground operations which lead to extensive horizontal and vertical connections which lead to the development of a network of underground shafts and tunnels called basins (McCarthy, 2010) The decommissioning of the gold mining operations over the decades led to consequent re-watering of the underground basins and associated flooding of the voids over time as well as water decant at the lowest topographical opening (Council of Geoscience, 2010; McCarthy, 2010), and due to the presence of sulphide bearing material, the decant is acidic. The forming of acid through the

AMD process in coal mining practices are identical to gold mining, where sulphide minerals are exposed to water and oxygen (Coleman, Usher, Vermeulen, Scholtz, & Lorentz, 2011). The two dominant methods for the extraction of coal, in South Africa, is through open cast or subsurface mining as a result of the relatively shallow placement of coal deposits (Coleman *et al.*, 2011). According to Frost *et al*. (2011) research studies have shown that AMD has numerous direct and indirect environmental impacts on water resources which can be summarized:

- Acidification of surrounding water resources
- High salinity levels in surrounding water resources;
- Elevated concentrations of sulphate, iron, aluminum and manganese; and
- Elevated toxic metal content including cadium, cobalt, copper, molybdenum and zinc. It was proven that AMD associated with gold mining activities often contain radion-nucludes which is transported to surrounding surface and groundwater resources.

Degradation of aquatic habitats, including wetland systems, causing toxic metals to seep into the environment and affect biotic ecosystems (Frost *et al.*, 2011). Both primary and secondary impacts have significant cumulative effects such as funding for rectification of pollution by government and pollution of water supply of South Africa leading to an imbalance between the water supply and water demand to the country's population (Frost *et al.*, 2011). The latter can also cause a decrease in economic growth due to the lack of water resources (Frost *et al.*, 2011).

Requirements for remediation of water pollution caused by gold and coal mining operations in South Africa can therefore be argued as one of the primary mine closure liabilities (Espinoza *et al.,* 2017b) and according to Alberts *et al.* (2017), mining holders in South Africa will remain liable for the long-term liabilities, which includes "*any environmental liability, pollution, or ecological degradation, the pumping and treatment of extraneous water, the management and sustainable closure thereof*" (Alberts *et al.*, 2017:273) even after the issuance of a closure certificate which implies a perpetual liability assigned to mining companies in this regard. By inherently excluding a value for remediation of water resources, particularly AMD as seen in the SGL and Harmony examples, the adequacy of the disclosed financial provision is questioned inherently as a major part of the organisation's liabilities are unaccounted for. Although the process of disclosure of a contingent liability is acceptable in the context of IFRS, it is inadequate to transparently reflect the company's cash flow proposal for full settling its obligation.

The evaluation of financial provision are inherently a complex process and is based on forward looking assumptions (Espinoza *et al.*, 2017a; Hewitson, 2012; ICMM, 2019c) and according to the ICMM (2019c), more emphasis has been placed on the transparency of estimation process by company directors, shareholders and regulators as a result of cost being underestimated.

ICMM (2019b; 2019c) highlight the importance of a clearly defined scope for closure cost estimation, where the costs will be based on direct costs (i.e. decommissioning, demolition, earthworks, remediation and rehabilitation, water management and post closure monitoring and maintenance) as well as indirect costs (i.e. mobilisation and demobilisation of contractors; socio-economic programmes; engineering, procurement and construction management fees etc.) all of which are required to reflect the total value required to settle the mine's obligation by achieving sustained closure. In order to evaluate the adequacy of the financial provisions in terms of meeting the required obligations, it is argued that the scope of the financial provision should be disclosed. In practice however, the results are poor, where its seen that the majority of organisations only provide general statements over the scope of the financial provision estimates, for example stating that the provision estimate were derived from the MCPs or that the provision accounts for all legislative obligations for closure of the mine's operations). Only South32 presented more information over the content of the MCPs, to provide some comfort over the extent of the direct and indirect costs reflected in the disclosed financial provision, and were therefore concluded as adequate. One of the requirements of the NEMA financial provision regulations includes the verification of the adequacy of financial provisions by independent specialists (South Africa, 2015; South Africa, 2019) and according to Alberts *et al.* (2017) it was found that there is a lack of in-house specialist competency to conduct closure planning, as opposed to technical specialists. The ICMM (2019c) guidance on mine closure planning also define technical specialists to be inclusive of engineering, rehabilitation, geotechnical water and related specialities required to perform mine closure planning, and its argued that disclosure over the inclusion of independent specialists will provide some level of comfort over the adequacy of the financial provision in the event of lack of disclosure around the scope of the provision estimate. In practice, it was found that none of the sampled organisations provided any disclosure over the financial provision quantification process or over the individuals, whether it was internal or external specialists, responsible for quantifying the disclosed estimates.

The overall result in evaluation of the quality of disclosure of financial provisions in South Africa reflected the same view as McHenry *et al.* (2015), where the quality of disclosure is measured as true transparency, and by using the same analogy, where disclosed information is seen as puzzle pieces required to complete a picture; which is not currently provided in the use of existing disclosure frameworks.

5.6 Recommendations

It is recommended that the quality of disclosures can be improved through influencing a change in the current regulated reporting requirements. Sustainability reporting over sustainability performance provides a means in which mining companies can secure a more sustained mining environment and therefore secure what is commonly referred to as a '*social license to operate'* (Azapagic, 2004), but should not be used as a conformance tool as it will not achieve the desired outcome. One of the key result trends that can be derived from the results of this study is that there is clear shortcomings in the current disclosure frameworks which guides disclosure over mine closure and financial provisions (i.e. GRI Standards and IFRS). As these guidelines are well established in the international arena and adopted as mandatory policies (i.e. mandatory requirement to use IFRS as standard for financial disclosure in accordance with the Companies Act), it has a greater chance to influence change. It is therefore proposed to consider influencing the enhancement of the current disclosure frameworks to address the shortcomings of disclosure, rather than to propose alternative disclosure framework.

The other recommendation is to propose for the development of clear reporting guidance over mine closure and financial provision disclosure. From the results in this study, it was viewed that disclosure guidance's are used explicitly by organisations over reporting of specifically non-financial data, rather than aiming to reflect a fully transparent view of the performance of a specific topic (i.e. all organization's applied the GRI standard for disclosure of disclosure of mine closure plans but the nature of the disclosure were found to be inadequate to assess performance). By providing additional guidance over mine closure management and financial provision disclosures, it could provide a platform for more transparency in this regard.

The last recommendation considers the resilience of mining organisations to address sudden closure, and mining organisations' proposals or actions taken to mitigate this from happening. There is a variety of reasons that can lead to sudden closure of mines which includes market changes, commodity prices as well as unexpected events. The unexpected events includes environmental disasters as well as the effect of climate change. There has been very limited information presented in research to consider the resilience of mine closure plans and financial provision estimates although the effect of sudden or unplanned closure is often seen in practice. It is therefore recommended that further research should focus on the resilience of mine closure plans, financial provisions and the proposed manner in which this information should be disclosed to reflect true transparency.

5.7 Conclusion

This chapter has formulated a general discussion of some of the more important issues concerning the quality of mine closure and financial provision disclosure in corporate reporting. Additionally, several recommendations were discussed outlining the need for increased guidance on disclosure practices over mine closure and financial provisions. The research conducted by McHenry *et al.* (2015) over transparency of disclosure formed an important foundation for many of the discussions and recommendation in this chapter. Furthermore, it is necessary to consider the discussions and recommendations in this chapter in light of the analysis performed and disclosure results presented in chapter 4.

The impact of inadequate disclosure over mine closure and financial provisions reflect over the organisation’s overall contribution to sustainable development, as argued that corporate reporting, financial provisions and mine closure plans are all EMTs used to promote sustainable development objectives. Recommendations for greater transparency is provided in the form of specific guidance on mine closure and financial provision disclosure, which can be used by governments, civil society, communities and other stakeholders to enable adequate assessment of organisation’s performance in this regard.

CHAPTER 6 CONCLUSION

The objective of this study was to evaluate mine closure and financial provision disclosure quality in corporate reports for the South African mining sector by responding to the research question:

> *How has the quality of mine closure and financial provision disclosure changed in corporate reporting for the South African mining sector between 2016 and 2018?*

The research was conducted over a three year period, between 2016 and 2018 and included representation of two major commodities mined in South Africa, namely gold and coal. These commodities were selected as preventatives as most mining practices associated with these commodities in South Africa have significant environmental liabilities for mine rehabilitation and closure (i.e. AMD or extensive mine footprints which require rehabilitation etc.).

The analysis results from the four case studies indicated that there were only a slight improvement over disclosure quality performance per annum between 2016 and 2018 with an overall average performance score of 55% across all three years. The results also reflected a significant difference in disclosure quality between the coal and gold sectors, where the gold sector provided greater transparency over their mine closure and financial provision disclosures when compared to the coal sector. One of the differentiating factors included a difference in mandatory regulatory requirements between the two groups, where the companies representing gold commodity were also subject to mandatory JSE listing requirements but the coal representing companies were not. All of the case study organisations disclosed their commitment towards sustainable development goals as imposed by the ICMM, UNGC or UNSDGs and presented corporate disclosure in line with GRI Standards. From the results, it was observed that the GRI standards did influence the level of disclosure over mine closure specifically but the nature of the disclosures were inconsistent and did not reflect a transparent view of the organisation's performance. Financial provision disclosures were presented for all of the case studies across all of the reporting periods under review, using IFRS as a disclosure framework. The nature of the disclosure therefore reflected compliance towards IFRS rather than aiming to the financial provisions in a manner that would provide the required comfort to ensure completeness and adequacy of the estimates towards achieving sustained mine closure.

From the data analysis, the findings reflect the views of McHenry *et al.* (2015) which argued that true transparency and disclosure are not synonyms, but that disclosed information provides the required pieces needed to reflect true transparency. It was argued that mine closure planning and management as well as financial provision disclosure provides only a portions of information required to evaluate the adequacy of the organisation's performance in achieving sustained closure of its operations. It was found that this result is mainly due to the organisation's aim to comply with specific standards of disclosure (i.e. JSE regulations, IFRS or voluntary standards). It was also found that the current disclosure frameworks (i.e. IFRS, GRI standards etc.) used by the organisations are inadequate to provide sufficient disclosure guidance over mine closure planning, mine closure management and financial provisions.

The recommendation from this study was to explore influencing the current disclosure frameworks or to consider development of further fit for purpose guidance over mine closure planning, management and financial provisions to address the disclosure shortcomings required by all stakeholders (i.e. regulators, civil society, host communities etc.). This research contributes to the overall discussion of sustainable development in the mining industry by focusing specifically on the monitoring and reporting part of IEM. Other research focus areas, not discussed in this dissertation, but found relevant to the arguments made includes assessment of the resilience of organisation's mine closure plans and closure cost estimates, to sudden or unplanned closure, which contributes to the work conducted by Laurance (2011) on premature closure of mines.

In conclusion, this paper has focused on evaluating the quality of mine closure and financial provision disclosure, by evaluating the transparency of disclosures made over a three year period for four selected mining organisations with operations in South Africa. The purpose of performing this research was to reflect over the adequacy and completeness of disclosures and to contribute to further research in addressing the current inadequacies in disclosure practices. The results are intended to form the basis for continued investigation and discussion over mine closure planning, management and financial provisions as a component to sustainable development.

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ANNEXURES

Annexure I Detailed mine closure and financial provision disclosure analysis results from information presented in corporate reports of the selected case study entities

Table A1: Sibanye Gold Limited corporate disclosure analysis results for period 2016 – 2018

<table>
<tr><th colspan="2" rowspan="2">Principles</th><th colspan="2">2016</th><th colspan="2">2017</th><th colspan="2">2018</th></tr>
<tr><th>Score</th><th>Reference to relevant disclosure in 2016 corporate reports</th><th>Score</th><th>Description</th><th>Score</th><th>Description</th></tr>
<tr><td>Principle 1 : Materiality</td><td>Is mine closure considered as a material aspect to the organisation?</td><td>1</td><td><u>Strategy:</u>

SGL's strategy include "By delivering on its strategy and vision to create superior value and improve lives, Sibanye expects to maintain mutually constructive relationships with all stakeholders and, ultimately, to achieve a premium market rating" (Sibanye, 2016:7). The company disclosed that its values which include: commitment, accountability, respect, enabling safety reflects their commitment towards safe production, stakeholder requirements, the environment and the future of the organisation. The company disclosed that it "has made significant strides in ensuring that environmental issues are fully integrated into its core business, and to remain legally compliant" (Sibanye, 2016:98). The company disclosed that its environmental strategy is underpinned by the company's duty of care, in accordance with the definition defined in NEMA.

<u>Primary activities:</u>

Primary activities of the company includes mine development and mining operations, exploration and sales therefore excludes mine</td><td>1</td><td><u>Strategy:</u>

Same strategic objective as disclosed in 2016. In addition to these disclosures. In 2017, SGL acquired a number of new assets in the USA extending the operating environment of the company considerably.

Disclosure around the company's environmental strategy was similar to 2016, and included "we manage, limit and attempt to mitigate any environmental impacts caused by our mining activities" (Sibanye-Stillwater, 2017:108).

<u>Primary activities:</u>

Same primary activities as disclosed in 2016.

<u>Material topics relating to mine closure management:</u>

The company did not disclose specific risks relating to mine closure in 2017, but did include "maintaining and obtaining operating licences and other permits in uncertain political and regulatory environments" as a top 10 business risk in 2017 (Sibanye-Stillwater, 2017:35).</td><td>1</td><td><u>Strategy:</u>

Same strategic objective as disclosed in 2016 and include:
— Establishing a values-based culture
— Focus on safe production and operational excellence
— Deleveraging our balance sheet
— Addressing our South African discount
— Pursuing value-accretive growth

The company further expanded on the environmental strategy (Vision 2020) which is based on five pillars (objectives) namely:
— Verifiable compliance
— Cost and risk management
— Awareness, stewardship and communication
— Environmental footprint management
— Community engagement and buy-in

Mine closure is imbedded in this strategy with specific reference to:
— Responsible concurrent rehabilitation planning and execution
— Effective socio-economic closure planning

<u>Primary activities:</u></td></tr>
</table>

Principles		2016		2017		2018	
		Score	**Reference to relevant disclosure in 2016 corporate reports**	**Score**	**Description**	**Score**	**Description**
			rehabilitation as part of primary activities. The company did reflect that community, social development initiatives, environmental management and rehabilitation is integrated into their primary activities. <u>Material topics relating to mine closure management:</u> One of the company's top ten risks includes "*Regulatory compliance with commitments in line with the MPRDA, the Mining Charter and related social and labour plans*" (Sibanye, 2016:27), but did not identify mine closure or related aspects as material to its business. <u>Future targets, objectives relating to mine closure:</u> According to disclosure over future focus of the business, mine closure planning has been highlighted *"Opportunities for optimisation will be identified and harnessed to reduce costs through innovation to offset our long-term closure liability. Sibanye will focus on.... Mine closure management: develop mine-based and regional closure plans, considering innovative approaches with regard to socio-economic closure, and determine the water management cost of mine closure"* (Sibanye, 2016:98).		In 2017, SGL also provided the top 10 environmental risks to the company, one of which specifically include the impact of new and emerging legislation on SGL's operations and long-term sustainability. In the context of this risk, SGL disclosed the impact on the company, specifically the financial impact, over compliance to the proposed NEMA Financial Provision Regulations and related actions taken to address these risks accordingly. <u>Future targets, objectives relating to mine closure:</u> The company introduced a new Environmental Vision 2020 for SGL, aimed to improve lives through responsible environmental management practices and include verifiable compliance, risk management and environmental and water footprint management in anticipation of post mining socio-economic closure. This objective links disclosure around the company's SIMPs to be developed for each operation.		Same primary activities as disclosed in 2016 and 2017 <u>Material topics relating to mine closure management:</u> Similar to prior year, SGL disclosed that one of the top ten business risks is "change in regulatory requirements", which includes risks such as impact of a changing regulatory environment, complexity of global regulatory and compliance environment and lack of technical expertise of regulators (South Africa) resulting in delays and onerous requirements. Although these risks does not directly relate to mine closure, the risks talk to the proposed implementation of the NEMA Financial Provision Regulations as well as SGL's ongoing dispute to account for VAT in their financial provision estimate. <u>Future targets, objectives relating to mine closure:</u> One of the future focus areas disclosed in 2018 included the reduction of overall closure liability, through a focused and cost-effective concurrent rehabilitation programme. No further information is presented over the nature, extent and status of the programme.

Principles		2016		2017		2018	
		Score	**Reference to relevant disclosure in 2016 corporate reports**	**Score**	**Description**	**Score**	**Description**
Principle 2: Mine closure planning and managemen t	Is there mine closure plans or mine closure objectives for all mining operations?	0	<u>Mine closure plans:</u> Reference made to EMPr which is used as primary plan for the management of environmental impacts and future plans to develop mine closure plans. The company also disclosed proposal for the development of component specific plans such as biodiversity plans for each operation, but its incorporation into future mine closure plans was not disclosed. <u>Mine closure objectives:</u> No disclosure	1	<u>Mine closure plans</u>: SGL provided the same disclosure as per 2016, with the following additional statements made: The company reflect over the planned implementation of the NEMA Financial Provision Regulations and actions taken by the company to clarify, confirm and alight their plans over mine closure and associated quantification of financial provisions. <u>Mine closure objectives:</u> SGL disclosed in 2017, that the aim for planning around mine closure is to compile a sustainable mine closure solution, the end objective of which is a sustainable socio-economic closure solution with due consideration of the water management cost of mine closure.	1	<u>Mine closure plans</u>: Extensive discussion over EMPr and its incorporation of mine closure commitments which is used to guide closure. Limited reference to MCP presented in 2018 which included: — The focus on the MCPs are specifically on redundant buildings and infrastructure as well as infrastructure under care and maintenance — Finalisation of the MCPs is expected for 2019 Sibanye also provided disclosure over the development of a social closure framework, which has been finalised in 2018, but excluding stakeholder engagement. <u>Mine closure objectives:</u> In 2018, SGL disclosed the following statement: *"Our concurrent rehabilitation and closure strategy considers the protection of land and biodiversity to ensure post-mining land uses acceptable to stakeholders*" (Sibanye-Stillwater, 2018:149). <u>Water resource management and mine closure:</u> In 2018, SGL disclosed two specific projects which relates to mine closure and water resource management, namely: 1. Project to quantify residual and latent water resource liabilities The aims of the project includes: — Quantify the potential liabilities associated with mining activities

Principles		2016		2017		2018	
		Score	Reference to relevant disclosure in 2016 corporate reports	Score	Description	Score	Description
							— Provide recommendation for mitigation — Align remediation approach (mitigation measures) with regulators and stakeholders The boundary of the project includes all South African gold operations, with a specific focus on the Wonderfonteinspruit and Loopspruit catchments. 2. Cooke underground closure planning SGL noted that alternative regional socio-economic solutions for the long-term sustainable closure of Cooke's underground mining operations have been completed. The most environmentally responsible and cost-effective, sustainable closure solution for these operations includes installation of four concrete plugs between Harmony's Doornkop mine, Cooke 1, followed by natural re-watering of the mine workings. A closure plan with specialist studies in support of this closure strategy was completed in 2018.
	Is there reference made to periodic updates to mine closure plans to refine content and incorporate changes in environment, policies etc.?	0	SGL did not specifically disclosure information around the update of MCPs, but rather the future development of MCPs for its operations.	1	SGL did not specifically disclosure information around the update of MCPs, but rather the future development of MCPs for its operations, as per 2016. In addition to 2016 disclosure, SGL also outlined its plans for the development and completion of HIA and BAP for its operations which will be used to inform closure of operations. Compliance with NEMA Financial Provision Regulations in development of the new MCPs was also disclosed.	0	SGL did not specifically disclosure information on MCPs and period updates thereof. Although other information is provided to give the reader information over progress of specific ongoing projects which is used as part of closure, this is also not specifically disclosed. In 2018, SGL noted that is has completed the HIAs for its gold operations and provided a summary of the findings per operation. In addition, SGL only noted that scientific information on mine closure and rehabilitation as well as biodiversity aspects are continuously generated by professional scientist and other experts, and disseminated

Principles		2016		2017		2018	
		Score	Reference to relevant disclosure in 2016 corporate reports	Score	Description	Score	Description
							to the mining industry through various forums. No further information disclosed on how this information is used to inform mine closure planning at SGL.
	Is there reference made to compliance with laws and regulations which give rise to mine closure liability?	1	Reference to compliance to laws and regulations: No specific reference to mine closure compliance related matters. The company did disclosure an information over EMPr compliance reviews being conducted. Specific reference were made to compliance over water resource management such as meeting water quality targets for water discharges, which included the following disclosure *"structural compliance with specific requirements of water use licences has been challenging and remains the key obstacle to achieving 100% compliance with regard to water quality. In line with the environmental management system, each gold operation has an approved EMPr, which is a formal contract between Sibanye, as the holder of the mining right, and the regulator, the DMR, regarding impacts that may arise from mining operations, assessment of these impacts from a risk perspective, proposed measures to mitigate the impacts, and commitments or undertakings by the licence*	1	Reference to compliance to laws and regulations: Specific reference made to mine closure compliance includes "*the company complies with all relevant legislation governing the use of resources and included water, responsible waste management, conservation of biodiversity and post-mining land use for socio-economic closure*" (Sibanye-Stillwater, 2017:108). As per 2016, the company provided a specific section on regulatory compliance in 2017. Similar to 2016, SGL highlighted that compliance to its WUL discharge targets were not achieved. Compliance to financial provision regulatory requirements: In 2017, SGL disclosed information with regards to receiving compliance notices from the local regulator over the exclusion of VAT from their environmental provision. SGL further disclosed actions taken to support the exclusion of VAT as confirmed by the South African Revenue Service (SARS). SGL were	1	Reference to compliance to laws and regulations: Similar to prior years, SGL disclosed information over compliance with environmental laws. In 2018, Sibanye specifically addressed their compliance to NWA and associated WUL obligations. As noted in prior years, SGL did not fully comply with its WUL discharge targets but noted that the company successfully interacted with the regulator on the matter and submitted an amended WUL which is expected to be approved in 2019. No further information is provided to support the extent of the obligations associated with the proposed amendment. The compliance results to the regulated discharge requirements was disclosed for 2018, per operation for the South African gold mines, and the company acknowledge the ongoing compliance challenges in this regard. The company is transparent in its lack of compliance to the discharge requirements which ranges from 56% - 97% compliant for the 2018 period. Compliance to financial provision regulatory requirements: In 2018, SGL specifically disclosed information over the extension of the implementation date of the proposed NEMA Financial Provision Regulations, and its proposal to mandate the inclusion of 15% VAT in all closure provision estimates. SGL further noted the expected financial impact thereof on their financial performance. The inclusion of

Principles		2016		2017		2018	
		Score	Reference to relevant disclosure in 2016 corporate reports	Score	Description	Score	Description
			holder to implement mitigation measures" (Sibanye, 2016:89). Compliance to financial provision regulatory requirements: The company did reflect over compliance to financial provision required by the regulator, by stating that annual contributions are made to dedicated environmental rehabilitation obligation funds to find the estimated cost of rehabilitation during and at the end of the LoM. In addition, bank guarantees are provided for funding shortfalls of the environmental rehabilitation obligations. In addition, SGL noted in 2016, that the regulated performed an annual independence compliance audit at Kloof, Driefontein and Cooke gold mining operations and delivered a 'notice of intent' to issue a compliance notice to SGL. The context of the notice is with regards to the exclusion of VAT to the current closure provisions, which is not acceptable by the regulator.		also transparent to note that the regulator did not accept SGLs argument and the matter remained unresolved in the 2017 reporting period.		latent and residual liabilities were also highlighted as mandated by the proposed NEMA Financial Provision Regulations but the company did not include its expected financial impact on its balance sheet. In the company's annual financial statements, the company disclosed its contributions to a dedicated environmental rehabilitation obligation fund for funding of the estimated cost of rehabilitation during and at the end of the life of mine. The fund amounts are provided as a group estimate and not presented per operation.
	Is there disclosure over the remaining life of mine and management actions required to	1	The company only discloses the remaining LoM, per operation as part of the mineral resource and reserve statement.	1	Same disclosure as per 2016, with additional disclosure over the closure of the Ezulwini operation during the course of 2017 and the management arguments for the premature closure of the operation.	0	No life of mine values provided in 2018.

Principles		2016		2017		2018	
		Score	Reference to relevant disclosure in 2016 corporate reports	Score	Description	Score	Description
	meet the closure objectives?						
	Has the organisation engaged with stakeholders on mine closure, specifically mine closure objective and final land use criteria?	0	No specific reference made by SGL on stakeholder consultation over mine closure objectives. The organisation did provide disclosure over its future plan on making use of impacted mine land and infrastructure of establish agri-infrastructure for local SMMEs as part of a closure strategy. The organisation reference that the approach is in line with the company's social closure strategy, although no further disclosure over a social closure strategy was disclosed.	1	<u>Stakeholder engagement on closure plans:</u> In 2017, SGL specifically highlighted the actions taken for closure of their Ezulwini gold mine. The company noted that it was in the process of undertaking the regulatory process to obtain approval for closure which included two rounds of public participation with inputs from neighbouring mines, communities, regulators and NGOs. <u>Social closure framework:</u> No reference made to specific stakeholder engagement with regards to mine closure. SGL did disclosure its proposal to develop SIMPs for its operations. The SIMPs aim to be used as guidelines to manage and mitigate the effects of mine closure on host communities. From the disclosure provided it is noted that the SIMPs has not yet been developed and no reference were made to stakeholder engagement with regards to development of the SIMPs. <u>Stakeholder concerns:</u> Extensive disclosure is provided over stakeholder engagement in the organisation.	1	<u>Stakeholder engagement programmes:</u> SGL disclosed information around their stakeholders on the manner in which they engage with them. The key stakeholders applicable to mine closure include: — Government and regulators — NGOs, community-based organisations and faith-based organisations — Communities No specific information was provided over the content of engagement being performed. <u>Social closure framework:</u> In 2018, SGL disclosed that it has finalised its social closure framework and is planning to commence with stakeholder engagement in 2019. The stakeholder engagement include collaboration and strategizing with stakeholders such as municipalities as well as local and regional government, to align the plans with the regional IDPs.

Principles		2016		2017		2018	
		Score	Reference to relevant disclosure in 2016 corporate reports	Score	Description	Score	Description
					The stakeholder concerns are also summarised and specifically include: — Environmental impacts of mining concerns by communities and consultative forum — Environmental compliance by regulators and government — Issues of major concern to the industry which included the NEMA Financial Provision Regulations by the Chamber of Mines and peers.		
	Are there key performance indicators used to measure performance of closure management in the organisation?	1	<u>Number of KPIs:</u> Two KPIs disclosed as part of narrative management disclosure and include: 1. Total land under SGL control and associated undisturbed land, and total cumulative land disturbed in 2016, presented in hectares. 2. Total closure liability as a KPI to natural capital, reflected as an undiscounted amount in ZAR. The amount was reflected for the group only with no breakdown for the operations.	1	<u>Number of KPIs:</u> Two KPIs disclosed: 1. Total land under SGL management and total areas disturbed by mining and related activities, presented in hectares. 2. Total gross (undiscounted) environmental liability presented for the USA and South African operations separately. No breakdown per operations presented, only a consolidation for the specific regions (i.e. USA and SA) as well as for the specific commodities mined (i.e. gold and PGMs).	1	<u>Number of KPIs:</u> Two KPIs disclosed: 1. Total land disturbed and rehabilitated but only for the USA based operations 2. Total gross (undiscounted) environmental liability presented for the USA and South African operations separately. No breakdown per operations presented, only a consolidation for the specific regions (i.e. USA and SA) as well as for the specific commodities mined (i.e. gold and PGMs).
Principle 3: Financial provision disclosure	Is a financial provision estimate been disclosed in terms of Financial	1	<u>Financial provision</u>: A group based financial provision estimate was disclosed in ZAR, in accordance with IFRS.	1	<u>Financial provision</u>: Same disclosure as per 2016, with an updated to the environmental provision estimate amounts.	1	<u>Financial provision</u>: Same disclosure as per 2016 and 2017, with an updated to the environmental provision estimate amounts only.

Principles		2016		2017		2018	
		Score	Reference to relevant disclosure in 2016 corporate reports	Score	Description	Score	Description
	Reporting obligations?		Contingent liability: A contingent liability associated with the risk for potential long-term AMD and groundwater pollution remediation were disclosed in 2016.		Contingent liability: Same contingent liability disclosed as per 2016.		Contingent liability: Same contingent liability disclosed as per 2016 and 2017.
	Is reference made to the scope of the financial provision estimate in terms of a description of the cost included?	0	Financial provision: SGL disclosed that the financial provision reflects the long-term environmental obligations in accordance with the approved EMPrs. The company further stated that the cost estimates are annually reviewed and adjusted with inflation or change in estimate. It is also noted that the cost reflects disturbance to date only. The costs estimates are presented as an undiscounted total for the group in ZAR. No further reference are provided around the breakdown of provision estimate, per operation, or with regards to the content of the closure cost (i.e. dismantling costs, rehabilitation costs, social closure costs, risk adjustments etc.). Contingent liability: SGL disclosed a contingent liability associated with long-term AMD and	0	Financial provision: In 2017 SGL disclosed that the closure provision were provided in line with a closure framework which includes compilation of concurrent rehabilitation plans and risk assessments on all of its operations, in line with the proposed NEMA Financial Provision Regulations. If further noted that the closure framework aims to reduce the overall closure liability over time. Furthermore, SGL noted that the 2017 closure cost assessments is a culmination of a five-year project to refine the closure cost model for its gold operations to acceptable level of accuracy. No further reference provided over the breakdown of the provision estimate, per operation, or with regards to the content of the closure cost estimates (i.e. dismantling costs, rehabilitation costs, social closure costs, risk adjustments etc.)	0	Financial provision: In 2018, SGL provided the same disclosure of financial provision estimate as per 2016 and 2017 in the company's financial statements, with an updated values presented. A short write-up on the closure liability noted that the closure cost for the South African operations was reduced through concurrent rehabilitation and transfer of assets following the DRDGold transactions (selling of selected assets to DRDGold). Similar to 2016 and 2017, the disclosure fails to provide information over the nature of the provision estimate and cost included, other than stating that the cost estimates reflect the entity's obligations. Contingent liability: Same information disclosed as per 2016 and 2017.

Principles		2016		2017		2018	
		Score	Reference to relevant disclosure in 2016 corporate reports	Score	Description	Score	Description
			groundwater pollution. The reason for disclosure of the contingent liability is indicated that the company were unable to reliably determine the financial impact or timeframe associated with this potential liability. The company disclosed that has initiated a long term water management strategy to predict the long term water quality impacts accordingly.		<u>Contingent liability:</u> Same information disclosed as per 2016.		
	Is there reference made to the number of operations covered by the financial provision estimate to verify the completeness of the estimate?	0	SGL only provided a undiscounted breakdown of the closure costs, per division, and not per operation: — Gold division: R4,120 million — PGM division: R2,026 million	0	Similar to 2016, SGL only presented its undiscounted closure estimate, per division and not per operations: <u>South African Operations:</u> — Gold division: R 4.2. billion — PGM division: R 2.7 billion	0	Same disclosure as per 2016 and 2017, presented its undiscounted closure estimate, per division and not per operations: <u>South African Operations:</u> — Gold division: R 4.3. billion — PGM division: R 2.8 billion
	Is there reference made to independent assessment or review of environmental provision estimates to verify the reliability of the information disclosed?	0	There is no reference made by SGL on the independent assessment or review of closure cost estimate or financial provisions.	0	Similar to 2016, no disclosure was made over independent assessment or update of closure cost estimates in 2017.	0	Similar to 2016 and 2017, no specific information is disclosed with regards to an independent assessment or verification of the closure cost estimates in 2018.

Table A2: Harmony Gold Mining Company Limited corporate disclosure analysis results for period 2016 – 2018

Principles		2016		2017		2018	
		Score	Description	Score	Description	Score	Description
Principle 1 : Materiality	Is mine closure considered as a material aspect to the organisation?	1	Strategy: The company's strategy reflects creating and sustaining value by producing safe, profitable ounces and by improving the company's margins. Although the company does not specifically reflect mine closure related narrative in the business strategy, mine rehabilitation and closure is reflected in the following executive level management statements: — Chairman's statement: "*Harmony's rehabilitation programme is creating jobs and contributing to building sustainable communities beyond the life of our mines by finding alternative uses of rehabilitated land for agriculture and renewable energy projects*" (HGMCL, 2016:11) with examples of projects completed in the reporting period. — Social and ethics committee chairman statement: "*Our land rehabilitation programme has advanced beyond demolition and restoration activities and has progressed to value creation*" (HGMCL, 2016:21), with example provided. The board approved an environmental policy which includes a specific objective relating to mine closure namely: "*This policy outlines*	1	Strategy: The business strategy of Harmony is the same as disclosed in 2016. Mine rehabilitation was reflected in the management statement namely: — Social and ethics committee chairman statement: "*Once our mines have reached the end of their economic lives, mine closure plans are implemented. These plans include rehabilitation, which is ongoing throughout a mine's operating life, to restore impacted land, making it suitable for an alternative economic use… Our land rehabilitation programme has continued to advance and has created added value on reclaimed land in the Free State, through the growing and harvesting of plants that thrive under difficult conditions, a project that provides energy bio-mass as well as employment and entrepreneurial opportunities for local people. Plant matter is being processed to generate gas*" (HGMCL, 2017:5). The organisation aligned it business strategies and reporting over business performance to the UN SDGs in 2017. This includes the goals. Primary activities:	1	Strategy: The company disclosed its strategic objective associated with mine closure by stating: "*Our environmental stewardship responsibilities include managing the impact of our business activities on the environment. These include land rehabilitation and management, conservation, biodiversity, waste management, pollution, the efficient use of natural resources as well as closure planning, which are all incorporated in the approved environmental management plans in place for each of our operations"* (HGMCL, 2018:7). Strategically, Harmony disclosed their alignment with the UN SDGs and 10 principles for sustainable development outlined by the ICMM. Harmony aligned land rehabilitation and its rehabilitation programme to specific UN SDGs accordingly. As part of the core business activities, Harmony disclosed that environmental stewardship responsibilities, which include managing their impact of their business activities on the environment. The management activities further include land rehabilitation and management, conservation, biodiversity, waste management, pollution, the efficient use of natural resources as well as closure planning. Harmony aligned their business activities and reporting thereof to the UN SDGs in 2018. This includes '*life on land*' goal which reflects the company's environmental conservation initiatives and the rehabilitation programme.

Principles		2016		2017		2018	
		Score	Description	Score	Description	Score	Description
			our commitment to responsible environmental stewardship and sustainable mining and closure" (HGMCL, 2016:59). Harmony disclosed that its material issues relating to environmental include: — Protecting our licence to operate — Managing our environmental impact — Reducing our environmental footprint — Delivering lasting environmental benefits Primary activities: Divestment and closure are disclosed as a primary activity of Harmony's operations, together with: — Locate and identify exploration targets — Valuation studies — Establish infrastructure, build or acquire mines — Mining operations — Marketing and beneficiation Material topics relating to mine closure management: The top-ten material issues, as identified through Harmony's stakeholder engagement process includes '*managing the company's impact*'. It is narratively disclosed that responsible resource management is crucial to Harmony's socio-environmental rehabilitation planning. While the company is operational, it strive to improve the living		Slight change in disclosure from 2016 around Harmony's primary activities which include in 2017: — Exploration and acquisition — Mining and processing — Beneficiation and — Rehabilitation Rehabilitation is narratively defined in 2017 to include "*Once our mines have reached the end of their economic lives, mine closure plans are implemented. These plans include rehabilitation, which is ongoing throughout a mine's operating life, to restore impacted land, making it suitable for an alternative economic use" (*HGMCL, 2017:5*).* Material environmental matters is disclosed in 2017 and has been amended form those disclosed in 2016, namely: — Managing our environmental impact — Reducing our environmental footprint — Delivering lasting environmental benefits — Prudent use of our natural resources — Protecting our licence to operate Material topics relating to mine closure management: As part of the company's top business risks, Harmony included '*regulatory compliance and*		Primary activities: Similar to the 2017 disclosure, environmental stewardship and mine closure are noted as a primary activity of Harmony, together with: — Exploration and acquisitions — Mining and processing — Sales and financial management Land rehabilitation and mine closure if further defined in the IR to include: "*restoring mining impacted land for alternative economic use post-mining and having in-place approved MCPs" (*HGMCL, 2018:5*)*. Material topics relating to mine closure management: One of the material business issues noted in the 2018 IR included '*managing our impacts*'. The rationale behind this material matter include responsible resource management which is a critical requirement to Harmony's socio-economic rehabilitation planning. Future targets, objectives relating to mine closure: The company disclosed targets for progressive rehabilitation which include: — Decommissioning of redundant shafts, specifically linked to illegal mining activities in the area by end of 2019.

Principles		2016		2017		2018	
		Score	Description	Score	Description	Score	Description
			conditions of employees and communities as well as bolster both socio-economic and ecological developments, so when the operations close, the company will leave behind viable communities which will be able to support their own economies. Harmony strategically recognise the need for mine closure planning and implementation during the operational phases of the mine's life cycle. Harmony disclosed that one of the company's top 10 business risks included '*socio-economic, political and regulatory changes*' which is narratively described to include environmental legislation. One of the material performance results provided by the business as part of the IR was '*value spent in 2016 on rehabilitation*' which was reported as 0.4% or R 69 million of the total shared value created in 2016. <u>Future targets, objectives relating to mine closure:</u> None disclosed. It is implied through review of the narrative that the company is conducted current rehabilitation, although no specific targets are disclosed.		*adapting to changes and amendments*'. Although the focus of this risk relate to regulatory uncertainty and risk associated with the Mining Charter, the risk also relate to uncertainty over environmental legislation. <u>Future targets, objectives relating to mine closure:</u> None disclosed. It is implied through review of the narrative that the company is conducted current rehabilitation, although no specific targets are disclosed. As noted in 2017 disclosure Harmony stated "*our focus to date has been to rehabilitate decommissioned shafts which have been linked to ingress by illegal miners*" (HGMCL, 2017:65).		

Principles		2016		2017		2018	
		Score	Description	Score	Description	Score	Description
Principle 2: Mine closure planning and managemen t	Is there mine closure plans for mining operations?	1	<u>Mine closure plan:</u> Harmony refers to an implemented EMPr which includes detailed MCPs for each of their operations. The MCPs are developed within five years of planned closure to expedite beneficial post-mining land use and sustainable community livelihoods. Furthermore, Harmony noted that rehabilitation and closure are incorporated into overall planning from initial concept stage and during the LoM and includes ensuring the required funding are in place to achieve the required targets. Harmony also perform concurrent rehabilitation and refurbish infrastructure for use by local communities during the operational phase of the mines, according to 2016 disclosure. It is noted that only a small portion of land (14%) are disturbed by mining activities and therefore progressive rehabilitation is limited. <u>Mine closure objectives:</u> The closure objectives are not specifically disclosed but the content of the report reflects Harmony's objective for mine closure which includes: — beneficial post-mining land use — sustainable community livelihoods	1	<u>Mine closure plan:</u> The same disclosure around implementation of an environmental programme which includes detailed MCPs is disclosed in 2017, as per 2016. Furthermore to the disclosure made in 2016, Harmony also refers to the implementation of MCPs at the end of their mine's economic life, but further disclosure that concurrent rehabilitation is performed during the course of the mine operational phase. <u>Mine closure objectives:</u> Harmony disclosed in 2017, that one of its primary activities include rehabilitation. As part of this disclosure, Harmony noted that the objective of the MCPs include rehabilitation, which is ongoing throughout the mine operating life, to restore impacted land, making it suitable for an alternative economic use.	1	<u>Mine closure plan:</u> The same narrative disclosure over MCPs as noted in 2016 and 2017, which includes "*EMPrs include detailed closure plans for each operation within five years of planned closure to expedite beneficial post-mining land use and sustainable community livelihoods"* (HGMCL, 2018:82). Harmony reported as part of their core business activities in 2018, that environmental stewardship responsibilities are included. As part of the disclosure, the required management activities, which include closure planning, is noted to be incorporated in the approved EMPrs for all of their operations. <u>Mine closure objectives:</u> As part of Harmony's top ten material risks for the business, disclosed in the 2018 IR, it was noted that responsible resource management is considered crucial to their socio-economic rehabilitation planning. The company aims to improve the living conditions of employees and communities during as well as further enhance the socio-economic and ecological developments at their mining operations during its operational phase in order to mitigate against closure impacts. The company specifically noted that these initiatives is aimed to support viable communities and economies that are not plagued by environmental or health issues during closure. <u>Mine closure performance results:</u>

Principles		2016		2017		2018	
		Score	Description	Score	Description	Score	Description
			— progressive rehabilitation According to 2016 disclosure, the closure strategy also incorporate mitigation against environmental impacts which include climate change and water management aspects. Specific disclosure reference is provided with regards to AMD.				Harmony specifically provide extensive disclosure in 2018 over performance results relating to mine closure planning and actions. These include: 1. Progressive rehabilitation Harmony indicated that its focus over the past two years (2017 and 2018) was to rehabilitate decommissioned shafts which have been linked to illegal mining activities in the area. The company is also in the process of decommissioning two gold plants. Other concurrent rehabilitation results included: — Rehabilitation of tailings dams (3 completed) — Rehabilitation of waste rock dumps (7 completed) 2. Development of final land uses Harmony noted that it is targeting four applications as part of its socio-economic development strategy which have been integrated into the company's SLPs and include: — Agriculture and agri-processing projects — Alternative energy projects including bio-energy and solar projects — Conservation initiatives — Industry applications 3. Specific management initiatives to address AMD It was disclosed that the geo-hydrological studies have been conducted and confirmed that the impacts associated with the mine's Doornkop and Kusasalethu mines are far more complex, but that the organisation is participating in regional Geohydrological and closure studies to further address identify appropriate mitigation against AMD.

Principles		2016		2017		2018	
		Score	Description	Score	Description	Score	Description
	Is there reference made to periodic updates to mine closure plans to refine content and incorporate changes in environment, policies etc.?	1	It is noted that the organisation have an ongoing concurrent rehabilitation programme and that MCPs are developed within five years of planned closure for each operation.	1	Same disclosure as per 2016	1	Same disclosure as per 2016 and 2017.
	Is there reference made to compliance with laws and regulations?	1	<u>Reference to compliance to laws and regulations:</u> Harmony disclosed that its operations are materially subject to the requirements of the MPRDA, NEMA, NWA and NNRA. Furthermore, it is noted that each operation has an approved EMPr. The organisation did disclosure one environmental incident but did not reflect over compliance to mine closure specifically. <u>Compliance to financial provision regulatory requirements:</u> The company reflected on the proposed NEMA Financial Provision Regulations and its requirement to account for latent liability. Harmony noted that it is working with government, through relevant industry forums, to rationalise the proposed legal requirements and its impact on the businesses.	1	<u>Reference to compliance to laws and regulations:</u> Harmony disclosed that its operations are primarily governed by the MPRDA, NEMA, NWA and NNRA as per 2016 disclosure. Harmony noted two significant environmental compliance matters in 2017 which include environmental incidents associated with water management. <u>Compliance to financial provision regulatory requirements:</u> No reference made to the NEMA Financial Provision Regulations in 2017 disclosure. Harmony does report that their environmental provision is fully funded in 2017.	1	<u>Reference to compliance to laws and regulations:</u> Harmony disclosed that its operations are governed by the MPRDA, NEMA, NWA and NNRA as per 2016 and 2017 disclosure. The company reported three environmental incidents for the 2018 period all of which related to water management (i.e. spillages or overflows). <u>Compliance to financial provision regulatory requirements:</u> Disclosure on applicable laws and regulations with specific reference made to NEMA Financial Provision Regulations and associated status of implementation and engagement with regulators on the matter. Harmony does report that their environmental provision is fully funded in 2018.

Principles		2016		2017		2018	
		Score	Description	Score	Description	Score	Description
			Harmony does note that the current environmental provision is fully funded in advance via trust funds, insurance and bank guarantees.				
	Is there disclosure over the remaining life of mine and management actions required to meet the closure objectives?	1	Harmony disclosed the remaining LoM per operation as part of the mineral resource and reserve statements. The organisation also provides narrative disclosure around land rehabilitation initiatives during its operational phase. These projects are different for the different operations (i.e. agri-processing, alternative energy developments etc.)	1	As per 2016 disclosure, Harmony provided the remaining LoM, per operation as part of their mineral resource and reserve statements.	1	As per 2016 and 2017 disclosure, Harmony provided the remaining LoM, per operation as part of their mineral resource and reserve statements.
	Has the organisation engaged with stakeholders on mine closure, specifically mine closure objective and final land use criteria?	1	<u>Stakeholder engagement strategy and overview:</u> The 2016 disclosure provided extensive narrative around stakeholder engagement. The company specifically noted that the company has a stakeholder engagement strategy and policies in line with specific organisational governance structures and compliant to specific industry standards (i.e. ISO14001). Mine closure planning is also partially reflected in the primary aim of Harmony's	1	<u>Stakeholder engagement strategy and overview:</u> The same narrative around stakeholder engagement approach is disclosed in 2017 as reflected in the 2016 IR. As per 2016, Harmony again noted that one of the top stakeholder issues included "managing impact" which relate to impacts associated with mine closure. The company's disclosed response is also the same as disclosed in 2016, which included: — Developing and implementing initiatives to empower local communities to ensure sustainable economic activity once mining has ceased	1	<u>Stakeholder engagement strategy and overview:</u> The same narrative around stakeholder engagement approach is disclosed in 2018 as reflected in the 2016 and 2017 IRs. As per 2016 and 2017, Harmony noted that one of the five top issues raised by stakeholders include "managing impacts" which include mine closure. In response to these issues, Harmony noted the following (as per 2016 and 2017 as well): — Develop and implement initiatives to empower local communities to ensure sustainable economic activity once mining has ceased — Inclusive engagement relating to land rehabilitation in the Free State and the creation of sustainable economic activities independent of mining

Principles		2016		2017		2018	
		Score	Description	Score	Description	Score	Description
			strategic intent to stakeholder engagement which include: — To improve the lives of host communities/stakeholders through appropriate programmes or projects — To find solutions to the various challenges facing our society and host communities — To find a balance between the expectations of shareholders and those of other stakeholders. Harmony provides a list of key stakeholders which include relevant stakeholders to consider for mine closure planning which include: — Government and regulators — NGOs and industry bodies — Host communities One of the material concerns raised by communities, as disclosed by Harmony includes “managing impacts” and is narratively discussed to include mine closure. Harmony disclosed that its actively engaging with stakeholders over the following: — Developing and implementing initiatives to empower local communities to ensure sustainable economic activity once mining has ceased		— Inclusive engagement relating to land rehabilitation in the Free State and the creation of sustainable of economic activities independent of mining		— Optimising use of materials and natural resources and minimising waste and emissions.

Principles		2016		2017		2018	
		Score	Description	Score	Description	Score	Description
			— Inclusive engagement relating to land rehabilitation in the Free State and the creation of sustainable of economic activities independent of mining. From the disclosure provided, it is clear that Harmony is actively conducting stakeholder engagement with regards to mine closure planning and formulating key mine closure objectives for the operations.				
	Are there key performance indicators used to measure performance of closure management in the organisation?	1	<u>Number of KPIs:</u> Five KPIs disclosed as part of narrative management disclosure and include: 1. Funding guarantee amount for rehabilitation and closure, in ZAR. 2. Total spent on concurrent rehabilitation in the reporting year, in ZAR. 3. Total number of people employed as part of Harmony's concurrent rehabilitation programme. 4. Total redundant mining infrastructure demolished in the reporting period. 5. Total land owned, total land disturbed and total land rehabilitated, presented in hectares.	1	<u>Number of KPIs:</u> Four KPIs disclosed as part of the narrative disclosure and include: 1. Total land owned, total land disturbed and total land rehabilitated, presented in hectares. 2. Total land rehabilitation liabilities, per country, in ZAR. 3. Narrative disclosure on total shafts and plants demolished, or in the process of being demolished, in 2017. 4. Total number of people employed as part of Harmony's concurrent rehabilitation programme. The KPI of total spent on concurrent rehabilitation, as disclosed in 2016, was not disclosed in 2017.	1	<u>Number of KPIs:</u> Five KPIs disclosed as part of the narrative disclosure and include: 1. Total land owned, total land disturbed and total land rehabilitated, presented in hectares. 2. Total land rehabilitation liabilities, per country, in ZAR. 3. Total value of funding/ guarantees in place to cover rehabilitation and closure, in ZAR. 4. Narrative disclosure on total shafts and plants demolished, or in the process of being demolished, in 2017. 5. Total number of people employed as part of Harmony's concurrent rehabilitation programme.
Principle 3: Financial	Is a financial provision estimate	1	<u>Financial provision:</u>	1	<u>Financial provision:</u>	1	<u>Financial provision:</u>

Principles		2016		2017		2018	
		Score	Description	Score	Description	Score	Description
provision disclosure	been disclosed in terms of Financial Reporting obligations?		A group based financial provision estimate was disclosed in ZAR, in accordance with IFRS. The company also disclosed the undiscounted financial provision estimate in ZAR as part of the financial statements. <u>Contingent liability:</u> Three contingent liability disclosures provided in the financial statements which include: 1. Potential liability associated with potential requirement for the remediation of groundwater and radiation. 2. Potential liability associated with the flooding and decant of underground mines. 3. Potential liabilities to be incurred at operations upon obtaining an approved WUL.		As per 2016, the company disclosed a group consolidated financial provision in ZAR, in accordance with IFRS. The company also disclosed their undiscounted financial provision estimate in ZAR as part of the financial statements. <u>Contingent liability:</u> The same contingent liabilities were disclosed in 2017 as per 2016 and included: 1. Potential liability associated with potential requirement for the remediation of groundwater and radiation. 2. Potential liability associated with the flooding and decant of underground mines. 3. Potential liabilities to be incurred at operations upon obtaining an approved WUL. No change in narrative observed from 2016 to 2017 disclosure.		As per 2016 and 2017, the company disclosed a group consolidated financial provision in ZAR, in accordance with IFRS. The company also disclosed their undiscounted financial provision estimate in ZAR as part of the financial statements. <u>Contingent liability:</u> The same contingent liabilities were disclosed in 2018 as per 2016 and 2017, and included: 1. Potential liability associated with potential requirement for the remediation of groundwater and radiation. 2. Potential liability associated with the flooding and decant of underground mines. 3. Potential liabilities to be incurred at operations upon obtaining an approved WUL. No change in narrative observed from 2016 and 2017 to 2018 disclosure.
	Is reference made to the scope of the financial provision estimate in terms of a description of the cost included?	0	<u>Scope of financial provision:</u> Harmony noted in 2016 financial statements that the company's operations are subject to extensive environmental laws and regulations. The financial provision estimates are principally based on legal and regulatory requirements. No specific reference made to specific laws or regulations.	0	<u>Scope of financial provision:</u> The same narrative disclosure provided in 2017, as per 2016. No further reference are provided around the breakdown of provision estimate, per operation, or with regards to the content of the closure cost (i.e. dismantling costs,	1	<u>Scope of financial provision:</u> The same narrative disclosure provided in 2018, as per 2016 and 2017 with the following additional statements: The company disclosed that the estimated long-term environmental obligations comprise of: — Pollution control — Rehabilitation and — Mine closure

Principles		2016		2017		2018	
		Score	Description	Score	Description	Score	Description
			No further reference are provided around the breakdown of provision estimate, per operation, or with regards to the content of the closure cost (i.e. dismantling costs, rehabilitation costs, social closure costs, risk adjustments etc.). <u>Scope of the contingent liability:</u> Three contingent liabilities were disclosed in 2016 and included: 1. Potential liability associated with potential requirement for the remediation of groundwater and radiation 2. Potential liability associated with the flooding and decant of underground mines 3. Potential liabilities to be incurred at operations upon obtaining an approved WUL. The scope of this contingent liability reflects the uncertainty of regulatory requirements to be imposed on the organisation upon issuance of WULs for their operations.		rehabilitation costs, social closure costs, risk adjustments etc.) <u>Scope of the contingent liability:</u> The same narrative disclosure as noted in 2016 around contingent liabilities.		The company further stated that the provision is based on the company's EMPrs in compliance with current technological, environmental and regulatory requirements. Harmony also disclosed information over the reasons for increasing its environmental liability from prior years which included a new acquisition and related components associated with the new asset. In addition, Harmony disclosed in 2018, that the company acquired a liability from AngloGold Ashanti for the Klerksdorp, Orkney, Stilfontein and Hartebeesfontein (KOSH) basin. Harmony recognised a provision for post closure management of the KOSH basin, specifically for the dewatering of the KOSH groundwater basin to ensure continued underground mining. <u>Scope of contingent liability:</u> The same narrative disclosure as noted in 2016 and 2017 around contingent liabilities.
	Is there reference made to the number of operations covered by the financial provision estimate to verify	0	Harmony provided no breakdown of provision estimates, per operation. The company only disclosed that the Group's provision comprises of all of the company's operations.	0	As noted in 2016, Harmony did not provide a breakdown of provision estimates, per operation. The company only disclosed that the Group's provision comprises of all of the company's operations.	0	As noted in 2016 and 2017, Harmony did not provide a breakdown of provision estimates, per operation. The company only disclosed that the Group's provision comprises of all of the company's operations.

Principles		2016		2017		2018	
		Score	Description	Score	Description	Score	Description
	the completeness of the estimate?						
	Is there reference made to independent assessment or review of environmental provision estimates to verify the reliability of the information disclosed?	0	There was no disclosure provided over performing of an independent assessment or verification of provision estimates in 2016. The company only noted that the costs are annually reviewed and adjusted for inflation, change in estimate and physical changes as a result of concurrent rehabilitation.	0	As noted in 2016, there was no disclosure provided over performing of an independent assessment or verification of provision estimates in 2017. Similar to the 2016 disclosure, the company only disclosed that costs are annually reviewed and adjusted for inflation, change in estimate and physical changes as a result of concurrent rehabilitation.	0	As noted in 2016 and 2017, there was no disclosure provided over performing of an independent assessment or verification of provision estimates in 2018. Similar to the 2016 and 2017 disclosure, the company only disclosed that costs are annually reviewed and adjusted for inflation, change in estimate and physical changes as a result of concurrent rehabilitation.

Table A3: South32 Limited corporate disclosure analysis results for period 2016 – 2018

Principles		2016		2017		2018	
		Score	Description	Score	Description	Score	Description
Principle 1 : Materiality	Is mine closure considered as a material aspect to the mine?	0	<u>Strategy:</u> South32 disclosed that their business strategy include "*invest in high-quality metals and mining operations where our distinctive capabilities and regional model enable us to stretch performance in a sustainable way*" (South32, 2016:1).	0	<u>Strategy:</u> South32 disclosed the same strategic business objectives as noted in 2016 AR disclosure. Similar to 2016 disclosure, the company strategically recognise sustainability and environment as a material matter to their business. The company remained to	1	<u>Strategy:</u> South32 changed their strategic disclosure in 2018, from disclosure of a business strategy as per 2016 and 2017 ARs, to the disclosure of a purpose for the business which include: "*our purpose is to make a difference by developing natural resources, improving people's lives now and for generations to come. We are trusted by our owners and*

Principles		2016		2017		2018	
		Score	Description	Score	Description	Score	Description
			The company's strategic focus areas include: — Optimising the performance of existing operations — Unlocking their potential – by converting high value resource into reserve — Identifying new opportunities to compete for capital within South32'S capital management framework The company further disclosure that it has a sustainability policy which defines the company's social, environmental, governance and economic principles and affirms the company's commitment to sustainable development. South32 is a member of the ICMM and align their business with the ICMM sustainable development framework as well as objectives of the UNGC and UN SDGs. The company's environmental policy is disclosed to include '*striving to be a responsible steward of environment*' by minimising the impact of South32's operations and proactively initiative conservation and rehabilitation activities.		disclosure its membership to ICMM as well as alignment to UNGC and UN SDGs in 2017. In 2017, South32 recognised land and water management as a key matter to their environmental strategy. It was disclosed that the company's fully integrated business planning process minimise biodiversity impacts to restore land through effective rehabilitation programs. The company highlights the ILM initiatives as part of South32's climate change strategy and noted that it has initiative two projects, one of which is associated with the South African coal operations (referred to as the Chrissiesmeer project). *<u>Highlighting rehabilitation processes in business:</u>* In 2017, South32 highlights its rehabilitation processes more formally, when compared to 2016. The company noted in 2017, that it has fully integrated business planning process which includes land management activities from pre-clearance to rehabilitation. The aim of this process is to minimise South32's operational impacts and footprint during the course of the operational phase of the mines.		*partners to realise the potential of their resources*" (South32, 2018a:170). The company also developed seven strategic focus areas. These focus areas, also referred to as, value drivers or '*how South32 make a difference*', include: — Guarantee everyone goes home safe and well — Meaningfully connected and believe in the company's purpose — Operations run to their full potential and maximise return on investment — South32 functions are lean and enable the operations to deliver their full potential — Technology and innovation is radically lifting South32's performance — Creating value through environmental and social leadership — Have an optimised portfolio and multiple growth operations with a bias to base metal. South32's 'creating value through environmental and social leadership' value driver refer to the company's sustainability and environmental strategies, as disclosed in 2016 and 2017 and is narratively explained as "*South32 will continuously find ways to reduce the land requirements, biodiversity impacts, waste, carbon and water usage. South32's climate change strategy will guide the organisation to ensure their business is resilient. South32 will progress initiatives in collaboration with host*

Principles		2016		2017		2018	
		Score	Description	Score	Description	Score	Description
			<u>Primary activities:</u> No primary activities disclosed by South32 in 2016. <u>Material topics relating to mine closure management:</u> Due to the nature of reporting in 2016 (AR and a supplementary "*Report on Environment*'), it is unclear what topics South32 considers material, as none is specifically disclosed. It is therefore assumed that the content of the AR reflect what is considered material to South32 and include sustainability and environment. With regards to the company's strategic and external risk, the company disclosed the following material matters: — Fluctuations in commodity prices, exchange rates, interest rates and global economy — Actions by governments, political events or tax authorities — Cost inflation and labour disputes could impact operating margins and expansion plans — Access to water and power		<u>Primary activities:</u> No primary activities disclosed by South32 in 2017. <u>Material topics relating to mine closure management:</u> In 2017, South32 reduced the number of strategic, external and operational risks to only include: — Fluctuations in commodity prices, exchange rates, interest rates and the global economy — Political events, actions by governments or tax authorities — Cost inflation and labour disputes could impact operating margins and expansion opportunities — Climate change — Failure to maintain, realise or enhance existing reserves — Deterioration in liquidity and cash flow — Health and safety risks in respect of our activities — Access to water and power — Water and waste water management, and environmental risks — Unexpected operational or natural catastrophes		*communities that will deliver enduring social, environmental and economic benefit*" (South32, 2018a:3). This value driver reflects mine closure planning and management activities. South32 provided additional disclosure on the company's environmental policies and processes in the '*Report on Environment'*. In this document, South32 notes that the company have a comprehensive EMS, which includes internal standards, reporting and governance frameworks, In 2018, South32 revised the company's environmental standards to include additional performance requirements related to: — Water stewardship — Land biodiversity — Rehabilitation Similar to 2016 disclosure, the company strategically recognise sustainability and environment as a material matter to their business. The company remained to disclosure its membership to ICMM as well as alignment to UNGC and UN SDGs in 2018. <u>Primary activities:</u> Primary activities disclosed in 2018 include mining and metal production. No reference made to mine rehabilitation or closure as a primary activity, although it can be assumed that mining includes reference to mine closure.

Principles		2016		2017		2018	
		Score	Description	Score	Description	Score	Description
			— We may be subject to regulations in relation to dividend payments and capital returns — Regulatory risks of climate change — Risks to commodity portfolio from climate change — Access to infrastructure — Failure to maintain, realise or enhance existing reserves — Support of the local communities in which businesses are located In review of the narratives, none of the risks specifically relate to mine closure related matters considered by South32. Operational business risks includes: — Health and safety risks in respect of our activities — Environmental risks in respect of activities including water and waste water management — Deterioration in liquidity and cash flow — Unexpected operational or natural catastrophes — Commercial counterparties that we transact with may not meet their obligations — Risks of fraud and corruption — Failure to retain and attract key employees		— Counterparties that we transact with may not meet their obligations — Risks of fraud and corruption — Breaches of information technology security — Failure to retain and attract key employees Similar to the narratives disclosures in 2016, the reported risks does not reflect closure related matters. <u>Future targets, objectives relating to mine closure:</u> No future targets disclosed relating to mine closure matters. From the review of the strategic disclosures made by South32, mine closure is not specifically highlighted. The company does however provide a number of references to the integration of mine closure planning as part of their business and does reflect over mine closure planning, rehabilitation planning and performance in 2017 in a similar fashion than 2016. It was therefore considered that mine closure planning is a strategic objective to South32,		<u>Material topics relating to mine closure management:</u> The company included 15 company based risks, as per prior year. The nature of the risks are similar or the same risks as disclosed in 2017, and include: — Fluctuations in commodity prices, exchange rates, interest rates and global economy — Actions by governments, political events or tax authorities — Cost inflation and labour dispute impact on operating margins and expansion — Access to water and energy — Failure to maintain, realise or enhance value due to inadequate knowledge of our resources and reserves — Deterioration in liquidity and cash flow — Climate change impacts — Health and safety risks in respect of our operational activities — Water, waste and environmental risks — Unexpected operational or natural catastrophes — Commercial counterparties that we transact with may not meet their obligations — Fraud and corruption — Breach of information technology security — Failure to retain and attract key people — Support our local communities Similar to the narratives disclosures in 2016 and 2017, the reported risks does not reflect closure related matters.

Principles		2016		2017		2018	
		Score	Description	Score	Description	Score	Description
			Similar to the external risks, the narratives with regards to the operational risks fails to disclosure information around mine closure related matters considered by South32. Future targets, objectives relating to mine closure: No future targets disclosed relating to mine closure matters. From the review of the strategic disclosures made by South32, mine closure is not specifically highlighted. The company does however provide a number of references to the integration of mine closure planning as part of their business and does reflect over mine closure planning, rehabilitation planning and performance in 2016. It was therefore considered that mine closure planning is a strategic objective to South32, based on the information disclosed in 2016.		based on the information disclosed in 2017.		Future targets, objectives relating to mine closure: No disclosure.
Principle 2: Mine closure planning and management	Is there mine closure plans for mining operations?	1	Mine closure plans: South32 disclosed that MCPs are maintained for each operations. The MCPs addresses specific closure criteria for future land use and cover health, safety, social aspects, environmental impacts and	1	Mine closure plans: South32 disclosed that the company maintains MCPs for each operation which address closure criteria and land use, as well as current and future shared economic, environmental and social value.	1	Mine closure plans: In 2018, South32 reported that all of their operations have MCPs which integrates the ICMM closure toolkit. The closure plans include criteria and land use options, as well as current and future shared economic, environmental and social value.

<table>
<tr><th rowspan="2" colspan="2">Principles</th><th colspan="2">2016</th><th colspan="2">2017</th><th colspan="2">2018</th></tr>
<tr><th>Score</th><th>Description</th><th>Score</th><th>Description</th><th>Score</th><th>Description</th></tr>
<tr><td></td><td></td><td></td><td>opportunities, and post-closure monitoring and maintenance. The MCPs also include requirements for rehabilitating disturbed areas, decommissioning infrastructure, remediating contaminated sites, treatment and disposal of wastes, water resource management and post closure monitoring and maintenance. It was also reflected that the MCPs for the basis of the financial provision estimates for each operation.

South32 reported that closure considerations are integrated into the annual business planning process.

<u>Concurrent rehabilitation:</u>

South32 disclosed that they undertake concurrent rehabilitation and have integrated rehabilitation practices into their mine planning processes, to ensure this objective is achieved. Rehabilitation activities are seen as scheduled mining activities, and planned in accordance to ensure full utilisation of equipment and resources.

South32 introduced a new programme, referred to as ILM as part of the company's climate change strategy.</td><td></td><td>The MCPs include requirements for rehabilitation of disturbed areas, decommissioning infrastructure, remediation of contaminated sites, treatment and disposal of wastes, land use options, and post closure monitoring and management. Similar to 2016, South32 noted that the MCPs provide the basis for the closure cost estimates and associated financial provision.

<u>South32 rehabilitation programme:</u>

In the 2017 disclosures, South32 highlights integrated rehabilitation programme. The company specifically indicate progressive rehabilitation is conducted concurrently with mining activities due to the integration of rehabilitation into the mine closure process. The company noted that this is achieved through treating rehabilitation as part of the mine plan, rather than a separate activity. The benefit of this include:
— Enhanced operating efficiencies
— Reduced cost
— Improved environmental outcomes.

<u>Mine closure objectives:</u></td><td></td><td>The MCPs content also include:
— Requirements for rehabilitation f disturbed areas
— Decommissioning of infrastructure
— Remediation of contaminated sites
— Disposal of waste
— Monitoring of effectiveness
— Consideration to economic transition and sustainable communities

100% of South32's operations were noted to have MCPs and the MCPs provides a basis for closure cost estimates and financial provisions.

<u>South32 rehabilitation programme:</u>

South32 reflected on their rehabilitation programme which is aimed to restore similar ecosystems services where the company operate and include supporting projects which provide resilience to climate change.

The rehabilitation programme includes progressive rehabilitation being conducted in parallel with mining activities. This is achieved by integrating rehabilitation into the mine's planning processes and ongoing operations. As per 2017, disclosure, South32 again noted that the benefit of rehabilitation integration include:
— Benefit from operating efficiencies
— Reduction in cost</td></tr>
</table>

Principles		2016		2017		2018	
		Score	Description	Score	Description	Score	Description
			The ILM programme identifies opportunities to transform land holdings, which seen as liabilities, into opportunities that increase climate resilience and general financial, social and economic value. The ILM programme has four guiding principles which include: — Protect biodiversity — Preserve ecosystem services — Leave behind a positive legacy for the community — Generate enough revenue to ensure the project can be successfully operate, independently of South32 The ILM identities specific projects to be implemented and is not part of the overall rehabilitation and closure of the mines. Mine closure objectives: The company disclosed that they aim to have consistent and transparent closure practices across all of their operations. South32 further refers to a Mine Closure Strategy but fails to disclosure further information over the nature or objectives of this strategy. According to South32 2016 disclosure, the guiding principles for MCPs include:		According to 2017 disclosure, guiding principles that support South32's closure planning include: — Fit for purpose — Consistent with regulatory requirements — Fully integrated into business planning cycle This is the same principles disclosed in 2016.In addition to 2016, South32 further notes that consideration is also given to economic transition and sustainable communities, especially where the organisation have a significant presence in the region.		— Improved environmental outcomes In addition to prior year discloses, South32 noted that they have introduced extensive programs designed to monitor the performance of rehabilitation against specific approved performance criteria. The nature of the performance criteria however were not disclosed in 2018. The ILM programme, which forms part of the company's sustainability framework and climate change strategy were again highlighted by South32 in 2018. In addition to prior year disclosures over the ILM programme, South32 also acknowledged in 2018 that the ILM framework represents a considerable maturity in the way South32 perceive and generate value to their stakeholders. It is also noted that the industry acknowledge South32's accountability for socio-economic stewardship and landscape level planning for the life of an operation and post closure phases. Mine closure objectives: South32 disclosed, as noted in the 2017 and 2016 disclosures that the guiding principles that support the company's closure planning include: — Fit for purpose — Consistent with regulatory requirements — Fully integrated into business planning cycle

Principles		2016		2017		2018	
		Score	Description	Score	Description	Score	Description
			— Fit for purpose — Consistent with regulatory requirements — Fully integrated into business planning cycle				
	Is there reference made to periodic updates to mine closure plans to refine content and incorporate changes in environment, policies etc.?	0	No disclosure with regards to the period update of MCPs.	0	No disclosure noted in 2017 with regards to the periodic update of MCPs. The company only disclosed that MCPs are maintained for each operation.	1	In 2018, South32 noted that the company regularly review all potential closure risks to retain value for future generations.
	Is there reference made to compliance with laws and regulations?	0	<u>Reference to compliance to laws and regulations:</u> No disclosure over compliance to laws and regulations made by South32 in 2016. Further no information provided over compliance to laws governing mine closure. <u>Compliance to financial provision regulatory requirements:</u> No disclosure over compliance to laws and regulations governing financial provisions.	0	<u>Reference to compliance to laws and regulations:</u> Similar to disclosure in 2016, South32 does not disclosure information with regards to compliance to laws and regulations in the AR or Report on Environment. There were also no reference made to compliance to laws and regulations governing mine closure in 2017. <u>Compliance to financial provision regulatory requirements:</u> No disclosure over compliance to laws and regulations governing financial provisions.	0	<u>Reference to compliance to laws and regulations:</u> In 2018, the company reflected over environmental compliance, specifically disclosing major environmental events as well as regulatory fines received during the year. South32 explained that the company classify incidents according to an internally agreed severity scale, where incident with a rating of four out of seven would be considered to have a major impact to land, biodiversity, ecosystems, water resources or air, with effects lasting greater than one year. South32 noted that no significant environmental events were reported in 2018, however three regulatory fines were received by South32. The first fine related to the South African based manganese smelter for exceeding emissions in terms of compliance limits outlined in the Air

Principles		2016 Score	2016 Description	2017 Score	2017 Description	2018 Score	2018 Description
							Emissions Licence (AEL). The second fine were for the Aluminium smelter in Mozambique. The third fine was issued to the Cerro Matoso operation in relation with air quality non-conformance. The company did not specifically disclosure information with regards to compliance with mine closure. <u>Compliance to financial provision regulatory requirements:</u> No disclosure over compliance to laws and regulations governing financial provisions.
	Is there disclosure over the remaining life of mine and management actions required to meet the closure objectives?	1	South32 disclosed the remaining LoM of all their operating assets as part of the company's minerals reserves and resource statements. No information is provided over the expected timeframe of closure and post-closure associated with closed mines.	1	Disclosure over remaining life of mines of operating mines provided as part of the minerals reserve and resource statements. No information is provided over the expected timeframe of closure and post-closure associated with closed mines.	1	Disclosure over remaining life of mines of operating mines provided as part of the minerals reserve and resource statements. No information is provided over the expected timeframe of closure and post-closure associated with closed mines.
	Has the organisation engaged with stakeholders on mine closure, specifically mine closure objective	0	No disclosure around stakeholder engagement on closure.	0	There is no specific reference made to stakeholder engagement policies, procedures or processes by South32 in 2017. <u>Community engagement:</u> South32 notes that building relationships with their communities is performed through regular, open and honest dialogue. The	0	<u>*Stakeholder engagement for ILM project selection:*</u> In 2018, South32 only reflected over considerable stakeholder engagement required for ILM initiatives and project selection. This is because selection of projects required a broad outlook of both internal and external operating environments.

Principles		2016		2017		2018	
		Score	Description	Score	Description	Score	Description
	and final land use criteria?				company obtained and incorporates the community views into their decision-making processes. South32 reported in 2017 that the company obtain feedback from local communities through conducting social baseline studies, social impact and opportunity assessments as well as performing community surveys. No disclosure is presented with regards to the context of the engagement to assess if the company engage effectively over mine closure planning and objectives.		Project selection for ILM initiatives is comprehensive and requires a broad outlook of both internal and external operating environments as well as considerable stakeholder engagement.
	Are there key performance indicators used to measure performance of closure management in the organisation?	1	<u>Number of KPIs:</u> One KPI disclosed as part of narrative management disclosure and include: 1. Total land under disturbed, total land rehabilitated and total land for conservation, presented in hectares The company also presented the total discounted environmental provision estimate, for the group (consolidated estimate) for the period, presented in US$.	1	<u>Number of KPIs:</u> Two KPIs disclosed as part of narrative management disclosure and include: 1 Total land under disturbed, total land rehabilitated and total land for conservation, presented in hectares 2 Number of intelligent land management practices (count) The company also presented the total discounted environmental provision estimate, for the group (consolidated estimate) for the period, presented in US$.	1	<u>Number of KPIs:</u> One KPI disclosed as part of narrative management disclosure and include: 1 Total land under disturbed, total land rehabilitated and total land for conservation, presented in hectares The company also presented the total discounted environmental provision estimate, for the group (consolidated estimate) for the period, presented in US$.
Principle 3: Financial	Is a financial provision estimate	1	<u>Financial provision:</u>	1	<u>Financial provision:</u>	1	<u>Financial provision:</u>

Principles		2016		2017		2018	
		Score	Description	Score	Description	Score	Description
provision disclosure	been disclosed in terms of Financial Reporting obligations?		A group based financial provision estimate was disclosed in US$, in accordance with IFRS. <u>Contingent liability:</u> No contingent liability disclosed.		A group based financial provision estimate was disclosed in US$, in accordance with IFRS. <u>Contingent liability:</u> No contingent liability disclosed.		A group based financial provision estimate was disclosed in US$, in accordance with IFRS. <u>Contingent liability:</u> No contingent liability disclosed.
	Is reference made to the scope of the financial provision estimate in terms of a description of the cost included?	1	<u>Financial provision:</u> South32 disclosed that the company maintains MCPs for each operation which forms the basis of the closure cost estimation (financial provision) and which include: — Specific closure criteria for future land use — Health — Safety — Social aspects — Environmental impacts and opportunities and — Post-closure maintenance and monitoring It is therefore assumed by the reader that the financial provision accounts for the cost for activities in relation to the above specifications, as context contained in the MCP.	1	<u>Financial provision:</u> South32 noted that the MCPs forms the basis of the evaluation of the company's closure cost estimates (financial provisions) in 2017. The company then further disclosed information over the content of the MCPs which then reflect over the scope of the financial provision and include: — Facility decommissioning and dismantling, — Removal or treatment of waste materials — site and land rehabilitation South32 also indicate that the provision is recognised at the time that disturbance occurs. <u>Contingent liability:</u> Not applicable as no contingent liability was disclosed by South32.	1	<u>Financial provision:</u> In 2018, South32 noted that the MCPs form the basis to which closure cost estimates (and financial provision) was defined. The content of the MCPs, as per 2018 disclosure, includes: — criteria and land use options — current and future shared economic, environmental and social value — Requirements for rehabilitation of disturbed areas — Decommissioning of infrastructure — Remediation of contaminated sites — Disposal of waste — Monitoring of effectiveness — Consideration to economic transition and sustainable communities It is therefore applied that the financial provision estimate include costs to perform the above noted actions. The other disclosure over financial provision reflects similar disclosure as noted in 2016 and 2017, and summarised as:

Principles		2016		2017		2018	
		Score	Description	Score	Description	Score	Description
			South32 also disclosed that the closure and rehabilitation provisions reflects the expected value of future cash flows, discounted to its present value and determined according to the probability of alternative estimate cash flows. In stating that the provisions reflects a probabilistic view, it is noted that South32 included related risk adjustments to reflect the most probable outcome of their estimate. No further information is provided on the value of the risks adjustments or noted risks included. South32 further noted that the provisions reflect present disturbance and that the cost included in the provision includes all closure and rehabilitation activities expected to occur progressively over the life of mine. <u>Contingent liability:</u> Not applicable as no contingent liability was disclosed by South32.				— The closure and rehabilitation works include facility decommissioning and dismantling, removal or treatment of waste, site and land rehabilitation. — Provisions for the cost of each closure programme is recognised at the time when disturbance occurs. — Routine operating costs that may impact the ultimate closure and rehabilitation activities (i.e. waste material handling conducted as an integral part of a mining production process) as not included in the provision. South32 disclosed that the provision reflects the present value and determined according to the probability of alternative estimate cash flows. As noted in prior years, this statement reflects that the provision estimate were adjusted by specific risks or uncertainty and the most probable outcome were used for accounting purposes. No further information is provided on the value of the risks adjustments or noted risks included. <u>Contingent liability:</u> Not applicable as no contingent liability was disclosed by South32.
	Is there reference made to the number of operations covered by the financial provision	0	South32 provided a breakdown of the financial provision per division (and not per operation) and included (presented in US$): — South Africa Energy Coal: 616 million — South Africa Aluminium: 164 million	0	South32 provided no breakdown of the financial provision estimates. The company only disclosed the group consolidated and discounted (NPV) estimate for the 2017 reporting period.	0	South32 provided no breakdown of the financial provision estimates. The company only disclosed the group consolidated and discounted (NPV) estimate for the 2017 reporting period.

Principles		2016		2017		2018	
		Score	Description	Score	Description	Score	Description
	estimate to verify the completeness of the estimate?		— Worsley Alumina: 278 million — Cerro Matoso: 100 million — Cannington: 88 million — Mozal Aluminum: 54 million — Illawarra Metallurgical Coal: 61 million — Brazil Alumina: 52 million — Other: 1 million				
	Is there reference made to independent assessment or review of environmental provision estimates to verify the reliability of the information disclosed?	0	No disclosure provide over independent assessment or review of the financial provision estimates by South32. South32 just disclosed that their closure and rehabilitation provisions are annually adjusted for changes in the cost estimates. South32 did include disclosure over periodic review of each site's provision which will then be updated on the facts and circumstances available at the time.	0	No disclosure provide over independent assessment or review of the financial provision estimates by South32. South32 did disclosure that their closure and rehabilitation provisions are annually adjusted for changes in the cost estimates, in a similar manner as 2016.	0	No disclosure provide over independent assessment or review of the financial provision estimates by South32.

Table A4: Glencore plc corporate disclosure analysis results for period 2016 – 2018

Principles		2016		2017		2018	
		Score	Description	Score	Description	Score	Description
Principle 1 : Materiality	Is mine closure considered as a	0	<u>Strategy:</u>	0	<u>Strategy:</u>	0	<u>Strategy:</u>

Principles		2016		2017		2018	
		Score	Description	Score	Description	Score	Description
	material aspect to the mine?		Glencore's strategic business objective is to "*sustainably grow total shareholder returns while maintaining a strong investment grade rating and acting as responsible operator*" (Glencore, 2016a:16; Glencore, 2016b:11). The business three strategic focus includes: — Integration of sustainability throughout the business — Maintain robust and flexible balance sheet — Focus on controls and operational efficiencies through the business. Sustainability was reported as a strategic objective to Glencore. Their sustainability approach includes: — Health and safety programmes — Advancing environmental performance — Respecting human rights — Maintain and strengthening stakeholder relationships. Glencore noted that their sustainability approach is embodied by GCP which consists of: — Values — Code of conduct — Group Health, Safety, Environment and Compliance (HSEC) policies		Glencore's strategy disclosed in 2017 is the same as disclosed in 2016. The company considers Sustainability as a strategic imperative to their business which is focused on: — Integration of sustainability throughout our business — Maintain robust and flexible balance sheet — Focus on controls and operational efficiencies through the business. The strategic sustainability components of Glencore include health, safety, environmental performance, human rights and development and maintaining the company's relationship with its stakeholders. <u>Primary activities:</u> As disclosed in 2016, the primary activities include — Processing and refining — Blending and optimisation — Extraction and production — Exploration, acquisition and development The company does not recognise mine closure or rehabilitation as a primary business activity.		The company disclosed the same strategy as noted in the 2016 and 2017 AR and include the integration of sustainability into the business. There has also been no change in disclosure in 2018 in relation to aspects included as part of sustainability, which included health, safety, environment and human rights and development and maintaining the company's relationship with its stakeholders. Environmental aims for 2018 still focused on: — Minimise negative environmental impacts from activities — Promote efficient use of resources <u>Primary activities:</u> The same primary activities disclosed as noted in 2016 and 2017 and include: — Exploration, acquisition and development — Extraction and production — Processing and refining — Blending and optimisation The company does not recognise mine closure or rehabilitation as a primary business activity. <u>Material topics relating to mine closure management:</u> The same disclosure as per 2016 and 2017 with regards to material topics in Glencore's business which include:

Principles		2016		2017		2018	
		Score	Description	Score	Description	Score	Description
			— Operational policies The GCP is considered the company's framework for integration of sustainability principles and guidance into the business operations. Environment, is defined by Glencore in the context of their sustainability approach to include "*minimise any negative impact from operations and apply precautionary principle in decision-making*" (Glencore, 2016a:22; Glencore, 2016b:12). Primary activities: Glencore reported the following primary activities of their business to include: — Exploration, acquisition and development — Extraction and production — Processing and refinement — Blending and optimisation — Logistics and delivery Glencore does not consider rehabilitation or closure as part of their primary activities but rather see 'environment' as part of their business output.		Material topics relating to mine closure management: The key performance matters relating to sustainability at Glencore, as disclosed in 2017, include: — Safe and healthy workplace – reduce Total Recordable Injury Frequency Rate (TRIFR), Lost Time Injury Frequency Rate (LTIFR) and occupational disease cases. — Environmental performance – water withdrawn, GHG emissions, meeting our commitments on climate change. — Long-term value for communities – community investment spend. The company therefore does not recognise mine closure as a primary environmental performance matter in 2017. Principal sustainability risks relating to the company's sustainability include: — Health, safety and environment, including potential catastrophes — Emissions and climate change — Community relations and human rights — Skills availability and retention As part of principle risks, community relations does reflect over mine closure, as per the disclosure in 2016 as well.		— Laws and enforcement exposure, which can imply regulations pertaining to mine closure — Community relations and human rights, which include mine closure planning but not specifically disclosed in 2018, as seen in the 2016 disclosure of this risk. — Health, safety and environment which reflects over the direct and indirect impacts of the company's operations on the environment and their ability to manage and mitigate such impacts. Although this risk was disclosed and implies measures for rehabilitation, it is not specifically expressed in this manner in 2018 disclosure. The material sustainability topics in 2018 included: — Catastrophic hazard management — Workplace safety and health — Climate change — Water and effluents — Waste and air emissions — Human rights and grievance mechanisms — Community engagement and social commitment compliance — Our people throughout our business The company did not recognise mine rehabilitation or closure as a material topic for their business in 2018, although some of the disclosed topics can imply matters relating to mine closure. Future targets, objectives relating to mine closure:

Principles		2016		2017		2018	
		Score	Description	Score	Description	Score	Description
			Glencore disclosed it's a member of ICMM, therefore subject to ICMMs sustainability principles. The company also disclosed its commitment towards the UNGC to support the UN SDGs. <u>Material topics relating to mine closure management:</u> Glencore did not disclosure material topics for their business but did disclosure material topics with regards to sustainability disclosure which included: — Health and safety — Catastrophic hazard management — Process safety management — Climate change and emissions — Water and effluents — Waste and spills — Local community engagement and social commitment compliance — Human rights and grievance mechanisms — Product stewardship — Emerging regulations Although mine closure are not specifically noted as material, some of the material topics does relate to closure such as community engagement and emerging regulations.		Other business risks disclosed in 2017 includes '*laws, regulations, enforcement, permits and licences to operate*', which can imply regulations pertaining to mine closure. <u>Future targets, objectives relating to mine closure:</u> None disclosed in 2017.		A specific target for South African assets includes the completion of impact assessment for mine closure that will support the development of social programmes that deliver a sustainable closure for local communities.

Principles		2016		2017		2018	
		Score	Description	Score	Description	Score	Description
			Mine closure is reflected in the company's material risks relating to local community engagement and social commitment compliance topics. <u>Future targets, objectives relating to mine closure:</u> Glencore identified the following future priorities: — Continue to implement activities that further integrate sustainability throughout the business — Support commitments to continuously improve over standards of health, safety, environmental and community performance.				
Principle 2: Mine closure planning and management	Is there mine closure plans for mining operations?	1	<u>Mine closure plans:</u> Glencore reported that all operations have a mine closure plan in 2016. The company stated that planning for rehabilitation begins before commencement of mining through development and maintaining a MCP which considers economic, societal and environmental factors. A closure plan, as defined by Glencore in 2016, included "*A formal document detailing a costed conceptual outline of how the operation will be closed, taking into account the options available to deal with prevailing social and*	1	<u>Mine closure plans:</u> There are no specific reference made to the content of mine closure plans in 2017 disclosures, other than reporting that all operations has a MCP. Glencore disclosed in 2017, that the company is participating in the ICMM working groups on closure and socio-economic impacts on communities. The work is in process and not further results were disclosed on the nature of this engagement and expected outcome of mine closure planning in Glencore.	1	<u>Mine closure plans:</u> There were no specific reference made to the content of MCPs in 2018, other than reported that all operations have an MCP. Glencore noted in 2018, that all of coal's operational management have clear performance expectations on rehabilitation, but does not specifically note the nature of such performance expectations. Additional disclosure over mine closure planning in 2018 included: — The company's mine closure planning processes includes treatment of final voids, including minimising

Principles		2016		2017		2018	
		Score	Description	Score	Description	Score	Description
			environmental issues. We set aside funds specifically for site closure, including land rehabilitation, based on this document" (Glencore, 2016b:122). Each site are required to prepare an ARLMP which details the company's concurrent rehabilitation and proposal for further work to be conducted. No specific information is provided to specify the nature of rehabilitation, other than providing case study examples for completed rehabilitation at selected Glencore operations. <u>Mine closure objectives:</u> In the SR, Glencore disclosed that they aim to return mine land to either self-sustaining native ecosystems, agricultural use or other purpose agreed by the host governments in consultation with local communities. Furthermore, Glencore disclosed that the company is committed to concurrent rehabilitation during the operational phase of their mines as well as during closure. The company specifically note that it work closely with host communities to manage the transition into closure to ensure that the organisation leaves a positive, lasting change.		<u>Mine closure objectives:</u> None disclosed in 2017.		the size or environmental impact of the final void and demonstrate beneficial re-use opportunities. — The company also notes that is actively participate in industry research on improving the understanding of, and developing guidance on, final voids and post-mining land use. — Glencore also actively look at the social transition involved in mine closure (for example development of rural development strategies, community strengthening initiatives and participating in the design of long-term regional development plans). These activities are not yet integrated across their operational footprint and is limited to specific mines as case studies. <u>Mine closure objectives:</u> Glencore disclosed in 2018, that the company's approach to mine close focuses on land management options that support sustainable post-mining land use.

Principles		2016		2017		2018	
		Score	Description	Score	Description	Score	Description
			In the SR, Glencore note that the company is committed to rehabilitation and restoration of land progressively during the course of the mine's life cycle.				
	Is there reference made to periodic updates to mine closure plans to refine content and incorporate changes in environment, policies etc?	1	Glencore notes that the closure plan must be continuously maintained for each operation throughout the life of the operation. Glencore further note that the MCP are reviewed annually. The nature of the MCP indicates it is a conceptual view of closure of the operations only and that ARLMP are developed. It is assumed by the reader that the information in the ARLMP reflects periodic updates provides the required information for update of the MCPs.	0	No disclosure	0	No disclosure
	Is there reference made to compliance with laws and regulations?	0	<u>Reference to compliance to laws and regulations:</u> Glencore noted that the company are subject to extensive laws and regulations which include: — Bribery and corruption — Taxation — Anti-trust — Financial markets regulations — Management of natural resources — Licences over resources owned by various governments	0	<u>Reference to compliance to laws and regulations:</u> The same information is disclosed in 2017 as per 2016 AR and SR respectively with regards to compliance. Glencore summarises the extensive laws and regulations as per the 2016 disclosure and provides reference to the company's compliance strategies, programmes, governance and reporting requirements and its implementation in the business.	0	<u>Reference to compliance to laws and regulations:</u> The same disclosure as per 2016 and 2017 with regards to compliance management at Glencore. No specific reference provided to compliance with laws and regulations which governs mine closure. <u>Compliance to financial provision regulatory requirements:</u> As disclosed in the 2017 AFR, Glencore only provides reference to rehabilitation trust funds as part of the financial report in 2018 disclosure. According to 2018

Principles		2016		2017		2018	
		Score	Description	Score	Description	Score	Description
			— Exploration production and post-closure reclamation. — Terms associated with operating licences or regulatory permits The company provides extensive disclosure over their approach to ensure compliance which include compliance strategies, programmes, governance and reporting requirements and its implementation in the business. These disclosure addresses all level of compliance, not just specific compliance relating to environmental management or mine closure. The company considers the change in laws and regulations as a material risk to their business as. This is as a result of stringent requirements which required additional expenditure as well as lead to imposed suspensions of operations and delays in development of assets. The company narratively commented to operating transparently, responding and meeting or exceeding applicable laws or external requirements.		As noted in 2016, the disclosures over compliance in 2017, addresses all level of compliance, not just specific compliance relating to environmental management or mine closure. Similar to 2016, 2017 also included risk '*Laws, regulations, enforcement, permits and licences to operate*' and Glencore commits that the company seek to ensure full compliance by either complying or exceeding the laws and external requirements imposed on the company. <u>Compliance to financial provision regulatory requirements:</u> Glencore only provides reference to rehabilitation trust funds as part of the financial report. According to 2017 disclosure, Glencore makes contributions to controlled funds that were established to meet the cost of restoration and rehabilitation, primarily in South Africa. The company however fail to indicate that the nature of the legal obligation and whether the funds are adequate (i.e. fully funded) as required by law.		disclosure, Glencore makes contributions to controlled funds that were established to meet the cost of restoration and rehabilitation, primarily in South Africa. The company however fail to indicate that the nature of the legal obligation and whether the funds are adequate (i.e. fully funded) as required by law.

Principles		2016		2017		2018	
		Score	Description	Score	Description	Score	Description
			The company does not specify the specific legislative requirements associated with mine closure in their corporate reports. <u>Compliance to financial provision regulatory requirements:</u> No reference made to compliance against specific laws and regulations governing mine closure.				
	Is there disclosure over the remaining life of mine and management actions required to meet the closure objectives?	0	No disclosure reference to remaining life of mine periods provided in the corporate reports.	0	No disclosure reference to remaining life of mine periods provided in the corporate reports. Glencore did provide disclosure over the number of closed mines and number of mine's close to closure, however no reference to specific operations.	0	No disclosure reference to remaining life of mine periods provided in the corporate reports
	Has the organisation engaged with stakeholders on mine closure, specifically mine closure objective and final land use criteria?	1	<u>Stakeholder engagement:</u> Glencore noted that its business continue to face a number of complex challenges, but the company remain committed to maintaining open dialog and engagement with all our stakeholders. Throughout the IR and SR, Glencore reflects over stakeholder engagement programmes that are performed and inclusion of stakeholder's issues into their business decisions, as disclosed "*we continuously incorporate feedback from key*	0	<u>Stakeholder engagement:</u> Glencore noted in 2017, that the company engage with all relevant stakeholder groups to build meaningful relationships and understand their business expectations. The 2017 SR also reflects on the stakeholder engagement policy, which form part of Glencore's HSEC framework, as disclosed in 2016.	1	<u>Stakeholder engagement:</u> Glencore reported that they engage on a board variety of topics with a wide range of stakeholders with diverse interest and options. Glencore's stakeholder groups, as reported in 2018 included: — Employees and contractors — Host communities — Civil society — Unions — Governments

<table>
<tr><th colspan="2" rowspan="2">Principles</th><th colspan="2">2016</th><th colspan="2">2017</th><th colspan="2">2018</th></tr>
<tr><th>Score</th><th>Description</th><th>Score</th><th>Description</th><th>Score</th><th>Description</th></tr>
<tr><td></td><td></td><td></td><td> stakeholders both internal and external, into the strategy" (Glencore, 2016b:26). The company does not provide a specific summary to outline the types of stakeholders and their matter issues as seen in IRs. Reference is made to stakeholder engagement policy as part of the Group's HSEC policy framework. The HSEC policies detail the group's management processes and procedures, which are integrated into corporate decision-making processes. No further reference with regards to nature of stakeholder engagement, identified stakeholders or their material issues. Narrative disclosures around stakeholder engagement is rather disclosed in specific sections, where such information is relevant, for example, community engagement. <u>Community engagement on mine closure:</u> Glencore considers community relations as a key material matter in 2016. This matter is specifically includes impact on host communities where the company operate. Specific attention is presented over mine closure. Glencore acknowledge that some of its operations are located in remote locations </td><td></td><td> <u>Community engagement:</u> In 2017, Glencore noted that a stakeholder engagement programme was implemented at their South Africa coal operations. The programme includes communities and regulators as the key stakeholders and is aimed to address community upliftment initiatives. No further information is presented around the nature of the engagement and whether the engagement process also considered mine closure objectives. </td><td></td><td> — Business partners
— NGOs
— Investors
— The media <u>Community engagement:</u> According to 2018 disclosure many of the operations host open days, where the local community members can visit the operations and interact with the operational teams. The company further noted that their asset-based community engagement teams build networks of contracts within local communities and decision-making authorities. These teams engage with the communities to share and obtain information over business activities, key risks and control measures. The nature of engagement with local communities include open-house sessions, formal engagements, face-to-face discussions and local grievance mechanisms. The key concerns raised by local communities in 2018 included: — Local employment and procurement opportunities
— Local socio-economic development projects
— Environmental management
— Potential site closure </td></tr>
</table>

Principles		2016		2017		2018	
		Score	Description	Score	Description	Score	Description
			resulting in Glencore being the primary employer in the region. Transitioning to closure in such locations is challenging, and Glencore acknowledge and disclosure that they work with all stakeholders at these operations to operate for as long as it's economically viable and to prepare long-term plans for a gradual transition into closure of the operation. Glencore also disclosed that they approach to community engagement is to adhere to principles of open dialogue and cooperation between the company and host community.				The potential site closure concerns where first disclosed as a matter by Glencore in 2018. Glencore does make reference to specific mine closure projects and related engagement with key stakeholders as case studies. Glencore also reflected on the proposed development of land management options that support sustainable post-mining land use which will be conducted in 2019 at the South African coal assets.
	Are there key performance indicators used to measure performance of closure management in the organisation?	1	Number of KPIs: Two KPIs disclosed as part of narrative management disclosure and include: 1. Total land rehabilitated and total land disturbed, presented in hectares. 2. Number of operations with MCPs (presented as narrative to just state "all" operations have MCPs. No disclosure over the total of MCPs as a value.) The company's financial provision estimate, for the Group is also disclosed in the financial report, presented in US$.	1	Number of KPIs: Two KPIs disclosed as part of narrative management disclosure and include: 1. Total land rehabilitated and total land disturbed, presented in hectares. 2. Number of operations with MCPs (presented as narrative to just state "all" operations have MCPs. No disclosure over the total of MCPs as a value.) The company's financial provision estimate, for the Group is also disclosed in the financial report, presented in US$. In 2017, Glencore disclosed information with regards to the changes in total land disturbed	1	Number of KPIs: Two KPIs disclosed as part of narrative management disclosure and include: 1. Total land rehabilitated and total land disturbed, presented in hectares. 2. Number of operations with MCPs (presented as narrative to just state "all" operations have MCPs. No disclosure over the total of MCPs as a value.) The company's financial provision estimate, for the Group is also disclosed in the financial report, presented in US$. A narrative disclosure over changes in total land disturbed is again disclosed, as per 2017 disclosure, referencing the same divestment of asset (Optimum and

Principles		2016		2017		2018	
		Score	Description	Score	Description	Score	Description
			The SR report provide a narrative description over the rehabilitation performance in South Africa, which includes: — Significant small opencast mining rehabilitation progress in South Africa, rehabilitating 740 ha in the past two years. — 440 ha sustainable grassland were made available for agri-culture in Witbank area.		as a result of divestment of the Optimum and Sherwin assets in 2016. The company narratively provides an explanation in the change of disturbance as well as note areas of re-disturbance which was previously rehabilitated. Rehabilitation performance: In 2017, Glencore provided extensive disclosure relating to rehabilitation of land. It noted the following: — Glencore's coal assets has the largest land footprint across the group (39% of total land disturbed by all of Glencore's operations). — The coal business owns or leases an estimate of 570 000 hectare and have disturbed 55 000 (10%) of the total land owned or leased in 2017. — The company has further rehabilitated around 17 000 of the total land owned or leased associated with its coal business. The company note that it had 12 coal assets in care and maintenance and 5 moving to closure. (The company does not reflect the names or locations of these operations).		Sherwin mines) and re-disturbance of some areas which was previous rehabilitated. Rehabilitation performance: In 2018, Glencore provided extensive disclosure relating to rehabilitation of land. It noted the following: — Glencore's coal assets has the largest land footprint across the group. — The coal business owns or leases an estimate of 600 000 hectare and have disturbed 57 000 (6%) of the total land owned or leased in 2018. — The company has further rehabilitated around 19 000 (3%) of the total land owned or leased associated with its coal business. — The company note that it had 12 coal assets in care and maintenance and 5 moving to closure. (The company does not reflect the names or locations of these operations).
Principle 3: Financial	Is a financial provision estimate	1	Financial provision:	1	Financial provision:	1	Financial provision:

Principles		2016		2017		2018	
		Score	Description	Score	Description	Score	Description
provision disclosure	been disclosed in terms of Financial Reporting obligations?		A group based financial provision estimate was disclosed in US$, in accordance with IFRS. <u>Contingent liability:</u> No contingent liability disclosed.		A group based financial provision estimate was disclosed in US$, in accordance with IFRS. <u>Contingent liability:</u> No contingent liability disclosed.		A group based financial provision estimate was disclosed in US$, in accordance with IFRS. <u>Contingent liability:</u> No contingent liability disclosed.
	Is reference made to the scope of the financial provision estimate in terms of a description of the cost included?	0	<u>Financial provision:</u> Glencore reported in 2016, that the organisation is managing closure of all operations throughout the life of each operation in accordance with a MCP. The MCPs are continuously maintained as well as appropriate financial provisions. Glencore note that the financial provisions is based on current studies of expected rehabilitation activities and timing. The cost is based on assumption of third party contractor rates and existing lives of operations. The financial provision is a deterministic or static forecast of the cost estimate. The presented financial provision is discounted (NPV). Glencore further indicate that the provision for future restoration, rehabilitation and decommissioning costs includes assumptions with regards to: — Relevant regulatory framework — Magnitude of the possible disturbance — Timeframe	0	<u>Financial provision:</u> As reported in 2016, Glencore disclosed that the Group's financial provision estimate was based on current studies of expected rehabilitation activities and timing. The cost is based on assumption of third party contractor rates and existing lives of operations. The financial provision is a deterministic or static forecast of the cost estimate. The presented financial provision is discounted (NPV). No further disclosure made on the nature of cost accounted for by Glencore (i.e. demolition, rehabilitation, risk adjustments, social closure etc.) <u>Contingent liability:</u> Not applicable as Glencore did not disclosure a contingent liability.	0	<u>Financial provision:</u> As per the disclosure reference in 2016 and 2017, Glencore only reflects that the roup's financial provision estimate was based on current studies of expected rehabilitation activities and timing. The cost is based on assumption of third party contractor rates and existing lives of operations. The financial provision is a deterministic or static forecast of the cost estimate. The presented financial provision is discounted (NPV). In 2018, Glencore also reflected on the close site's rehabilitation costs which included the following statement: "*closed site rehabilitation costs relates to movements on restoration, rehabilitation and decommissioning estimate related to sites that are no longer operational and are thus classified as 'closed sites*" (Glencore, 2018a:160). No additional information presented over the number of closed sites or related cost to be incurred at these operations. No further disclosure made on the nature of cost accounted for by Glencore (i.e. demolition, rehabilitation, risk adjustments, social closure etc.) <u>Contingent liability:</u>

Principles		2016		2017		2018	
		Score	Description	Score	Description	Score	Description
			— Extent and cost required for closure and rehabilitation activities. No further disclosure made on the nature of cost accounted for by Glencore (i.e. demolition, rehabilitation, risk adjustments, social closure etc.). Contingent liability: Not applicable as Glencore did not disclosure a contingent liability.				Not applicable as Glencore did not disclosure a contingent liability.
	Is there reference made to the number of operations covered by the financial provision estimate to verify the completeness of the estimate?	0	No disclosure provided to indicate a breakdown of the financial provision per operation.	0	No disclosure provided to indicate a breakdown of the financial provision per operation.	0	No disclosure provided to indicate a breakdown of the financial provision per operation.
	Is there reference made to independent assessment or review of environmental provision estimates to verify the reliability of	0	No disclosure over independent assessment or review of financial provision estimates, other than stating that the operations are required to annually assess and maintain the financial provisions.	0	No disclosure over independent assessment or review of financial provision estimates, other than stating that the operations are required to annually assess and maintain the financial provisions.	0	No disclosure over independent assessment or review of financial provision estimates, other than stating that the operations are required to annually assess and maintain the financial provisions.

Principles		2016		2017		2018	
		Score	Description	Score	Description	Score	Description
	the information disclosed?						

ANNEXURE II SUMMARISED GUIDING PRINCIPLES FOR ADEQUATE CORPORATE REPORTING AS PROPOSED BY VARIOUS INTERNATIONAL GUIDANCE ON CORPORATE REPORTING AND DISCLOSURE

Table A5: A summary of guiding principles on effective disclosure as proposed by various international guidance on corporate reporting

Defining principle	The International Integrated Reporting Framework: Guiding principles for integrated reporting (IIRC, 2013)	Global Reporting Initiative (GRI) Principles for defining report content and quality (GSSB, 2016)	Task Force on Climate-related financial disclosures: principles for effective disclosures (TCFD, 2017)
a) Scope of information being reported	P2: Connectivity of information: An integrated report should show a holistic picture of the combination, interrelatedness and dependencies between the factors that affect the organization's ability to create value over time P3: Stakeholder relationships: An integrated report should provide insight into the nature and quality of the organization's relationships	Principles defining report content: P1 - Stakeholder Inclusiveness Principle: The organization should identify its stakeholders, and explain how it has responded to their reasonable expectations and interests. P2 - Sustainability Context Principle: The report should present the organization's	P1: Disclosures should represent relevant information P3: Disclosures should be clear, balanced, and understandable

	with its key stakeholders, including how and to what extent the organization understands, takes into account and responds to their legitimate needs and interests.	performance in the wider context of sustainability. P5 - Balance Principle: The report should reflect positive and negative aspects of the organization’s performance to enable a reasoned assessment of overall performance. P9 - Clarity Principle: The organization should make information available in a manner that is understandable and accessible to stakeholders using the report.	
(b) Materiality or significance of information	P1: Strategic focus and future orientation: An integrated report should provide insight into the organization’s strategy, and how it relates to the organization’s ability to create value in the short, medium and long term, and to its use of and effects on the capitals	P3 - Materiality Principle: The report should cover aspects that: (a) reflect the organization’s significant economic, environmental and social impacts; or (b) substantively influence the assessments and decisions of stakeholders.	

	P4: Materiality: An integrated report should disclose information about matters that substantively affect the organization's ability to create value over the short, medium and long term		
(c) Timeframe of disclosure	P7: Consistency and comparability: The information in an integrated report should be presented: (a) on a basis that is consistent over time; and (b) in a way that enables comparison with other organizations to the extent it is material to the organization's own ability to create value over time.	P8 - Timeliness Principle: The organization should report on a regular schedule so that information is available in time for stakeholders to make informed decisions.	P7: Disclosures should be provided on a timely basis P4: Disclosures should be consistent over time
(d) Reliability of information (accuracy / completeness)	P6: Reliability and completeness: An integrated report should include all material matters, both positive and negative, in a balanced way and without material error	P10 - Reliability Principle: The organization should gather, record, compile, analyze and disclose information and processes used in the preparation of a report in a way that they can be subject to examination and that	P6: Disclosures should be reliable, verifiable, and objective P2: Disclosures should be specific and complete

		establishes the quality and materiality of the information. P7 - Accuracy Principle: The reported information should be sufficiently accurate and detailed for stakeholders to assess the organization's performance. P4 - Completeness Principle: The report should include coverage of material aspects and their boundaries, sufficient to reflect significant economic, environmental and social impacts, and to enable stakeholders to assess the organization's performance in the reporting period.	
(f) Presentation of information (format of disclosure)	P5 - Conciseness: An integrated report should be concise	P6 - Comparability Principle: The organization should select, compile and report information consistently. The reported information should be presented in	P5: Disclosures should be comparable among companies within a sector, industry, or portfolio

		a manner that enables stakeholders to analyze changes in the organization’s performance over time, and that could support analysis relative to other organizations.	