UNIVERSITY OF CAPE TOWN

FACULTY OF SCIENCE

DEPARTMENT OF ENVIRONMENTAL AND GEOGRAPHICAL SCIENCE

Research Dissertation for the Degree of:

Master of Science

Environmental and Geographical Sciences

Investigating strategies for involving host mining communities in mine closure planning: An integrated stakeholder engagement in the West Rand, South Africa

by

Karabelo Innocent Majela

Supervisor: Dr. J. RC Von Holdt

University of Cape Town

Co-Supervisor: Dr. M. Mpanza

University of Johannesburg

Table of Contents

List of Figures

List of Tables

List of Acronyms and Abbreviations

AMD	Acid Mine Drainage
AEL	Atmospheric Emissions Licenses
ANZMEC	Australian and New Zealand Minerals and Energy Council
CSO	Civil Society Organisations
CBO	Community-Based Organizations
CSR	Corporate Social Responsibility
DFFE	Department of Forestry, Fisheries and the Environment
ECASADC	Economic Commission for Africa and Southern African Development Community
OECD	Economic Cooperation and Development
ESMS	Environmental and Social Management System
EAP	Environmental Assessment Practioner
EA	Environmental Authorisation
EIA	Environmental Impact Assessment
EMP	Environmental Management Programme
EMPr	Environmental Management Programme report
ESIA	Environmental Social Impact Assessment
EITI	Extractive Industry Transparent Initiative
GRI	Global Reporting Initiative
GW	Gold Wheaton
GN	Government Notice
IRMA	Initiative for Responsible Mining Assurance
IDP	Integrated Development Plans
I&AP	Interested and Affected Parties
ICMM	International Council of Mining and Metals
IFC	International Finance Corporation
LED	Local Economic Development
MPRDA	Minerals and Petroleum Resources Development Act
MPRDA	Minerals and Petroleum Resources Development Act
NAAQS	National Ambient Air Quality Standards
NEMA	National Environmental Management Act

NEMAQA	National Environmental Management Air Quality Act
NEMPAA	National Environmental Management: Protected Areas
NRGI	National Resources Governance Institute
NWA	National Water Act
NGO	Non-Governmental Organisations
PGEs	Platinum Group Elements
PRQ	Primary Research Questions
PMBK	Project Management Body of Knowledge
RSA	Republic of South Africa
S&EIR	Scoping and Environmental Impact Assessment Report
SIA	Social Impact Assessment
SLP	Social Labour Plan
SLO	Social License to Operate
SANCO	South African National Civic Organization
SPP	Southern Pacific Petroleum
SEMA	Specific Environment Management Acts
GISTM	Standards on Tailings and Management
SMCRA	Surface Mining Control and Regulations Act
SDG	Sustainable Development Goals
TSF	Tailings Storage Facility
UN	United Nations
UNHR	United Nations Human Rights
UN SDGs	United Nations Sustainable Development Goals
WRDM	West Rand District Municipality

Acknowledgements

First, I would like to thank God the Almighty for carrying me this far and keeping me abreast amidst this world's trials and tribulations. Indeed, Psalms 121:1-2 carried me throughout to remind me that He does the impossible because He is who He says He is and who always keeps his promises. He always declared every day that He had plans to prosper and not harm us but to give us hope and hope for the future (Jeremiah 29:11).

I would also like to thank my family and my supervisors, Drs. Johanna Von Holdt and Mbalenhle Mpanza, for their dedication, assistance, and support in helping me become a better version of myself and improve. I would also like to thank all the participants who have assisted me and partaken in the study to share their knowledge and experiences. Without them, this would not have been possible, and for that, I Thank You!

Declaration

This dissertation, Investigating Strategies for Involving Host Mining Communities in Mine Closure Planning: An Integrated Stakeholder Engagement in the West Rand is submitted for the degree Master of Science in Environmental and Geographical Science at the Department of Environmental and Geographical Sciences. To the best of my knowledge, I, Karabelo Majela, declare that this dissertation has not been submitted for examination at any university and is my work. All materials used and contained in this study have been duly acknowledged.

	11 October 2024
Signature	Date

Abstract

Sustainability challenges are intricate and interconnected and require a collaborative effort from multiple stakeholders. There is an increased accountability for mining companies to implement socially responsible strategies to curb environmental, social and economic impacts in societies, particularly within the context of mine closure and host mining communities. This is primarily because these impacts are disproportionately felt at the community level. Responsible mining practices are equally crucial in addressing these impacts. These practices include social and environmental assessments, transparency, and compliance with international standards, which ensure that mining operations do not compromise the well-being of local communities and ecosystems. By integrating responsible mining principles, mining companies can mitigate adverse impacts and contribute to sustainable development. Literature also highlights that industry best practices continues to promote the need to engage host mining communities in mine closure planning and processes through stakeholder engagement. Effective stakeholder engagement not only fosters collaboration and innovative outcomes but also ensures that responsible mining practices are upheld, thereby promoting long-term sustainability and community well-being. However, despite this, there is a gap in knowledge on continuous community consultation in mine closure planning through stakeholder engagement. This includes the practical application of the integration of host mining communities in mine closure planning and maintaining ongoing stakeholder engagement with communities. Additionally, the lack of integration of host mining communities is exacerbated by unclear regulatory frameworks that create legislative loopholes for mining companies to treat and maintain stakeholder engagements as an optional administrative activity. Thus, this research uses the West Rand area to enhance the understanding of the impacts of mine closure on host mining communities. This is done to recommend strategies that could potentially improve the integration of host mining communities into mine closure plans within the South African context. To realise the above-stated aim, the study was conducted through a qualitative research approach using thematic content analysis based on four primary research questions: (1) What are the impacts of mine closure in mining host communities in the West Rand Region? (2) How do legislative uncertainties influence the decision-making of mining companies concerning mine closure and integration of host mining communities in closure plans? (3) What is the level of communication transparency between host mining communities and mining companies in the West Rand? and (4) What are the existing integration strategies for the inclusion of host mining communities into closure plans in the West Rand? The findings reveal

that the impacts of mine closure cuts across the three pillars (environmental, social and economic) of sustainable development. The evaluation of these impacts should take place using a cascading approach. Secondly, the current legislation is ineffective due to institutional capacity, legislative gaps and a phenomenon called revolving door, a mechanism for captured state institutions. Thirdly, there is miscommunication between mining companies and communities due to a lack of established mining community structures, high community illiteracy levels, and the use of technical language in reports. Lastly, existing engagement strategies by mining companies in the West Rand are still ineffective due to selective engagement, lack of feedback monitoring, and lack of clarity and purpose in meetings. Therefore, the study proposes a constructive and proactive stakeholder engagement framework that promotes collaboration and ongoing engagements with host mining communities while elucidating and recommending reforms to the existing legislative ambiguities that hinder ongoing stakeholder engagement, the inclusion of host mining communities and the sustainable closure of mines.

Keywords

stakeholder engagement, mine closure, sustainability, host mining communities, sustainable development.

Chapter 1: Introduction

1.1 Background

Sustainability challenges are intricate and interconnected in nature, requiring multiple stakeholders to collaborate (Stubbs and Cocklin, 2008; Bocken et al., 2019). The International Council of Mining and Metals (ICMM) has, in recent years, increased its demand for businesses and companies involved in the mining industries to show greater accountability towards all interested and affected parties (I&APs) impacted by their operations (ICMM, 2015). This was primarily because the environmental, social, and economic impacts associated with mining activities are felt globally, thus negatively impacting sustainable development.

These adverse environmental, social and economic impacts are collectively called the three pillars of sustainability (triple bottom line), and they are disproportionately felt most at local levels within mining host communities (Natural Resource Governance Institute, 2014). According to Bansal and DesJardine (2014), addressing the three pillars of sustainability promotes sustainable development. Sustainable development ensures that the current generation satisfy their needs without jeopardising the ability of future generation to do the same, thereby promoting intergenerational equity (WCED, 1987).

Matikainen (2022) consequently, posited that for sustainable outcomes to be reached, stakeholder engagement is needed to promote collaboration and innovative outcomes. However, despite this, there is still a lack of research on ongoing community consultation in mine closure planning, particularly involving host mining communities and maintaining continuous stakeholder engagement (Bocken et al., 2013; Costa, 2016; Horowitz et al., 2018; O'Faircheallaigh and Lawrence, 2019; Bocken et al., 2019; Schneider and Clauss, 2020; Preghenella and Battistella, 2021; Majela, 2022; Rathobei et al., 2024).

South Africa has been one of the many countries worldwide that have responded to international bodies' calls to implement sustainability strategies in their development plans (Murombo, 2008). The country has impressive laws to preserve natural resources and ensure their sustainable use. However, there are notable gaps within the current South African legislation on stakeholder engagement. The primary governing legislation, the Minerals and Petroleum Resources Development Act (MPRDA) 28 of 2002 and the National Environmental Management Act (NEMA) 107 of 1998, does not promote ongoing stakeholder engagements. The Acts only require engagement with I&AP during the environmental authorisation phase.

This creates a legislative loophole as mining companies treat stakeholder engagement as an administrative exercise. This calls for South African policymakers to implement and enforce laws and policies that support sustainable practices and thus promote sustainable development.

Murombo (2008) highlighted that true sustainable development requires legal measures to engage all relevant stakeholders in mine closure planning and processes. This includes incorporating public input into the mining company's decision-making, leading to more balanced perspectives and promoting sustainable outcomes. It is for this reason that stakeholder engagement was noted by the United Nations Sustainable Development Goals (UN SDGs) to promote sustainable outcomes as well as address issues such as knowledge gaps or ethical dilemmas concerning legislation or policies in an organisation by providing insights to help solve complex issues and navigate such problems through a collaborative effort (United Nations, 2020; United Nations, 2020; Mitchell et al., 2022). It can thus be concluded that stakeholder engagement plays a pivotal role in shaping and reforming organisations and, therefore, comes as a viable tool within the mining sector to engage stakeholders on an ongoing basis and promote policies and legislative reforms that are more inclusive and will support ongoing stakeholder engagement (Mtegha et al., 2006; Chipangamate et al., 2023).

Responsible mining practices are equally crucial in addressing the environmental, social, and economic impacts of mining activities. These practices include social and environmental assessments, transparency, and compliance with international standards, which ensure that mining operations do not compromise the well-being of local communities and ecosystems. By integrating responsible mining principles, mining companies can mitigate adverse impacts and contribute to sustainable development (Goodland, 2012). As a result, mining companies integrating stakeholder engagement into their operations, can ensure that their practices are responsible, sustainable, and aligned with the needs and expectations of all affected parties. This synergy between stakeholder engagement and responsible mining ultimately leads to more ethical, transparent, and sustainable closure of mining operations.

Mine closure planning is a critical phase in the lifecycle of a mine to ensure the environmental, social and economic impacts of mine activities are addressed sustainably (DesJardine, 2014). As evidence, effective stakeholder engagement ensures that the concerns and needs of I&AP by mining activities are integrated into the closure plan and thus, promoting responsible mining. Therefore, stakeholder engagement in mine closure planning acts as a mechanism for mining companies to identify issues early. It facilitates a smooth transition for host

communities post-closure and promotes long-term sustainability (Clegg, 2013). This is supported by the principles of ICMM (2019) where Principle 9.1 advocates for inclusive strategic approaches and their implementation with local host communities to identify development priorities and support activities that foster enduring social and economic well-being. Therefore, integrating continuous community consultation and stakeholder engagement aligns with sustainable development and community well-being goals.

To provide clarity and establish a strong foundation for the next sections and chapters of this study, it is essential to define key terms at the outset. Concepts such as mine closure and stakeholder engagement play a central role in this study, shaping the broader implications of the research. The introduction of these definitions early into this section, is to provide better orientation before engaging with the complexities of the conceptualisation and justification discussions of this research. This approach is adopted to ensures coherence and enhance comprehension, for a more seamless transition into the core narratives of this dissertation.

1.1.2 Mine closure definition

Numerous definitions exist in the literature on what constitutes ‘mine closure’. According to Vivoda et al. (2019) and Brock et al. (2019), mine closure encompasses four steps: planning, impact mitigation of mining legacies, land rehabilitation, decommissioning and relinquishment. Mine closure can be defined as a phenomenon that takes place once the natural resources have been completed, which is called the decommissioning phase and includes processes such as infrastructure removal, rehabilitation activities of land and relinquishment of all rights of the operator by the state after the operator having met all the legislative requirements, resulting in the issuance of a closure certificate (Matebesi et al., 2023). In this case, the definition of mine closure has limitations; while correctly described as a process, the closure of mines does not occur only because of depleting natural resources or fluctuations in the price of commodities. Mine closure according to Laurence (2006) can also occur due to (1) geological and structural conditions, such as unanticipated decreased size of the ore body. (2) fluctuating commodity prices, as well as (3) mining companies not meeting legislative requirements or (4) the absence of a Social Licence to Operate (SLO) due to community opposition.

The ICMM (2019) defined mine closure as an interactive, inclusive and dynamic process that factors in environmental, economic and social factors throughout the lifecycle of a mine, and

the process forms an integral part of the mine's operations and core business. Therefore, considering the multiple definitions that exist in the literature on mine closure, the study adopts the following definition of mine closure:

As an engaging process that takes place at the decommissioning phase of the mining lifecycle after the operator has met the set country legislative requirements and a closure certificate is issued to the operator by the state.

The term 'engaging' in the mine closure process is of utmost importance. It signifies the need for inclusivity of all interested and affected parties, proactive risk management to address potential risks, and a balance between environmental, social, and economic factors. Moreover, mine closure planning should not be a reactive measure during the decommissioning phase but rather a proactive part of the business's core operations from the outset of prospecting. This is also primarily because of the long-lasting impacts that negatively impact sustainable development and any progress made towards attaining the SDGs (Owen and Kemp, 2018; Cole and Broadhurst, 2020). Therefore, the term 'engaging' in the mine closure process is of utmost importance. It signifies the need for inclusivity of all I&AP, proactive risk management to address potential risks, and a balance between environmental, social, and economic factors. Therefore, underpinning the involvement of relevant parties in decision making and planning, and consequently, stakeholder engagement.

1.1.3 Stakeholder engagement theories and definitions

The definition of a 'stakeholder' has been widely debated in literature. The main contestation of the definition is around the conceptual confusion of the term (Renn, 2015; De Grandis and Halgunset, 2016). According to Krstic (2014) 'stakeholder' is a phrase that consists of two root words: 'stake', which implies an 'interest', and 'holder', which implies a 'carrier'. The term dates back to Freeman (1984), in which he defined it as individuals or a group of individuals who have the potential to influence an organisation. According to Ranängen (2017), it is a group of people or individuals with a specific impact on an organisation. It should be noted, however, that Freeman's (1984) definition has been criticised, partly because various authors stated that it lacks demarcation as it considers everyone to be a stakeholder. In his response, Freeman (1984) posited that his stakeholder theory focused on stakeholders and not societies. Quartey (2020) substantiated that although Freeman's (1984) definition gives the impression that society is equated to stakeholders, it was not Freeman's (1984) intention to do that.

Clarkson (1995) also shared their opinion on the definition of stakeholders; they defined it as a group of people who, present, past or future, have claim, ownership, rights, or a keen interest in an organisation's activities.

This section expands on the term 'stakeholder' by introducing the concept of 'engagement'. The main point is to emphasize that engagement is an ongoing process. It is not enough for organizations to merely communicate; they must actively engage with their stakeholders (Ansu-Mensah et al., 2021). Therefore, Amoako (2017) defines stakeholder engagement as processes and strategies that organisations conduct, with their I&AP. Andrews (2019) added that the techniques to engage the stakeholders must be through consultation, collaboration, recognition of interested parties, discourse and interaction. Del Baldo and Aureli (2019) substantiated that ISO 26000 standards of social responsibility also lay down the definition of stakeholder engagement as mechanisms of interactions established by an organisation to interact with one or more of its interested parties to enhance the decision-making of an organisation. According to Nana and Beddewela (2019) and Kujala et al. (2022), the main purpose of stakeholder engagement is to establish relationships with stakeholders and incorporate their opinions and concerns into the company's corporate strategy. Therefore, it is important to classify and identify stakeholders who will have the most impact on the business's day-to-day operations and who may negatively impact the reputation of the business.

The key concepts such as mine closure and stakeholder engagement now defined; the foundation is set for understanding the broader concepts that are fundamental to this research. Therefore, given the definitions, it is crucial to examine the importance of this study and its contribution to the existing knowledge. The following section outlines the justification for this research, emphasising its relevance and gaps it seeks to address, and the implications for policy and practice.

1.2 Justification and conceptualisation of the study

The following sections present the study's justification; through a funnelling approach, the justification is supported by international literature, literature focused on the African continent, and literature focused on the South African context.

1.2.1 An International review context

The United Nations 2030 Agenda for Sustainable Development, with the agenda "of the people, by the people and for the people," identified the need to manage risks and enhance long-lasting relationships with communities impacted by mining operations. The international body suggested an inclusive and proactive stakeholder engagement with government entities, mining companies, and financial institutions to promote accountability and transparency for optimal outcomes between mining companies and their host communities to create peaceful and just societies as its cornerstone of the 2030 Agenda (United Nations, 2020:5). It is crucial to recognise the ongoing impacts of mine closure, which continue to harm the environment and global societies. This underscores the urgency of sustainable mine closure planning and the need for effective stakeholder engagement to mitigate these impacts.

The closure of mines internationally has been shown to cause persistent negative impacts across generations, adversely affecting sustainable development (Owen & Kemp, 2018). To substantiate this, Cole and Broadhurst (2022), as well as Atlas (2016) posited that the unsustainable closure of mines has significantly negatively influenced the Sustainable Development Goals (SDGs). Table 1 below shows the impact of mine closure and mining activities on the SDGs. The National Resources Governance Institute (NRGI) (2014) and Marais (2013b) highlighted that most of these negative environmental, economic, and social impacts are felt significantly at community levels.

Table 1: Sustainable development goals and the impact of mining activities (Atlas, 2016; Cole and Broadhurst, 2022)

SDGs	Aim of the SGD	Impact of Mining Activities on the SDGs
SDG 1	End poverty in all forms	Mine closures, resettlements, and retrenchments worsen poverty
SDG 2	End hunger and improve food sustainability	Acid Mine Drainage (AMD) degrades soil, impacting food sustainability
SDG 3	Ensure health and well-being	Pollution causes cancer, respiratory diseases, etc.
SDG 5	Promote gender equality	Discrimination in hiring, professional development, and decision-making; failure to address gender-based violence

SDG 6	Sustainable water and sanitation management	AMD pollutes rivers and groundwater
SDG 7	Access to affordable clean energy	Mining is energy-intensive, increasing competition for grid power and non-renewable energy consumption
SDG 8	Promote decent work and economic growth	Over-reliance on mining; mine closures collapse local economies
SDG 11	Promote resilient, safe settlements	Resettlement without livelihood provision and social cohesion
SDG 12	Responsible consumption and production	Insufficient waste, tailings, and pollution management
SDG14	Conserve life below water	AMD discharges into rivers and marine environments
SDG 15	Protect life on land	Mining degrades ecosystems, soil, and land

Internationally, in addition to the environmental, social, and economic impacts of the extractive industry, various authors have reported a broad disengagement from the government in implementing the regulatory framework for the closure of mines. Additionally, the absence of legal guidelines for responsible mine closure planning has been identified as a worldwide issue (Vivoda et al., 2019). According to Owen and Kemp (2018), the absence of regulations threatens the resolution of environmental, social and economic challenges associated with the closure of mines, which has been emphasised as problematic. To bridge this gap, Mtegha et al. (2006), Lemke and Harris-Wai (2015) including Bang et al. (2022) suggested that mining companies engage stakeholders to develop more inclusive policies and regulations.

To cement this, Otto (1997) highlighted that effective stakeholder engagement in mine closure planning is a viable tool to ensure the enhancement of the lives of community members beyond the conventional life of a mine and ensure that mining companies and host communities implement robust measures through a collaborative effort to curb the impacts of mine closure. This statement was further corroborated by the Economic Commission for Africa and Southern African Development Community (ECASADC) (2004), who posited that stakeholder engagement as part of the mine closure planning will likely alleviate the social, economic and environmental impacts of mine closure. Further supporting this, Wasylycia-Leis et al. (2014)

highlighted the necessity of placing communities at the heart of sustainable mining efforts. In 2019, an Australian Senate hearing by the Environment and Communications Reference Committee and the ICMM (2019:13) emphasised that "integrated mine closure should integrate stakeholder involvement and community consultation throughout the mining lifecycle".

Despite the ongoing reaffirmances, there is still a notable literature gap on the continuous community consultation in mine closure planning through stakeholder engagement (Bocken et al., 2013; Costa, 2016; Horowitz et al., 2018; O'Faircheallaigh and Lawrence, 2019; Bocken et al., 2019; Schneider and Clauss, 2020; Preghenella and Battistella, 2021; Majela, 2022). To support the existing stated research gap, which forms the fundamental aim of this dissertation, Rathobei et al. (2024) further argued that in addition to the scant scholarly studies that tackle the integration of host mining communities in mine closure planning and continuous stakeholder engagement of mining communities, there is also a lack of practical application. To further evidence the need to fill this research gap, Drusche and Krause (2021) posited that to minimise environmental, social and economic risks, organisations, such as mining companies, need to develop a wide range of engagement processes and integrate stakeholders in their value-creation process. It is evident, therefore, that while the social aspects of mine closure are increasingly acknowledged as vital to the mining industry, they remain the least understood and implemented as part of sustainable development, and the least explored in scholarly research (Kozłowska-Woszczycka and Pactwa, 2022). Thus, it was essential to evaluate the stakeholder engagement and mine closure in South Africa.

1.2.2 South African context review

Mine closure in South Africa is also perpetually becoming a growing concern. The more pressing and even concerning issue is that many of the mines in South Africa are expected to close. The Auditor-General (2022) posited that there are about 6,100 abandoned mines in South Africa, with a significant number of those subject to extended maintenance while the others are awaiting closure certificates. According to Phala et al. (2017) 600 are located in the Gauteng province alone. Various reasons have resulted in the unsustainable closure of mines in South Africa (expanded more in section 2.5). One of the most significant issues is that legislation is spread across different government departments. This fragmentation leads to divided responsibilities among government personnel who regulate mine closure, resulting in differing interpretations of the legislation (Watson & Olalde, 2019; Miralas et al., 2014). Additionally, it

necessitates individuals with specialised skills to navigate these complexities (Van Druten, 2017). According to Crous et al. (2021) this has contributed to the slow process of mine closures in South Africa, which is attributable to the stated claim of Cornelissen et al. (2019), as mentioned above. These mines then resort to a status of care and maintenance, a widely occurring phenomenon in South Africa.

The closure of mines has not only perpetuated many social ills in South Africa but has also created a sense of urgency. The increased criminal activity due to illegal miners and the subsequent emigration of the local people, especially the young and active population, are leaving behind the frail and vulnerable, leading to the formation of ghost towns (Marais, 2013a). This urgent situation is impacting local infrastructure, resulting in dilapidated buildings due to the deterioration of houses and roads (Siyongwana and Shabalala, 2019). Retrenched workers in the mining industry in South Africa are also experiencing high emotional and psychological stresses and suffering from health issues such as cancer as a result of radioactive materials from the Tailings Storage Facilities (TSF) (Siyongwana and Shabalala, 2019). Other impacts of the closure of mines in South Africa include deterioration of the standard of living due to a decline in economic activity, as the mining industry in South Africa is a driver of employment and economic growth (Marais, 2013a). This underscores the need for immediate and sustainable closure of mines in South Africa. As evidence, mine closure is inevitable and will result in dire environmental, social and economic impacts. The funnelling effect stretches to then evaluate the status of mine closure within the West Rand Municipality as outlined in the following section.

1.2.2.1 West Rand context review

Numerous mines in the West Rand are anticipated to close within the next 10-20 years, and the local economy greatly depends on the mining sector (Dikgwatlhe and Mulenga, 2023). However, despite this, no mechanism has been established to ensure the sustainability of the local economy. To bring into perspective, mining companies in the West Rand employ 70% of the total labour force in the municipality, with 84% in towns, 90% in mining villages, 56% in townships and 55% in informal settlements (Cole & Broadhurst, 2022). This accounts for 6% more employment than South Africa as a whole. Despite the West Rand being the most significant mining contributor in South Africa, no strategies have been implemented to ensure economic sustainability and sustainable livelihoods of host communities dependent on the

sector. A few of the mines that had to close off recently include Blyvooruitzicht gold mine. However, currently operational (resumed operations in 2020), the review of the mine is based on the liquidation period (2012-2013) due to financial difficulties. Other mines include Tautona and Savuka, which reached the end of their lifecycles, and Mintails, which was liquidated (Cole & Broadhurst, 2022).

Since liquidation is a sudden and immediate process that does not grant time for preparation, local community members, particularly in Blyvoor and Mintails, were devasted by the closure of these two mines (Bega, 2021). They highlighted that they were never told and, therefore, could not prepare for the imminent liquidation the mines were facing, making it difficult to plan for alternative employment (Bega, 2021). Consequently, this highlights a lack of consultation from mining corporations and a need for stakeholder engagement to facilitate better communication and community inclusion in mining activities in the municipality. There are abundant towns within the West Rand (Randfontein, Carlentoville, Westonaria) where mining activities remain the main economic driver (Bega, 2021). The closure of these mines could have severe social and economic repercussions. Therefore, it is conceivable that mine closure presents a real threat to the West Rand area, hence the need and urgency for stakeholder engagement and the inclusion of host mining communities in mine closure planning and processes. Literature highlights the lack of laws and their enforcement as one of the reasons exacerbating the unsustainable closure of mines. Therefore, it was to this effect that the researcher evaluated the South African legislation as well on stakeholder engagement and guidelines on how legislation addresses stakeholder engagement within the context of mine closure.

1.2.3 Ambiguous South African Legislative Framework

Mine closure and mining activities as a whole in South Africa are regulated according to the Constitution of the Republic of South Africa, the National Environmental Management Act (NEMA) 107 of 1998, the National Water Act (NWA) 36 of 1996, the National Environmental Management Air Quality Act (NEMAQA) 39 of 2004 and the Minerals and Petroleum Resources Development Act (MPRDA) 28 of 2002 as will be presented in Chapter 2 (Swart, 2003). Watson and Olade (2019) cite factors hindering sustainable mine closure, highlighting the overlapping legislation across various departments, each with distinct rules and interpretations, which complicates and hinders sustainable closure efforts. Additionally, the

main governing legislation (MPRDA) does not require mining companies to regularly conduct stakeholder engagements with all I&APs throughout the mining lifecycle.

Stakeholder engagement in the form of public participation is enshrined in sections 5A(c), 16, 22, and 27 of the MPRDA, which prohibits any mining activities from taking place before the holder of the mining right or the applicant consults with the person or people who legally own the land and anyone else who might be an interested or affected party. It is worth noting that the engagement is only required during the project feasibility stage and not throughout the lifecycle of the mine. Stakeholder consultation is also enshrined in the Social Labour Plan (SLP), a legally binding document required during the project feasibility stage when an applicant or a mining company applies for a mining right (Van Der Watt and Marais, 2021). SLP outline the plans the mining company has set out on how it plans to benefit the local communities. SLP guidelines dictate that these plans and promises must align with the local municipality's strategic plans, such as the Integrated Development Plans (IDP) and Local Economic Development (LED) plans. According to Van Der Watt and Marais (2021), this promotes collaboration between mining companies and local governments and communities. However, it should be noted that these plans and promises on SLPs are often not made in consultation with the local community as the guideline dictates and often do not address the challenges faced by host communities due to a lack of local community input, thus defeating the entire purpose of a collaborative effort (Centre for Legal Studies, 2022).

The MPRDA and NEMA say mining companies must consult with the I&AP. It should be noted that these consultations are only enshrined for project feasibility phases for Environmental authorisations (EA) and Social Licenses to Operate (SLO) (Pape, 2021). This creates a legislative loophole because mining companies treat stakeholder engagements and community consultations as voluntary bureaucratic tick-box exercises. As a result, inadequate mine closure planning and outcomes occur, potentially infringing on the constitutional rights of local communities who are left with affected environments.

Effective engagement with stakeholders is also enshrined in Environmental Impact Assessment (EIA) process in the form of public participation. However, there remain loopholes and limitations. According to Chapter 5 of NEMA, read in conjunction with Chapter 6 of the EIA regulations, public participation ends with granting or rejecting environmental authorisation. This implies that the regulations still treat public participation as a once-off event while it should ideally remain an iterative, ongoing process beyond project conception or approval.

Therefore, no specific guidelines could guide mining companies in South Africa in promoting ongoing stakeholder engagement; there is only unclear and ambiguous legislation.

In summary, though globally recommended to address literature gaps and mitigate environmental, social, and economic impacts, mine closure planning and stakeholder engagement remain under-researched and have limited practical application, especially in Africa and other developing countries. Additionally, the lack of enforcement of regulations globally by regulatory bodies to mining corporations to ensure closure requirements are met is another aspect that prevents the sustainable closure of mines. As a result, to address the existing literature and knowledge gap, this dissertation aims to use the West Rand as a lens to enhance an understanding of the impacts of mine closure planning and process on host mining communities. This is done to propose strategies that could improve the integration of host mining communities into mine closure plans within the South African context as well as to highlight some of the existing legislative ambiguities, including their amelioration to enhance better proactive inclusion and consultation of host mining communities in mine closure planning and processes. In light of the background and justification of the study, the following research problem is established.

1.3 Problem Statement

There is increasing accountability for mining companies within an academic and business context to implement socially responsible strategies to curb environmental, social and economic impacts in societies, particularly within the context of mine closure and host mining communities. This is primarily because these impacts are disproportionately felt at the community level. Literature highlights that industry best practices promote the need to engage host mining communities in mine closure planning and processes through stakeholder engagement. However, despite this, there is an existing literature gap and knowledge on the continuous community consultation in mine closure planning through stakeholder engagement, including the practical application that tackles the integration of host mining communities in mine closure planning and maintaining the ongoing stakeholder engagement with mining communities. Additionally, the lack of integration of host mining communities is exacerbated by unclear regulatory frameworks that create legislative loopholes for mining companies to treat and maintain stakeholder engagements as an optional administrative activity. Subsequently, stakeholder engagement by most mining companies is often conducted at the

end of the mining lifecycle. This issue is exacerbated by the lack of clear stakeholder engagement guidelines, leaving it up to the mining companies to decide what constitutes stakeholder engagement and which processes or models to follow. The following research aim, and objectives are established in light of the problem statement.

1.3.1 Research aim and objectives

This study uses the West Rand communities as a lens to enhance an understanding of the impacts of mine closure on the host mining communities. This is done to propose strategies that could potentially improve the integration of host mining communities into mine closure plans within the South African context. To realise this aim, the following objectives were carried out:

- To facilitate an understanding of the impacts of mine closure within the communities situated in the West Rand region.
- To determine the legislative uncertainties that affect and impact the actions of mining corporations regarding decision-making and the ethical responsibility of involving host communities in mine closure plans.
- To determine factors that enable and hinder communication transparency between mining corporations and host communities.
- Formulate best practice stakeholder engagement framework using best practice guidelines.
- Propose strategies to integrate host mining communities into mine closure plans in South Africa according to the proposed best practice stakeholder engagement framework.

1.3.1.1 Research questions

The research was guided by four Primary Research Questions (PRQ). These are:

- What are the impacts of mine closure in mining host communities in the West Rand Region?
- How does legislative uncertainties influence the decision-making of mining companies concerning mine closure and integration of host mining communities in closure plans?

- What is the level of communication transparency between host mining communities and mining companies in the West Rand?
- What are existing integration strategies for the inclusion of host mining communities into closure plans in South Africa?

In light of the research aim and objectives, it was important for the research to delineate the study's aims and what will be excluded from the study through the following scope of study.

1.4 Scope of the study

The study focuses on stakeholder engagement, mining legislation, and social, environmental, health, and economic impacts. The study evaluates the current legislative ambiguities that exacerbate the exclusion of host communities in mine closure planning and processes. The study also examines the impacts of mine closure from an environmental, health, social, and economic point of view and how these prevent the sustainable closure of mines and the overall sustainability of mines. The study investigates international best practices strategies for engaging host mining communities throughout the entire life cycle of a mine. Participants for the study were selected based on convenience, purposive and snowballing sampling. The geographic focus of the study is around the West Rand. However, the framework the study intends to propose can be used in South Africa and adapted based on numerous factors such as the type of mining, the phase of the mining lifecycle, the geography of the area, and the targeted stakeholders impacted by the mining operation's activities. Considering the scope of this study, the researcher encountered some limitations, which are discussed below.

1.5 Limitations

The study does not differentiate between various types of mine closures, such as care and maintenance, abandoned, or legal closures. Instead, it focuses on assessing the inclusivity of host communities in mine closure planning and processes by mining companies, to develop a stakeholder engagement framework that is inclusive of all stakeholders. Secondly, the distinct types of mine closure were not the main aim of this study as the study sought to evaluate the overall impacts the closure of mines has had on local communities. Thus, this first limitation did not compromise the objective of this study. In terms of data collection, the researcher encountered some difficulties getting hold of certain participants (government stakeholders)

due to the research being conducted during national elections and that certain government departments, such as the DMRE were reluctant to participate in the study. Hence, sufficient government representatives were not available. However, the abovementioned limitation did not compromise the successful execution of this study, as data was continuously verified through multi-source validation and analysis, such as a comprehensive literature review analysis. Moreover, the sample size is large enough to make sufficient conclusions and develop strategies for successfully integrating host mining communities into mine closure planning. The framework proposed does not factor in Indigenous people due to the demographics of the geographic area of the study, which did not have Indigenous people who could be readily identified. Thus, this opens a gap for future research on the inclusivity of Indigenous communities in mine closure planning and processes.

1.6 Structure of the thesis

This dissertation is presented over six chapters, which are briefly outlined below:

Chapter 1: Introduction

The primary aim of this chapter is to introduce the research and set the scene for the subsequent chapters. The chapter begins with an overview of the background to research, the research gap and problem statement. Next, it discusses the significance of the research. Finally, it outlines the study's scope, detailing what the dissertation will and will not cover. These elements are presented through the study's background, justification, problem statement, research aims and objectives, guiding questions, and scope and limitations.

Chapter 2: Literature Review

This chapter aims to demonstrate a comprehensive understanding of the literature based on the study's research aim, highlight existing gaps, and propose solutions to fill in the gaps. This chapter establishes conceptual and theoretical frameworks underpinning it, concepts, definitions, impacts of mine closure and an overview of mine closure from an international context funnelled to an African context and South Africa. Moreover, it highlights existing international best practices. This chapter also provides a comprehensive understanding of the legislative framework of South Africa, which guides mine closure and stakeholder engagement,

the existing gaps and ambiguities and the need to ameliorate these ambiguities. The chapter also brings practicality by providing international case studies.

Chapter 3: Research Methodology

This chapter provides a blueprint for research methodologies utilised to compile this dissertation. It also provides sampling and data collection techniques and data analysis. The research was conducted through a qualitative research approach. The chapter also consists of the research paradigm underpinning the study. A case study research design, including purposive, convenience, and snowballing sampling techniques, was used. Data collection techniques were questionnaires, interviews, and focus groups.

Chapter 4: Data results and discussion

This chapter provides a comprehensive account of the research findings. The data was analysed through thematic content analysis. The codes were grouped into clusters. Codes of the same meaning were grouped under one cluster to give rise to themes. Each PRQ yielded various themes. These themes are discussed in this chapter, including gaps and challenges.

Chapter 5: Synthesis

This chapter provides best practice stakeholder engagement, an assessment tool and a stakeholder engagement tailored to the West Rand based on the research findings and the lifecycle the West Rand mines are currently in. The best practice stakeholder engagement framework considers stakeholder engagement process that runs throughout the lifecycle of a mine from exploration to planning and evaluation, construction, production, and closure.

Chapter 6: Conclusion and Recommendations

This chapter summarises all the chapters by highlighting the challenges, gaps, solutions, recommendations, and future research areas.

1.7 Chapter Summary

There is a growing increase of accountability by the extractive industry in implementing socially responsible strategies to curb the never-ending impact on the three pillars of sustainability, which negatively impact sustainable development. International bodies and various scholars have suggested that the engagement of stakeholders can enable sustainable development initiatives and further advance the UN SDGs, thus representing one of the components of promoting sustainable closure of mines. This chapter has disseminated the need to conduct this research through the explanation of a problem statement which describes the issue, the justification of the study, which provides a comprehensive account of the importance of this research and the scope which outlines the focus of the study, the research aim and objectives which guided this research, PRQ which assisted the research in answering the research aim.

This chapter laid a foundation for the literature review (Chapter 2), which evaluates the status of stakeholder engagement, mine closure, and the guiding legislative frameworks, gaps, challenges, and strategies to ease these challenges by adopting a funnelling approach. The comprehensive analysis of Chapter 2 will play an important role in devising a stakeholder engagement framework.

Chapter 2: Literature Review

2.1 Introduction

The main aim of this chapter is to build on the gaps identified in Chapter 1 through a comprehensive literature review, aligning with the stated aim and research objectives of this study. The first component to be reviewed is the literature on mine closure, which was conducted using a funnelling approach, a systematic method employed to narrow down the topic to the focus of the study area. This chapter begins with a review of mine closure from an international context to provide a broad scope and comprehensive background of the phenomenon. Gaps, challenges, and trends are identified to build out a golden thread of the mine closure phenomenon, highlighting the general themes that will feed into the suggested stakeholder engagement framework. The funnelling approach from an international context then continues with a review of the literature on the African continent, followed by a review of South Africa, and lastly, the West Rand area. International best practice literature is also reviewed to identify what mine closure planning and processes should consist of, consolidating the mine closure review based on the identified challenges, gaps, and trends.

The second component of the literature review focuses on stakeholder engagement. The legislative framework of South Africa is reviewed in terms of stakeholder engagement to assess its inclusiveness in promoting ongoing and proactive stakeholder engagement. The legislative framework underpins this study as its conceptual and theoretical framework, supported by various theories such as stakeholder and stakeholder engagement concepts and definitions as discussed in the previous chapter. The literature review continues to evaluate stakeholder engagement in the context of mine closure, using a combination of international and local literature to identify gaps, challenges, and trends. Lastly, successful stakeholder engagement case studies are evaluated to draw on the best practicable examples of the topic, similar to international best practices in mine closure planning. The figure below presents the conceptual design of the literature review.

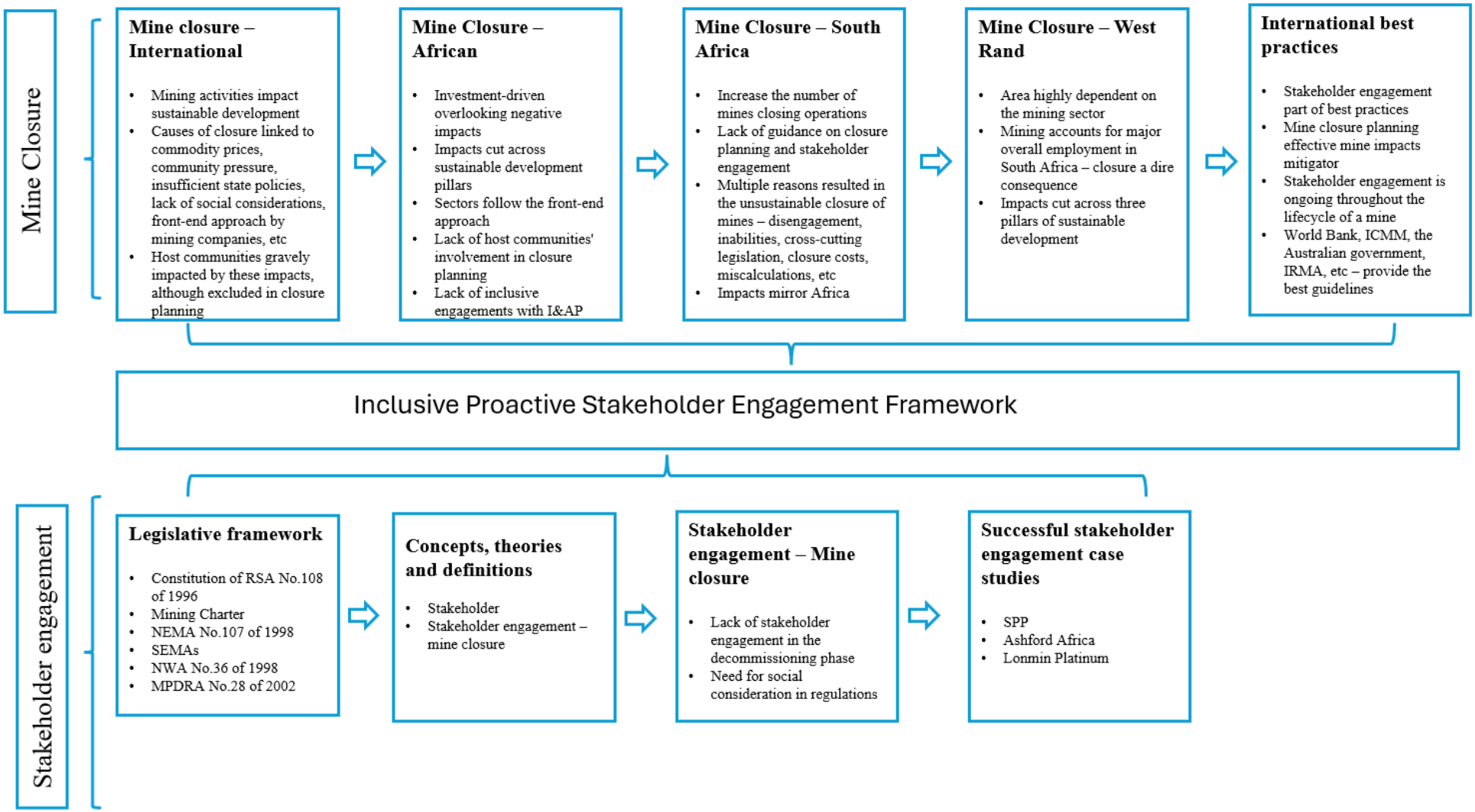

Figure 1: Conceptual design of the literature review

2.2 Mine Closure: International Context

Mine closure has become an international occurrence as natural resources are continually becoming more depleted, with prices of commodities fluctuating and decreasing with economic value (Marais and Atkinson, 2006). There are different type of closures that have been documented by various authors, such as care and maintenance which is associated with the temporary suspension of mining activities (Pepper et al., 2021). There are increasing international concerns that mining companies are using care and maintenance closures as a way to evade their responsibilities for properly closing mines (Queensland Audit Office, 2014; Lamb et al., 2015; Ashby et al., 2016; New South Wales Audit Office, 2017; Vivoda et al., 2019). This has prevented proper mine closure and resulted in increased regulatory and policy challenges. The second type of mine closure is abandonment, which occurs where the leases or titles of the mines have expired and no individual, company or organisation can be held liable for the rehabilitation of the area previously used by mining activities (MCMPR and MCA 2010). Lastly, full closure, in which the operator has met all the legislative country requirements that absolves them form any further social, environmental, and economic obligations and is issued a closure certificate (Stacey et al. (2010); Matebesi et al., 2023). This dissertation is primarily concentrated on stakeholder engagement, its inclusiveness in preparation for mine closure.

Internationally, various authors have cited reasons that cause mines to close operations, which includes amongst others, increases in operational costs, breakdown of equipment, changes in government or state policies (Laurence, 2002; Owen and Kemp, 2018; Morrison-Saunders, 2019). The most pressing issue highlighted by Bainton and Holcombe (2018), was the existence of limited literature and insufficient guidelines exploring the social implications of mine closure, with fewer studies focusing on planning and managing mine closure impacts. To support this, Vivoda et al. (2019), attributed this to the front-end approach that mining companies follow. This implies that the mining companies focus on securing SLO, and by the time closure takes place, little to no money is available to deal with closure impacts.

Scholars around the world continue to document the long-lasting negative impacts of mine closure. According to Siyongwana and Shabalala (2019), scholars have raised significant concerns that local communities are often the most impacted by mine closure. These impacts have resulted in (1) the economic downfall of local economies where mining was the only source of economic growth and activity. Mine closure in those communities or towns has

caused local economies to lose profit margins and this has resulted in budget shortages aimed at carrying out service provisions by the local municipalities. As a result, this has cascaded to cause infrastructure collapse, a decrease in the standard of living, and an increase in poverty (Morar, 2011; Laurence 2002). (2) Siyongwana and Shabalala (2019) also highlight ongoing impacts in local communities, such as job losses, reduced social programs due to economic decline, and decreased revenue for funding growth initiatives. Marais (2013b) mentioned that some former mine workers stated that securing employment in other industries is difficult due to a lack of specific skills that cater for those industries. (3) Mine closure has also resulted in rampant environmental impacts. According to Marais (2013b), some documented environmental impacts include soil and water contamination air pollution from Tailings storage facilities and acid mine drainage. (4) Moreover, according to Edwards and Maritz (2019), the closure of mines has resulted in declining mining community populations, where emigration occurs after a mine closes, and this has caused demographic changes and ghost towns. On this occasion, Marais (2013b) substantiated that the skilled labour force, young people and men usually move out first. (5) Mine closure has had a massive impact on service provision as mentioned, particularly in towns and communities whose economy relies on the extractive industry. This is primarily because mining companies pay significant taxes and high rates, including the employees who work in the mine. Since there is no existence of a mine, the local government lose on the taxes and rates and, thus, cannot carry out service provisions (Marais, 2013b). In addition, Vivoda et al. (2019) corroborated that this increases pressure on local municipalities. (6) The most prominent of all impacts caused by mine closure is the increase in illegal activities due to the increased presence of illegal miners. In South Africa, they are called the ‘zama-zamas’. According to Marais (2013b), illegal mining has formed unlawful markets where the government is losing on value-added tax for selling commodities. In local communities, Marais (2013b) additionally supplemented that the presence of zama-zamas has resulted in an increase in domestic violence cases, thefts, breakings and murders, amongst other criminal activities.

Mine closure is also noted as a two-edged sword. In contrast, literature documents mainly the negative aspects of closure, and few scholarly articles highlight the positive transition that the closure of mines potentially brings for local communities. These positive transitions include (1) rehabilitation and repurposing of land and mining infrastructure. (2) Creation of alternative economies, e.g., from mining to tourism. (3) Supporting low-carbon transition initiatives (Everingham et al., 2020). Despite this, there is an international consensus that the closure of

mine does more harm than good, to the extent of impacting sustainable development and SDGs (Owen & Kemp, 2018; Cole & Broadhurst, 2022; National Resource Governance Institute, 2014; United Nations, 2022).

Based on international literature, the impacts of mine closure cascade down to impact mostly host mining communities, who often reap fewer benefits from the extractive industry. To substantiate, Lehutso (2018) posited that communities, as one of the many mining stakeholders residing near the mines, are often illiterate, disadvantaged, and disempowered. As a result, they usually lack knowledge of the potential impacts they will sustain from the closure of mines (Lehutso, 2018). This situation is particularly prevalent in the African context.

2.3 Mine closure: An African context

Mining has been a driving force of human civilisation for millennials in Africa, where significant developments came from the extractive industry. The eminent end of such a mega-giant industry has raised critical challenges spanning from land rehabilitation, restitution programmes, service provisions, economic linkages, infrastructure and employment (United Nations Economic Commission for Africa and African Union, 2011). To action against the challenges and impacts of the closure of mines on the African continent, the African Union implemented the African Vision Mining with the following goals (African Union Commission et al., 2012a):

(1) To create a mining sector that is knowledge-driven and is the engine of an internationally competitive African industrial economy;
(2) To create a sustainable and well-governed mining sector that is inclusive and appreciated by all stakeholders and surrounding communities; and
(3) To increase investment flows into mining and infrastructure projects to support broad socio-economic development.

The African Union, therefore, hopes that the above-mentioned sustainability-oriented goals will be translated into policies and guidance for mine closure planning. However, this has not occurred meaningfully since establishing the goals mentioned above. In fact, in 2022, the World Bank and International Finance Corporate (2002) estimated that 25 large mines in Africa would close, and the impact on mining host communities could be disastrous. Since the 1990s, the African continent has seen a rapid increase in the abandoned closure of mines. African

countries have been presently focused on attracting international investments in the extractive industry for harnessing resource development (African Union, 2009; African Union, 2013; United Nations Economic Commission for Africa, 2011; African Union Commission et al., 2012a; African Union Commission et al., 2012b). The expectations in African nations run high on the possibilities and prospects of what mining companies might do for the local communities, overlooking the potential negative impacts. African national governments are currently overlooking the idea that these minerals are exhaustive, and thus, they may need to prepare for their inevitable closure (Matebesi et al., 2023). This oversight is problematic because it leads to a lack of comprehensive mine closure planning, resulting in significant socio-economic and environmental impacts on host communities.

Vivoda et al. (2019) while conducting a study of regulating the social aspects of mine closure in the case of Australia, discovered a similar trend taking place in the extractive industry, and that is, all mining companies, inclusive of mines in the African continent follow a front-end approach to mining activities and processes. Consequently, the ICMM (2019) re-emphasised that mine closure planning should form part of the mining lifecycle's core business. The ICMM, a prominent industry organisation, promotes inclusive consultations and partnerships with local communities and member companies throughout the mining life cycle and closure transitions. For example, ICMM Principle 9.1 requires member companies to:

"Implement inclusive approaches with local communities to identify their development priorities and support activities that contribute to their lasting social and economic wellbeing, in partnership with government, civil society and development agencies, as appropriate".

This overlaps with international literature and the African Union's second goal of creating an inclusive mining sector where all stakeholders are appreciated, particularly host mining communities. The involvement of host mining communities in mine closure planning and process serves as the right to participate and ensure an effective process. As highlighted above, these communities are often the ones that will inherit the legacies of mine closure.

As in the case of the international context, the impacts of mine closure on the African continent mirror similar impacts that are taking place in South Africa (South African case is described below). These impacts have been associated with job losses, business shutdowns, and economic decline. Social impacts include among others, declining populations and changing demographics, an increase in criminal activities, disruptions in social order, compromised safety and security, loss of household income, increase in kids that drop out of school, resulting

in intergenerational consequences of high unemployment rate due to the inability of families to provide for their children, and health impacts such as diabetes, health conditions, suicides, miscarriages, substance abuse, depression and increased mental health issues (United Nations Economic Commission for Africa and African Union, 2011; Matebesi et al., 2023). Therefore, as demonstrated, the status of mine closure on the African continent is dire. The review of literature focusing on the African context was filtered to South Africa. This is also linked to the fact that South Africa has comprehensive literature that covers mine closure and lessons learned can be transferrable to the rest to the African context.

2.4 Mine closure: South African context

The extractive industry, much like the rest of the African continent, has been the backbone of industrialisation in South Africa (Matebesi et al., 2023). Mine closure is becoming a growing concern in South Africa as resources deplete. According to The Auditor-General (2022), there are about 6,100 abandoned mines, and only a few have been issued closure certificates. Matebesi et al. (2023) established Figure 2 below, which shows mines currently under care and maintenance and excludes the 6,100 abandoned ones. South African legislation lacks adequate guidance on mine closure, a topic that will be further explained in section 2.6. Therefore, according to Marais (2013a), South Africa, like the rest of the African continent, is lacking in ensuring the sustainable closure of mines and implementing closure regulations.

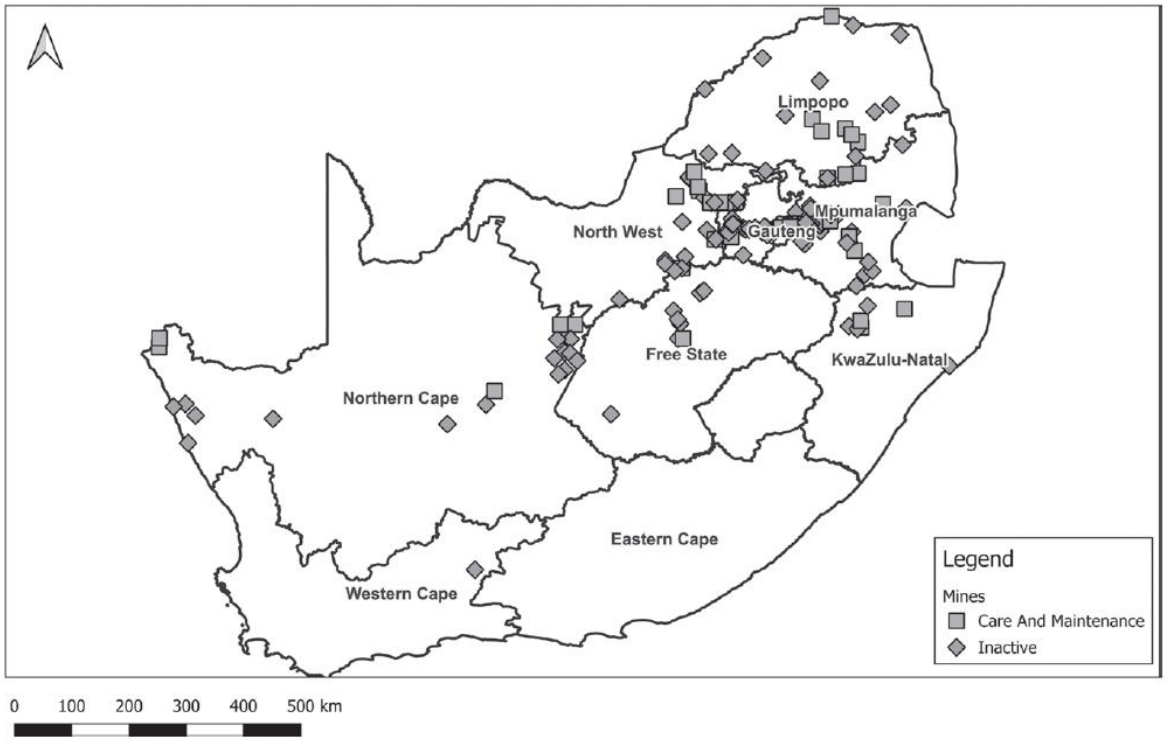

Figure 2: Inactive mines and mines under care and maintenance in South Africa (Matebesi et al., 2023)

Various cited reasons by different authors that prevent the sustainable closure of mines in South Africa have been linked to: (1) overlapping of legislation across numerous departments, each with its own set of rules and interpretations (Watson and Olalde, 2019); (2) Insufficient mine closure skills, knowledge, and experience among government officials (Van Druten and Bekker, 2017); (3) the South African government's resistance to issuing closure certificates to prevent the transferring of environmental rehabilitation obligations to them (Watson & Olade, 2019); (4) Mining companies' failure and incapacity to fill rehabilitation requirements due to high costs in evaluating environmental impacts like AMD (Van Druten & Bekker, 2017); (5) Undervaluing of closure costs by Mining companies (Watson & Olade, 2019); (6) Mining companies' unwillingness to be held liable for their environmental impacts regardless of receiving closure certificates (Alberts et al., 2017); (7) the allocation of mining rights to companies with limited resources that are unlikely to comply with closure regulations (Swart, 2009); and (8) the absence of a nationwide data-driven perspective on the current state of mine closures in South Africa (Chipangamate et al., 2023). As a consequence, mine closure in South Africa poses a significant threat with potentially dire consequences waiting to happen.

There is an unpublished strategy by the DMRE in South Africa aimed at addressing mine closure, the strategy is called the national strategy for mine closure and management of derelict and ownerless mines (DMRE, 2024). The strategy was drafted together with the Council for Geosciences. The proposed strategy was gazetted for public comments on the 21st of May 2023. The strategy aims to resolve four main issues:

- Lack of issuance of closure certificates, which often leads to mines resorting to a status of care and maintenance and ultimately liquidation;
- Lack of official plans that tackle combined effects on the environmental and local communities associated with linked mines;
- Investigation of stable economies post-closure; and
- The inclusion of communities in decision-making and stakeholder engagement.

In the context of mine closure, community and stakeholder engagement, the strategy acknowledges the importance and need to engage stakeholders in mine closure planning and processes. The strategy further recognises the importance of community engagement and all other I&AP throughout the lifecycle of a mine, this is particularly emphasised within the context of managing socio-economic impacts and post-mining land use. While the need for ongoing stakeholder engagement is greatly emphasised as one of the strategic focus areas needed to be implemented in Mine closure and South Africa, there are, however, numerous shortcomings of the strategy.

(1) There is a lack of detailed mechanisms that articulate how stakeholder engagement should be facilitated. (2) The strategy does not emphasise the importance of embedded stakeholder engagement as a process in mine closure planning that runs throughout the lifecycle of a mine. (3) Roles and responsibilities of various possible stakeholders (local government, Universities, NGOs, CBO, all I&AP) are not provided within the strategy. (4) Communication methods and frequency of these engagements are not provided. (5) Access to information has been mentioned as a challenge, however, the strategy does not provide strategies or tools to increase information access and ensure that stakeholders can make informed decisions before engaging in any consultations. There is a huge gap as evidenced, on strategies needed to promote stakeholder engagement in South Africa and to curb the impacts of mine closure. Therefore, it is important to evaluate mine closure in the context of a case study, the West Rand which will form the foundation of this study.

2.5 Mine closure: West Rand

There has been a massive increase in the number of mine closures in the West Rand (Matebesi et al., 2023). Kusambiza-Kiingi et al. (2024) identified four types of closures taking place in the West Rand, active closure, care and maintenance closure, mining of the residue closure and selling to other mining companies. Kusambiza-Kiingi et al. (2024) note a recent trend in the West Rand that when mines no longer become profitable, they then mine tailings and dumps including a change in ownership. This account can be corroborated by the recent opening of the Blyvooruitzicht gold mine after it was liquidated. Several factors have been associated with the closure of mines in the West Rand according to Neingo and Tholana (2016), and these factors are (1) fluctuating gold prices. (2) decreased value of gold deposits. (3) Production costs increase due to industrial protests and the requirement for deeper mining. The closure of mines in the West Rand has resulted in dire socioeconomic and environmental consequences. The full account and type of impacts are elaborated below.

2.5.1 Social impacts

Social impacts of mine closure play a significant role in shaping the population of an area, and other social dynamics. Specific social impacts due to mine closure in the West Rand are described below.

2.5.1.1 Population changes

Mine closure in the West Rand has resulted in three main demographic changes. Firstly, it is the decrease in population growth as certain areas have been linked to a negative growth rate due to emigration (Merafong City Local Municipality, 2021). Secondly, there is a reduced dependency on migrant labour, and the male-to-female ratio has been reported to be higher as men leave the area to seek jobs (Kusambiza-Kiingi et al., 2024). Lastly, there has been an increase in land use despite a decrease in population growth. Several factors have been associated with this, such as the inability of the residents to afford formal housing, increasing squatter settlements, and illegal invasions of land (Kusambiza-Kiingi et al., 2024).

2.5.1.2 Illegal land occupation

Economic hardships have led to a significant increase in informal settlements in the West Rand (Cole and Broadhurst, 2022). Informal settlements have doubled from 476 hectares in 1990 to 1,257 hectares by 2020 (Kusambiza-Kiingi et al., 2024). Some of these settlements are on mined land (Magadzu, 2021). According to Mathebula (2014) over 600 residents from Bekkersdal have occupied land owned by a Uranium mining company. The significant proportion of informal settlements in the West Rand is reportedly higher than the overall proportion in Gauteng province with 22,5% against 18% of the entire Gauteng province based on data from Statistics South Africa 2016 (Kusambiza-Kiingi et al., 2024). The reasons associated with the increase in informal settlements are complex but have been associated with people reluctant to leave the area even after the closure of mines (Kusambiza-Kiingi et al., 2024).

2.5.2.3 Increased criminal activities

High unemployment in the West Rand has been associated with increased criminal activities, especially for former mine workers (Marais et al., 2022). Murder rates have been reported to be high in the West Rand due to illegal mining and the presence of criminal syndicates involved who often kill one another to protect their territories and continue to mine remaining reserves from unregulated mine closures (Marais et al., 2022).

2.5.2.4 Protest

There have been reported protests taking place in the West Rand. These have been associated with poor service delivery and access to land (Kusambiza-Kiingi et al., 2024). Informal settlements have been reported particularly associated with social unrest as a result of poor service delivery, lack of fulfilment of promises made by mining companies and politicians including mistrust among stakeholders as well as long-standing grievances (Kusambiza-Kiingi et al., 2024).

2.5.2 Environmental and health impacts

Significant environmental and health issues caused by mine closure in the West Rand continue to cause challenges. Due to an increase in the presence of informal housing, there are

settlements reportedly situated near tailing dams exposed to harmful radioactive substances, dust, and floods (Kusambiza-Kiingi et al., 2024). Abandoned mines have contributed to the rise in sinkholes, with 50% of the 2,500 sinkholes in South Africa being located in the West Rand (Kritzinger, 2017). The increase in the number of abandoned mines in the West Rand is linked to pre-2002 legislation which had minimal regulations for mine closure and land rehabilitation requirements. Other reasons include historical underground mining (Kusambiza-Kiingi et al., 2024).

2.5.3 Economic impacts

The West Rand has observed a sharp economic decline due to mine closure. Impacts include a decrease in jobs in the mining industry. Kusambiza-Kiingi et al. (2024) based on the 2021 global insight data, reported that mining jobs in the West Rand have decreased from 110 000 in 1996 to 40 000 in 2019 with an overall annual decline of 14%. Based on much more recent statistics, the SARS, (2023) presented data that shows a drop in mining employment from 80,000 in 2014 to 62,000 in 2021 (Kusambiza-Kiingi et al., 2024). Merafong has lost about 11,000 jobs, Mogale City has lost 2,000 mining jobs and Rand West has lost 6,000 mining jobs. Unemployment and poverty have surged with the current unemployment rate at 32,3% according to the Municipality's IDP, an increase of 3.1% from 2018. The Gauteng provincial treasury has also reported a 4% investment decline as a result of mine closure (Gauteng Department of Treasury, 2022). Therefore, given the significant impacts mine closure has on the three pillars of sustainable development, it is crucial to explore international best practices for mine closure to mitigate these adverse negative impacts.

2.6 Mine closure process: International best practices

The ICMM, in its best practice guideline handbook (2019), makes recommendations of what mine closure planning and process should consist of; the recommendations come from a consolidated literature review gathered over the years, international guidelines for mine closure planning, closure planning identified in conference proceedings, interviews and workshops and country wise examples. Mine closure planning consists of the following components as illustrated in Figure 3:

(1) Planning; (2) Closure objectives; (3) Stakeholder engagement and community upliftment; (4) Risk Management; (5) Operations (6) Cost estimates and financial provisions; (7) Rehabilitation; (8) Decommission and post-closure monitoring; (9) Relinquishment.

Figure 3: Components of international best practices for mine closure (diagram by author)

2.6.1 Early closure planning process

The ICMM alluded to the mine closure process, which should always be incorporated into the project feasibility stages of the mining process to ensure that all closure processes are effectively implemented. Bentel (2009) emphasised the importance of closure planning for a company's ability to manage the closure of mining operations. This view was earlier supported by the Australian and New Zealand Minerals and Energy Council (2000) which stated that incorporating the closure process in the planning phase of the mining lifecycle is essential. This ensures adequate mitigation measures are in place to protect both natural and social environments, allowing mining companies to minimise or mitigate environmental and social impacts during operations. Furthermore, a closure plan enables effective post-closure land use planning and reduces the need for long-term monitoring and maintenance. The ICMM also highlights the benefits of integrating mine closure planning throughout the mine's lifecycle. These benefits span from stakeholder support, consideration of design and operations, better risk and knowledge management, value generation, liability and cost reduction, increased efficiency, regulatory compliance, adequate financial provisioning, reduced care and

maintenance risk, informed ownership decisions, accurate cost estimates and adequate planning for post mining land use (ICMM, 2019).

2.6.2 Closure objectives

These refer to the mining company's specific targets and goals as part of its closure process. They should be incorporated in the planning phase and can be modified during a mine's lifecycle. These objectives assist mining companies in negotiating with the governing body concerning risks and performance and adherence to closure legislation (Heikkinen and Räisänen, 2008). Also, it articulates what the company intend to achieve and the legacy it plans to leave behind. Closure objectives provide the overall direction and cater for risk and opportunity consideration by providing the opportunity to identify risks and mitigation strategies early which consequently leads to a reduction in closure liabilities and enhances post-closure benefits (ICMM, 2019). Figure 4 provides best practices associated with embedding closure objectives including the involvement of internal and external stakeholders.

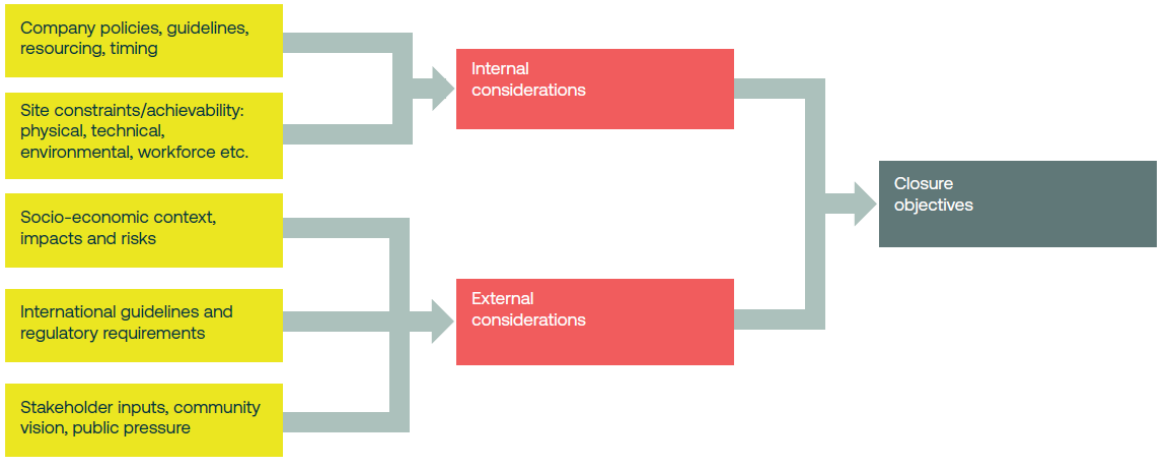

Figure 4: Inputs to Closure Objectives (ICMM, 2019)

2.6.3 Stakeholder engagement and community upliftment

Mining communities always suffer the social and environmental repercussions brought by mining companies. In the context of a mining town, the term 'community' refers to anybody affected by a mine (Everingham et al., 2020). Additionally, according to Everingham et al. (2020), communities are spatially defined and can be socially constructed and overlapping.

There are four categories of communities: (1) Communities of interest, (2) Communities of affiliation, (3) Communities of standing, and (4) Communities of place. Communities of interest refer to people with common goals or interests, such as miners, who are individuals affected by mining operations. Communities of affiliations are groups linked through their social networks or organisations, such as mining employees or worker's unions. Communities of standing are legally recognised through legislation, such as the constitution and possess legally recognised rights, such as holders of mining rights and government authorities. Lastly, communities of place refer to groups of people with particular ties to a place, either because they work, live, or depend on a specific location, such as mining town residents. The communities of place and affiliation are relevant for this study in evaluating the impact of the closure of mines as per the first objective of this study and evaluating how local mining companies, as permanent residents, are included in the closure plans and processes. Hence, Clegg (2013) devised the importance of community and stakeholder consultation as the best mechanism for proper mine closure. The involvement of stakeholder engagement ensures that different needs, concerns, and issues are well raised in advance for closure. Stakeholder engagement is not a once-off event but a process that needs to occur from project feasibility to the end of the mining lifecycle.

ICMM's good practice guideline highlights that effective stakeholder engagement development should keep a wide range of stakeholders informed and updated. This includes their involvement in the development of the closure plan from the onset of project feasibility as reiterated above. Secondly, maintaining transparent communication on the progress of the closure plan and associated mining activities. ICMM (2019) emphasises consideration of a wide range of stakeholders such as host communities, workforce, government and regulators, indigenous or traditional people, industry peers, academic institutions, the media and non-governmental organisations. Figure 5 illustrates success criteria for the engagement process which includes defining what successful mine closure looks like and any continued learnings from ongoing closure activities must be used to refine the success of the criteria. Secondly, consideration and identification of residual risks which should be communicated to all stakeholders. Lastly, an inclusive engagement process that ensures comprehensive understanding by all stakeholders.

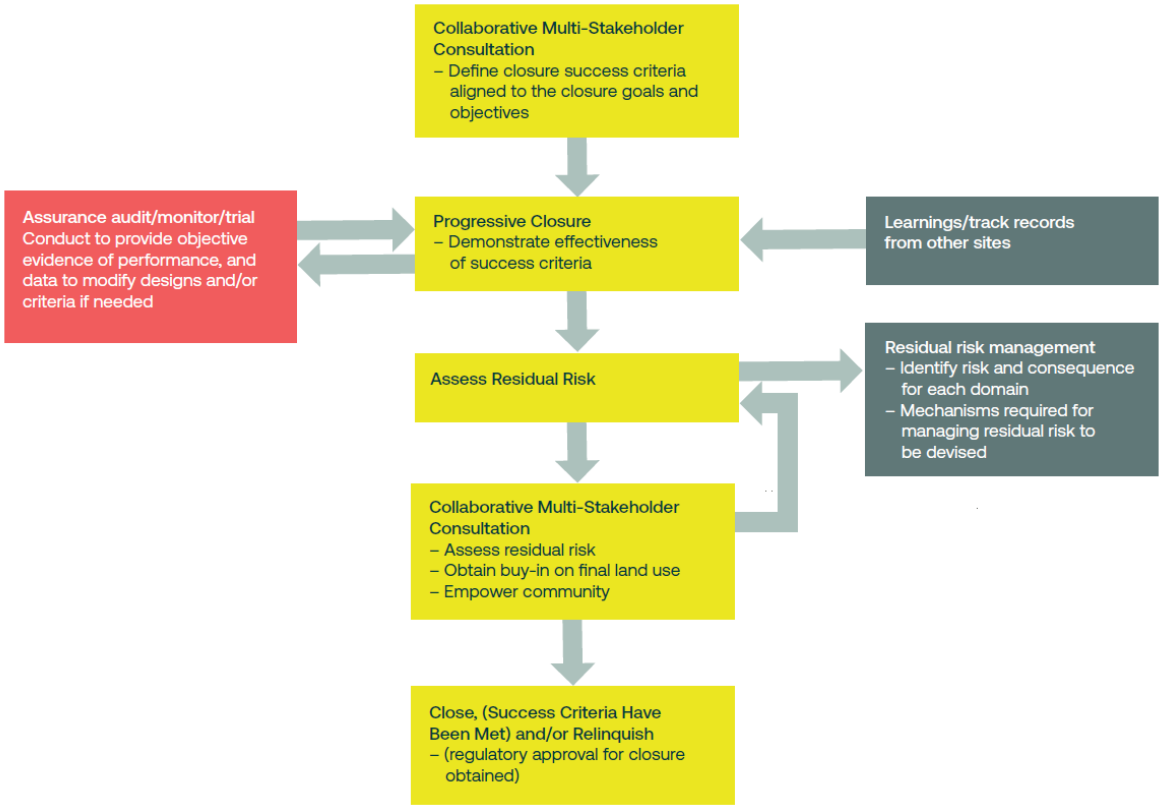

Figure 5: Components of a successful stakeholder engagement (ICMM, 2019)

2.6.4 Risk Management

This refers to the process in which the mining company predicts future risks that might and will incur because of mine closure and the consequences accompanied by those risks (Garcia, 2008). Risk management forms an integral part of the mine closure process. Mining companies, according to Candi et al. (2019) are advised to have a risk management assessment carried out and implemented as part of the closure process to ensure all risks are identified, quantified, and a decision is made regarding mitigation and containment measures of those risks. This risk should be monitored throughout to ensure successful risk assessment and reassessments. Risk assessment should occur until the final mine closure plan is developed and implemented. Successful risk management will give all stakeholders peace of mind, knowing the environmental and social impacts are minimised and ensuring the mine is more adaptive to the changing legislation (Candi et al., 2019). Figure 6 provides key steps that should be considered in the identification of risks during the mine closure planning and processes.

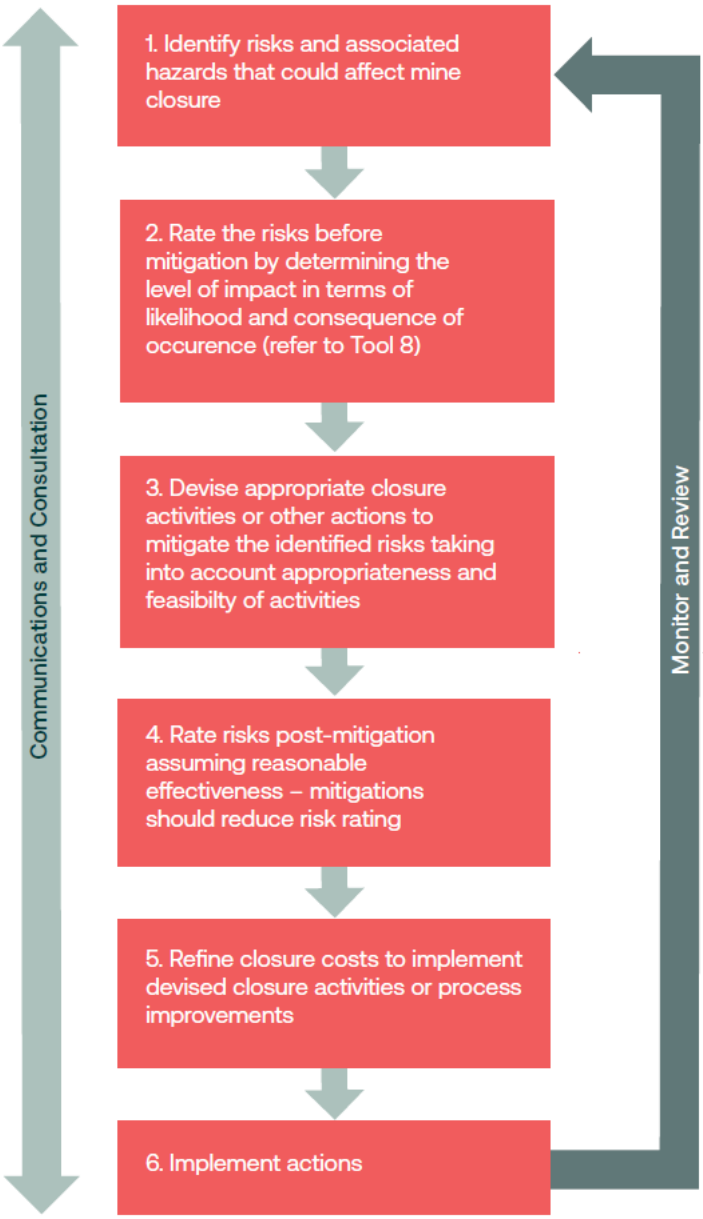

Figure 6: Mine Closure risk assessment process (ICMM, 2019)

2.6.5 Operations

The ICMM (2008) posited that during the operation phase, the mining company should have established a concurrent rehabilitation closure plan that includes employees and training programs to enable mine employees to have multiple skills post-closure. These programs should also ensure the mine workers reap benefits and compensation packages, such as annuities, for the duration they have been employed. Alternative economies should be established in preparation for closure. Stakeholder engagement with interested and affected

parties should be maintained. Moreover, rehabilitation plan activities must be ready for execution when the mine is nearing to close operations.

2.6.6 Cost estimates and financial provisions

Mining companies around the world are required to ensure sufficient money is available for clean-up and to carry out rehabilitation activities. This comes after growing global concerns of mining companies leaving inadequate funding for mine closure, or often resorting to a status of care and maintenance or illegal closure (Shen, 2016). There are limited guidelines internationally on the best cost estimate and financial assurance for the extractive sector. However, the International Institute for Sustainable Development (IISD) published a report on financial assurance governance for the post-closure mine transition as well as the ICMM on good closure handbook. The main aim of financial provision (assurance) and cost estimate is to ensure that a third-party contractor or the state can undertake closure and post-closure rehabilitation activities and thus, a successful post-mining transition. According to ICMM (2019), there are four types of closure cost estimates. The first is the Life of Asset (LoA) cost, which covers expenses anticipated at the end of the mine's life cycle. The second is financial liability, which includes estimated liabilities based on accounting requirements like financial reporting or asset retirement obligations. The third type is sudden closure costs, which are related to the immediate closure of a mine in its current state. Lastly, regulatory estimate costs (financial assurance) are used to create financial assurances that are submitted to regulatory bodies for approval, ensuring compliance with specific regulations. IISD composed Table *2* which provides various instruments for financial assurance, cost estimate or financial provision as well as their associated advantages and disadvantages.

Table 2: Advantages and disadvantages financial assurance instruments (International Institute for Sustainable Development, 2021)

INSTRUMENT	ADVANTAGES	DISADVANTAGES
Government mine rehabilitation/ reclamation fund	• Intended to reduce the capital requirements of financial assurance for companies. • Cost may be similar to other forms of assurance for some companies, particularly smaller and lower-credit-rated companies. • Funds could be used to address closure issues that develop after relinquishment, thus supporting a pathway to relinquishment. • Interest earned on the fund can be used by government to address abandoned mine sites. • In the long term, once the fund grows to an acceptable size, it can reduce the cost of financial assurance to companies.	• May not have sufficient funds to cover a default in the first few years after the creation of the fund and may not have sufficient funds to cover multiple closure defaults at the same time. • May take decades to fully capitalize. • Company contributions are non-refundable. • Requires a relatively large mining sector in order that sufficient funds are deposited annually to grow the fund. • Funds are controlled by government, which has the risk that funds are used for other purposes.
Letter of credit (bank guarantee)	• Inexpensive to set up, with low administrative requirements. • Secure (subject to the strength of the financial institution). • Does not tie up company capital. • Irrevocable and non-transferable. Any changes require consent of all parties including government. • If the bank does not renew the credit, and the proponent fails to provide an acceptable alternative, the government can request payment of the full outstanding credit. • Government can reserve the right to approve which banks can issue guarantees which can reduce the risk of failure of weak institutions.	• Annual review and renewal by the bank, which may decide not to renew the guarantee. • Availability is subject to the credit rating of the company. Some companies may need to place up to the full value of the credit on deposit with the bank. This may reduce their borrowing power. • Annual cost to the company ranges from 0.5% to >3% of the guaranteed amount. • Funds do not generate interest. • Government may specify which banks it accepts. This could be a disadvantage in some countries if a local bank that may have limited financial resources is required. • Bank or financial institution may fail or become unable to cover the liability.
Surety bond (insurance/ performance bond)	• Low cost to the company, but often more than a letter of credit. Low administrative requirements. • Does not tie up company capital. • Any changes require consent of all parties, including government. • If the insurance company does not renew, the government has the option of drawing the full amount (unless the operator provides another form of financial assurance).	• Bond issuer may fail • Availability is subject to the credit rating of the company. Some companies without a proven track record may need to place up to the full value of the bond on deposit with the insurance company. This may reduce their borrowing power.

INSTRUMENT	ADVANTAGES	DISADVANTAGES
Cash, bank draft, certified cheque	• Cash is secure and readily available to cover closure costs. • High public acceptance ("visibility"). • Suitable for small/junior miners who may not meet stringent bank criteria for a letter of credit. • Deposited funds may accrue interest.	• Significant company capital is tied up. • Some governments may be tempted to use deposited cash for other purposes. • Financial institution may be under the control of government. In such cases, mining companies may be reluctant to use those banks due to the risks of theft/ fraud/redirection of the funds.
Company (self) guarantee (balance sheet test)	• Does not tie up company capital. • Least costly instrument for companies. • Simple to administer. • Company annual reports and financial statements are publicly available (for listed companies). • Many jurisdictions that accept self-guarantees require that they be converted to other types of financial assurance (e.g., bonds, letters of credit, etc.) well before the end of mine life.	• Limited public acceptance. • Requires a long history of financial stability, a credit rating from a specialized credit rating service, and at least an annual financial statement prepared by an accredited accounting firm. • Even large companies can fail, regardless of financial history. • Governments must have the capacity and expertise to regularly review the financial strength of the company.
Trust fund (mining reclamation trust/ environmental trust)	• High public acceptance due to "visibility and transparency." • The fund may appreciate in value. • Types of investments available can/should be decided by the proponent and government and specified in the agreement. • If payments are not made by the proponent, and no acceptable alternative is provided, the government can draw the full amount of the fund. • Trust Fund management and performance subject to periodic review. • Could be used to fund post-closure operating and sustaining capital costs (as opposed to funding costs during the actual closure period).	• Relatively costly to manage and administer. • Company funds are increasingly tied up. • Risk of poor long-term fund investment and management. • May not accumulate enough value if the mine closes prematurely. • A secondary financial assurance instrument (bond, letter of credit, etc.) may be required until the full amount of the fund is reached.
Cash, bank draft, certified cheque	• Cash is secure and readily available to cover closure costs. • High public acceptance ("visibility"). • Suitable for small/junior miners who may not meet stringent bank criteria for a letter of credit. • Deposited funds may accrue interest.	• Significant company capital is tied up. • Some governments may be tempted to use deposited cash for other purposes. • Financial institution may be under the control of government. In such cases, mining companies may be reluctant to use those banks due to the risks of theft/ fraud/redirection of the funds.

2.6.7 Rehabilitation

These activities include removing unwanted mining infrastructure, repurposing land (such as for plantations), stabilizing waste dumps and tailings storage facilities (TSF), and detoxifying hazardous materials (ICMM, 2019). During rehabilitation, all mining companies should ensure all hazards are eliminated, the environment is safe and barricaded, and warning signs for all active toxins are posted. Additionally, all impacted land and water resources should be restored, and environmental impacts should be offset. The Australian Government (2016) published a handbook that provides steps and guidelines for mine site rehabilitation as illustrated in Figure 7.

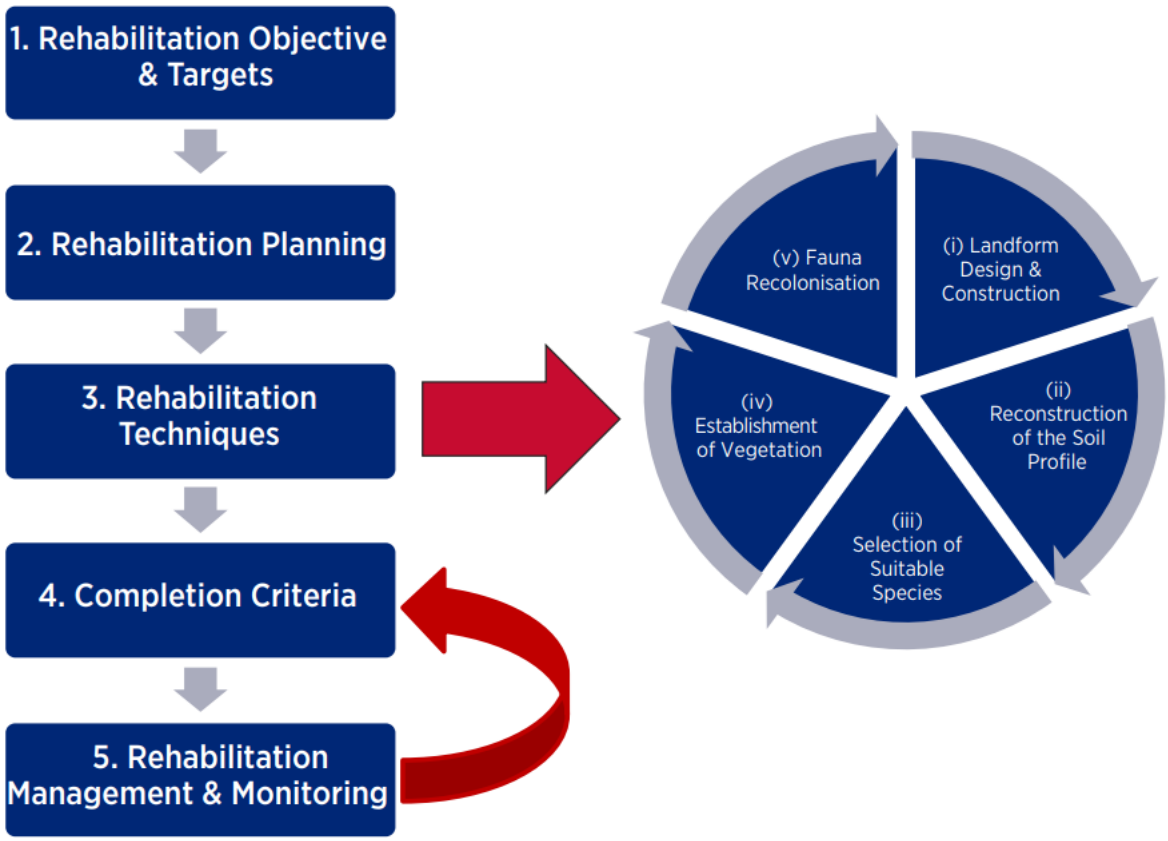

Figure 7: Rehabilitation and implementation stages (Government of Australia, 2016)

2.6.8 Decommissioning and Post-Closure Monitoring

This phase should start post-rehabilitation to assess the progress of the rehabilitation phase (Tongway, 2008). In this phase, groundwater, soil, and air should be evaluated and monitored to ensure additional alignment with the initial closure objectives (Candia & Oblasser, 2008). This also ensures that all the remaining infrastructure can be sold or given to the community

for their benefit to ensure local economic growth and continuity and that the local community can benefit from post-mining land use. The land use can be developed into recreational grounds consisting of game reserves or used as a tourist attraction to boost the local economy and enhance economic diversification (Sánchez, Silva-Sánchez and Neri, 2014).

The Namibia government developed a care and maintenance closure and completion guideline through rigorous consultation and engagements with the government and industries, along with various specialists and companies. The Namibian Government (2019) adopted the following through leading best practices as aspects that should be monitored:

- **Vegetation Monitoring and Management**: Tracking and guiding the natural growth of plants to ensure the area develops into a stable ecosystem.
- **Erosion Control**: Observing and preventing soil erosion to maintain land stability and protect water bodies from sedimentation.
- **Slope Stability**: Ensuring that embankments and slopes remain secure to prevent landslides or collapses.
- **Fencing and Signage Maintenance**: Regularly checking that fences and warning signs are intact and visible to prevent unauthorized access and ensure safety.
- **Water Treatment and Drainage Systems**: Ensuring that water treatment and drainage systems are functioning properly to prevent contamination and manage water flow.
- **Surface Run-off Monitoring**: Managing the flow of rainwater or melted snow over the land to prevent flooding and water pollution.
- **Pollution Control Facilities**: Monitoring facilities like tailings dams and evaporation ponds to ensure they are operating correctly and not causing environmental harm.

According to Heikkinen et al. (2008) the methods below can be used for monitoring of the aspects mentioned above:

- **Inspecting Tailings and Embankments**: Regularly checking the condition of tailings storage areas and embankments to ensure they are stable.
- **Monitoring Water Discharge**: Measuring the quality and quantity of water released from waste rock and tailings storage areas to ensure it meets environmental standards.
- **Surface Water Quality Checks**: Assessing the chemical and physical properties of surface water both downstream and upstream of the mine to detect any contamination.
- **Evaluating Aquatic Ecosystems**: Checking the health of nearby aquatic ecosystems by measuring the water's physical and chemical properties.

- **Groundwater Analysis**: Analysing the chemical and physical properties of groundwater to ensure it is not contaminated.
- **Tracking Revegetation**: Monitoring the progress of plant growth, including the rate of revegetation, vegetation density, and biodiversity, to ensure successful ecological restoration.

2.6.9 Relinquishment

The relinquishment phase is the stage where the owner of the mine, is absolved of all liabilities and any other associated responsibilities and culminates in the issuance of a closure certificate (ICMM, 2019). This implies the closure phase, and the owner of the mining rights has met all the legislative requirements associated with the set country closure requirements. The IISD (2023) recommends the following steps to be undertaken as part of relinquishment:

Detailed closure plan: Regularly updated plans must be required, with guidance on creation and execution, promoting ongoing reclamation efforts, and including a monitoring period before closure is considered complete.

Independent inspections: Mandate independent inspections or audits of closure activities after a suitable monitoring period, involving relevant stakeholders.

Residual risk monitoring: Specify post-relinquishment monitoring and maintenance requirements, including long-term maintenance or equipment replacement, with a cost estimate.

Legal transfer process: Finalize the transfer of the site to the next landowner, clearly defining the legal liabilities of both the mine operator and the new landowner.

Best international practices for mine closure provide a clear picture of how to handle the lifecycle of mining responsibly and sustainably. These practices have highlighted the significance of protecting the environment, supporting local economies, and being socially responsible. Sustainable development requires the balancing of the three pillars (environment, social and economic). In the context of best practices, it is greatly illustrated that environmental concerns, such as land rehabilitation or ecosystem concerns are intrinsically linked to social and economic concerns, including community health, social cohesion an economic stability. Effective mine closure planning must therefore integrate environmental, economic, and social considerations. This includes involving local communities in the planning process to ensure

their needs and concerns are addressed and implementing sustainable land use practices that support long-term community resilience. By doing so, mining companies can mitigate negative impacts and contribute to the sustainable development of host communities. With this understanding, the following section carefully evaluates mine closure planning guidelines that are widely used for the closure of mines.

2.7 Gap analysis of closure planning guidelines

There is a growing concern from communities about the social and environmental impacts caused by unplanned and poorly managed mining activities. In response to this increasing pressure, government and other international organisations are increasingly paying attention to the mine closure planning and closure processes by passing laws and guidelines to ensure closure takes place sustainably (Andrews-Speed et al., 2005; Hoskins, 2005; Cesare and Maxwell, 2003; Johnson and Wright, 2003; McDonald et al., 2012; ICMM, 2019; Cole et al., 2024). Mine closure planning has been adopted to avoid the adverse effects of resource extraction and the closure of mines (Getty and Morrison-Saunders, 2020). Mine closure planning was first promulgated in 1977 in the United States of America (USA) through the Surface Mining Control and Regulations Act (SMCRA) and later gained prominence and formalisation in at least 50 countries (Getty and Morrison-Saunders, 2020). According to Cole et al. (2024), these environmental and social impacts are more prudent and observable during post-closure and mine closure phases. The ICMM (2019) posited that mine closure planning should commence during the exploration phase of the mining lifecycle and be carried out through the decommissioning phase. However, the Australian Government and the ICMM (2019) noted the difficulties of factoring in the three pillars of sustainable development into closure planning while ensuring consideration of multiple stakeholders and operating country regulatory frameworks. The ICMM (2019) and the Government of Western Australia (2020) have developed guidelines to inform best practices, as illustrated below.

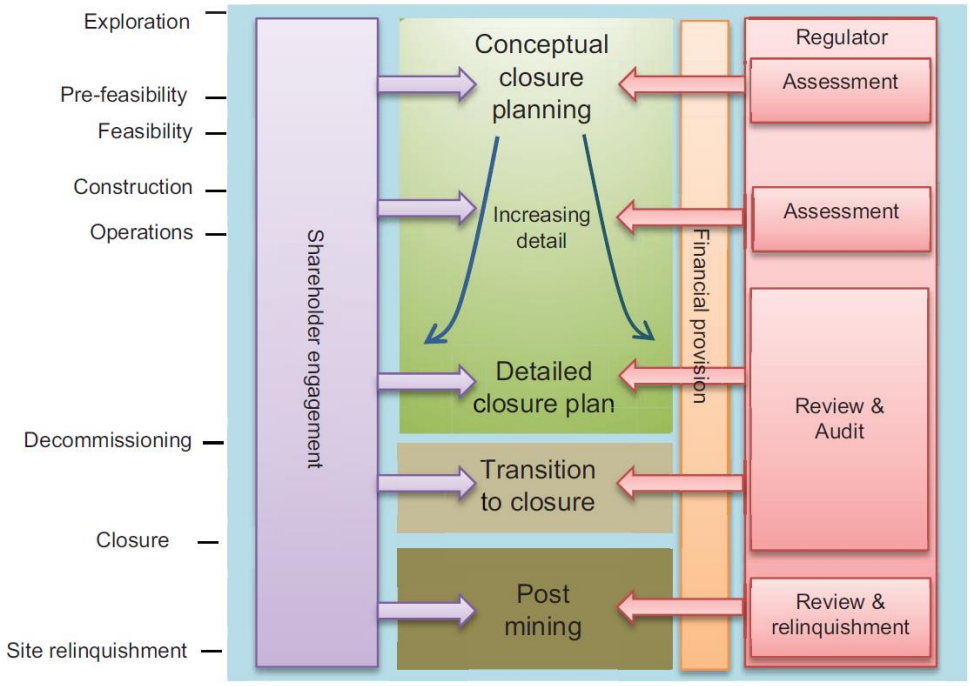

Figure 8: Mine closure planning throughout the lifecycle of a mine (ICMM, 2019; Government of Western Australia, 2020)

There has been an increase in the development of frameworks and guidelines to guide the mining industry in addressing mine closure, Cole et al., (2024) (in MMSD, 2002; ICMM, 2023; IRMA, 2014). According to Cole et al. (2024), optimum mine closure planning encapsulates the following components illustrated in Figure 9.

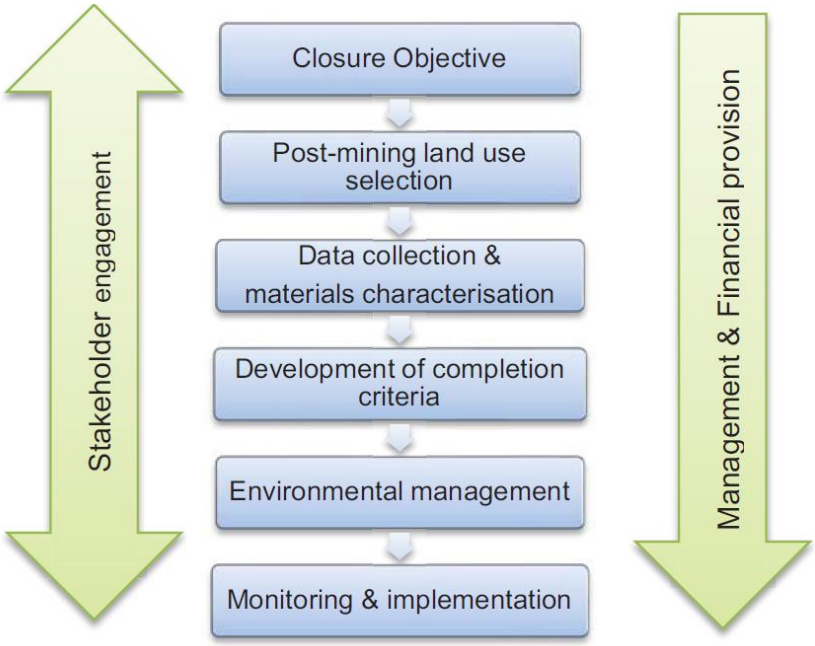

Figure 9: Best practice guideline for mine closure planning (Cole et al., 2024)

Cole et al. (2024) reviewed the best international mine closure planning practices. The first review was the ICMM's 2008 guideline, which sought to promote an integrated approach to mine closure by ensuring closure planning takes place throughout the lifecycle of a mine. The 2008 guideline, however, was later reviewed and revised in 2019 with the consideration that mine closure planning should be progressive, dynamic and iterative by considering all environmental, social and economic issues (ICMM, 2019). The second guideline or framework reviewed was the Initiative for Responsible Mining Assurance (IRMA), which provides a standard for responsible mining by focusing on legacy development to ensure long-term positive outcomes post-closure. The review considers all the revised versions from the draft in 2014, and the revision of the 2018 and 2021 guidelines (IRMA, 2018). Thirdly, the Anglo American Mine Closure Toolbox was a set of tools designed to promote optimisation, planning, and execution of closure activities. However, the toolbox had limitations as it did not emphasise the importance of stakeholder engagement, and it was later updated in 2019 to factor in stakeholder engagement considerations in mine closure planning (Anglo American, 2019). Fourthly, World Bank Mine Closure Governance provides policies, legislation and practices that should be incorporated into the lifecycle of a mine (World Bank, 2021). Lastly, guidelines from the Canadian and Australian jurisdictions as they have mature mining processes (Ministry Energy and Natural Resources, 2017; Government of Western Australia, 2020). The full comprehensive assessment of the review is illustrated in the Figure below.

Evaluation criteria		ICMM Toolkit[1]	Anglo American Toolbox[2]	Canada Quebec Guidelines[3]	Western Australia Guidelines[4]	IRMA Standard[5]	World Bank Toolkit[6]
Stakeholder engagement	Multi-stakeholder engagement promoted across activities?	□	□	□	□	□	□
	Provides framework for stakeholder engagement	W	W	¡	¡	¡	¡
Closure objectives	Requires specific and clear mine closure objectives	¡	¡	¡	□	¡	¡
	Post-mining land use considerations clearly detailed?	¡	¡	¡	¡	¡	W
Data collection & materials characterisation	Defines materials and data measurements	¡	¡	□	□	□	W
Completion criteria	Details performance criteria and indicators	W	W	¡	¡	¡	W
Environmental management	Management criteria clearly stated?	¡	¡	□	□	□	¡
	Integrates progressive rehabilitation	¡	¡	□	□	□	¡
Monitoring and implementation	Defines environmental monitoring criteria	¡	¡	¡	□	□	¡
	Details socio-economic monitoring criteria	W	W	W	W	W	¡
	Details management of social risks	¡	¡	¡	¡	¡	W
Financial provision	Clear details on estimation	¡	□	□	¡	□	¡
	Promotes frequent review of estimations	W	¡	¡	¡	□	□

Figure 10: Global Review of Mine Closure Guidelines and Best Practices (Cole et al., 2024). The keys assigned to each guideline are □, ¡, and W for Fully-defined, Semi-defined and Unclear, respectively.

In the context of stakeholder engagement, all the guidelines have a semi-defined to unclear stakeholder engagement framework to promote the engagement of all stakeholders. Consequently, this supports the fact that stakeholder engagement consideration in closure planning and processes is still lacking and highlights the need for a framework to engage stakeholders in mine closure planning and processes.

It can therefore be concluded from the evaluation of international best practices to mine closure planning that stakeholder engagement is an important part in closure mine panning and processes. Additionally, international best practices emphasise the importance of good sound governance in the form of regulations to ensure that stakeholder engagement is treated as a

mandatory process throughout the lifecycle of a mine. Mine closure legislation is different in every country and thus there will be no evaluation of international legislation best practice, and the shift will focus on South African legislation since it is the main focus of the study. South African legislation is therefore evaluated to identify if it promotes ongoing stakeholder engagement throughout the lifecycle of a mine so that gaps can be identified and recommendations for more improved legislation that caters for ongoing stakeholder engagement can be suggested.

2.8 Legislative Framework: Mine Closure in South Africa

Mining activities and closure planning and processes in South Africa are guided by certain legislation to ensure mining processes, particularly closure activities, achieve a post-closure landscape that is acceptable and has factored in both environmental and social risks for all stakeholders, either those directly impacted by mining activities or those interested (Fourie and Tibbett, 2019). South Africa's legislation constantly evolves to keep abreast of international best practices (Lehutso, 2018). However, the country's legal framework has many gaps, uncertainties, and ambiguities, which continue to contribute to the unsuccessful closure or non-closure of mines.

Mine closure has presented a complex mix of social, environmental and economic issues from the state's perspective. The South African government is responsible for ensuring that mining corporations adequately prepare for closure, that their closure activities and processes are within and per South African law, and that they are satisfactorily implemented in the affected host mining communities (Watson and Olalde, 2019). Regulatory frameworks and responsibilities carried out by the state must ensure that local communities understand that societal-induced costs are managed and avoided (Marais, 2013a). These responsibilities require active involvement by the state throughout the closure process (Marais and De Lange, 2021). However, governments remain disengaged regarding closure processes due to various reasons such as capacity constraints and competency in carrying out mine closure processes from a regulation point of view (Watson and Olalde, 2019). The South African government has promulgated the following legislative acts and regulations to guide the closure of mines. In light of the above, the constitution as the supreme governing legal framework in South Africa is therefore evaluated.

2.8.1 Constitution of the Republic of South Africa [No. 108 of 1996]

The Constitution of the Republic is the highest law in South Africa, from which all other laws derive. Mine closure must be interpreted, challenged, and implemented following the Bill of Rights. Section 24 of the Constitution guarantees the right to environmental protection, stating that (RSA, 1996):

'Everyone has the right: -

(a) to an environment that is not harmful to their health or well-being, and

(b) to have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that:-

i. prevent pollution and other ecological degradation;

ii. promote conservation; and

iii. secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development.'

The above rights enshrine and highlight the government's commitment to the well-being of affected communities, protection of the environment and sustainable rehabilitated land post-closure (Mining Weekly, 2023). Therefore, Section 24 of the Constitution gives rise to the National Environmental Management Act (NEMA) to guide on matters affecting the environment.

2.8.2 National Environmental Management Act (NEMA) [No. 107 of 1998]

NEMA sets out the national norms and standards, including general principles and procedures for sustainable development and environmental management in South Africa to give effect to Section 24 of the Constitution. According to Blackmore (2015), NEMA addresses some socio-economic advancement and environmental protection issues in mining communities. Mining-related activities under NEMA fall under the environmental authorisation of listed activities. NEMA embodies principles that apply to mining companies, including the affected communities, to promote environmental justice and foster public participation. These principles include, amongst others:

(a) Environmental Justice should be pursued so that adverse environmental impacts shall not be distributed in such a manner as to unfairly discriminate against any person, particularly vulnerable and disadvantaged persons (Section 2 (4) (c) of NEMA
(b) Responsibility for the environmental consequences throughout its life cycle (Section 2 (4) (e) of NEMA, 1998).
(c) The polluter pays principle (Section 2 (4) (p) of NEMA, 1998).
(d) The participation of all interested and affected persons, and vulnerable and disadvantaged persons in particular, in environmental management (Section 2 (4) (f) of NEMA, 1998).
(e) Section 2(4) (g) of NEMA emphasises consideration and account of all forms of knowledge, including knowledge of traditional and ordinary people, as well as their values and needs.
(f) Section 2(4) (k) of NEMA highlights that decisions must be made following the law and must be open and transparent. NEMA also enshrines access to information in accordance with the same law.
(g) Section 2(4) (q) of NEMA promotes full participation of women and youth in environmental management and development.

The principles outlined above emphasise the need for public participation that extends beyond consultation as dictated by the Act. This was also reiterated in the High Court of South Africa in a matter between Earthlife Africa and the Director General of the Department of Environmental Affairs and Tourism (Case No 7653/03) that there is a need for improved procedural, compliance and substantive criteria on environmental management principles to become more inclusive, effective and strengthened.

NEMA also provides Specific Environment Management Acts (SEMA) such as National Environmental Management: Biodiversity Act 10 of 2004; National Environmental Management: Air Quality Act 39 of 2004; National Environmental Management: Waste Act 59 of 2008; National Environmental Management: Protected Areas Act 57 of 2003 and National Environmental Management: Integrated Coastal Management Act 24 of 2008. According to NEMA, any activity that will harm the environment must apply for authorisation based on the EIA regulations as per Section 24. Within the context of the mining sector, mining projects and activities necessitate an environmental authorisation consistent with NEMA principles associated with public participation. Environmental Authorisation (EA) as it relates to activity on land regarding public participation is enshrined in the EIA regulations section 39(1), which states that “If the proponent is not the owner or person in control of the land on which the

activity is to be undertaken, the proponent must, before applying for an environmental authorisation in respect of such activity, obtain the written consent of the landowner or person in control of the land to undertake such activity on that land".

Section 40 (Chapter 6) of the EIA regulations provides the purpose of public participation when a basic assessment report, an EMPr, and a closure plan are submitted, and these must follow Regulation 19. Regulation 21 makes provisions for a scoping report, and Regulation 23 makes provisions for an EIA report, and an EMPr in the case of a closure activity. All potential interested or affected parties, including the competent authority, must be given at least 30 days to provide comments on each of these reports or plans. According to NEMA, the competent authority refers to a government body that either approves authorisation or denies it after carefully assessing a proposed project's environmental impacts.

Regulation 23 of the EIA then outlines the process of submission and consideration of the EIA report including all supporting documents to the competent authority. In the case of mine closure, Regulation 23(4A) needs to be complied with which sets out the requirement for submission of a closure plan and this must be done in congruence with Regulation (4B). Appendix 5 of the EIA provides general information that a closure plan must contain. This includes details of the environmental assessment Practioner (EAP), closure objectives, proposed mechanisms for monitoring and assessment, reporting, measures to rehabilitate, management or mitigation measures, description of modification, remedial, compliance, against environmental impacts and provisions of the Act regarding closure, time periods, process to manage any environmental damage, pollution, treatment and pumping of water or any ecological damage and details of public participation. The regulation in terms of the closure plan does not make any specific provisions to promote ongoing public participation that extends beyond environmental authorisation (EA). Regulation 24 provides a decision that can be made regarding the S&EIR application which can either be granted in all parts or only certain parts of the activity or refused EA.

Regulation 41 provides the minimum requirements that constitute minimum public participation requirements; these include, putting a notice board in a visible and accessible site of the proposed development or any other alternative location. Sending written notices to all I&AP such as the occupiers, owners, municipal councillor, municipality or any organ of the state and any other competent authority. The proponent should place an ad in one of the local newspapers or any official Gazette or provincial and national if the activity affects areas beyond

the local municipality. The notice should include notice details of the application, and whether it is a basic assessment or S&EIR. The nature of the activity and location should be described including details where additional information can be found and the process of how and to whom comments can be made. The notice board should at least be 60 by 42 cm in size. The person conducting public participation must ensure information accessibility and that participation affords all parties a chance to comment.

NEMA and the EIA regulations require the consideration of social aspects through Social Impact Assessment (SIA). According to Kruger and Sandham (2018) despite ongoing debates on whether other specialists should separate them, SIA and EIA are fully integrated in South Africa. Additionally, Kruger and Sandham (2018) posited that SIA could theoretically drive and advance public participation beyond consultation. Public participation in terms of Chapter 6 of EIA regulations does not extend beyond the environmental Authorisation (EA) phase. While in NEMA does not make any provisions for ongoing public participation or stakeholder engagement. Therefore, as presented within NEMA and the EIA regulations, mining companies are not required to continuously conduct public participation beyond consultations for EA.

Financial provision is also enshrined in NEMA. NEMA dictates that the prospector must make financial provisions for the mining rights to rehabilitate the land. While this is justified and appropriate as legislation dictates, Krause and Snyman (2014) notes that this is insufficient, as it does not incorporate the annual review of the closure plan. They note that the main reason for reviewing financial provisions is to ensure that costs are adjusted, and financial provisions must match environmental remediation plans. This is an important aspect, which is also enshrined in the international best practices to ensure that environmental rehabilitation is carried out and in alignment with the necessary financial costs at that time required for rehabilitation. Additionally, as it relates to stakeholders, financial provision ignores the involvement of a wide range of stakeholders such as local communities or NGOs in decision-making, the decision only lies with the Minister responsible for Mineral Resources. Nevertheless, NEMA provides overarching frameworks for environmental governance in South Africa using Specific Environmental Management Acts (SEMAs) to address specific environmental issues. These SEMAs are evaluated below with a specific focus on stakeholder engagement.

2.8.3 National Environmental Management: Air Quality Act (NEM: AQA) [39 of 2004]

Air pollution in South Africa was controlled through the Atmospheric Pollution Prevention Act 45 of 1965 before 2004 which was later repealed through the promulgation of NEM: AQA. The main aim of NEM: AQA is to improve air quality in South Africa through pollution prevention and protection of the environment while ensuring sustainable development. NEM: AQA sets the national standards for monitoring and managing air quality. The most critical aspect, as reflected in NEM: AQA, is the National Ambient Air Quality Standards (NAAQS) (GNR 1210 of 2009). The standards provide management plans concerning air quality and benchmarking in measuring air quality. Government Notice (GN) 486 in Government Gazette 35463 of 29 June 2012 must also be considered as they reference consideration to the National Ambient Air Quality Standard for Particulate Matter with Aerodynamic Diameter of less than 2.5 µm (PM 2.5). As it relates to public participation, section 7(2)(a) emphasises participation for the protection and enhancement of air quality. Section 56 provides the consultation process that should be followed, while Section 57, provides minimum requirements for public participation. Sections 56 and 57 do not make provisions to promote ongoing public participation. Public participation is also enshrined in terms of Section 38(3) for the application of Atmospheric Emissions License (AEL) requiring applicants to consider their applications to the attention of all I&AP. Section 46(3) ensures that changes to emission licenses are not made without proper oversight and input from stakeholders. In terms of mining operations and mine closure, NAAQS establishes Minimum Emission Standards (MES) that should be adhered to as per Table 3 below. MES also factor into consideration Particulate Matter, PM10 and PM2.5 and these provides limits to the air quality monitoring for particulate matter and form the basis of air quality management compliance criteria.

National Regulations for Dust Deposition were enacted to control dust, enforce compliance, and mitigate negative impacts in both residential and light commercial areas. The acceptable dust rates are provided in Table 4 below.

Table 3: South African Ambient Air Quality Standards (Government Gazette 32816, 2009)

Pollutant	Averaging Period	Limit Value (µg/m³)	Limit Value (ppb)	Frequency of Exceedance	Compliance Date
Benzene	1 year	10	-	0	Immediate – 31 Dec 2014
	1 year	5	-	0	1 Jan 2015
CO	1 hour	30 000	26 000	88	Immediate
	8 hour[a]	10 000	8 700	11	Immediate
NO_2	1 hour	200	106	88	Immediate
	1 year	40	21	0	Immediate
PM_{10}	24 hour	75	-	4	1 Jan 2015
	1 year	40	-	0	1 Jan 2015
$PM_{2.5}$	24 hour	40	-	4	1 Jan 2016 – 31 Dec 2029
	24 hour	25	-	4	1 Jan 2030
	1 year	20	-	0	1 Jan 2016 – 31 Dec 2029
	1 year	15	-	0	1 Jan 2030
SO_2	10 minutes	500	191	526	Immediate
	1 hour	350	134	88	Immediate
	24 hour	125	48	4	Immediate
	1 year	50	19	0	Immediate

Table 4: Permitted Dust fall rates

Restriction areas	Dustfall rate (D) in mg/m²-day over a 30 day average	Permitted frequency of exceedance
Residential areas	D < 600	Two within a year, not sequential months.
Non-residential areas	600 < D < 1 200	Two within a year, not sequential months.

As evidenced, NEM: AQA plays a pivotal role in regulating air quality and preventing pollution and ecological degradation. Pollution prevention is not only enshrined in NEM: AQA, the main SEMA that provides comprehensive pollution prevention in terms of waste management is the National Environmental Management Waste Act, which is discussed below.

2.8.4 National Environmental Management: Waste Act (NEMWA) [No. 59 of 2008]

NEMWA seeks to regulate waste management, safeguard the environment and public health, prevent pollution and ecosystem degradation, and establish planning frameworks for waste management in South Africa. Public participation is enshrined in various sections of NEMWA, such as Section 28 (5), which requires that industries submit waste management plans, and this must be done in consultation with I&AP. NEMWA mandates licensing and applications in

terms of listed activities under the original notice GN 921 published in GG 37083 and as amended in GN 332, GN R633, and GN 1094 that have a detrimental effect on the environment that a proponent must apply for a waste management license through the EIA regulations (basic assessment of S&EIR). According to Pape (2021), some of the activities that are associated with mining activities that would necessitate a waste management license include but are not limited to excavation, disposal and removal of ore bodies, beneficiation, and tailings disposal. The licensing application, as it relates to public participation, follows the EIA regulations and does not make provisions to promote ongoing engagement with I&AP as part of the licensing requirements. Public participation is enshrined as a consultative phase during authorisation. NEMWA plays an important role in regulating and minimising waste to promote sustainable development by setting national norms and standards for waste management. To fully protect the environment and ecological degradation, the National Environmental Management Protect Areas Act ensures the conservation of ecologically viable areas and safeguards South Africa's rich biodiversity. NEMPAA is discussed below.

2.8.5 National Environmental Management: Protected Areas Act (NEMPAA) [No. 57 OF 2003]

NEMPAA aims to protect and conserve South Africa's biodiversity from all levels of government. This act accomplishes the protection of biodiversity per national norms and standards to ensure their full preservation. Public participation is enshrined in NEMPAA through prospecting and mining activities in protected areas. This is highlighted through Section 48(1) NEMPAA that:

"Despite other legislation, no person may conduct commercial prospecting or mining activities- (a) in a special nature reserve or nature reserve; (b) in a protected environment without the written permission of the Minister and the Cabinet member responsible for minerals and energy affairs; or (c) in a protected area referred to in section 9(b) or (d)".

The legislation quoted above appears to place the decision-making power in the hands of the minister or cabinet members. While these authorities may consult with stakeholders, the legislation does not explicitly require them. This limits the scope of promoting ongoing stakeholder engagement or public participation. To support this, section 33 of NEMPAA provides a public participation process concerning the declaration, management and regulation

of protected areas. The section as well, does not make any provisions for ongoing public participation or stakeholder engagement. NEMPAA conserves ecologically sensitive areas and ensures South Africa's natural heritage is preserved for future generations. To ensure comprehensive management, the National Water Act (NWA) focuses on sustainable water resource management.

2.8.6 National Water Act (NWA) [No. 36 of 1998]

The main aim of NWA is to ensure equitable use, management, and protection of water use. Any individual using water must have a permit issued under this Act. Additionally, the Act ensures that water is used sustainably for current and future generations (Swart, 2003). Section 3 of NWA ensures additional protection of aquatic ecosystems and biodiversity. It prevents and reduces water contamination of both surface and groundwater and encourages the management of drought and flooding and the safety of dams. Public participation within NWA is enshrined in section 21. Section 21 of the NWA makes provisions for activities related to water use that require a license, some of which are associated with mining operations. These activities include but are not limited to waste discharge and disposal into water resources, underground water abstraction, etc. In this instance, the Act dictates that:

"*Water use must be licensed unless listed in Schedule I, is an existing lawful use, is permissible under a general authorisation, or if a responsible authority waives the need for a licence*".

Section 39 of NWA does not explicitly require public participation as part of the general authorisation process to secure a water use license (WUL). This can lead to risks that important stakeholders are not consulted about such as water-related aspects of mine processes and closure, potentially resulting in conflicts. Although like all SEMAs which do not make provisions to promote ongoing stakeholder engagement, NWA however, plays also a pivotal role in regulating activities that involve the closure of a mine. Specific sections include Section 19, which deals with pollution prevention and mitigating the effects of pollution. Section 22 ensures water regulation and authorisation. Lastly, Section 28 deals with mitigating incidents that may pollute water resources, this is relevant in sudden mine closures. To address the regulation that deals with mineral and petroleum resources, the Mineral and Petroleum Resource Development Act (MPRDA) is the main governing legislation for mining activities in South Africa.

2.8.7 Mineral and Petroleum Resource Development Act (MPRDA) [No. 28 of 2002]

The MPRDA and its Regulations (GN R527) and as amended GN R1288, GN R1203, GN R349 and GN R466, present milestones in the extractive industry's transformation to ensure petroleum and resource development is conducted sustainably. The Act adopts a 'cradle-to-grave' approach to the exploration of mineral resources, considering the economic, social, and environmental costs to achieve sustainable mineral development. In comparison to its predecessor, the Mineral Act (No.50 of 1991) is said to provide a comprehensive, detailed, effective and efficient regulatory framework for mine closure and rehabilitation (Lehutso, 2018).

The MPRDA establishes certain specific objectives regarding the interpretation of the act, as outlined in section 4(1) of the Act; this section emphasises that any interpretation that aligns with these objectives as set out in the act should be favoured over any other reasonable interpretations that do not. Public participation within the MPRDA is enshrined through environmental authorisation. The Act highlights that any prospective applicant must apply for an environmental authorisation. As mentioned above in the EIA regulations, environmental authorisation is detailed as a basic assessment or full scoping S&EIR process. The manner of consultation in the MPRD regulations is aligned with NEMA public participation according to Regulation 42 of MPRD regulations:

"*The meaningful consultation with landowners, lawful occupiers and interested and affected persons contemplated in sections 16(4)(b), 22(4)(b), 27(5)(a) of the Act shall be conducted in terms of the public participation process prescribed in the Environmental Impact Assessment Regulations promulgated in terms of section 24(5) of the National Environmental Management Act, 1998.*"

This implies that the MPRDA's required consultations do not exceed the level of consultation required by the EIA regulations, which in this case would be of a proposed exploration of a mining right application. Thus, this highlights the lack of emphasis on stakeholder engagement, considering the impacts associated with mining operations.

Chapter 2 of the MPRDA outlines fundamental principles related to mining in the Republic of South Africa:

(1) The principle recognises the State's right to exercise authority over all of the mineral and petroleum resources in South Africa.
(2) The State as being the trustee and custodial parent of these resources
(3) The principles ensure that every South African has access to these resources.
(4) The principles encourage the active involvement of previously disadvantaged groups including women in the mineral and petroleum industries
(5) The principle encourages the development of the mineral and petroleum industries for the betterment of the nation.
(6) The principle enshrines emphasis on job creation and the enhancement of living standards.
(7) The principle promotes certainty of the law given to those engaged in surveying, searching or mining and even in production.
(8) The principle promotes Sustainable resource development following environmentally sustainable practices as advocated by the Constitution's section 24.
(9) The principle provides that the holders of mining or production rights be required to participate in the socioeconomic development of the areas they work in.

Regulation 56 GN R527 establishes the principles related to mine closure that the prospector right, the retention permit holder must ensure: (1) integrated closure process; (2) proactive management of environmental risks; (3) compliance with Mine Health and Safety Act 29 of 1996; (4) Adress residual and latent impacts; (5) Maintain rehabilitation to sustainable standards and (5) ensure efficient and cost-effective closure.

Section 38(1) of the MPRDA (2002) requires mining rights holders to rehabilitate land to its natural state or a generally acceptable land use that aligns with sustainable development principles. The Act's regulations mandate that mining rights holders submit an Environmental Management Programme (EMP) or EMPr, which outlines closure objectives and key goals for mine closure. This program guides project design, development, management of environmental impacts, future land use objectives for the site, and closure costs (Krause and Snyman, 2014).

Regulation 61 and Regulation 62 of the MPRDA Regulations (2004) require the EMPr/EMP of the holders of the mining rights to ensure that the objectives of their closure plan should be translated into a strategy that can be implemented. The closure plan must include several additional components beyond those already mentioned. These components encompass the implementation and funding strategies, a summary of the environmental risk report findings,

results of rehabilitation efforts, descriptions of decommissioning methods, and a management strategy for addressing impacts. It should also cover long-term management and latent plans, closure costs, financial monitoring, maintenance, post-closure management, and records of consultations with interested and affected parties (Krause and Snyman, 2014). While it is mandated by regulations that interested and affected parties be consulted during the planning phase and project initiation of the mining lifecycle, there is a lack of articulation on the form and type of consultation (oral, public meetings, written, etc.) (Krause and Snyman, 2014). Secondly, no specific provisions have been made regarding the progress of the closure plan and the implementation of rehabilitation efforts concerning the EMPr/EMP (Lehutso, 2018). These ambiguities explain why some community members report that mining companies never consulted them on decommissioning and post-closure activities (Krause and Snyman, 2014). Moreover, it has recently become difficult for the Mineral Resource and Energy Department of South Africa to enforce the legislation due to institutional capacity constraints.

Section 43(1) of the MPRDA (2002) states that a mine is officially closed when the government issues a closure certificate. This certificate absolves the owner of any obligations to exploit the resources and any associated liabilities and responsibilities regarding environmental, social, and economic impacts. Applying for a closure certificate is mandatory under the following conditions: (1) during the decommissioning phase of the mining lifecycle, (2) when relinquishing any portion of the prospecting land, and (3) upon completing the prescribed closure plan related to a right, permit, or permission.

The MPRDA (2002) also requires mining companies to submit Social Labour Plans (SLP) as part of the company's application for a social license to operate. Then, the SLP must be drafted in alignment with the Integrated Development Plan (IDP), which is a five-year plan made by the local government on how they will carry out the development of the area (Van Der Watt and Marais, 2021). Van Der Watt and Marais (2021) state that the primary goal of the SLP is to promote collaboration between local governments, communities, and mining companies. However, this has often not been the case, as strained relationships between communities and mining companies have become a global issue (Hoon et al., 2023). SLPs play a crucial role in mine closure planning. They are designed to ensure that mining companies address both the social and economic impacts of mine closure on local communities. This includes planning for post-closure land use, economic diversification, and community development projects that can sustain the local economy after mining activities cease. The MPRDA mandates the

development of SLPs, highlighting their importance as a legislative requirement to ensure that mine closure processes are comprehensive and inclusive.

Section 100(2) links the MPRDA with the mining charter, reinforcing the need for mining companies to adhere to these guidelines and integrate SLPs into their overall mine closure strategies. This alignment ensures that the social and economic well-being of communities is considered throughout the mining lifecycle, from exploration to closure.

2.8.8 Mining Charter: Broad-based Socio-economic Empowerment

The mining charter is a tool the government uses to regulate the mining industry. The charter provides tools and guidelines that mining companies need to follow and came into effect on the 1st of March 2019 (Peter et al., 2021). The mining charter aims to promote growth for the mining companies and the broader communities, including historically disadvantaged people. The charter was created to transform the mining industry positively, including communities affected by mining operations. The mission of the charter is to give effect to section 100 (2)(a) of the MPDRA, section 9 of the constitution and to align with the government's transformation policies. Specific clauses within the charter that promote public participation or stakeholder engagement are (South African Government, 2018):

Clause 2.1.3.5 – "*Host communities and qualifying employees shall have representation on the board or advisory committee of a right holder*".

Clause 2.5 – "*A right holder must, in consultation with relevant municipalities, mine communities, traditional authorities, and affected stakeholders, identify developmental priorities of mine communities. Mining right holders operating in the same area may collaborate on identified projects to maximise the socio-economic developmental impact in line with approved Social and Labour Plans. Approved Social and Labour Plan must be published in English and one or two other languages commonly used within the mining community.*".

In September 2021, the High Court of Gauteng delivered a judgment that renders the charter a policy, not a legislation or subordinate legislation (Peter et al., 2021). This judgement was delivered between the Minerals Council of South Africa, the Minister of Mineral Resources and Energy and Thirteen Others (Case No. 20341/19). The High Court found that section 100(2) does not empower the minister to make the charter a law. The court highlighted that the

mining charter is not a legislation or regulation but rather an instrument that can be used to inform policy decisions. As a result, mining companies have more flexibility in choosing to comply with the charter. Thus, this court decision makes it clear that the mining charter does not have the same force of law as the legislation or regulations.

This section has highlighted the existing gaps regarding the lack of ongoing public participation within the South African legislative framework. It is important to note that legislation plays a pivotal role in fostering relationships and collaboration. Hamann (2004), highlights that collaboration and partnerships among society, the mining industry, governments, and mining-affected communities have become a central theme in development. This links to the existing literature, which indicates that current regulatory and policy guidelines do not sufficiently provide for stakeholder engagement. These guidelines fail to ensure that stakeholder engagement spans from the early planning phase of exploration, as illustrated in best international practice guidelines, to the actual closure phase. This gap aligns with one of the objectives of this study, which is to suggest possible legislative reforms in the context of South African legislation. These reforms aim to ensure that stakeholder engagement runs throughout the lifecycle of a mine, leading to more sustainable closure outcomes.

The lack of provisions for continuous stakeholder engagement beyond environmental authorisation stage highlights a critical gap in the legislative framework. Without structured and ongoing participation, key stakeholders may be excluded from decision-making processes that directly affect them. To better understand how engagement can be strengthened, it is essential to the classification and identification of these stakeholders and the methods that can be used to engage them.

2.9. Classification and identification of stakeholders

Stakeholder classification and identification determines interested and affected parties to a project or a company's activities (Chen et al., 2020). For effective stakeholder identification and classifications, organisations, as emphasised by Kujala et al. (2022), must first draft a list of their stakeholders and their impact on the organisation's activities. The identification of stakeholders is an integral part of the stakeholder and an initial step in developing a stakeholder engagement plan (Bahadorestani 2019). The Project Management Body of Knowledge (PMBK) guide additionally added that the identification of stakeholders ensures that the

interests of stakeholders, impact, influence, involvement, analysis, and overall identification are factored into the engagement plan.

In this study, identifying and classifying stakeholders will help achieve the third research objective which is around determining the factors that facilitate and prevent communication transparency between mining corporations and host communities. This will also serve as a foundation for addressing the fourth objective. Techniques often adopted to identify and classify stakeholders are focus, semi-structured interviews, and one-on-one interviews often used as the mode for collecting data as well (Gregory et al., 2020). These modes of inquiry align with Reed et al. (2009), who mentioned that focus group interviews assist in evaluating stakeholder influence, interest, impact and categorisation. Kujala et al. (2022) mentioned that semi-structured interviews assist in supplementing data gathered in focus group interviews on stakeholder engagement, as they are a meaningful mode of inquiry to gain a deeper understanding of the nature of the relationship amongst various stakeholders and information triangulation. Lastly, one-on-one interviews, as highlighted by Bullock (2016), are an excellent way to ensure an inclusive approach by ensuring that all stakeholders are considered, especially those who cannot speak for themselves, either because they are shy or overpowered in the engagement process, those who are immobile and have mobility problems or deficiencies. All these modes of data collection are adapted in this study their application in the context of this study will be explained more in Chapter 3. Another method of identifying and classifying stakeholders as proposed by Reed et al. (2009), is through the usage of snowball sampling, which is a method of data inquiry where data is gathered from referrals of the interviewer, which is also a method of data inquiry that was adapted by this study (further expanded in Chapter 3 of this dissertation). Therefore, it is paramount that after stakeholders are classified and categorised, they are properly engaged.

2.11.1 Stakeholder engagement steps

Stakeholder engagement should be consultative, inclusive, and ensure constant communication and enhance stakeholder relationships (Quartey, 2020). According to Staunton et al. (2018), there are three levels of stakeholder engagement: (1) high level, (2) peer level, and (3) community engagement level. The first level of engagement, the high level, comprises policymakers and government officials. For example, it involves stakeholders in institutional, national, and international decision-making. Peer level engagement, as the second level, is

made up of geologists, environmental scientists, health and safety officers, and engineers who possess the technical knowledge regarding processes and procedures for mining and closure of mining. Lastly, the third level of engagement, which is community engagement, is made up of residents, miners, Non-Governmental Organisations (NGOs) or environmental activists (Staunton et al., 2018). Quartey (2020) highlighted that organisations are advised to actively update their stakeholder engagement contact or lists due to changing populations and cultures and due to the dynamic nature of stakeholder engagement. The study will focus on all three levels of the engagement process. Quartey (2020) posited that the literature highlights a deficiency of studies undertaken for community-level engagements, particularly on environmental management and Corporate Social Responsibility (CSR) reporting projects. The stakeholder engagement steps, consultation levels and the need for engagement studies to be taken at community levels led to the synthesis of stakeholder engagement in the context of mine closure.

2.10 Stakeholder engagement in the context of mine closure

Literature associated with stakeholder engagement emphasises the importance of consultation on the social aspects of mine closure (Kozłowska-Woszczycka and Pactwa, 2022). However, the literature also brings to light a major problem in the mining industry, and that is, the lack of stakeholder engagement during the decommissioning phase of the mining lifecycle (McCullough, 2016). This issue is a significant challenge that needs to be addressed (McCullough, 2016). There is a strong consensus in the literature that effective stakeholder engagement is a necessity for stakeholder consultation in mine closure planning (Mtegha et al., 2006; Murombo, 2008; Clegg, 2013; United Nations, 2020; United Nations, 2020; Mitchell et al., 2022; Chipangamate et al., 2023). Kozłowska-Woszczycka and Pactwa (2022) conducted a study viewing the literature on topics such as ‘mine closure’ and ‘mine closure planning’ using the Google Scholar database. The mine closure planning returned 1080 search results, while the former returned 18 400 search results. These words were compared with phrases such as ‘social license’, and ‘socially acceptable’. Most importantly, when such words were compared with phrases such as ‘stakeholder engagement’, the results were only limited to 236. Additionally, only ten publications deal with mine closure, adding phrases such as ‘stakeholder engagement’, ‘sustainable development’, and ‘corporate social responsibility’(Kozłowska-

Woszczycka and Pactwa, 2022). According to Ansu-Mensah et al. (2021), this is primarily because literature concerning stakeholder engagement in the mining industry is often combined with corporate social responsibility (CSR).

Stakeholder engagement is new and usually emphasises the importance of the term 'engagement'. Reasons for this include that firstly, corporations or businesses need to be accustomed to doing more than just communicating, they need to build strong relationships and rapport with their stakeholders (Ansu-Mensah et al., 2021). According to Saenz (2019), this has also largely been driven by the need to Create shared value (CSV) to address declining relationships between corporations or businesses with society and strengthen the relationships between businesses and the communities they serve. In the business world, this is usually accomplished through materiality assessment. Materiality assessment is a process of identifying the most significant environmental, social, and economic impacts, and often increasingly incorporates governance impacts as well in the form of environmental, social, and governance (ESG) analysis (Saenz, 2019). Therefore, one of the core steps of any materiality process is the involvement and engagement of stakeholders (Saenz, 2019). The other reasons for an increase in literature focused on stakeholder engagement include that mining companies seek to establish trust and build confidence, promote justice and good governance, often greatly driven by various ESG reporting and Sustainability frameworks such as the Global Reporting Initiatives (GRI), Sustainability Accounting Standards Board (SASB), Task Force on Climate-related Financial Disclosures (TCFD), United Nations Global Compact (UNGC), International Organisation for Standardisation (ISO), International Financial Reporting Standards (IFRS), Carbon Disclosure Project (CDP), Taskforce on Nature-Related Financial Disclosures (TNFD), Climate Disclosure Standard Board (CDSB) and the UN Guiding Principles Reporting/Framework (Mensah et al., 2017; Boadi et al., 2018l; Sharma, 2024).

The existing literature that talks about stakeholder engagement and mine closure planning was published by Claudia Sales Rosa et al. (2018) and Morrison-Saunders (2019), which was centred around ecosystem services that can potentially be used to drive stakeholder engagement within mine closure planning. Although the literature expands on a much existing gap in mine closure planning and stakeholder engagement, their focus was on Brazil and Australia, which poses a serious limitation on its practicality, especially within the context of African countries. However, it points out an important need for stakeholder engagement in the decommissioning phases of the mining lifecycle. A study was conducted by Vivodia et al. (2019) on the extent to which social considerations are considered in Australia's regulations. The study yielded that

social consideration in mine closure regulations in Australia, and the extent and effectiveness vary significantly across states. However, there is a general trend of a need for more in-depth consideration to ensure that social aspects are adequately addressed throughout the lifecycle of a mine. This can be achieved by ensuring a consistent involvement of the government, as they can create the legal basis to ensure sufficient social considerations in mine closure. There are various successful case studies that this study draws on to demonstrate the practical application of stakeholder engagement.

2.10.1 Successful Stakeholder Engagement Case Studies

This section provides some of the successful stakeholder engagement studies, particularly within the extractive sector.

2.10.1.2 Southern Pacific Petroleum: Stakeholder analysis and management of challenges in the extractive petroleum industry in Gladstone

Several international case studies have documented the effectiveness of stakeholder engagement. One such study by Dobele et al. (2014) examined Southern Pacific Petroleum (SPP), a company in the extractive industry in Northern Eastern Australia. The study focused on SPP's ability to manage organisational processes for building and maintaining relationships with stakeholder groups, as well as its capacity to identify and overcome various challenges and impediments. According to Robinson (2011), the company received government funding to establish a facility in the community that would use advanced technologies to ensure the safe extraction of oil from shale (Anderson, 2002). In its initial step, the company identified stakeholders who were only important to the project's success (Grandall, 2002). As depicted in the figure below, the stakeholders identified were the local, federal, and state governments, investors, potential customers, press and industry peer networks.

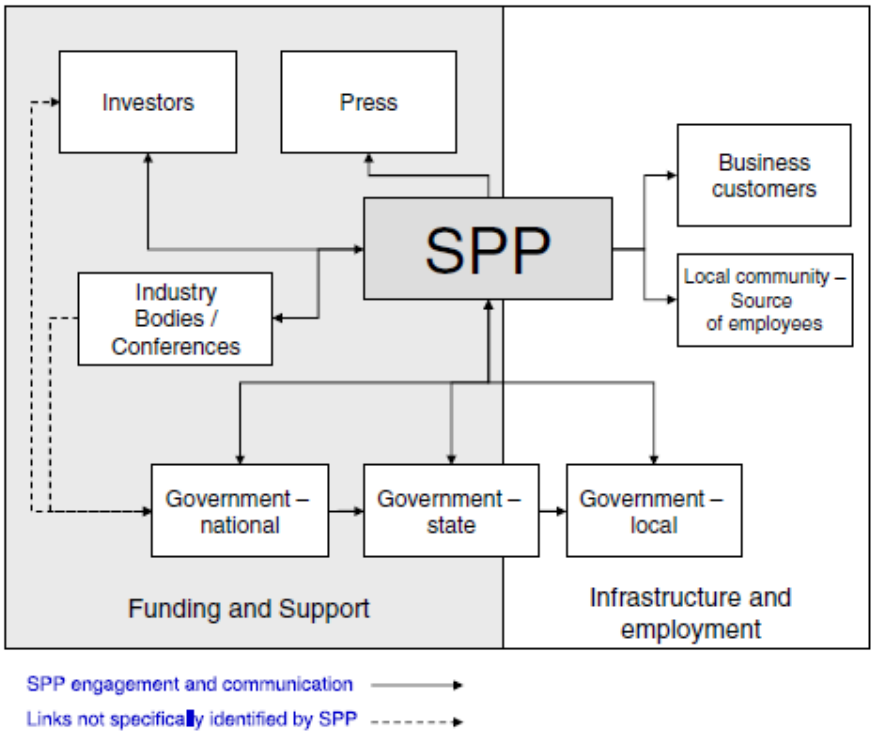

Figure 11: SPP Initial targeted stakeholder that only considered important stakeholders to the success of the project. (Dobele et al., 2014)

Over time, the company began to encounter issues because its stakeholder engagement framework did not account for a broad range of stakeholders who could influence and impact the project, such as industrial neighbours, community groups, and lobby groups. Their resolution was the withdrawal of a centralised management approach, further exacerbating the problem as it isolated the company from stakeholders (Dobele et al., 2014). Their first resolution failed primarily because (1) the company failed to identify stakeholders timeously to engage them successfully and (2) the lack of recognition of the wider stakeholder network. After being subjected to criticism and negative feedback, the company recognised a more comprehensive range of stakeholders. It increased its stakeholder engagement framework by appointing a stakeholder relations adviser (SRA) based in the Gladstone community to manage increasing volatile opinion. Thus, the stakeholder engagement model was re-implemented to reflect a wider range of stakeholders as shown in Figure 12 below. This case study yields lessons that stakeholder engagement is an important key task for businesses to identify to "whom they are responsible and how far that responsibility extends", which the extension part would then incorporate aspects of CSR (O'Riordan and Fairbrass, 2008:747).

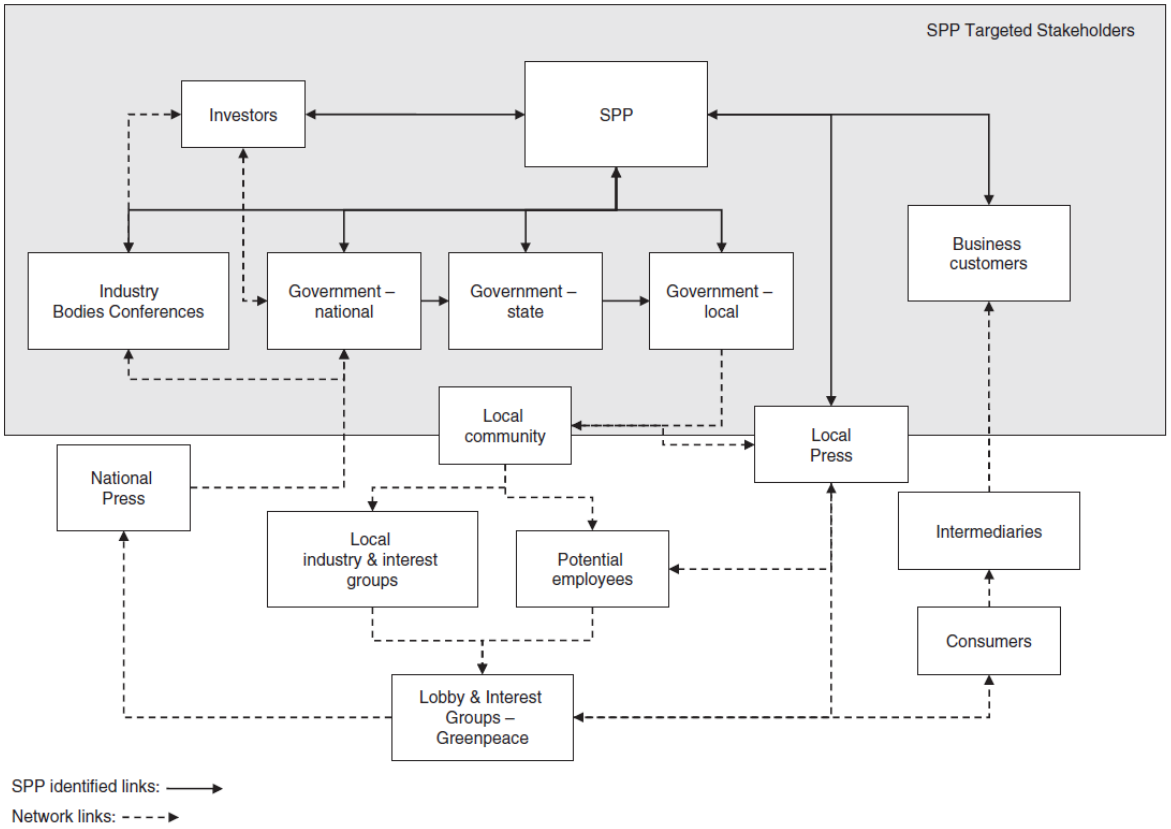

Figure 12: Second revised stakeholder network that included a broad range of stakeholders and communication paths devised by SSP (Dobele et al., 2014)

2.10.1.3 Ashford Africa: Strategies to engage host communities and NGOs in Malawi

Ashford, a subsidiary of Ashford International, operates in Australia, Malawi, Canada, Namibia, and Nigeria, specializing in uranium mining. Mzembe (2016) conducted a study on Ashford Africa, particularly in Malawi, examining its stakeholder engagement processes and strategies with host communities and NGOs. The study identified two modes of stakeholder engagement: (1) an Organizational Life Cycle perspective based on descriptive stakeholder theory (Jawahar and McLaughlin, 2001), and (2) a Stakeholder Integration perspective based on instrumental stakeholder theory (Heugens, Van Den Bosch and Van Riel, 2002). The organisational lifecycle is centred around how organisations depend on resources and make decisions when facing risks, while the stakeholder integration perspective refers to strategies used to address stakeholders' concerns and improve performance. Ashford fosters relationships with local leadership and community elites by engaging communities through development

projects (Mzembe, 2016). The process, however, was subject to criticism from other stakeholders, such as host communities and Civil Society Organisations (CSOs). They presented the following arguments: (1) the stakeholder engagement framework was not robust enough; (2) there was a lack of clear requisite structures to engage host communities. The interviews' findings also alleged exclusion by Ashford to affected communities from participating in decision-making processes (Delmas and Toffel, 2004; Garvey and Newell, 2005). On the other hand, the method of engagement Ashford embarked on with NGOs was antagonistic, primarily due to the lack of trust and transparency between the company and the NGOs. According to Mzembe (2016), Ashford attempted to use CONGO, a non-governmental organisation (NGO) that the company would establish to curtail threats, such as protests from host communities and act as a conduit of communication with the communities. Nevertheless, the antagonism made Ashford and the local campaigning NGOs increasingly fragmented. However, Ashford, using its senior officials, forged a relationship with the NGOs.

The above study highlights that (1) mining companies operating in developing countries must take cognisance of their stakeholders' expectations and that some of their stakeholders are not vocal enough to voice their concerns. (2) Mining companies should have an inclusive stakeholder engagement for communication. (3) Stakeholder engagement frameworks, particularly from developing countries, should be less pragmatic but should be constructed in such a manner to reflect the economic, social, environmental, and political dimensions of the operating country (Jenkins, 2004). (4) Antagonistic relationships between mining companies and NGOs led to transactional costs such as court cases, plummeting share prices and reputational risks. (5) NGOs and CSOs can potentially hold mining companies accountable for their actions. The above case studies elucidate some causes that prevent successful stakeholder engagement. These highlights that mining companies in developing countries do not have an established mechanism to manage their stakeholder's expectations and the vulnerable and marginalised are still excluded from stakeholder engagements. There is an increasingly dislike relationship between NGOs and mining companies. NGOs are often linked to damaging the reputation of mining companies while trying to hold them accountable.

2.10.1.4 Employer-Employee relationships at Lonmin Platinum: A South African perspective

Holtzhausen and Fourie (2011) conducted a study at South Africa's London Mine to determine the guidelines that can be used to ascertain employer-employee relationship quality. Lonmin is the third-largest producer of PGEs (Platinum, Palladium, Rhodium, Ruthenium, Iridium, Osmium) and Gold. The company was acquired by Sibanye Stillwater on the 10th of June 2019 (Heiberg and Shabalala, 2019). The study utilised a stakeholder perception survey to assess various stakeholders' views on corporate citizenship, good governance, and sustainable development in South Africa. The survey was carried out in four phases, involving external stakeholders, employees, community perception, and content analysis of Lonmin's media profile (Holtzhausen and Fourie, 2011). The survey was distributed among 508 employees. The results of the survey indicated a negative relationship between employer and employee at Lonmin rather than a communal relationship. However, the company has since undertaken proactive actions to strengthen its stakeholder relations, including the establishment of a stakeholder engagement forum, the provision of capacity building workshop to staff and community members, conducting a community perception survey to narrow the satisfaction of stakeholders across the company's activities and publishing and disseminating the results emanating from stakeholder engagement processes, providing reassurance to stakeholders.

While the existing literature provides valuable insights into key trends, incorporating more comparative examples can further strengthen the analysis. Several cited studies (Marais, 2013a; Marais et al., 2022; Marais and Atkison, 2006; Marais and De Lange, 2021; Matebisi et al., 2023) offer detailed insights from a South Africa context. Therefore, to enhance the discussion, it is important to examine how these global experiences compare with the case study from South African context. The following section explores these trends highlighting similarities, differences, and lessons that can be drawn.

2.10.2 Comparative analysis of Case study trends within the South African context

The SPP case study highlights the importance of identifying and engaging a broad range of stakeholders to ensure project success. Initially, SPP focused only on stakeholders directly important to the project's success, which led to issues when broader community and industrial stakeholders were not engaged (Dobele et al., 2014). This can be compared to Marais et al.

(2022), who found that inadequate stakeholder engagement in South African mining towns led to social disruption and increased crime rates. Similarly, Ashford Africa's stakeholder engagement in Malawi faced criticism for not being robust enough and for excluding affected communities from decision-making processes (Mzembe, 2016). This is akin to findings by Marais and Atkinson (2006), who emphasised the challenges of transitioning small towns from mining-dependent economies to diversified economic bases, highlighting the need for inclusive stakeholder engagement. The study on Lonmin Platinum's employer-employee relationships revealed negative perceptions and a lack of trust between employees and the company (Holtzhausen and Fourie, 2011). This can be compared to Marais and De Lange (2021), who discussed the importance of long-term planning for mine closures and the need to address the social and economic impacts on local communities. Additionally, Marais et al. (2022) and Marais and Atkinson (2006) both highlighted the importance of comprehensive stakeholder engagement to mitigate social disruption and support economic transition. The findings on increased crime rates in areas experiencing mine decline (Marais et al., 2022) can be compared to the social challenges faced by SPP and Ashford Africa. Additionally, Marais and Atkinson (2006) discuss the obstacles in transitioning to a post-mining economy, which can be linked to the challenges faced by Ashford Africa in engaging local communities and NGOs. These case studies provide valuable insights into the broader themes of stakeholder engagement, social disruption, and economic transition in mining communities taking place in different countries in comparison to South Africa.

2.11 Chapter Summary

In summary, a literature review was conducted using a funnelling approach, providing an overview of the status of stakeholder engagement and mine closure from an international context and then siphoning it to the African continent and finally to the South African context. This study aims to use the West Rand area as a lens to enhance an understanding of the impacts the closure of mines has had and continues to have on host mining communities. This was done to recommend strategies that could potentially enhance the integration of host mining communities into mine closure plans in South Africa. Consequently, this chapter has comprehensively provided an overview of the international literature highlighting that mine closure impacts sustainable development and overall sustainable closure of mines. The impacts cut across all pillars of sustainable development, including economic, social, and environmental. The impacted SGDs supported by Cole and Broadhurst (2022) are

1,2,3,6,7,8,11,12,14 and 15. Globally, there is increased accountability from various international organisations, such as the IFC, ICMM, UN, African Union, and ECASADC, to engage communities through stakeholder engagement. However, despite this, there is still a knowledge gap. Moreover, the literature also notes that globally, there is a disengagement from the state or government to implement the regulatory framework for mine closures, which has been marked as a great challenge.

Mine closure in South Africa presents complex environmental, social and economic issues. The South African economy is highly dependent on the extractive sector, the main driver of economic growth and the largest contributor to the country's GDP. The closure of mines presents a real threat to the South African economy, and the West Rand is no exception, as it has been presented, with the conceivable impact spanning from environmental, social, and economic aspects that the area is already experiencing. The impact of the closure of mines and also their lack of proper closing is exacerbated by unclear regulatory framework, which does not make requirements for mining companies to conduct stakeholder engagement on an ongoing basis. The legislative framework makes it a requirement for mining companies to conduct stakeholder engagement often only during the project feasibility stage when companies require social licenses to operate, thus creating a legislative loophole for mining companies to treat stakeholder engagement as an administrative activity. In summary study uses the West Rand communities as a lens to enhance an understanding of the impacts of mine closure on the host mining communities. This is done to propose strategies that could potentially improve the integration of host mining communities into mine closure plans.

Chapter 3: Research Methodology

3.1 Introduction

This chapter describes the research methodology utilised by the researcher, from research design, sampling techniques and data collection. This chapter further presents the researcher's data analysis methods for analysing gathered data. Moreover, the chapter also explores the limitations and challenges encountered throughout the research process. Lastly, ethical considerations will also be briefly outlined, which were the guiding blueprint for data collection. Research methodology refers to the procedures used to identify, select, process, and analyse information on a specific topic, utilising various data-gathering techniques to acquire relevant information (Williams, 2007). The research employed various research and data collection methods to achieve its aims and objectives, supported by the usage of different tools, which will be expanded below.

3.2 Research design and methods

Research design provides a way in which the research will be conducted. According to Creswell (2009) defines research design as a blueprint outlining the procedures, plans, decisions, and assumptions a researcher makes to guide their study. This includes the tools used for data collection and the methods for data analysis, as supported by (Hesse-Biber and Nagy Leavy, (2011). Additionally, they further substantiated that these procedures often establish methods that will be employed in the study and guide the researcher's ontological and epistemological positions. The researcher undertook a pragmatic paradigm as the philosophical and worldview standpoint, as described below.

3.2.1 Research paradigm

Research paradigm refers to methods used to understand reality, what can be disseminated about it and also the manner of attaining the knowledge (Rehman and Alharthi, 2016). A paradigm assists researchers in deciphering what constitutes valid research and consists of four components: (1) Ontology, (2) Epistemology, (3) Methodology, and (4) Methods.

To briefly unpack these, Ontology, according to (Richards, 2003:33) refers to "the nature of our beliefs about reality". In the study context, this would focus on the realities of mining communities and mining operations. This includes an evaluation of, for example, whether the experiences and perceptions of these communities are objective (existing independently of individual perceptions) or subjective (constructed through personal and collective perceptions). Epistemology, according to Gall et al. (2003:52) refers to "the branch of philosophy that studies the nature of knowledge and the process by which knowledge is acquired and validated". In practicality, within the context of the study, this would consider answering questions such as, 'How do we know what strategies are effective?', 'What sources of information are considered valid and reliable?'. Therefore, this includes a review of the literature. On the other hand, Methodology, according to (Ellen, 1984:9) refers to "an articulated, theoretically informed approach to producing data". This would refer to the mode of inquiry for conducting the research, whether, for instance, qualitative, quantitative or mixed method. Lastly, Methods refer to how data will be collected, for example, through interviews, questionnaires, surveys, etc.

The pragmatic paradigm employs research designs that focus on 'what will work best' to address the research topic, proposing strategies for involving host mining communities in mine closure planning (University of Nottingham, 2024). 'What works best' is to align with pragmatists, who believe that there is no single interpretation of a subject and that realities can be interpreted in various ways (Brierley, 2017). According to Goldkuhl, (2012), this is primarily because of fewer restrictions pragmatists put when undertaking research. Therefore, according to (Quartey, 2020), pragmatists are shaped by the view that our knowledge is shaped by individual experiences, which are also social constructs. In the context of the study, the reasons for choosing the pragmatic paradigm were (1) the flexibility that comes with research methods, pragmatic allows the usage of either or both qualitative or quantitative research approaches, which implies the ability to provide a more comprehensive understanding of the underlying factors that prevent the inclusion of host mining communities into mine closure planning and existing legislative ambiguities on how they are acting as hindrances to prevent the sustainable closure of mines. (2) As stated in chapter 2 of this paper (sections 1.2 and 1.3), Rathobei et al. (2024) stated lack of practicality, in addition to scant scholarly articles on mine closure and stakeholder engagement, this paradigm fills this void as it provides practical solutions to real-world problems. Practicality will communicate an understanding of factors that prevent the inclusion of host mining communities into mine closure and assist in improving the existing

strategies. (3) the paradigm caters for multiple perspectives; since the aim is to improve stakeholder engagement and inclusion, the researcher will deal with different people (communities, mining companies, NGOs, etc), thus ensuring all various perspectives are factored into the research. (4) in alignment with the research objectives of this study, the paradigm has assisted in performing content analysis to review, e.g., legislation, interview findings to understand and propose actionable strategies informed by best practices and input from the data gathered. To address the research gap, the researcher employed the following research design and methods shaped by the study's research aim and literature review conducted in Chapter 2 of this study.

3.2.2 Approach: Qualitative approach

The study employed a qualitative research design. A qualitative study design is a research inquiry that collects and analyses non-numerical data (Tracy, 2013). The qualitative research design aligns with the chosen paradigm for this research, as explained above. To substantiate, Firstly, Queirós et al. (2017) articulated that this research design method stresses reality using social constructivism and explains the dynamic nature of social relations. (2) Hesser-Bieber & Leavy (2011:15) mentioned that a qualitative research design is suitable for research that seeks to understand people's experiences (impacts of mine closure as per the studies' research objectives), circumstances and situations—in essence, comprehending unquantifiable human experiences. (3) Qualitative research design is beneficial to this study regarding data collection and analysis (section 3.4); for the analysis, it rigorously assists in finding patterns and themes. The study uses inductive reasoning through thematic content analysis (explained later in this chapter). (4) regarding the data collection, qualitative research design caters for focus groups, one-on-one, structured and unstructured interviews in that respondents share their beliefs and personal experiences, and there is also flexibility to allow probing (in the case of unstructured interviews) and allows for shared meanings for focus groups (Armour, 2012). The study employs focus groups, one-on-one and structured and unstructured interviews as its modes of data collection.

The application of a qualitative research design in the context of the study was selected based on understanding, exploring, and clarifying the experiences of communities and their exclusion in associated mine closure planning and processes, the role of other stakeholders and ways to build an integrated, inclusive stakeholder engagement to ensure each stakeholder is involved

in mine closure planning and the plan is of a holistic approach. Additionally, this approach helped provide an additional understanding that mining companies can embark on about their stakeholder engagement when they plan for closure. Moreover, this approach will assist in exploring and clarifying some of the legislative ambiguities and the legislation's role in deterring sustainable closure of mine and strategies to elucidate the ambiguities. Lastly, this research design is suitable for this study as the study seeks to develop strategies that involve a group of people (communities) within the context of a social phenomenon of mine closure through a social engagement (stakeholder engagement) within a social environment. The study uses empirical inquiry (case study) to address the research gap.

3.2.3 Design: Case study design

A case study is a form of qualitative research design that provides an in-depth understanding of a phenomenon of a single or multiple cases (Taylor et al., 2016). According to Soy (1997) and Yin, (2009) the case study approach 'recognises the importance of the subjective human creation of meaning but does not outright reject some notion of objectivity'. This blends well with the chosen pragmatic paradigm for this study. Firstly, individuals construct knowledge through their interactions. Secondly, individuals create their meanings based on personal experiences. Lastly, specific aspects of knowledge might not be subjective and can be shared among individuals. The study was carried out in multiple communities of the West Rand District Municipality (WRDM) as shown in Figure 13, this was in Zuurbekom, Bekkersdal, Thusanang, Westorania, Waterpan, and Simunye to compare and illuminate different aspects of mine closure and stakeholder engagement. This was also done to ensure that the issues are not explored through one lens (single community) but rather through multiple lenses to allow for numerous facets of the phenomenon to be understood (Hesser-Bieber & Leavy, 2011).

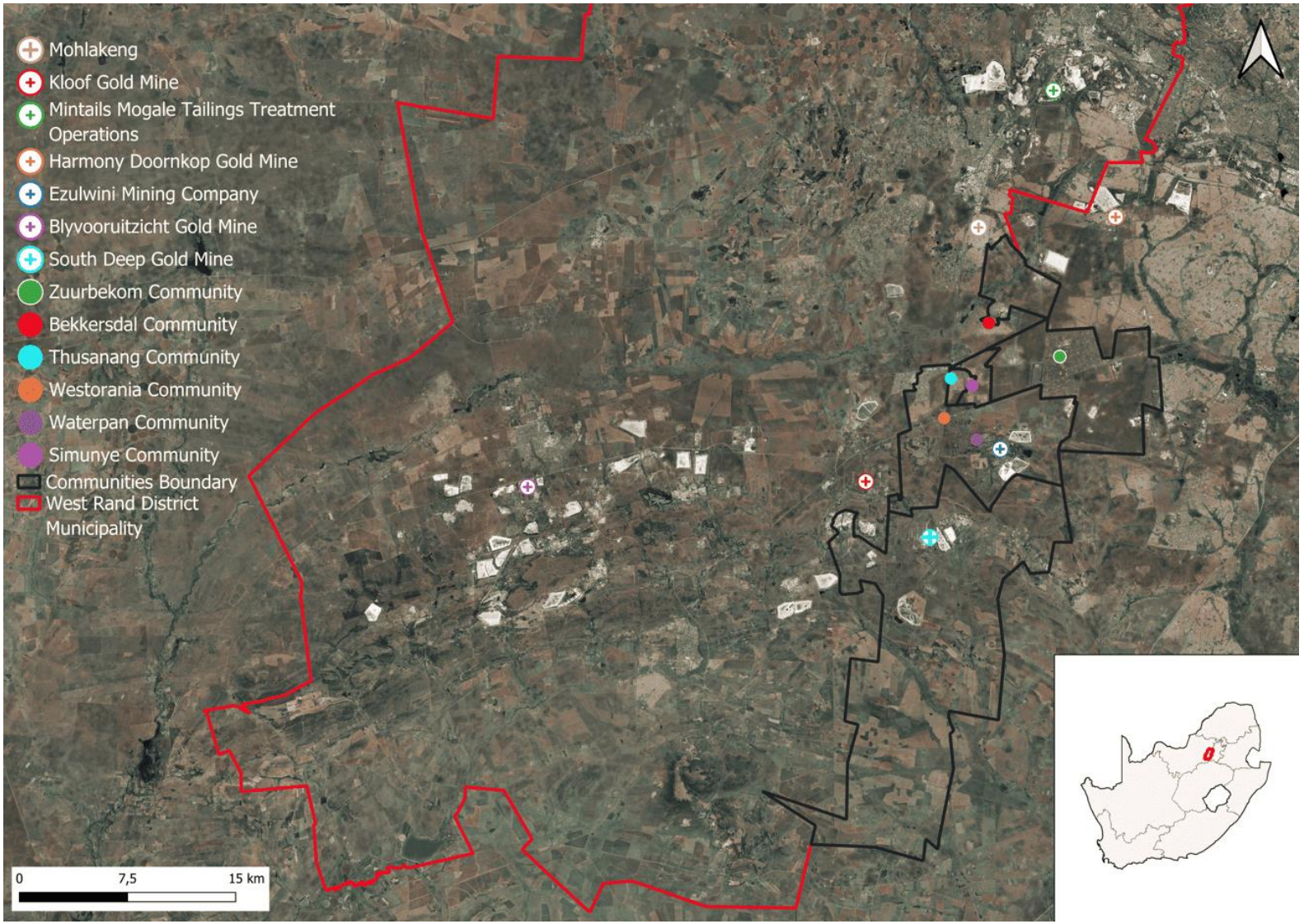

Figure 13: Locality Map of West Rand District Municipality (author)

3.2.4 Context of the case study area

The research was undertaken in the WRDM in Gauteng province of South Africa. The researcher's first step was to evaluate the literature about the West Rand area's topographical and geographical characteristics, spatial, economic and population contexts to supplement the literature review conducted in Chapter 2 of this dissertation.

3.2.5.1 Topographical and geographical

The West Rand District in Gauteng, South Africa, features a diverse topography with mountainous regions, valleys, and plains, highlighted by the Witwatersrand Mountain range known for its rich gold deposits (Schrader and Winde, 2015). The district, comprising Merafong, Mogale, and Rand West City municipalities, includes several rivers and dams essential for ecosystems and human activities (Cooperative Governance & Traditional Affairs, 2020). This combination of urban centers and rural landscapes supports industrial activities and agriculture (Cooperative Governance & Traditional Affairs, 2020). The varied topography and water bodies enhance biodiversity, providing habitats for various species. The presence of both urban and rural areas allows for balanced development, where economic growth coexists with environmental conservation (Schrader and Winde, 2015).

3.2.5.2 Spatial context

The West Rand District Municipality (WRDM) is categorised as a category C local municipality (Cooperative Governance & Traditional Affairs, 2020). The municipality is surrounded by Bojanala District Municipality, the City of Tshwane Metropolitan Municipality to the northeast, and the City of Johannesburg to the east of the Sedibeng District Municipality to the northeast. WRDM borders the Northwest Province and all major roads to Gauteng Province. WRDM consists of the towns of Randfontein, Carletonville, Krugersdorp, and Westonaria (Cooperative Governance & Traditional Affairs, 2020). The WRDM comprises an economic core, urban residential, and mining and agricultural land precincts (Matebesi et al., 2023). According to the IDP 2023/2024, the western part of Rand West is mainly focused on agricultural activities and farmland, with Badirile as its rural residential node (West Rand Municipality, 2023). The municipality includes mining villages and disperses urban structures. The presence of dolomitic rocks restricts development expansion, limiting the scope for settlement growth (Riukulehto, 2022). Despite these restrictions, people continue to occupy

areas such as Bekkersdal, Westonaria, Simunye, and Venterspost (West Rand Municipality, 2023).

3.2.5.3 Economic context

The West Rand area was formed due to the discovery of gold, and mining is an important economic driver in production and employment (Riukulehto, 2022). The municipality's economic stability has seen a recession in 2018 owing to the decline in mine output due to declining mineral reserves, particularly gold, rising costs, and the stagnation of the price of gold on international markets and stock exchanges (West Rand Municipality, 2023). The decline in mining output has resulted in severe socio-economic ramifications. The sector accounts for 29.2% of West Rand's economic output as of 2024, based on the municipality's 2023/2024 IDP. As of currently, the mining output in the West Rand has decreased by 8.6%.

Table 5: Contributions of various sectors in the West Rand district Municipality for the year 2016 (West Rand District Municipality, 2023)

	West Rand	Mogale City	Rand West City	Merafong City
Agriculture, forestry & fishing	1,7%	2,4%	1,2%	1,3%
Mining & quarrying	28,6%	4,9%	47,6%	33,8%
Primary Sector	**30.0%**	**7.3%**	**48.8%**	**35**
Manufacturing	13,6%	24,4%	11,9%	4,2%
Electricity, gas & water	4,4%	7,5%	3,4%	2,2%
Construction	3,1%	4,1%	2,6%	2,6%
	West Rand	**Mogale City**	**Rand West City**	**Merafong City**
Wholesale & retail trade	11,4%	12,4%	8,9%	12,9%
Transport & communications	7,0%	8,1%	5,2%	7,6%
Finance & business services	12,8%	13,9%	8,1%	16,4%
Government, social & people services	17,4%	22,2%	11,1%	18,8%
Total Industries	100,0%	100,0%	100,0%	100,0%

Table 5 above represents the total economic activity to which each sector contributes to the West Rand district municipality. The table shows that the dominant industry is mining and

quarrying across all municipalities, with the most significant contribution to economic growth from the mining sector being from the Rand West City local municipality, followed by Merafong, West Rand, and Mogale City.

3.2.5.4 Population context

WRDM contributes 6% of Gauteng's total population. By 2030, the WRDM will have more than a million people living in the municipality (West Rand District Municipality, 2023). According to the population data figures gathered by HIS Markit Regional Explora within the Municipality's IDP, the average population increase between 2023 and 2024 is 1.4%, showing a remarkable increasing trend. Table 6 shows the West Rand region having higher population figures than other regions and the lowest population figures are observed in Merafong municipality.

Table 6: West Rand Population Size and Growth (West Rand District Municipality, 2023)

Regions	Population numbers			Average Growth		
	2010	2020	2024	2010-2015	2016-2020	2021-2024
West Rand	804 853	900 806	932 666	1,1%	1,2%	1,4%
Mogale City	352 819	421 097	447 490	1,8%	1,7%	1,5%
Merafong	196 407	193 421	201 814	-0,4%	0,2%	1,1%
Rand West City	233 627	286 287	303 362	1,1%	1,2%	1,5%

3.2.5.5 Employment context

The unemployment rate in the WRDM started to increase in 2018 (Riukulehto, 2022). There was a total of 200,000 unemployed people in the municipality, an increase of 115,000 from 84,600 in 2008 (West Rand Municipality, 2023). The municipality observed an increase of 3.1% rate. The increase was attributed to the shedding and deteriorating of economic conditions. In 2019, there was a further increase of 4% in the unemployment rate, an increase of 12,476 without jobs (West Rand Municipality, 2023). The unemployment rate in the West Rand Municipality is higher than that in the Gauteng province, with 32,3% between 2023-2024 (West Rand Municipality, 2023). The South African unemployment rate as of 2024 is 30% (Statista, 2024). The total number of unemployed people constituted 9.75% of the total number of unemployed people in Gauteng.

Stats SA (2016) highlighted the contribution of the mining sector in various communities of the West Rand. In Westonaria LM in 2014, mines contributed 19% in terms of employment, and 25% in Merafong LM in 2016. According to Cole et al. (2024) about 58% of mine workers in the West Rand are unskilled, a perceived risk of finding alternative employment when mines close. The main labour-sending areas according to Cole et al. (2024) are Gauteng, Eastern Cape, Lesotho, and Mozambique. Table 7 below provides a summary of mines and their associated employees in the West Rand.

Table 7: Overview of mining operations and workforce in the West Rand (Cole and Broadhurst, 2022)

Company	Mines	Processing plants	Permanent employees	Contractors	Life of Mine
Harmony	Kusasalethu (twin shafts)	Kusasalethu	3,764	496	2024 (2 years)
	Mponeng (1 shaft)	Mponeng	4,650	658	2028 (6 years)
Sibanye-Stillwater	Driefontein (5 shafts)	Driefontein 1	10,941	2,141	2030 (8 years)
	Kloof (5 shafts, 1 waste rock dump)	Kloof 1 Kloof 2	9,858	1,438	2033 (11 years)
	Cooke (1 TSF)	Cooke	846	60	2023 (1 years)
DRDGold	Far West Gold Recoveries (1 TSF)	Driefontein 2	~318	~613	2040 (18 years)
Gold Fields	South Deep (twin shaft, 1 TSF)	South Deep	2,342	1,801	2106 (84 years)
Blyvoor Gold	Blyvoor (1 shaft, 1 TSF)	Blyvoor	600	0	2061 (49 years)
Total			33,319	7,207	182 years

3.2.5 Selection criteria and sampling for case studies and stakeholders

The researcher considered the following stakeholders to form part of the study: (1) the DMRE, (2) Local government, (3) Mining companies, (4) Communities, (5) NGOs, (6) Media, (7) Trade Union representative. The DMRE was studied from a desktop point of view, partly

because they were reluctant to participate. The selection of the above stakeholders was based on the following sampling techniques.

The West Rand, as previously stated, is composed of three local municipalities: (1) West Rand city, which consists of the following mining towns: Randfontein, Finsbury, Mohlakeng, Venterspos, Bekkersdal, and Westorania. (2) Mogale City consists of the following mining towns: Magaliesburg, Muldersdrift, and Krugersdorp. (3) Merafong City consists of Fochville, East Driefontein, Carlentonville, and Oberholzer. The study's focus was on the West Rand.

The Department of Mineral Resource and Energy (DMRE) provided a list of mines in South Africa through their website. The researcher downloaded the list of mines (134) found in Gauteng and manually filtered them. The following criteria were utilised to filter out the mines:

(1) Location: All the mines located within the West Rand and those not within the West Rand were not considered.
(2) Mines that were considered where those that we either operated or closed, including closed and then now operational.

After applying the above criteria, the DRME list of mines in Gauteng province ended up with six mines. The mines selected to form the basis of the community case study for this study included Blyvooruitzicht Gold Mine, Ezulwini Mining Company, Kloof Gold Mine, Mogale Gold (Pty) Ltd, Randfontein Operations, and South Deep Gold Mine.

3.2.3.1 Blyvooruitzicht Gold Mining Co. Ltd

Blyvooruitzicht is a gold mining company located in the West of the Witwatersrand in the Transvaal basin near Carletonville. The company abruptly initiated an insolvency proceedings in August 2013 due to a decline in the price of Gold (Cole and Broadhurst, 2020). Consequently, operations stopped, and thousands of people lost their jobs. The resulting environmental degradation and social repercussions were not just statistics, but a harsh reality for the local community (Bega, 2021). The implication within the community aspect was that the loss of income and increase in unemployment due to a decrease in the standard of living. Residents continue to face uncertainty regarding their ability to remain home (Maeko, 2020).

The mine reopened earlier this year in April, however, it remains a good case study for this thesis. The reasons are that, firstly, it led to detrimental socio-economic consequences for host mining communities, municipalities, and local businesses. In this context, it provides the

importance of early closure planning and measures to be put in place to ensure continued local economic growth. Secondly, Blyvooruitzicht highlights the lack of effective communication and engagement with all stakeholders such as on the company's financial position which led to its liquidation, emphasising the need for transparent and inclusive stakeholder engagement. Lastly, the sudden closure and lack of accountability placed post-closure on the company highlights existing legislative gaps that govern mine closure in South Africa. Consequently, all the reasons mentioned (mine closure, stakeholder engagement and legislative gaps) form the fundamental aim of this dissertation, and thus, the relevance of Blyvooruitzicht in forming part of this study. The severity of the situation at Blyvooruitzicht was underestimated, and the sudden liquidation of the mine and the local community was not fully comprehended. As a result, the local communities bore the brunt of this failure. The Blyvooruitzicht case serves as a stark warning of a potential widespread crisis in mine closures (Maeko, 2020). There seem to be contradicting statements around the lifecycle of a mine, according to Table 6, Cole and Broadhurst (2022) highlight the lifecycle of Blyvooruitzicht to be 46 years, while Bulbulia, (2023) estimated it to be 22 years.

The mine was purchased in 2015 by Richard Floyd of Aurous Resources who was reported to have spent 9 years re-permitting, capitalising, planning, relaunching and driving increased margins (Aurous Resources, 2024). In March 2024, McKay (2024) reported listing of the mine on NASDAQ (National Association of Securities Dealers Automated Quotations), an American stocks exchange due to an acquisition by Rigel Resource Acquisition Company backed by Orion Resource Partners.

3.2.3.2 Ezulwini Mining Company

Ezulwini Mining Company, a subsidiary of Sibanye Gold, mines gold ores from lode deposits as well as the recommissioning of underground uranium deposits (Mining Technology, 2008). The mine, located 8 km southeast of Westonaria in the Gauteng Province, is in a care and maintenance phase. Production was halted in 2001 due to capital constraints, compounded by a decrease in the price of gold and uranium commodities. In November 2009, Gold Wheaton (GW) acquired the right to obtain seven per cent of the life of the mine with $50 million upfront and $400 an ounce upon each delivery. However, in March 2012, Gold One International, a major player in the industry, acquired 100% of Ezulwini Mining Company for a staggering R539.7 million ($70 million) (Mining Technology, 2008). On the 30th of May 2023, the

Supreme Court of Appeal of South Africa delivered a judgment case between Ezulwini Mining Company (appellant) and the Minister of Mineral Resources and Energy, among others (Case No: 289/2021). The primary issue at hand was whether Ezulwini Mining Company was legally required to keep pumping and treating excess water from its underground mining areas even after it ceased underground mining activities. Ezulwini Mining had stopped underground mining in 2016 but continued surface operations. It sought to stop pumping water, arguing that it was not legally required to continue. However, Gold Fields, an adjacent mine operator, opposed this, fearing flooding if pumping ceased. The court ruled that Ezulwini Mining Company must continue this activity until it receives a closure certificate from the Minister of Mineral Resources and Energy, as per section 43 of the Mineral and Petroleum Resources Development Act (MPRDA). The lifecycle of the mine is estimated to be 2 years, closing off in 2027 (Sibanye Stillwater, 2024).

3.2.3.3 Kloof Gold mine

The mine is situated within the West Rand district and the main towns surrounding the mine are Westonaria and Randfontein (Sibanye Stillwater, 2017). The Kloof Gold mine is owned and controlled by Sibanye Gold. The life of mine is projected until 2033, which implies that it has nine years remaining. The Kloof Gold Mine employs 11,389 employees and contractors (Sibanye , 2021). The mine is an ultra-deep underground gold mining and processing operation established in 2000 by merging existing operations such as Ventersdorp, Libanon, Leeudorm, and Kloof (Sibanye Stillwater, 2024). According to Mantshantsha (2023) Sibanye Stillwater reportedly retrenched 575 employees while another 550 were offered and accepted severance packages, totalling over 1000 jobs lost. The retrenchment according to Mantshantsha (2023) had affected 2 400 employees. About 581 contractors were also affected. These retrenchments are a result of financial losses and productivity problems even after improving how much gold they could extract and cutting costs, these efforts were not effective (Mantshantsha, 2023). The company mentioned that operational challenges such as increased seismic events and cooling issues contributed to the layoffs. The status of mine closure at all Sibanye operations represents dire socio-economic consequences for host communities and South Africa. As of latest in 2024, according to Jamasmie (2024) Sibanye-Stillwater is still going to make another layoff estimated at 4000 jobs as part of the major restructuring of its gold mining operations in South Africa. The layoffs will impact 3, 107 employees and 915 contractors. The restructuring aims to tackle financial and operational challenges.

3.2.3.4 Mintails Gold Mogale (Pty) Ltd

Mogale Gold (Pty) Ltd, which was 100% wholly owned by Mintails Mining SA, was liquidated in 2018 (Mining Review Africa, 2022). According to an article written by Creamer (2022), Pan Africa Resources acquired Mogale Gold's TFS and mined gold from it. The mine is located near Krugersdorp, northwest of Johannesburg. The Mogale Gold TSFs include nine individual dams containing re-mineable mineral resources. Production is set to commence in December 2024 (Mining Review Africa, 2022). Similar to Blyvooruitzicht, Mintails mining represents broader mine closure problems in South Africa such as abdication of responsibilities and leaving liabilities with the state and communities suffering the most. The mine provides a good example of poor mine closure. According to Olalde (2018), the clean-up costs left by the mine after it was liquidated amounted to R330 million and the financial provision set aside was only R24.6 million. Olalde (2018), highlighted the following issues, firstly, the mine caused rampant environmental degradation through severe water and air pollution, gravely impacting nearby communities. Secondly, Mintails failed to set aside sufficient funds for environmental rehabilitation, mirroring what others have mentioned regarding the importance of an annual or consistent review of financial provisions to ensure that sufficient funds are set aside and congruent to the clean-up costs needed. Lastly, Mintails highlights the poor oversight of planning and regulatory failures, despite non-compliance issues found about the mine. Therefore, although re-mining operations are set to commence, the mine provides a good case study and is relevant to this research.

3.2.3.5 Harmony Doornkop mine

Harmony Gold mining operations own Randfontein operations, and the mine boarders Randfontein, Westonaria and Roodepoort districts. The mine is 16 km from north to South and consists of four shafts, Cooke 1, 2 and 3, and Doornkop. The Doornkop operation has a life cycle of 17 years (the end year 2035) and is focused on mining gold-bearing conglomerates on the South Reef. The workforce is estimated at 4 093 (Harmony Gold, 2023). The mine has not announced any specific retrenchments or mine closure planning.

3.2.3.6 South Deep Gold Mine

The mining operation is in the Witwatersrand basin, 50km southwest of Westonaria Johannesburg. The life cycle of mine is projected to be 80 years (until 2101). This implies the

mine will be a valuable asset to Goldfields as most of the mines within the West Rand would have run out of reserves by then. 100,000 people live near the mine and are reliant on the operations of the mine (Gold Fields, 2022). The mine has a total labour force of 3,615 employees and is the largest labour-sending mine in Gauteng (Gold Fields, 2022).

3.2.3.7 Mining communities

Mining communities, as defined by the Social and Labour Plan (SLP) Guidelines, consist of two conditions: firstly, they refer to the community in which mining operations are taking place, and secondly, they are also labour-sending areas. The labour-sending area refers to where many mine workers are sourced, either those currently working in the mine or former (historical) workers who have been working there. Mining companies require an employment profile to determine the areas of labour-sending. In conjunction with the MPRDA, the Mining Charter also defines a mining community/ host community as a community located next to the mining area. Therefore, based on the above guidelines on what constitutes a mining host community, the following criteria were used to establish the community aspect of mining stakeholders.

The communities were selected because the mining company operates within that area as per the guidelines of the SLP, the MPRDA, and the Mining. The second criterion of using the labour-sending area did not form part of this study, as it requires disclosure of labour figures from the mining companies, which are confidential, and the mining houses were reluctant to discuss this issue. Therefore, the primary focus was on the host communities and not necessarily the employment profile of the mine.

Purposive, convenient, and snowball sampling techniques were used in communities to select participants. Purposive sampling, also known as judgment sampling, involves the researcher deliberately choosing participants based on their qualities, which are essential and align with the study (Etikan, 2016). Convenience sampling, or haphazard sampling, is a non-random and non-probability where participants are targeted due to practical criteria, such as accessibility, availability, and willingness to participate in the research (Dörnyei, 2007). Lastly, in snowball sampling, is a method of data inquiry where data is gathered from referrals. In this instance, the researcher uses recommendations from the initial participants who fit the study's criteria and will participate (Parker 2019). The primary reason for purposive sampling was to ensure an adequate selection of the community members who have been or will be impacted by mine closure from a social, environmental or economic perspective. This was to evaluate whether

there has been sufficient emphasis on inclusive and proactive stakeholder engagement on mine closure planning strategies and whether measures are implemented from the community's perspective on their involvement in mine closure processes. On the contrary, the purposive sample also disseminated an understanding of the lack of measures to integrate communities in mine downscaling planning and processes, and their overall inclusive engagement. Convenience sampling adopted within the study assisted the researcher in developing strategies for involving host community members through stakeholder engagement based on the knowledge acquired from the purposive sample. Lastly, snowball sampling in this study put an additional primary emphasis on saturation, and this sampling technique ensured that each aspect and angle of the study was studied thoroughly by utilising suggestions of other people, the participants who have suggested other members of the community to be interviewed who significantly contribute to the aims and objectives of this study.

Twenty participants from the community level were selected based on the above sampling techniques. The community members were sampled from (1) Zuurbekom; (2) Bekkersdal; (3) Thusanang; (4) Westorania; (5) Waterpan, and (6) Simunye. The sample size was chosen based on the credibility, time, and resources available for this research. Sandelowski (2010) emphasised that sample sizes in qualitative research should be balanced, not so large that it becomes difficult to extract detailed, rich data, and not so small that achieving data or theoretical saturation is challenging. The sample size for the interviews was determined based on factors such as age, occupation, gender, role within the community, location, and level of education.

3.2.3.8 Spheres of Government

The spheres of government are composed of local, provincial, and national governments. The official(s) from the local government or local and district municipalities were selected based on convenience and snowball sampling techniques. They had to have had a certain experience working with the host communities. This was to ensure that the individual selected has the highest knowledge about the impacts of mine closure and has been in the municipality and communities long enough to observe their inclusivity in stakeholder engagements.

The same criteria were used for the provincial sphere of government, with the exception that the official needed to be working within the provincial government where the mine is located. Snowball and purposive sampling were used as a criterion for selecting the participants. I the

researcher, on multiple occasions, tried to engage the DMRE and other departments from a national perspective such as the Department of Fishery, Forestry and Environment (DFFE). However, they were reluctant to participate in the study. Even after making multiple requests from various government departments (e.g., DMRE), they would send me contacts of people who would look like they would assist. However, after reaching out to the contacts, provided, there were never responses. They used quite numerous tactics not to participate in the study, such as providing outdated email addresses or claiming they were sick.

3.2.3.9 Trade Unions

The National Union of Mine Workers or any employee who had been part of the union was selected to represent the union aspect of stakeholder engagement as the most dominant union representing the interests of mine workers and their communities. The participants were selected based on snowballing and their willingness to participate in the study.

3.2.10 Non-Governmental Organisations

These are voluntary groups or institutions with a social mission and operate independently from the government. The proposed NGOs selected included the Centre for Environmental Rights[1], MACUA[2], Benchmarks Foundation[3], Lawyers for Human Rights[4], and the Federation for Sustainable Development[5]. These NGOs were selected based on purposive and convenience sampling. Additional reasons regarding their selection include their contribution to the mining sector towards holding mining companies accountable for harmful activities and ensuring community protection. Each NGO had at least one participant discussing the proposed questions sent out to them. The selection of the participants was based on their willingness and availability to participate in the study, including knowledge of mine closure and some experience with the decommissioning phase of the mining lifecycle.

[1] https://cer.org.za/
[2] https://macua.org.za/
[3] https://www.bench-marks.org.za/
[4] https://www.lhr.org.za/
[5] https://fse.org.za/

3.2.11 Media

The selection criteria for media companies were fluid. The main target and aim of the media group or company needed to have been extensively involved in media coverage of mining-related issues. The Journalists selected will be solely based on the recommendation of the media house based on their competency and availability to participate in the study.

The research was at liberty to collect the data using various data collection techniques, which is expanded further in this study's data collection and synthesis section.

3.4 Data collection techniques

The study used both primary and secondary data approaches to collect data. Primary data entailed information from first-hand sources or participants, in contrast with secondary data, which is data collected from existing sources. Two modes of primary data collection were used are interviews and questionnaires.

3.4.1 Primary data

Interviews were used as a form of primary data collection and were conducted in both unstructured and structured formats. Unstructured interviews were chosen to delve deeply into the mine closure phenomenon, allowing for flexibility and comfort for participants, creating an open environment for free expression. This format was suitable for engaging participants and encouraging spontaneity, as it allowed the researcher to structure the content and questions freely, probe further, and raise issues spontaneously (Tracy, 2013).

In contrast, structured interviews involved a predetermined set of questions, asked using exact wording as provided in the interview schedule on Microsoft Teams. This approach ensured that participants stayed focused on the interview's objectives and had sufficient time to prepare for the questions. Structured interviews were tailored mainly for industry professionals, such as those from government or NGOs, allowing them to refer to specific documents and suggest additional participants for a more in-depth view. The use of structured interviews also facilitated accessibility, as participants across the country could participate online, ensuring credibility and comprehensive stakeholder engagement.

The researcher also conducted focus group interviews (using a cell phone as a recording device) from a community aspect to explore the perceptions, impacts, experiences and understanding

of mine closure and how communities believe they could be better included in closure planning using both purposive and snowball sampling. Moreover, to find out the state of community inclusivity in the status of mine closure planning by mining companies. The focus group interviewees were grouped into 5-8 people, and this was to ensure the sample size was manageable and all participants were able to express how mine closure has impacted their lives as well as voice out their inclusion or lack thereof in mine closure planning. A local community liaison officer assisted in getting hold of the community members and was present throughout the interviews. This was also because mining host communities are reluctant to participate in any studies or interviews if they do not see a familiar phase who lives with them, and also, very territorial to see someone going around the communities asking questions, particularly in the case of Zama-zamas.

Some of the community members, as a result, felt comfortable speaking their local language, which was Xhosa. In this instance, the researcher used a local community relations officer who was familiar with the language and could translate the questions the researcher was asking to Xhosa and then translate from Xhosa to English. Over and above, the researcher disseminated a questionnaire to provide the participants with a list of questions that will be asked. This was done to ensure they were prepared and could infer or demonstrate documents related to the questions. This strategic approach also ensured more flexibility with this mode of inquiry as probing was used to follow up on unclear answers or answers that required further substantiation. A total of 40 stakeholders participated in the research. The following PRQs were used as a basis to inquire about the subject topic, which were supplemented by additional questions based on probing.

These PRQs are linked to the main objectives of this study. The first objective of this study was to facilitate an understanding of the impacts of mine closure within the communities situated in the West Rand region. This linked to the first PRQ aimed at understanding the current situation of mine closure, and associated impacts. The second objective was to determine the legislative uncertainties that affect and impact the actions of mining corporations regarding decision-making and the ethical responsibility of involving host communities in mine closure plans. This links to the second PRQ which sought to evaluate the current regulatory framework, the gaps and challenges. The third objective of this study was to determine factors that enable and hinder communication transparency between mining corporations and host communities. The question was aimed at evaluating the current relationship between stakeholders in the West Rand, information dissemination and ways to increase and strengthen it, which greatly aligns

with the third PRQ. The fourth objective of was to propose strategies to integrate host mining communities into mine closure plans in South Africa. This aligns with the fourth PRQ aimed at strengthening stakeholder engagement. These research questions were supplemented by additional questions listed in Annexure C of this paper to comprehensively evaluate the perpetual and global unsustainable closure of mines and the lack of stakeholder engagement for host mining communities who often bear the brunt of the impact of mine closures. More comprehensive explanations are provided below.

PRQ1: What are the impacts of mine closure in mining host communities in the West Rand Region?

This research question is important because it roots out the impacts that mine closure has had or continues to have on mining communities, thereby disseminating an understanding of their associated social, environmental, and economic consequences. This helped the researcher suggest mitigation strategies to promote sustainable mine closure and post-closure planning.

PRQ2: How do legislative uncertainties influence the decision-making of mining companies concerning mine closure and integration of host mining communities in closure plans?

This research question illuminates existing legislative uncertainties and how these uncertainties present challenges and barriers to integrating host mining communities. It also assists the study in terms of policy recommendations and legislative reforms.

PRQ3: What is the level of communication transparency between host mining communities and mining companies in the West Rand?

This research question assisted the researcher in evaluating the current state of communication transparency between all stakeholders (e.g., mining companies, communities, NGOs, CBO, etc.). It also assisted in elucidating factors that hinder communication transparency, which may lead to mistrust and community resistance and thus result in poor community and stakeholder engagement outcomes.

PRQ4: What are existing integration strategies for the inclusion of host mining communities into closure plans in South Africa?

The importance of these research questions assisted the researcher in evaluating the current existing strategies that ensure the inclusion of host mining communities in mine closure planning (Chapter 2), which was entirely evaluated based on document reviews and interviews

conducted with various stakeholders. The efficacy of the existing strategies laid a foundation to identify gaps and thus develop a comprehensive and proactive stakeholder engagement. The researcher explored secondary data sources to add more to the data and evaluate the alignment of the discussions during the interviews and alignment with publicly available information for purposes such as verifications.

3.4.2 Secondary data

Secondary data refers to data the researcher did not gather and is publicly available for access. Therefore, secondary data sources were obtained from various state documents, municipalities, policy documents, mining toolkits, mining sustainability reports, research reports and articles, newspapers, conference proceedings, books, and dissertations, including any other publicly available information sources. Tools utilised to collect the data included EBSCO host, JSTOR, ScienceDirect, Google Scholar, internet (trusted sources), mining and government websites and Research Gate.

3.4.2.1 International best stakeholder engagement practice guidelines

The stakeholder engagement framework for best practice was developed using guidelines and frameworks illustrated in Table 8. The evaluation of best practice guidelines was through a desktop review, with a specific focus on stakeholder engagement, mining, and mine closure.

Table 8: List of Frameworks and guidelines used to compile best practice stakeholder engagement framework (AccountAbility, 2015; ICMM, 2019; OHCHR, 2011; UN Global Compact, 2024; IFC, 2000; IFC, IFC, 2007; IFC, 2012; Global Reporting Initiative, 2024)

Framework	Aim of the Framework
AA1000 Stakeholder Engagement Standard	The AA1000 Stakeholder Engagement Standard (AA1000SES) framework is used for evaluating, designing, executing, and communicating effective stakeholder engagement.

ICMM Integrated Mine Closure: Good Practice Guide	This book encourages a systematic approach to integrated closure planning and enhances the consistency of best practices within the extractive industry.
United Nations Human Rights Commission	Global framework designed to prevent and address human rights abuses connected to business activity.
Organisation for Economic Co-Operation and Development	OECD offers government-endorsed guidelines on responsible business practices to promote sustainable development and lasting social progress.
Good International Industry Practice (GIIP)	GIIP are to the global standards, practices, methods, and procedures that comply with legal requirements and reflect the level of skill, care, diligence, prudence, and foresight that would typically be expected from a competent and experienced individual or organisation involved in a similar type of activity under comparable conditions.
Global Reporting Initiative	Aims to help organisations be transparent and take responsibility for their impacts on the economy, environment, and society. GRI enables informed dialogue and decision-making around these impacts.
United Nations Human Rights Commission	Global framework designed to prevent and address human rights abuses connected to business activity.

International Finance Corporation Performance Standards, Environmental Health and Safety (EHS) guidelines, Good Industry Practice (GIIP)	Provide guidance to clients on how to identify and manage environmental, health and social risks and impacts

3.5 Data collection process

Upon receiving research ethics approval (see section 3.6 and Annexure B), the researcher contacted various stakeholders, as listed in Table *9*. This approach was adopted to mobilise participants, given that the study primarily relied on snowball sampling for the above reasons. As such, in terms of one-on-one interviews, participants were provided with a list of interview questions to afford them the necessary preparation time and have them at ease to participate. Participants were geographically dispersed across various provinces, including the Western Cape, Mpumalanga, Gauteng and the United States of America (one media participant relocated to the USA). Therefore, the interviews were conducted online via the Microsoft Teams application. Moreover, the interviewees were representatives from mining companies, non-governmental organisations, the press, and various media members.

Regarding focus group interviews, the researcher gathered individuals in a single location through the help of a local community liaison officer who assisted in arranging to locations where members of the community would be comfortable to discuss the impacts of mine closure, their involvement in the host mine closure planning and processes, and other related questions to the research topic. These focus groups primarily included community members and Community-Based Organizations (CBOs) that are part of the community. In some instances, the researcher conducted one-on-one interviews with specific community members, primarily due to their remote location from the main community gathering point.

As stated above, the sampling strategy combined snowballing, purposive, and convenience sampling. Since the data collection was gathered during the National elections in South Africa, the researcher faced numerous obstacles in trying to secure interviews with other local leaders. However, the DMRE did not want to participate in the study including other government departments such as the Department of Forestry, Fisheries and the Environment, as stated in section 1.5 as one of the limitations. Snowball sampling was helpful because participants, especially the communities, were willing to suggest other people who could be interviewed and contribute to the study's objectives. Therefore, the sample of the interviews consisted of

representatives from the Municipal level government, local councillors, NGOs, community members (spread across various locations), CBO, mining companies, and the media. Community interviews were done through focus groups, while some members of the community (local councillors) were done through one-on-one interviews. NGOs since they were geographically spread, the interviews were done online including CBOs, mining companies, and the media. All the interviewees were involved in mine closure-related activities and their associated impacts and have been involved in the West Rand area. To ensure the anonymity of the interviewees as part of the research ethics, representative descriptions will be used as set out in Table 9.

Table 9: Stakeholders who participated in the study

Stakeholders	Type	Description
Mining Companies	Company A	MCR1
	Company B	MCR2
Non-Governmental Organisations	NGO A	NGO1
	NGO B	NGO2
	NGO C	NGO3
	NGO D	NGO4
Press/Media	Media Outlet A	MO1
	Media Outlet B	MO2
Government	Local councillors	LC
Communities	CM	CM
Community-based organisations	CBO	CBO

3.6 Data analysis

Data analysis is defined as the process of bringing various elements of data collected to produce meaningful information (Bryman, 2012). The primary data gathered from the participants was analysed through thematic content analysis. Thematic content analysis in qualitative research implies an analysis of the contents of interviews to identify the main themes provided by respondents. Codes were utilised as a means of organising the data into themes. Codes with similar concepts are grouped into themes to compare and analyse the responses. Data recorded during the interviews was transcribed from the audio recording into text. After reaching a point of saturation, the researcher then finalised the themes and sub-themes.

To ensure the reliability and validity of the data, the researcher used data the following techniques: (1) Triangulation, according to (Mathison, 1988) has increasingly been utilised in academic research to reduce research bias and promote a comprehensive understanding of phenomena. In the study, triangulation was employed to address inconsistencies in participants' narratives. This involved asking the same question to different participants in similar roles, such as one councillor in one location and another councillor in a different location, to eliminate any discrepancies.

In sections 3.3.1 and 3.3.2 of the research paradigms, the researcher uses the social constructivism paradigm (pragmatic). According to Golafshani, (2015) using such paradigms involves interviews and recordings, which lead to valid and reliable acknowledgements of multiple realities. In practicality, the paradigm in the context of data validity and within the study acknowledges the existence of strategies for involving host mining communities is not fixed. They are constructed through interactions between various stakeholder groups, and there may be multiple and diverse realities and perspectives of these strategies based on, for instance, the scale of the mine, the geographic location, and country laws.

3.5.1 Nvivo analysis

Nvivo was used to assist in laying the foundation for thematic analysis. Nvivo is a software tool designed to help qualitative researchers manage and interpret their data (Dhakal, 2022). The software is embedded with programs such as CAQDAS, to support researcher in collecting, organising, analysing, visualising and reporting their findings. According to Dhakal (2022), it should however be noted that it does not replace the human touch. Hence in the case of the study, the researcher had to manually sort out the codes to generate themes. Thus, Nvivo provides useful tools and features to help researchers structure and make sense of their data.

Interview transcripts were uploaded to Nvivo software, and the analysis took place. Nvivo generated codes from the interview transcripts. The codes were transported onto an Excel sheet and manually grouped into clusters. In this case, a cluster refers to a grouping system where codes of the same meaning or intentions are grouped under a single cluster. This cluster grouping, based on the codes under them, generated a pattern that led to the formulation of themes. The researcher then generated the themes based on the clustering of codes under each of the clusters. Abiding by research ethics was paramount in this study.

3.7 Ethical considerations

All scientific research aims to search for the truth; however, this should not be conducted at the expense of the interviewee's right to privacy and consent to participate in the study. As such, this researcher abided by all ethical guidelines while collecting the data and the overall research process to ensure that research participants, for instance, are not placed at risk or harmed in any way and they willingly want to participate in the study. Ethics permission for the study was approved with ethics code FSREC 071-2023 by the University of Cape Town's Faculty of Science Research Ethics Committee, and the authorisation letter is provided in Annexure B. Therefore, adherence to ethical guidelines was accomplished by disseminating a consent form (available in Annexure A), and all participants were afforded sufficient time to read through it. When the participants did not understand specific terms or how their responses would be kept confidential and anonymous, the researcher explained that their names would not be used to relay the research findings. Still, only the usage of pseudonyms, despite some participants, out of frustrations from lived experiences of the subject topic, wanted their names to be mentioned with the hope that this research would eventually reach the right people.

As the researcher, I placed a significant emphasis on maintaining research objectivity and integrity. This was crucial in ensuring that the research findings were reported fully and accurately, without any misinterpretation from the participants, research methods, designs, and interpretations. The research involved a series of interviews, which necessitated audio recordings. I took great care to ensure that the interpretation and transcription of the recorded data were accurately presented and appropriately referenced/quoted (transcripts of all interviews or notes and recordings for communities are available on the institutional repository Zivahub).

The research involved mostly primary data collection and utilised human beings to obtain data on the subject topic; as such, I ensured that each participant's rights to participate in the study were not infringed upon. This was accomplished by upholding their right to privacy and the right to refuse to participate in the study before or after signing the consent form when they change their minds to participate in the inquiry. Secondly, I upheld the participant's right to anonymity and confidentiality. Thirdly, I upheld the right to informed consent by distributing consent forms. Lastly, I upheld the right to the safety of the participants from physical, emotional, or psychological harm by ensuring that the interviewees were in an environment they felt secure in, as most of the participants were interviewed directly from their homes.

3.8 Chapter Summary

In summary, the research approach employed in this study was qualitative research, based on the nature and the type of non-numeric data gathered. The West Rand area was selected as a case study, providing a practical application to understand the subject topic. The study involved various community members in the West Rand, such as Zuurbekom, Bekkersdal, Thusanang, Westorania, Waterpan, and Simunye. The stakeholders in the research, besides the communities, include local and provincial government, mining companies, NGOs, the media, and a Trade Union representative. The DMRE and other government officials were reluctant to participate in the study using systematic tactics such as providing incorrect and outdated email addresses, this highlights the abandonment of responsibility and lack of accountability. The sampling techniques employed in the study include purposive, convenience, and snowballing to select participants due to the nature of the study. The data gathered consists of both primary data and secondary data. Primary data sources were mainly from the interviews, and secondary sources were primarily from publicly available data that the researcher did not gather. The study was structured through four PRQs, and the findings are presented in the following chapter.

Chapter 4: Results and discussions

4.1 Introduction

The purpose of this chapter is to analyse, explain and provide an interpretation of the findings, including gaps and challenges associated with the findings. The interpretation will encompass the analysis as well as explore their meaning with the already discussed chapters, that is, chapter 1 of the introduction, chapter 2 of the literature review and chapter 3 of the research methodology and how will this be tied up to feed into Chapter 5 (the synthesis chapter which consists of the best practice stakeholder engagement framework and suggested framework for the West Rand) and Chapter 6 (recommendations and conclusion). This study aims to use the West Rand area as a lens to enhance an understanding of the impacts the closure of mines has had and continues to have on host mining communities. This was done to recommend strategies that could potentially enhance the integration of host mining communities into mine closure plans in South Africa. To realise the above-stated aim, the following PRQs were established: (1) What are the impacts of mine closure in mining host communities in the West Rand Region? (2) How do legislative uncertainties influence the decision-making of mining companies concerning mine closure and integration of host mining communities in closure plans? (3) What is the level of communication transparency between host mining communities and mining companies in the West Rand? Lastly, (4) What are existing integration strategies for the inclusion of host mining communities into closure plans in the West Rand? Thematic analysis was used to analyse and present the data.

4.2 Findings and Analysis

The interviews are presented below based on each of the PRQs.

4.2.1 PRQ1: What are the impacts of mine closure in mining host communities in the West Rand Region?

This research question yielded numerous responses highlighting the current impact of mine closure on West Rand. The NVivo analysis of the responses yielded a set of codes grouped into four clusters (Table 10). Each cluster represents a theme, which provides a broad overview of the impacts of mine closure: (Cluster 1) health impacts, (Cluster 2) lawlessness and disorder,

(Cluster 3) environmental degradation, and (Cluster 4) socio-economic instability. Each theme is discussed below.

Table 10: Cluster analysis for PRQ1 based on codes generated from NVivo

	Cluster 1	Cluster 2	Cluster 3	Cluster 4
codes	• Cancer • Increased Respiratory Illnesses • Silicosis • Psychological impact • Kidney failure • Diabetes	• Criminal activities • Illegal Mining • Gender-based violence and harassment (GBVH) • Increased presence of Zama-Zamas	• Dust and Pollution • Disturbance of land • Increased mine dumps (tailings facilities) • Increased Radioactivity • Sinkholes • Acid mine drainage • Contaminated land	• Local economic decline • Evictions • Immigration • Emigration • Retrenchments • Increased unemployment • Lack of public services
Themes	**Health impacts**	**Lawlessness and disorder**	**Environmental degradation**	**Socio-economic instability**

4.2.1.1 Environmental degradation

There is rampant environmental degradation in the West Rand due to the closure of mines. Participants mentioned an increase in metal runoff after the mines had closed. This runoff reaches aquatic bodies and causes acid mine drainage.

NGO3 said:

"*There are quite many impacts, such as dust, a lot of people are struggling from respiratory issues, the mining dumps are also not fenced, kids play in those mine dumps. Other community members complained of pits, how their livestock would fall in those sinkholes, kids playing in the acidic water, and some even drowning in there; you cannot even use water because the water is contaminated. Sometimes, there is the presence of gas explosions. There is also illegal mining*".

A journalist from a media outlet (Media Outlet A), which investigates Environmental Journalism focusing on environmental issues, had this to say when asked about the impacts the closure of mines has had on the local host mining communities in the West Rand:

"*The key challenges in host mining communities in the West Rand include heavy metals runoff causing AMD, dust from mine dumps and tailings, illegal mining caused by the zama-zamas, all leading to significant health impacts and safety of the communities. Holding mining companies accountable has left communities vulnerable and scarred*".

Mines in the West Rand are mostly mining gold, and gold is associated with pyrite, a sulphide-bearing mineral which is the primary cause of acid mine drainage (Feris and Kotzé, 2014). Another impact that causes environmental degradation alluded to is sinkholes, which are mostly predominant in the West Rand and kids have often died from these sinkholes (Kritzinger, 2017).

NGO4 added:

"*Key impacts, especially in the West Rand, include issues of dust, and issues of sinkholes, death by kids when playing near dumps. Some yards have the biggest sinkholes, and kids were falling in the sinkholes and dying*".

One CM said:

"*As we speak now, just to demonstrate how unfortunate we are, last year, there was a school that was demolished due to the presence of sinkholes which have resulted in a collapse of infrastructure. On this occasion, there was no consultation that took place with us. Even houses around us they have been demolished, and then mines come into the communities, loot the gold and mineral resources and then leave".*

The increase in the presence of tailings storage facilities or mining dumps has been linked to causing dust pollution. A journalist when asked about some of the stories they have written and the outcries emanating from these impacts, had this to say:

"*There is a 62-year-old pensioner who was living off an oxygen machine for about 16 hours a day. She mentioned that had she been younger, she would have relocated as she is very close to the mining dump. Her biggest problem was that the tailing dumps were blowing the toxic dust air day and night into her house, so she inhaled that every day*".

One NGO1 said regarding the impact of tailings as a result of mine closure on the communities:

"*The challenges specific to the West Rand area is the issue of tailing, mining that has been happening for many years, dust pollution is some of the impacts the area is facing, effluent discharges, radiation levels, increased influx of people in the area.*

The tailings pollution particles accumulate in the soil and contaminate it, thereby killing vegetative plants and crops (Marais, 2013b). Other local community members complained of the seismic activity the closure of mines has caused.

CM said:

"*The impacts have been bad, you see, like how we are sitting like this, land can just shake without knowing what happens. Also, there are mine dumps; those dumps emit dust. We have not been notified about the closure of the mines; there are also very deep sinkholes. Mines surround us, but we are not working. We are not benefiting from the mines. The mines have resulted in diseases and an influx of people, which have resulted in Squatter settlements. Sicknesses also emanated from the mines, such as dust and dumps. We cannot even plant crops because the land is contaminated with acid and toxins. The water we are drinking is contaminated. Our livestock also get affected because they eat the Uranium mined from these mines.*

Important to note that seismic activity takes place in this case after mining operations have ceased or during the actual mining. In the case of mining operations, seismic activity takes place underground due to a lack of rehabilitation of the underground tunnels. This is because of the stress caused by mining. In the case of post-mining operations, illegal mining, as in the case of the West Rand exacerbates seismicity by causing instability. The increased occurrence of mine closure impacts in the West Rand has not only caused environmental degradation but also led to a negative impact on the individual health of host communities in the West Rand.

4.2.1.2 Health impacts

Participants regarding the health aspect due to the closure of mines alluded that some community members have developed respiratory illnesses due to inhalation of toxic substances blown from the mine dumps.

An investigative journalist for a MO2 said:

"*The big impact for the nearby communities includes public health, the number of cases such as asthma, respiratory issues, skin issues is alarming and large part of that is likely from tailing piles which blow toxic substances, another issue is the disparity of wealth and mine waste dumps*".

Other community members have raised specific health impacts, which includes impacts include diabetes, depression, cancer and kidney failure, which induces a psychological health impact, respiratory and other associated health problems. These impacts are also supported by Ackermann et al., (2018) to be associated with to mine closure and mining activities.

To substantiate further on exposure of toxins from mine closure and mining activities, one CM said:

"*The most important one to me is the high prevalence of cancer, people have no idea that we are affected by high radioactivity due to Uranium. We have vegetables in the yard, trees, vegetation is affected, a dam, and the water is very high in metals. The worst part is that people are doing baptisms in contaminated water bodies and have no idea what might happen in the long future. Other associated health impacts include kidney failure and diabetes which have also been linked to radioactivity".* One CM said on Uranium, *"It stays in your hair, and you cannot see it*".

Other causes of health impacts raised by participants emanate from toxic heavy metal runoff, acid mine drainage, mine dumps and tailings storage facilities. The most important health impact that is increasingly widespread is the prevalence of cancer in the West Rand as alluded by one of the participants caused by exposure to radioactive elements such as Uranium and silica-containing minerals (Quartz) (Raji et al., 2023). If mines are not closed sustainably in the West Rand, these health impacts are predicted to be dire (Cole and Broadhurst, 2022).

Some of the participants raised issues of increased spread of HIV due to the closure of mines. NGO2 said, "...*Impacts include chronic, HIV*…" This is primary because when a mine closes, it often leads to significant economic and social disruptions (discussed in section 4.2.1.3) in the surrounding communities. The loss of employment and income can result in increased poverty and reduced access to healthcare services. This economic instability can exacerbate the spread of HIV, as individuals may engage in high-risk behaviours such as transactional sex to survive. Additionally, the migration of former mine workers to other regions in search of employment can contribute to the spread of HIV, as they may carry the virus to new areas and

as in the case of incidents of sexual violence by illegal miners (ENCA, 2023). The next section evaluates the socio-economic impacts.

4.2.1.3 Socio-economic impacts

Literature by Kusambiza-Kiingi et al. (2024) supported by the interview findings highlights increased retrenchment activities occurring in the West Rand. In support of the issues associated with job losses, CM in a separate location from where the councillor was located said:

"*They retrench us… the little severance or retrenchment packages given to us employees is not sufficient…. Criminal activities have become rife in our communities, and the same retrenched people, after exhausting their retrenchment packages, resort to such activities; there is even gangsterism; Bekkersdal is worse, full of illegal miners".*

In support of this, local councillor (LC) said:

"*The closure of mines has resulted in unprecedented havoc in the communities. During the retrenchment processes, mines expect workers to vacate their hostels and leave. However, during this period, the retrenched workers do not go to their places of origin or where they came from, they come to us as councillors seeking housing assistance. Some leave the West Rand and then come back later. While some after using their retrenchment packages, return to the community. Others resort to criminal activities after coming back and finding there is no work".*

Retrenchment activities taking place have also impacted other business owners. A local kindergarten owner mentioned that she is struggling with children's enrolment in the school due to their parent's financial constraints.

A woman who owns a kindergarten said:

"*As a kindergarten owner, I am affected; right now, there are no kids here*; I *even went and begged parents that I will reduce the school fees. Sometimes, I even ask them to bring the children for free for the sake of the children not to be in the streets during the day*."

In addition to this, the local municipality is also affected due to a loss of municipal revenue as mining companies in the West Rand contribute significantly to the local economy.

NGO 1 said:

Key socio-economic impacts include job losses, supply chain disruption, and impact on municipality fiscals. These companies play an important role in contributing to the local economic development of the municipality".

The loss of taxes and rates from both mining companies and retrenched employees to the municipality implies that (1) the local municipality cannot carry out service provisions due to fiscal loss; (2) people are unable to pay for resources they render from municipality due to job losses or retrenchments; (3) the area is soon to become a ghost town due to emigration. The downside of emigration is that it also brings immigration. One community member who alluded to this said, "*There is no life after mining; this place is now a ghost town*". Local councillors mentioned that people come back to the West Rand after being evicted from mining hostels to look for housing, while others become zama-zamas and resort to criminal activities, causing lawlessness and disorder in the West Rand.

4.2.1.4 Lawlessness and disorder

The closure of mines has increased the presence of zama-zamas in the West Rand. A councillor highlighted that in Bekkersdal, retrenched mine workers have opted to live in that area because they are from afar and cannot return to their provinces, while others have come back and resorted to illegal mining. Illegal mining activities perpetuate criminal activities and activate a chain of reaction where other criminal activities are breaded from; for instance, members of the community have raised concerns that criminal activities have also raised security concerns as community members have become victims of housebreaking, gender-based violence and harassment, and theft.

One CM said: "*There are a lot of killings taking place in our communities. If they do not find the gold, they return to our communities and steal cables…. Last week at Mohlakeng…*", this was the week of 18-25th of February 2024, "…*they were shooting each other*". On the same occasion, another CM coming from a different location said: "*Someone was shot here last week…* [11 February – 18 February 2024] *…and someone was also stabbed here, 5 metres away from my house* [23 February 2024]. *It shows that it has become a norm, the shooting and the killings*".

Another NGO (NGO2) said:

"*Key impacts are GBV, Unemployment rate, criminal activities, we also found in mining villages out of services that have to be unproclaimed and partially claimed footprints of mine dumps that have not been rehabilitated, chronic impacts, respiratory, HIV as well are some of the impacts*".

This has been widely reported in both academia and literature; the most recent criminal activity concerns due to illegal mining are cases of rape taking place in the Krugersdorp as a result of zama-zamas (ENCA, 2023). ENCA (2023) reported that the fight against the Zama-zamas in the Krugersdorp was and is still far from over; this comes after illegal mining, where raids and arrests had been conducted in the previous year. The news broadcaster reported that West Village residents in the Krugersdorp live in fear for their lives due to illegal mining and the presence of zama-zamas. According to Sithole (2023) despite the arrest of over 80 people, no conviction has been made due to insufficient evidence including DNA tests that failed to link the suspects to the crime.

The research inquired about lessons that can be drawn from the impacts of mine closure. NGO 1 said:

"*I have been involved in mine closure and its related processes for about 20-22 years. The challenges communities mentioned and the ones we face are often quite complex, and there is no one-size-fits-all. Unfortunately, there is no copying and pasting of these challenges. They mostly have to do with skewed power imbalances. The mines have resources they know about the impacts of mining before mining even exists. Often, they move to communities where mines have never taken place before, and those communities are not knowledgeable about the impacts of mining operations. For instance, they promise them social development and economic vibrancy, but the downside is that they do not tell them about environmental degradation, an influx of people, and dust pollution. So, these mines tell half-truths and not the full truth; they tell them the positive side and omit to tell the downside of what their operation or closure would cause. Conversely, you find organised communities or communities starting to organise themselves.*

They are starting to make innuendos and the concept of divide and rule, and the divide and rule concept is usually from the mines, but it can also come from the communities themselves; people start to see the benefits and want a big slice of the cake. So, the divide and rule can take place internally and externally. Mining houses can pay the community to be against each other

because they have a particular interest or want a particular share. The other is political intervention, where the politically influential people come and divide the people or the community".

In summary, it should be noted that there is a chain of reaction associated with the impacts of the closure of mines. To demonstrate, in the case of environmental impacts, contaminated land and water due to the presence of toxic heavy sulphide metals such as pyrite causes AMD to kill crops, which affects subsistence farmers and possibly leads to malnutrition and poverty, triggering the socio-economic and health impacts theme. The socio-economic theme, such as loss of jobs, triggers lawlessness and disorders as people, especially the retrenched mine workers resort to criminal activities. It is, thus, noteworthy to recognise that the closure of mines has cascading effects; the impacts, as demonstrated, crosscut against the fundamental pillars of sustainable development, that is, environmental, social and economic pillars and trigger other impacts. The evaluation of the legislation led to yield the following findings for the second PRQ.

4.2.2 PRQ2: How do legislative uncertainties influence the decision-making of mining companies concerning mine closure and integration of host mining communities in closure plans?

This question was mainly directed to industry professionals such as media outlets, NGOs, mining companies, and local government officials. This was primarily because of extensive knowledge and experience, which provided an understanding of the legislation as they dealt with and evaluated it when conducting such investigations. They have firsthand experience in how the uncertainty of South African laws has influenced decisions and what challenges this presents currently and in the future. Some interviewees included Attorneys who are experts in elucidating and evaluating the complexities of the legislation. To supplement the questions that build up to the primary questions (PRQ2), industry professionals were asked how effective the current legislative framework is in ensuring that mining companies are financially responsible for mine closure and post-closure activities and the inclusion of host communities in closure planning processes.

The findings generated the following codes from the NVivo analysis presented in the table below. The themes that have emerged on this question include (cluster 1) regulatory failure,

(cluster 2) Institutional capacity constraints, and (3) captured institutions and they are discussed below.

Table 11: Cluster analysis for PRQ2 from codes generated from NVivo

	Cluster 1	Cluster 3	Cluster 4
codes	• Ineffective due to enforcement • Lack of compliance • Ineffective due to lack of Prosecution and Recourse • Ineffective due to legislative gaps	• Ineffective due to lack of extensive capacity/resources • Ineffective due to access to information • Ineffective due to government inaction	• Ineffective due to increased politicisation • Power Imbalances • Manipulation by Mining Companies • Revolving door • Ineffective due to corruption
Themes	**Regulatory failure**	**Institutional Capacity constraints**	**Captured institutions**

4.2.2.1 Regulatory failure

Participants all agreed on the existence of compliance gaps due to the state's lack of enforcement of the regulations effectively.

NGO 1 said with regards to the effectiveness of the legislation:

"*Legislation might be good, but compliance is not there. But the state can enforce it by having sufficient human resources or capacity. However, even if they have the resources, there comes the issue of "revolving door" – if I find you lack compliance, do I enforce the policy. We have sufficient legislation, we need enforcement, there is a systematic failure with the DMRE especially on the issue of compliance*".

In support of the lack of enforcement of the regulation, NGO4 that works closely with the communities of the West Rand said: "*The legislation is effective on paper, but not effective in reality*".

Media Outlets were also posed with the question, where one Media Outlet B (MO2) said: "*South Africa has better laws and policies even better than America, but what is lacking is the extensive capacity from the national regulators, the DMRE. So, the country has great laws but lacks enforcement of these laws. We need the DMRE to be better and not politicised".*

Participants also mentioned that the lack of capacity and enforcement hinders the implementation of laws. NGO 1 said, "*The state needs sufficient human resources or capacity to enforce the law*".

The issue of regulatory failure, lack of compliance and enforcement has also been reiterated by the United Nations Human Rights (UNHR) office of the Commissioner on the guiding principles on business and human rights that "The failure to enforce existing laws that directly or indirectly regulate business respect for human rights is often a significant legal gap in State practice" (UNHR, 2011). Lack of regulatory enforcement leads to lack of prosecution and recourse to hold mining companies accountable for not abiding by the law, weakening the legislation framework. A weakened legislative framework allows individuals and mining companies to choose whether to comply with the law, knowing they can often bypass regulations by paying bribes for their non-compliance. A practical example is provided by one of the participants, who mentioned insufficient financial provisioning by a mining company. MO2 said:

"There was a scenario or case with an existing 40 billion ZAR for financial provisions to clean up the mines. Still, when I was busy with the investigations, I did not read or find from the data I had collected any clean-up done using those financial provisions set aside. In another instance, we found a mine with R24.5 million financial provisioning".

Weakened legislation implies that mining companies are neglecting proper closure procedures, which has caused environmental, health and socio-economic impacts as mentioned. In the context of stakeholder engagement, this implies that it is going to be difficult to foster trust and cooperation between stakeholders. This might cause regulatory failure if concessions are made by state officials to further their prospective career ambitions through the revolving door. This lack of enforcement and human capacity not only weakens regulatory effectiveness but also highlights deeper institutional constraints that hinder sustainable governance and policy implementation.

4.2.2.2 Institutional capacity constraints

Several factors have been linked to the unsuccessful closure of mines in South Africa. According to Van Druten and Bekker (2017), there is an absence of essential skills, knowledge, and experience related to mine closure among the government officials responsible for overseeing this process. This has been supported by the participants that there is an existence

of lack of human resources within the national regulator, as alluded by NGO 1 above. This has demonstrated to have had a huge impact on the legislative framework as DMRE is reluctant to issue closure certificates. The national regulator lacks sufficient competent personnel to advise on deficiencies when mining companies apply for closure certificates. As a result, they hesitate to issue these certificates due to uncertainty about missing requirements and the potential repercussions of issuing them incorrectly. Consequently, this has led to insufficient oversight and allowed non-compliance by mining companies, mirroring the findings and discussions in the literature chapter on factors that prevents the successful closure of mines in South Africa. Participants mentioned a revolving door (explored more below) which limit genuine regulatory independence and resulting in governance decay.

4.2.2.3 Captured State Institutions (Governance decay)

A scant scholarly article particularly explores the impact of a revolving door within the extractive industry and how this phenomenon aggravates the lack of enforcement and compliance among the regulators within the government. NGO1 from the interviews, explained in practical terms what is a revolving door, and they elaborated it as:

"*In the case of DMRE, you find a manager who works for the state (DMRE), after a certain time frame, this can be 3-4 years, the same manager who was working at the DMRE would now be working for Mine X. This is because while they were working for the DMRE they were making concessions for Mine X to operate even in the case of Mine X being non-compliant. For instance, Mine X would tell the DMRE manager while working with the state not to include or omit certain details in audit reports or licensing applications. Then, the same manager would pursue omitting such requested information. Then, after 3-4 years, they come and work where they made the concessions, which is at Mine X. Even the government, you find an MEC or Member of Parliament who will be a shareholder in Mine X because of such concessions; these are some things we see and deal with*". NGO3 further substantiated that: "*The current legislative framework is effective but lacks implementation and enforcement, it still has not settled yet, hence we hope financial provisions when they get published next year, we know what the responsibilities are for mining companies. There are also instances where they are not giving closure certificates, if you talk to the DMRE I would also like to know why*".

According to Zheng (2014), the concept is widely used within the American government and law. In the context of the study, a revolving door implies that officials within the state move

between government and industry roles, which increasingly has created a conflict of interest as these officials make concessions when evaluating reports and compliance for industry officials. Numerous theories and debates exist on whether the phenomenon constitutes regulators being captured by industry professionals to further their interests (Zheng, 2014). State capture is a widespread phenomenon in South Africa, according to Madonsela (2019), it is the use of state institutions to further the interest of private individuals. Consequently, this makes the revolving door a mechanism for state capture. This has caused and resulted in corruption, lack of accountability, misuse of state resources, and poor rehabilitation.

The impacts of ineffective regulations have a cascading and a chain reaction effect. In the context of institutional capacity constraints, the human and institutional capacity constraints, have led to poor oversight of mine closure regulations, which has resulted in a lack of enforcement and accountability, and consequently, rendering the legislation redundant (regulatory failure). A weakened legislation opens a bypass for external private individuals to capture the state resulting in corruption. One of the main problems is the lack of closure governance. Effective mine closure governance is crucial as it ensures that mining companies adhere to environmental and social responsibilities, preventing long-term negative impacts on communities and ecosystems. Without strong governance, mine closures has lead to environmental degradation, economic instability, and social issues, exacerbating the challenges faced by affected communities. The third primary research question focused on communication yielded the following results.

4.2.3 PRQ3: What is the level of communication transparency between host mining communities and mining companies in the West Rand?

The interview yielded the following codes from NVivo, which are presented in the table and discussed below. The question yielded the following themes: (cluster 1) Knowledge and language barrier, (cluster 2), Community fragmentation, (cluster 3) Lack of community involvement, and (cluster 4) Communication breakdown.

Table 12: Cluster analysis for PRQ3 based on code generated from NVivo

	Cluster 1	Cluster 2	Cluster 3	Cluster 4
Codes	High community illiteracy Dense/Technical language in reports	Changing Community Structures Divide and Rule Lack of Transparency and accountability	High engagement obstacles Lack of Community Involvement Lack of public participation/stakeholder engagement Community resistance Lack of Transparency and accountability	Lack of Communication Lack of Community Grievances Resolutions Lack of clarity
Themes	**Knowledge and language barrier**	**Community fragmentation**	**Lack of community involvement**	**Communication breakdown**

4.2.3.1 Knowledge and language barrier

NGOs have raised issues of knowledge and language barrier, that communities fail to participate and be included in closure planning and discussions due to dense technical reports or technical language often used to write these reports.

NGO3 said:

"*There are quite several hindrances to communication transparency between mining companies and communities. Firstly, language is a problem, and those reports are quite dense. The usage of scientific reports and formulae is also a barrier.*

Language barriers and the complexity of reports often leads to misunderstandings and mistrust, as community members struggle to comprehend dense, technical documents. The use of scientific jargon and formulae further exacerbates this issue, potentially creating a perception of deliberate obfuscation by the mining companies. These barriers hinder effective engagement, leaving communities feeling excluded from important discussions and decisions.

The use of technical language could be ameliorated by adopting information dissemination used in SLPs. MPRDA 28 of 2022 and Regulation 46 as amended by GN R527 of 23 April 2004 mandate that SLPs be developed in consultation with affected communities and that information be in local languages. This alignment can shed light on communities in understanding the implications of mining communities. Secondly, this will foster collaboration and increased participation to voice their concerns and contribute to discussions. Therefore, knowledge and language barriers are some of the factors that contributed to the lack of community involvement

4.2.3.2 Lack of community involvement

Community members highlighted that they are engaged by mining companies only during compliance season when they have to renew their social licenses to operate, and these engagements are selective and do not necessarily touch on issues of mine closure and stakeholder engagement.

One CM, said:

"*We do have meetings. However, only Mine X is involving us. Mine Y only calls us when they have compliance matters, for instance, their social license to operate or one of their licenses; that is when they do those engagements. Mine X is the only one close to the people*".

The researcher probed about the frequency of these meetings and what is being usually discussed, and the response from a LC was,

"*Once or twice a year, but not often, there are community meetings that you might attend. However, you often return without gaining anything substantial or understanding the purpose of the meeting or what they aim to achieve. These meetings can be confusing, as people tend to discuss their agendas. For instance, those from farming backgrounds discuss farming issues, while those from construction focus on matters related to their field. They often ignore or consider such points even if you raise concerns or issues. It is as if everyone is talking, but no one is listening".*

NGO 3 said on mining companies only engaging communities during compliance season:

"Sometimes, mining companies would go to the communities for public participation and sign attendance. The communities said they would sign the register to say they were there. Still, the

mining companies use those signatories to say the community members are fine with what was discussed with the mine or what took place, which is disingenuous because that would not be the case. Sometimes, it is also the case of communities feeling like not the right people were invited to this public participation".

NGO1 said on possible factors contributing to lack of community involvement:

"*Sometimes mining companies, for instance, would want to meet with the communities at inconvenient times, arranging a meeting during the week knowing that head of the households have gone to urban areas to work. So, the mining companies use these clever systematic ways of manipulating the system*".

Other NGOs supported this statement that mining companies use clever systematic tactics by waiting for the active population (who are also very vocal) employed in urban areas to leave the villages or communities and invite the vulnerable and voiceless. The active population in the community is often the ones who ask pertinent questions when they are called. Regarding the content of some of these meetings, including meetings communities are called for compliance purposes. Participants, especially community members revealed that these meetings do not touch on the issues of mine closure or matters related to the closure planning and processes, the discussions are centred around social development.

One CM said, "*They do not talk about mine closure, the meetings are usually and mostly about social developments*". A different CM added, "*Mine closures are not the centre of the topic for these meetings, they do disclose certain details on the closing of certain shafts, but they omit certain details, so there is a lack of transparency*".

To corroborate, in a separate location, one CM member said on stakeholder engagements:

"*I have never been in attendance of any stakeholder engagement meeting concerning the closure of the mines, we only hear about these things only after they have happened. Information is not readily available; we have to dig deep for it, and sometimes, we get tired because the same information is not beneficial to us. I started to become negative when we heard funds that were allocated to SLP someone from the mine bought themselves a plot of land instead; the corruption made me lose so much interest and stop making an effort*".

A LC in the West Rand from a different location said:

"*Mines are not transparent about their closure objectives and processes…there is no communication between the mines and with the local leaders at all; they are not sufficiently transparent. As councillors, we don't have experience when it comes to mines, so they don't come to us with what is expected and what we must do to work together*".

One CM said:

"*Mining companies do not disclose their closure plans. They do sometimes send us closure documents, but only after the closure has taken place and not involved in the actual closure process*[6]".

Another CM added:

"*Our local people are not involved in these closure plans. Local people are overlooked, but when they have to renew their licenses, they call us, bribing people with blankets because they have to fill in their reports"*.

A different LC from a different location said:

"*In my years of being a councillor for two and half years, when they call, they just call us for the attendance register; they know what they want to achieve. They do host meetings, but these meetings are dodgy due to ulterior motives; they do not serve any purpose. In those meetings, they do not touch on aspects of mine closure. They only talk about developments that they have not even made. They claim petty things, donations of school shoes, and blankets*".

A different CM said about the social developments:

"*The existing programs that the mines have are just on paper in black and white; they are not implemented. They make many promises to plough back to the community, but that is only just that, empty promises. They have not delivered on their promises. The community meetings the councillor mentioned are talk shows".*

This has also been the case, as reported by Mzembe (2016) that mining companies are focused much on social developments and little is done to prepare host communities for closure.

[6] Many of the previously closed mines in the West Rand are being re-mined and are set to commence operations in 2024 or early 2025. This includes mines such as Blyvooruitzicht and Mintails. However, there is currently widespread closure of shafts in the West Rand, with the mines being stripped of their infrastructure.

Mzembe (2016) further reported this as one of the factors that causes the failure of proper closure planning.

Company B responded by saying that on issues of mine closure:

"*On mine closure, the mine will close in a very long time, and when we are mining, we are already rehabilitating the land, so mine closure in these engagements is not a subject that is mostly talked about too much. We are not necessarily saying we are not talking about it gets talked about when we are talking about environmental impacts; this is because people are looking for jobs as their main focus*".

The company representative further added on social development issues:

"*The communities they just want the mines to assist them. That exceeds what we are supposed to be helping them with; it sometimes gives the mine the role of a government now. There is still a long way to go, and as much as a lot is done for the community, the communities need to be empowered with information and engaged. Communities are still lost in terms of information awareness"*.

Communities have further highlighted various other obstacles that contribute to their lack of involvement, such as the inaccessibility of these meetings, only a selective sample of the population gets taxis that will take them to where these meetings are held, and communities alluded they want the alternative to be that these meetings be held in local community halls where everyone can access and participate.

A CM said:

"Mining companies must be honest and transparent with local communities; they should come down directly and engage with the people. Instead of only getting a taxi for a select few people, they should get a hall or use a community hall and gather people there. They should ensure community participation and public meetings".

The implications of the highlighted issues are significant for both the mining companies and the host communities. The selective and infrequent engagement by mining companies, primarily during compliance seasons, undermines trust and transparency. Community members feel that these engagements are superficial and do not address critical issues such as mine closure and stakeholder engagement. This selective approach leads to a lack of meaningful participation and leaves communities feeling excluded and unheard. The timing of meetings,

often scheduled when key community members are unavailable, further exacerbates this issue, creating a perception of manipulation and disingenuousness. Additionally, the focus on social development during these meetings, rather than on mine closure plans, results in a lack of preparedness for the eventual closure of mines. This lack of transparency and genuine engagement has led to frustration, disengagement, and a breakdown in communication, ultimately hindering the development of effective and sustainable closure plans.

4.2.3.3 Communication breakdown

Various factors have contributed to communication breakdown between mining companies. Communities mentioned that meetings are often confusing, and they leave them without any actionable item or understanding of their purpose, this leads to confusion and misunderstanding. Thus, resulting in frustrations and a sense of unproductiveness among participants, as one community member even mentioned that they even lost hope in making inquiries about these meetings. The research inquired also based of this if there is a way to raised grievances with the mining companies on the way things are unfolding between them and the communities. The IFC has established performance standards on environmental and social sustainability, and the critical aspect of the existence of a grievance mechanism is that it enhances community engagement through tracking, resolving, and communicating with local stakeholders, communities, and mining companies.

The CM members had this to say about grievance procedures in their surrounding mines: "*There is a grievance process in place*; *however, when you raise your concerns, they see you as the enemy. The mines are using divide and rule if you want them to account, those who are very vocal about their concerns, they are disregarded"*.

They further added that:

"*These mining companies do not want dialogue, they want communities to agree with everything they do and do not want to be challenged, that is why they do not include us in anything. The NGOs have tried, but they also got tired due to the back and forth of communication. Still, they did assist the communities in the past, trying to advocate for safe mining and the health of local communities".*

Mining companies have indeed highlighted the existence of grievance procedures; however, communities are not aware of the accessibility of grievance channels as they mentioned that

their grievances are not heard. Additionally, there could also be that communities are not following proper channels to raise their grievances and use these meetings as a way to raise their grievances, which therefore, does not constitute proper channels for raising grievances. It is important to note therefore that to enhance communication, it is important to establish community-mining structures that will foster collaboration between mining companies and communities, thus promoting an easy flow of information.

4.2.3.4 Community fragmentation

The lack of community-mining structures has contributed to fragmentation and love-hate relationships between both stakeholders, including the government. Communities expressed disappointment in their local leadership to distribute information effectively.

A CM member said:

"*There is a lack of accountability coming from our leaders, like provincial and National governments, because of conflict of interest. These leaders have shares or stakes in businesses that conduct or have contracts with these mining companies, so they do nothing and turn a blind eye when they must hold these mines accountable*".

To add to some of the barriers that result in fragmentation, one NGO4 said:

"*The leading cause of fragmentation is ignorance from the mining companies. To fix this problem, mining companies should practice transparency and accountability and promote a meaningful engagement with stakeholders (Community, civil society, DMRE), which should be conducted regularly*".

An NGO2 added that:

"*Communities are not properly engaged because there are too many of them; some cannot attend these meetings because they do not have transport. They do not have access to data or the internet for online meetings. So, there is an abundance of obstacles. Some communities cannot participate meaningfully because they do not have access to information. These reports are also technical; the language used is highly scientific at times and, therefore, cannot be understood. Additionally, certain sections and factions in communities claim they are the representative of the community. When weeks pass, another faction in the same community differs from the one previously seen and claims they are also the community representative.*

This contributes to a breakdown in communication, ultimately community fragmentation. Thus, one needs to understand community structure and the changing dynamics of the community. Often the marginalised are not included in the participation, not only the vocal ones.".

Other factors highlighted NGO2:

"*The mining-affected communities do not know what to ask and how to engage as they have not been involved in large-scale mining. Political organisations use these meetings to push their agenda and not focus on the actual impacts. The questions mostly come from communities and are about jobs. We try to capacitate the community for intergenerational equity*".

Mining companies had different views from those expressed by other stakeholders; Company A said:

"*The company identifies stakeholders through stakeholder mapping. We have an existing database where we store all the stakeholder's information and continuously update it. We categorise them according to their risk and impact when we meet them. Also, based on their proximity, this person or a group of these people are more impacted than others, etc. We monitor those that are high risk and then devise a plan… We engage the media, but people here sometimes do not listen to the radio. When meeting our stakeholders, we also conduct studies to check their relationship with the mine. We get an independent consultant to interview mining employees and their relationship with the mine and see how they would rate the mine and its relationship with the employees"*.

Company B added:

"*We have a multiple-tier stakeholder engagement so that a formal stakeholder will consist of the government (local to national). I am speaking now about Merafong, where we have no traditional authority. In areas where there is a traditional authority, the model is different. Then, in between the government, there are NGOs, local communities clustered in different communities, and youth movement*".

Moreover, there appears to be a broad disengagement by the government in community forums established by communities; this has been widely reiterated by various stakeholders, from the media to NGOs.

NGO 1 said:

"*I have never attended a consultation where every sector is present, or the engagement has a representation of every sector. Some sectors, such as the DMRE, are not responsive to such engagements*".

When the researcher inquired about the methods, they use to engage stakeholders and enhance communication transparency, the company said:

"*To identify stakeholders, we used stakeholder mapping, there is a scientific way we approached it where we look at the Stats SA data on who are the old people, who are the young people... So, Stats SA assists us in knowing when we are planning for our programmes, to consider factors such as how many people we should plan for. We also have the local government to borrow the constituencies from. We also have teams that engage with stakeholders, and we know the wards and their inner space*".

Given that stakeholder engagement is not a once-off event but a continuous process, the researcher inquired about the frequency of these engagements. The response from the company was:

"*The frequency of stakeholder engagements depends on the structure of the meetings, which can be either quarterly, monthly, or yearly. For instance, the municipality holds mandatory Mayoral committees once a quarter. Similarly, community engagement forums, NGO sessions, and discussions with the SMMEs are scheduled quarterly. These meetings are structured to allow sufficient time to execute the commitments made during those engagements. However, we maintain regular communication with them due to our open-door policy. Every quarter, we have standard business agendas that provide updates. Any issues between these scheduled meetings are dealt with as and when they occur".*

They further added:

"*We utilise various methods for conducting stakeholder engagements. We have an app for disseminating content, newsletters, and mass media, primarily for content distribution. We also hold formal meetings disrupted during the COVID-19 pandemic, leading us to switch to virtual meetings. These meetings with stakeholders occur either at our premises or local government premises, depending on the circumstances. We have implemented sectoral engagements to ensure the inclusion of the most vulnerable groups. This means we conduct separate meetings with different groups, such as women and people with disabilities. This approach helps to avoid the 'loudest voice' phenomenon, where the most vocal individuals tend to dominate the*

conversation at the expense of others. Therefore, we have adopted a multi-tiered approach to ensure all voices are heard".

In contrast, Company B's response to the frequency of engagements reflected a level of frustration. Company B responded by saying:

"*The biggest problem in mining towns is that they think mines must do everything for everybody. They do not appreciate that there is a government that has to provide services. A mine is already paying rates and taxes, and it is already paying royalties. It is already contributing to the local economy by hiring people. So already we are keeping local stores open because our employees are their customers. There is no appreciation that CSI and SLP are already over and above. People have expectations that mining companies are now a pseudo-government. The bulk of our monies go back to paying salaries and utilities*".

The company added:

"*SLPs are about contributing; the keyword is to contribute; the responsibility of building roads is the responsibility of the government. This is largely driven by corruption, particularly in South Africa. Is it fair that stakeholders expect one party to do this much while the other doesn't? We are in a situation where municipalities are dysfunctional across all the mining towns*".

The implications associated with disengagement and lack of government oversight are significant. The disengagement has led the local communities in the West Rand and the government with the burden of environmental rehabilitation costs. Secondly, miscommunication has led to unrealistic expectations from communities, who often expect mining companies to fulfil roles typically reserved for the government. This has resulted in increased community expectations and unfulfilled commitments from mining companies. Communities complain about the lack of transparency and broken promises, while mining companies argue that they are businesses, not pseudo-governments. NGOs highlight that mining companies often omit critical details to secure social licenses to operate, further eroding trust. If this situation persists, mining companies in the West Rand may face social unrest and anger from community members, potentially disrupting operations and damaging their reputations. This lack of trust and transparency hinders collaborative efforts to address issues and improve mining practices, making it increasingly difficult for mining companies to engage effectively with communities. Although one mining company mentioned that during the interviews they are busy with stakeholder mapping, which is a good first step towards the

inclusion of stakeholders and host communities in mine closure planning and processes. The last PRQ led to the following findings.

4.2.4 PRQ4: What are existing integration strategies for the inclusion of host mining communities into closure plans in the West Rand?

The interview yielded the following codes from NVivo, which are presented in the table and discussed below. The question yielded the following themes: (cluster 1) Engagement and outreach, (cluster 2) Openness and accountability, (cluster 3) Sustainable community development.

Table 13: Cluster analysis for PRQ4 based on codes generated from NVivo

	Cluster 1	**Cluster 2**	**Cluster4**
Codes	• Stakeholder engagement • Community engagement • Media Engagement • Community Advocacy	• Increased communication • Increased transparency • Information Empowerment	• Community benefits • CSR Programs • Job creation • Local Recruitment • Skills Development • Alternative local economic sources
Themes	**Engagement and Outreach**	**Openness and accountability**	**Sustainable community development**

4.2.4.1 Engagement and Outreach

Mining companies mentioned that there are currently engagement initiatives taking place in the West Rand.

Company A said:

"*We have a stakeholder engagement plan that devises how often we engage with everyone. For example, we meet with the councillors every week. South African Police Services, we meet them quarterly or at an event. We monitor the plan and devise it monthly or annually, and check how many times we have met the communities, etc. Communities: we meet them every day when we run a campaign, invite them into that campaign, and have a community open day once or twice*

a year. Then we do one-on-one discussions on what their interest is in terms of employment as well as developments such as CSR and environment. We go there, but when we go there, we do not go there as a mine; we involve other parties such as the government."

Company B responded:

"*We use country laws and international practices. We use instruments. In the West Rand, we looked at Agriculture as an alternative economic pillar, working with the government to see what investments can be made to implement those plans. We are also looking at renewable energy*."

Although they are meeting with SAPS and counsellors, there seem to be discrepancies in the statement. Firstly, communities, such as community-based organisations highlighted the fact that they have lost hope in local leaders (councillors and mayor) because of not disseminating information. Therefore, this renders their current approach not viable, what the mining companies claim they are doing is not reflective of what the participants are saying. However, conducting meetings is something they are doing, although lack of direction has also been pointed out as one of the factors that render these meetings futile. Secondly, important engagement takes place during events. This does not constitute stakeholder engagement; it also emphasises the ulterior motives, as alluded to by mining communities, that mining companies only meet with communities when they need something from them or purely for compliance matters. To ensure that mining companies can reach everyone, they hold one-on-one meetings with communities at these events, this could promote a channel for open communication, or it may not. Community members in the previous PRQ 3 also mentioned that mining companies need to the people, using community halls to improve accessibility and participation in these engagements.

4.2.4.2 Openness and Accountability

The one-on-one engagement as a form of strategy can be crucial for building trust and providing a voice for those who are afraid to voice their opinions in a group setting. However, while there are positives associated with this, there are also negative aspects such as acting as a mechanism for potential miscommunication as verbal information discussed between two people cannot verified unless it was recorded, which is the opposite in terms of this of types of engagements. One-on-one engagements are also resource intensive as more human capacity is needed. This type of engagement creates increased community expectations as everyone in the

community would expect the same courtesy. NGOs also raised opinions of issues of systematic tactics employed by mining companies in their current strategy to hold meetings during the week when the active outspoken population is not present.

NGO4 said:

"*I do lament on how meetings are conducted in the West Rand, and it is disappointing when they consult the communities, that is what we are currently fighting. But in addition to that, the DMRE also is not adequately addressing that*".

This questions the motives of these engagements and their openness to promote transparency and to be held accountable.

NGOs also commented on current existing strategies for the inclusion of host communities and NGO1 said:

"*I would not say there are good strategies, mining companies use these clever systematic ways when it comes to engagements, they would call meetings during the week when people have gone to work, but we then come in to query the motive behind that and suggest a suitable date, for instance, on a Saturday when all people are there… West Rand is quite huge and communities are not homogenous, they vary, some communities will try to organise themselves while others are disorganised, and others are still in the process, but once the process has started, they would then collapse… Are there processes, yes, are they reflective of the whole West Rand, no, I do not think so. There are organisations such as MACUA who are rallying to bring people together*".

The NGO1 further recommended that:

"*To bring about robust strategies, because of how big the area is, you would need a multi-faceted approach you would need things like labour movement, organisations such as COSATU*[7] *would be needed and combined with the struggle organisation of workers, because before you are a worker you are also a community member*".

[7] Congress of South African Trade Unions

4.2.4.3 Sustainable development

There are approaches and strategies in the pipeline as alluded to by mining companies, NGOs and host communities to better the integration of host mining communities in mine closure plans. The mining companies are prioritising what is material in the communities, such as employment. There is a high unemployment rate in the West Rand. The current unemployment rate is 32,3% based on the Municipality's IDP (2023). Although narrowing and focusing on material topics is a good approach towards sustainable development, it is equally important that mine closure discussions form part of the conversations to prepare host communities. Mining companies need to disseminate an understanding that minerals are exhaustive and there will come a time when the mine has to shut down its operations. The companies are also looking at alternative economies post-closure, this has been a widespread occurrence that after a mine has closed, the area is used as a tourist attraction, similar to the Big hole in Kimberly (Tyson, 2021).

4.3 Chapter Summary

In summary, the findings of this chapter highlight the various impacts that cut across all the pillars of sustainable development. Some of these impacts are not unique from those widely reported by multiple authors induced by the presence and closure of mines. Literature often does not highlight the cascading effects of these impacts, that one impact can breed another as demonstrated in this chapter. Secondly, the findings reveal that the current legislative framework that deals with stakeholder engagement is ineffective as it does not promote ongoing consultation to extend beyond initial mining applications, as in the case of MPDRA, NEMA, EIA, and all other governing legislations as alluded by the participants. The findings further highlight the need for transparency, accountability, and government compliance enforcement in the case of the revolving door phenomenon. Thirdly, the study's interview results highlight that the level of communication transparency between mining companies and communities, including all other stakeholders, is poor, all though signs of good practice such as stakeholder mapping emerged. This, however, calls for improved transparency and communication. Lastly, while mining companies publicly disclose their stakeholder engagement strategies, the study found that there is often no correlation between what is written and documented on these engagement strategies, and what is taking place in practice. Moreover, there is a miscommunication or lack of communication between mining companies

and the government to ensure that both their interests align with the interests of communities due to the disengagement of both parties. The following chapter (Synthesis) will provide the solutions to the gaps that have been identified and suggest areas for improvement, including best practice framework and an assessment tool as well as framework tailored for the West Rand area based on the findings.

Chapter 5: Proposed stakeholder engagement framework and synthesis

5.1 Introduction

This chapter aims to synthesise the best practice stakeholder engagement framework and associated stakeholder engagement assessment tool. Subsequently, the chapter synthesises the research findings in Chapter 4 and proposes a framework (strategies) that caters to the gaps and challenges identified in the West Rand. Firstly, as per the five research objectives, this chapter is dedicated to synthesising the mine closure framework conducted from a desktop study using best international practices. Secondly, the chapter will synthesise gaps and challenges gathered from the findings. Thirdly, from the best practice guidelines, this chapter will propose a tailor-made stakeholder engagement framework that caters for the needs, challenges and gaps on the West Rand. The proposed framework, however, is not limited to the case of the West Rand but can be applied and adapted to South Africa as a whole. Additionally, this chapter recommends specific sections in the legislation that should be amended to promote and complement the stakeholder engagement framework.

5.2 Proposed best practice stakeholder engagement framework

The stakeholder engagement framework proposed below as part of this study is based on the desktop research of international best practices (reporting standards and best practice guidelines). The framework is compiled using best international practices and reporting standards. This includes

- Environmental, Health and Safety (‘EHS’) general and sector-specific guidelines (IFC, 2000);
- IFC Performance Standards (IFC, 2012);
- Good International Industry Practice (GIIP) (IFC, 2012);
- IFC’s Stakeholder Engagement Handbook (IFC, 2007);
- UN quality stakeholder engagement in the implementation and follow-up of the 2030 Agenda (UNDP and UNDESA, 2021);

- AA1000 Stakeholder Engagement Standard (AccountAbility, 2015);
- Global Reporting Initiative (GRI) (Global Reporting Initiative, 2024);
- ICMM Integrated Mine Closure: Good Practice Guide (ICMM, 2019);
- UN Guiding Principles on Business and Human Rights(OHCHR, 2011); and
- UN Global Compact and the Organisation for Economic Cooperation and Development (OECD) guidelines for multinational Enterprises (UN Global Compact, 2024).

These frameworks and guidelines aim to guide the mining companies to ensure ongoing stakeholder engagement with interested and affected parties (I&AP) to ensure inclusive and proactive consultations. These guidelines and frameworks have been tested, applied and proven to be efficient and also financed by multi-lateral banks, and other financial institutions such as the IFC and OECD. Thus, they play a crucial role in ensuring a robust stakeholder engagement framework.

5.2.1 Basic understanding and directives of stakeholder engagement

Stakeholder engagement should occur from the onset (project feasibility) until the decommissioning phase of the mining life cycle. The engagement with I&AP should go beyond the mining rights application or permit phase and must be proactive rather than reactive and embedded as a core function of the company's business strategy. Companies engage with stakeholders only in crisis mode or, as in the case of mining companies, only when they have legislative compliance and a mandate to fulfil, like renewing their social licenses to operate or during the transfer of mining rights from one owner to another. According to best practice guidelines the following components should be embedded as part of the stakeholder engagement strategy: the strategy for outlining how stakeholders will be engaged and how their expectations, concerns and needs will be managed. Secondly, objectives are merely the goals for engagement and what the company, together with I&AP, hopes to achieve at the end of the engagement. Thirdly, the timetable for interacting with stakeholders; fourth, the budget that should be allocated to all engagement efforts; and lastly, responsibilities to clearly define who is responsible for what in the engagement to promote accountability. The following components (Figure 14) will be used to develop a stakeholder engagement framework:

Figure 14: Components essential for stakeholder engagement (figure by author)

5.2.1.1 Stakeholder mapping

International best practices and guidelines highlight this as the first step to developing a proactive stakeholder engagement by identifying stakeholders potentially affected by the company's activities, including those interested in the work the company is engaging in, collectively called I&APs. Stakeholders that can be considered include but are not limited to local communities, NGOs, CBOs, government, employees, clients, suppliers, shareholders, and academic institutions. The UN SGD quality stakeholder engagement for the 2030 Agenda also provides a comprehensive list of potential stakeholders to consider. Kozłowska-Woszczycka and Pactwa (2022) highlighted, as portrayed in Figure 15, that those stakeholders who have the greatest impact, such as mine employees, should be closely managed as this could eliminate potential problems at other levels of stakeholders. As a result, stakeholders are divided into those that are directly affected by the mining operations, such as employees and mining authorities, and those that should be managed closely, such as host communities and local businesses. The last division includes those who should be informed as well as those where minimal contact must be maintained, such as other civil society organisations and other citizens.

Figure 15: Stakeholder mapping, engagement levels and approaches (Source: Kozłowska-Woszczycka and Pactwa (2022)

The AA1000 stakeholder engagement guidelines provide different levels and approaches to engagement, such as consultation, negotiation, information, collaboration, involvement, advocation, empowerment, monitoring, and remaining passive. The methods or mechanisms of engagement can include from the media, letters, websites, brochures, and speeches, focus groups, public meetings, workshops . These methods and tools of engagement are context-specific to the communities. The World Bank (2010) list the advantages and disadvantages of some of the engagements methods as described below:

- One-on-One Meetings promote confidentiality and build trust with stakeholders while they are resource and time-intensive and do not capture the broader views of stakeholders.
- Focus groups or forums are efficient for obtaining information on specific concerns. However, they are limited to a small number of participants.
- Workshop Sessions encourage co-responsibility and ownership while they require careful planning, information gathering, and individual consultation.
- Public Meetings facilitate consultations with a large audience and gather diverse opinions. However, some stakeholders may feel uncomfortable sharing their views openly.

5.2.1.2 Stakeholder consultation

There is agreement among international best practice guidelines on what constitutes a proactive engagement, suggesting the following components be included in consultation with stakeholders:

- The engagement process should have a clearly defined purpose and scope.
- The first step (stakeholder mapping) should have been conducted to identify which stakeholders will be engaged first, the engagement process that will take place to engage these stakeholders and the exact timelines of the engagement process. It is also important to incorporate feedback timelines to report back to stakeholders.
- Clearly defined expected contributions and requirements from stakeholders or for the engagement, such as stakeholder feedback and input, advocacy and support from local NGOs or adherence to regulatory company or country laws.
- The benefits of participation should also be clearly defined, including the engagement techniques used to communicate with different stakeholders. The United Nations Stakeholder Engagement and the 2030 Agenda provide a comprehensive list of techniques that can be used to engage stakeholders.
- Communities are usually spread across towns and villages, logistical and practical information should be communicated to ensure vulnerable groups, such as women, the old and fragile are included in the engagement processes.
- Clearly defined structures should exist for all stakeholders partaking in the engagement process as well as their associated responsibilities to help promote accountability.
- There should be a system established by mining companies and local governments where all records and documentation of engagements are stored and captured.

Stakeholder engagement is a dynamic, ongoing process that involves collecting feedback from diverse stakeholders and involves meaningful free information exchange and views that will be incorporated in decision-making loops. The process, as reiterated, is context-specific and thus shaped by various factors such as the local situation or types of stakeholders that will be engaged at that time. Feedback engagement should also be conducted. Feedback engagements are essential to establish credibility and manage expectations from communities. It is important that during these consultations, all stakeholders are capacited with access to information to make informed decisions.

5.2.1.3 Access to information

Stakeholders need to be granted access to information. Both mining companies and the government often withhold information due to commercial confidentiality, personal data protection, and proprietary concerns. However, lack of access to information perpetuates speculative behaviour and unnecessary expectations. The following measures are proposed as a means of promoting transparency and access to information:

- According to the GRI guidelines, communication should be balanced to promote transparency, and positive aspects should not be overemphasised. The company's challenges and the cons of its operations or post-closure impacts should be acknowledged. The GRI reporting principles provide a comprehensive guide on information disclosure about an organisation's impacts based on accuracy, clarity, balance, comparability, sustainability context, completeness, timeliness and verifiability principles.
- Before engaging stakeholders, mining companies conducting the engagement process should ensure that all relevant I&AP have access to information as early as possible to prepare adequately to engage meaningfully and make informed decisions.
- Language dialects should be used or translators to translate the technical languages used in reports or engagements in real-time in the local language. Secondly, highlight and translate key information into local languages and dialects to prevent information overburdening. Thirdly, clear community structures should be established, considering literacy levels factored into the process to assist with disseminating information.
- Access to information can be through newspapers, websites (government and mining companies), social media, email, radio, etc, depending on the geographic context, literacy levels and other socio-economic factors, amongst others, that will need to be factored in. The other means, particularly for mining companies, is to reach a wide range of stakeholders outside the company's geographic influence through sustainability reporting.

Consultation should foster partnerships and collaboration between mining companies and all I&AP to build trust, accountability, and transparency.

5.2.1.4 Negotiations and partnerships

Stakeholder engagements and consultation involve exchanging views, beliefs and perceptions, which, at times, may contradict the views of other stakeholders. Negotiations and Partnerships are a subset of the engagement process to ensure that stakeholders find a mutually acceptable resolution to a complex set of issues tabled during the discussion. The intention is to reach a beneficial consensus on a particular outcome. All stakeholder engagement negotiations and partnerships should be conducted with an open mind and genuine motives to reach an agreement. According to Miller (2014), there are five types of negotiations: the competing style and the power-orientated negotiation style, whereby an individual pursues their interests at the expense of the other person. The accommodative style is a peacemaker-orientated negotiation type where an individual neglects their concerns and lets the other person's concerns take precedence. Avoidance style, in simple terms, is choosing not to deal with the issue at hand by either ignoring it in its totality, postponing it or simply withdrawing it. Collaborative style: this is a joint effort type of negotiation where all parties engage with one another to find a resolution that makes all parties involved happy. The compromising style involves negotiations where parties find a middle-ground solution that is acceptable to the parties involved. Engaging and consulting with various stakeholders aims to foster good relations and partnerships and reach an agreement; thus, the study recommends a collaborative and compromising style of engagement as a form of negotiation style that companies and communities and I&AP should embark on. Communities and all I&AP should find a middle-ground resolution to an issue when a consensus is not reached. Grievance mechanism procedure will be dealt with in section 5.3.3 and 5.5.1.7 as illustrated in Figure 17.

5.3 Stakeholder engagement framework in mine Lifecycle

Stakeholder engagement is a process that should be embedded in the entire lifecycle of a mine. There are five stages of the mining lifecycle namely exploration, planning and evaluation, construction (development), production, closure (Asr et al., 2019). Figures 16 lays out best practice stakeholder engagement framework throughout the lifecycle of a mine as a process, starting from the exploration phase.

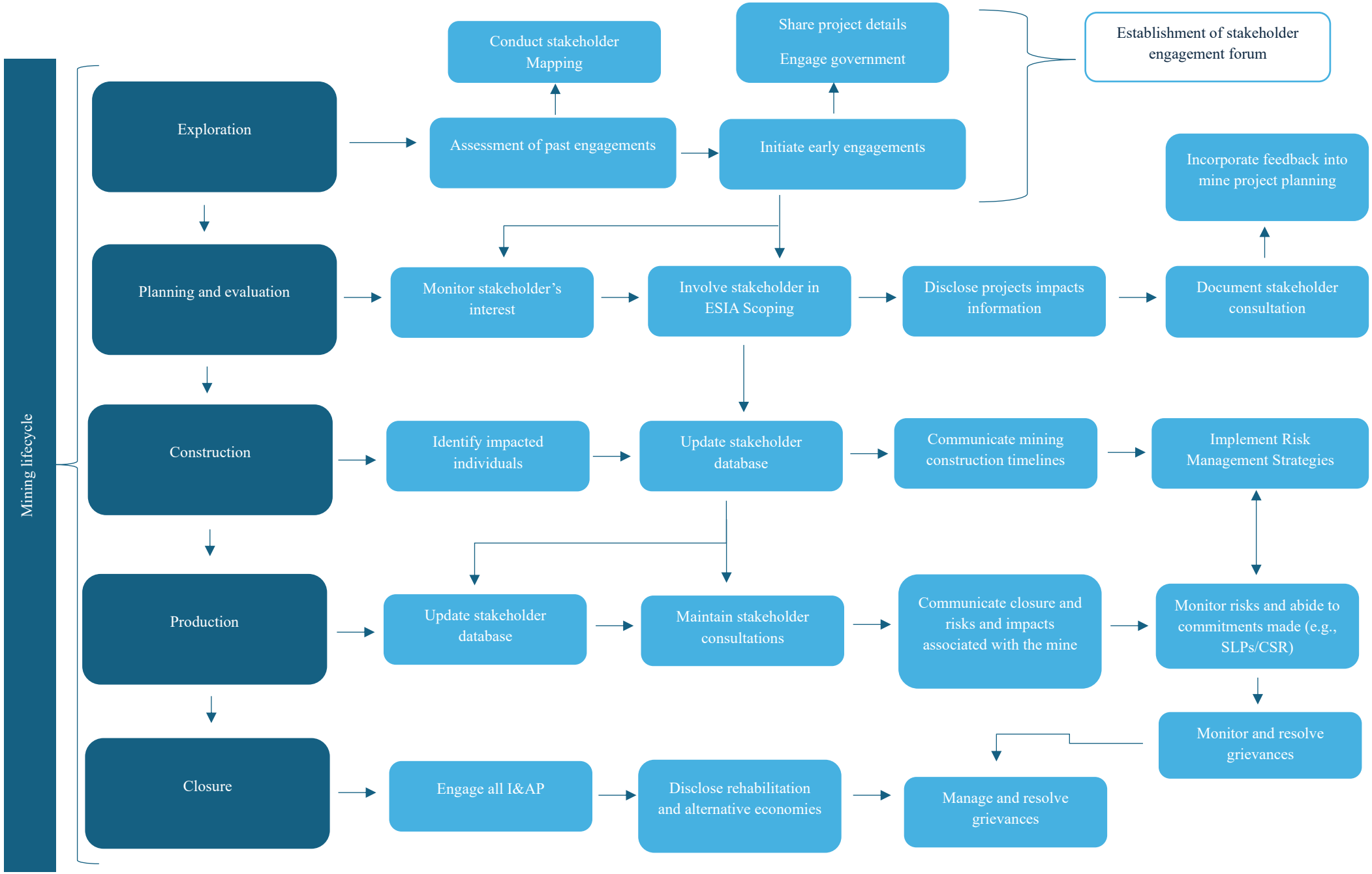

Figure 16: Best practice stakeholder engagement framework that integrates stakeholder engagement as a process throughout the lifecycle of a mine (by author)

5.3.1 Exploration

In the exploration phase, companies enlist the expertise of Environmental Assessment Professionals (EAP) to gain a comprehensive understanding of the area they are targeting for prospecting. EAPs conduct studies such as geological surface mapping, sampling, and geochemical analysis to identify deposits. They also play a crucial role in addressing conflicts, environmental concerns, and land claims or regulations. (Asr et al., 2019). According to best international good practices, stakeholder engagement should take place from the onset by evaluating any existing past engagements that have been undertaken. The source of information can be municipality stakeholder databases, environmental and social impact studies, etc. This is to manage potential risks, such as reputational risks or project opposition from the NGOs or CBOs. This also affords the prospecting company to align with the socio-economic conditions of the area and to be more tuned with community's needs. Early consultation engagement should commence.

The second step of is to choose what information to share and who to discuss it with. This is to manage information flow, mitigate risks, or build strategic relationships with host communities, as well as providing information about the project design and location. This aims to create transparency and open communication with host communities by sharing information on design possibilities and the location where the project is to take place so that all stakeholders are well-informed and can make necessary decisions. In addition, they must consult and engage with government engagement consultation; with the aim of this, amongst other reasons, for regulatory approvals and alignment with public policies and managing expectations of host communities, especially with greenfield projects during the scoping and feasibility studies. This then emphasises collaboration, communication with government entities, and compliance with the laws. A stakeholder engagement forum should be established with the aim to establish structures of both I&AP based on the company's activities. Various organisations who seek to be part of this forum should be allowed to do so, and this is to promote open communication, control possible risks, foster collaboration, and have structures in place to facilitate communication and information sharing. Following the exploration phase is the planning and evaluation phase.

5.3.2 Planning and Evaluation

This phase involves detailed plans for the operation and opportunity of the mine. Activities such as mine planning, studies about the area's geology, mine design, costs, and feasibility studies are all undertaken, including establishing safety, health and environmental impact goals (IFC, 2007). Firstly, mining companies should continue to monitor stakeholders' interests to ensure their operations align with community needs and expectations. This step aims to keep stakeholders engaged by promoting communication, risk identification and conflict resolution when the company's expectations are not aligned with those of host communities. The frequency of these engagements should be consistent based on an agreed plan, such as regular check-ins and monthly presentations of the project's milestones. Also, to keep all I&AP informed about the current studies undertaken and what the mining company hopes to achieve in this phase. This phase involves a lot of studies, such as the Environmental Social Impact Assessment (ESIA); therefore, stakeholders should be included in the scoping phase of the ESIA process to ensure all potential impacts and concerns from stakeholders are identified from the onset and incorporated into the feasibility studies. Incorporating stakeholders in the ESIA process allows for a more comprehensive and inclusive assessment, often leading to better decision-making and project planning. It promotes transparency, inclusivity, and collaboration.

Mining companies also need to prepare information about the impacts of the project ahead of the consultation; this is to promote meaningful discussion about the environmental and social effects of the project or the company's activities. This ensures that stakeholders are also well-informed and can participate in informed consultation discussions. Thereafter, mining companies need to periodically share changes in the project design with stakeholders to ensure that all stakeholders are updated about any changes in the project so that they stay informed on the progress and any changes that might affect them. This is to assist mining companies in managing expectations, promoting collaboration and transparency throughout the lifecycle of the mine, and fostering open communication. It is important throughout all consultations that mining companies, and all other stakeholders such as local government and NGOs maintain records of stakeholder engagements to keep track of who was consulted, what questions they asked and what feedback was provided, including agreements or consensus made. This helps to ensure that all stakeholder's views are considered, and this can be used to report on resolutions or for the company's sustainability reports. Incorporate stakeholder feedback into all aspects of project planning to ensure that insights from these engagements are used to inform, refine or induce modifications in all stages of planning to align with the needs and

expectations of stakeholders for better project outcomes and increased stakeholder satisfaction. Following the planning and evaluation phase is the construction phase.

5.3.3 Construction

This phase involves the construction of the mine, where site preparations are being undertaken, clearing of land, building of roads, shafts, and infrastructures for workers, offices and power supplies, including discussions on the lifecycle of a mine (ICMM, 2019). Firstly, individuals impacted by construction activities need to be identified. The identification process involves stakeholders who will be directly or indirectly impacted the construction activities of the mine. In each phase, prior information gathered in engagements is used, including stakeholders consulted in the previous mining lifecycle, such as in the planning and evaluation phase and ensuring that the stakeholder engagement database is correctly updated against newly presented data. After identifying impacted stakeholders, it is important to notify the host communities or impacted stakeholders of the timelines of the planned construction activities. This is vital and portrays the importance of timely communication. It will assist in managing expectations, addressing concerns, and building good relations between the mining company and the stakeholders.

Community-mining structures need to be updated if not established before to ensure that grievances are handled well and recorded. Construction activities of any project, especially mining, bear a lot of grievances such as from noise, air pollution, waste, dust and traffic. Therefore, mining companies should have a community liaison officer who will occasionally engage with communities about the impacts of the construction phase. Figure 17 provides guidance on effective grievance procedures based on international best practices. All grievances should be logged in the grievance mechanism register. The process of resolving the grievances as depicted in Figure 17 should be followed. Subsequently, according to IFC performance standards (2012) mining companies need to implement effective risk management strategies to minimise any potential negative impacts on stakeholders as a result of the actions of contractors; this should be in alignment with the company's Environmental and Social Management System (ESMS). As part of the E&S management plans, mining companies should consider aspects of land acquisition if the construction phase will necessitate removal of people, influx management, artisanal and small-scale mining management, local hiring, procurement, grievance mechanism as mentioned earlier, and monitoring and evaluation.

5.3.4 Production

In this phase of the mining lifecycle, mineral deposit extraction occurs, and it is associated with drilling, crushing, grinding, and refining ore deposits (Asr et al., 2019). The first step in this phase is to ensure the stakeholder database is continually updated. Host communities often complain of selective consultation; one of the factors contributing to this is the old information in the stakeholder engagement databases. Thus, the community liaison officer employed by the mine must assist the stakeholder relations officer in updating the stakeholder engagement database. Ongoing stakeholder engagement consultation must be maintained throughout the production phase of the mining lifecycle. The frequency of engagement should be conducted quarterly to align with financial reporting cycles and investor's expectations. Additionally, this is also to prevent overwhelming I&AP with constant communication. This engagement should consist of disclosing relevant information on the risks of the mining activities thus far, such as potential closure, which should be communicated throughout the entire lifecycle of a mine. This assists in building transparency, trust, and credibility between host communities and the mining company. Ongoing commitments between mining companies and host communities must be monitored which includes commitments made when acquiring social licenses to operate within the SLPs and other associated CSR initiatives. This ensures and aligns community expectations with the mining company's performance and resolves any misalignment in expectations previously agreed upon. Continuously monitoring grievances from I&AP builds good relationships with host communities and prevent reputational risks. Finally, the closure phase follows in the lifecycle of a mine.

5.3.5 Closure

In the end phase of the mining lifecycle, a company ceases operations and must meet all the legislative requirements. A closure certificate must also be issued, constituting proper closure and absolving the company of any financial liabilities. Mining companies must continue to engage with I&AP on the closure of mines; this step should not surprise all stakeholders as mine closure and the lifecycle of a mine should have been continuously communicated in all previous engagement processes. It is important to continually update stakeholders on compensation benefits, environmental rehabilitation, post-closure alternative economies, and sustaining the mine to prevent illegal mining and, thus, an influx of zama-zamas in host communities. Lastly within the closure phase, mining companies should ensure management

and resolution of any last remaining stakeholder grievances. To ensure alignment with best practices, a stakeholder engagement plan assessment tool has been devised that incorporates the entire lifecycle of a mine.

5.4 Stakeholder engagement plan assessment tool

Table 14 represents an assessment tool that can be used to evaluate the progress against the incorporation of best practice guidelines as proposed in section 5.3.

Table 14: Best practice stakeholder engagement assessment tool (author)

Stakeholder Engagement Plan Assessment Tool for the Lifecycle of a Mine				
Phase	**Notes or Comments**	**Deficient**	**In progress**	**Best Practice**
Exploration		Previous stakeholder engagements have not been assessed	Evidence of adequate effort has been made to access previous stakeholder engagements	Past Stakeholder engagements have been assessed and reviewed
		There is no evidence of stakeholder mapping or early stakeholder engagements.	Evidence of adequate stakeholder mapping has been conducted, including early engagements.	Stakeholder mapping has been conducted, and early engagements have been initiated.
		I&AP are unaware and do not know the project details	Little information has been relayed to all I&AP on the description of the project details of the mine	Stakeholders, including all I&AP, have been briefed on the Project description and details of the mine, including the location of the mine
		No engagements have been conducted with the government for regulatory approvals and building rapport.	Sufficient evidence of engagements exists, and adequate rapport has been built with the Government.	Government engagements have been conducted for regulatory approvals, and a good rapport has been built.
		There is no evidence of a stakeholder engagement forum, and stakeholders are unaware of the existence of such a forum.	There is a stakeholder engagement forum with unclear structures; some stakeholders have little information on its existence.	A stakeholder engagement forum has been established with a clear purpose and structures to foster collaboration and information sharing, and all stakeholders are aware of the existence of this forum.
Planning and evaluation		I&AP are not monitored, and there is no documentation of grievances	I&AP is intermittently monitored, and grievances are intermittently documented	I&AP are continuously monitored, and a record is kept of any arising grievances
		No ESIA was conducted.	ESIA was conducted with an unclear definition of the area of influence and impacts (and opportunities) of closure	ESIA is conducted with a clear definition of the area of influence and impacts (and opportunities) of closure.

		ESIA is not conducted, and there is no consideration of stakeholder's concerns	EISA has been conducted with little to no consideration of stakeholder’s concerns	ESIA factors in all stakeholder concerns from stakeholders from the onset
		No information disclosure to stakeholders about the impacts of the proposed mine	Little information disclosure about the impacts of the proposed mine to stakeholders	Full information disclosure to stakeholders of the impacts of the proposed mine
		Stakeholder engagement consultations are documented but not stored in a database for record keeping.	Stakeholder engagement consultations are intermittently documented and stored in a database. Records are intermittently or not kept in the municipality, and the mine may have a database to store and report the consultations.	Stakeholder engagement consultations are documented and stored in a database. Records are kept in the local municipality, and the mine has a separate database for separate record-keeping
		Stakeholders are not kept informed on the progress of the mine, and no mechanism has been established to manage expectations.	Stakeholders are intermittently informed on the progress of the mine to manage expectations and promote transparency.	Stakeholders are kept informed on the mine's progress to manage expectations and promote transparency.
		There is no evidence of feedback incorporation from stakeholder engagements into the mine project planning.	Sufficient to little feedback incorporation from stakeholder engagements into the mine project planning	Comprehensive Stakeholder engagement feedback is incorporated into the mine project planning.
Construction		Individuals impacted by construction activities have not been identified	Sufficient identification of impacted individuals by construction activities exists, but not all individuals have been identified	Individuals affected by construction activities have been identified
		There is no evidence of timeline communication of planned activities to host communities and I&AP.	Little evidence of planned timeline activities has been communicated to host communities and I&AP.	Timelines of planned construction activities have been communicated to host communities and I&AP.
		No existence or update of the stakeholder engagement database	The stakeholder database is rarely updated and reflects little of the current status quo	Stakeholder engagement database is updated to reflect the current status quo
		There is no existing grievance mechanism for construction activities	Sufficient grievance mechanism is in place for construction activities	A comprehensive grievance mechanism is in place for construction activities
		There is no existence of a grievance mechanism, grievance register, or documentation for the resolution of grievances.	Grievances are sporadically documented and resolved. The outcome of resolution is sporadically communicated to complainants and intermittently documented in a grievance register.	Grievances are documented and resolved. Outcomes of resolutions are communicated to complainants and noted in the grievance register.
		No evidence of risk management strategies and procedures as part of the Environmental Social Management System (ESMS)	Evidence of and moderate sufficient risk management strategies and procedures implemented as part of the company’s Environmental Social Management System (ESMS)	Effective risk management strategies and procedures are implemented as part of the company’s Environmental Social Management System (ESMS)

		No evidence of E&S Management plans	Evidence of some E&S management plans are considered, such as land acquisition and compensation, influx management, artisanal and small-scale mining, monitoring and evaluation, procurement and local hiring	Implementation of E&S management plans are comprehensively considered, such as land acquisition and compensation, influx management, artisanal and small-scale mining, monitoring and evaluation, procurement and local hiring
Production		The stakeholder database is not updated.	A little update on the stakeholder database	The stakeholder database is continuously updated
		Host communities and other stakeholders do not know of the existence of a closure plan.	Nearby communities and workers may have been given the opportunity to input on the closure plan, and broader input was not leveraged.	The closure plan has been communicated with input from host communities and other stakeholders.
		There is no evidence of stakeholder engagement strategy, and communities do not know representative structures.	Stakeholder engagement strategy does not fully encourage communities to form representative structures.	Stakeholder engagement strategy continues to encourage communities to form representative structures.
		No evidence of CSR activities	There is little evidence of CSR activities and moderate transparency in the information exchange.	Evidence of CSR activities is present, and honest and transparent information exchange takes place.
		There is no evidence of communication on closure risks and impacts	There is little evidence and moderate communication on closure risks and impacts	Closure risks and impacts are communicated
		Risks and commitments (SLP) are not monitored and documented (insufficient disclosures on annual sustainability reports)	Risks and commitments are moderately monitored and documented (moderate disclosure in annual sustainability reports)	Risks and commitments (SLP) are monitored and documented (e.g., annual sustainability reports)
		There is no disclosure on closure plans, and stakeholders do not know how to contribute to the closure plan.	Little information is disclosed on closure plans, and stakeholders have little information on how to contribute to the closure plan.	Information on closure plans is continuously disclosed, and stakeholders have full knowledge of the closure plan and how to contribute to the closure planning.
Closure		There is no evidence of communication of closure plans to stakeholders	There is little evidence of communication of closure plans to stakeholders	Full proof of communication of closure plans to stakeholders
		There is no evidence of communication on compensation benefits, environmental rehabilitation, and alternative economies.	There is little evidence of communication on compensation benefits, environmental rehabilitation, and alternative economies.	Information on compensation benefits, environmental rehabilitation and alternative economies is communicated.
		Grievances are not documented and inaccessible to stakeholders	Grievances are intermittently documented, resolved and remain sporadically accessible to stakeholders	Grievances are continually documented, resolved and remain accessible to stakeholders

		Community group structures (representatives) have not been selected to participate in the closure planning activities.	Some community group structures (representatives) have been selected to participate in the closure planning activities.	Community group structures (representatives) have been selected to participate in the closure planning activities.
		Community and company surveys are not conducted to evaluate the engagement process and inclusivity of the company.	Community and company surveys are somewhat conducted with unresolved issues on the engagement process and inclusivity of the company.	Community and company surveys are conducted to evaluate the engagement process and inclusivity of the company.

5.5 Observed reality in the West Rand

This section synthesises the gaps and challenges associated with the findings of the West Rand to propose strategies that can better integrate host mining communities in mine closure planning. Mining companies in the West Rand area should have thoroughly involved stakeholders from the exploration phase as most mines in the West Rand are currently in the production phase. It is very important to acknowledge that international best practices do not provide guidelines on involving stakeholders during mining operations as best practice guidelines articulate stakeholder engagement as a process that is carried out from the project feasibility to the closure phase. However, to salvage the situation in the West Rand, mining companies can still properly involve their stakeholders and have a robust stakeholder engagement framework. The following strategies are therefore proposed from the production phase.

5.5.1 Production phase

In terms of research findings carried out in Chapter 4, the study found that: (1) there is a need for community empowerment through the involvement of host communities in the decision-making process relating to the closure of mines. Firstly, mining companies in the West Rand must thoroughly identify their stakeholders (local communities, government, NGOs, and other relevant parties) including all interested and affected parties (I&AP) and subsequently conduct stakeholder mapping. According to international best practice guidelines, stakeholder identification and mapping are in the exploration phase of the mining lifecycle. However, in the case of the West Rand area, this will be different, stakeholder identification and mapping will be the first step of the production phase as mining activities have long commenced and mines are expected to close within 10-20 years. Acknowledging also that some mining companies will start their operations, like Blyvooruitizcht and Mintails, which are now brownfield projects. International best practices do not provide guidelines for brownfield projects in the mining sector. However, this study recommends that stakeholder identification and mapping for brownfield projects should be carried out during the planning and evaluation phases, overlapping with the exploration phase. This is because operations have not yet begun and these brownfield projects (Blyvooruitzicht and Mintails) unique due to the change of ownership as well, can still conduct proper stakeholder mapping and identification.

The assumption, in this case, is that mining companies in the West Rand (except Blyvooruitzicht and Mintails) may not need to conduct environmental studies such as Environmental Impact Assessment (EIA), Environmental Monitoring Programmes (EMP), Environmental Social Impact Assessment (ESIA) and all other studies as they should have been conducted during licensing applications and therefore need not to be conducted again. This assumption is drawn from South African legislation, such as NEMA, MPRDA, SEMAs and all other supporting Regulations which dictate specialised studies must be conducted before issuing environmental authorisation or a licensing permit. After stakeholder identification and mapping have been completed. Mining Companies with all other stakeholders identified and mapped, establish a stakeholder engagement forum as the next step. Stakeholder forums will necessitate the establishment of clear community-mining structures.

5.5.1.1 Community-mining structures

The findings in Chapter 4 also highlight; (2) the need for clear community mining structures in the West Rand to foster cohesion and ensure accurate information dissemination. The establishment of a stakeholder engagement forum will assist the West Rand Municipality with clear structures. The aim of this forum should be to establish structures of both I&AP based on the company's activities. Include organisations that seek to be part of this forum (such as NGOs, and Community based organisations). This will promote open communication, control possible further risks, foster collaboration, and facilitate communication and information sharing. This comes after communities in the West Rand complained about information disclosure by mining companies and their lack of open communication, which resulted in communication breakdown and highlighted the fragmented community-mining structures. The establishment of a stakeholder engagement forum, therefore, implies stakeholder interests should be monitored, and communication flow will be enhanced, through properly established structures, communities will then be aware of whom to go to when they seek information. The following step would be to maintain records of stakeholder engagements to keep track of who was consulted, what questions they asked and what feedback was provided, including agreements or consensus made. These records can be maintained on a database where appointed individuals representing each stakeholder from the forum become admins of such a database (e.g., ISOMETRIX). This helps to record stakeholder's views, complaints, and resolutions and to address any claims from stakeholders that they were never consulted. The advantage of this in terms of Sustainability reporting is that it can be effective when

companies have to report their material topics to a wide range of stakeholders. Material topics would already have been gathered and stored in this database. The next step would be to determine the budget, scope and timeline for stakeholder engagements, and any changes to this should be communicated to stakeholders.

5.5.1.2 Budget, scopes and timelines

This is primarily because stakeholders, particularly community members in the West Rand raised issues of lack of actionable outcomes and confusion regarding some of the meetings they are called to; (3) this highlights a need for improved quality of these engagements. To clear out the confusion, mining companies should ensure a clearly defined scope, that explains the purpose of these engagements, what will be discussed, what issues are going to be addressed, any other issues besides the ones currently being addressed at the time, how they will be dealt with, the timeline of engagements and timeline for feedback and other issues raised. The frequency of these engagements will depend on the issues that are discussed and how significant they need to be resolved. In the case of the West Rand, it is recommended that quarterly engagement should be held. This is largely because stakeholder engagement is already not effective and many mines are about to reach the end of their lifecycle, thus, closure is imminent and the local economy is highly dependent on the extractive industry, therefore, closure represents a dire socioeconomic consequence. Secondly, conducting stakeholder engagement quarterly by mining companies in the West will ensure alignment with financial reporting cycles and investor's expectations. Lastly, the suggestion of quarterly meetings is also to prevent overwhelming stakeholders with constant communication. The most important topics West Rand communities and mining companies should be discussing is mine closure and its preparation (discussed more later in this section). These engagements should be aimed at building transparency, trust, and credibility between host communities the mining company, and all other stakeholders.

5.5.1.3 Consultation methods

This study recommends mining companies should embark on community meetings in the West Rand, because of the direct interaction they would provide between all the stakeholders. Communities in the West Rand highlighted that mining companies should use community halls as a venue to hold these engagements, therefore, this makes community meetings a viable

option for open dialogue and for information to be shared transparently. Secondly, another consultation method is focus groups to understand the unique perspectives and needs of the different groups within the communities, such as women and youth focus groups. This is also to address the fact that West Rand communities raised issues that in a single meeting, different topics were covered, those involved in farming would discuss farming, and those involved in mining would discuss mining, but the problem is they are all being discussed in one meeting. Therefore, having focus groups provides differentiated segments for different needs of different groups of people.

These engagements would necessitate consideration of a budget factored in by mining companies. The budget needs to consider community hall bookings if there is a fee that needs to be paid, budget for the elderly, and vulnerable people to be able to participate, and translation services for communicating in the local language (although it is advisable to mining companies to hire a stakeholder liaison officer already fluent in the languages used in the community). The most spoken languages in the West Rand are Sesotho, Setswana, Xhosa, and isiZulu. Also, best practice guidelines are against buying gifts for the community as this creates misinterpretation of the purpose of these engagements. Currently, communities in the West Rand have the preconceived idea that mining companies are buying their signatures using these gifts (blankets). Many of the mining companies in the West Rand as reiterated are soon to close their operations, therefore, mine closure planning in these engagements is important for all stakeholders.

5.5.1.4 Mine closure planning

Mine closure topics should have already formed part of stakeholder engagement discussions from the feasibility and development planning phases. However, in the case of the West Rand area, mining companies should ensure mine closure discussions are part of these engagement processes going forward. The general trend currently taking place in the West Rand is the closing of shafts which have resulted in retrenchments and thus high unemployment rates in the Municipality. Topics concerning mine closure that should be discussed include but are not limited to, plans for rehabilitation, support programmes for workers who will be losing jobs, community development projects to mitigate the social impacts of mine closure, evaluation of health risks to the communities after closure, plans for ongoing monitoring and maintenance,

and post-closure land use. Importantly, economic diversification should be part of mine closure planning discussions.

5.5.1.4.1 Economic diversification

The most important finding from the West Rand is the (4) significant need for economic diversification. There is a high dependency of West Rand communities on the extractive industry. Early community development programs in the West Rand can assist with the transition of creating a diversified economy. Programmes that should be considered include vocational training to equip the current workforce and communities with the necessary skills to pivot to other industries such as construction and technology, making them more employable outside the mining industry. Secondly, the continued support of small and medium-sized enterprises (SMEs) is one of the mechanisms that can be employed, in this case, by both the mining companies and the West Rand or Gauteng's Department of Small Business Development (DSBD). This will create more resilient economies and ensure that local businesses can thrive. Lastly, investment in infrastructure such as transportation to make the area more accessible to investment. It is important to note that these strategies for alternative economies are the responsibility of the local and provincial government, as well as the mining companies in the area. These strategies need to be aligned with the West Rand Municipality's Integrated Development Programmes (IDP) to prevent duplication of strategies. While promoting economic diversification, communities in the West Rand need to be capacitated on potential mine closure impacts.

5.5.1.4.2 Mine closure impacts capacity-building

Stakeholders in the West Rand area are facing environmental, health, socio-economic, lawlessness and disorder impacts. The closure of mines has had detrimental impacts on host communities. This highlights a need for; (5) rehabilitation, monitoring and control measures of mine closure impacts and (6) communities to be capacitated to understand the impacts of mine closure before closure even takes place. Capacity-building workshops should be conducted in a similar format used to conduct stakeholder engagements. Communities in the West Rand are not equipped with the necessary knowledge to understand these impacts. As a result, organised focus groups and community meetings should explain the anticipated environmental and social impacts. For mining companies to provide a comprehensive understanding, they should

provide relatable case studies from other communities that have experienced mine closures, such as Mintails and Blyvooruitzicht (although they are being re-mined again). This will encourage the communities to share their concerns about any perceived potential risks and opportunities. Stakeholder partnerships between Universities and NGOs can assist in the identification of further risks and opportunities, including mitigation measures that the West Rand Municipality can implement. These capacity-building workshops or focus groups will also facilitate a platform where community members in the West Rand can discuss future uses of land, simultaneously coinciding with strategies to establish alternative economies. To ensure proper control measures, stakeholders such as Universities and NGOs, with the help of the provincial or local government and mining companies, can establish community monitoring programmes where community members can monitor and report on closure-related impacts. This will assist mining companies in keeping track of risk identification impacts, and priority areas that should be expedited regarding mitigation measures. Through the implementation of these strategies, all stakeholders in the West Rand will be better equipped to understand and manage the impacts of mine closure, ensuring more sustainable mine closures. In all of these engagements, stakeholders need access to information.

5.5.1.5 Information accessibility

Information accessibility remains a challenge in the West Rand and the entire mine sector in South Africa. Therefore, (7) the West Rand findings highlight there is a need to ensure that information is readily available to all I&A parties to promote transparency and accountability and that I&AP can make informed decisions during stakeholder engagement meetings. International best practices highlight factors that contribute to the lack of access to information which include non-disclosure agreements, commercial confidentiality, personal information protection and that some information is proprietary. Any information confidential information such as financial data (balance sheets, profit and loss accounts) or confidential results (internal audits or sensitive project outcomes) intended for regulatory compliance should not be disclosed based on the above-mentioned reasons. However, in the case of the West Rand community members mostly complained about information relating to engagements, as they deem these engagements to be selective, that only a few people are aware of certain meetings while others are not, thus, resulting in a lack of transparency.

Information accessibility in the West Rand can be promoted through community meetings and workshops. This is because the same community meetings will be used to conduct stakeholder engagements in any case, and as a result, should also be used to promote access to information. Secondly, most mining companies, especially on the African content in rural areas according to Kasimba and Lujala (2022) use local media, such as local radio stations, newspapers, and community bulletins as one of the strategies to promote access to information, particularly in the context of mining communities. These strategies are found to befit the West Rand. Additionally, WhatsApp has become a widely used form of communication, and therefore the study recommends it as a form of mechanism to promote information access. Based on the current socio-economic status of the West Rand, these strategies will ensure those who do not have access to information also remain informed. Moreover, the use of digital platforms for much younger population groups can also be adopted by mining companies in the West Rand, the percentage of the youth in the West Rand is 36% based on the Municipality's IDP (West Rand District Municipality, 2023). There is an increase in 4IR (Industrial Revolution), this will ensure the engagement strategies reflect the current community status quo of the West Rand. Other strategies mining companies in the West Rand can use include Community-based organisations (through established community-mining structures) to assist in disseminating information and gathering community feedback. These structures are also an excellent way to promote access to information as they have already established trust and communication channels within the communities. Stakeholder engagement is only effective if each stakeholder plays their role, which is not the case in the West Rand, particularly the government including the DMRE.

5.5.1.6 Address of government's lack of participation

There is a widespread disengagement from the government in the West Rand, mostly the DMRE to attend and participate in stakeholder engagements. This highlights negligence and abandonment of responsibilities. Therefore, (8) this study's findings highlight that there is a need for the government in the West Rand, including the DMRE to participate in stakeholder engagements as the government forms a core stakeholder with the most impact across all stakeholders. International best practices do not provide any guidelines on the disengagement of government in stakeholder engagements. The lack of participation by DMRE is beyond the scope of the local government and mining companies. Strategies to increase DMRE participation should be through legislative mandates that require state officials to participate in

stakeholder engagement and community meetings. The responsibility in this case is that of the National Assembly and Parliament of the Republic of South Africa. Secondly, Parliament and the National Government must develop Key performance indicators (KPIs) linked to stakeholder engagement and reporting for officials who have been assigned the responsibility to oversee and participate in these engagements, particularly those involved in mine closure planning and processes. Thirdly, peaceful protests by community members and NGOs can assist in directing attention to the DMRE for their lack of involvement in the West Rand. NGOs and CBO should also approach the public protector's office, which will investigate the claims of the DMRE's lack of involvement in the West Rand to enforce accountability. To date, there has been lack of accountability to hold the DMRE accountable for their lack of participation in community engagements. All stakeholders, to ensure accountability across the board, should have a grievance redress mechanism to address complaints.

5.5.1.7 Grievance redress mechanism

There is (9) a need for more robust grievance management procedures to be in place in the West Rand. Best practice guidelines mostly account for and emphasise external grievances but having both internal mechanisms are equally important. Members of any organisation should be able to raise grievances if they are not happy with how processes are conducted and unfolding. In this way, people will be held accountable both internally and externally. Some community members in the West Rand do not understand the grievance processes of the surrounding mines, that is, how a grievance is recorded, how it is tracked, how it is resolved and the manner of communication to deliver the resolution to the complainant. Mining companies in the West Rand should, therefore, clearly communicate their grievance procedure through the proposed channels of information access as mentioned above. Figure 17 provides an excellent illustration of the best practice grievance mechanism mining companies should follow, this study sees it befitting that it should also be adopted and applied in the case of the West Rand. The grievance mechanism in the West Rand should run from the production phase to closure. Mining companies in the West Rand mentioned that some grievances raised by communities are a result of unrealistic expectations by mining communities and other stakeholders.

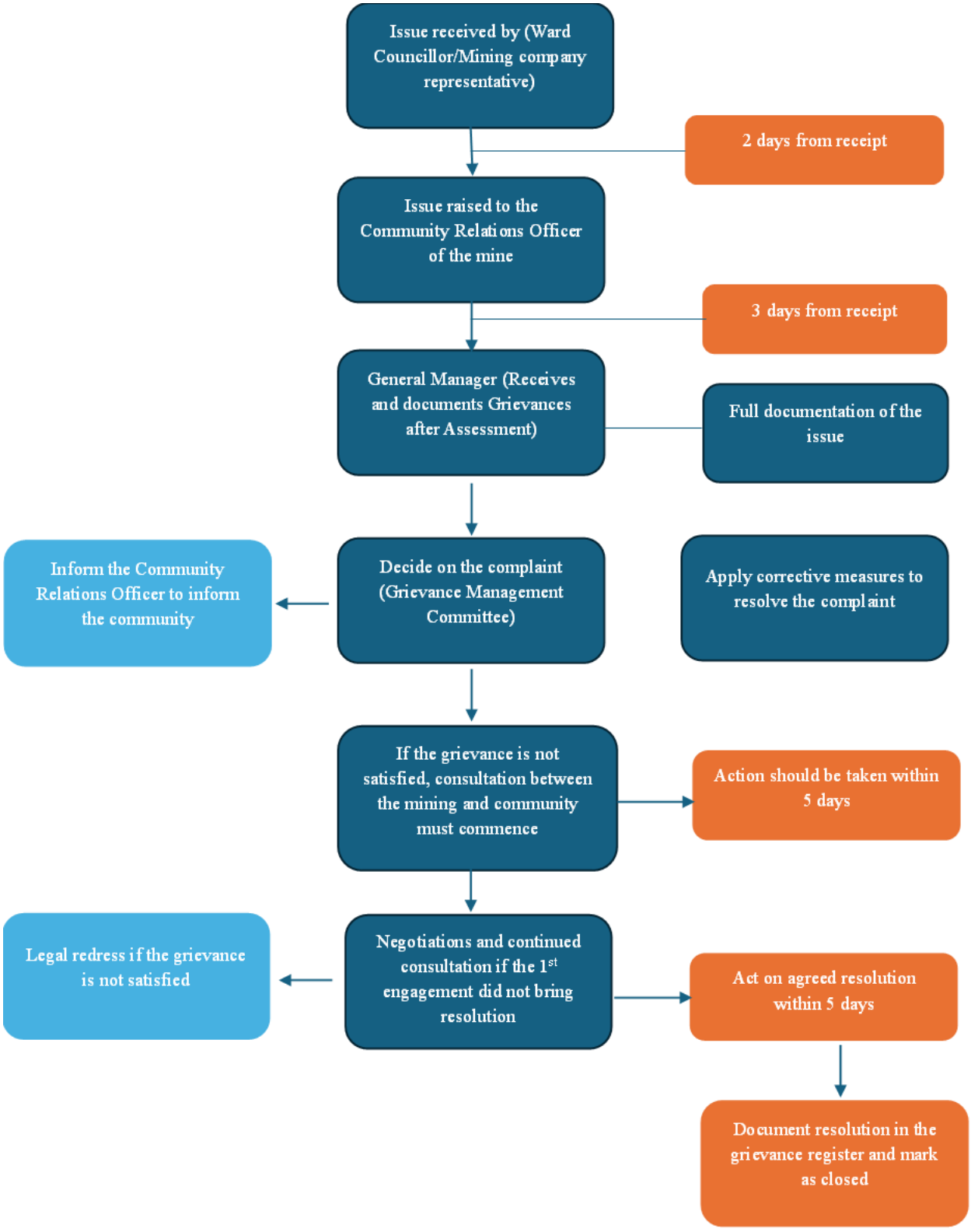

Figure 17: Grievance Management Procedure and the process that should be followed at community level when addressing grievances (IFC, 2019).

5.5.1.8 Management of expectations

Mining companies in the West Rand should therefore ensure that (10) they continuously monitor ongoing commitments they make with all stakeholders; this includes commitments associated with Social Labour Plans (SLP) and Corporate Social Responsibility (CSR) initiatives. The main aim of this is to manage the community's expectations. This comes after mining companies complained of the role they play in West Rand communities. That is, West Rand communities want mining companies to play the role of the government while they are a business. Unrealistic expectations noticed in the West Rand is that there is a comparison communities make between the different types of mines and expect homogenous social development. Mining companies in the West Rand can manage this by communicating to communities where their mine is in terms of the lifecycle and what resources they have, what they are able to assist the communities with and what they are not able to assist communities with. Clear, direct and open communication is important to manage expectations, mining companies in the West Rand should refrain from sugarcoating and making promises they are not able to fulfil, as alluded to by one of the interviewees. The findings highlighted other sources of expectations by communities to be as a result of increased pressure to exceed the standards set by previous projects; and distorted information due to political interventions which cause communities to divide and have differing expectations and conflicts. There is disillusionment from stakeholders in the West Rand, particularly communities, who feel they have been misled through promised benefits and those promises are not materialising within the expected time frame, which has led to an erosion of trust between the two stakeholders. These issues can be addressed through transparent communication, and mining companies must maintain honest channels of communication. They must also acknowledge the legacy of past projects and address any lingering concerns or expectations they may have created.

Since robust stakeholder engagement will only be conducted late in the mining lifecycle in the West Rand, this will have repercussions, such as, mining companies missing out on valuable insights that could have helped them to mitigate potential conflicts and reputational risks (already damaged). Secondly, stakeholders perceive companies as secretive, and communities and other stakeholders will feel the companies are only interested in their input when it is convenient, which is what is taking place currently in the West Rand. Therefore, they perceive mining companies as lacking trust and transparency. Thirdly, late engagement implies that all potential impacts are not thoroughly addressed and will become significant issues in the future as it has also been observed as an ongoing trend in the West Rand. Mitigation measures of

environmental and social impacts in the West Rand are reactive rather than proactive. Lastly, late engagement will result in reduced community buy-in and support.

5.5.2 Closure phase

Most mining operations in the West Rand will cease operations in the next 10-20 years. Findings from communities in the West Rand have highlighted that closure discussions are not held in meetings the communities are called to and that the meetings are mostly about social development. This is a significant concern considering the socio-economic profile of the municipality which is very dependent on the extractive sector. Before the inevitable socio-economic impacts such as job losses, decline in service provision and standard of living, mining companies need to engage communities before these events to remind them of the inevitable that is to take place and ensure all social programmes and services are executed, such as sports facilities, social services, training for alternative employment, and retrenchment programmes. Programmes associated with environmental rehabilitation must be rolled out already or should be in the process of being rolled out. The West Rand has major issues of dust from tailings facilities, sinkholes, and acid mine drainage. Environmental rehabilitation programmes must be curated to solve those issues. In terms of the mining infrastructure, some of the mining assets (buildings) in partnership with other stakeholders (NGOs, CBOs, and local government) should be repurposed into community halls and centres to further skills training and development with more facilities available implying more programmes to cater for.

Mining companies should ensure regular updates to all stakeholders to allay any fears and resolve any lingering grievances or uncertainties. The communication should also include how stakeholders can participate in the closure phase. In the context of the West Rand area, communities are well aware of their current socio-economic status and what they need. Therefore, they can be part of the closure activities and assist in identifying and suggesting ways to repurpose the mining infrastructure for community use. Findings from the interviews highlight the need for libraries for kids and training facilities. The local government, on the other hand, should work with mining companies to ensure the alignment of closure activities with municipal plans such as the IDP. Secondly, the local municipality should monitor the environmental and social impacts of closure activities of the mines in the West Rand, this comes after the research findings found rampant environmental and social impacts community members continue to suffer during closure activities of these mines. NGOs should continue to

monitor these impacts and the rehabilitation efforts of mining companies. These will ensure that mining companies are now held accountable, which is currently the opposite in the West Rand in terms of closure processes.

Illegal mining in the West Rand is a major issue and people in the West Rand highlighted they live in fear, particularly in Bekkersdal where most of the illegal miners live. The solution to illegal mining should be a collaborative effort that necessitates the involvement of the national government and all other stakeholders, including law enforcement. There is still a research gap on strategies for preventing illegal mining, in South Africa and globally. According to the University of Cape Town Mineral Law in Africa (2016), there are no easy solutions to the increase in illegal mining. However, strategies include proper closure and heavier penalties for companies failing to close properly. Secondly, increased patrolling and surveillance around mining areas and the use of surveillance technology. Thirdly, strengthening of legal frameworks to address the issue of illegal mining and lastly, conducting audits and inspections of mining companies to ensure compliance with closure measures. For stakeholder engagement to be effective, it requires the support of the legislation and enforcement thereof. The next section provides specific sections within the legislation that should be amended to promote ongoing stakeholder engagement.

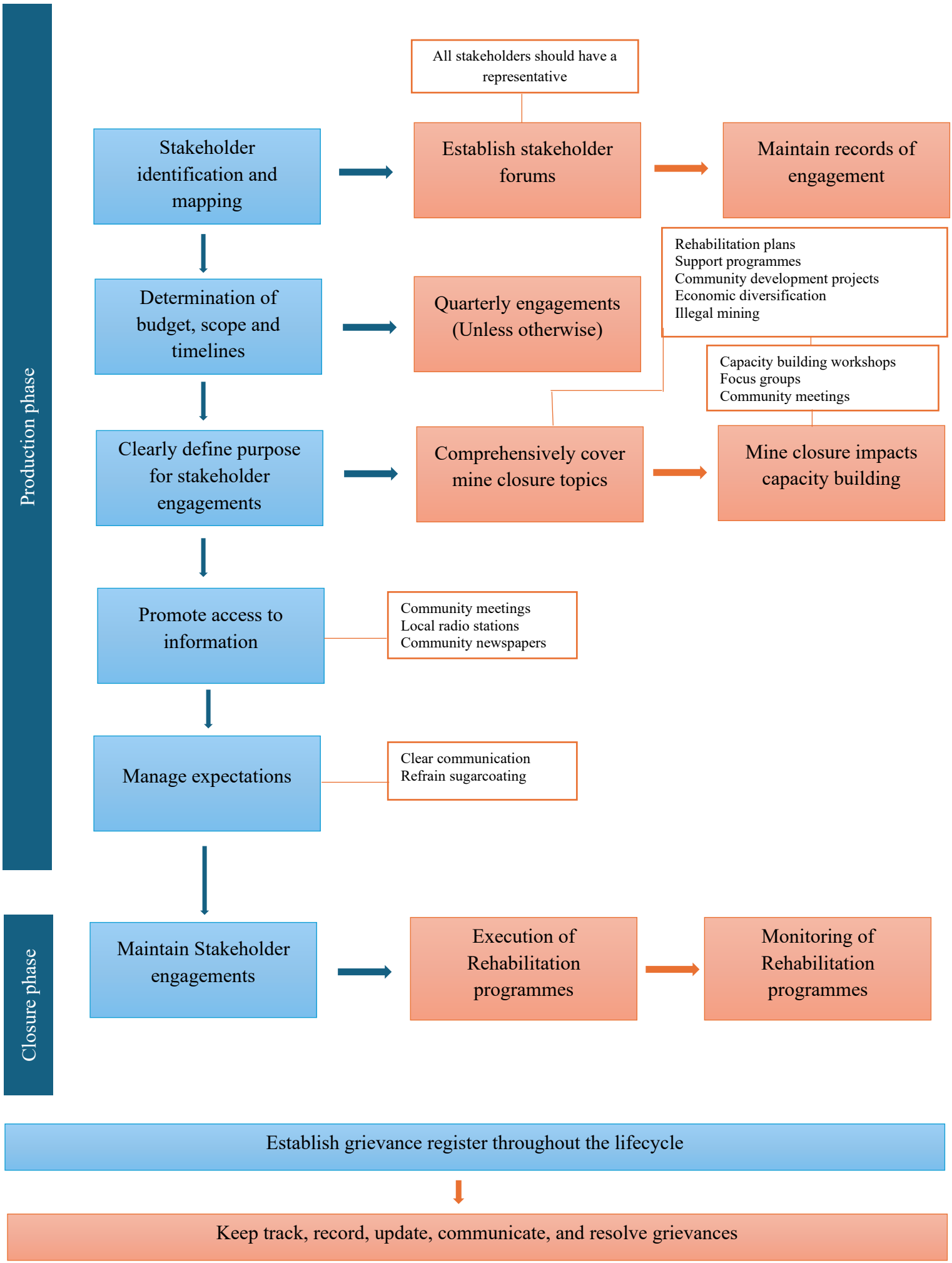

Figure 18: Proposed strategies and framework for the West Rand

5.6 Legislative recommendations

There is a famous saying by Waterhouse (2015:171) that "*the people's parliament requires an institution that prioritises and seeks active engagement with the public, and that it is receptive and responsive to the needs of the people*". This implies that Parliament as the legislative body of South Africa should put the interest of South Africans first, by engaging in an open and transparent manner and reacting to the needs of the people. South Africa is a democratic state, and democracy is for the people by the people. Consequently, this section aims to propose recommendations within the legislation that can enhance the inclusion of host communities and, consequently, promote stakeholder engagement.

NEMA is the primary governing environmental regulation in South Africa (Maphanga et al., 2023). Stakeholders in the West Rand highlighted the (11) need to be involved in refining the legislation to clear ambiguities and to ensure community engagement extends beyond initial mining applications, as is currently the case with NEMA for EIAs and the MPDRA. EIA processes under NEMA regulate public participation when environmental impact assessments are conducted to obtain an environmental authorisation. Public participation is undertaken only as a once-off event for an Environmental authorisation (EA). After EA is acquired, the communities and all I&AP are seldom consulted about the project's activities. Therefore, stakeholders in the West Rand made it clear the current legislation is ineffective in promoting continuous stakeholder engagement and subsequently holding mining companies accountable for the lack of stakeholder engagement in the municipality. The findings of this study highlight (12) the need for legislative reforms. Legislative reform needs to take place to ensure continued and ongoing public participation with all I&AP. The study proposes the following amendments concerning the legislation on NEMA.

Chapter 1, section 2 which deals with NEMA principles should be amended and strengthened to make it mandatory for ongoing stakeholder engagement and public participation throughout the lifecycle of the environmental decision-making process. This will ensure that public participation is conducted continuously and not only a one-time process. On Chapter 3 which deals with Co-operate Governance Procedures, section 11 of Environmental Implementation Plans, and management plans should be amended to make provisions requiring regular updates and consultation with stakeholders during the preparation and revision of environmental management, this should be in conjunction with Section 14 of the content of EMPs and section 16 of compliance with these plans. This will ensure that these plans reflect the concerns and

inputs of stakeholders regularly to promote an increase in transparency and accountability in the implementation of these plans. Section 24 of NEMA that deals with Environmental authorisation (EA) should be amended to make provisions that promote ongoing public participation and stakeholder engagement as part of the EA process, including post-approval monitoring and compliance. This amendment aims to ensure that stakeholders are involved in the initial approval and ongoing monitoring and enforcement of the EAs. Section 35 of NEMA should ensure sufficient provisions for compulsory stakeholder engagement in the negotiation, implementation and monitoring of these agreements. This is to ensure these agreements are in alignment with the interest of I&AP. Section 47 which primarily focuses on procedures for making regulations should be amended with provisions that strengthen the requirements for ongoing public participation or stakeholder engagement including provisions for public hearing and feedback mechanisms to increase transparency and incorporation of inputs from a broad range of stakeholders. Amendment of these sections of NEMA will promote ongoing stakeholder engagement that leads to more inclusive and effective environmental regulations. Similarly, Specific Environmental Management Acts (SEMA) under public participation, should be conducted in following the amended NEMA, stakeholder engagement or public participation in this way becomes an ongoing process and not a once-off event.

In the context of the Mineral Petroleum Resource Development Act (MPRDA) 28 of 2002 Section 10 that deals with consultation with interested and affected parties should be amended to include provisions for continuous engagement that caters for the entire lifecycle of the project. This could involve regular updates, public meetings, and feedback mechanisms. Section 21(b) deals with the progress of the report with respect to prospecting, and this should make sufficient provisions that require sections of these reports to be shared with stakeholders and a section included that integrates stakeholder feedback and concerns. This should be done in conjunction with Regulation 31 under GN R527 in Government Gazette 26275 dated 23 April 2004. To promote transparency, these reports or sections thereof should be publicly made available to include a summary of stakeholder engagement activities and their responses. Regulations 45 and 46 of the MPRDA under GN R527 specify reporting requirements for social labour plans (SLPs) should also be amended. The amendments to these regulations should make it a requirement for stakeholder engagement reports as part of the annual submission. These reports should detail how stakeholder engagement inputs have been incorporated into the SLPs. Section 39 of MPRDA 28 of 2002 for monitoring and performance assessments of EMPr and EMP, in conjunction with Regulation 55 under GN R527 in Government Gazette

26275 should make provisions that add a requirement for regular stakeholder engagement sessions to discuss the findings of these assessments and gather input on best environmental management practices. The EIA process within the MPRDA is enshrined as part of the EMPr and thus, in alignment with NEMA. Additionally, Regulation 86 under GN R527 in Government Gazette 26275 lists requirements for an EIA process. The EIA in MPRDA should be conducted with the proposed amended EIA process under NEMA. Section 43 of the MPRDA 28 of 2002 should amend the conditions of issuing a closure certificate to cater for stakeholder engagement. This includes the amendment of Regulation 132 of the decommissioning or closure to make provisions for stakeholder engagement in the development and implementation of the closure plan, ensuring that the host mining community's concerns including those of I&AP are addressed.

NEMA and MPRDA must collaborate to promote ongoing stakeholder engagement with all I&APs. This can be achieved through the suggested constitutional reforms to promote meaningful consultations. Clear guidelines (National mine closure plan strategy and integrated environmental management tools) should be established to promote ongoing engagements throughout the lifecycle of a mine, as demonstrated in the stakeholder engagement framework. Lastly, ongoing monitoring and evaluation of stakeholder engagement should be conducted as part of the Social License to Operate (SLO) to ensure ongoing engagement consultations are indeed taking place and are effective. The amendment of the proposed section will make the legislation more effective in fostering transparency, accountability and the inclusion of I&AP throughout the entire process of a mine lifecycle.

Figure 19 visualises the closure governance framework that should be used to ensure stakeholder engagement is part of the legislative framework. The closure governance framework should consist of statutory legislation, regulatory legislation, policies and guidelines to provide greater enforcement and greater detail for guidance. According to Boubacar et al. (2021) in this instance, the legislation aims to create an obligation in the form of an Act. The regulation, on the other hand, is a secondary legislation used for prescriptive and descriptive requirements and cannot contradict existing laws. On the other hand, policies are guidance documents used for achieving legislative requirements and are often referenced and produced by the government. Lastly, guidance documents explain the interpretations the regulatory agency provides and include how to apply and comprehend the laws and regulations

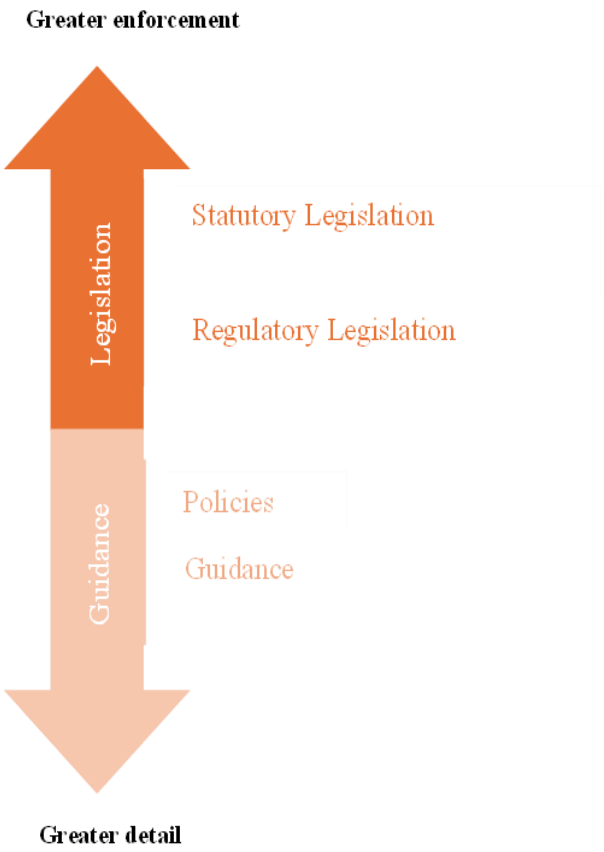

Figure 19: Mine closure governance framework for legislation and guidance to provide greater guidance and enforcement (World Bank, 2010)

In practical terms within the context of South Africa and the West Rand, statutory legislation is the Constitution of the Republic of South Africa and Acts of Parliament (NEMA or MPRDA). Regulatory legislation are regulations under, for instance, NEMA regulations or MPRDA regulations. Policies are, for instance, the national mining policy, and guidance documents include SLP guidelines or environmental management frameworks (EMFs).

In the context of stakeholder engagement, South African legislation needs to be amended (as proposed) to establish requirements in the legislation for stakeholder engagement. These requirements should ensure provisions of ongoing stakeholder engagement from the exploration phase to the closure and post-closure phases of the mining lifecycle. The content of the stakeholder engagement needs to be regularly reviewed by the DMRE competent persons. Guidance should be provided by the state using policies on stakeholder engagement, meaningful consultations and tools that can be used to conduct these engagements. This should be provided in the policies and guidelines documents.

Policy and guidelines should ensure provisions are made for minimum thresholds and suggest processes for stakeholder engagement in alignment with the suggested framework of stakeholder engagement. Policies and guidance documents should clearly define the different roles of stakeholders to promote accountability and transparency. Policies and guidance should also establish mechanisms for feedback to stakeholders. Different methods of communication have previously been outlined in this chapter under the stakeholder engagement framework. There should also be provision of guidelines to ensure meaningful stakeholder engagement through the reference of international best practices.

5.7 Chapter summary

The study has developed a stakeholder engagement framework to illustrate how stakeholder engagement should be adopted in the lifecycle of a mine. The development of the best practice stakeholder engagement framework led to strategies based on the research findings that can be used to promote ongoing stakeholder engagement in the West Rand and can be adopted in Sub-Saharan Africa as well. Therefore, fulfilling the fifth objective of this study. The stakeholder engagement for the West Rand factored into consideration the mining lifecycle most mining companies are in, which is the production phase, and most will be closing within the next 10-20 years. Therefore, the West Rand Stakeholder engagement framework does not run throughout the entire lifecycle. Hence it was important to show the best practice stakeholder engagement framework to portray how the West Rand's proposed framework differs from how it should have been throughout the entire lifecycle. The proposed stakeholder engagement framework in the West Rand, can also be adopted to Sub-Saharan Africa mining companies that are in the similar phase as the mines in the West Rand in term of the mining lifecycle.

The components that form the essence of stakeholder engagement framework include stakeholder mapping, consultation, information access, partnerships and negotiations, grievance procedures, and stakeholder reporting. These components are mirrored both from international best practices and within the West Rand. All these components feed into the broader purpose of ensuring all I&AP are informed, identified, consulted, and have access to information to make informed decisions. Also, mining companies together with all other stakeholders such as government, NGOs, CBO and all other stakeholders form partnerships to ensure sustainable closure of mines.

Components of stakeholder engagement based on international practices account for the fact that stakeholder engagement is a process that should be embedded throughout the lifecycle of a mine. Components proposed within the exploration phase include assessment of current and previous engagement and modification of such engagement through stakeholder mapping to reflect the existing stakeholders in a community. The planning and evaluation phase includes activities such as monitoring the interest of the stakeholders and involving them in ESIA scoping while maintaining a transparent communication of the impacts and incorporating them into the mine planning process. The construction phase involves risk identification and management of stakeholders likely to be gravely impacted by the construction of the mine while maintaining open communication and transparency. The production or operational phase includes maintenance of stakeholder engagement and continued monitoring of risks and impacts including commitment made in SLP when obtaining the social license to operate in the exploration, planning and evaluation phases. The last phase, which is the closure, is the engagement of all I&AP, the disclosure of rehabilitation and alternative economies while ensuring that all grievances are resolved

The components of the stakeholder engagement framework proposed for the West Rand start from the production phase, in contrast to the best practice framework due to the Lifecycle of many of the mines in the West Rand area. There is a significant need for mining companies to re-do their stakeholder identification and mapping as it does not cater for all stakeholders. Most importantly, mine closure is currently not discussed as part of the current meetings communities are called to, while it remains an inevitable socio-economic dire consequence. Topics linked to mine closure that should be discussed include alternative economies, rehabilitation activities, capacity-building workshops for communities in particular to understand the impacts associated with mine closure and provision of skills and training. In all stakeholder engagement, mining companies should refrain from telling half-truths on the impacts associated with closure. This creates unrealistic expectations on their side. The following chapter provides conclusions and recommendations for the study

.

Chapter 6: Conclusions and recommendations

This chapter is dedicated to summarising the findings and presenting the overall conclusions and recommendations of the study. These findings are crucial as they strengthen the gaps identified in the existing body of research and pave the way for future studies. Despite the unavoidable limitations such as time constraints and budget, this chapter reiterates the research aim and objectives, including the four guiding PRQs. The study's findings make a valuable contribution to the body of knowledge in the extractive industry on mine closure and stakeholder engagement.

In summary, this thesis aimed to use the West Rand communities as a lens to enhance understanding of the impacts of mine closure on host communities. This was ultimately done to propose strategies that could potentially improve the integration of host communities into mine closure plans within South Africa. The study was carried out through four research objectives. (1) To facilitate an understanding of the impacts of mine closure within the communities situated in the West Rand region. (2) To determine the legislative uncertainties that affect and impact the actions of mining corporations regarding decision-making and the ethical responsibility of involving host communities in mine closure plans. (3) To determine factors that enable and hinder communication transparency between mining corporations and host communities. (4) To propose an international best practice stakeholder engagement framework through a desktop review of international best practices. (5) Propose strategies to integrate host mining communities into mine closure plans in South Africa.

Four PRQs facilitated the objectives of this study, and these questions were supplemented by secondary research questions as annexed in this thesis. The first PRQ aimed to investigate the impacts of the mine closure and the mining industry on the mining community to disseminate an understanding of their associated social, environmental, and economic consequences. This, consequently, provided an answer to the first research objectives. These impacts were first explored in Chapter 2 from an international perspective, the African continent and, finally, the West Rand region. The impacts were further analysed in Chapter 4 of the research findings under the first PRQ. The findings through thematic analysis included health impacts, lawlessness and disorder, environmental degradation and socio-economic instability due to the closure of mines.

The second PRQ of this study shed light on existing legislative uncertainties and how these uncertainties present challenges and barriers to the integration of host mining communities. It also assisted the study in terms of policy recommendations and legislative reforms. This subsequently answered the second research objective of identifying factors within the legislative framework that perpetuates decisions of mining companies to treat stakeholder engagement as an optional administrative activity beyond the exploration phases and when they need to renew their Social License to Operate (SLO). Factors contributing to this are set out in Chapter 2 from the legal review of the legislative framework, which does not promote and lacks articulation to encourage stakeholder engagement. The findings from the study in Chapter 4, through thematic analysis, attributed these to regulatory failure, governance decay or systematic rot, institutional capacity constraints and captured institutions.

This study's third PRQ aimed to evaluate the current state of communication transparency amongst various stakeholders as a means of identifying factors that hinder communication transparency and poor stakeholder engagement outcomes. This question assisted the research regarding the third research objective of communication transparency. The findings from the study attributed these factors to knowledge and language barriers, community fragmentation due to lack of established structures and communication breakdown.

The desktop review of international best practices assisted in fulfilling the fourth research objective of this study and lastly, the fourth PRQ also used all the information gathered from the first PRQ to the third to present a framework reflecting the current status of the mining companies in the West Rand area and South Africa as a whole to promote proactive and ongoing stakeholder engagement, thus, fulfilling the fifth research objective of this study. The best practice stakeholder engagement framework ensures that stakeholder engagement is kept as a process that runs from the exploration phase of the mining lifecycle to the decommissioning phase. These findings propose strategies to promote the integration of host mining communities into the mine closure plan and consequently promote ongoing stakeholder engagement.

To foster stakeholder engagement in the West Rand area, several strategies have been proposed by this study. These include revising stakeholder mapping and identification to reflect the current community status, establishing stakeholder forums and community-mining structures to enhance information dissemination, and incorporating timelines, budgets, and scopes into engagement processes to improve quality of these engagements and reduce confusion. Consultation methods such as local radio stations and focus groups are recommended in the

West Rand. As the mines in the West Rand are near the end of their lifecycle, it is crucial to address closure topics like rehabilitation plans, capacity building, economic diversification, and monitoring programs. Communities should be equipped with information beforehand to make informed decisions. Information access can be enhanced focus groups and WhatsApp. Finally, grievance mechanisms and complaints should be monitored throughout the lifecycle of the mining operations.

The proposed framework and strategies promote ongoing stakeholder engagement in the West Rand that are inclusive and proactive. This framework can additionally be adopted by mining companies in Sub-Saharan African that mirror similar lifecycle as mining companies in the West Rand. The framework includes components vital to the gaps identified in the West Rand Communities, such as the involvement of host communities in decision-making, clear regulatory frameworks, and increased transparency, accountability, and community structures. Other challenges identified include information access and disengagement from the government, particularly the national government (DMRE). These gaps and challenges are also addressed.

The stakeholder engagement framework needs to be supplemented by supporting legislation and regulation. This includes amendment of public participation in NEMA and MPRDA (including all supporting Acts, standards, guidelines and policies as proposed) to ensure stakeholder engagement is an ongoing process mandated in the legislation and not carried as a once-off event in the application processes and EIA. The roles and responsibilities of all stakeholders, including I&AP, should be clearly defined in the legislation to promote accountability. Policies and guidelines, on the other hand, should ensure that minimum provisions and thresholds are met in alignment with the proposed stakeholder engagement framework and procedures to ensure meaningful stakeholder engagement through the reference of international best practices.

6.1 Contribution of the Study

South Africa lacks a comprehensive stakeholder engagement framework to ensure ongoing stakeholder involvement, the practical application and research that shows the current status of stakeholder engagement. Additionally, there are legislative gaps within the South African regulatory framework that allow mining companies to treat stakeholder engagement as a mere compliance checkbox exercise. This study proposes solutions to these issues by providing a

best practice stakeholder engagement framework and how stakeholder engagement should be integrated as a process that runs from the exploration phase of the mining lifecycle to closure. Additionally, the study articulates the current status of stakeholder engagement through the practical application in the West Rand, including strategies to promote robust engagement. All these solutions fill and address the current gaps. The need for a robust stakeholder engagement framework is also highlighted in the National Strategy for Derelict and Ownerless Mines (unpublished), which identifies stakeholder engagement as a core pillar for the country. Despite the contribution this study makes, there are areas of improvement or gaps identified that necessitate further research due to time and budgetary constraints that will further enhance the sustainable integration of host communities into mine closure planning and processes. Therefore, the study makes the following recommendations.

6.2 Recommendations for further research

- The study does not make a clear distinction between the different types of closure; as such, further research needs to be conducted on the impact of mine closure on host communities based on the type of closure that took place, either planned, sudden, temporary or legal closure.
- The proposed framework also does not factor in Aboriginal/indigenous communities. Thus, this opens a gap for future research on the impact of mine closure in Indigenous communities, including their inclusiveness in mine closure planning and processes through stakeholder engagement.
- Research on the social impacts of mine closure is lacking, and the existing research does not provide guidelines for quantification of the social effects so that they can be considered in management and financial provisioning, as often these impacts have a cascading and compounding effect to exceed the level of their initial risk or impact.
- Further research is needed on mechanisms that can be used to tighten the governance aspect (captured officials of the state) in relation to the regulatory framework perpetuated by the revolving door, which this study has labelled as a mechanism for state-captured institutions. Corruption is so pervasive and entrenched in the entire system that it would necessitate a study on its own.

6.3 Chapter Summary

This chapter aims to summarise the whole study and provide recommendations for aspects that could not be studied due to time and budgetary constraints. This includes the limitations. The study comprehensively fills the existing gap in knowledge and provides tools that promote sustainable ongoing stakeholder engagement within the extractive industry that runs throughout the mining lifecycle to promote sustainable closure of mines and overall sustainable development.

References

Ackermann, A., Botha, D. and Van der Waldt, G. (2018). Potential socio-economic consequences of mine closure. *The Journal for Transdisciplinary Research in Southern Africa*, 14(1): a458.

African Union. (2009). African mining vision. Addis Ababa: African Union. Available at: https://cirdis.uqam.ca/IMG/pdf/amv-en.pdf. [Date of access: 02 February 2023].

African Union. (2013). The country mining vision – CMV. Addis Ababa. African Union.

African Union Commission., African Development Bank. and United Nations Economic Commission for Africa. (2012). Building a sustainable future for Africa's extractive industry from vision to action: Action plan for implementing the AMV. Addis Ababa: Africa Mining Vision.

African Union Commission., United Nations Economic Commission for Africa. and African Development Bank (2012). The African Minerals development centre business plan. Addis Ababa, Ethiopia: African Union Commission.

Alberts, R. Wessels, J.A., Morrison-Saunders, A., McHenry, M.P., Sequeira, A.R., Mtegha, H. and Doepel, D. (2017). Complexities with extractive industries regulation on the African continent: What has "best practice" legislation delivered in South Africa?'. *The Extractive Industries and Society*, 4(2): 267–277. Available at: https://doi.org/10.1016/j.exis.2016.08.005.

Amoako, G.K. (2017). Relationship Between Corporate Social Responsibility (CSR) and Corporate Governance (CG): The Case of Some Selected Companies in Ghana'. In: Aluchna, M and Idowu, S.O. (eds). *Responsible Corporate Governance*. Cham: Springer International Publishing (CSR, Sustainability, Ethics & Governance): 151–174. Available at: https://doi.org/10.1007/978-3-319-55206-4_9.

Andrews, N. (2019). *Gold Mining and the Discourses of Corporate Social Responsibility in Ghana*. Cham: Springer International Publishing. Available at: https://doi.org/10.1007/978-3-319-92321-5.

Andrews-Speed, P. Ma, G., Shao, B. and Liao, C. (2005). Economic responses to the closure of small-scale coal mines in Chongqing, China. *Resources Policy*, 30(1): 39–54. Available at: https://doi.org/10.1016/j.resourpol.2004.12.002.

Anglo American. (2019). *Mine closure toolbox version 3*. Johannesburg: Anglo American plc.

Ansu-Mensah, P. P., Marfo, E.O., Awuah, L.S. and Amoako, K.O. (2021). Corporate social responsibility and stakeholder engagement in Ghana's mining sector: a case study of Newmont Ahafo mines. *International Journal of Corporate Social Responsibility*, 6(1):1-22. Available at: https://doi.org/10.1186/s40991-020-00054-2.

Armour, K. (2012) *Research Methods in Physical Education and Youth Sport*. 1st (Vol 1). London: Routledge. Available at: https://doi.org/10.4324/9780203807170.

Ashby, A.D., van Etten, E.J.B., Lund, M.A. 2016. *Pitfalls of gold mine sites in care and maintenance*. In: Fourie, AB, Tibbett, M (Eds.), Mine Closure 2016. Australian Centre for Geomechanics, Perth.

Asr, E.T., Kakaie, R., Ataei, M., Tavakoli Mohammadi, M.R., 2019. (2019). A review of studies on sustainable development in mining life cycle. *Journal of Cleaner Production*, 229: 213–231. Available at: https://doi.org/10.1016/j.jclepro.2019.05.029.

Atlas, A. (2016) *Mapping Mining to the Sustainable*.

Auditor-General. (2022). Auditor-General calls for stricter management in rehabilitating abandoned mines and mine openings. Auditor General South Africa. Available at: https://www.agsa.co.za/Portals/0/Reports/Special%20Reports/2021/2022%20%20MEDIA%20STATEMENT%20(Derelict%20and%20Ownerless%20Mines%20Performance%20Report)%20FINAL%20(002).pdf?ver=2022-03-31-102059-447&timestamp=1648714873244 [Date of access: 21 August 2023].

Aurous Resources. (2024). About the company. Available at: https://blyvoorgold.com/about-us/#aboutmine [Date of access: 20 January 2024].

Australian and New Zealand Minerals and Energy Council. (2000). Strategic Framework for Mine Closure. Perth, Australia: Australian Government Printing Office.

Australian Government. (2016). *Mine rehabilitation: leading practice sustainable development programme for the mining industry*. Australian Government. Available at: https://www.industry.gov.au/sites/default/files/2019-04/lpsdp-mine-rehabilitation-handbook-english.pdf.

Bahadorestani, A., Karlsen, J.T. and Motahari Farimani, N. (2019). A Comprehensive Stakeholder-Typology Model Based on Salience Attributes in Construction Projects. *Journal of Construction Engineering and Management*, 145(9): 04019048. Available at: https://doi.org/10.1061/(ASCE)CO.1943-7862.0001684.

Bainton, N. and Holcombe, S. (2018). A critical review of the social aspects of mine closure. *Resources Policy*, 59: 468–478. Available at: https://doi.org/10.1016/j.resourpol.2018.08.020.

Bansal, P. and DesJardine, M.R. (2014). Business sustainability: It is about time. *Strategic Organization*, 12(1):70–78. Available at: https://doi.org/10.1177/1476127013520265.

Bega, S. (2021). South Africa's closed mines must not shaft people. Available at: https://mg.co.za/environment/2021-08-14-south-africas-closed-mines-must-not-shaft-people/ [Date of access: 2 August 2023].

Bentel, G. (2009). Key closure planning considerations. In: Fourie, A.B and Tibbett, M (eds) *Proceedings of the 4th International Conference of Mine Closure*. Perth, Australia: Australian Centre for Geomechanics.

Blackmore, A. (2015). The relationship between the NEMA and the Public Trust Doctrine: The importance of the NEMA Principles in Safeguarding South Africa's Biodiversity. *South African Journal of Environmental Law and Policy*, 20(2):89-118.

Boadi, E.A. He, Z., Darko, D.F. and Abrokwah, E. (2018). Unlocking from Community Stakeholders, Corporate Social Responsibility (CSR) projects for effective Company–Community relationship. *Labor History*, 59(6): 746–762. Available at: https://doi.org/10.1080/0023656X.2018.1470223.

Bocken, N., Boons, F. and Baldassarre, B. (2013). A value mapping tool for sustainable business modelling. *Corporate Governance: The international journal of business in society*, 13(5): 482–497. Available at: https://doi.org/10.1108/CG-06-2013-0078.

Bocken, N., Boons, F. and Baldassarre, B. (2019). Sustainable business model experimentation by understanding ecologies of business models. *Journal of Cleaner Production*, 208: 1498–1512. Available at: https://doi.org/10.1016/j.jclepro.2018.10.159.

Boubacar, B., Lori, H.K., Narine, T., Raymond, M.G.J., Maria, F.R., Gayane, M. and Qing, W. (2021). *Mine Closure : A Toolbox for Governments*. 157963. Washington, D.C: World Bank Group. Available at: http://documents.worldbank.org/curated/en/278831617774355047/Mine-Closure-A-Toolbox-for-Governments [Date of access: 2 August 2023].

Brierley, J.A. (2017). The role of a pragmatist paradigm when adopting mixed methods in behavioural accounting research. *International Journal of Behavioural Accounting and Finance*, 6(2): 140. Available at: https://doi.org/10.1504/IJBAF.2017.086432.

Brock, D., Weeks, B. and Heyes, J. (2019). Introducing the International Council on Mining and Metals' Integrated Mine Closure Good Practice Guide. In: *13th International Conference on Mine Closure*, pp. 781–788. Available at: https://doi.org/10.36487/ACG_rep/1915_63_Brock.

Bryman, A. (2012). *Social research methods* (Vol 4). New York: Oxford University Press.

Bulbulia, T. (2023). Investment, management engenders turnaround at Blyvoor mine. *Mining Weekly*. Available at: https://www.miningweekly.com/article/investment-management-engenders-turnaround-at-blyvoor-mine-2023-01-27 [Date of access: 23 April 2024].

Candi, M., Melia, M. and Colurcio, M. (2019). Two Birds with One Stone: The Quest for Addressing Both Business Goals and Social Needs with Innovation. *Journal of Business Ethics*, 160(4): 1019–1033. Available at: https://doi.org/10.1007/s10551-018-3853-y.

Centre for Legal Studies. (2022). *Social and Labour Plan Mining Community Toolkit*. Johannesburg, University of the Witwatersrand.

Cesare, P. and Maxwell, P. (2003). Mine closure legislation in Indonesia: The role of mineral industry involvement. *Natural Resources Forum*, 27(1): 42–52. Available at: https://doi.org/10.1111/1477-8947.00039.

Chen, J., Dyball, M.C. and Harrison, G. (2020). Stakeholder salience and accountability mechanisms in not-for-profit service delivery organizations. *Financial Accountability & Management*, 36(1): 50–72. Available at: https://doi.org/10.1111/faam.12217.

Chipangamate, N.S. Nwaila, G.T., Bourdeau, J.E. and Zhang, S.E. (2023). Integration of stakeholder engagement practices in pursuit of social licence to operate in a modernising mining industry. *Resources Policy*, 85: 103851.

Clarkson, M.B.E. (1995). A Stakeholder Framework for Analysing and Evaluating Corporate Social Performance. *The Academy of Management Review*, 20(1): 92. Available at: https://doi.org/10.2307/258888.

Claudia Sales Rosa, J., A. Morrison-Saunders and Sánchez, L.E. (2018). Improving Stakeholder Engagement in Closure Planning through an Ecosystem Services Approach. In: *2nd International Congress on Planning for Closure of Mining Operations.* Santiago, Chile.

Clegg, L. (2013). The World Bank and the Reconstruction of Stakeholder Engagement. In: Clegg, L. *Controlling the World Bank and IMF*. London: Palgrave Macmillan UK, pp. 93–125. Available at: https://doi.org/10.1057/9781137274557_4.

Cole, M., Chimbganda, T., Esau, M., Abrams, A. and Broadhurst, J. (2024) *Developing Mine Closure Risk Ratings and a Post-closure Opportunity Framework for South Africa*. WRC Report No. TT 930/23. Cape Town: University of Cape Town.

Cole, M.J. and Broadhurst, J.L. (2020). Mapping and classification of mining host communities: A case study of South Africa. *The Extractive Industries and Society*, 7(3): 954–964. Available at: https://doi.org/10.1016/j.exis.2020.06.007.

Cooperative governance & traditional affairs. (2020). Profile: West Rand District Municipality Gauteng'. Available at: https://www.cogta.gov.za/ddm/wp-content/uploads/2020/07/West_Rand_District_Profile.pdf. [Date of access: 04 March 2023]

Costa, S. (2016). Social impacts of mine closure: engaging employees and host communities in planning for closure. Available at: https://doi.org/10.14288/1.0305870.

Creamer, M. (2022). Good-to-do R2.5bn Mogale Gold project an all-round win-win – Pan African. *Mining Weekly*. Available at: https://www.miningweekly.com/article/good-to-do-

r25bn-mogale-gold-project-an-all-round-win-win-pan-african-2022-07-06 [Date of access: 12 April 2023].

Creswell, J.W. (2009). *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches*. (Vol 3). Thousand Oaks, CA: SAGE Publication.

Crous, C. Owen, J.R., Marais, L., Khanyile, S. and Kemp, D. (2021). Public disclosure of mine closures by listed South African mining companies. *Corporate Social Responsibility and Environmental Management*, 28(3): 1032–1042. Available at: https://doi.org/10.1002/csr.2103.

De Grandis, G. and Halgunset, V. (2016). Conceptual and terminological confusion around personalised medicine: a coping strategy. *BMC Medical Ethics*, 17(1): 43. Available at: https://doi.org/10.1186/s12910-016-0122-4.

Del Baldo, M. and Aureli, S. (2019). Anticipating and Assessing Corporate Social Responsibility Within ISO 26000 Implementation: The Experience of Camst Cooperative (Italy). ISO 26000 - A Standardized View on Corporate Social Responsibility: Practices, Cases and Controversies: 115-136.

Department of Mineral Resources and Energy and the Council for Geosciences. (2024). *National Strategy for ownerless and derelict Mines in South Africa*. Unpublished paper. Pretoria. Government Printer

Delmas, M. and Toffel, M.W. (2004). Stakeholders and environmental management practices: an institutional framework. *Business Strategy and the Environment*, 13(4): 209–222. Available at: https://doi.org/10.1002/bse.409.

Dikgwatlhe, P. and Mulenga, F. (2023). Perceptions of local communities regarding the impacts of mining on employment and economic activities in South Africa. *Resources Policy*, 80: 103138. Available at: https://doi.org/10.1016/j.resourpol.2022.103138.

Dobele, A.R. Westberg, K., Steel, M. and Flowers, K. (2014). An Examination of Corporate Social Responsibility Implementation and Stakeholder Engagement: A Case Study in the Australian Mining Industry. *Business Strategy and the Environment*, 23(3): 145–159. Available at: https://doi.org/10.1002/bse.1775.

Dörnyei, Z. (2007) *Research Methods in Applied Linguistics*. New York: Oxford University Press.

Drusche, O. and Krause, S. (2021). Potentials of business model innovation and values-based management approaches in the mining sector. In: *E3S Web of Conferences*. (Vol. 266, p. 06004). EDP Sciences. Available at: https://doi.org/10.1051/e3sconf/202126606004.

Economic Commission for Africa and Southern African Development Community. (2004). Harmonization of mining policies, standards, legislative and regulatory frameworks in Southern Africa. Lusaka: United Nations Economic Commission for Africa, Southern Africa Office.

Edwards, J. and Maritz, A. (2019). Social aspects of mine closure: the elephant in the room. In. *13th International Conference on Mine Closure*, pp. 305–316. Available at: https://doi.org/10.36487/ACG_rep/1915_25_Edwards.

Ellen, R.F. (1984). *Ethnographic research: A guide to general conduct*. New York: Academic Press.

Etikan, I. (2016). Comparison of Convenience Sampling and Purposive Sampling. *American Journal of Theoretical and Applied Statistics*, 5(1): 1-4. Available at: https://doi.org/10.11648/j.ajtas.20160501.11.

Everingham, J. MacKenzie, S., Svobodova, K. and Witt, K. (2020). Participatory processes, mine closure and social transitions. Centre for Social Responsibility in Mining. University of Queensland.

Feris L and Kotzé L. (2014). The Regulation of Acid Mine Drainage in South Africa: Law and Governance Perspectives. *Potchefstroom Electronic Law Journal,* (17)5: 2105-2163

Fourie, A.B. and Tibbett, M. (2019) 'Social aspects of mine closure: the elephant in the room', in. Australian Centre for Geomechanics, Perth.

Gall, M.D., Gall, J.P. and Borg, W.R. (2003) *Educational research: An introduction* (Vol 7). Boston, MA: Pearson.

Garcia, D. (2008). Overview of international mine closure guidelines. In: *Proceedings of the 3rd International Professional Geology Conference*. Arizona: American Institute of Professional Geologist.

Garvey, N. and Newell, P. (2005). Corporate accountability to the poor? Assessing the effectiveness of community-based strategies. *Development in Practice*, 15(3–4): 389–404. Available at: https://doi.org/10.1080/09614520500075763.

Gauteng Department of Treasury. (2022). *Gauteng Province Socio-Economic Review and Outlook (SERO)2022*. Gauteng. Available at: https://www.gauteng.gov.za/Publications/PublicationDetails/%7B3b1d6cf1-6b3e-4856-86b2-f12e4be5e852%7D [Date of access: 07 July 2024]

Getty, R. and Morrison-Saunders, A. (2020). Evaluating the effectiveness of integrating the environmental impact assessment and mine closure planning processes. *Environmental Impact Assessment Review*, 82: 106366. Available at: https://doi.org/10.1016/j.eiar.2020.106366.

Golafshani, N. (2015). Understanding Reliability and Validity in Qualitative Research. *The Qualitative Report* [Preprint]. Available at: https://doi.org/10.46743/2160-3715/2003.1870.

Gold Fields. (2022). Gold Fields South Deep Gold Mine: Social and Labour Plan 2018-2022. Available at: https://www.goldfields-southdeep.co.za/downloads/send/23-documents/84-south-deep-social-and-labour-plan-2018-2022.

Goldkuhl, G. (2012). Pragmatism vs interpretivism in qualitative information systems research. *European Journal of Information Systems*, 21(2): 135–146. Available at: https://doi.org/10.1057/ejis.2011.54.

Good International Industry Practice. (2017). Washington, DC. Available at: https://asiasociety.org/policy-institute/navigating-belt-road-initiative-toolkit/glossary/social/good-international-industry-practice-giip#:~:text=The%20exercise%20of%20professional%20skill,similar%20circumstances%20globally%20or%20regionally [Date of access: 23 September 2024]

Goodland, R. 2012. Responsible mining: the key to profitable resource development. *Sustainability*, 4(9): 2099-2126.

Government of Western Australia. (2015). Guidelines for Preparing Mine Closure Plans. Department of Mines and Petroleum Environmental Protection Authority.

Government of Western Australia. (2020). *Guidelines for preparing mine closure plans*. Australia: Department of Mines and Petroleum, Environmental Protection Authority.

Government of South Africa. (1998). *National Environmental Management Act 107 of 1998*. Cape Town. Government Printer.

Government of South Africa. (2003). *National Environmental Management Amendment Act 46 of 2003*. Cape Town. Government Printer

Government of South Africa. (2004). *National Environmental Management Amendment Act 8 of 2004*. Cape Town. Government Printer.

Government of South Africa. (2008). *National Environmental Management Amendment Act 62 of 2008*. Cape Town. Government Printer

Government of South Africa. (2008). *National Environmental Management Laws Amendment Act 44 of 2008*. Cape Town. Government Printer

Government of South Africa. (2002). *Mineral and Petroleum Resources Development Act 28 of 2002*. Cape Town. Government Printer.

Government of South Africa. (2008). *Mineral and Petroleum Resources Development Amendment Act 49 of 2008*. Cape Town. Government Printer.

Government of South Africa. (2004). *National Environmental Management: Air Quality Act 39 of 2004*. Cape Town. Government Printer.

Government of South Africa. (2004). *National Environmental Management: Air Quality Act 39 of 2004*. Cape Town. Government Printer.

Government of South Africa. (2008). *National Environmental Management: Waste Act 59 of 2008*. Cape Town. Government Printer.

Government of South Africa. (2003). *National Environmental Management: Protected Areas Act 57 of 2003*. Cape Town. Government Printer.

Government of South Africa. (1998). *National Water Act 36 0f 1998*. Cape Town. Government Printer.

Global Reporting Initiative. (2024). Global Reporting Initiative. Available at: https://www.globalreporting.org/ [Date of access: 13 September 2024].

Gregory, A.J., Atkins, J.P., Midgley, G. and Hodgson, A.M. (2020). Stakeholder identification and engagement in problem structuring interventions. *European Journal of Operational Research*, 283(1): 321–340. Available at: https://doi.org/10.1016/j.ejor.2019.10.044.

Hamann, R. (2004). Corporate social responsibility, partnerships, and institutional change: The case of mining companies in South Africa. *Natural Resources Forum*, 28(4): 278–290. Available at: https://doi.org/10.1111/j.1477-8947.2004.00101.x.

Harmony Gold. (2023). Doornkop. Harmony. Available at: https://www.harmony.co.za/operations/south-africa/underground/doornkop/.

Heiberg, T. and Shabalala, Z. (2019). Sibanye's $286 million Lonmin takeover gets all clear from shareholders. Available at: https://www.reuters.com/article/business/finance/sibanyes-286-million-lonmin-takeover-gets-all-clear-from-shareholders-idUSL8N23423D/ [Date of access: 13 July 2024].

Heikkinen, P.M., Noras, P. and Salminen, R. (2008). *Mine Closure Handbook: Environmental Techniques for the Extractive Industries*. Vammalan Kirjapaino Oy. Available at: https://tupa.gtk.fi/julkaisu/erikoisjulkaisu/ej_074.pdf.

Heikkinen, P.M. and Räisänen, M.L. (2008). Mineralogical and geochemical alteration of Hitura sulphide mine tailings with emphasis on nickel mobility and retention. *Journal of Geochemical Exploration*, 97(1): 1–20. Available at: https://doi.org/10.1016/j.gexplo.2007.09.001.

Hesse-Biber, S. and Nagy Leavy, P. (2011). *The practice of qualitative research* (Vol 2). New York: SAGE Publication.

Heugens, P.P.M.A.R., Van Den Bosch, F.A.J. and Van Riel, C.B.M. (2002). Stakeholder Integration: Building Mutually Enforcing Relationships. *Business & Society*, 41(1): 36–60. Available at: https://doi.org/10.1177/000765030204100104.

Holtzhausen, L. and Fourie, L. (2011). Employer–employee relationships at Lonmin Platinum: A developing South African perspective. *Communication*, 37(1): 155–172. Available at: https://doi.org/10.1080/02500167.2011.556093.

Horowitz, L.S., Keeling, A., Lévesque, F., Rodon, T., Schott, S. and Thériault, S. (2018) 'Indigenous peoples' relationships to large-scale mining in post/colonial contexts: Toward multidisciplinary comparative perspectives. *The Extractive Industries and Society*, 5(3): 404–414. Available at: https://doi.org/10.1016/j.exis.2018.05.004.

Hoskins, W. (2005). Mine Closure: the 21st Century Approach- Avoiding Future Abandoned Mines. In: in Bastida, E., Wälde, T and J. Warden-Fernánde (eds) *International and Comparative Mineral Law and Policy. Trends and Prospects*. Kluwer: The Hague, pp. 627–639.

International Council for Mining and Metal. (2015). *Stakeholder Research Toolkit*. Available at: https://www.icmm.com/website/publications/pdfs/social-performance/2015/guidance_stakeholder-research.pdf [Date of access: 05 March 2023]

ENCA. (2023). Illegal mining: Krugersdorp residents fear for their lives. Available at: https://www.enca.com/top-stories/illegal-mining-krugersdorp-residents-fear-their-lives [Date of access: 12 September 2024].

International Council for Mining and Metals. (2015). *Good Practice Guide: Indigenous Peoples and Mining* (Vol 2). London: International Council on Mining and Metals. Available at: https://www.icmm.com/en-gb/guidance/social-performance/2015/indigenous-peoples-mining.

International Council for Mining and Metals (2019) *Integrated Mine Closure: Good Practice Guide* (Vol 2). Available at: https://www.icmm.com/website/publications/pdfs/environmental-stewardship/2019/guidance_integrated-mine-closure.pdf?cb=60008.

International Finance Corporate (IFC). (2007). *Stakeholder engagement: A good practice handbook for companies doing business in emerging markets*. Washington, DC: International Finance Corporation.

International Finance Corporation (IFC). (2000). General Environmental, Health, and Safety Guidelines. Available at: https://www.ifc.org/en/insights-reports/2000/general-environmental-health-and-safety-guidelines [Date of access: 13 September 2024].

International Finance Corporation (IFC). (2019). Papua New Guinea - Improving Access to and Value from Health Services in PNG Project : Financing the Frontlines : Environmental Assessment : Stakeholder Engagement Framework (English). Washington, DC. Available at: https://documents.worldbank.org/en/publication/documents-reports/documentdetail/201081570170953344/stakeholder-engagement-framework [Date of access: 12 August 2024]

International Institute for Sustainable Development. (2021). *Global Review: Financial assurance governance for the post-mining transition*. Canada. Available at: https://www.iisd.org/system/files/2021-09/financial-assurance-governance-for-post-mining-transition.pdf [Date of access: 03 October 2024]

International Institute for Sustainable Development. (2023). *Relinquishment of Closed Mine Sites: Policy steps for governments*. Canada. Available at: https://www.iisd.org/publications/report/relinquishment-closed-mines-policy-steps-for-governments [Date of access: 04 October 2024]

Initiative for Responsible Mining Assurance. (2018). *IRMA Standard for Responsible Mining*. IRMA-Standard (Vol 1). Seattle, Washington.

Jamasmie, C. (2024). Sibanye-Stillwater to axe 4,000 jobs in gold mines restructuring', *Mining.com*. Available at: https://www.mining.com/sibanye-stillwater-to-axe-4000-jobs-in-gold-mines-restructuring/ [Date of access: 03 October 2024]

Jenkins, H. (2004). Corporate social responsibility and the mining industry: conflicts and constructs. *Corporate Social Responsibility and Environmental Management*, 11(1): 23–34. Available at: https://doi.org/10.1002/csr.50.

Johnson, S.L. and Wright, A.H. (2003). *Mine void water resource issues in Western Australia*. Report HG,9. Water and Rivers Commission. Available at: https://www.dmp.wa.gov.au/Documents/Minerals/minerals-

minerals_guidelines_and_environmental_notes-mine_void_water_resources.pdf [Date of access: 13 June 2024]

Kasimba, S.A. and Lujala, P. (2022). Community based participatory governance platforms and sharing of mining benefits: evidence from Ghana. *Community Development Journal*, 57(4): 635-654. Available at: https://doi.org/10.1093/cdj/bsab021.

Kozłowska-Woszczycka, A. and Pactwa, K. (2022). Social License for Closure—A Participatory Approach to the Management of the Mine Closure Process. *Sustainability*, 14(11): 6610. Available at: https://doi.org/10.3390/su14116610.

Krause, R.D. and Snyman, L.G. (2014). Rehabilitation and Mine Closure Liability: An Assessment of the Accountability of the System to Communities. In: *International Conference of Mine Closure*, Sandton, Johannesburg: Centre for Applied Legal Studies, University of the Witwatersrand.

Kritzinger, A.S. (2017). S*ocio-economic impact assessment of the proposed cessation of pumping and associated closure of the underground workings of the Ezulwini operations of Sibanye Gold. In Gauteng Province*. Westonaria, Gauteng. Available at: https://www.jaws.co.za/wp-content/uploads/2020/03/Sibanye-SEIA_10-July-2017-1.pdf [Date of access: 03 March 2023]

Krstic, N. (2014). Stakeholder management from the business perspective. *Megatrend revija*, 11(2): 165–182. Available at: https://doi.org/10.5937/MegRev1402165K.

Kruger, L. and Sandham, L.A. (2018). Social impact assessment: practitioner perspectives of the neglected status in South African SIA. *South African Geographical Journal*, 100(3): 394–411. Available at: https://doi.org/10.1080/03736245.2018.1503090.

Kujala, J., Sachs, S., Leinonen, H., Heikkinen, A. and Laude, D. (2022). Stakeholder Engagement: Past, Present, and Future. *Business & Society*, 61(5): 1136–1196. Available at: https://doi.org/10.1177/00076503211066595.

Kusambiza-Kiingi, M., Nel, V. and Gbadegesin, J. (2024). West Rand Decline in South Africa's economic heartland. In: Matebesi, S and Marais, L (eds) *Local Responses to Mine Closure in South Africa* (Vol 1). South Africa: Routledge. Available at:

https://www.taylorfrancis.com/chapters/edit/10.4324/9781003403326-6/west-rand-margaret-kusambiza-kiingi-verna-nel-job-gbadegesin.

Lamb, D., Erskine, P.D., Fletcher, A. 2015. Widening Gap Between Expectations and Practice in Australian Minesite Rehabilitation. *Ecological Management and Restoration*, (16)3.

Laurence, D. (2006). Optimisation of the mine closure process. *Journal of Cleaner Production*, 14(3–4): 285–298. Available at: https://doi.org/10.1016/j.jclepro.2004.04.011.

Laurence, D.C. (2002). Optimising Mine Closure Outcomes for the Community - Lessons Learnt. *Minerals & Energy - Raw Materials Report*, 17(1): 27–38. Available at: https://doi.org/10.1080/140410402760018084.

Lehutso, M. (2018). *An assessment of the efficacy of South Africa's legal framework in addressing key challenges related to liability for mine closure and rehabilitation*. (Masters-Thesis). University of Pretoria.

Lemke, A.A. and Harris-Wai, J.N. (2015). Stakeholder engagement in policy development: challenges and opportunities for human genomics. *Genetics in Medicine*, 17(12): 949–957. Available at: https://doi.org/10.1038/gim.2015.8.

Maeko, T. (2020). Blyvooruitzicht: A glimmer of hope between the sewage, rats and fear', *Mail & Guardian*. Available at: https://mg.co.za/article/2020-02-14-blyvooruitzicht-a-glimmer-of-hope-between-the-sewage-rats-and-fear/ [Date of access: 25 June 2023]

Magadzu, M.S. (2021). *Mine closure narratives in Blyvoorutizicht Gold Mine in West Rand, South Africa*. (Masters-Thesis). University of the Free State.

Majela, K. (2022). *Exploring vulnerabilities and social resilience of mining communities due to mine closure*. Unpublished Honours Project. North-West University.

Mantshantsha, S. (2023). Sibanye-Stillwater cuts over 1 000 gold jobs at its Kloof mine', *News24*. Available at: https://www.news24.com/fin24/companies/sibanye-stillwater-cuts-over-1-000-gold-jobs-at-its-kloof-mine-20231204 Date of access [12 September 2024]

Maphanga, T., Shale, K., Gqomfa, B. and Zungu, V.M. (2023). The state of public participation in the EIA process and its role in South Africa: a case of Xolobeni. *South*

African Geographical Journal, 105(3): 277–305. Available at: https://doi.org/10.1080/03736245.2022.2087726.

Marais, L. (2013a). Resources policy and mine closure in South Africa: The case of the Free State Goldfields. *Resources Policy*, 38(3): 363–372. Available at: https://doi.org/10.1016/j.resourpol.2013.04.004.

Marais, L. (2013b). The Impact of Mine Downscaling on the Free State Goldfields. *Urban Forum*, 24(4): 503–521. Available at: https://doi.org/10.1007/s12132-013-9191-3.

Marais, L., Ndaguba, E., Mmbadi, E., Cloete, J. and Lenka, M. (2022). Mine closure, social disruption, and crime in South Africa. *The Geographical Journal*, 188(3): 383–400. Available at: https://doi.org/10.1111/geoj.12430.

Marais, L. and Atkinson, D. (2006). Towards a post-mining economy in a small town: challenges, obstacles and lessons from South Africa. In: *Desert Knowledge Conference*, Alice Springs, Australia: University of the Free State, p. 19.

Marais, L. and De Lange, A. (2021). Anticipating and planning for mine closure in South Africa. *Futures*, 125: 102669. Available at: https://doi.org/10.1016/j.futures.2020.102669.

Matebesi, S., Marais, L. and Nel, V. (2023). *Local Responses to Mine Closure in South Africa: Dependencies and Social Disruption* (Vol 1). London: Routledge. Available at: https://www.taylorfrancis.com/books/9781003403326

Mathebula, N. (2014). Bekkersdal land invasion: community won't budge', *Randfontein Herald*. Available at: https://www.citizen.co.za/randfontein-herald/news-headlines/2014/01/31/bekkersdal-land-invasion-community-wont-budge/ [Date of access: 24 June 2023]

Mathison, S. (1988). Why Triangulate? *Educational Researcher*, 17(2): 13–17. Available at: https://doi.org/10.3102/0013189X017002013.

Matikainen, L.S. (2022). Addressing Sustainability in the Mining Industry Through Stakeholder Engagement. *South Asian Journal of Business and Management Cases*, 11(1): 35–48. Available at: https://doi.org/10.1177/22779779221078673.

McCullough, C. (2016). Key mine closure lessons still to be learned. In: *Mine Closure 2016*, pp. 325–338. Available at: https://doi.org/10.36487/ACG_rep/1608_23_mccullough.

McDonald, P., Mayes, R. and Pini, B. (2012). Mining Work, Family and Community: A Spatially-Oriented Approach to the Impact of the Ravensthorpe Nickel Mine Closure in Remote Australia. *Journal of Industrial Relations*, 54(1): 22–40. Available at: https://doi.org/10.1177/0022185611432382.

McKay, D. (2024). Blyvoor Gold announces plans to list on Nasdaq. Available at: https://www.miningmx.com/news/gold/56250-blyvoor-gold-to-announces-plans-to-list-on-nasdaq/ [Date of access: 6 May 2024].

MCMPR and MCA. 2010. *Strategic Framework for Managing Abandoned Mines in the Minerals Industry*. Ministerial Council on Mineral and Petroleum Resources (MCMPR) and Minerals Council of Australia (MCA), Canberra.

Mensah, H., Agyapong, A. and Oteng-Abayie, E. (2017). Making Corporate Social Responsibility Work: Do Rural and Community Banks (RCBs) in Ghana Care at All?. *The Qualitative Report* [Preprint]. Available at: https://doi.org/10.46743/2160-3715/2017.2787.

Merafong City Local Municipality. (2021). *Merafong City Local Municipality Review of 2016-2021 Integrated Development Plan*. Carletonville: Merafong City Local Municipality.

Miller, O. (2014). The Negotiation Style: A Comparative Study between the Stated and in-Practice Negotiation Style. *Procedia - Social and Behavioral Sciences*, 124: 200–209. Available at: https://doi.org/10.1016/j.sbspro.2014.02.478.

Mining Review Africa. (2022). Pan African closes transaction to acquire Mintails SA assets'. Available at: https://www.miningreview.com/gold/pan-african-closes-transaction-to-acquire-mintails-sa-assets/ [Date of access: 04 May 2024]

Mining Technology. (2008). Ezulwini Uranium and Gold Mine, Gauteng. Available at: https://www.mining-technology.com/projects/ezulwini/ [Date of access: 06 February 2023]

Mining Weekly. (2023). Legal requirements for mine closure in South Africa. *Creamer Media*, 6 July. Available at: https://www.miningweekly.com/article/legal-requirements-for-mine-closure-in-south-africa-2023-07-

06#:~:text=National%20Environmental%20Management%20Act%20(Act,activities%20which%20require%20Environmental%20Authorization [Date of access: 21 March 2023].

Ministry Energy and Natural Resources. (2017). *Guidelines for Closure Planning in Quebec*. Canada: Ministry Energy and Natural Resources.

Mitchell, J.R., Mitchell, R.K., Hunt, R.A., Townsend, D.M., Lee, J.H. (2022). Stakeholder Engagement, Knowledge Problems and Ethical Challenges. *Journal of Business Ethics*, 175(1): 75–94. Available at: https://doi.org/10.1007/s10551-020-04550-0.

Morrison-Saunders, A. (2019). The action is where the social is! The ecosystem services concept and other ideas for enhancing stakeholder engagement in integrated mine closure planning. In: *13th International Conference on Mine Closure*, pp. 5–18. Available at: https://doi.org/10.36487/ACG_rep/1915_02_Morrison-Saunders.

Mtegha, H.D., Cawood, F.T. and Minnitt, R.C.A. (2006). National minerals policies and stakeholder participation for broad-based development in the southern African development community (SADC). *Resources Policy*, 31(4): 231–238. Available at: https://doi.org/10.1016/j.resourpol.2007.03.001.

Murombo, T. (2008). Beyond Public Particpation: The disjuncture between South Africa\'s Environmental Impact Assessment (EIA) Law and Sustainable Development. *Potchefstroom Electronic Law Journal/Potchefstroomse Elektroniese Regsblad*, 11(3): 1–31.

Mzembe, A.N. (2016). Doing Stakeholder Engagement Their own Way: Experience from the Malawian Mining Industry. *Corporate Social Responsibility and Environmental Management*, 23(1): 1–14. Available at: https://doi.org/10.1002/csr.1353.

Namibian Government. (2019). *Care and maintenance, closure and completion*. Erongo, Namibia. Available at: https://www.namibianuranium.org/wp-content/uploads/2020/08/Best-Practice-Guide-in-Mining-Part-5_Closure_2019-small.pdf [Date of access: 23 July 2023]

Nana, R.K.H.M. and Beddewela, E. (2019). The politics of corporate social responsibility in the mining industry in Burkina Faso. *Africa Journal of Management*, 5(4): 358–381. Available at: https://doi.org/10.1080/23322373.2019.1676099.

Natural Resource Governance Institute. (2014). *National Resource Charter*. Available at: https://resourcegovernance.org/sites/default/files/documents/nrcj1193_natural_resource_charter_19.6.14.pdf [Date of access: 10 February 2023].

Neingo, P.N. and Tholana, T. (2016). Trends in productivity in the South African gold mining industry. *Journal of the Southern African Institute of Mining and Metallurgy*, 116(3): 283-290. Available at: https://doi.org/10.17159/2411-9717/2016/v116n3a10.

NSW, Auditors Office. 2017. *Mining Rehabilitation Security Deposits, Department of Planning and Environment.* New South Wales Auditor-General's Report - Performance Audit

O'Faircheallaigh, F. and Lawrence, R. (2019). Mine closure and the Aboriginal estate. *Australian Aboriginal Studies*, 1: 65–81.

Office of the United Nations High Commissioner for Human Rights (OHCHR). (2011). *Guiding Principles on Business and Human Rights*. Available at: https://www.ohchr.org/sites/default/files/documents/publications/guidingprinciplesbusinesshr_en.pdf [Date of access: 13 September 2024].

Hoon, OH.., Shin, J. and Ho, S.S.H. (2023). Conflicts between mining companies and communities: Institutional environments and conflict resolution approaches. *Business Ethics, the Environment & Responsibility*, 32(2): 638–656. Available at: https://doi.org/10.1111/beer.12522.

Olalde, M. (2018). Mintails collapse: case study in how not to close mines. *Oxpeckers*. Available at: https://oxpeckers.org/2018/08/mintails-collapse/.

O'Riordan, L. and Fairbrass, J. (2008). Corporate Social Responsibility (CSR): Models and Theories in Stakeholder Dialogue. *Journal of Business Ethics*, 83(4): 745–758.

Otto, J.M. (1997). A national mineral policy as a regulatory tool. *Resources Policy*, 23(1–2): 1–7. Available at: https://doi.org/10.1016/S0301-4207(97)00007-X.

Owen, J.R. and Kemp, D. (2018). Mine closure and social performance: An industry discussion paper. In: *Centre for Social Responsibility in Mining, Sustainable Minerals Institute*. Brisbane: The University of Queensland.

Pape, U.B. (2021) *A critical analysis of the evolution of public participation in environmental decision-making in the South African mining sector*. (Masters-Thesis). University of Pretoria.

Parker, C., Scott, S. and Geddes, A. (2019). *Snowball sampling*. New York: SAGE Publication.

Peter, L., Patrick, L. and Muller, E. (2021). Key consequences of the Gauteng High Court's decision in Minerals Council of South Africa v The Minister of Mineral Resources and Energy and Thirteen Others (Case No. 20341/19)(Mining Charter III Judgment)', 28 September. Available at: https://www.lexology.com/library/detail.aspx?g=de622f59-6c08-4a0c-9f37-38e01da2cc98 [Date of access: 10 July 2024].

Pepper, M., Hughes, M. and Haigh, Y. 2021. Loophole or lifeline? The policy challenges of mines in care and maintenance. *The Extractive Industries and Society*, 8(3):00879.

Phala, A., Mistry, D. and Matlala, R.L. (2017). Implications of illegal mining in Gauteng Province. *International Journal of Humanities and Social Science Invention*, 6(4): 56–63.

Preghenella, N. and Battistella, C. (2021). Exploring business models for sustainability: A bibliographic investigation of the literature and future research directions. *Business Strategy and the Environment*, 30(5): 2505–2522. Available at: https://doi.org/10.1002/bse.2760.

Quartey, K.G. (2020). *Stakeholder engagement in Johannesburg's corridors of freedom urban regeneration vision*. University of the Witwatersrand.

Queirós, A., Faria, D. and Almeida, F. (2017). Strengths And Limitations Of Qualitative And Quantitative Research Methods, *European journal of education studies*. Available at: https://doi.org/10.5281/ZENODO.887089.

Queensland. Audit Office. 2014. *Environmental Regulation of the Resources and Waste Industries*. In: Environmental Regulation of the Resources and Waste Industries Report.

Raji, I.B., Hoffmann, E., Erasmus, E., Ngie, A. and Winde, F. (2023). Assessing health risk associated with uranium in Rietspruit water, far West Rand goldfield, South Africa. *International Journal of Environmental Science and Technology*, 20(9): 10229-10242.

Rathobei, K.E., Ranängen, H. and Lindman, Å. (2024). Stakeholder integration in sustainable business models to enhance value delivery for a broader range of stakeholders. *Business*

Strategy and the Environment, 33(4): 3687-3706. Available at: https://doi.org/10.1002/bse.3651.

Rehman, A.A. and Alharthi, K. (2016). An Introduction to Research Paradigms. *International Journal of Educational Investigations*, 3(8): 51–59.

Renn, O. (2015). Stakeholder and Public Involvement in Risk Governance. *International Journal of Disaster Risk Science*, 6(1): 8–20. Available at: https://doi.org/10.1007/s13753-015-0037-6.

Republic of South Africa. (1996). The Constitution of the Republic of South Africa. Available at: https://www.justice.gov.za/constitution/SAConstitution-web-eng.pdf.

Richards, K. (2003). *Qualitative inquiry in TESOL*. New York: Palgrave Macmillan.

Riukulehto, S. (2022). Dangerous, frightening, homely: Home experiences of those living on the goldmines of the Far West Rand. *New Contree*, 89: 19. Available at: https://doi.org/10.54146/newcontree/2022/89/06.

Robinson, P. (2011). Company downplays shale oil plant impact. ABC Capricornia. Available at: http://www.abc.net.au/news/stories/ 2011/03/24/3172323.htm?site=capricornia.

Saenz, C. (2019). Creating shared value using materiality analysis: Strategies from the mining industry. *Corporate Social Responsibility and Environmental Management*, 26(6): 1351–1360. Available at: https://doi.org/10.1002/csr.1751.

Sánchez, L.E., Silva-Sánchez, S.S. and Neri, A. (2014). *Guide for Mine Closure Planning*. Brazil: Instituto Brasileiro de. Available at: https://www.researchgate.net/publication/262935956_Guide_for_Mine_Closure_Planning [Date of access: 12 October 2023]

Schneider, S. and Clauss, T. (2020). Business Models for Sustainability: Choices and Consequences. *Organization & Environment*, 33(3): 384–407. Available at: https://doi.org/10.1177/1086026619854217.

Schrader, A. and Winde, F. 2015. Unearthing a hidden treasure: 60 years of karst research in the Far West Rand, South Africa. *South African Journal of Science*, 111(5-6):1-7.

Sharma, A. (2024). ESG & Sustainability standards and frameworks comparison. *ESG Reporting frameworks*. Available at: https://www.linkedin.com/feed/update/urn:li:activity:7181158865827241984?utm_source=share&utm_medium=member_desktop [Date of access: 23 September 2024]

Shen, B. (2016) *Study on financial assurance and closure cost for mine reclamation*. (Doctoral-Thesis). University of British Columbia.

Sibanye Stillwater. (2017). *2017-2021 Social Labour Plans*. Available at: https://thevault.exchange/?get_group_doc=245/1605180665-ssw-kloof-SLP2017-english.pdf [Date of access: 15 August 2023]

Sibanye Stillwater. (2021). Kloof 2021 Performance. Available at: https://www.sibanyestillwater.com/business/southern-africa/gold-operations/kloof/ [Date of access: 15 August 2023]

Sibanye Stillwater. (2024). Cooke. Available at: https://www.sibanyestillwater.com/business/southern-africa/gold-operations/cooke/ [Date of access: 15 August 2023]

Sithole, S. (2023). Krugersdorp multiple rape case unsolved one year later. *IOL*. Available at: https://www.iol.co.za/the-star/news/krugersdorp-multiple-rape-case-unsolved-one-year-later-e12eb005-901d-4054-8602-3492d710249f#:~:text=Johannesburg%20%2D%20In%20July%20last%20year,dump%20in%20West%20Village%2C%20Krugersdorp [Date of access: 04 August 2024]

Siyongwana, P.Q. and Shabalala, A. (2019). The socio-economic impacts of mine closure on local communities: evidence from Mpumalanga Province in South Africa. *GeoJournal*, 84(2): 367–380. Available at: https://doi.org/10.1007/s10708-018-9864-5.

South African Government. (2018). Broad-Based Socio-Economic Empowerment Chater for the Mining and Minerals industry 2018.Department of Mineral Resources and Energy. Government Printer.

Soy, S.K. (1997). *The case study as a research method (Unpublished paper)*. University of Texas.

Stacey, J. Naude, A., Hermanus, M. and Frankel, P. (2010). The socio-economic aspects of mine closure and sustainable development: Literature overview and lessons for the socio-economic aspects of closure - Report 1. *Journal of the Southern African Institute of Mining and Metallurgy*, 110(7): 379–394.

Statista. (2024). Unemployment rate in Africa as of 2024, by country. Available at: https://www.statista.com/statistics/1286939/unemployment-rate-in-africa-by-country/#:~:text=South%20Africa%20is%20expected%20to,percent%20and%2025%20percent%2C%20respectively [Date of access: 24 March 2024].

StatsSA. (2016). *Community Survey 2016 Statistical release P0301*. Pretoria: Statistics South Africa.

Staunton, C., Tindana, P., Hendricks, M. and Moodley, K. (2018). Rules of engagement: perspectives on stakeholder engagement for genomic biobanking research in South Africa', *BMC Medical Ethics*, 19(1): 13. Available at: https://doi.org/10.1186/s12910-018-0252-y.

Swart, E. (2003). The South African legislative framework for mine closure. *Journal of the South African Institute of Mining and Metallurgy*, 103(8): 489–492.

Taylor, S.J., Bogdan, R. and DeVault, M.L. (2016) *Introduction to qualitative research methods* (Vol 4). New Jersey: John Wiley & Sons, Inc.

Tongway, D. (2008). Facilitating mine closure with a continuous analysis and review system. In Fourie, A.B., Tibbett, M., Weiersbye, I.M. and Dye, P.J. (eds) *Proceedings of the 3rd International Conference on Mine Closure*. Johannesburg, South Africa: Australian Centre for Geomechanics.

Tracy, S.J. (2013). *Qualitative research methods*. West Sussex, UK: Wiley-Blackwell.

Tyson, R. (2021). Industrial mining tourism – a new opportunity for old mines. Available at: https://www.mining.com/industrial-mining-tourism-a-new-opportunity-for-old-mines/ [Date of access:11 October 2024]

United Nations Department of Economic and Social Affairs. (2020). *Stakeholder engagement and the Agenda 2030*. New York. Available at:

https://sustainabledevelopment.un.org/content/documents/2703For_distribution_Stakeholder_Engagement_Practical_Guide_spreads_2.pdf [Date of access: 18 August 2024]

United Nations. (2020a). Sustainable development goals'. United Nations. Available at: https://www.un.org/sustainabledevelopment/sustainable-development-goals/ [Date of access: 2 February 2023].

United Nations. (2020b). Take Action for the Sustainable Development Goals. United Nations. Available at: https://www.un.org/sustainabledevelopment/sustainable-development-goals/ [Date of access: 20 June 2023].

United Nations Development Programme (UNDP) and the United Nations Department of Economic and Social Affairs (UNDESA). (2021). *Stakeholder Engagement*. Available at: https://sdgs.un.org/sites/default/files/2021-11/UNDP-UNDESA-Stakeholder-Engagement-en.pdf [Date of access: 13 September 2024].

UN Global Compact. (2024). *The Ten Principles of the UN Global Compact*. Available at: https://unglobalcompact.org/what-is-gc/mission/principles [Date of access: 14 September 2024].

United Nations Economic Commission for Africa and African Union. (2011). *Minerals and Africa's development*. Addis Ababa, Ethiopia.

United Nations Economic Commission for Africa, and African. (2011). AU conference of Ministers responsible for mineral resources development: minerals and Africa's development – an overview of the report of the international study group on Africa's mineral regimes. In. *AU conference of Ministers responsible for mineral resources development*, Addis Ababa: UNECA.

University of Cape Town Mineral Law in Africa. (2016). Illegal mining: the problem and possible solutions'. Available at: https://law.uct.ac.za/mineral-law/articles/2016-05-24-illegal-mining-problem-and-possible-solutions [Date of access: 10 May 2024].

University of Nottingham. (2024). Understanding Pragmatic Research. University of Nottingham. Available at: https://www.nottingham.ac.uk/helmopen/rlos/research-evidence-based-practice/designing-research/types-of-study/understanding-pragmatic-research/section03.html [Date of access: 14 July 2024]

Van Der Watt, P. and Marais, L. (2021). Implementing social and labour plans in South Africa: Reflections on collaborative planning in the mining industry. *Resources Policy*, 71, p. 101984. Available at: https://doi.org/10.1016/j.resourpol.2021.101984.

Van Druten, E.S. and Bekker, M.C. (2017). Towards an inclusive model to address unsuccessful mine closures in South Africa. *Journal of the Southern African Institute of Mining and Metallurgy*, 117(5): 485–490. Available at: https://doi.org/10.17159/2411-9717/2017/v117n5a10.

Vivoda, V., Kemp, D. and Owen, J. (2019). Regulating the social aspects of mine closure in three Australian states. *Journal of Energy & Natural Resources Law*, 37(4): 405–424. Available at: https://doi.org/10.1080/02646811.2019.1608030.

Wasylycia-Leis, J., Fitzpatrick, P. and Fonseca, A. (2014). Mining Communities from a Resilience Perspective: Managing Disturbance and Vulnerability in Itabira, Brazil. *Environmental Management*, 53: 481–495. Available at: https://doi.org/10.1007/s00267-014-0230-1.

Waterhouse, S. (2015). People‘s Parliament? Do citizens influence South Africa‘s legislatures. In: *New South African Review 5: Beyond Marikana*. Wits University Press.

Watson, I. and Olalde, M. (2019). The state of mine closure in South Africa - what the numbers say. *Journal of the Southern African Institute of Mining and Metallurgy*, 119(7): 639-645. Available at: https://doi.org/10.17159/2411-9717/331/2019.

World Commission on Environment and Development. (1987) *Our Common Future*. Oxford: Oxford University Press.

West Rand District Municipality. (2023). *2023/2024 Integrated Development Plan*. Available at: https://www.wrdm.gov.za/wp-content/uploads/documents/idp/202324-Final-Reviewed-IDP-1.pdf [Date of access: 23 November 2023]

Williams, C. (2007). Research Methods. *Journal of Business & Economics Research (JBER)*, 5(3): 65-72. Available at: https://doi.org/10.19030/jber.v5i3.2532.

World Bank. (2021). *Mine Closure: A Toolbox for Governments*. World Bank Energy and extractives.

World Bank and International Finance Corporate. (2002). It's not over when it's over: Mine closure around the world. Available at: http://siteresources.worldbank.org/INTOGMC/Resources/notoverwhenover.pdf [Date of access: 2 April 2023].

Yin, R.K. (2009). *Case study research design and methods* (Vol 4). Thousand Oaks, CA: SAGE Publication.

Zheng, W. (2014). The revolving door. *Notre Dame L. Rev*. 90: 1265.

Annexures

Annexure A: Consent form

DEPARTMENT OF EVIRONMENTAL AND GEOGRAPHICAL SCIENCE

UNIVERSITY OF CAPE TOWN
PRIVATE BAG X3
RONDEBOSCH 7701
SOUTH AFRICA

RESEARCHER/S: KARABELO INNOCENT MAJELA
TELEPHONE: +27-78-473 6449
E-MAIL: MKLKAR002@MYUCT.AC.ZA
URL: https://science.uct.ac.za/departments/environmental-geographical-science

Informed Voluntary Consent to Participate in Research Study

Project Title: Understanding the impacts of mine closure planning and process on host communities: An integrated stakeholder engagement in the West Rand

Invitation to participate, and benefits: You are invited to participate in a research study. The aim of this study is to use the West Rand area as a lens to enhance an understanding about the impacts of mine closure on host mining communities. This is done with the view to recommend strategies that could potentially enhance the integration of host mining communities into mine closure plans within the South African context. This will be accomplished through an integrated stakeholder engagement approach to involve other stakeholders who are also affected and impacted by the closure of the mines within the West Rand as a means of promoting long-term sustainability amid and post closure. I believe that your experience would be a valuable source of information, and hope that by participating you may gain useful knowledge.

Procedures: During this study, you will be asked questions about the capacity you fill and your involvement in the mining sector, including some of the hindrances within your line of work that prevent successful stakeholder engagement, integration of communities into mine closure planning as well as sustainable closure of mines. All these questions will be disseminated to you to afford you sufficient preparation time ahead of the interview.

Recording: We may take photographs and/or record audio/video as part of the study. These will be used for the sole purpose of transcription and will not be disseminated or published without prior consent. Please indicate 'Yes' or 'No' below by ticking your choice in the box and writing out your initials.

Risks: There are no potentially harmful risks related to your participation in this study.

Feedback: You will receive feedback about the results of this research in the following manner: All other stakeholders (excluding community participants) will be provided with a summary report containing a transcription of what was discussed in the interviews and possible conclusions and recommendations that will emerge from the study. While on the other hand, community participants will be informed through a workshop of all likewise, conclusions and recommendations from the interviews and overall study. All the participants will be allowed to make any further suggestions or recommendations as they may see fit.

Disclaimer/Withdrawal: Your participation is completely voluntary; you may refuse to participate, and you may withdraw at any time without having to state a reason and without any prejudice or penalty against you. Should you choose to withdraw, the researcher commits not to use any of the information you have provided without your signed consent. Note that the researcher may also withdraw you from the study at any time.

Confidentiality: All information collected in this study will be kept private in that you will not be identified by name or by affiliation to an institution. Confidentiality and anonymity will be maintained as pseudonyms will be used.

What signing this form means: By signing this consent form, you agree to participate in this research study. The aim, procedures to be used, as well as the potential risks and benefits of your participation, have been explained verbally to you in detail, using this form. Refusal to participate in or withdraw from this study at any time will not affect you in any way. You are free to contact me, to ask questions or request further information, at any time during this research.

I agree to participate in this research (tick one box)	☐ Yes	☐ No	_____ (Initials)
I agree to be photographed	☐ Yes	☐ No	_____ (Initials)
I agree to be audio-recorded	☐ Yes	☐ No	_____ (Initials)
I agree to be video recorded	☐ Yes	☐ No	_____ (Initials)

For queries, contact the Faculty of Science Research Ethics Committee – sci-rec@uct.ac.za

Name of Participant	Signature of Participant	Date
Name of Researcher	Signature of Researcher	Date

Annexure B: Ethics Clearance

UNIVERSITY OF CAPE TOWN
IYUNIVESITHI YASEKAPA • UNIVERSITEIT VAN KAAPSTAD

Faculty of Science
University of Cape Town
Rondebosch South Africa 7701

E-mail: sci-rec@uct.ac.za
Tel: 021 650 4315

31 July 2023

Karabelo Innocent Majela
Environmental and Geographical Sciences

Investigating strategies of involving host mining communities in mine closure planning: An integrated stakeholder engagement in the West Rand

Dear Karabelo Innocent Majela

I am pleased to inform you that the Faculty of Science Research Ethics Committee has approved the above-named application for research ethics clearance, subject to the conditions listed below.

- Note that "Environmental" is misspelled in the consent form.
- Implement the measures described in your application to ensure that the process of your research is ethically sound; and
- Uphold ethical principles throughout all stages of the research, responding appropriately to unanticipated issues: please contact me if you need advice on ethical issues that arise.
- If you are planning to do research with students or staff, you are required to request permission from the appropriate parties, see https://uct.ac.za/research-support-hub/integrity/accessing-uct-staff-or-students-research-population

Your approval code is: **FSREC 071-2023**
Expiration date: **31 December 2024**

I wish you success in your research.

Yours sincerely

A/Prof Melissa Densmore
Chair: Faculty of Science Research Ethics Committee

Annexure C: Stakeholder questionnaire

List of supplementary questions asked per stakeholder

NGOs	Communities	Trade Union	Mining Companies	Government	Media
Can you tell me a bit more of the work that you do?	How have you been involved in the mining and mine closure process in your community?	How do you ensure that the interests of both your workers and the host mining communities are represented in the mine closure planning process?	What is your role in the mine?	Who are you and what do you do?	Can you tell me a bit more of the work that you do?
How long have you been involved in mine closure processes from an advocacy point of view and what are some of the challenges you faced along the way?	How have your problems/concerns and needs taken into account during the mining and closing consultation process?	Can you provide examples of successful mine closure planning processes that have included your workers and the host mining communities through integrated stakeholder engagement?	How long have you been in the mine / carrying the responsibilities of your role?	What are the primary causes of legislative ambiguity and uncertainty regarding mine closure in South Africa?	How long have you been involved in mine closure processes from an advocacy point of view and what are some of the challenges you faced along the way?
What is the role of NGOs in mine host communities, mine closure planning and processes?	How would you describe the level of engagement and communication between the mining company and the local community about mining operations and potential closures?	What should an effective stakeholder engagement consist of to ensure the interest of workers from host mining communities are heard and long term sustainability is promoted post closure?	What is the mine currently doing to promote social sustainability?	How do these legislative uncertainties affect and impact the actions of mining corporations and stakeholders regarding decision-making and ethical responsibilities?	What are the key challenges faced by the host communities in the West Rand due to mine closures?
What are the challenges faced by NGOs in advocating for the inclusion of host mining communities in the mine closure process?	What role has NGOs and other organisations played in facilitating your inclusion in the mining and mining closure process?	What challenges have you faced in including your workers and the host mining communities in the mine closure planning process, and how have you addressed these challenges?	What does stakeholder engagement mean to the mine and the communities the mine operates it?	In what ways can these ambiguities be ameliorated or elucidated to promote sustainable mine closure?	How have the mine closure planning and processes impacted the socio-economic conditions of the host communities in the West Rand?
How do you think these challenges could be mitigated? Have you experienced similar challenges in the West Rand?	What challenges has your community faced in being included in the mining and mining closure process, and how have these challenges been addressed?	What is the role of trade unions in mining and mine closure process?	Has the company identified its stakeholders?	What lessons have you learned from past closure experiences, and how have those lessons influenced your current approach to mine closure planning?	Can you share any stories or experiences of individuals or families who have been directly affected by mine closures in the West Rand?
What are the key socio-economic impacts of mine closure on the host mining communities, particularly in the West Rand area?	How can mining companies, governments and NGOs work together to ensure that your community is not left behind during the mining and mine closing process?	How often have trade unions been included in closure consultation processes in the West Rand?	What could be the potential reasons why stakeholders have not been identified / Why were other stakeholders not considered as "stakeholders"?	What policies and regulations are in place to ensure that host mining communities are included in the mine closure planning process?	How effective has the stakeholder engagement been in addressing the impacts of mine closures on the host communities in the West Rand?
Do you think these impacts are as a result of mine closure planning and processes or they have been aggravated by the unsustainable closure of mines?	How often do are stakeholder engagements conducted?	How are mining workers, who are also residents of host communities, currently represented and engaged in discussions related to mine closure planning?	Are the company's employees also form part of stakeholders, in what capacity / possible reasons that resulted from their inclusion or exclusion?	How does the government ensure that mining companies comply with these policies and regulations?	Are there any specific policies or initiatives that have been implemented to mitigate the impacts of mine closures on the host communities in the West Rand?

NGOs	Communities	Trade Union	Mining Companies	Government	Media
How can mining companies in the West Rand mitigate the negative impacts of mine closure on host mining communities?	How are you informed of these engagements?	From a trade union perspective, how can the involvement of workers residing in host communities contribute to a more holistic and effective mine closure plan that benefits both workers and the community?	Are stakeholders engagements documented e.g., Is there documentation that exist for all stakeholders and how often is it updated for any prospective engagements?	What challenges has the government faced in including host mining communities in the mine closure planning process, and how have these challenges been addressed?	How has the media coverage of mine closures in the West Rand influenced public opinion and policy-making?
In what stage of the mining life-cycle NGOs are consulted?	Who is facilitating these engagements and how free are you in voicing your concerns and issues?	How can trade unions collaborate with mining companies, community representatives, and other stakeholders to ensure that worker perspectives are adequately integrated into mine closure planning discussions?	Is there a group or a team within the company that works directly with these stakeholders, for instance, to disseminate notices of meetings when the need arises (e.g. community liaison officers)?	What are some of the successful mine closures that have taken place in the West Rand?	What role do journalists play in highlighting the impacts of mine closures on host communities and facilitating stakeholder engagement in the West Rand?
Is there a stakeholder engagement consultation that is taking place in the West Rand since your involvement in that area?	What were your experiences?	How do you view the role of mine closure planning in safeguarding the livelihoods of workers residing in host communities after the mine ceases operations?	How often does stakeholder engagements take place and what are probably occasions that causes these engagements to take place?	If not, why is this the case, and what approach was implemented to prevent similar cases in future or assist mining companies to close effectively?	Are there any lessons that other mining regions can learn from the West Rand's approach to mine closure planning and stakeholder engagement?
How many mine closure/stakeholder engagement consultations have you attended from an NGO representation, particularly in the West Rand?	How well-informed do you feel about the mining activities taking place locally, including the potential impacts on the environment and your community?	How can trade unions help bridge the gap between the interests of mining workers and the aspirations of host communities during mine closure planning discussions?	How are these engagements conducted?	How does the government's regulatory framework ensure the participation of host mining communities in the mine closure planning process, particularly in the West Rand?	How has the landscape and environment of the West Rand changed as a result of mine closures?
Do you believe mining companies (in general) or in the West Rand consult adequately with their stakeholders?	Are there any challenges you face in obtaining accurate information about mine's operations and closing plans?	How can trade unions facilitate effective communication between mining workers, community members, and mining companies to ensure that everyone is informed and involved in closure planning?	What measures has the company implemented to ensure the inclusion of the most vulnerable, least visible and voiceless for whom special consultation efforts may have to be made?	Can you provide an overview of the legislative requirements or guidelines that mandate or encourage integrated stakeholder engagement in mine closure planning?	What future developments are anticipated for the West Rand region following the mine closures?
What are the leading causes that hinder communication transparency between mining companies and I&AP (stakeholders)?	How did you deal with these problems?	In your view, how can mine closure planning contribute to leaving a positive legacy for both mining workers and the host community, considering factors such as job opportunities, environmental restoration, and community well-being?	When is the mine expected to close and what has been done to prepare for it (from a community aspect), e.g., have they been consulted to inform them about the closure and any preparations to ensure sustainability (communities able to fend themselves post-closure)?	Have these legislative requirements been tested already and proven success in the West Rand?	What role do local government and non-governmental organizations play in mitigating the impacts of mine closures?

NGOs	Communities	Trade Union	Mining Companies	Government	Media
What can be done to fix the lack of communication and any other factors that hinder it?	What are your main challenges or concerns about the mining operation's impact on your community's wellbeing, both during its operation and after closure?	Can you share examples of successful collaborations or initiatives where trade unions played a significant role in advocating for worker interests and community well-being in mine closure planning?	What are some of the challenges encountered around this, and any plans in motion to overcome these challenges?	What measures are in place to hold mining companies accountable for meeting closure obligations and ensuring the well-being of host communities?	Is there a stakeholder engagement consultation that is taking place in the West Rand since your involvement in that area?
How can mining companies in the West Rand effectively engage with their stakeholders during each life cycle of a mine?	What do you envision for your community's future after the mine closes? Are there specific opportunities you hope to see, or challenges you want to avoid?	Are there specific policies or practices you believe should be in place to ensure that mine closure does not disproportionately impact workers and their families?	What would you say are some of the foreseeable internal situations that highlight closure is imminent from a mining company perspective?	How does the government promote transparency in mine closure planning by requiring mining companies to share relevant information and progress updates with host communities?	How many mine closure/stakeholder engagement consultations have you attended from media representation, particularly in the West Rand?
What lessons have you learned from past closure experiences, and how have those lessons influenced your current approach to mine closure planning?	How do you think the mining company could enhance the benefits and reduce the risks associated with mining activities and closures in the end?	In the context of the West Rand, how can trade unions foster collaboration between mining workers, community representatives, and mining companies to enhance the inclusivity of mine closure planning?	Has there been any resistance to hold stakeholder engagements in the past?	From a government perspective, what should an effective stakeholder engagement consist of, and how should each aspect / stakeholder member carry out their activities to ensure a successful sustainable engagement even post closure?	Do you believe mining companies (in general) or in the West Rand consult adequately with their stakeholders?
What are the key stakeholders that should be involved in the mine closure process from a sustainability perspective?	Are you aware of any plans or discussions about the closure of the mine, how do you feel about the potential impacts on your community?	How can the lessons learned from these experiences be applied to create more inclusive and effective mine closure plans in the West Rand?	What was the cause of this and how was this overcome?	Does the government provide support or resources to enhance the capacity of host communities to actively engage in mine closure planning discussions?	What are the leading causes that hinder communication transparency between mining companies and I&AP (stakeholders)?
How can governments, mining companies, and NGOs work together to ensure that host mining communities are not left behind after mine closure?	What measures would you like to see to ensure that communities continue to thrive economically and socially after the mine is not closed?	Are there challenges you've identified in terms of disseminating accurate information about mine closure plans to both workers and the community?	Which communities form part of your stakeholder engagement?	Are there programs or initiatives in place to empower local communities to effectively participate in decision-making processes related to mine closure?	How can mining companies in the West Rand effectively engage with their stakeholders during each life cycle of a mine?
How does your organization engage with policymakers and legislators to advocate for strong regulations related to mine closure and its impacts on communities and mining companies?	Do you recognize the role of local government, NGOs and other stakeholders in simplifying communication and cooperation between the community and the mining company?		What criteria was used to identify these communities, and are these communities also labour-sending area communities?	How does the government collaborate with mining companies, NGOs, and other relevant stakeholders to ensure comprehensive and effective mine closure planning?	
Can you share examples of successful advocacy initiatives that have led to	Are there any specific projects or initiatives that you believe will		When conducting these engagements, what are some of the primary areas of concerns	Can you share examples of successful partnerships that have led to improved	What lessons have you learned from past closure experiences, and

NGOs	Communities	Trade Union	Mining Companies	Government	Media
improvements in the legislative framework governing mine closure?	contribute to the better of society and the welfare of the community after the mining companies cease their activities?		from stakeholders? E.g., economic, environmental, political, etc…?	mine closure outcomes and community well-being?	how have those lessons influenced your current approach to mine closure planning?
From your perspective, how effective is the current legislative framework in ensuring that mining companies are financially responsible for mine closure and post-closure activities, as well as ensuring the inclusion of host communities in closure planning processes?	Have these already been communicated by the mining company?		Through a consultative process, how are these concerns resolved and does the company provide evidence of resolution?	What strategies does the government have in place to promote the long-term sustainability of host communities after mine closure?	What are the key stakeholders that should be involved in the mine closure process from a sustainability perspective?
Are there specific areas within the legislation that you believe should be strengthened to enhance the inclusion of host mining communities and other stakeholders to promote accountability and avoid leaving communities with liabilities? What recommendations do you have for strengthening these aspects of the regulatory framework?	What are suggestions for improving communication, engagement and cooperation between the community and the mining company for the mutual benefit of all parties?		Does the mining company have a stakeholder engagement conflict resolution framework or plan?	How are economic diversification and alternative livelihood opportunities encouraged to mitigate the impact of mine closure on local economies?	How can governments, mining companies, and I&A parties work together to ensure that host mining communities are not left behind after mine closure?
Can you share examples of countries or regions where legislation has successfully ensured proper mine closure and fairness to communities (their inclusion) in mine closure planning and processes?	What should an affective stakeholder engagement consist of?		How does do they handle conflicts from stakeholder engagements if ideas are not complementary with those from communities / other stakeholders in the best interest of sustainability of these continued engagements?	How does the government monitor and enforce compliance with closure plans and obligations outlined in the regulatory framework?	How does your organization engage with policymakers and legislators to advocate for strong regulations related to mine closure and its impacts on communities and mining companies?
How does your organization engage with policymakers and legislators to advocate for strong regulations related to mine closure and its impacts on communities and mining companies?	What kind of work/work should be involved in the long-term development?		Has there been sufficient consultation in terms of communing CSI projects?	Can you provide examples of instances where regulatory bodies have effectively enforced closure requirements to ensure positive outcomes for communities?	Can you share examples of successful advocacy initiatives that have led to improvements in the legislative framework governing mine closure?
Can you share examples of successful advocacy initiatives that have led to	Have you been provided with information about your rights and		In terms of sustainability, what does the mining company do to ensure that	What lessons have been learned from past mine closure experiences, and how	From your perspective, how effective is the current legislative

NGOs	Communities	Trade Union	Mining Companies	Government	Media
improvements in the legislative framework governing mine closure?	opportunities to participate in the implementation of the mining closure plan through legal channels?		communities are able to keep up with the projects the mine have done as part of its CSR?	have those lessons influenced updates or improvements to the government's approach to stakeholder engagement in closure planning?	framework in ensuring that mining companies are financially responsible for mine closure and post-closure activities, as well as ensuring the inclusion of host communities in closure planning processes?
	Are there any challenges or restrictions you've encountered while seeking or participating in mine closure process, even though legislation mandates community involvement?		Does the mine engage with NGOs as part of their stakeholders? In what ways do these engagements take place?	How does the government gather feedback from host communities and other stakeholders to continuously improve the mine closure process?	Are there specific areas within the legislation that you believe should be strengthened to enhance the inclusion of host mining communities and other stakeholders to promote accountability and avoid leaving communities with liabilities? What recommendations do you have for strengthening these aspects of the regulatory framework?
	Do you believe that the legal requirement for community inclusion has led to improved collaboration and dialogue between your community and the mining company?		What challenges have you faced in including host mining communities in the mine closure planning process?		Can you share examples of countries or regions where legislation has successfully ensured proper mine closure and fairness to communities (their inclusion) in mine closure planning and processes?
			What steps do you take to engage with host mining communities during the mine closure planning process?		
			Can you provide examples of successful mine closure planning processes that have included host mining		
			What strategies do you have in place to facilitate the transition of host communities from mining-dependent economies to diversified and sustainable economies after closure?		

NGOs	Communities	Trade Union	Mining Companies	Government	Media
improvements in the legislative framework governing mine closure?	opportunities to participate in the implementation of the mining closure plan through legal channels?		communities are able to keep up with the projects the mine have done as part of its CSR?	have those lessons influenced updates or improvements to the government's approach to stakeholder engagement in closure planning?	framework in ensuring that mining companies are financially responsible for mine closure and post-closure activities, as well as ensuring the inclusion of host communities in closure planning processes?
	Are there any challenges or restrictions you've encountered while seeking or participating in mine closure process, even though legislation mandates community involvement?		Does the mine engage with NGOs as part of their stakeholders? In what ways do these engagements take place?	How does the government gather feedback from host communities and other stakeholders to continuously improve the mine closure process?	Are there specific areas within the legislation that you believe should be strengthened to enhance the inclusion of host mining communities and other stakeholders to promote accountability and avoid leaving communities with liabilities? What recommendations do you have for strengthening these aspects of the regulatory framework?
	Do you believe that the legal requirement for community inclusion has led to improved collaboration and dialogue between your community and the mining company?		What challenges have you faced in including host mining communities in the mine closure planning process?		Can you share examples of countries or regions where legislation has successfully ensured proper mine closure and fairness to communities (their inclusion) in mine closure planning and processes?
			What steps do you take to engage with host mining communities during the mine closure planning process?		
			Can you provide examples of successful mine closure planning processes that have included host mining		
			What strategies do you have in place to facilitate the transition of host communities from mining-dependent economies to diversified and sustainable economies after closure?		

NGOs	Communities	Trade Union	Mining Companies	Government	Media
			How do you communicate closure plans, progress, and potential challenges to host communities and other stakeholders in a transparent and accessible manner?		
			How do you incorporate feedback and insights from previous closure processes into ongoing improvements of your stakeholder engagement and closure strategies?		
			What mechanisms are in place to address situations where there is disagreement between the company and the local community regarding closure plans?		
			How do you ensure compliance with legislative requirements during the mine closure process?		
			Can you provide examples of instances where your company has gone beyond regulatory compliance to enhance the outcomes of mine closure for both communities and the company?		
			Do you think these legislative requirements ensure fairness to both host mining communities and mining companies?		
			What role do NGOs and other stakeholders play in advocating for and enforcing these legislative requirements in the mine and the broader community the mine operates in?		
			What challenges have you faced in complying with these legislative requirements, and how have you addressed these challenges?		
			How do you incorporate community input and consent into the mine closure planning process in accordance with legal requirements and international best practices?		

NGOs	Communities	Trade Union	Mining Companies	Government	Media
			How does the legislation require your company to communicate mine closure plans, progress, and financial assurances to both local communities and regulatory authorities?		