Socio-economic impact assessment focuses on evaluating the impacts a development has on a community's social and economic well-being. This analysis relies on both quantitative and qualitative measures of impacts. Development impacts are generally evaluated in terms of changes in community demographics, housing, employment and income, market effects, public services, and aesthetic qualities of the community.

GRUISFONTEIN COAL PROJECT

Socio-economic Impact Assessment

13 September 2019

DIPHORORO DEVELOPMENT (Pty) Ltd

DOCUMENT INFORMATION

GRUISFONTEIN COAL PROJECT

Socio-Economic Impact Assessment Report

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DECLARATION OF INDEPENDENCE

LIZINDA DICKSON

Lizinda Dickson, part-author of the Socio-Economic Impact specialist report, hereby declares that I am an independent socio-economic assessment specialist. I have 22 years of practice and experience in socio-economic impact assessments. Please refer to my CV attached as Annexure A. Lizinda Dickson compiled the Socio-economic Impact Assessment based on independent research and analysis of the proposed Gruisfontein Coal Project. I hereby confirm that I have no business, financial, personal or other interest in the activity proceeding other than remuneration for work performed as defined under "independent" in Chapter 1 of the Environmental Impact Assessment Regulations, 2014.

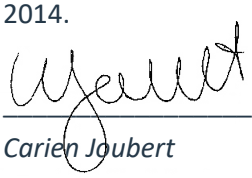
13 September 2019

Lizinda Dickson *Date*

CARIEN JOUBERT

Carien Joubert, part-author of the Socio-Economic Impact specialist report, hereby declares that I am an independent socio-economic assessment specialist. I have 32 years of practice and experience in socio-economic impact assessments. Please refer to my CV attached as Annexure A.

Carien Joubert compiled the Socio-economic Impact Assessment based on independent research and analysis of the proposed Gruisfontein Coal Project. I hereby confirm that I have no business, financial, personal or other interest in the activity proceeding other than remuneration for work performed as defined under "independent" in Chapter 1 of the Environmental Impact Assessment Regulations, 2014.



13 September 2019

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WERNER NEETHLING

Werner Neethling, part-author of the Socio-Economic Impact specialist report, hereby declares that I am an independent socio-economic assessment specialist. I have 16 years of practice and experience in economic and socio-economic impact assessments. Please refer to my CV attached as Annexure A.

Werner Neethling compiled the Socio-economic Impact Assessment based on independent research and analysis of the proposed Gruisfontein Coal Project. I hereby confirm that I have no business, financial, personal or other interest in the activity proceeding other than remuneration for work performed as defined under "independent" in Chapter 1 of the Environmental Impact Assessment Regulations, 2014.

13 September 2019

Werner Neethling *Date*

CONTENTS OF THE SPECIALIST REPORT – CHECKLIST

Contents of this report in terms of Regulation GNR 982 of 2014, Appendix 6 (as amended 2017)		Relevant Section in Specialist study
(1)	A specialist report prepared in terms of these Regulations must contain-	
	details of-	
	the specialist who prepared the report; and	Section 2.1
	the expertise of that specialist to compile a specialist report including a curriculum vitae	Section 2.1
	a declaration that the specialist is independent in a form as may be specified by the competent authority;	Page 3
	an indication of the scope of, and the purpose for which, the report was prepared;	Section 2.2
(cA)	an indication of the quality and age of base data used for the specialist report;	Section 2.5
(cB)	a description of existing impacts on the site, cumulative impacts of the proposed development and levels of acceptable change;	Section 5 Section 6.3 Section 2.8
	the duration, date and season of the site investigation and the relevance of the season to the outcome of the assessment;	Section 2.5
	a description of the methodology adopted in preparing the report or carrying out the specialised process inclusive of equipment and modelling used;	Section 2
	details of an assessment of the specific identified sensitivity of the site related to the proposed activity or activities and its associated structures and infrastructure, inclusive of a site plan identifying site alternatives;	Section 2.4
	an identification of any areas to be avoided, including buffers;	Section 2.4
	a map superimposing the activity including the associated structures and infrastructure on the environmental sensitivities of the site including areas to be avoided, including buffers;	Section 2.4
	a description of any assumptions made and any uncertainties or gaps in knowledge;	Section 2.10
	a description of the findings and potential implications of such findings on the impact of the proposed activity or activities;	Section 6
	any mitigation measures for inclusion in the EMPr;	Section 6.6
	any conditions for inclusion in the environmental authorisation;	Section 7
	any monitoring requirements for inclusion in the EMPr or environmental authorisation;	Section 7
	a reasoned opinion -	
	whether the proposed activity, activities or portions thereof should be authorised;	Section 8
	regarding the acceptability of the proposed activity or activities; and	Section 8
	if the opinion is that the proposed activity, activities or portions thereof should be authorised, any avoidance, management and mitigation measures that should be included in the EMPr, and where applicable, the closure plan;	Section 7
	a description of any consultation process that was undertaken during the course of preparing the specialist report;	Section 2.5
	a summary and copies of any comments received during any consultation process and where applicable all responses thereto; and	Included in the PP records
	any other information requested by the competent authority.	None

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1 INTRODUCTION

This report presents the socio-economic baseline and impact assessment for the Gruisfontein Coal Project. The report details the positive and negative socio-economic impacts, which are predicted to arise from the Gruisfontein Coal Project. This assessment provides a comprehensive overview of the socio-economic conditions and opportunities associated with the project as well as proposed management and mitigation measures. This report has drawn on existing information and fieldwork conducted.

1·1 Context

Nozala Coal (Pty) Ltd ("Nozala Coal") has applied for a Mining Right (LP30/5/1/2/2/10170MR) over the farm Gruisfontein 230LQ, 1,1136.2 ha in area, located in the Limpopo Province some 70 km North-West of the town of Lephalale.

The mining method is open cast with on-site processing whereafter it will be transported via road to the off-set points. The development of the project will take approximately four years in which licences will be secured, agreements for offtake and services will be entered into, feasibility studies completed, and construction commenced.

The below diagram indicates that operations will only commence during Stage 4, estimated to be around 2023, mainly due to licencing and construction of infrastructure for the mine. The life of mine is estimated at 20 years.

The project is divided into different stages:

STAGE 1 LICENCING	STAGE 2 WATER USES AND FEASIBILITY	STAGE 3 CONSTRUCTION	STAGE 4 RAMP-UP OPERATIONS	STAGE 5 FULL PRODUCTION	STAGE 6 DOWNSCALING & CLOSURE
2019 – 2020 (12 mnths)	2020 (12 mnths)	2021 – 2022 (18 mnths)	2023 (12 mnths)	2024 (16 years)	2037 (3 years)
Mining Right Application Environmental Authorisation Waste Management Licence	Water Use Licence Feasibility Study	Commence Construction	Commence Operations	Operations in Full Production	Rehabilitation Downscaling Portable Skilling Closure
		Construction employees 250 - 300	Start-up employees 300 - 350	Full Production employees 500	

RSV Enco Consulting (Pty) Ltd (RSV Enco) completed a Concept Study in 2018 to determine the most suitable exploitation of the resource. After the Concept Study, RSV Enco was appointed to project manage the application for the mining right on behalf of Nozala Coal and to ensure that all legal requirements are in place for the said applications. RSV Enco, in turn, appointed Jacana Environmentals cc (Jacana) to apply for Environmental Authorisation (EA) in terms of the National Environmental Management Act (NEMA), 1998 (Act 107 of 1998), as amended, and for the Waste Management Licence (WML) in terms of the National Environmental Management: Waste Act (NEMWA), 2008 (Act 59 of 2008), as amended.
The Integrated Water Use Licence (IWUL) in terms of the National Water Act (NWA), 1998 (Act 36 of 1998), as amended, will only be applied for once the EA and WML are granted.

Jacana Environmentals appointed Diphororo Development to conduct the Socio-economic Impact Assessment, as a specialist study.

2 APPROACH AND METHODOLOGY

2·1 Specialist Details and Expertise

Socio-economic Specialist	Diphororo Development
Responsible person	Lizinda Dickson
Authors	Lizinda Dickson, Werner Neethling
Postal Address	PO Box 13509, Sinoville, 0129
Telephone	082 922 2261
Facsimile	086 602 5566
E-mail	lizinda@diphororo.com

2·1·1 Lizinda Dickson

Lizinda Dickson has 23 years of practice and experience in Social and Socio-Economic Impact Assessments for various mining sector, agricultural sector, sport and water sector projects. Her qualifications include a Masters' Degree in Environmental Management & Analysis (in progress). Other diplomas include Database management, ArcGIS 8 and PlanetGIS. She has conducted studies for institutions and companies such as Anglo Platinum, Impala Platinum, Xstrata, Coal of Africa, Optimum Coal, BHP Billiton, Target Holdings, Platinum Australia, Chromex, Barrick SA, Department of Human Settlement, Department of Water Affairs, Department of Environmental Affairs, various District Municipalities and Local Municipalities. Lizinda's expertise range from Environmental Aspects, Land use, Spatial Planning, Socio-economic Assessment and Management, GIS mapping, Risk assessments, Resettlement Management, complex Stakeholder and Community Engagement strategies to overall project management of complex projects. Lizinda Dickson compiled the Socio-economic Impact Assessment based on independent research and analysis of the proposed project, and have no business, financial, personal or other interest in the activity proceeding other than remuneration for work performed as defined under "independent" in Chapter 1 of the Environmental Impact Assessment Regulations, 2014 (as amended in 2017).
Please refer to her CV attached as Annexure B.

2·1·2 Werner Neethling

Werner Neethling is a senior consultant and is a qualified Management Accountant and Economic Specialist with over 15 years' experience in financial management and economic assessment. Having studied in the United Kingdom Werner has worked for numerous listed companies in various industry such as Edwards Hospitality UK (Formula One), Informa PLC UK (Publishing) Calidris Developments (Property Development) and Impala Platinum (Mining).

2·2 Study Scope of Work

The overall objective of the SEIA is to identify and analyse the potential impacts of the proposed project, gather sustainable development opportunities as well as to mitigate the negative impacts. The purpose of the SEIA is to:

- Review stakeholder's engagement records;
- Undertake a baseline assessment to determine the socio-economic baseline, property value or infrastructure assets, to determine current commercial and economic contributions of potentially directly affected persons and to identify and quantify potential alternative land use activities;
- Determine the impact on socio-economic conditions of directly affected persons by determining the potential impact, in financial terms, of the loss in property value or infrastructure assets and determining the economic loss, in terms of net present value, of commercial, economic or as a result of the proposed mining activity; and
- Undertake a comparative assessment of the identified land use and development alternatives and their potential on the environment, social and cultural impacts given generally accepted sustainable development principles which consider the costs and benefits of social, environmental and economic factors.
- Provide an assessment based on collected baseline data to identify positive and negative socio-economic impacts at both the local and national level;
- Propose mitigation and management methods.

2·3 Study Zone Delineation

The SEIA was conducted based on the evaluation of social networks, livelihoods and land use activities in three study zones. Utilising satellite imagery, aerial photography and the data collected, these aspects have been mapped in the various study areas. The study areas include a) the footprint, b) an area located within 550m around the Open Pit; c) an area located within 500m around the footprint; and d) the balance of the MRA and an area located 500m around the MRA area. Apart from these immediate study areas, the SEIA also took into consideration the provincial and regional social environment. The figure below indicates the study areas:

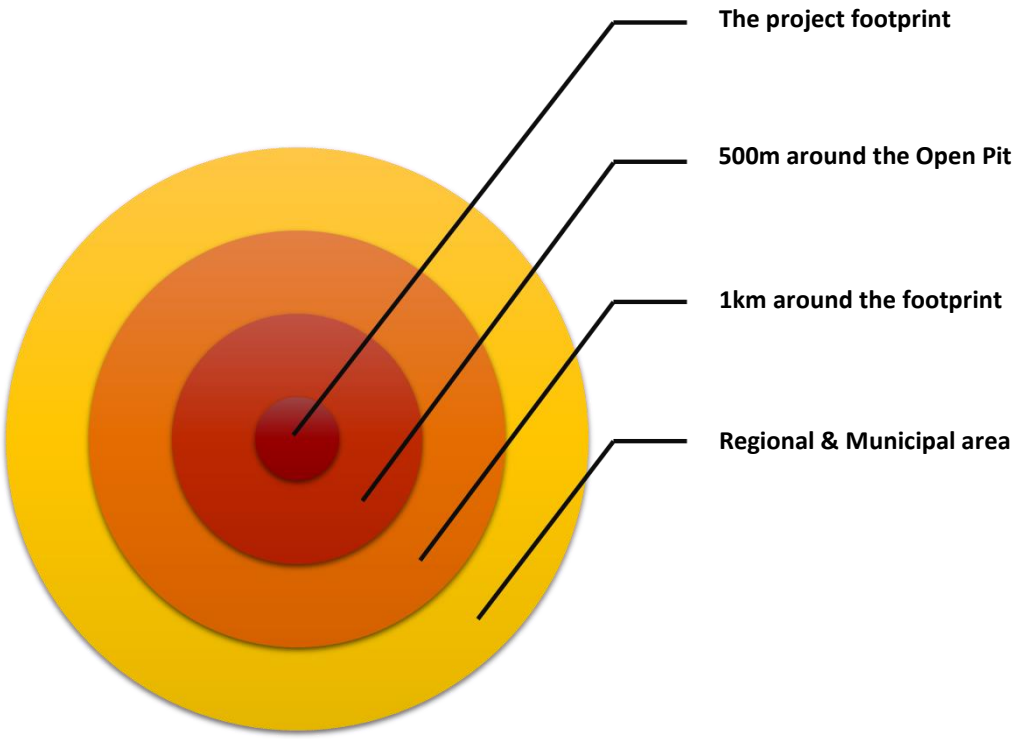


Figure 1: Study Zone Delineation

The thematic map below indicates the delineation of the study areas:

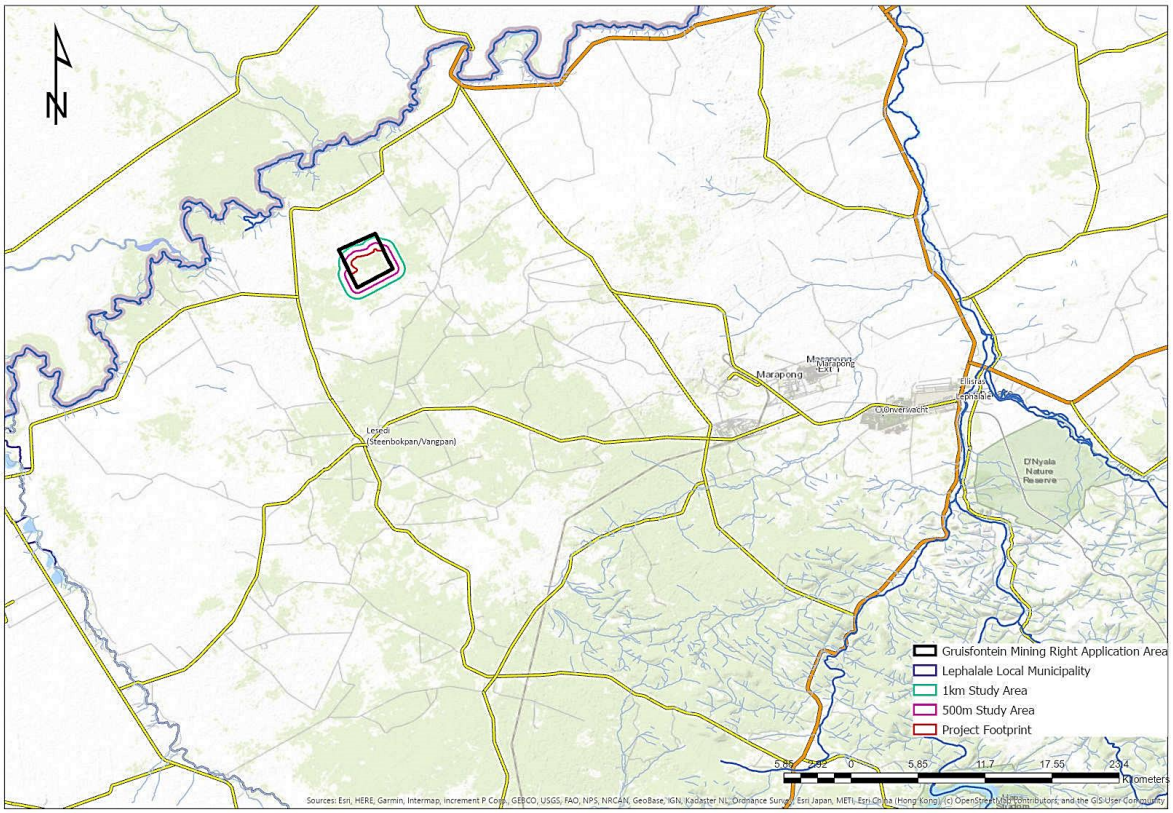


Figure 2: Study Areas Thematic Map

2.4 Potential Sensitive Receptors

Available information, orthophotos and satellite imagery were utilised to identify potential sensitive receptors. The following receptors have been included in the SEIA:

- Residential areas (rural houses)
- Agricultural residences and infrastructure
- Labour tenants or land occupants

The figure below indicates the potential sensitive receptors identified.

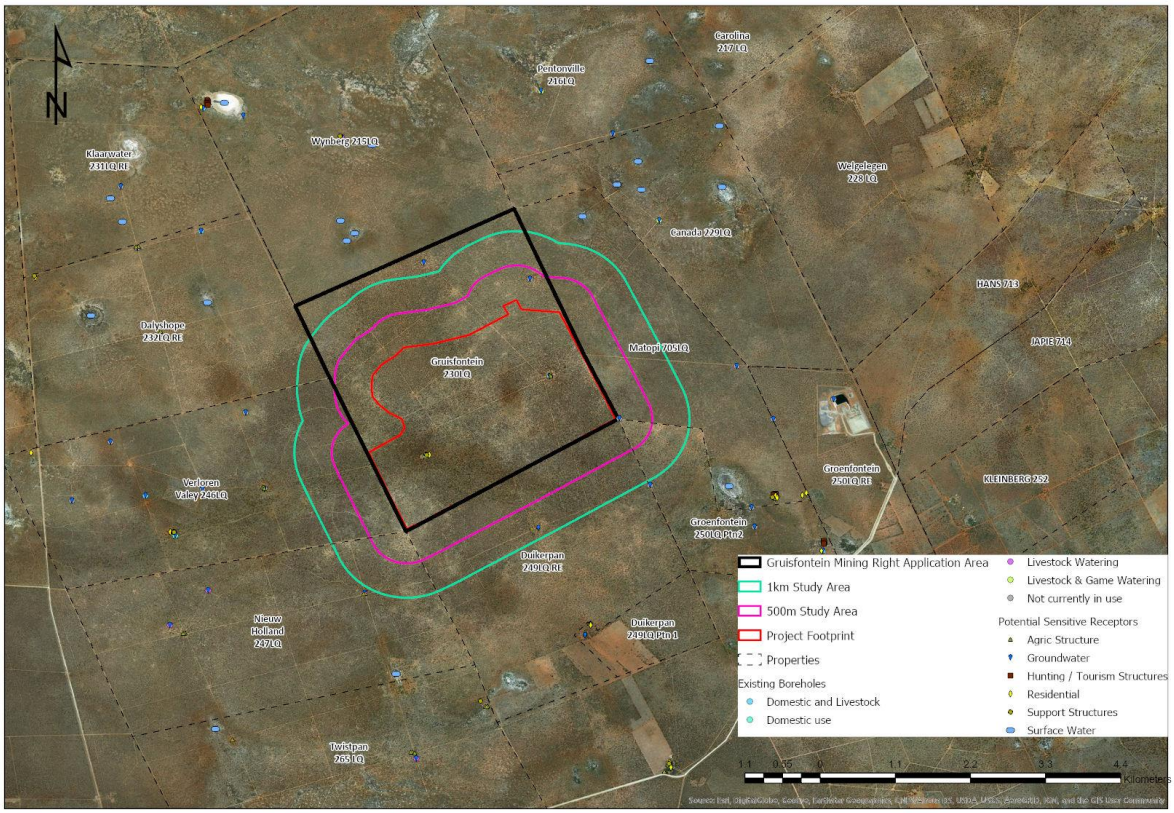


Figure 3: Potential Sensitive Receptors

2·5 Data Collection

To collect data in support of the impact assessment, the following activities have been undertaken:

2·5·1 Review of Socio-economic and Planning Documents and Data

To document the socio-economic context of the study area, several important documents or sources of information were reviewed and referenced and used to inform this SEA:

- Limpopo Provincial Growth and Economic Development Strategies
- Limpopo Provincial and District Spatial Development Frameworks
- District and Local Integrated Development Plans
- Census 2011 data
- Community survey 2007
- Quarterly Labour Force Survey 2012 & 2013
- General household survey, 2011
- Income and Expenditure Survey 2010/2011
- Mortality and causes of death survey, 2010
- Other Socio-economic Assessment (SEA) for similar projects

- Maps and available orthophotos and satellite imagery of the proposed project area and surrounding environment

2·5·2 Literature Review

A literature review has been undertaken and focuses on best practice derived from case studies and was sourced from academic journals and studies available on the internet or the media. See references for a list. Additional documents such as planning documents, which substantiate the baseline profile or provide context to the project have been referred to where relevant. This provided a conceptual framework for designing the empirical data collection and interpretation.

2·5·3 Site Visits and Observations

Direct observation, such as site visits or photographic records, are descriptive records developed by outside or participant-observers. It captures free-form impressions, going beyond the limitations of previously defined categories, and interactions are observed in a natural setting. Site visits were undertaken in February 2019. Observations were also made while on-site or within the wider study area, and these have supplemented the other findings.

2·5·4 Interviews

Interviews were conducted with the following surrounding landowners:

- Prostart Traders 136 (Pty) Ltd - Hein Schönfeldt & Piet Nel
- Tarina Pelser (Beukes)
- Bekker Pelser
- Louw & Retha Swanepoel
- Kobus de Villiers (legal representative of Daniel & Hardus Steenkamp)

Interviews were further conducted with neighbouring mining companies which have mineral rights and, in some instances, also surface rights. These included:

- Sasol – Sasol Mafutha Project
- Anglo American – Klaarwater Project
- Temo Coal - Temo
- Exarro – Grootgeluk Mine

2·5·5 Public Participation Review

The consultation process has included various interested and affected parties. The socio-economic issues which were raised by interested and affected parties are summarised as follows:

- potential financial losses and damages for current land users;
- potential socio-economic impacts;
- economic and social impact concerning the cumulative financial effect the increase in mining operations may have on livelihood activities in the region

2·6 Economic Quantification

There are various direct and indirect factors which may impact on the macro and microeconomic environment as a result of the current land use as well as proposed development activities. The extent to which these factors are influenced will depend on the nature and scale of current and proposed land use activities. It is therefore important to understand and assess the economic footprint of the proposed development in comparison to alternative land use. Factors which need to be considered during an economic assessment include a range of economic, social and environmental indicator which are broadly illustrated in the figure below. These factors may have a potential impact or influence on a local, regional, provincial or national level during the various phases of the project life cycle.

It is however not possible to assign an economic value to all of these aspects, in particular, external factors. External factors or externalities refer to the impact (positive or negative) of economic activity associated with the proposed development that is not incurred directly by those participating in the activity but are instead borne by society and/or future generations (Nahman et al., 2009).

Typical external factors (externalities) associated with mining developments, will include social aspects such as additional pressures on infrastructure (housing, road network) and basic services (education, health care, transport, security, municipal services) due to an influx of people; increase in social ills (crime, HIV/AIDS); health-related impacts as a result of environmental pollution; and the general degradation of an area. External environmental factors include pollution; the cost of environmental management and rehabilitation; increase in water demand; and the change in post-closure land use potential. These are measured on a qualitative basis.

The potential social and environmental impacts, which may result from the proposed development will be investigated and assessed by various specialists as part of the environmental impact assessment process.

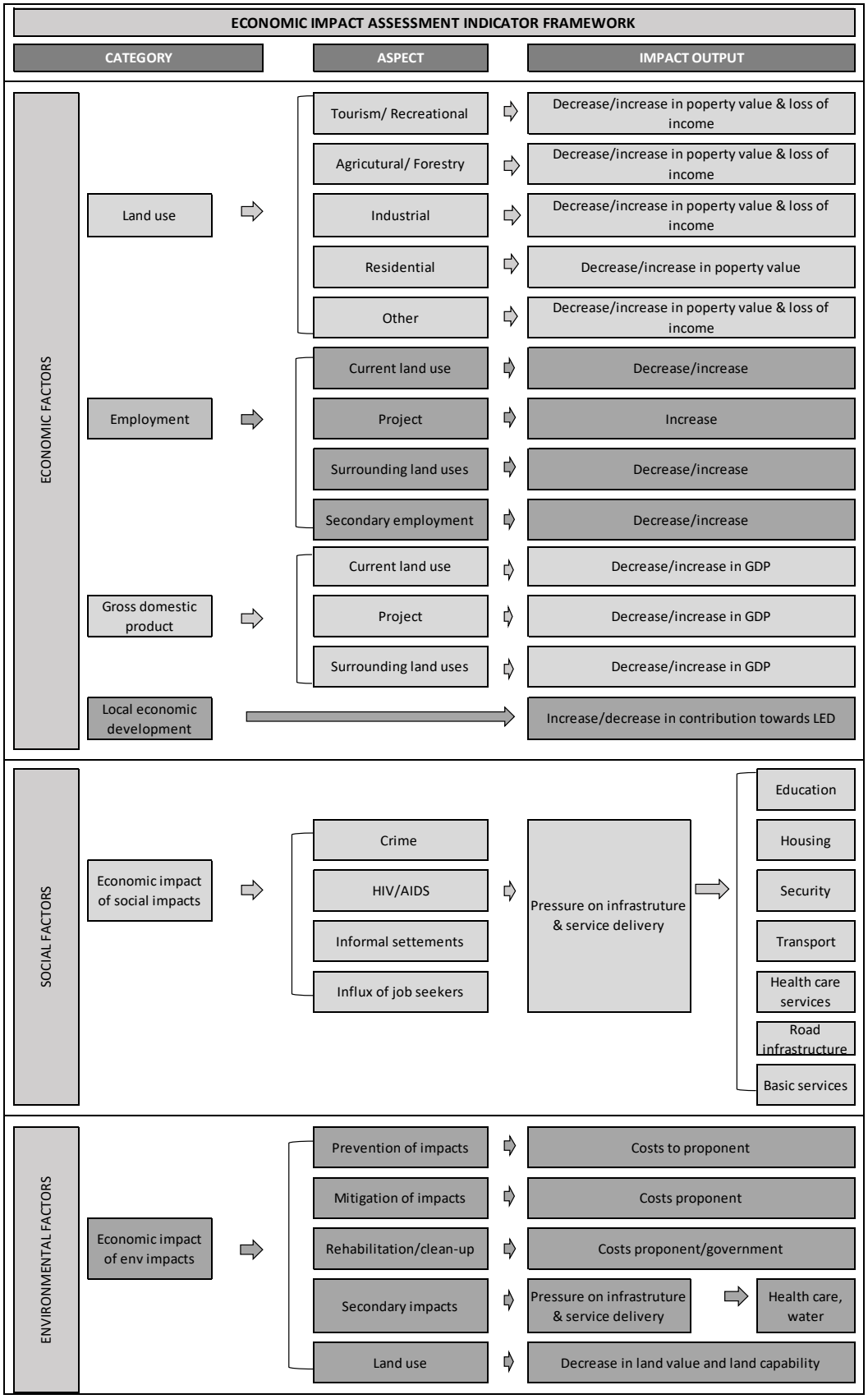


Figure 4: Economic Impact Framework

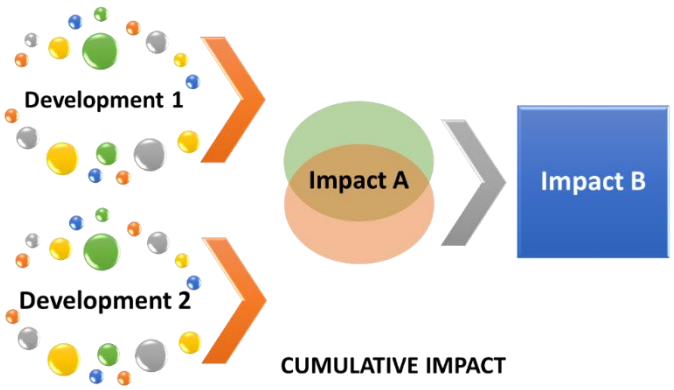
2·7 Types of Impacts

In addition to direct impacts that can be experienced as a direct result of development, further impacts can be divided into the following categories: indirect impacts, cumulative impacts and impact interactions (European Commission, 2001). All these categories of impacts need to be considered when conducting an SIA (or any other type of impact assessment for that matter). These categories of impacts will be explained further in the sections that follow.

2·7·1 Indirect impacts

Indirect impacts are impacts, which are not a direct result of the project, often produced away from or as a result of a complex pathway. It is sometimes also referred to as second or third level impacts, or secondary impacts (European Commission, 2001). Direct/primary impacts cause indirect/secondary impacts and often occur later than and/or further away from the occurrence of direct impacts (DEAT, 2006). An example of an indirect impact is the construction of a new road, resulting in improved access to facilities, with the indirect impact being an increase in school attendance because learners can get to school more easily. Human Right Impacts are also indirect impacts.

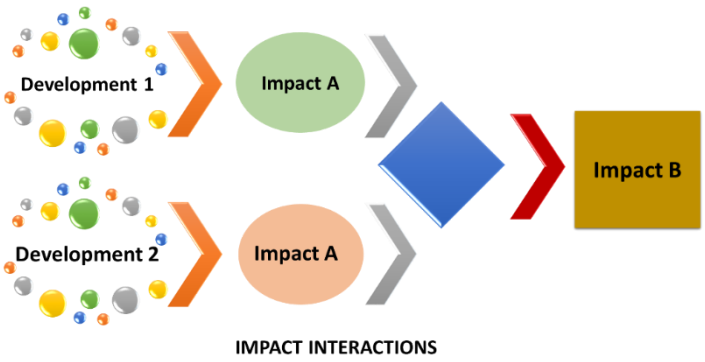
2·7·2 Cumulative impacts



Cumulative impacts are impacts that result from incremental changes caused by other past, present or reasonably foreseeable actions together with the project (European Commission, 2001). Cumulative impacts result from other impacts of other past, present or future developments. It reflects how the impacts of one project may affect and be affected by other projects and can be seen as the sum of the proposed action plus past and present activity in the same area (DEAT, 2006), for example the construction of several new facilities for the generation of power across the country, resulting in a significant increase in availability of electricity in Eskom's power grid (as opposed to the construction of one solar plant, for example, which will in isolation not have a significant impact on the grid).

2·7·3 Impact interactions

Impact interactions are the reactions between impacts, whether between the impacts of just one project or between the impacts of other projects in the area (European Commission, 2001). An impact interaction can, for example, be the construction of a new clinic in a community, on the one hand, resulting in access to quality healthcare, and the installation of a sewage system in the area where there was none, on the other hand, resulting in access to proper sanitation. Both the impacts (access to quality healthcare and access to proper sanitation) will lead to people in the community being healthier and perhaps having a higher life expectancy as a result.



IMPACT INTERACTIONS

2·8 Assessing the Weight of Socio-economic Impacts

2·8·1 Assessment Criteria

According to the NEMA Regulations, 'significant impact means an impact that by its magnitude, duration, intensity or probability of occurrence may have a notable effect on one or more aspects of the environment'. In line with the Regulations, and based on the qualitative findings of the activities undertaken, each potentially significant impact has been assessed concerning:

- the nature and status of the impact
- the extent and duration of the impact
- the probability of the impact occurring
- the effect of significance on decision-making
- the weight of significance
- The mitigation efficiency

2·8·1·1 Nature and Status

The 'nature' of the impact describes what is being affected and how. The 'status' is based on whether the impact is positive, negative or neutral.

2·8·1·2 Spatial Extent

'Spatial Extent' defines the spatial or geographical scale of the impact.

Table 1: Rating of Extent

CATEGORY	RATE	DESCRIPTOR
Site	1	Site of the proposed development
Local	2	Limited to site and/or immediate surrounds (500m zone of influence)
District	3	Local Municipal area
Region	4	District Municipal area
Provincial	5	Limpopo Province
National	6	South Africa
International	7	Beyond South African borders

2·8·1·3 Duration

'Duration' gives the temporal scale of the impact.

Table 2: Rate of Duration

CATEGORY	RATE	DESCRIPTOR
Temporary	1	0 – 1 years
Short term	2	1 – 5 years
Medium-term	3	5 – 15 years
Long term	4	Where the impact will cease after the operational life of the activity either because of a natural process or by human intervention
Permanent	5	Where mitigation either by natural processes or by human intervention will not occur in such a way or such a period that the impact can be considered as transient

2·8·1·4 Probability

The 'probability' describes the likelihood of the impact occurring.

Table 3: Rate of Probability

CATEGORY	RATE	DESCRIPTOR
Rare	1	Where the impact may occur in exceptional circumstances only
Improbable	2	Where the possibility of the impact materialising is very low either because of design or historical experience
Probable	3	Where there is a distinct possibility that the impact will occur
Highly probable	4	Where it is most likely that the impact will occur
Definite	5	Where the impact will occur regardless of any prevention measures

2·8·1·5 Intensity

'Intensity' defines whether the impact is destructive or benign; in other words, the level of impact on the environment.

Table 4: Rate of Intensity

CATEGORY	RATE	DESCRIPTOR
Insignificant	1	Where the impact affects the environment is such a way that natural, cultural and social functions and processes are not affected. Localised impact and a small percentage of the population is affected

Low	2	Where the impact affects the environment is such a way that natural, cultural and social functions and processes are affected to a limited extent
Medium	3	Where the affected environment is altered in terms of natural, cultural and social functions and processes, continue albeit in a modified way
High	4	Where natural, cultural or social functions or processes are altered to the extent that they will temporarily or permanently cease
Very High	5	Where natural, cultural or social functions or processes are altered to the extent that they will permanently cease and it is not possible to mitigate or remedy the impact

2·8·1·6 Ranking, Weighting and Scaling

The weight of significance defines the level or limit at which point an impact changes from low to medium significance, or medium to high significance. The purpose of assigning such weights serves to highlight those aspects that are considered the most critical to the various stakeholders and ensure that the element of bias is taken into account. These weights are often determined by current societal values or by scientific evidence (norms, etc.) that define what would be acceptable or unacceptable to society and may be expressed in the form of legislated standards, guidelines or objectives.

The weighting factor provides a means whereby the impact assessor can successfully deal with the complexities that exist between the different impacts and associated aspect criteria.

Table 5: Description of assessment parameters with its respective weighting

SPATIAL EXTENT	DURATION	INTENSITY / SEVERITY	PROBABILITY	WEIGHTING FACTOR	SIGNIFICANCE RATING (SR - WOM) PRE-MITIGATION	MITIGATION EFFICIENCY (ME)	SIGNIFICANCE RATING (SR-WM) POST MITIGATION
Site (1)	Short term (1)	Insignificant (1)	Rare (1)	Low (1)	Low (0 – 19)	High (0.2)	Low (0 – 19)
Local (2)	Short to Medium-term (2)	Minor (2)	Unlikely (2)	Low to Medium (2)	Low to Medium (20 – 39)	Medium to High (0.4)	Low to Medium (20 – 39)
District (3)							
Regional (4)	Medium term (3)	Medium (3)	Possible (3)	Medium (3)	Medium (40 – 59)	Medium (0.6)	Medium (40 – 59)
Provincial (5)	Long term (4)	High (4)	Likely (4)	Medium to High (4)	Medium to High (60 – 79)	Low to Medium (0.8)	Medium to High (60 – 79)
National (6)							
International (7)	Permanent (5)	Very high (5)	Almost certain (5)	High (5)	High (80 – 110)	Low (1.0)	High (80 – 110)

2·8·1·7 Impact Significance without Mitigation (WOM)

Following the assignment of the necessary weights to the respective aspects, criteria are summed and multiplied by their assigned weightings, resulting in a value for each impact (before the implementation of mitigation measures).

Equation 1:
Significance Rating (WOM) = (Extent + Intensity + Duration + Probability) x Weighting Factor

2·8·1·8 Effect of Significance on Decision-makings

Significance is determined through a synthesis of impact characteristics as described in the above paragraphs. It indicates the importance of the impact in terms of both tangible and intangible characteristics. The significance of the impact "without mitigation" is the prime determinant of the nature and degree of mitigation required. Table 6 below will determine whether the significance rating will affect decision-making or not.

Table 6: Effect of Significance on Decision-Making

RATING		DESCRIPTOR
Negligible	0	The impact is non-existent or insignificant, is of no or little importance to decision making.
Low	1-19	The impact is limited in extent, even if the intensity is major; the probability of occurrence is low, and the impact will not have a significant influence on decision-making and is unlikely to require management intervention bearing significant costs.
Low to Medium	20 – 39	The impact is of importance; however, through the implementation of the correct mitigation measures, such potential impacts can be reduced to acceptable levels. The impact and proposed mitigation measures can be considered in the decision-making process
Medium	40 – 59	The impact is significant to one or more affected stakeholder, and its intensity will be medium or high, but can be avoided or mitigated and therefore reduced to acceptable levels. The impact and mitigation proposed should influence the decision.
Medium to High	60 -79	The impact is of major importance, but through the implementation of the correct mitigation measures, the negative impacts will be reduced to acceptable levels.
High	80 – 110	The impact could render development options controversial or the entire project unacceptable if it cannot be reduced to acceptable levels; and/or the cost of management intervention will be a significant factor and must influence decision-making.

2·8·1·9 Mitigation

"Mitigation" is a broad term that covers all components of the 'mitigation hierarchy' defined hereunder. It involves selecting and implementing measures, amongst others protecting the users of the environment from adverse impacts as a result of mining or any other land use. The aim is to prevent adverse impacts from occurring or, where this is unavoidable, to limit their significance to an acceptable level. Offsetting of impacts is considered the last option in the mitigation hierarchy for any project.

The mitigation hierarchy in general consists of the following in order of which impacts should be mitigated:

- **Avoid/prevent impact**: Can be done through utilising alternative sites, technology and scale of projects to prevent impacts. In some cases, if impacts are expected to be too high the "no project" option should also be considered, especially where it is expected that the lower levels of mitigation will not be adequate to limit socio-economic impacts.
- **Minimise (reduce) impact**: Can be done through the utilisation of alternatives that will ensure that impacts on the socio-economic environment and eco-services provision are reduced. Impact minimisation is considered an essential part of any development project.
- **Manage (restore) impact**: Applicable to aspects where impact avoidance and minimisation are unavoidable or, where an attempt to re-instate impacted aspects and return them to conditions which are similar to the pre-project conditions.
- **Offset (compensate) impact**: Compensating for latent or unavoidable negative impacts on the socio-economic environment. Offsetting should take place to address any impacts deemed to be unacceptable, which cannot be mitigated through the other mechanisms in the mitigation hierarchy.

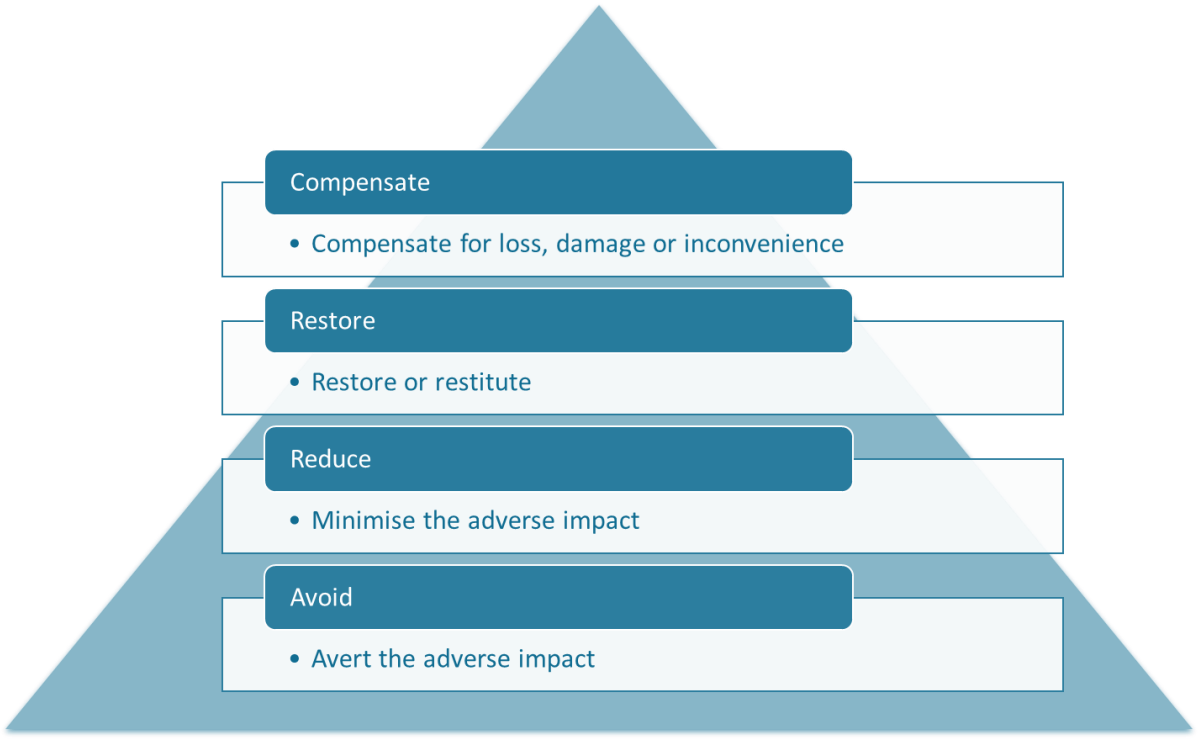


Figure 5: Mitigation Hierarchy

According to the DMR (2013), "Closure" refers to the process for ensuring that mining operations are closed in an environmentally responsible manner, usually with the dual objectives of ensuring

sustainable post-mining land uses and remedying negative impacts on biodiversity and ecosystem services.

The significance of residual impacts should be identified on a regional as well as national scale when considering biodiversity conservation initiatives. If the residual impacts lead to irreversible loss or irreplaceable biodiversity, the residual impacts should be considered to be of very high significance and when residual impacts are considered to be of very high significance, offset initiatives are not considered an appropriate way to deal with the magnitude and/or significance of the biodiversity loss. In the case of residual impacts determined to have medium to high significance, an offset initiative may be investigated. If the residual biodiversity impacts are considered of low significance, no biodiversity offset is required.

2·8·1·10 Impact Significance with Measures (WM)

To gain a comprehensive understanding of the overall significance of the impact, after implementation of the mitigation measures, it was necessary to re-evaluate the impact.

2·8·1·11 Mitigation Efficiency (ME)

The most effective means of deriving a quantitative value of mitigated impacts is to assign each significance rating value (WOM) mitigation effectiveness (ME) rating. The allocation of such a rating is a measure of the efficiency and effectiveness, as identified through professional experience and empirical evidence of how effectively the proposed mitigation measures will manage the impact. Thus, the lower the assigned value, the greater the effectiveness of the proposed mitigation measures and subsequently, the lower the impacts with mitigation.

Equation 2:
Significance Rating (WM) = Significance Rating (WOM) x Mitigation Efficiency (ME)

Mitigation Efficiency is rated out of 1 as follows:

Table 7: Mitigation Efficiency

CATEGORY	RATE	DESCRIPTOR
Not Efficient (Low)	1	Mitigation cannot make a difference in the impact
Low to Medium	0.8	Mitigation will minimise impact slightly
Medium	0.6	Mitigation will minimise impact to such an extent that it becomes within acceptable standards
Medium to High	0.4	Mitigation will minimise impact to such an extent that it is below acceptable standards
High	0.2	Mitigation will minimise impact to such an extent that it becomes insignificant

2·8·1·12 Significance Following Mitigation (SFM)

The significance of the impact after the mitigation measures is taken into consideration. The efficiency of the mitigation measure determines the significance of the impact. The level of impact is therefore seen in its entirety with all considerations taken into account.

2·9 Cumulative Impact

The EIA Regulations provides the following definition:
'"cumulative impact", concerning an activity, means the impact of an activity that in itself may not be significant but may become significant when added to the existing and potential impacts eventuating from similar or diverse activities or undertakings in the area'.

There is the potential for cumulative impact as the coal mining potential of the area is exploited, depended on further sites being identified and developed, particularly if favourable market conditions are present.

Cumulative effects can be:

- Additive: the simple sum of all the effects (e.g. the accumulation of groundwater pollution from various developments over time leading to a decrease in the economic potential of the resource);
- Synergistic: effects interact to produce a total effect greater than the sum of individual effects. These effects often happen as habitats or resources approach capacity (e.g. the accumulation of water, air and land degradation over time leading to a decrease in the economic potential of an area);
- Time crowding: frequent, repetitive impacts on a particular resource at the same time (e.g. multiple boreholes decreasing the value of water resources);
- Neutralising: where effects may counteract each other to reduce the overall effect (e.g. infilling of a wetland for road construction, and creation of new wetlands for water treatment); and,
- Space crowding: high spatial density of impacts on an ecosystem (e.g. rapid informal settlement).

Source: Adapted from Cooper, 2004.

2·10 Limitations and Assumptions

2·10·1 Assumptions

Data accuracy: The information supplied about baseline employment, agricultural activities, size of farming area and crop yield were based on information collected during a social scan undertaken. It is assumed the information is accurate close to accurate. The information supplied by the applicant concerning employment and revenue and closure liability for the proposed mining development is assumed to be accurate. Information, which was used in some calculations, were sourced from third parties. Errors with this information could affect the results of the calculations and therefore, the assessment.

Land values: Land values were based on average land values according to property valuation tables within the Lephalale area. The true value of the land is, however, determined by a range of factors and could, therefore, most likely be higher or lower than the value used in this report.

Period: The economic assessment was based on a period of the potential impact of 16 years.

NPV: A discount rate of 10% was utilised in all NPV calculations.

Agricultural Activities: NPV and PV calculations for agricultural activities were determined over 16 years, which excluded two years for permitting and licensing and excluded three years for downscaling and rehabilitation.

Wage Rates: Wages for the farmworkers were based on rates provided by the Department of Labour (2018). Wages for mine employees were based on the labour values included in the Mine Works Programme. No temporary or seasonal employment was considered in calculating the employment value for agricultural activities.

Gruisfontein Revenue & Employment: The revenue and employment figures provided for the opencast and plant activities only made provision up to Year 10, even though the life of these activities will be 16 years. The provided current term numbers were therefore applied to the remaining six years before the PV and NPV calculations were made.

The strategic importance of the project and no-go option: It is assumed that the strategic importance of the project, is supported by the national and provincial government and therefore, their policies.

Technical suitability: It is assumed that the Gruisfontein Coal Project and its sites identified represent a technically suitable site.

Financial Sustainability: It is assumed that the Applicant, which has assessed the need for the Project, has produced a business case determining financial sustainability. This SEA has, therefore, not evaluated these aspects of the Project.

2·10·2 Limitations

The information available: This study was carried out with the information available to the specialists at the time of executing the study, within the available timeframe and budget. The sources consulted are not exhaustive and additional information which might strengthen arguments or contradict information in this report might exist.

Evidence-based Approach: The specialists did endeavour to take an evidence-based approach in the compilation of this report and did not intentionally exclude scientific information relevant to the assessment.

Socio-economic Sensitive Environments: Areas that might yield socio-economic sensitivities have been identified through a desktop study utilising available Mapping, Orthophotos and Google Earth™, and where possible verified with landowners. The areas that have been marked are the sensitive areas visible to the socioeconomic specialists at the time of the study, which is close to the proposed project location under investigation.

Demographic data: The demographic data used in the study is largely based on the 2011 Census. While this data does provide useful information on the demographic profile of the affected area, the data are dated and should be treated with care. Where possible, reference is made to the latest demographic data contained in local Integrated Development Plans and other documents.

Sense of Place: Assessment of the impact on the sense of place is based on the specialist's opinion as a sense of place is a very personal experience, and is not easily measurable.

Decommissioning Impacts: Socio-economic impacts associated with the eventual decommissioning of the mine at the end of its life are briefly discussed but are not subject to detail assessment. This omission is motivated by the fact that predictions concerning the characteristics of the receiving socio-economic environment at the time of decommissioning are subject to a large margin of error, thus significantly reducing the accuracy of the impact assessment.

3 LEGISLATIVE, POLICY AND PLANNING ENVIRONMENT

3.1 Introduction

Section 3 provides an overview of the legislative, policy and planning environment affecting the Gruisfontein Project. To meet the objectives of the SEA, the list below includes the legislation, policy and planning documents that were reviewed. Summaries of these legislations and policies are not necessarily included in this report where relevance is low:

- International Best Practice
  - Equator Principles
  - IFC Standards
  - Project Classification
  - Human Rights
- South African Legislation
  - The Constitution, Act 108 of 1996
  - The National Environmental Management Act 107 of 1998 (NEMA)
  - National Heritage Resources Act (Act No. 25 of 1999) (NHRA)
  - Conservation of Agricultural Resources Act (Act No. 43 of 1983)
  - Mine Health and Safety Act, 1996 (Act 29 of 1996)
  - Land Use Planning Ordinance (Ordinance No. 15 of 1985)
  - Town Planning and Townships Ordinance No 15 of 1986
  - Spatial Planning and Land Use Management Act (SPLUMA)
  - Special Economic Zones Act, No. 16 of 2014
  - Promotion of Access to Information Act (No. 2 of 2000)
  - Promotion of Administrative Justice (No. 3 of 2000)
  - Broad-Based Black Economic Empowerment Act (No. 53 of 2003)
  - Restitution of Land Rights Act 3 of 1996
  - Amendment of the Upgrading of Land Tenure Rights Act 112 of 1991
  - Transvaal Nature Conservation Ordinance 12 of 1983
  - Limpopo Environmental Management Act No 7 of 2003 (LEMA)
- Policies and Planning Documents
  - Limpopo Provincial Growth and Economic Development Strategy
  - Limpopo Spatial Development Framework
  - Waterberg District and Lephalale Local Municipal Spatial Development Framework
  - Waterberg District and Lephalale Local Municipal Integrated Development Plan

3·2 International Best Practice

The most widely recognised and frequently applied set of best practice standards on the assessment and management of social and environmental impacts are the Performance Standards (PS) on Social and Environmental Sustainability, developed by the IFC in 2006. The IFC's Performance Standards form part of the Equator Principles.

The IFC's Performance Standards aim to manage social and environmental risks (and impacts) to enhance development opportunities in private sector financing in member countries eligible for financing (IFC, 2006 as amended in 2010). The emphasis is on the early identification of potential impacts associated with the project activities during the life cycle of the project, namely construction, operation, decommissioning and closure activities.

IFC Performance Standards define project proponents' roles and responsibilities for managing project activities and associated infrastructure and the requirements for receiving and retaining IFC support.

3·2·1 Basic Human Rights

The protection of basic human rights is first and foremost, the responsibility of the state. However, in terms of international best practice, private sector companies are increasingly required to uphold and promote these basic rights. Box 1 outlines the UNICEF definition of human rights.

> **"Human rights are those rights, which are essential to life as human beings – basic standards without which people cannot survive and develop in dignity. They are inherent to the human person, inalienable and universal."**
>
> *Source: UNICEF, 2011*

The UN's 'Protect, Respect and Remedy Framework for Business and Human Rights' (2010) underlines the corporate responsibility to protect human rights, address adverse impacts and provide greater access to remedies. The following key aspects of the UN Framework for Business and Human Rights apply to projects:

- *Respecting rights*: it is the responsibility of a company to respect human rights. This is often defined by social expectations and in part is a company's ''social licence to operate''. A company cannot compensate for human rights harm by performing good deeds elsewhere and "doing no harm" may require positive steps such as policies, training and managing impacts.
- *Due diligence*: This concept describes the steps a company must take to become aware of, prevent and address adverse human rights impacts. At a minimum, a company should look at the international bill of human rights and core conventions of the International Labour Organisation (ILO). Companies should consider three sets of factors, namely:
    - The country contexts, to highlight any specific human rights challenges they may pose.

- What human rights impact the project activities may have within that context.
- Whether they might contribute to abuse through the relationships connected to their activities, such as with business partners, suppliers, State agencies, and other non-state actors, how far or how deep this process must go will depend on circumstances.

- *Policies*: Companies need to adopt a human rights policy.
- *Impact assessments*: Companies must take proactive steps to understand how existing and proposed activities may affect human rights.
- *Integration*: The integration of human rights policies throughout a company is essential as is leadership from the top to embed respect for human rights throughout a company, as is training to ensure consistency, as well as capacity to respond appropriately when unforeseen situations arise.
- *Tracking performance*: Monitoring and auditing processes permit a company to track on-going developments.
- *Sphere of influence*: The sphere of influence conflates two very different meanings of influence: one is an impact, where the company's activities or relationships are causing human rights harm; the other is whatever leverage a company may have over actors that are causing harm. The first falls squarely within the responsibility to respect; the second may only do so in particular circumstances.
- *Complicity*: The corporate responsibility to respect human rights includes avoiding complicity, which refers to indirect involvement by companies in human rights abuses - where the actual harm is committed by another party, including governments and non-State actors. Due diligence can help a company avoid complicity.

3·3 Policy and Planning

3·3·1 South African Mining Charter

Focus on the sustainable transformation of the mining industry. 2018 Mining Charter seeks to achieve the following objectives:

- (a) Recognise the internationally accepted right of the State to exercise sovereignty over all its mineral resources;
- (b) Deracialise ownership of the mining industry by redressing the imbalances of past injustices;
- (c) Substantially and meaningfully expand opportunities for Black Persons to enter the mining and minerals industry and to benefit from the exploitation of the nation's mineral resources;
- (d) Utilise and expand the existing skills base for the empowerment of Black Persons;
- (e) Advance employment and diversify the workforce to achieve competitiveness of the industry and productivity;

- (f) Enhance the social and economic welfare of mine communities and major labour sending areas in order to achieve social cohesion;
- (g) Promote sustainable development and growth of the mining industry;
- (h) Catalyse growth and development of local mining inputs sector by leveraging the procurement spend of the mining industry; and
- (i) Promote beneficiation of South Africa's mineral commodities.

Social management and mitigation measures, to be developed as part of the SEA, is aligned to the 2018 Mining Charter.

3·3·2 National Strategy for Sustainable Development and Action Plan (2011)

The Strategy for Sustainable Development and Action Plan (NSSD1) is a proactive strategy that regards sustainable development as a long-term commitment, which combines environmental protection, social equity and economic efficiency with the vision and values of the country. It is a milestone in an ongoing process of developing support and initiating, and up-scaling actions to achieve sustainable development in South Africa (DEA, 2011) and has outlined the following strategic objectives:

- enhance systems for integrated planning and implementation;
- sustain ecosystems and use natural resources efficiently;
- move towards a green economy;
- build sustainable communities; and
- respond effectively to climate change.

3·3·3 National Development Plan 2030 (2010)

The National Development Plan aims to ensure that all South Africans attain a decent standard of living through the elimination of poverty and reduction of inequality by 2030. The core elements of a decent standard of living identified in the plan are:

- housing, water, electricity and sanitation;
- safe and reliable public transport;
- quality education and skills development;
- safety and security;
- quality health care;
- social protection;
- employment;
- recreation and leisure;
- clean environment; and
- adequate nutrition.

3·3·4 New Growth Path (2010)

South Africa has embarked on a new economic growth path in a bid to create 5million jobs and reduce unemployment from 25% to 15% over ten (10) years. The plan aims to address unemployment, inequality and poverty by unlocking employment opportunities in South Africa's private sector and identifies five priority areas (green energy, agriculture, mining, manufacturing and tourism) as part of the programme to create jobs

3·3·5 National Framework for Sustainable Development (2008)

The purpose of the National Framework on Sustainable Development is to enunciate South Africa's national vision for sustainable development and indicate strategic interventions to re-orientate South Africa's development path in a more sustainable direction. It proposes a national vision, principles and areas for strategic intervention that will enable and guide the development of the national strategy and action plan.

The national framework for sustainable development seeks to build on existing programmes and strategies that have emerged in the first 14 years of democracy. It aims to identify key, short, medium and long–term challenges in our sustainable development efforts set the framework for a common understanding and vision of sustainable development; and defines strategic focus areas for intervention (DEAT, 2008).

3·3·6 National Spatial Development Perspective (2006)

The NSDP 2006 provides a framework for a focused intervention by the State in equitable and sustainable development. It represents a key instrument in the State's drive towards ensuring greater economic growth, buoyant and sustained job creation and the eradication of poverty. It provides:

- a set of principles and mechanisms for guiding infrastructure investment and development decisions;
- a description of the spatial manifestations of the main social, economic and environmental trends that should form the basis for a shared understanding of the national space economy; and
- an interpretation of the spatial realities and the implications for government intervention.

3·3·7 National Infrastructure Plan 2012 (NIP)

SA Government adopted a National Infrastructure Plan in 2012. With the plan, it aims to transform SA‟s economic landscape while simultaneously creating significant numbers of new jobs, and strengthen the delivery of basic services. The plan also supports the integration of African economies. The National Infrastructure Plan (NIP) seeks to promote:

- re-industrialisation through the manufacturing of inputs, components and machinery;
- skills development aimed at critical categories;

- greening the economy; and o empowerment.

The NIP comprises 18 identified Strategic Integrated Projects (SIPs) which integrate multiple infrastructure plans into a coherent package. SIP 1 refers to "Unlock the northern mineral belt with Waterberg as the catalyst".

- Unlock mineral resources;
- Rail, water pipelines, energy generation and transmission infrastructure;
- Thousands of direct jobs across the areas unlocked;
- Urban development in Waterberg - first major post-apartheid new urban centre will be a "green" development project;
- Rail capacity to Mpumalanga and Richards Bay;
- Shift from road to rail in Mpumalanga; and
- Logistics corridor to connect Mpumalanga and Gauteng.

The Gruisfontein Mining Project can play a role to one such goal, "unlocking the northern mineral belt of the Waterberg as a catalyst". The Gruisfontein Mining Project is thus of strategic importance and in line with the development goals of the NIP.

3.3.8 Limpopo Provincial Development Plan

The Limpopo Provincial government developed a five-year developmental plan for the period 2015-2019. The Limpopo Development Plan (LDP) serves as the medium-term strategic plan of the current provincial administration. Although the plan is being reviewed at the moment, it is still relevant to the economic development of the province, and as such, all planning in the province must be based on it. The plan is aligned to the NDP, and its main goals include the reduction of poverty, unemployment and inequality through sustainable development and transformation as a means of growing the provincial economy. The vision of the LDP is to fulfil the potential for prosperity in a socially cohesive, sustainable and peaceful manner. The vision will be achieved through participatory leadership aimed at promoting excellence and an entrepreneurial spirit, improved service delivery, facilitation of decent job-creation and systematic poverty reduction The LDP emphasises enhancing economic thrusts of the province, which include g mining, manufacturing, agriculture and tourism. The objectives of the LDP are to:

- Create decent employment through inclusive economic growth and sustainable livelihoods
- Improve the quality of life of citizens Prioritize social protection and social investment
- Promote vibrant and equitable sustainable urban and rural communities
- Raise the effectiveness and efficiency of developmental public service
- Ensure sustainable development

The main approach of the LDP in growing the local economy and creating jobs include a focus in:

- Cluster value-chain development strategies, including the SEZs;

- The Green Economy Strategy;
- Information and Communication Technology Development;
- SMME and Co-operative Development, including the informal sector; and
- Biodiversity Development.

Economic planning in Lephalale will respond to the above focus areas.

3.3.9 Waterberg Spatial Development Framework

The Waterberg SDF strongly emphasises the links between developments in the constituting municipalities. The development and implementation of the SDF are built around the powers and functions of the Waterberg District Municipality and the local municipalities within its area of jurisdictions.

The following areas and issues have been identified as critical to development in all the municipalities:

- Institutional support regarding:
    - Capacity for fulfilling the local municipalities land use control and spatial planning mandates.
    - Communication between municipalities regarding land use and spatial planning related matters affecting all municipalities.
    - Data needs and data management, which includes GIS capacity.
- The development of implementation plans to support the development of the core components of the SDF.
- Developing a common approach to key development areas, namely:
    - Meeting the needs and demands for land and supporting infrastructure from mining companies.
    - The development of ecotourism facilities, which includes, eco-resorts, estates, various types of protected areas and ancillary infrastructure in support of tourism in the area.
    - Service delivery and the provision of social infrastructure in the non-urban area.
- The development of the Waterberg biosphere to allow it to fulfil its potential as an ecological area of national and international importance.

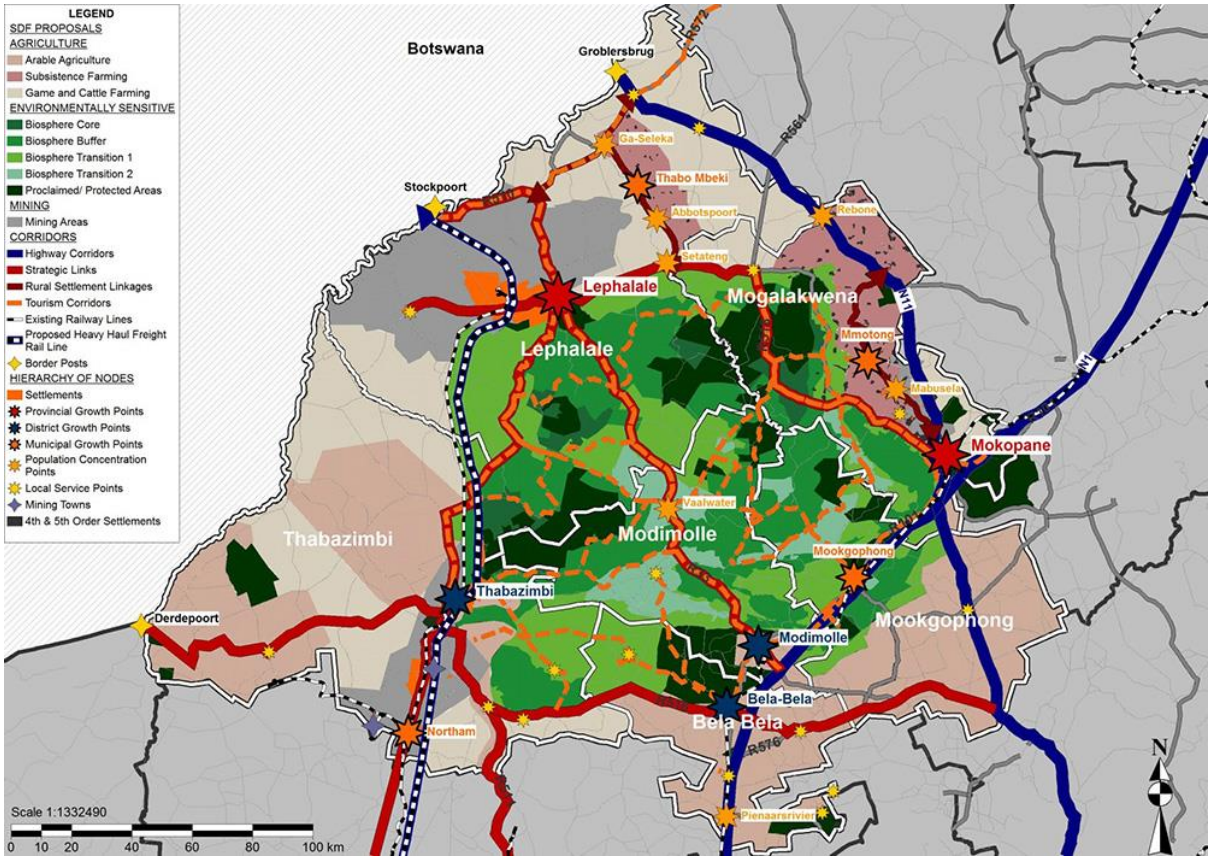


Figure 6: Waterberg SDF

3·3·10 Lephalale Spatial Development Framework

The Lephalale SDF is a core component of Lephalale Local Municipality's economic, sectoral, spatial, social, institutional, environmental vision, a tool to achieve the desired spatial form of the Municipality. The Lephalale SDF echoes the Waterberg District EMF in its land-use planning objectives. Based on the Lephalale SDF, the project site is outside any of the Environmental Management Zones but within their areas earmarked for future mining development.

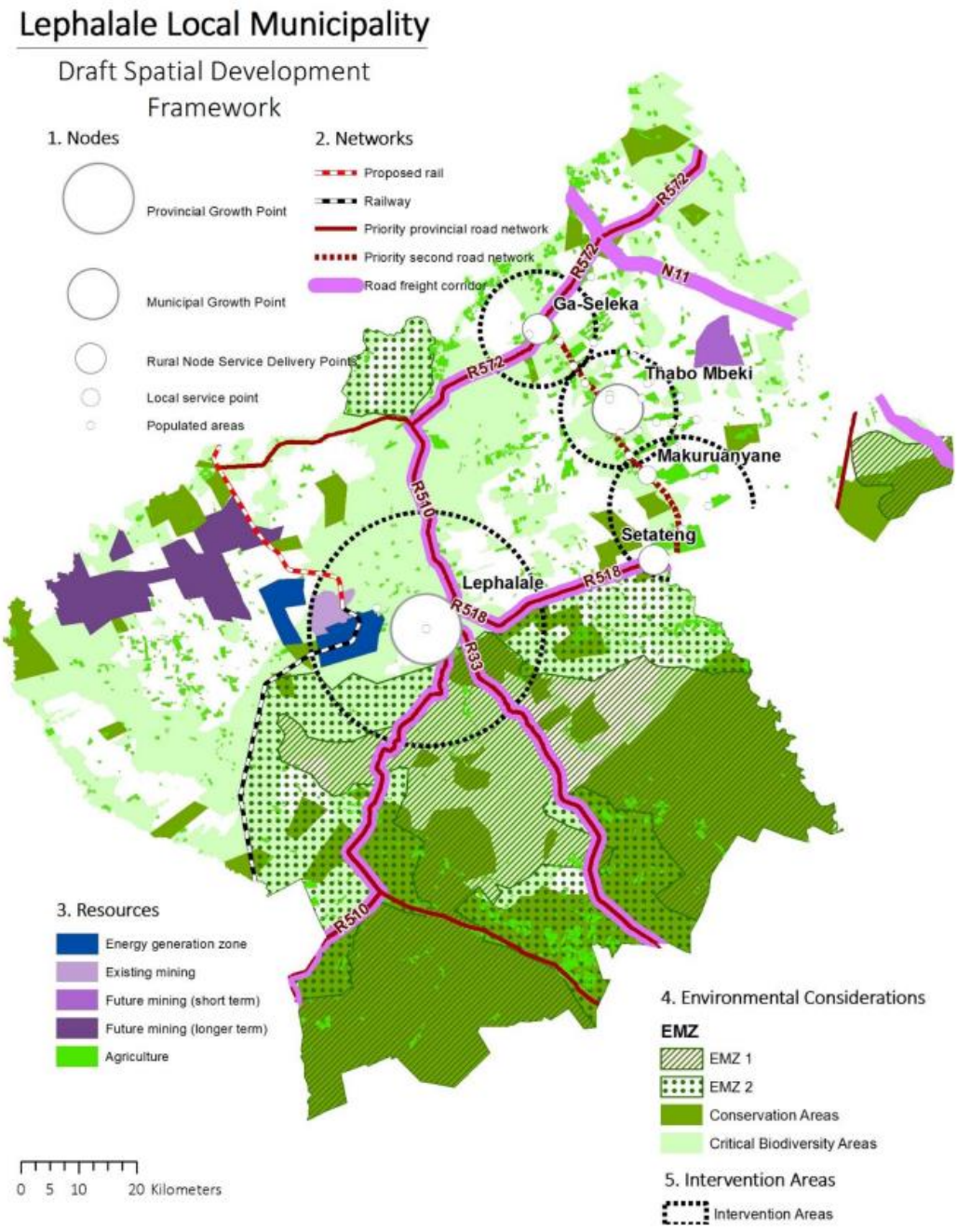


Figure 7: Lephalale SDF

3·3·11 Lephalale Local Municipal Integrated Development Plan

The IDP is a process through which the municipalities prepare strategic development plans for five years. An IDP is one of the key instruments for local government to cope with its new developmental role and seeks to arrive at decisions on issues such as municipal budgets, land management, promotion of local economic development and institutional transformation in a consultative system and strategic manner.

The IDP recognises the future development of further mining in the Steenbokpan region.

3·3·12 Summary of the Regional Policies

The table below is the author's interpretation of the relevance and impact of the Regional Policies on the Gruisfontein Mine Project:

Table 8: Regional Policy/Plan Summary

AREA		
	FOCUS AREA	**RELEVANCE TO THE GRUISFONTEIN PROJECT**
National & Limpopo	Focus on economic development. Unlock mineral potential Create jobs	Aligned with National and Provincial Plans
Waterberg DM & Lephalale LM	Leverage future mining development for infrastructure development and economic growth	Aligned with District and Municipal Plans

4 PROJECT OVERVIEW

4.1 Locality

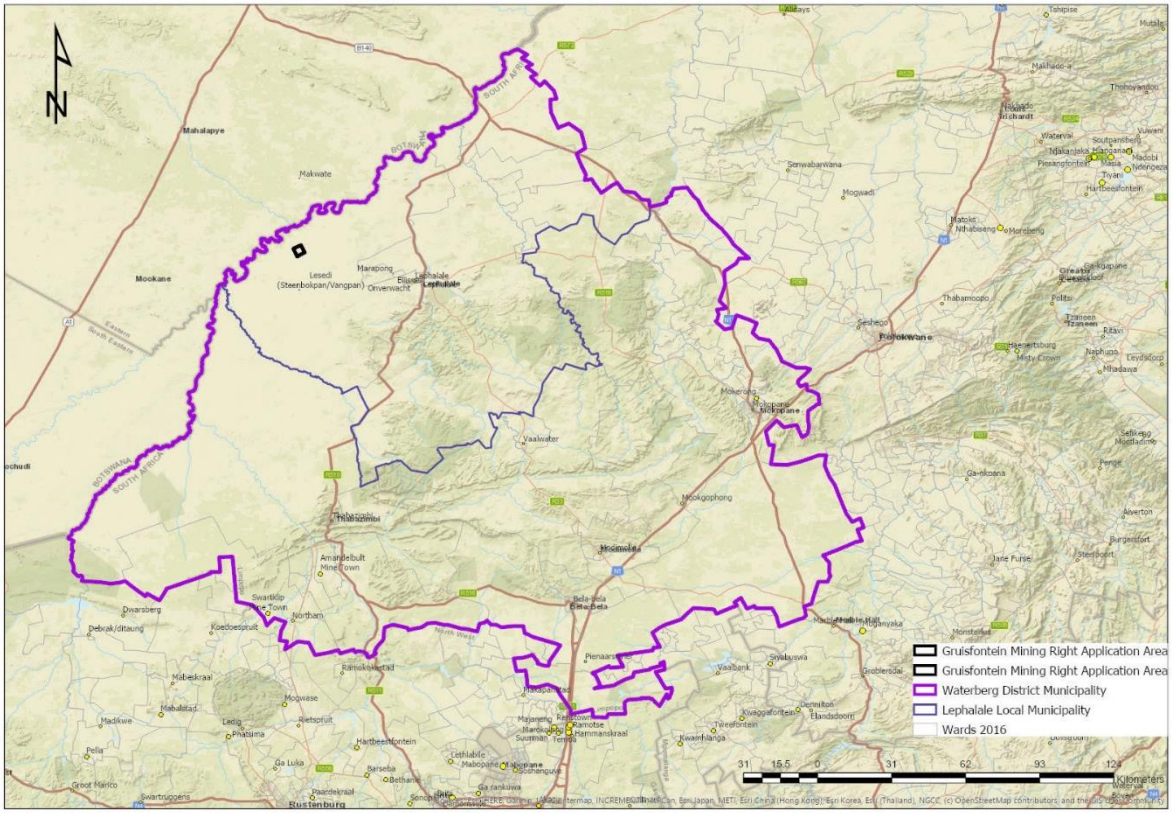


Figure 8: Institutional Map

The Gruisfontein Project is located in Ward 3 of the Lephalale Local Municipality within the Waterberg District Municipality of Limpopo Province. The proposed development lies within the Waterberg Coalfield.

The main settlement in the area is the Lephalale town that consists of Ellisras and Onverwacht, with a large settlement to the north-west called Marapong, approximately 40 km south-east from the Gruisfontein MRA area. The closest town to the proposed development is Steenbokpan, approximately 13 km to the south, with a relatively small settlement (± 400 households) called Lesedi located on the farms Steenbokpan and Vangpan.

The Matimba and Medupi Power Stations (Eskom) is situated strategically close to the proposed development, approximately 28 km south-east of the proposed Gruisfontein Project.

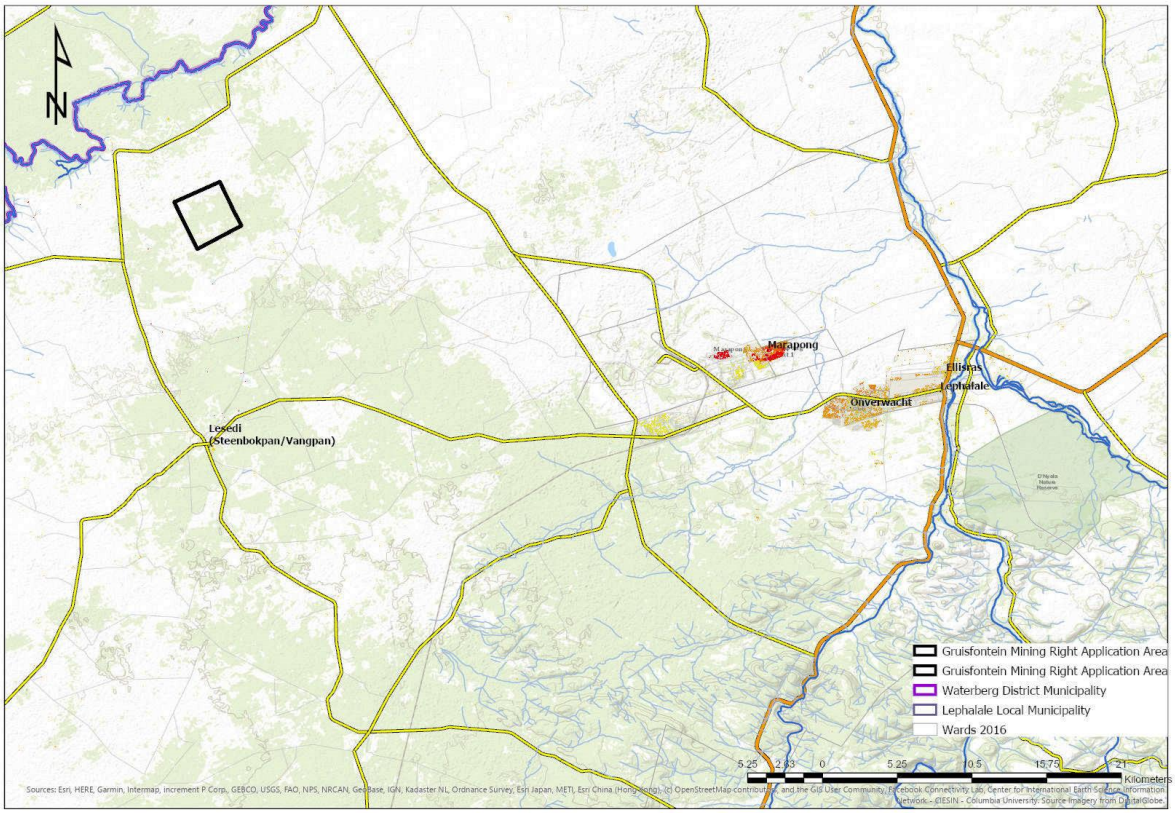


Figure 9: Locality Map

The farm Gruisfontein 230 LQ is a privately owned farm used for cattle and game ranching. The areal extent of the property is in the order of 1 136.1 ha, and the current surface owner is Prostart Traders 136 (Pty) Ltd (Directors Mr PJ Nel and HW Schönfeldt).

Neighbouring landowners include private landowners (DH Steenkamp, GA Steenkamp, ME Swanepoel and SC Beukes) and commercial or mining companies (Kanivest 3067, Sasol Mafutha Mining, Anglo Operations, Eyesizwe Coal). Refer to Landownership Map in the figure below.

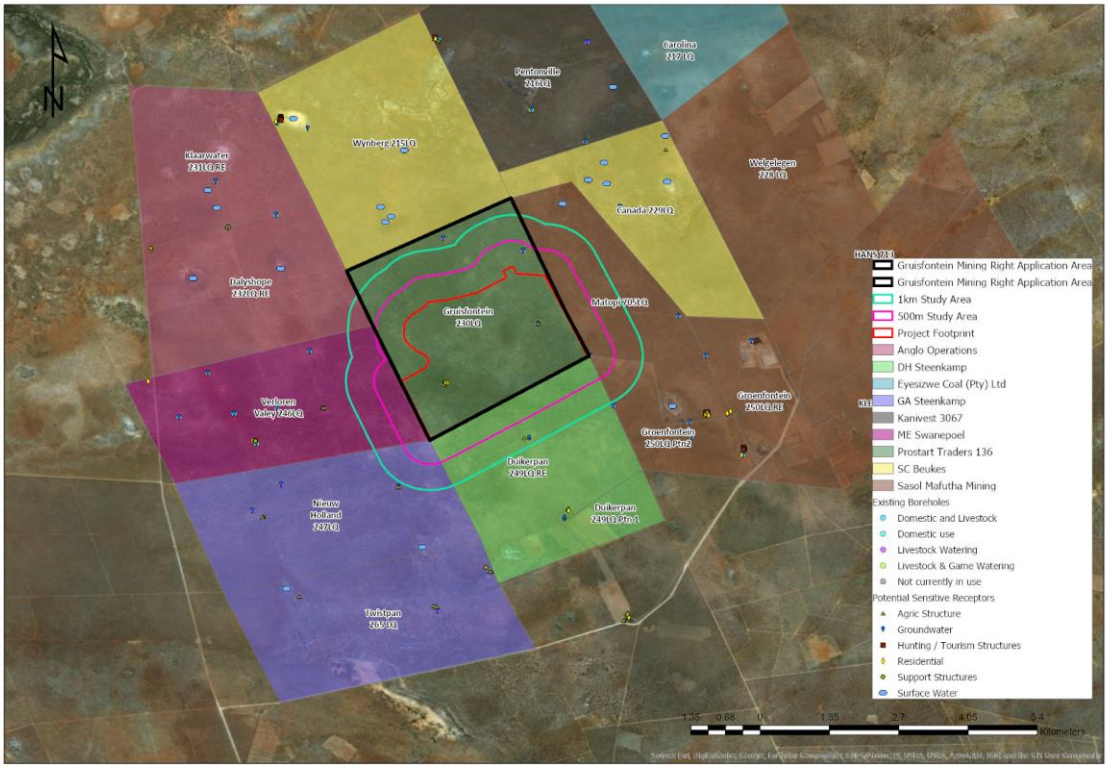


Figure 10: Landownership

Several other mineral rights (prospecting and mining rights) are held by various companies in the region of the proposed Gruisfontein Project, as indicated in the figure below.

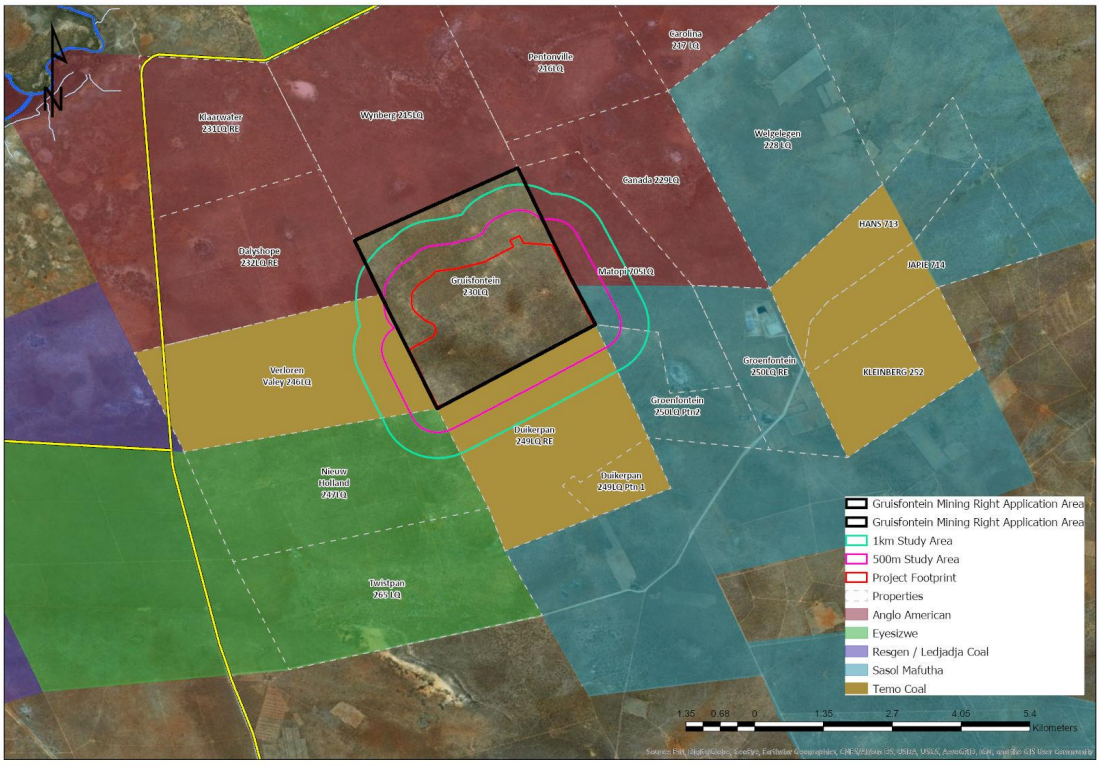


Figure 11: Mineral Right Holders

4.2 Project Overview

The Gruisfontein Project will be an opencast coal mine with a processing plant, ancillary infrastructure and temporary and permanent dumps and stockpiles. The project has a life-of-mine (LOM) of approximately 16 years and will be mined via open-pit truck and shovel operations. Gruisfontein Project is designed to accommodate a run-of-mine (RoM) production of 6 million tonnes per annum (Mtpa), and at a practical product yield of approximately 50%, resulting in 3 Mtpa of Eskom product. The footprint of the infrastructure and mining areas (disturbed areas) is in the order of 830 ha (70% of the farm extent). The infrastructure will be placed to the south of the open pit and include a processing plant, temporary discard dump (3 years), long-term discard dump, overburden and topsoil stockpiles and water management and other supporting infrastructure. The product will be transported via road to either Medupi or Matimba Power stations or both, with an option of an export product to be transported via rail to the market.

The Gruisfontein resource is near existing roads and proposed rail infrastructure linking South African Freight Rail to the Botswana rail network.

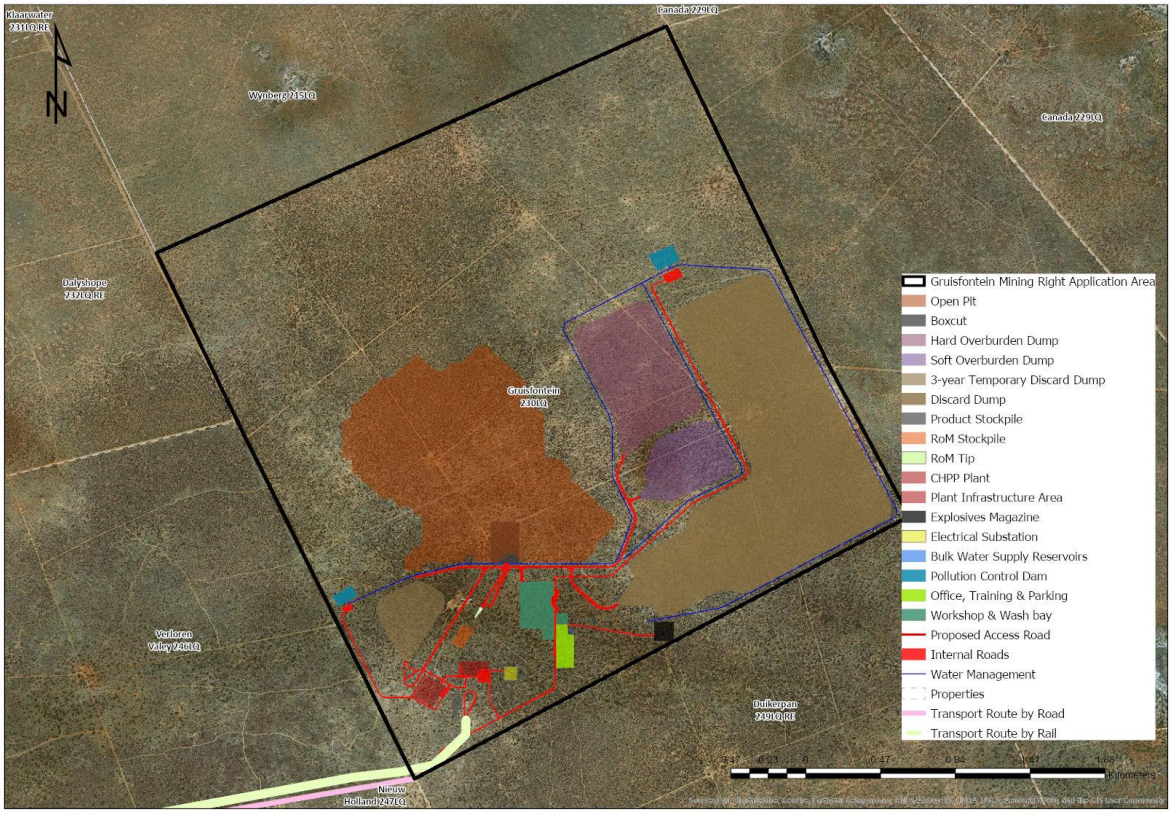


Figure 12: Gruisfontein Mine Project - Proposed Mine Plan

The target product is domestic thermal coal for Eskom with a quality specification of 19 - 20 MJ/kg (air-dry basis). The project is estimated to produce approximately 6 Mtpa of RoM coal over a total

mine life of approximately 16 years. The quality to be produced will be suitable for local and regional markets. The coal can be marketed to the international market as a low-grade export product. The majority of the coal will be used to supply the local thermal market. The marketing strategy is to supply the nearby Medupi power station and cover the shortfall that Grootgeluk mine will supply once Medupi is in full production. The opportunity also exists to supply thermal coal into the Witbank region or to export as low-grade coal which is feasible at current export prices.

4·2·1 Mine Methodology and Timeframe

Coal will be mined via opencast strip-mining methods. Based on the geological information contained in the MWP, the production is estimated as 3Mtpa. This will be mined over 16 years.

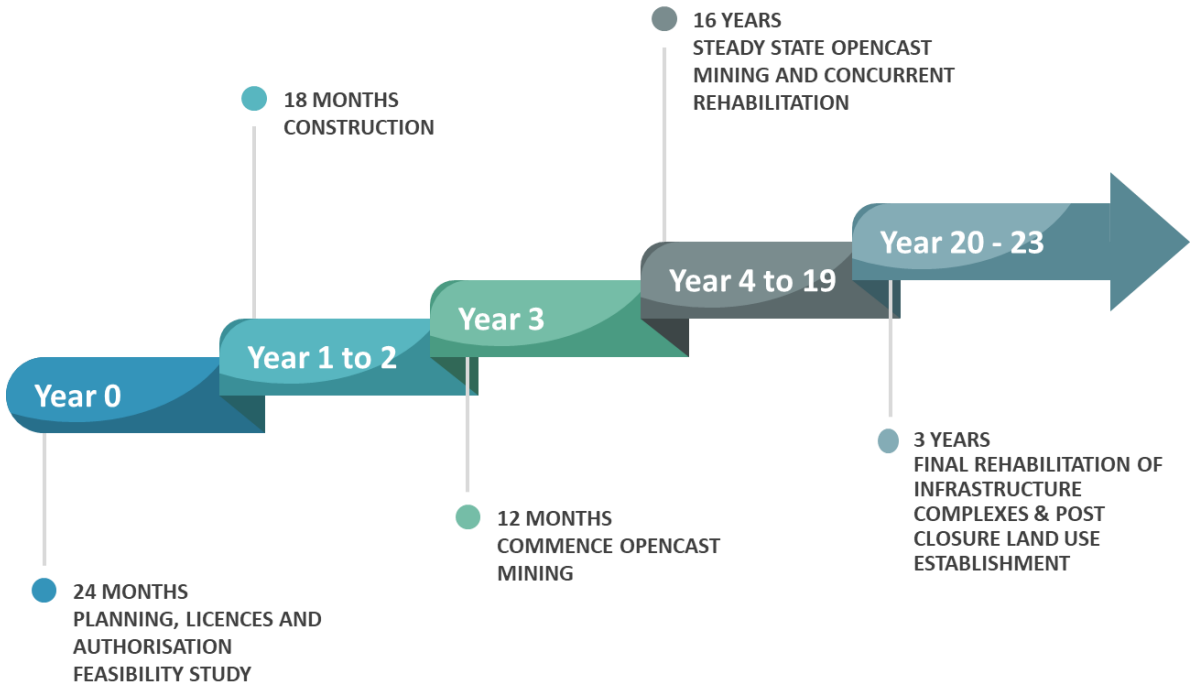


Figure 13: Life of Mine Phases

4·2·1·1 Open Cast Mining

The Gruisfontein resource will be mined using the opencast strip-mining method, which is preferred because the initial box cut lies generally close to the surface with a low strip ratio. This mining system is considered standard for these types of barcode coals, is well understood in southern Africa, and is suitable for large near-surface coal deposits found in the Waterberg coal basin.

The selected mining system has been identified as a standard truck and shovel with blasting below rockhead. The mining operation will follow the sequence outlined below:

- Initial scrubbing to clear the land.
- Topsoil will be stripped from the waste, discard dumps and initial box cut and stockpiled appropriately for use at a later date for reclamation and rehabilitation.
- Appropriate ditching will be applied around the perimeter of the excavations and soil removal areas.
- Overburden from the initial box cut will be removed by a combination of hydraulic digging, ripping and drill and blast as required. The combined method of extraction will be dependent on the rock mass and strength properties which have in turn been determined by geotechnical domain classification. The overburden will initially be hauled to an above-ground waste dump and later returned to the mined-out void. Once the waste dump has reached maximum capacity, and there is sufficient mined-out volume the waste will be hauled to an adjacent mined-out void. Whenever possible preference will be given to backfilling due to the cost and time implications of hauling to a dumpsite.
- Once the overburden has been stripped to expose the coal mining horizons, they will be liberated by digging, ripping or drill and blast and loaded onto haul trucks using excavators. The haul trucks will then transport the RoM coal to the RoM pad at the coal handling and preparation plant (CHPP) for washing/beneficiation.
- The CHPP waste will be removed by haul truck and either taken to the dedicated discard dump or placed in compartments constructed from soft and hard overburden to prevent spontaneous combustion.

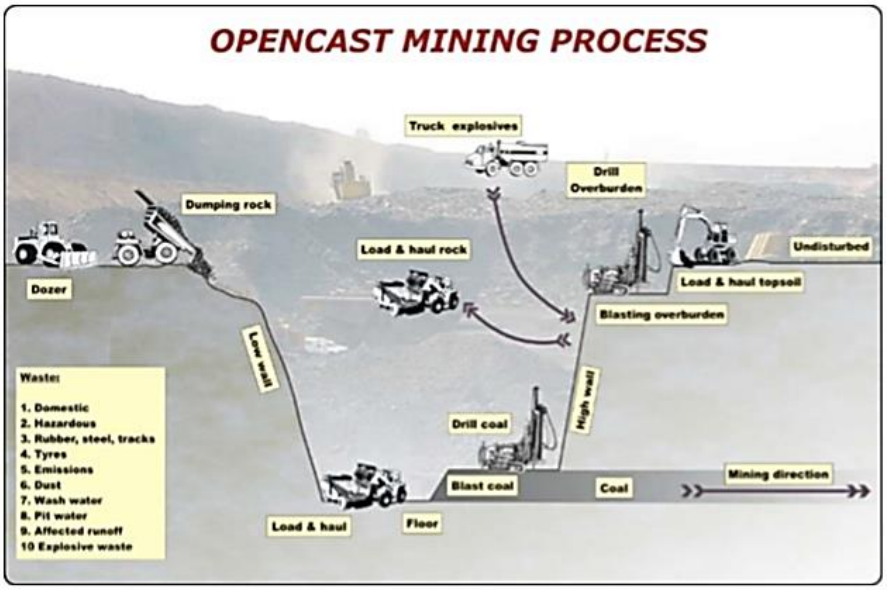
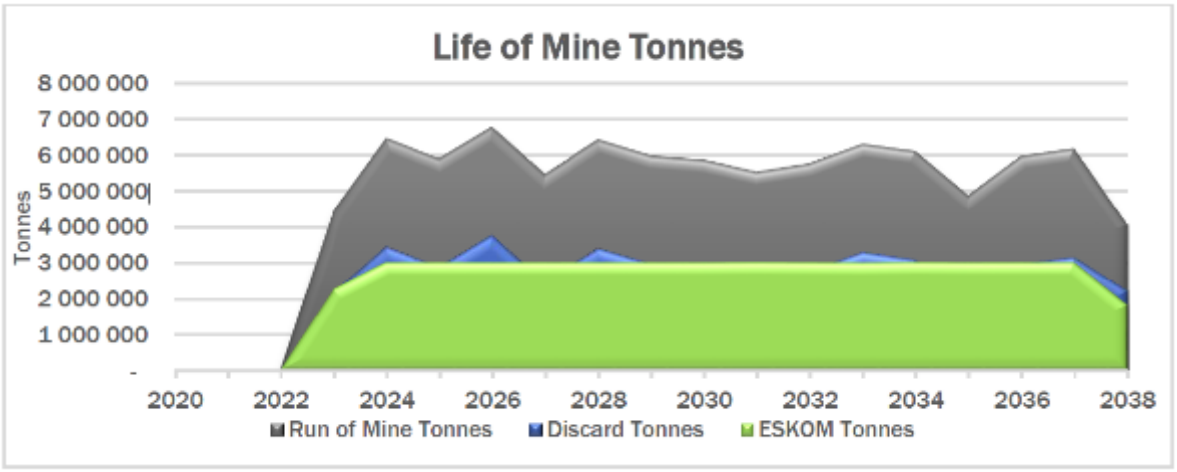


Figure 14: Opencast Mining Process

4.2.1.2 Production Profile

Gruisfontein Project is designed to accommodate an RoM production of 6 Mtpa, and at a practical product yield of approximately 50%, resulting in a 3 Mtpa Eskom product. The production profile is indicated in the figure below.



4.2.1.3 Rehabilitation and Closure Planning

The following preliminary closure objectives have been set for the successful rehabilitation of the disturbed areas associated with the proposed Gruisfontein Project:

- Demolition: To demolish the surface structures where alternative use is not possible (agreed with community and/or landowners) and rehabilitate the areas where required.
- Rehabilitation: To rehabilitate the open pit and other disturbed areas to a post-mining grazing capability class. All stockpiled material (overburden, discard) will be utilised to backfill and rehabilitate the opencast area; no surface dumps will remain post-closure.

The final closure objectives will be consulted through the Public Participation Process. The recommendations proposed by the IAPs and authorities will be considered during the development of the final closure plan.

4.2.2 Coal Processing

The project requires the establishment of a new CHPP to process the extracted RoM from the opencast mine. The CHPP has been specified to supply coal of Calorific Value (CV) 19.0 - 20.0 MJ/kg (air-dried) as the primary product. The CHPP will incorporate raw coal handling, beneficiation, fines bypass, water clarification product and discard handling facilities. The plant will be a single-stage CHPP that will produce a product destined for the thermal domestic market.

Mining benches will be mined simultaneously and stockpiled on a raw coal stockpile. A stacker and reclaimer operation will be utilised to ensure adequate blending before feeding to the CHPP and will act as buffer capacity between mine and CHPP.

The plant feed is equipped with a single deck scalping screen, 15 mm size. Dense medium cyclones are utilised for the 50 x 15mm, and 1 x 0.15mm is beneficiated using spirals. It is expected that fines carry over from the scalping screen will occur, and for this reason a fines circuit has been allowed for. The 0.15 x 0 mm is dewatered in the thickener and filter plant, the filter product reports to the discard belt, and the 15 x 0 mm raw coal by-passes the plant and will report to the product.

- Screening Plant: Raw coal, nominal 50 x 0 mm, from the raw coal stockyard will be fed into one 200t capacity raw coal distribution bin that will feed the raw coal scalping screen. Feed to the scalping screen is extracted using vibrating feeders that control the feed rate.
- Cyclone Plant: The coal preparation plant will consist of one module. The minus 50 mm raw coal discharging from the plant feed conveyor will be mixed with water before feeding onto a de-slime fixed sieve. Slurry consisting of dense medium and coal will be pumped into one high-capacity dense medium cyclone located on the top floor of the plant.
- Magnetite Recovery: A portion of the medium from the correct medium headbox will provide the bleed of the medium via the correct medium bleed splitter box to the dilute medium tank. Concentrated magnetite from the magnetic separators will gravitate to the correct medium tank. Effluent from the magnetic separators will gravitate to the plant feed chute feeding the de-sliming screen.
- Fines Circuit: The de-sliming screen underflow is pumped to a set of classifying cyclones. The classifying cyclones classify the feed at nominal 0.15 mm. Cyclone underflow gravitates to spiral banks for fines beneficiation.
- Thickener and Filter Press Circuit: Overflow from the classifying cyclones gravitates to the thickener and combines with the discards dewatering screens underflow. Flocculent will be added in the thickener launder and feed-well to aid with the settling of the material. The clarified water overflow from the thickener gravitates to a surge tank. The clarified water tank will be equipped with a level indicator. The level indicator will control the raw water make-up.
- Flocculent Addition: A fully automated flocculent mixing/dosing system will be provided to serve the tailings thickener. The system will be designed to accept a powdered flocculent supply which will be manually charged into the flocculent bin regularly to ensure availability at all times.
- Raw, Return and Potable Water System: For the return water system decanted water returning from the pollution control dams will be re-used as process water to minimise the volume of raw water needed to sustain the CHPP. Water from the dam will be pumped to the clarified water tank (by others). A potable water tank will be supplied complete with pump, and reticulation pipelines to the flocculent make up the plant.

4·3 Infrastructure Layout

The proposed infrastructure to be developed includes:

- Process plant and associated stockpile and load-out facilities;
- Buildings and structures (viz. offices, workshops, changes houses, stores, etc.);
- Roads (haul, service and access);
- Bulk services such as fuel, water, sewage and power;
- Water and power distribution facilities;
- Water management infrastructure, including clean and dirty water drains, pollution control dams, etc.; and
- Discard and carbonaceous material facilities.

The infrastructure components and layout are presented in the figure below.

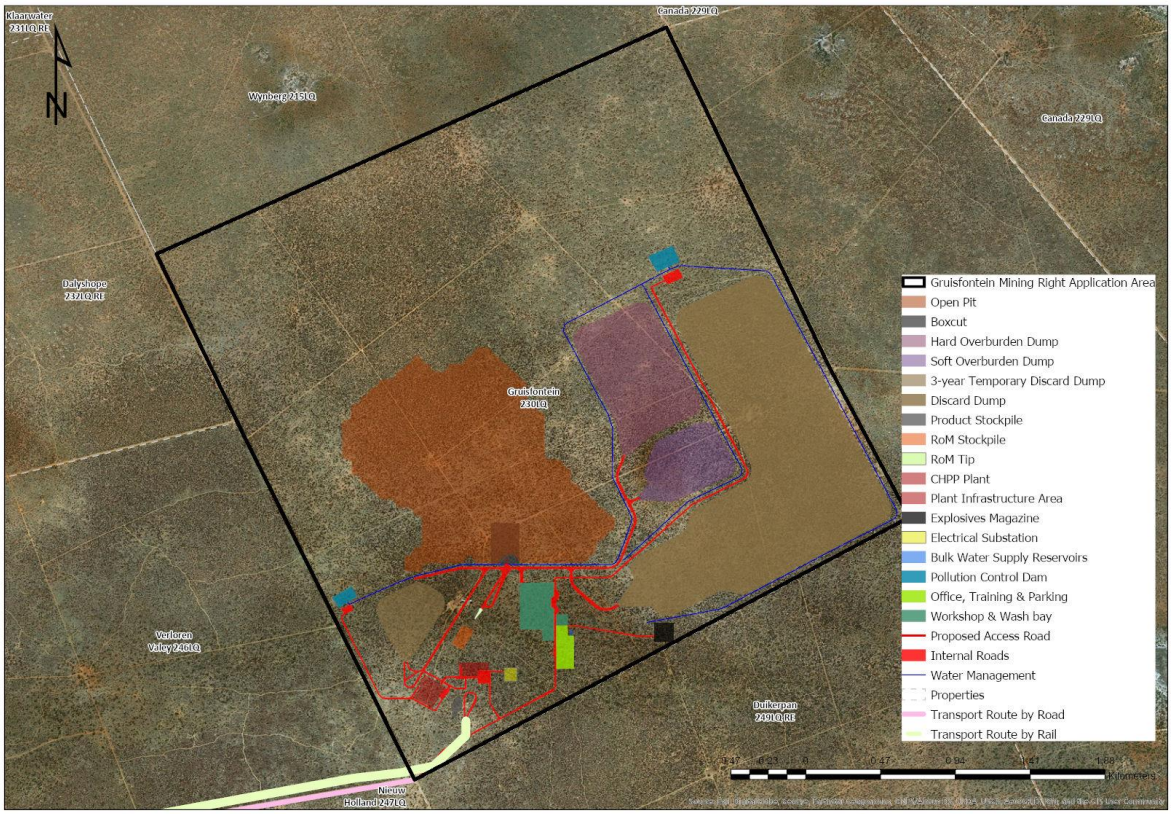


Figure 15: Infrastructure Lay-out

4·3·1 Access and Transport

Access to the site will be gained via the Provincial Road D1550 from Lephalale towards Steenbokpan. From Steenbokpan, access to the site will be via Provincial Road D1675, a gravel secondary provincial road. This road will be upgraded to handle the additional traffic associated with the proposed mining project, as required. From the D1675 the mine will be accessed via an existing service road running along the southern border of Verloren Valey 246 LQ. Similarly, this road will be upgraded to carry the

additional traffic load. Formal access will be constructed to the pit and the infrastructure as the development progresses.

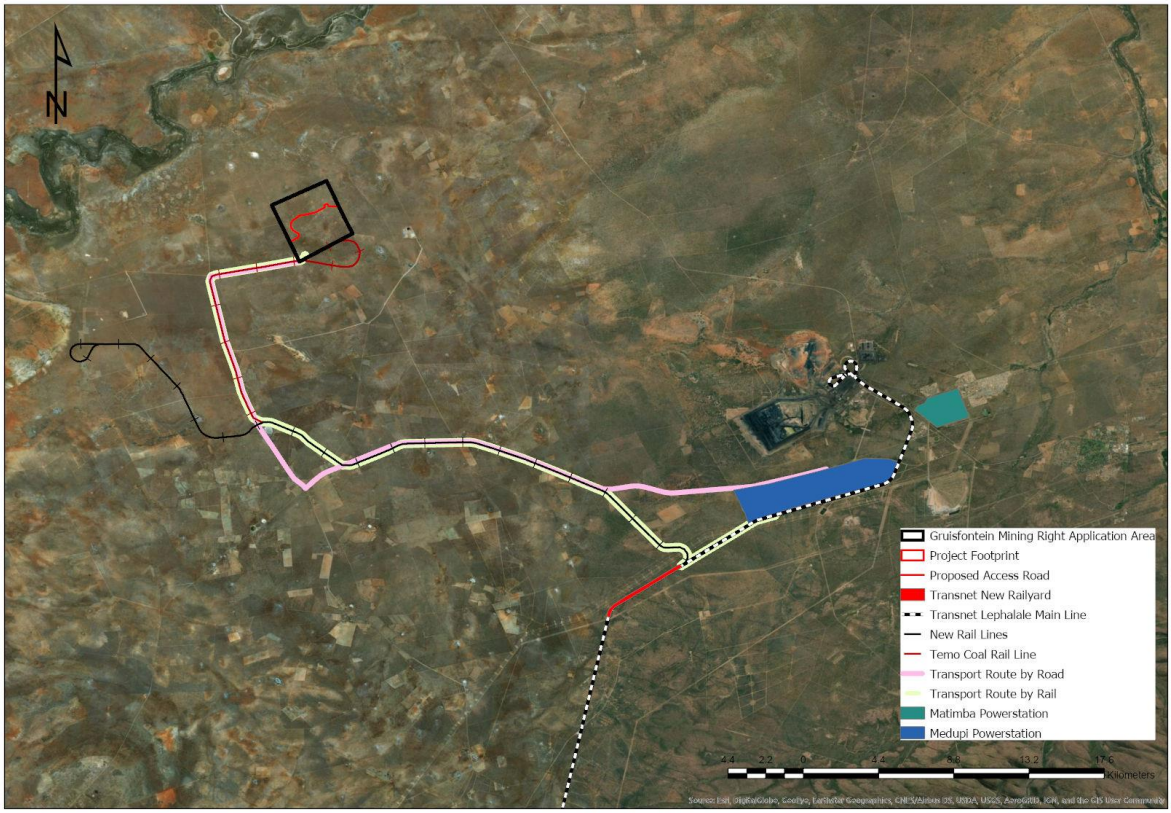


Figure 16: Proposed Transport Routes

4·3·2 Security and Access Control

Perimeter fencing is planned around the infrastructure areas. These fences would be maintained for the duration of the project. Access control and a security office would be established at the entrance to each of the infrastructure complexes. Safety barriers will be placed around the perimeter of the open-pit mining areas.

4·3·3 Human Resources and Housing

It is envisaged that the Gruisfontein Project will employ 500 people at full production, as indicated in Table 9. The nature of the operations requires employees that are all skilled to operate safely and effectively. Due to the nature of the operations a Mine Manager, as well as a Government Certificated Engineer, will be appointed.

Table 9: Labour force

Phase	Designation	Number
Construction	Permanent employees	10
	Contractors	250 – 300
Operational	Permanent employees	53
	Contractors	447

4.3.4 Services

4.3.4.1 Water Supply and Management

Water requirements

The daily bulk water requirements for the Gruisfontein Project is provided in Table 2. This estimated water requirement does not take into account the potential of utilising water recovered from open-pit dewatering operations. Also, dust suppression usage could be reduced through the use of suppression additives.

Table 10: Water requirements

Requirement	No of people	Consumption	Total consumption per day (M^3)
Potable Water	500	120l/person/day	60
Service Water			
Process Plant		90m^3 / Hr	3443
Mine Infrastructure Areas		4m^3 / Hr	86
Dust Suppression		55m^3 / Hr	1320
Total			**4909**

The above requirement excludes any recycling. The overall water balance and make-up water requirements will be defined as part of the EIA process, and it is envisaged that this make-up requirement will be much lower than the stated water demand above.

Several potential water sources are being explored, and details will be provided in the EIAR, including:

- Mokolo and Crocodile (West) Water Augmentation Project (MCWAP) 2 Scheme;
- Collaboration with other project developers in the area who are in an advanced stage of sourcing bulk water;
- Wastewater treatment plant effluent;
- Borehole water;
- Groundwater from the open pit; and
- Rainwater.

Water treatment and storage reservoirs

On-mine water treatment and storage facilities will be established to facilitate daily demands. Potable, raw water and service water will be stored in separate storage reservoirs.

4.3.4.2 Stormwater management

The Storm Water Management Plan (SWMP) for the Gruisfontein Project will be defined as part of the EIA process.

4.3.5 Power requirements

The proposed Gruisfontein Coal Mine has an estimated forecast maximum demand of between 3 and 4 MVA, excluding the provision of the power factor correction. This estimated power requirement will be firmed up in the next study phase.

An Eskom sub-station, Theunispan, is located in proximity to the town of Steenbokpan and it is assumed that Gruisfontein will be able to source power from this substation. It is assumed that Eskom will provide the following infrastructure to support the mine:

- A 22 kV overhead line from the sub-station to the mine.
- A 22 kV / 0.55 kV /10 MVA sub-station located on the mine.

4.3.6 Hydrocarbon requirements

A total of 607 m3 of hydrocarbon storage facilities will be required for the operational phase, as indicated in the table below.

Table 11: Hydrocarbon requirements

Quantity	Volume	Location
6	82 000 litres	Bulk storage for diesel at the workshop area facility
4	23 000 litres	Bulk storage facilities for new oils and lubricants at the workshop area
1	23 000 litres	Bulk storage facilities for used oils at the workshop area

4.3.7 Waste Management

4.3.7.1 Residue waste

The mining operations would produce waste rock. This would comprise material excavated to expose the targeted resource of the reserves. These materials would need to be stockpiled on-site before being used as backfill material in the open pit during rehabilitation.

4·3·7·2 General and hazardous waste

General and hazardous wastes would be generated during construction and operation phases. These wastes would be handled, sorted and temporarily stored on-site in a waste/salvage yard. Where wastes can be reused or recycled, this would be undertaken, or waste handling companies would remove the wastes for recycling, re-use or final disposal at permitted waste disposal facilities.

4·3·7·3 Sewage handling and treatment

Two sewerage treatment plants will be established within the project area. The treatment works will be an activated sludge treatment plant. Sewerage from various ablution facilities to be located in the mine area will be channelled to the treatment plants. Each ablution facility will contain water closets, urinals, wash hand basins and showers (for the change house). The sewage (brown and grey) water will be collected from the ablution facilities and will gravitate to the connection manholes via the internal and external sewer network at the building. The sewage will gravitate to a sewer pump station from where it will be pumped to a sewer treatment works. The treated effluent from the sewer treatment works will be pumped to a PCD.

4·3·8 Decommissioning and Closure

The decommissioning phase would include the removal of infrastructure from site and the final rehabilitation of areas. In consultation with I&APs, the final post-closure land use will be identified. The conceptual closure plan objectives would be aligned with a rehabilitation plan that supports a post-closure land use of grazing.

4·4 Project Economic Assessment

The proposed project will contribute towards the local, regional and national economies through the following:

- increased foreign investment and income;
- Direct impacts are arising from wages, taxes and profits. This includes money spent to pay for salaries, supplies, raw materials, and operating expenses;
- Indirect impacts from the initial and operational spending which will create additional activity within the local and regional economy, as local businesses will be benefiting directly from the proposed development and will subsequently increase spending at other local businesses (indirect effect) as well as hiring additional staff members; and
- induced impacts as a result of increased personal income or spending power. Businesses will be experiencing increased revenue from the direct and indirect effects and will subsequently increase payroll expenditures (by hiring more employees, increasing payroll hours, raising salaries, etc.). Households will, in turn, increase spending at local businesses. The induced effect is, therefore, a measure of this increase in household-to-business activity.

4.4.1 Land value

The capital investment required for establishing mining infrastructure was not taken into account to determine the land value post mine closure as the infrastructure is mining-specific and it was assumed that it would be removed and the area rehabilitated during the decommission and closure phases of the mine in line with the EIA and EMP closure objectives. Once the infrastructure has been removed and the area rehabilitated, the land will be restored to grazing land.

According to the closure cost estimate study undertaken by RSV Enco for the Mine Works Programme, a total rehabilitation liability of R158.4 million was assigned to the mining footprint area, which makes provision for costs to mitigate socio-economic conditions of directly affected persons.

4.4.2 Direct employment

The labour cost for this project was obtained from the budgeted costs included within the Mine Works Programme. It is anticipated that the project will potentially create 500 new job opportunities over the life of the mine. The employment creation over the life of mine has a Net Present Value of R5.23 billion, of which R1.57 billion is with low-income households.

The construction period will create additional short-term employment opportunities of between 250 - 300. Due to its temporary nature, these values were not taken into consideration.

4.4.3 Economic Impact

Capital investment

The capital investment incorporates initial and on-going capital expenditure. The initial capital expenditure is stated as R895.8 million within the 18 month construction period.

As part of ongoing capital expenditure, the applicant made provision for major overhauls, replacement of equipment and infrastructure, with an additional R101.2 million for sustainable capital expenditure over the life of mine.

The total capital investment for the proposed project equates to R1 billion in real monetary terms. The figures equate to R782.94 million in net present value terms using a discount rate of 10%. This capital investment will have a positive impact on direct, indirect and induced effects on the local, regional and national economy.

Expected Revenue

The revenue numbers included in the MWP was utilised in this study. The expected revenue was determined based on modelled ROM. A price is then calculated based on the estimated product quality, in the case of price the calorific value of the total product and a price of R610/ton.

Revenue numbers were provided for ten years. As the active operational life of the proposed project is 16 years, an annual average inflow of revenue was assumed for an additional six years. This equates to an NPV revenue of R25.99 billion over 16 years. No downturn of production was, however, taken into account in this calculation.

- Direct impacts: Direct effects are the results of the money initially spent in the study region by the business or organisation being studied. This includes money spent to pay for salaries, supplies, raw materials, and operating expenses.
- Indirect effects: The direct effects from the initial and operational spending will create additional activity within the local and regional economy, as businesses benefiting directly from the proposed development will subsequently increase spending at other local businesses (indirect effect) as well as hiring additional staff members.
- Induced Effects: Induced effects are the results of increased personal income a result of the proposed project, including indirect effects. Businesses experiencing increased revenue from the direct and indirect effects will subsequently increase payroll expenditures (by hiring more employees, increasing payroll hours, raising salaries, etc.). Households will, in turn, increase spending at local businesses. The induced effect is, therefore, a measure of this increase in household-to-business activity.

4.4.4 Contribution towards ESKOM

Also, the proposed project has a potential impact on Eskom's economic footprint. Eskom has two coal-fired power generations stations in the area. The Power stations are within 40km from the project, and with Transnet's infrastructure programme, there will also be access to the rail infrastructure. Eskom's older power stations consume on average coal with a calorific value of 24.4 MJ/kg to a minimum of 21.5 MJ/kg, the newer power stations like Medupi can accept lower quality coal (caloric values as low as 18.5 MJ/kg, 18.5% volatiles and an ash content less than 36%). Based on Gruisfontein's processing strategy, this presents the mine with an opportunity to provide Eskom with high-or low-grade coal. Both power stations are currently contracted with the Grootgeluk mine to supply 14.6 million tons of coal a year. Access to the rail system also provides an opportunity to transport the coal to the Mpumalanga power stations.

4.4.5 Contribution towards socio-economic development

In addition to the direct and indirect economic impacts discussed above, the mine through its corporate social investments and social and labour plan contributes towards the local economic development in the area. The operation of the proposed mine has following positive socio-economic benefits to its employees and surrounding communities:

- development of skills through its skills development plan;
- learnership programs to provide learners with an occupational qualification; and
- investment in infrastructure development through local economic development and integrated development programmes.

The MWP indicated the following investments toward the Social and Labour Plan for the first five years:

- Human resource development (HRD): R16.87 million;
- Local economic development (LED): R14.55 million; and
- Management of downscaling and retrenchments: R19.2 million.

This equates to a total of R31.42 million for the first five years. This commitment will be evaluated towards the end of the five years of the current SLP. The socio-economic investment over the life of mine has a Net Present Value of R83.8 million.

4.4.6 Post mining land use

It is assumed that all infrastructure will be removed and the area rehabilitated during the decommission and closure phases of the mine in line with the EIA and EMP closure objectives to optimise post-mining land use. Once the infrastructure has been removed and the area rehabilitated, the land will be restored to grazing land.

To assess the potential economic impacts of post-mining activities, it was first assumed that agricultural activities neighbouring the mining rights application might be able to resume to the same level as before mining. Secondly, two scenarios were assumed for the mining rights area. The first scenario assumed that the entire area could be utilised for livestock farming. The second scenario assumed that the area could be utilised for game farming. As the potential duration and sustainability of these activities are uncertain, only annual values for employment and revenue in present value terms were determined. These values are presented in Table 12 below:

Table 12: Post Mining Land Use Economic Impact (Annual Value)

Area	Livestock farming only		Game farming only	
	Revenue	Employment value	Revenue	Employment value
Mining rights area	R975 000	R 114 084 (3 employees)	R 383 307	R 76 056 (2 employees)
Surrounding impacted (indirectly) area	R843 760	R76 056 (2 employees)	R346 833	R93 802 (5 employees)

The post-mining land value was not evaluated as it will be determined by market forces at the time, which is ultimately determined by the willing seller willing buyer principle.

4.4.7 "No-go" Alternative: Potential economic impact

In the "no-go" scenario, the current land use activities will remain in force and agricultural activities will continue to contribute towards the local, regional and national economies as outlined.

Also, the proposed project has a potential impact on Eskom's economic footprint. The potential impact of the project not going ahead, may not significantly impact on Eskom as coal could be sourced from other suppliers. Sourcing coal from another source, may have an impact on operational expenses and ultimately, the consumer, which would include entire South Africa.

5 BASELINE DESCRIPTION OF THE SOCIO-ECONOMIC ENVIRONMENT

Baseline conditions are the existing conditions and past trends associated with the human environment in which the proposed activity is to take place (DEAT, 2006). Establishing the baseline conditions is essential for describing the receiving environment, the status quo and for identifying and predicting potential impacts. "A prediction of change can only be as effective as the baseline information from which it is derived. It is thus important that the specialist puts the proposed project in perspective by comparing the current state with the potential future state" (DEAT, 2002a).

5.1 Provincial and Regional Overview

5.1.1 Provincial Level: Limpopo Province

The project is located in the province of Limpopo, which consists of 5 District Municipalities and 23 Local Municipalities. Limpopo is located in the northeast corner of South Africa where it stretches over

an area of about 125 806 km^2 covering approximately 10,2% of the entire country and accounting for 10% of the population of South Africa. Limpopo has the fifth largest population in the country after Gauteng with 14.2 million (25.3 percent), KwaZulu Natal with 11 million (19.6 percent), Western Cape with 6.5 million (11.5 percent) and Eastern Cape at 6.4 million (11.5 percent). The population structure of Limpopo province is skewed towards the youth population. This indicates that the composition of the population is growing especially among infants, teenagers and youth. This raises very important policy questions in terms of government services in general. More investments will be required to ensure that Sustainable Development Goals (SDGs) on access to universal education is achieved.

The province of Limpopo is considered to be the gateway to the rest of Africa as it accommodates the crossing into Zimbabwe at Beit Bridge and shares borders with Botswana, Zimbabwe and Mozambique. In the south Limpopo is bordered by the provinces of North-West, Gauteng and Mpumalanga. The province contributes about 7.2% of the country's GDP through a mixed industry, but the contribution to the national economy is largely attributed to the contribution of the mining sector in Limpopo to the national output. Limpopo is rich in mineral reserves that include, amongst other minerals, copper, coal, iron ore and platinum. The agricultural sector focuses mainly on cattle ranching and controlled hunting in the Waterberg District and includes a wide range of crops such as sunflower, cotton, maize and tomatoes, mainly grown in the Capricorn District. Various subtropical fruits such as bananas, litchis, pineapples, mangoes and pawpaws are grown in the Mopani and Vhembe Districts. Extensive forestry plantations and citrus estates also exist in the province. Notwithstanding this agricultural activity, many rural people in Limpopo still rely on subsistence farming to survive.

The tourist potential of Limpopo is greatest in the Waterberg and Mopani districts. The Mopani district encompasses a large section of the Kruger National Park, which, together with the Parque Nacional do Limpopo in Mozambique, forms the Great Limpopo Transfrontier Park. Lephalale is situated on the Mokolo River (a tributary of the Limpopo) about 60 km from the Botswana border and the Stockpoort border post and offers excellent game-viewing opportunities and sports tourism, among other activities. Lephalale is a hunting mecca and prime eco-tourism area drawing thousands of tourists each year. The mild winter months and moderate summer evenings make this a popular venue for camping and stargazing. The natural beauty of the Waterberg, together with the spectacular sunsets and abundance of game, compose an ideal holiday destination. The absence of malaria is a bonus for tourists. Lephalale forms part of the world-renowned Waterberg Savannah Biosphere.

The unemployment rate in Limpopo increased from 19.3% in quarter 4 in 2016 to 19.6% in the same quarter in 2017. This slight increase in the unemployment rate is seen in the increase in the actual number of unemployed people from 337,000 to 346,000, that is 9,000 people. The Sekhukhune district had the highest level of unemployment in the province in 2016 at 30.8%, while Waterberg only had an unemployment rate of 13.0% in the same period.

The increase in unemployment highlights the issues that still need to be addressed in terms of creating employment. The first issue is to increase labour force participation and absorption rates in the provincial economy. In the third quarter of 2017, the labour force participation rate[1] was 48.6%, and the absorption rate was 39.3% in the province. More than 2 million people were deemed not to be economically active, and 377,000 job seekers deemed to be discouraged and not actively looking for work. The effort to create jobs in the provincial economy should focus on the promotion of the labour absorbing industries. A major challenge in this regard is the capital intensive nature of mining as a sector which limits the potential to create more jobs.

According to Statistics SA, an individual's educational level is closely related to poverty. Statistics SA's data showed that 79.2 percent of individuals with no formal education were poor, compared to only 8.4 percent of individuals who had a post-matric qualification in 2015.The percentage of people leaving in poverty (Upper Bound Poverty Line) decreased from 82.4 percent in 2006 to 70.1 percent in 2011. However, in 2015, the percentage grew to 72.4 percent. Despite the declines over time, the percentage of people living in poverty in Limpopo is still very high.

This state of poverty in the province is also confirmed through other distinguishing features associated with poverty, which are apparent in the province such as a low level of urbanization; a low skills basis; low levels of education; a high mean household size; a higher proportion of females to males; a high degree of population out-migration; high levels of unemployment and low earning potential. Despite these somewhat negative indicators, Limpopo has made some progress in respect of housing and electricity with limited gains in respect of water supply, toilet facilities, refuse removal and the distribution of household goods.

The province of Limpopo consists of the following five district municipalities:

- Waterberg District Municipality;
- Capricorn District Municipality;
- Vhembe District Municipality;
- Mopani District Municipality and
- Greater Sekhukhune District Municipality.

Apart from the District Municipalities listed above, there are also 24 local municipalities in the province of Limpopo with the capital city of the province situated at Polokwane, located within the District Municipality of Capricorn. The proposed project is, however, situated further to the west, within the District Municipality of Waterberg and, more specifically, within the Local Municipality of Lephalale. Both these areas will be described in greater detail below.

[1] Employed/labour force ratio

5·1·2 Regional Context: Waterberg District

The Waterberg District Municipality is the largest district in the province of Limpopo covering a geographical area of 44 913 km^2. This district contains the following five local municipalities:

- Thabazimbi Local Municipality
- Lephalale Local Municipality
- Mogalakwena Local Municipality
- Bela-Bela Local Municipality, and
- Modimolle-Mookgopong Local Municipality

The Waterberg district covers the south-east portion of the province of Limpopo stretching from Botswana in the north-east to the Capricorn District Municipality in the east. In the southwest it shares borders with the North-West Province while in the south and southeast Gauteng, Mpumalanga and the Greater Sekhukhune District Municipality border the Waterberg District Municipality.

Although Waterberg is geographically the largest district in Limpopo, with a population of 773,682[2], it only accounts for 12.8% of the total population of the province making Waterberg the least densely populated district in the province despite a high level of urbanisation. In terms of structure, the population of Waterberg also differs when compared to the other districts in Limpopo. In this respect, Waterberg has the most racially diverse population in the province with 9.2% of the population comprising non-Africans while Capricorn, the next most diverse population has only 3.6% of its population is made up of race groups other than African. In respect of the other district municipalities, Mopani comprises 97.6% African, Vhembe 98.5%; Greater Sekhukhune 99.1%.

Compared to the rest of the district municipalities in Limpopo, Waterberg has the highest rate of urbanisation, even though the largest town, and the administrative capital of Limpopo, Polokwane, is located outside of Waterberg. Waterberg has an urbanisation rate of 37.6%, the effects of which are manifest in most other indicators. What is also evident is that Waterberg has a more positive trend in respect of labour market conditions and income prospects due to the economic activities found in the Waterberg district in which mining and electricity supply play a major part.

[2] Calculations based on Census 2011

5.2 Local Overview

5.2.1 Settlements

The main settlement in Lephalale LM is the Lephalale town that consists of Ellisras and Onverwacht, with a large settlement to the North-West called Merapong (28km south-east from the proposed development). The closest settlement is Lesedi located on the farms Steenbokpan and Vangpan approximately 14km south of the proposed development. Lesedi consist of approximately 400 households and 1,474 people.

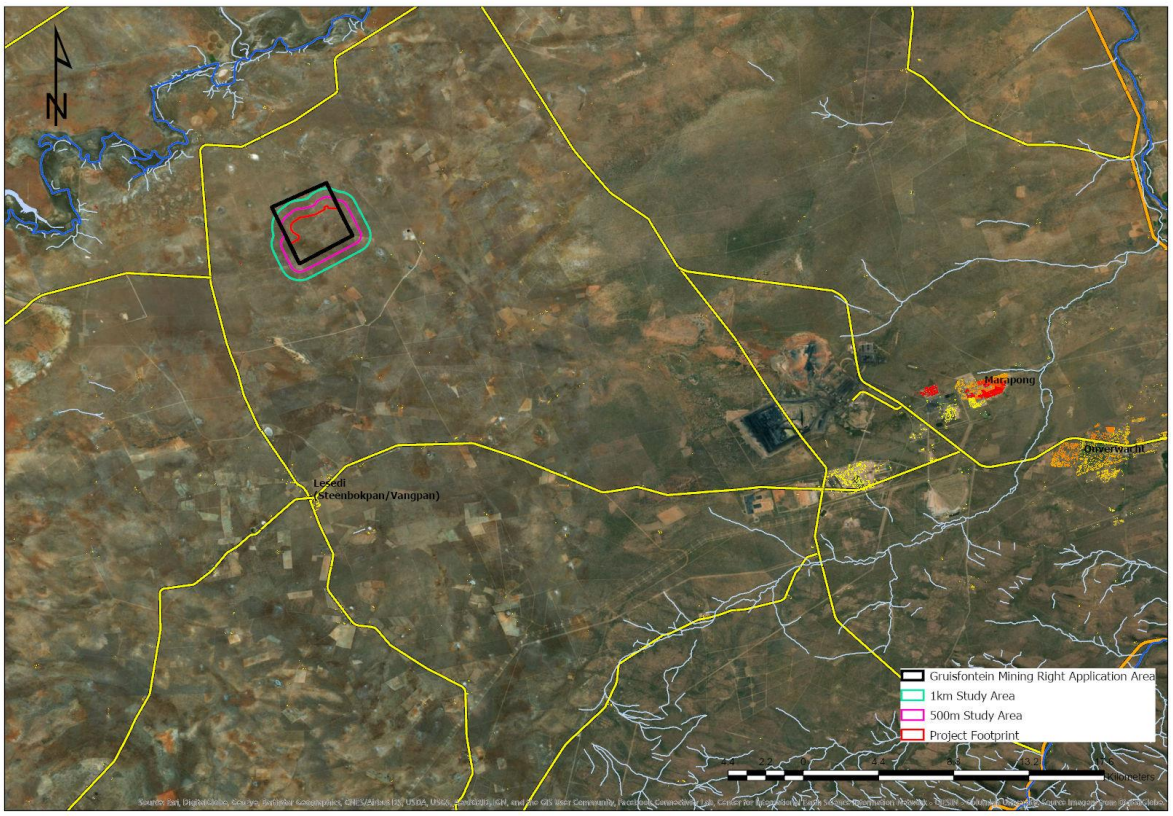


Figure 17: Settlements

5·2·2 Demographics

5·2·2·1 Population & Households

The LLM includes the local mine communities, local employees within these communities, as well as local suppliers. The population of LLM is estimated at a total of 126,870 (one hundred and twenty-six thousand, eight hundred and seventy) people where 54% are male, and 46% are female, this includes the towns/communities/villages.

Table 13: Population and households

Area	Population	Households	Members per household
Limpopo	5,404,868	1,418,100	3.8
Waterberg District	679,336	174,189	3.9
Lephalale	118,865	33,599	3.5
Ward 3	10,836	3,762	2.9

Spatially, Lephalale is the largest municipality within the Waterberg DM, yet the total population and households only make out one-fifth of the District (Census, 2011). The population has increased by 26.3% from 85,272 in 2001, implying an average annual population growth rate of 2.6% over the ten years.

Approximately 22.7% (26,228 people) of the municipality's population resides in Marapong, while 15.2% (17,638) resides in Lephalale town and the remaining population resides in the rest of the municipality. However, according to the Lephalale LM's IDP, the population growth within Lephalale Town node is among the highest in Limpopo and reflects the influx of people to work on the construction of the Medupi Power Station and the local coal mine expansion projects.

A large portion (45.2%) of the population in the LM resides in tribal areas, while 39.8% resides in urban areas, and the rest (15%) lives in on farms. This depicts the rural nature of the Lephalale LM.

The majority (90.1%) of the people in the municipality are Black African; 7.9% of the population is White, with other population groups making up the remaining 2%. Sepedi is the language most spoken in the LM.

5·2·2·2 Gender Profile

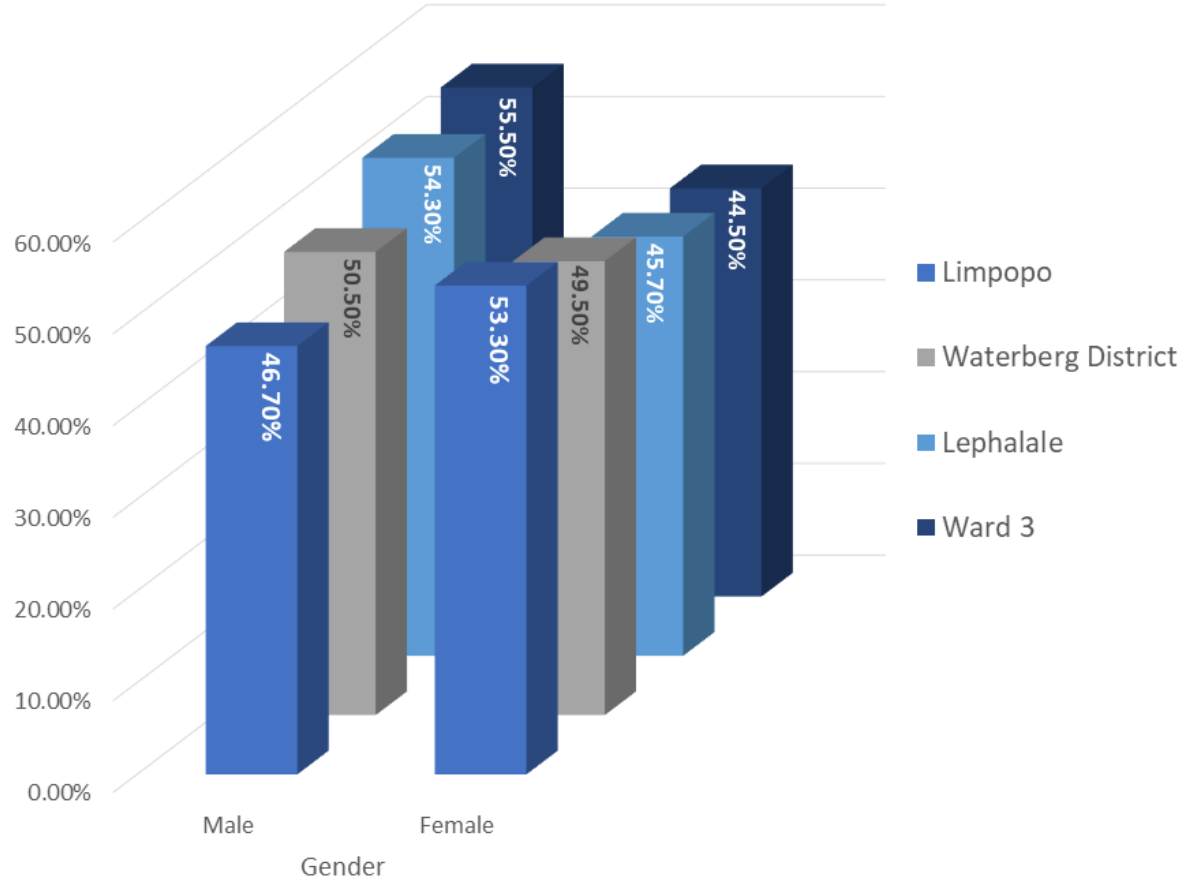


Figure 18: Gender Profile

In the Lephalale LM, the male population (54.3%) exceeds the female population (45.7%). The gender distribution in Ward 3 consists of 55.5% males and 44.5% females. According to the Lephalale LM IDP, this can be attributed to the high incidence of contract workers and male professionals coming into the municipality in pursuit of employment opportunities. Especially mining, construction and agriculture that tends to favour males.

5·2·2·3 Age Profile

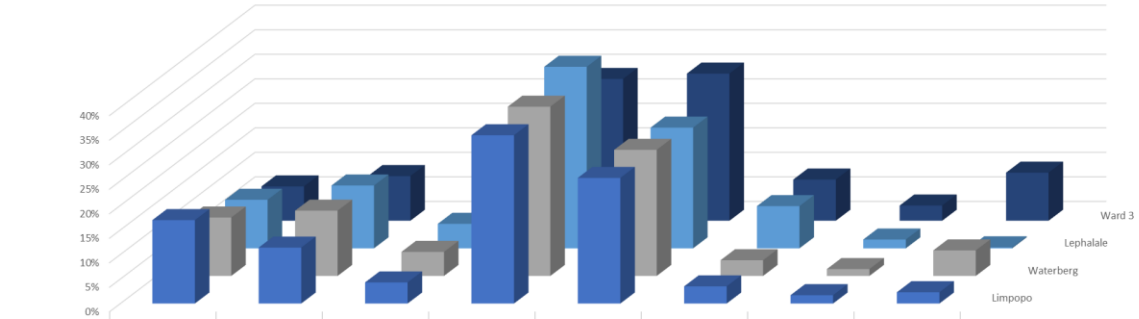
The youth (aged between 15 and 34 years) make up the majority of the people living in the Lephalale LM (43.4%), followed by the group between the ages of 35 and 64 years with 26.4%. The average age in Ward 3 is 30.66 years. The majority of people in the ward are aged 25 – 34 years (23.1%), followed by 15 – 24 years (22.4%) and 35 – 49 years (20.6%).

Considering the working-age group that is between the ages of 15 and 64 years, the municipality has as a lightly bigger percentage of working-age males than females, which is again attributed to the influx of male workers and jobseekers to the area.

The population in the area is characterised by a high dependency ratio (43.2%) with 26.1% of the population within the ages of 0 to 14 and over 65 years old (4.1%). The implications of this population structure are higher demand for the provision of social and physical facilities, like schools, primary health care centres, etc.

5·2·2·4 Education Profile

In terms of Education levels, 35% of the 20+ population of the Lephalale Municipality has passed matric, and in Ward 3 this is approximately 41.5%. The Education profile is presented in the table below:

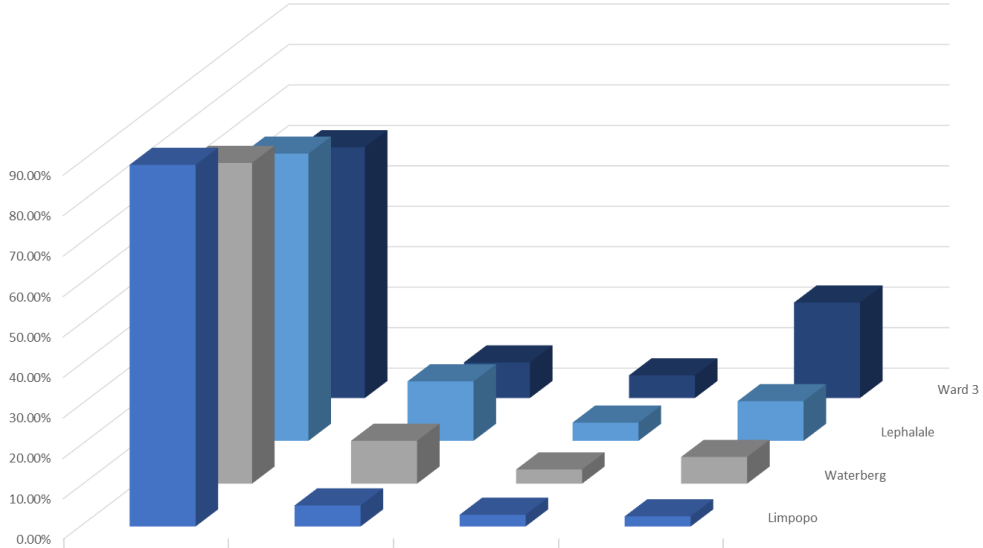


	None	Some primary	Primary	Some secondary	Grade 12 (Matric)	Undergrad	Post-grad	Other
Limpopo	17%	11.40%	4.30%	34.30%	25.60%	3.50%	1.70%	2.30%
Waterberg	11.90%	13.30%	4.90%	34.50%	25.70%	3.20%	1.40%	5.20%
Lephalale	9.90%	12.80%	5%	37%	24.60%	8.60%	1.80%	0.20%
Ward 3	7%	9.10%	3.60%	28.90%	30%	8.40%	3.10%	9.80%

Figure 19: Education Profile

In terms of education levels in the LM, 9.9% of the adult population (over 20 years of age) have no education at all, while 49.5% have primary or secondary education (Stats SA, 2011). Those with higher educational qualifications accounted for 10.4% of the population. In Ward 3, a lower percentage (7%) of individuals older than 20 has no formal schooling.

5.2.3 Housing Profile



	House	Shack	Room / Flatlet	Other
Limpopo	89.40%	5.20%	2.90%	2.50%
Waterberg	79.30%	10.60%	3.50%	6.60%
Lephalale	71%	14.70%	4.50%	9.80%
Ward 3	62%	8.80%	5.60%	23.60%

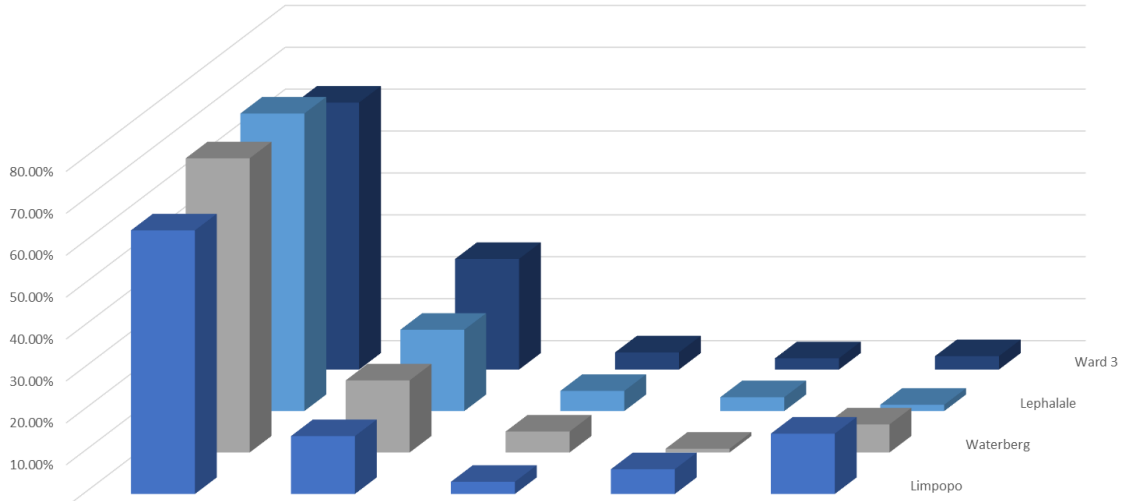
Figure 20: Housing Profile

Due to increased industrial development and population growth, there is an increased demand for housing in the area. According to municipal officials, the demand for housing since the start of construction of the Medupi Power Station has increased dramatically. However, officials have noted that there has been an oversupply of upper-income housing and a deficit in the supply of lower-income and affordable housing. Proposed further developments in the area will increase the demand for low-cost and affordable accommodation in the area. Due to the aggregated effects on the local accommodation industry, realtors have indicated that they anticipate the market for low-medium cost buy-to-rent properties to increase in the future. Recent statistics suggest that approximately 71% of the households in the Lephalale LM reside informal housing units in the form of a house or other brick structures on a separate stand or yard. There is currently a housing backlog of 15,153 units in the Lephalale LM. The backlog of housing and the increased population because of a migrant influx puts pressure on service delivery, particularly with the growth of informal settlements, which are found adjacent to nodes–most of these being mining developments.

Majority of the households have access to adequate housing (75.5%) in the study area. Only 14.7% still live in shacks.

5·2·4 Basic Service Delivery

5·2·4·1 Access to Water



Service provider	Borehole	Tanker	River	Other
Limpopo	62.90%	13.80%	2.90%	5.90%	14.40%
Waterberg	70.20%	17.20%	5%	0.90%	6.70%
Lephalale	71%	19.40%	4.80%	3.30%	1.50%
Ward 3	63.70%	26.40%	4.10%	2.70%	3.20%

Figure 21: Access to Water

It has been widely recognised by numerous local, district and regional government policies and frameworks that the limited water supply within the Lephalale LM has and is currently hindering development (Waterberg IDP). Water within the municipality and for the Lephalale town, and for all industrial projects within the area and agriculture activities is currently received from the Mokolo Dam. The Grootegeluk Coal Mine does the supply and maintenance of the dam. In terms of access to piped water, 67.3% of the households in the municipality have access to piped water either inside the dwelling or in the yard. The picture improves in Lephalale and Marapong, where 98.9% and 78.6% of the households have access to piped water inside their dwellings or yard, respectively. According to the Lephalale LM IDP, water service backlog is estimated at 3,280 units. The Lephalale LM has identified the future water capacity of the area as a concern. Full capacity has almost been reached, allowing for only limited spare yields for the anticipated swell in development. The Mokolo Dam, water management area, can not supply future water demands; however, water transfer schemes such as the Mokolo-Crocodile River Water Augmentation Project will supplement local supply and provide for the anticipated development in the area (Lephalale LM IDP). However, if current development trends continue and water supply capacity is not increased, there will be a shortage of water in future affecting the lives of both people living and working in the area.

5·2·4·2 Sanitation

Concerning sanitation, 46.3% of the households have access to a flush toilet, while 46.8% of the households use pit latrines. Approximately 5.3% of families have no access to toilet facilities, and 0.6% are still using the bucket system. According to the Lephalale LM IDP, sanitation backlog is estimated at 14250 units mostly in the farms and rural villages.

5·2·4·3 Electricity

Despite Lephalale being declared the Limpopo Coal and Energy Petrochemical Cluster, an electrical supply deficit for the areas are present. This is partially related to the challenges and costs associated with the establishment of electricity transmission and distribution infrastructure in low population density areas that are dominant in Lephalale. Currently, Eskom supplies all electricity to rural areas within the municipality. In 2011, 85% of the households in the Lephalale LM had access to electricity for lighting.

5·2·4·4 Refuse Removal

Only 41% of the households in the Lephalale LM have access to refuse removal services at least once a week, while 43% depend mainly on backyard dumping sites. The provision of the service is limited in rural areas. According to the LM's IDP, the municipality is still faced with the challenge of illegal waste dumping in various rural and settlement areas.

The Municipality developed a draft waste management plan as required by NEMA: Waste act and determined by its powers and function. The Municipality is allocated the function of solid waste management. The function involves the determination of waste disposal strategy, regulation, establishment, operation and control of waste disposal sites or facilities, refuse removal, waste minimisation through recycling, re-use and waste education and awareness. In implementing its function, the Municipality has a role in ensuring that waste management systems are in place and the systems should be in line with the hierarchy of waste management according to the national waste management strategy. The implementation of the function is dependent on the function that is allocated to the Municipality, i.e. refuse removal. Currently, most of the waste is collected from the household, followed by commercial industries.

The Municipality has no drop-off, garden sites, transfer station, material recovery facilities and buy-back centres for recycling. The Municipality is relying on private companies and community programmes for recovery of the recyclables. The companies such as Nampak, CONSOL, Mondi,

Transpaco, Collect-a-can and Consol have contracted a service provider for the recovery of K4 box, cans, plastic bottles, clear and mixed plastics, white paper and glass bottles. There are also informal recyclers in the landfill, collecting K4 box, plastics, papers and steel. The municipality has a challenge of providing refuse removal service to the rural community. A pilot project has been initiated by the municipality to provide for refuse removal services in certain areas within the rural villages. The challenge range from unavailability of land and inadequate funds to provide the service.

The Municipality has no transfer station and Roll-on-Roll-off system in areas that are situated at 30 to 35 kilometres from the landfill site. The areas such as Steenbokpan, Ga-Seleka, Shongoane, and Mokuruanyane are in a pilot programme for refuse collection in rural areas. Skip bins have been placed at a specific central collection point and collected weekly.

The Municipality has one permitted waste disposal facility. The life expectancy of the landfill is five years without waste minimisation programmes, but with such programmes, life expectancy can go as far as more than ten years.

5.2.5 Status of Infrastructure

5.2.5.1 Road infrastructure and public transport

The road network is the principal means of travel in Lephalale and the greater Waterberg District Municipality. On a district scale, several provincial roads provide inter-provincial and inter-municipal connectivity for the wider district; they also serve as linkage roads that provide local connectivity and form key components of the supply chain of the local economy. Intensive road network and infrastructure planning did not precede, nor has it kept pace with the significant industrial and population growth within the municipal area.

Vehicle ownership in the area is limited; thus, the majority of people walk or use public transport. Public transport in the form of buses and taxis is available, yet they do not meet the requirements of the current working population. There are twelve taxi routes in Lephalale serviced by five taxi associations. Of the five, only three provide a local service, while the other two offer long-distance travel. The fleet consists of 566 vehicles. The bus service provides the Lephalale Municipality with a fleet of 155 vehicles at three terminals, one of which is informal.

5.2.5.2 Social Infrastructure

Access to social infrastructure is indicative of a community's development. Social infrastructure inclusive of educational, social and health facilities, police stations, and recreational and sports

facilities are determining factors concerning a community's welfare and ability to develop sustainably. The existence of a platform for dialogue between communities and local government is equally indicative of a community's social development.

As far as educational facilities are concerned, there are 75 primary schools, five combined schools, 22 secondary schools, and one FET college in the Lephalale LM (Waterberg IDP). According to the Lephalale LM IDP, although the facility template depicts a ratio of 1:26 in terms of classroom allocation (26,869 learners with 1,146 classrooms), the reality is that there is an influx of pupils into urban areas and this scenario changes significantly when headcount is done. Some schools portray a record of 60 students to a classroom. Some of the education-related challenges within the municipality include (Lephalale LM IDP):

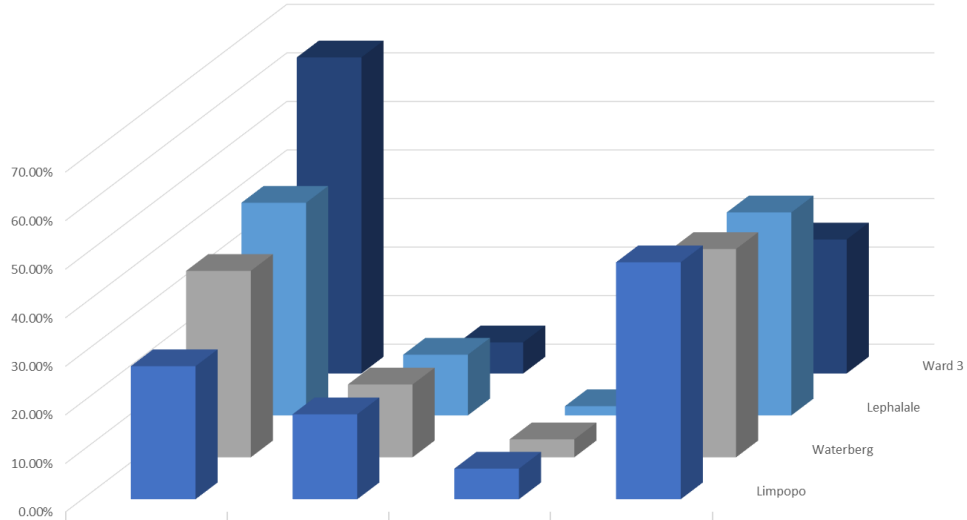
- High level of illiteracy, which makes it difficult for local communities to enter skilled and semi-skilled employment markets.
- Most of the secondary schools in rural areas do not have enough teachers to offer maths and science subjects, which is a requirement for entry into an engineering career.
- Lack of technical high schools' limits career path for students at an early stage.

Healthcare and social welfare within the municipality are provided for by three hospitals, seven clinics, and three mobile clinics (Lephalale LM IDP). There is no indication of community health centres and day-care centres offering care to disabled community members. Six police stations (24% of the District) serve the municipality.

The sports and recreational facilities that are available to the community consist of only two enclosed soccer fields. Mogol sports centre and Marapong stadium are the two facilities, which are available to the community in the urban area. There are public parks with children's play equipment in urban areas. There are only two parks, and the third is nearing completion in rural villages, where a big part of the population resides. There are two enclosed sports fields at Ga-Monyeki village and Thabo-Mbeki Township, which cater for sporting activities for the community in rural areas. The district IDP cites that these facilities were erected some years ago and their standard has dropped since then (Waterberg IDP).

5·3 Economic Profile

5·3·1 Employment Profile



	Employed	Unemployed	Discouraged work-seeker	Other not economically active
Limpopo	27.40%	17.50%	6.30%	48.80%
Waterberg	38.40%	15%	3.70%	42.90%
Lephalale	43.80%	12.50%	1.90%	41.80%
Ward 3	65.10%	6.40%	0.90%	27.60%

Figure 22: Employment Profile

Employment is the primary means by which individuals who are of working age may earn an income that will enable them to provide for their basic needs and improve their standard of living. As such, employment and unemployment rates are important indicators of socio-economic well-being.

The Census 2011 data indicates that the Lephalale LM had about 80,694 people within the working-age population. Of these, 58.2% of the people were economically active; while 41.8% of the working-age population was not economically active (NEA), that is, persons aged 15–64 years, excluding discouraged jobseekers. The employed labour in the LM was estimated at 35,328, while the unemployed population was estimated at 10,101, reflecting an unemployment rate of 12.5%. This was lower than the country's unemployment rate of 29.7%.

In terms of the structure of employment, the agricultural sector was the most important economic sector in the LM, contributing 24.5% of the total employment opportunities. This was followed by the trade and mining sectors, which made contributions of 20.3% and 16.9% to the total employment, respectively. One of the goals outlined in the NDP (2011-2030) is to ensure the development of a stable economy. Essentially, a stable economy is less reliant on the primary and secondary sectors than the tertiary sector, as an economy easily affected by trade and global economic spin-offs is

unstable. Therefore, an economy dominated by the tertiary or services sector is more desirable as it reduces the risks associated with fluctuations in demand for commodities. Over the period between 2003 and 2013, the mining and transport sectors were the only sectors that showed significant growth in employment, while the other sectors fluctuated between periods of growth and decline.

5·3·2 Income Profile

To determine the people's living standards, as well as their ability to pay for basic services such as water and sanitation, the income levels of the population, are analysed and compared to the income level in the province in general.

Table 14: Income Profile

	Limpopo	Waterberg	Lephalale	Ward 3
R0	**10%**	**7%**	**12.9%**	**4%**
Under R4800	**4%**	**3%**	**3%**	**2%**
R5k - R10k	**9%**	**6%**	**6%**	**3%**
R10k - R20k	**24%**	**24%**	**17%**	**24%**
R20k - R40k	**17%**	**20%**	**21%**	**13%**
R40k - R75k	**13%**	**15%**	**16%**	**11%**
R75k - R150k	**12%**	**11%**	**11%**	**12%**
R150k - R300k	**8%**	**7%**	**8%**	**15%**
R300k - R600k	**2%**	**2%**	**4%**	**7%**
R600k - R1.2M	**0.4%**	**0.5%**	**1%**	**2%**
R1.2M - R2.5M	**0.2%**	**0.2%**	**0%**	**0.3%**
Over R2.5M	**0.2%**	**0.2%**	**0%**	**0.4%**
Unspecified	**0.2%**	**4.1%**	**0.1%**	**6.3%**

The average household income in the Lephalale LM is about R10,052, with 12% of the households earning no income at all. Overall, 46.2% of the households within the local municipality earns up to R3200 per month. 72.1% of households earn their salaries in the formal sector. On average 89.7% of the income bearing population brings an income into the household; this includes pensions and social grants.

5·3·3 Economic Structure

The structure of the economy and the composition of its employees provide valuable insight into the dependency of area on specific sectors and its sensitivity of fluctuations of global and regional markets. Knowledge of the structure and the size of each sector are also important for the economic impact results' interpretation, as it allows the assessment of the extent to which the proposed activity would change the economy, its structure and trends of specific sectors.

The Limpopo Province contributes about 7.1% to the country's Gross Domestic Product (GDP). The LM contributed approximately 12.2% to the economy of the Waterberg District and made a contribution of 2.9% to the Province's economy.

With the expected development of the mining industry in the area and establishment of new associated industries, employment opportunities within both the mining and secondary industry are expected to grow. These developments are expected to maximise local economic spin-offs leading to the creation of new employment opportunities in the services sector, thus contributing to the sustainable development of the local economy.

Currently, mining is the largest and predominant contributor to the Waterberg regional economy, which is sustained by extensive and rich mineral resources located in the North-Eastern and Western parts of the District. Extensive current and planned mining activities are mainly located in the Lephalale area. The primary sector, particularly mining, largely stimulated the growth of the Lephalale economy in the past few years. More than 60% of the local economy is derived from the mining activities, and specifically coal mining. These activities are directly dependent on the demand for coal created by the local energy generating sector. Thus it can be suggested that the sustainability of the existing local employment opportunities is indirectly reliant on the future growth of the local electricity generating industry and other industries that use coal as production inputs. Mining has shown significant growth in contribution to the GDP-over the past decade. Agricultural contribution, on the other hand, has declined. The propelled growth of the mining sector is primarily due to the advance in development of the Limpopo Coal, Energy and Petrochemical Cluster. All of these developments will result in an accompanying accelerated population growth impact in the region and will put strain on the following key economic enabling drivers:

- Effective transport network;
- Water supply;
- Service management;
- Reliable and sustainable electricity provision and
- Skilled labour supply;
- TFR rail network.

Lephalale Local Municipality comprises 1 378 000 ha and consists of varied topography (steeper in the Waterberg in the southeast). More than 60% of Lephalale Local Municipality area has moderate or better soil potential, but climate (especially rainfall) is the greatest limiting factor so that irrigation is the preferred method of cultivation to obtain long-term results. The agricultural potential of the area is intimately associated with topographical, pedological (soil) and climate determinants. As a general trend the potential for dryland cropping decreases with the rainfall distribution from south to north and west to east. Soil factors do play a role in that shallow, sandy and very high clay content which

also leads to a slight reduction in potential due to decreased water storage/ plant water supply capacity. Threats to this aspect of the land include erratic rainfall and high input costs.

The importance of the tourism industry to the economy of the area is likely to continue to grow into the future. This is likely to be related to the hunting and ecotourism industries, but could also be linked to any expansion of the industrial operations and the related business tourism. The existing importance of the business tourism sector and its strong links to the mine and power station are also viewed as important. The challenge faced by the tourism industry in the area is to increase leisure/ecotourism visitors in the summer seasons. This would relate to ecotourism rather than hunting.

5.4 Land Use

Limpopo Growth and Development Strategy define Lephalale as a coal mining and petrochemical cluster. The area is currently experiencing growth driven by mining expansion and the development of the Medupi power station, although this is decreasing as the Medupi project is near completion. The coal to liquid project that was investigated by Sasol is currently placed on hold; if this project goes ahead it could broaden the opportunities for cluster formation. The local economy is dominated by the coal mine and the power station. Three clusters that are most relevant to Lephalale are firstly Coal & Petrochemical, secondly red meat via livestock farming and thirdly Game farming, breeding and its associated Ecotourism.

5.4.1 Mining and Power Generation

Minerals that are mined in the area include coal, methane gas, aggregate which are the influence behind most town development and expansion. Coal and petroleum mining in Lephalale have been taking place, and with the coal power stations constructed and those proposed, it is envisaged that further mining is foreseen.

The existing Matimba Power Station is designed to generate 4 000 MW and is the largest direct dry cooled power station in the world. Coal is supplied to Matimba using a conveyer belt system from the Grootegeluk mine. The Medupi power station is slightly bigger than Matimba and produces 4 800 MW. Additional to Matimba and Medupi three new Eskom power stations CF3, CF4 and CF5 are planned for the future as well as a further two by independent power producers envisaged by the private sector (Lephalale IDP, 2018). The success of mining development in the region hinges on several key factors:

- Effective transport network;
- Water supply;
- Service management;

- Electricity provision; and
- Skilled labour supply.

Besides the mineral extraction process, the emergence of new mining communities impacts significantly on housing development, retail and service supply demands.

Exxaro's Grootegeluk Colliery is currently the only commercial coal mining operation in the Waterberg Basin. At present annual production of Grootegeluk coal mine is 15.3 Mt/a. It is the largest open cast coal mine of its kind in the world. The mine is currently being expanded. Other mining projects that have secured Mining Rights include the Boikarabelo Coal mine, Themo Coal, Waterberg Coal Mine, etc.

Without the Matimba, Medupi and other power stations to consume the high-ash coal, the Grootegeluk coal mine and envisaged other possible mines will not be economically viable. The low-grade Waterberg coal with its high ash content and low yields is a significant stumbling block to further development from coal, other than power generation and coal-to-liquid fuel plants.

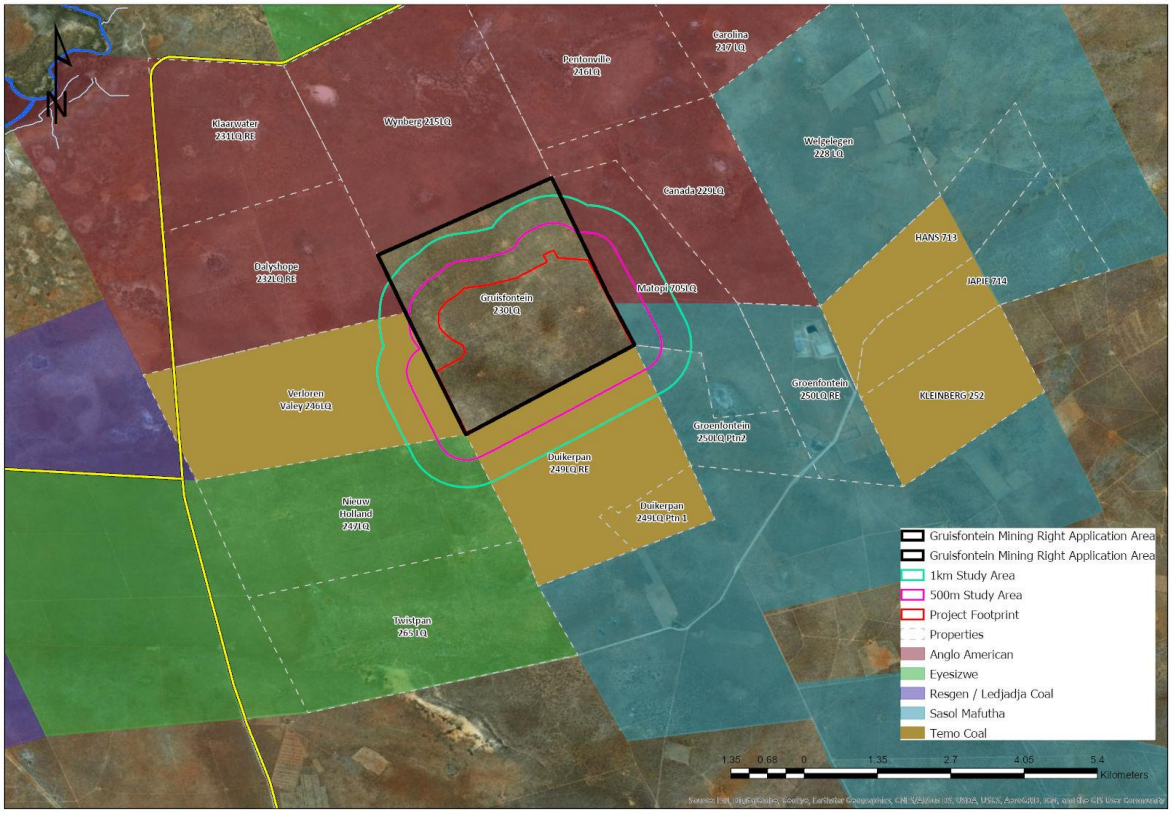


Figure 23: Other mining and power generation activities

Where information was available, specifically on Socio-economic aspects, these were considered for the Cumulative Impact Assessment.

5.4.2 Livestock Farming

Agriculture is a major land use in Lephalale (in terms of geographic area) with 47% of land in the municipal area consumed and contributes considerably to the region's economy (Lephalale IDP, 2018).

Within the project study area, it is estimated that approximately 10,000 hectares are utilised for grazing of either livestock or game farming, covering approximately ten properties within a 1km radius from the Mining Right Application area.

In the table below the respective estimated grazing areas, cattle numbers and LSU for the study area is presented.

Category	Mining Right Area	1km radius around MRA
Total property extent	**1 140ha**	**9 348ha**
Estimated grazing hectares	1 082ha	8 792ha
Hectares for other land use[3]	58ha	556ha
Large Stock Units	87	276
Livestock	103	293

In the study area, livestock numbers and specifically cattle numbers have declined considerably in the past number of years, gradually making way for game farming. At present the ratio between cattle and game on the commercial farms appears to be around 40% cattle and 60% game for the area. In some of the areas it is as low as 10% for cattle.

The estimated economic parameters include the potential revenue generation, employment generation, income to low-income households and net-present value.

Table 15: Livestock farming Economic value

Category	Mining Right Area	1km radius around MRA
Estimated turnover per annum	R604 500	R1 906 149
Net-Present Value over life of mine at current values	R4 729 432	R 14 913 154
Employment generation	2	9
Estimated wages per annum	R76 056	R 342 252
Estimated wages to low-income households	R60 845	R 273 802

[3] Includes roads, infrastructure, residential, water management, and mining

Category	Mining Right Area	1km radius around MRA
Net-present value of wages over the life of mine	R595 040	R 2 677 680

For the assessment, employee numbers earning minimum wages as per the Department of Labour guidelines (2018) were used in the calculations. The employment numbers are inclusive of livestock and hunting activities.

To determine the livestock revenue, a carrying capacity of 1 cattle for every 8 hectares and a calving ratio of 90% was assumed.

The future of cattle in the area is largely dependent on the future of the game farming and related activities in the area. The cumulative development of mining may have an impact on livestock farming. If the impact is high on game, the related cattle farming can stabilise at present levels as further development might not be feasible. The projected growth in the area could even stimulate the demand for meat, and a possible optimistic scenario is that a switch back to cattle can take place.

5.4.3 Game Farming

The core of South Africa tourism industry is based on wildlife tourism. Private game reserves and game farms, which form part of wildlife tourism constitute most of the wildlife products in South Africa. On these private reserves and game farms, hunting is one of the major income generators for product owners. Most of South Africa's hunting takes place in five of the nine provinces: The North West, the Eastern Cape, Limpopo, the Northern Cape and the Free State, the last three being the most popular. In 2014 Van der Merwe et al. (May 2014) undertook a research study to determine the economic impact of hunting in the Limpopo, Freestate and Northern Cape Provinces. This study aimed to analyse the economic impact of hunting on the regional economies of three of South Africa's most important hunting provinces. The study used economic multipliers, input-output analysis, and related modelling processes through input-output (supply-use) tables and social accounting matrices (SAM). The results differed significantly for the three provinces, with Limpopo receiving the biggest impact (R2.6 billion) and the Free State having the highest multiplier (2.08).
The geographical location of the game farms, the number of farms and the species available all influenced the magnitude of the economic impact of hunters over and above the traditional determinants of economic impact analysis.

According to the information contained in this study, hunting is an important source of income for the South African wildlife industry. The greater part of this industry takes place on privately-owned farms and game reserves, which constitute 17.9% of the total land suitable for agriculture in South Africa. The number of game farms in South Africa has increased sharply since the early 1990s, and in 2014 it

was estimated to be more than 9,000 farms, which translates into 14.7 million hectares. Based on a study which was undertaken in 2002, fifty percent of South Africa's 9 000 game farms are situated in the Limpopo Province, and about 80% of the country's hunting takes place here.

In South Africa, hunting is primarily of two types, biltong and trophy hunting. The combined contribution by trophy and biltong hunting to the South African economy for the 2009 and 2010 season was close to R6 billion. In 2010, hunters spent an estimated total of R1.5 billion on licences (hunting licences and permits), travel, supplies and services directly connected with hunting in Limpopo. Of the total spending by all hunters, biltong hunters spent an estimated 94% and trophy hunters only 6%. Spending on game/species accounted for 45% of total expenditure, accommodation and food for 22%, new equipment for 10%, fuel and transport for 9% and meat processing services for 5%. All other expenditures accounted for approximately 9% of the total expenditure for 2010. Biltong hunters contributed an estimated R1.4 billion, and trophy hunters an estimated R88.2 million to the Limpopo economy in 2010.

The analysis of the results of the study (Van der Merwe et al., 2014) indicated that the direct economic impact of spending by the two types of hunters (trophy and biltong) in the regions (in the order of R1.5 billion for Limpopo), produced an additional R1.1 billion in Limpopo. This is equivalent to an aggregated production multiplier in the order of 1.78 in Limpopo. The aggregated production multiplier is obtained by dividing the total impact by the direct impact. Therefore, for each rand spent by the two types of hunters, 78 cents were generated additionally in terms of indirect expenditure (Limpopo). One of the elements of the additional value-added that results from the hunters' spending are employee remuneration, which in turn affects household income. The household income multiplier thus measures the magnitude of changes both to household income and to spending and saving patterns. The impact on low-income households is particularly important, as it can be used to indicate how much hunting contributes to poverty alleviation through the provincial economy. Labour is a key element of the production process. Based on figures from the Limpopo SAM, and using data on the labour force relative to the business volume and jobs per activity sector, it was possible to estimate the impact of hunter spending on job level. The research found that 17,806 jobs may depend on hunting in Limpopo, in addition to those of people permanently employed on game farms.

The economic impact of hunting is the highest in the Limpopo Province at R2.6 billion, as indicated in Table 1 below, for the following reasons:

- 50% of South Africa's game farms are found here,
- the largest percentage (29%) of biltong and trophy hunters refer to hunt in Limpopo
- the most preferred species for hunting, kudu, impala, blue wildebeest and warthog, are commonly found in Limpopo
- Limpopo borders Gauteng, which is South Africa's wealthiest area and the province that most of the hunters come from.

The size of the overall operation (the number of game farms), the number of hunters, the species available and the geographical location of the market play a significant role in the economic impact of hunting in Limpopo.

Table 16: Total Impact of hunter spending on regional production in Limpopo (ZARmillion) (Van der Merwe et al., May 2014)

Sectors	Spending by biltong hunters	Spending by trophy hunters	Direct impact of hunters	Production multipliers	Total Impact
Agricultural	251	8	259	1.650	442
Mining	22	1	23	1.777	40
Manufacturing	212	11	223	1.594	404
Electricity & water	36	3	39	1.932	72
Construction	14	1	15	1.897	29
Trade & accommodation	346	24	370	1.879	692
Transport and communication	121	19	140	1.730	243
Financial and Business services	326	14	340	1.762	586
Community services	53	6	59	1.322	97
Total	**R1.381billion**	**R86million**	**R1.467billion**	**-**	**R2.605billion**

Based on the study and information contained in the table above, it was possible to determine economic indicators as outlined below. It was furthermore assumed that the entire extent of the farm might be utilised for hunting. This may result in an overestimation as it is more likely that less of some of these farms are utilised for game farming.

Table 17: Hunting multipliers

Detail	Indicator
Game farms located in Limpopo	4500
The extent of game farms in Limpopo	7.35 million hectares
Direct spending by hunters	R200/ha
Direct spending by hunters with a multiplier effect	R354/ha

The economic value relates to the following:

Table 18: Hunting Economic value

Category	Mining Right Area	1km radius around MRA
Estimated turnover [4] per annum without multiplier	R86 343	R1 328 758
Estimated turnover per annum with a multiplier	R153 323	R2 359 519
Net-Present Value over the life of mine at current values (with multiplier)	R1 199 553	R18 460 192
Employment generation	1	34
Estimated wages per annum	R12 676	R684 504
Estimated wages to low-income households	R10 141	R547 603
Net-present value of wages over the life of mine	R99 173	R5 355 360

5.4.4 Associated Eco-tourism

The study area offers a variety of recreational opportunities covering hunting, eco-tourism, game viewing, hiking and bird watching. The tourism industry in the region is relatively new and is currently in a rapid growth phase. The rapid growth is resulting in significant land-use changes in the broader region. Traditionally the land uses in the area were agricultural (cattle) and mining (coal). Approximately 14 years ago there was in the region of 120 000 head of cattle in the Lephalale Municipality area. This number has shrunk drastically. This is likely to indicate a change from agricultural-based land use to an eco-tourism and hunting-based land use.

Trophy hunters, leisure and eco-tourists make use of chalets and other “bush” accommodation. Hunting and associated accommodation have low occupancy, and the length of stays are of shorter duration, as hunters mainly occupy them during the winter (the hunting season period from June to August does not apply to trophy hunters in which case special hunting licences are obtained). Eco-tourists (which include game viewing/drives, bird watching and hiking) visiting for the outdoor and wildlife experience, visit throughout the year. Peak season is from March to October and during school holidays, long weekends and public holidays. Low season is from November to February. The biltong hunters, who are restricted to the hunting season (June to August) generally, stay in accommodation provided for by the landowner. The economic value is included as a multiplier above.

5.5 The monetary value of current activities

[4] Inclusive of Trophy Hunting and Biltong Hunting

The economic value of production in Lephalale Municipality is driven by coal mining and electricity generation. By comparison, the contribution for other sectors to the value of production is relatively small. The structure of the local economy is likely to become even more concentrated if and after the coal mine expansions and additional power station construction commence.

In the calculation of the baseline of the current economic activities in the area, the following aspects were determined:

- Economic growth, i.e. the Revenue and the net present value of land use activities; and
- Employment creation, i.e. the impact on labour requirements.
- Income to low-income households

In summary, the following is estimated in terms of monetary value. It should be noted however that the values are estimated based on information obtained during this study.

Table 19: Total economic value

Category	Mining Right Area	1km radius around MRA
Total estimated revenue generation per annum	R757 823	R4 265 668
Net-Present Value over life of mine at current values	R5 928 985	R33 373 347
Total employment Generation	3	43
Total estimated wages per annum	R88 732	R1 026 756
Total wages to low-income households per annum	R70 986	R821 405
Net-Present Value of wages over the life of mine at current values	R694 213	R8 033 040

6 SOCIO-ECONOMIC ASSESSMENT

6.1 Interaction between Environmental and Socio-Economic Change Drivers

It is often the case that one type of impact (for example, an environmental impact) can lead to a different type of impact (for example a social impact). An example is air pollution (environmental impact) due to a new factory that can result in impacts on the health of surrounding communities (social impact). Therefore, it is important, when conducting an SEIA, to consider all the impacts identified by the other studies conducted for the same development, such as impacts identified in an EIA Report, Traffic Impact Assessment, Noise Impact Assessment, Blasting and Air Quality Assessment.

6.1.1 Traffic Assessment

The traffic impact assessment estimates additional heavy vehicle trips per peak hour will be generated during the mining activities. It could be expected that most proposed heavy vehicles transporting the final product as part of the proposed mining development would transport the product along an existing service road situated on the southern border of the farm Verloren Valley 246-LQ, then southbound for ±15km to Steenbokpan along the existing provincial gravel road D175, and then eastbound for ±30km to the Medupi or Matimba Power Station along the existing paved provincial road D1765.

The expected daily production volume of coal transported by road relates to a daily number of 400 truck trips, which is equal to 32 trips during peak hour on the surrounding road network. The expected number of deliveries and staff movements to/from the site is estimated to generate 92 trips per day. Of these trips less than 50% is expected during the peak hour on the surrounding road network, resulting in 28 trips during peak hour. Mass transport of staff and labourers to the site is estimated to be equal to 28 trips per day of which 50% is estimated to take place during the peak hour on the surrounding road network resulting in 14 trips during peak hour. The various transport modes identified above can, therefore, be expected to generate a total of 74 additional new trips during the peak operational hour of the surrounding road network. This is equal to 37 new trips inbound and 37 new trips outbound during the peak hour.

The surrounding roads of new development should cater for the traffic demand determined in the previous section, and road improvements for the account of the developer have to be done to enable the existing road infrastructure to function effectively, given the additional traffic caused by the development.

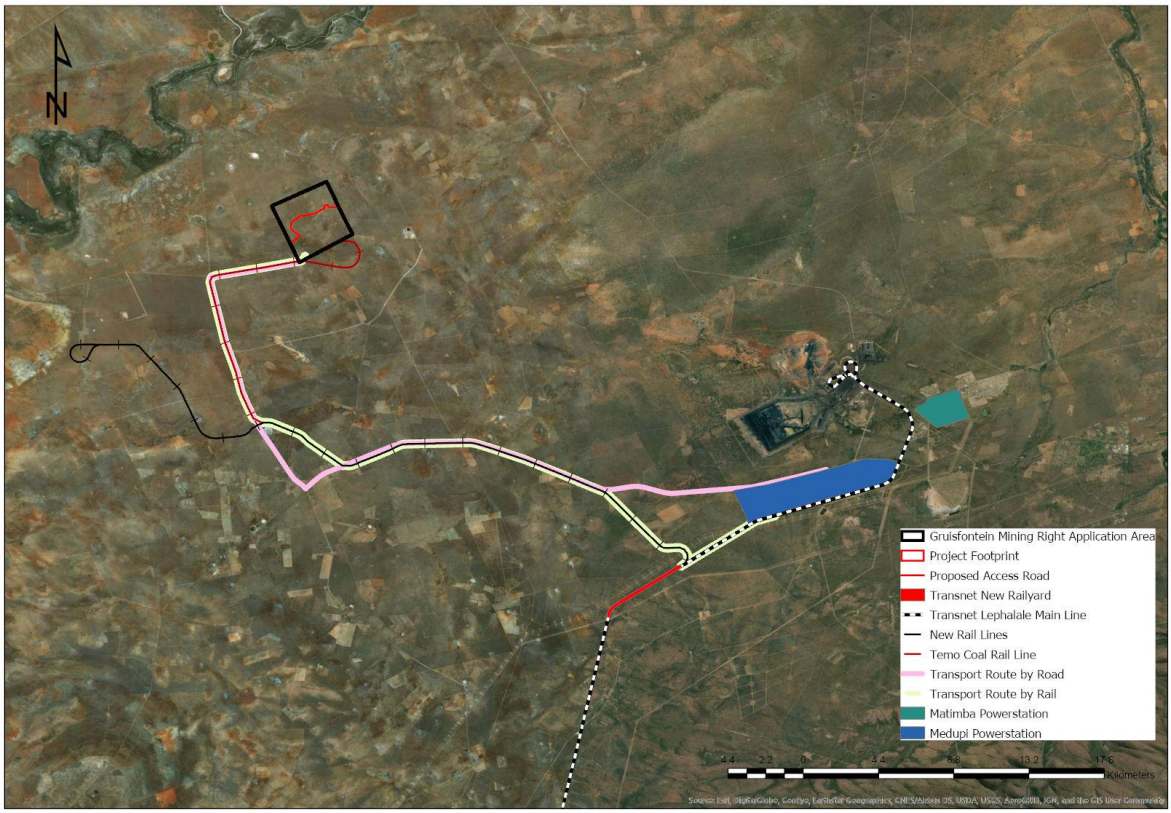


Figure 24: Traffic Sensitivity Map

All immediate surrounding sections of the road are currently in an acceptable condition concerning the design status thereof. All surrounding intersections are expected to still operate at an acceptable level of service with the additional new trips due to the Gruisfontein Mining Project. Aspects that would require attention is road safety and the current road condition.

6·1·2 Air Quality Assessment

Dust fallout modelling indicates the areas where fallout is expected to exceed the permissible limits for residential and industrial areas. Therefore, it is recommended that dust fallout monitoring be undertaken to determine the effectiveness of the mitigation measures implemented.

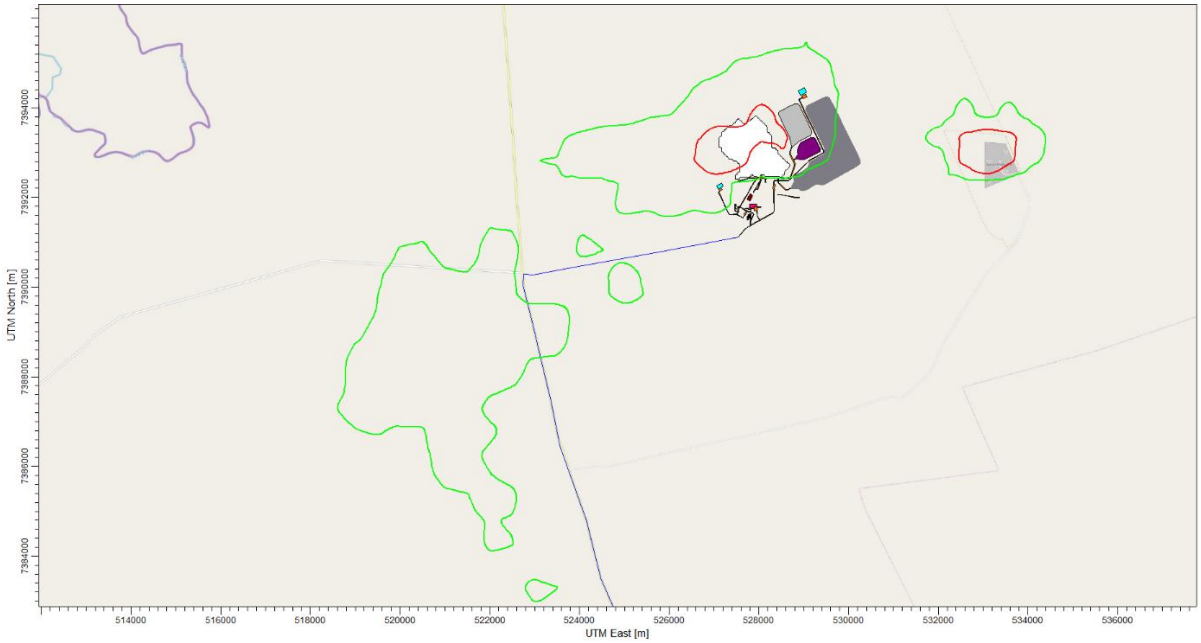


Figure 25: Air quality sensitivity map (unmitigated)

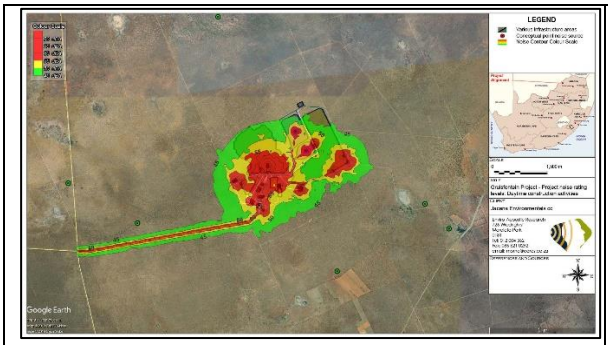
Predicted dust fallout impacts with the residential impact (600mg/m²/day) in green and the industrial (1200mg/m²/day) in orange. The area on the right is the Sasol Mafutha Mine

6·1·3 Noise Assessment

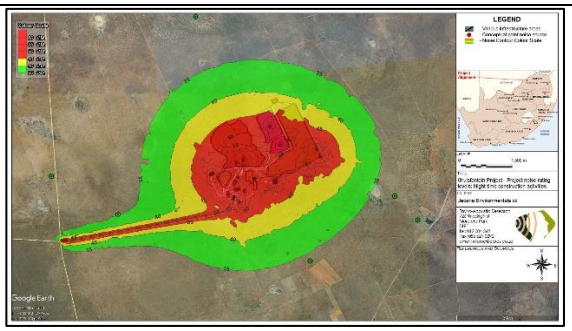
The baseline acoustic environment was described in terms of the location of NSRs, the ability of the environment to attenuate noise over long distances, as well as existing background and baseline noise levels.

The main findings of the impact assessment are:

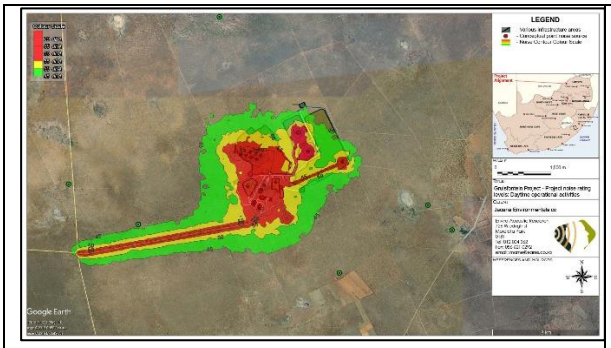
- Projected construction noise levels are less than 35 dBA at all NSDs. Noise levels only exceed 55 dBA close to the projected activities (within 250 m).
- Projected operational noise levels may exceed 35 dBA at NSD04 and 06 (Verloren Valey & Duikerpan). Mitigation is available to reduce the significance to a low significance;



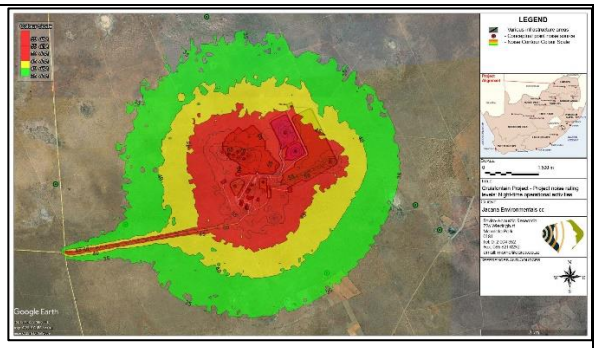
Projected conceptual daytime construction noise levels



Projected conceptual night-time construction noise levels



Projected conceptual daytime operational noise rating levels



Projected conceptual night-time operational noise rating levels

Figure 26: Noise sensitivity map

Based on the findings of the assessment and the proximity of some NSRs to the project, it is recommended that the mitigation and monitoring measures recommended in the noise report are in place during the construction and operational phase of the project. With specific reference to the social environment:

- Ensure a good working relationship between mine management and all potentially noise-sensitive receptors staying closer than 2,000 m from the mine.
- Ensure that equipment is well maintained and fitted with the correct and appropriate noise abatement measures. Engine bay covers over heavy equipment could be pre-fitted with sound-absorbing material. Heavy equipment that fully encloses the engine bay should be considered, ensuring that the seam gap between the hood and vehicle body is minimised.
- The operation should investigate the use of white-noise alarms instead of tonal reverse alarms on heavy vehicles operating on roads, within the mining area and at stockpile areas.
- Formal register where receptors can lodge any noise complaints;
- Noise measurement protocol to investigate any noise complaints; and
- The commitment from the mine to consider reasonable mitigation if the noise complaint investigation indicates the validity of a noise complaint. These measures could include steps ranging from process changes, development of barriers or enclosure of the noise source and even relocation (if no other feasible alternatives exist).

6.1.4 Visual Impact Assessment

The viewshed analysis of individual project components found that the Long-term Discard Dump (90m high) and CHPP (25m high) will theoretically be highly visible, while the ROM, Hard Overburden Dump (15m) and Product Stockpiles (12m high) will be moderately visible. The remaining infrastructure components, all below 5m in height or at ground level, are expected to have low visibility.

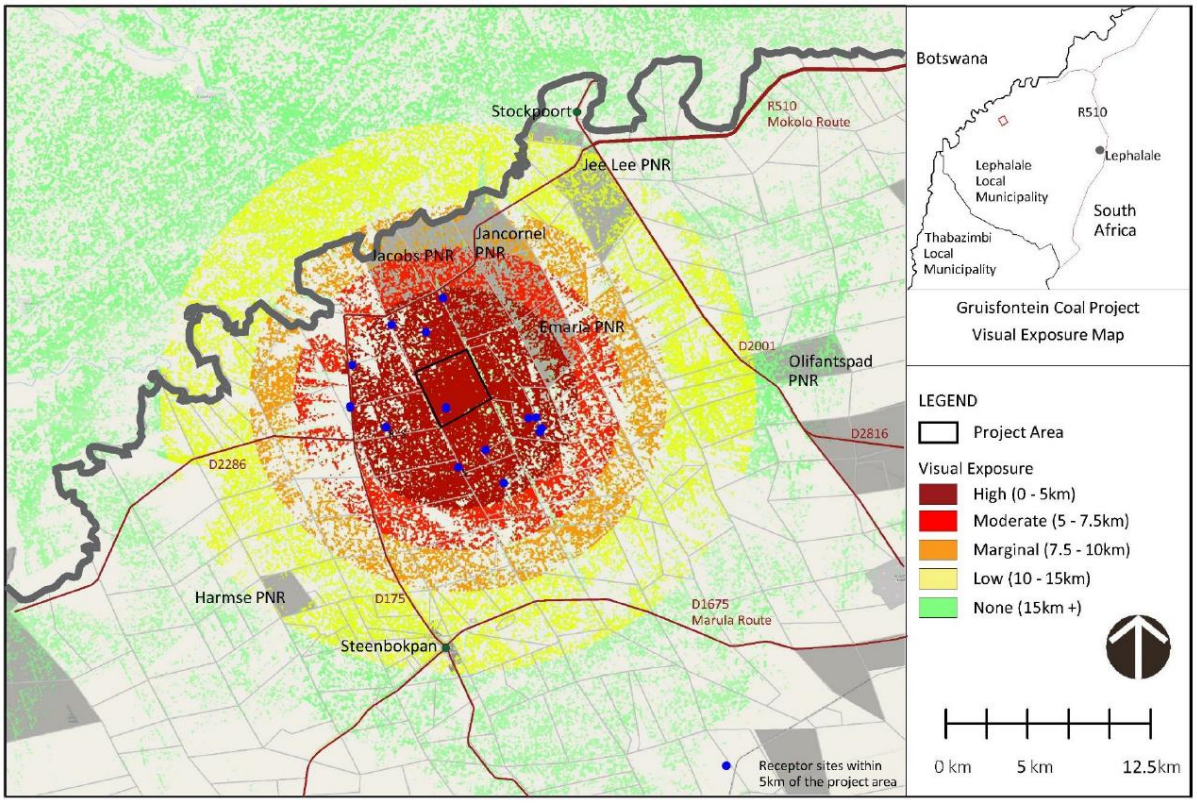


Figure 27: Visual Sensitivity

6·1·5 Blasting Assessment

This assessment indicated that:

- Ground vibration levels may be disturbing (unpleasant) when blasting takes place within 3,500m from residential houses (the unmitigated scenario). The impact may be of high significance and mitigation (such as controlled blasting) is available and proposed that will reduce the vibration levels to less than 2.54 mm/s within 3,500 m from the blast;
- Ground vibration levels may pose a risk of damage to potential sensitive structures when blasting take place within 1,600m from these structures (the unmitigated scenario). The impact may be of high significance, and mitigation is available and proposed that will reduce the vibration levels to less than 2.54 mm/s at 1,600 m from the blast;
- air blast levels, while audible to surrounding receptors, will be less than 120 dB;
- There are no risks of fly rock to people or residential structures, but blasting close to the mine infrastructure may result in fly rock damage and the rock fragments may pose a risk to road users. Management measures are available to ensure the risks are minimised, and controlled blasting methods will be used to ensure blasted material is thrown away from mining infrastructure.

6.2 Socio-Economic Impact Assessment

6.2.1 Economic Displacement of households and workers

Any project with a physical footprint inevitably requires a land acquisition process. One of the most significant socioeconomic impacts that may result from such land acquisition is the displacement of persons residing on or making use of the land. Displacement-related impacts encompass both physical displacement (the loss of a home and the necessity of moving elsewhere) and/or economic displacement (the loss of income and productive assets such as livestock or game farming) from the acquired land (IFC, 2012). In this case, both physical and economic displacement is applicable as the current land use which entails livestock and game farming land where workers will lose their jobs and housing where workers and co-dependents reside on the property where the proposed mine is located.

Table 20: Direct Economic Loss

INDICATOR	MRA AREA
Impact	100%
Land value (current terms)	-R39.88 million
Revenue (NPV over 16 years)	-R5.928 million

Table 21: Impact Table - Economic Displacement of households and workers

Phase	Nature of Impact	Extent	Duration	Intensity	Probability	Weighting Factor	Significance Rating (WOM)	Mitigation Efficiency	Significance Rating (WM)
Construction	Negative	Site specific	Long term	High	Definite	High	Medium to High	Medium N	Medium

Mitigation measures include:

- Fair compensation negotiated and agreed with landowner based on valuation of land and economic value of the livelihood activities
- Make available land not being used for leaseback by neighbouring operators
- Continuous consultation with neighbouring landowners to ensure co-existence and collaboration on mitigation measures for impacts on noise and dust
- Implement a consultation programme with local stakeholders in the development of a closure plan and rehabilitation programme
- Determine the regional needs and characteristics to ensure post-mining land use enhances the regional characteristics
- Monitoring the impact on neighbouring properties

6·2·2 Economic or Physical Displacement due to Secondary Impacts and Environmental Interactions

It is anticipated that the impacts of surface infrastructure and open-pit development could contribute to indirect economic displacement due to other environmental interactions. Limited impact is expected on surrounding properties, which are mostly noise and visual impacts, but would not require any physical displacement but have an economic impact.

Table 22: Surrounding land use Economic Loss

INDICATOR	SURROUNDING AREA
Impact	11%
Land value (current terms)	R0
Revenue (NPV over 16 years)	-R3.685 million

Table 23: Impact Table - Economic or Physical Displacement due to Secondary Impacts and Environmental Interactions

Phase	Nature of Impact	Extent	Duration	Intensity	Probability	Weighting Factor	Significance Rating (WOM)	Mitigation Efficiency	Significance Rating (WM)
Construction	Negative	Local	Long term	Low	Probable	Medium to High	Medium	Medium N	Low to Medium

Mitigation measures include:

- Fair compensation negotiated and agreed with landowner based on valuation of land and economic value of the livelihood activities
- Make available land not being used for leaseback by neighbouring operators
- Continuous consultation with neighbouring landowners to ensure co-existence and collaboration on mitigation measures for impacts on noise and dust
- Implement a consultation programme with local stakeholders in the development of a closure plan and rehabilitation programme
- Determine the regional needs and characteristics to ensure post-mining land use enhances the regional characteristics
- Monitoring the impact on neighbouring properties

6·2·3 Loss of employment opportunities

The employee's dependant on the property affected may lose their positions and livelihoods with no guarantees that they will be able to re-establish their living conditions and livelihoods if the property owner re-establishes the farming activities elsewhere. Worst case scenario is that these employees will be without a job if the landowner does not purchase new properties and provide them with job opportunities.

Table 24: Loss of employment - Value and Number

INDICATOR	MRA AREA	SURROUNDING AREA	TOTAL
Impact	100%	11%	
Loss in employment	-3	-5	-8
Annual employment value (NPV over 16 Years)	-R694 213	-R897. 519	-R1.591 million

Table 25: Impact Table - Loss of employment opportunities

Phase	Nature of Impact	Extent	Duration	Intensity	Probability	Weighting Factor	Significance Rating (WOM)	Mitigation Efficiency	Significance Rating (WM)
Construction	Negative	Local	Long term	Medium	Probable	Medium to High	Medium	Medium N	Low to Medium

Mitigation measures include:

- Priority employment from local communities with the development of recruitment procedures and utilising the existing skills available from the local communities with special focus on those that are bound to lose their jobs

6·2·4 Impact on Aesthetic Value and Sense of Place due to Visual intrusions and increase Nuisance Noise

Social impacts experienced in the physical environment relates to exposure to dust, noise, risk, odour, vibration, artificial light etc. It is anticipated that there will be a decrease in the quality of the physical environment. Noise levels and traffic in and around the affected area will increase as a result of the

mining activities. The extent, magnitude and impact on the physical environment and the nuisances this will create are addressed in various other specialist studies.

It is of significance to note that the proposed project is located within the Waterberg Coalfield, a region indicated in terms of the Waterberg District Environmental Management Framework (EMF; 2017) as a 'mining focus area'. Several coal mining projects are proposed near the project area, and various applications for supporting infrastructures, such as power lines, road diversions, pipelines and rail loops are also currently underway. Mineral rights, for both prospecting and mining, are held by various companies in the vicinity of the farm Gruisfontein. While those mentioned above contribute to the cumulative visual impact that the proposed project may have on the receiving landscape, it also highlights the proximity of potential future mining and industrial developments and the perceived manner in which the landscape character and sense of place in the region may change in future.

Table 26: Impact Table - Impact on Aesthetic Value and Sense of Place due to Visual intrusions and increase Nuisance Noise

Phase	Nature of Impact	Extent	Duration	Intensity	Probability	Weighting Factor	Significance Rating (WOM)	Mitigation Efficiency	Significance Rating (WM)
Operational	Negative	Local	Long term	Medium	Probable	High	Medium to High	Medium N	Low to Medium

Mitigation measures include:

- Implementation of mitigation measures as contained in the Air Quality, Noise and Visual Impact Assessment
- Rehabilitation and Closure Planning to coordinate with future planning of the area.
- Establish a complaint and grievance procedure.

6.2.5 Disruption of daily living and movement patterns and safety of road users

Currently, landowners utilise the D175 to access the properties. Some landowners also utilise the D1675 for access. Gruisfontein will also utilise these roads for product transport, goods and services and staff.

Change processes would, however, result from both construction and operational vehicles accessing, crossing and using roads for the proposed project. These impacts would potentially manifest in: (1) the general population, e.g. individuals on their way to work; parents taking children to school; people on their way to local towns and beyond; and 2) the livestock and game business and tourism traffic,

including seasonal increases to traffic. Impacts would present differentially for these groups, ranging potentially from a mere nuisance factor giving rise to frustration, to more serious ramifications where activities are impeded.

Table 27: Impact Table - Disruption of daily living and movement patterns and safety of road users

Phase	Nature of Impact	Extent	Duration	Intensity	Probability	Weighting Factor	Significance Rating (WOM)	Mitigation Efficiency	Significance Rating (WM)
Construction	Negative	Local	Long term	High	Highly Probable	Medium to High	Medium to High	Low to Medium N	Medium

Mitigation measures include:

- Implementation of the recommendations and mitigation measures as contained in the Traffic Impact Assessment
- Establishment of a complaint and grievance procedure

6.2.6 Impact on well-being and livelihoods due to dust generation along transport routes

The road network to be utilised for Construction, Supplies, Staff and Production involve the use of D175 which is a gravel road. The use of this road may contribute further to dust fall-out and degradation of the air quality unless proper mitigation measures are implemented as proposed by the air quality specialist.

Table 28: Impact Table - Impact on well-being and livelihoods due to dust generation along transport routes

Phase	Nature of Impact	Extent	Duration	Intensity	Probability	Weighting Factor	Significance Rating (WOM)	Mitigation Efficiency	Significance Rating (WM)
Operational	Negative	Local	Long term	High	Highly Probable	Medium	Medium	Medium N	Low to Medium

Mitigation measures include:

- Implementation of the management and mitigation measures of the Air Quality Impact Assessment

- Implementation of the design, management and mitigation measures of the Traffic Impact Assessment
- Establishment of a Complaint and Grievance Procedure

6.2.7 An influx of Job seekers and Population growth pressures

Previous studies and experience in the field indicated that, in South Africa with its high levels of unemployment, with any new development or rumour of a new development, people are prone to move in search of employment opportunities, which when considered against the trends in population growth rates in the individual municipalities will have a definitive impact. It is thus anticipated that potential job seekers would start moving to areas specifically near the proposed open cast operational areas and the infrastructure complexes (targeting uncontrolled open areas), in an attempt to secure employment. The potential influx of job seekers and their anticipated settlement in the uncontrolled and or low-income areas are likely to lead to direct, indirect and cumulative social impacts, for example, conflict amongst local communities and job seekers, social disintegration, pressures on existing infrastructure and services, housing, etc.

Even if it is the intent of Gruisfontein to source workers locally, it is unlikely to discourage people from elsewhere entering the area. It is this perceived prospect of employment opportunities, fuelled by potential rumours about the number of jobs to be created, that would attract outsiders. Furthermore, introducing job opportunities into a resource-starved environment (see unemployment figures) is a potential source of competition between unemployed locals - a situation that would be exacerbated by outsiders, potentially resulting in conflict. This process of potential in-migration is likely to affect all neighbouring settlements and vacant uncontrolled properties.

Table 29: Impact Table - Influx of Job seekers and Population growth pressures

Phase	Nature of Impact	Extent	Duration	Intensity	Probability	Weighting Factor	Significance Rating (WOM)	Mitigation Efficiency	Significance Rating (WM)
Operational	Negative	District	Long term	High	Probable	Medium	Medium	Low to Medium N	Low to Medium

Mitigation measures include:

- Development and implementation of an Influx and Land use Management Plan in collaboration with the municipality and the current landowners.
- Prioritise employment from local communities with the development of recruitment procedures

- Implementation of practical skills programmes
- Induction of contractors and workforce about their code of conduct in the local area.

6.2.8 Increase in Social Pathologies and Crime

The presence of construction and mine workers poses a potential risk to social practices, family structures and social networks in the area. While the presence of construction and mine workers does not in itself constitute a social impact, how workers may conduct themselves can impact on the local community. In this regard the most significant negative impact is associated with the disruption of existing social practices, family structures and social networks. This risk is linked to the potential behaviour of workers, including:

- An increase in alcohol and drug use
- An increase in crime levels
- The loss of girlfriends and / or wives to construction workers
- An increase in teenage and unwanted pregnancies
- An increase in prostitution
- An increase in sexually transmitted diseases (STDs)

The above interference and resulting impacts manifesting would depend on several factors, including whether newcomers:

- Foreigners or S.A. nationals from elsewhere. As noted previously, research shows that foreigners exist as discrete networks and don't readily assimilate into local communities. If this research is correct, interference and impacts on social networks would, therefore, be more readily attributable to foreigners than S.A. nationals (newcomers) from elsewhere.
- Will be able to secure employment or are already employed by Gruisfontein or its contractor(s), thus being able to meet their primary needs, e.g. shelter and food, thus not needing to interfere in existing social networks to secure instrumental support.
- Will be in the area only to secure employment at the proposed Gruisfontein project (in the case of job-seekers) and leave if they are unsuccessful in doing so. (Construction workers who are part of a stable, permanent contractor workforce are expected to vacate the area following completion of the construction phase).

Employing members from the local community to fill the medium to low-skilled job categories will assist in reducing the risk and mitigating the potential impacts on the local communities. These workers will be from the local community and form part of the local family and social network and, as

such, the potential impact will be low. The use of local residents to fill the medium to low skilled job categories will also reduce the demand placed on local services (housing etc.) by workers. However, due to the potential mismatch of skills and low education levels, the potential employment opportunities for the members from these local communities may be low.

Table 30: Impact Table - Increase in Social Pathologies and Crime

Phase	Nature of Impact	Extent	Duration	Intensity	Probability	Weighting Factor	Significance Rating (WOM)	Mitigation Efficiency	Significance Rating (WM)
Construction	Negative	District	Short term	High	Probable	Medium	Low to Medium	Medium N	Low to Medium

Mitigation measures include:

- Implement health awareness programmes for workers and communities, including education programmes on sexually transmitted diseases and HIV/AIDS and other illnesses such as TB.
- Increased security on mine premises: Properly constructed and secured fences can control access to the mine site. Implementing strict access control to the project site.
- Employment of local people on the mine to improve the poverty levels in the neighbouring towns and suburbs.
- Code of Conduct to form part of the induction of new workers with a clear statement and procedure regarding access, conduct and identification.
- Grievance Procedure within the local area.

6.2.9 Creation of employment

Employment during the operational phase has the potential of being over a long period (operational phase will span 16 years), which can have a major, long term (as opposed to short-term construction opportunities), positive impact for successful job applicants and their dependents. The operational workforce requirement for the mine is approximately 500 employees.

With mining being an established industry in the region, it is expected that a sufficient number of the unemployed will have appropriate skills to qualify them for at least semi-skilled positions at the mine. During the construction process, potential candidates can also be identified to receive skills training, bursaries or internships preparing them for specific roles during operations.

This means that local communities can potentially take maximum advantage of employment opportunities to be created by the proposed mine and that Gruisfontein will likely be able to meet its

local recruitment target. It should be noted that some positions will require scarce skills, which will not necessarily be readily available in local labour sending areas. Therefore a certain percentage of the mine's workforce will be recruited from elsewhere in Gauteng and Limpopo. Those who succeed in gaining employment on the Project would benefit substantially in terms of wages, training/skills development and income security. Local employment in the project supply chain could further increase the benefits of the Project. However, the challenge will be to ensure that contractors comply with recruitment policies and relevant legislative requirements.

The project will contribute R240 million in wages and salaries annually over the 16-year life of mine period. The operational phase of the proposed project could give rise to some indirect employment opportunities. These could include jobs in the informal sector and in the formal sector (for instance, by sourcing goods and service from enterprises elsewhere in the secondary area where possible or increasing the demand for commuter transport services).

Table 31: Impact Table - Construction Phase Employment

Phase	Nature of Impact	Extent	Duration	Intensity	Probability	Weighting Factor	Significance Rating (WOM)	Mitigation Efficiency	Significance Rating (WM)
Construction	Positive	District	Temporary	Low	Definite	Medium	P-Low	Medium P	P-Medium

Table 32: Impact Table - Operational Phase Employment

Phase	Nature of Impact	Extent	Duration	Intensity	Probability	Weighting Factor	Significance Rating (WOM)	Mitigation Efficiency	Significance Rating (WM)
Operational	Positive	District	Long term	High	Definite	High	P-Medium	Medium P	P-High

Optimisation measures include:

- Prioritise people residing in local area.
- Implementation of practical skills programmes.

6.2.10 Generation of revenue and GDP contribution

A positive effect of the project in terms of stimulation of domestic production, job creation, and government revenue could occur by implementing this project. More specifically, the project will, during its operational phase contribute to the GDP of the region and province and will create both direct and indirect employment opportunities.

The State will receive royalty and tax payments for the permanent extraction of non-renewable commodities. Ideally, a proportion of these funds should be used to stimulate regional economic growth by re-investing the funds into infrastructure development throughout the municipal area.

The project will also be required to pay rates and taxes to the local municipality. Such an injection into local municipal structures could contribute to the development of the municipal area, including upgrading of services, thereby creating conditions which can be conducive to economic growth.

It is expected that the benefits of the proposed project will extend beyond members of the mine's workforce to suppliers through the procurement of products and services. The preferential procurement strategy should adhere to the stipulations of the MPRDA and aim to achieve HDSA procurement targets set out in the Mining Charter 2018. The strategy should further endeavour to increase opportunities for HDSA suppliers which will, in turn, be conducive to enterprise development and economic growth in communities within the region.

Table 33: Economic Value - Gruisfontein Economic contribution

INDICATOR	GRUISFONTEIN PROJECT
Assessment period	16 years
Capital investment	R782 938 955 (NPV over 16 years[5])
Land value (current terms)	Liability of R158.4 million before rehabilitation
Employment value including subcontractors and service providers	R5.234 Billion (NPV over 16 Years)
Revenue	R25.988 billion (NPV over 16 years)

Table 34: Impact Table - Gruisfontein Economic contribution

Phase	Nature of Impact	Extent	Duration	Intensity	Probability	Weighting Factor	Significance Rating (WOM)	Mitigation Efficiency	Significance Rating (WM)
Operational	Positive	National	Long term	Medium	Highly Probable	High	P-Medium	Medium P	P-High

[5] Upfront and sustainable capital expenditure

Optimisation measures include:

- Optimise local involvement in on-mine business opportunities to maximise local economic growth
- Identify contracts or part of contracts that may be suitable to smaller local companies
- Facilitate and encourage the involvement of SMME's in larger contracts as sub-contractors
- Establish SMME development programmes to support upcoming and SMME businesses

6·2·11 Secondary benefits in the creation of electricity to supply the domestic demand

Also, the proposed project has a potential impact on Eskom's economic footprint. Eskom has two coal-fired power generations stations in the area. The Power stations are within 40km from the project, and with Transnet's infrastructure programme, there will also be access to the rail infrastructure. Eskom's older power stations consume on average coal with a calorific value of 24.4 MJ/kg to a minimum of 21.5 MJ/kg, the newer power stations like Medupi can accept lower quality coal (caloric values as low as 18.5 MJ/kg, 18.5% volatiles and an ash content less than 36%). Based on Gruisfontein's processing strategy, this presents the mine with an opportunity to provide Eskom with high-or low-grade coal. Both power stations are currently contracted with the Grootgeluk mine to supply 14.6 million tons of coal a year. Access to the rail system also provides an opportunity to transport the coal to the Mpumalanga power stations.

Table 35: Impact Table - Electricity supply benefits

Phase	Nature of Impact	Extent	Duration	Intensity	Probability	Weighting Factor	Significance Rating (WOM)	Mitigation Efficiency	Significance Rating (WM)
Operational	Positive	National	Long term	Medium	Highly Probable	Medium	P-Medium	Medium P	P-Medium

6·2·12 Contribution to Human Resource and Socio-economic Development Programmes

In addition to the direct and indirect economic impacts discussed above, the mine through its corporate social investments and social and labour plan contributes towards the local economic development in the area. The operation of the proposed mine has following positive socio-economic benefits to its employees and surrounding communities:

- development of skills through its skills development plan;
- learnership programs to provide learners with an occupational qualification; and

- investment in infrastructure development through local economic development and integrated development programmes.

The MWP indicated the following investments toward the Social and Labour Plan for the first five years:

- Human resource development (HRD): R16.87 million;
- Local economic development (LED): R14.55 million; and
- Management of downscaling and retrenchments: R19.2 million.

This equates to a total of R31.42 million for the first five years. This commitment will be revaluated towards the end of the five years of the current SLP. The socio-economic investment over the life of mine has a Net Present Value of R83.8 million.

Table 36: Impact Table - Contribution to Human Resource and Socio-economic Development Programmes

Phase	Nature of Impact	Extent	Duration	Intensity	Probability	Weighting Factor	Significance Rating (WOM)	Mitigation Efficiency	Significance Rating (WM)
Operational	Positive	Local	Long term	Medium	Highly Probable	Medium	P-Low	Medium P	P-Medium

Optimisation measures include:

- Implementation of the Social and Labour Plan

6.2.13 Loss of job opportunities due to downscaling of the mine employment

The Gruisfontein project is for a life of mine of 16 years. At the end of this period downscaling and retrenchment will follow that will reduce employment and have an economic impact.

Table 37: Impact Table - Decrease in employment and economic benefit post-mining

Phase	Nature of Impact	Extent	Duration	Intensity	Probability	Weighting Factor	Significance Rating (WOM)	Mitigation Efficiency	Significance Rating (WM)
Decommissioning	Negative	Local	Medium term	Medium	Highly Probable	Medium to High	Medium	Medium N	Low to Medium

Mitigation measures include:

- Implement portable skills development programmes to enable retrenched employees to find alternative employment
- Design and implement economic development programmes that will assist people being retrenched in sustaining their livelihoods
- Establish a future forum with representation from the workforce to discuss potential difficulties and solutions
- Implementation of programmes to minimise and mitigate the impact of downscaling and retrenchment.
- Implementation of capacity building programmes to minimise and mitigate the impact of mine downscaling and closure.
- Closure plan implementation

6·3 Cumulative Impacts

6·3·1 Cumulative decrease of primary game farming production and economic contribution of the hunting industry in the Limpopo region

The potential loss of game farming and its economic contribution via the hunting industry from current mining activities as well as the foreseeable future mining activities in the region may increase to at least 20% of the Limpopo industry, which could equate to R521 million per annum. This will have a direct impact on the economy in South Africa.

The Gruisfontein project is relatively small and will, therefore, have a limited contribution to this.

Table 38: Impact table - Cumulative impact on hunting

Phase	Nature of Impact	Extent	Duration	Intensity	Probability	Weighting Factor	Significance Rating (WOM)	Mitigation Efficiency	Significance Rating (WM)
Cumulative	Negative	Provincial	Long term	High	Probable	Medium to High	Medium to High	Low to Medium N	Medium to High

Mitigation measures include:

- Collaborate with stakeholder forums to explore ways of hunting and mining co-existence, discussing various methods to reduce impacts from noise and view-shed

6·3·2 Cumulative Increase influx, housing demand and land use management issues

Due to the proximity of other mine developments in the area, it is anticipated that influx will be amplified within the broader area. The cumulative influx will be focused on formal towns and unoccupied areas close to mine development, such as at Steenbokpan.

An increase in development projects in the region affecting similar geographical area can cause an increase in pressures on the availability of housing. The participation in regional development planning forums may be able to foresee potential impacts and manage those appropriately.

Table 39: Impact Table - Cumulative increase influx, housing demand and land use management issues

Phase	Nature of Impact	Extent	Duration	Intensity	Probability	Weighting Factor	Significance Rating (WOM)	Mitigation Efficiency	Significance Rating (WM)
Cumulative	Negative	District	Long term	Medium	Probable	Medium	Low to Medium	Low to Medium N	Low to Medium

Mitigation measures include:

- Engage Local Municipality to identify and manage hotspot areas

6·3·3 Cumulative Increase in environmental interactions causing further socio-economic impacts

Neighbouring mining development also has environmental interactions with land use and livelihood activities in the region. The additional development further compounds those impacts especially if the impacts are within the same geographical area.

The Temo Coal project is just west of the Gruisfontein project, and there could be overlapping impacts that should be considered. Although the information was requested from neighbouring mining projects, limited to no information was received that related to the socio-economic and environmental impacts.

Table 40: Impact Table - Cumulative Increase in environmental interactions causing further socio-economic impacts

Phase	Nature of Impact	Extent	Duration	Intensity	Probability	Weighting Factor	Significance Rating (WOM)	Mitigation Efficiency	Significance Rating (WM)
Cumulative	Negative	District	Long term	High	Probable	Medium to High	Medium to High	Low to Medium N	Medium

Mitigation measures include:

- The placement of monitoring points for both noise and air quality levels must be done, taking into consideration the cumulative impact and other developments in the area.
- Establishing an Environmental Monitoring Committee with other mining companies

6·3·4 Cumulative Increase in local disruption and traffic congestion

Existing limited road access into the area will be further impacted if more development is initiated that will utilise the same roads. The land-use activities also utilise the same roads for transport, and therefore the development will intensify the impact.

Table 41: Impact Table - Cumulative Increase in local disruption and traffic congestion

Phase	Nature of Impact	Extent	Duration	Intensity	Probability	Weighting Factor	Significance Rating (WOM)	Mitigation Efficiency	Significance Rating (WM)
Cumulative	Negative	District	Long term	High	Probable	Medium	Medium	Medium N	Low to Medium

Mitigation measures include:

- The placement of monitoring points for both noise and air quality levels must be done, taking into consideration the cumulative impact and other developments in the area.
- Establishing an Environmental Monitoring Committee with other mining companies

6·3·5 Cumulative Improved Skills Development and Employment

If all planned developments take place within the broader project area, the anticipated benefits will be intensified, causing an increase in skill levels as well as employment. The secondary effect is more disposable income which will lead to a higher standard of living in communities surrounding these developments.

Table 42: Impact Table - Cumulative Improved Skills Development and Employment

Phase	Nature of Impact	Extent	Duration	Intensity	Probability	Weighting Factor	Significance Rating (WOM)	Mitigation Efficiency	Significance Rating (WM)
Cumulative	Positive	District	Long term	High	Highly Probable	High	P-Medium	High P	P-High

Mitigation measures include:

- Implementation of the Social and Labour Plan

6·3·6 Improved local business development through procurement opportunities within the mining and construction industries

If all planned developments take place within the broader project area, the anticipated benefits will be intensified, causing an increase in entrepreneurs and growth in local businesses. The secondary effect is more indirect employment and spend, which employs communities surrounding these developments.

Table 43: Impact Table - Cumulative Improvement of local business development through procurement opportunities within the mining and construction industries

Phase	Nature of Impact	Extent	Duration	Intensity	Probability	Weighting Factor	Significance Rating (WOM)	Mitigation Efficiency	Significance Rating (WM)
Cumulative	Positive	District	Long term	High	Highly Probable	High	P-Medium	Medium P	P-High

Mitigation measures include:

- Implement Preferential Procurement Strategy

6.4 Assessment of Land Use Alternatives

The obvious alternative land use on the properties affected is the current mix of livestock and game farming; other alternatives include the optimisation of livestock farming on all the properties or the optimisation of all game and hunting activities on all affected properties. The table below indicates the loss of economic value and employment for the various options including if mining is not implemented.

Table 44: Land use Alternatives

Category	Current Impacted Land-use (No Go Option)	Option 1: Optimised Livestock farming	Option 2: Optimised Game farming	Option 3: Mine Development
Total estimated revenue generation per annum	R1 228 831	R1 818 760	R730 141	R2.015 billion
Net-Present Value over life of mine at current values	R9 614 017	R6 381 179	R5 712 407	R25.99 billion
Total direct employment generation	8	5	7	500
Total estimated wages per annum	R203 450	R190 140	R119 154	R 240 million
Total wages to low-income households per annum	R162 760	R152 112	R95 324	R 72 million
Net-Present Value of wages over the life of mine at current values	R1 591 732	R907 436	R932 229	R5.235 billion

6.5 Impact Summary

Table 45: Impact Table

ID	Potential Impact	Phase	Nature of Impact	Extent	Duration	Intensity	Probability	Weighting Factor	Significance Rating (WOM)	Mitigation Efficiency	Significance Rating (WM)
1	Economic Displacement of households and workers	Construction	Negative	Site-specific	Long term	High	Definite	High	Medium to High	Medium N	Medium
2	Economic or Physical Displacement due to Secondary Impacts and Environmental Interactions	Construction	Negative	Local	Long term	Low	Probable	Medium to High	Medium	Medium N	Low to Medium
3	Loss of employment opportunities	Construction	Negative	Local	Long term	Medium	Probable	Medium to High	Medium	Medium N	Low to Medium
4	Impact on Aesthetic Value and Sense of Place due to Visual intrusions and increase Nuisance Noise	Operational	Negative	Local	Long term	Medium	Probable	High	Medium to High	Medium N	Low to Medium
5	Disruption of daily living and movement patterns and safety of road users	Construction	Negative	Local	Long term	High	Highly Probable	Medium to High	Medium to High	Low to Medium N	Medium
6	Impact on well-being and livelihoods due to dust generation along transport routes	Operational	Negative	Local	Long term	High	Highly Probable	Medium	Medium	Medium N	Low to Medium
7	The influx of Job seekers and Population growth pressures	Operational	Negative	District	Long term	High	Probable	Medium	Medium	Low to Medium N	Low to Medium
8	Increase in Social Pathologies and Crime	Construction	Negative	District	Short term	High	Probable	Medium	Low to Medium	Medium N	Low to Medium
9	Creation of temporary construction employment	Construction	Positive	District	Temporary	Low	Definite	Medium	P-Low	Medium P	P-Medium
10	Creation of operational employment	Operational	Positive	District	Long term	High	Definite	High	P-Medium	Medium P	P-High
11	Generation of revenue and contribution towards the local, regional and national economies	Operational	Positive	National	Long term	Medium	Highly Probable	High	P-Medium	Medium P	P-High
12	Secondary benefits in the creation of electricity to supply the domestic demand	Operational	Positive	National	Long term	Medium	Highly Probable	Medium	P-Medium	Medium P	P-Medium
13	Contribution to Human Resource and Socio-economic Development Programmes	Operational	Positive	Local	Long term	Medium	Highly Probable	Medium	P-Low	Medium P	P-Medium
14	Loss of job opportunities due to downscaling of the mine employment	Decommissioning	Negative	Local	Medium-term	Medium	Highly Probable	Medium to High	Medium	Medium N	Low to Medium

ID	Potential Impact	Phase	Nature of Impact	Extent	Duration	Intensity	Probability	Weighting Factor	Significance Rating (WOM)	Mitigation Efficiency	Significance Rating (WM)
15	Cumulative Decrease of primary game farming production and economic contribution in the Limpopo region	Cumulative	Negative	Provincial	Long term	High	Probable	Medium to High	Medium to High	Low to Medium N	Medium to High
16	Cumulative Increase influx, housing demand and land use management issues	Cumulative	Negative	District	Long term	Medium	Probable	Medium	Low to Medium	Low to Medium N	Low to Medium
17	Cumulative Increase in environmental interactions causing further socio-economic impacts	Cumulative	Negative	District	Long term	High	Probable	Medium to High	Medium to High	Low to Medium N	Medium
18	Cumulative Increase in local disruption and traffic congestion	Cumulative	Negative	District	Long term	High	Probable	Medium	Medium	Medium N	Low to Medium
19	Cumulative Improved Skills Development and Employment	Cumulative	Positive	District	Long term	High	Highly Probable	High	P-Medium	High P	P-High
20	Cumulative Improvement of local business development through procurement opportunities within the mining and construction industries	Cumulative	Positive	District	Long term	High	Highly Probable	High	P-Medium	Medium P	P-High

6.6 Mitigation Summary

Table 46: Mitigation Table

ID	Potential Impact	Mitigation Measure
1	Economic Displacement of households and workers	▪ Fair compensation negotiated and agreed with landowner based on valuation of land and economic value of the livelihood activities ▪ Make available land not being used for leaseback by neighbouring operators ▪ Continuous consultation with neighbouring landowners to ensure co-existence and collaboration on mitigation measures for impacts on noise and dust ▪ Implement a consultation programme with local stakeholders in the development of a closure plan and rehabilitation programme ▪ Determine the regional needs and characteristics to ensure post-mining land use enhances the regional characteristics ▪ Monitoring the impact on neighbouring properties
2	Economic or Physical Displacement due to Secondary Impacts and Environmental Interactions	▪ See above
3	Loss of employment opportunities	▪ Priority employment from local communities with the development of recruitment procedures and utilising the existing skills available from the local communities with special focus on those that are bound to lose their jobs
4	Impact on Aesthetic Value and Sense of Place due to Visual intrusions and increase Nuisance Noise	▪ Implementation of mitigation measures as contained in the Air Quality, Noise and Visual Impact Assessment ▪ Rehabilitation and Closure Planning to coordinate with future planning of the area. ▪ Establish a complaint and grievance procedure.
5	Disruption of daily living and movement patterns and safety of road users	▪ Implementation of the recommendations and mitigation measures as contained in the Traffic Impact Assessment ▪ Establishment of a complaint and grievance procedure
6	Impact on well-being and livelihoods due to dust generation along transport routes	▪ Implementation of the management and mitigation measures of the Air Quality Impact Assessment ▪ Implementation of the design, management and mitigation measures of the Traffic Impact Assessment ▪ Establishment of a Complaint and Grievance Procedure
7	The influx of Job seekers and Population growth pressures	▪ Development and implementation of an Influx and Land use Management Plan in collaboration with the municipality and the current landowners. ▪ Prioritise employment from local communities with the development of recruitment procedures ▪ Implementation of practical skills programmes ▪ Induction of contractors and workforce concerning their code of conduct in the local area.
8	Increase in Social Pathologies and Crime	▪ Implement health awareness programmes for workers and communities, including education programmes on sexually transmitted diseases and HIV/AIDS and other illnesses such as TB. ▪ Increased security on mine premises: Properly constructed and secured fences can control access to the mine site. Implementing strict access control to the project site. ▪ Employment of local people on the mine to improve the poverty levels in the neighbouring towns and suburbs. ▪ Code of Conduct to form part of the induction of new workers with a clear statement and procedure regarding access, conduct and identification.

ID	Potential Impact	Mitigation Measure
		▪ Grievance Procedure within the local area.
9	Creation of temporary construction employment	▪ Prioritise people residing in local area. ▪ Implementation of practical skills programmes.
10	Creation of operational employment	▪ Same as above
11	Generation of revenue and contribution towards the local, regional and national economies	▪ Optimise local involvement in on-mine business opportunities to maximise local economic growth ▪ Identify contracts or part of contracts that may be suitable to smaller local companies ▪ Facilitate and encourage the involvement of SMME's in larger contracts as sub-contractors ▪ Establish SMME development programmes to support upcoming and SMME businesses
12	Secondary benefits in the creation of electricity to supply the domestic demand	▪ No mitigation
13	Contribution to Human Resource and Socio-economic Development Programmes	▪ Implementation of the Social and Labour Plan
14	Loss of job opportunities due to downscaling of the mine employment	▪ Implement portable skills development programmes to enable retrenched employees to find alternative employment ▪ Design and implement economic development programmes that will assist people being retrenched in sustaining their livelihoods ▪ Establish a future forum with representation from the workforce to discuss potential difficulties and solutions ▪ Implementation of programmes to minimise and mitigate the impact of downscaling and retrenchment. ▪ Implementation of capacity building programmes to minimise and mitigate the impact of mine downscaling and closure. ▪ Closure plan implementation
15	Cumulative Decrease of primary game farming production and economic contribution in the Limpopo region	▪ Collaborate with stakeholder forums to explore ways of hunting and mining co-existence, discussing various methods to reduce impacts from noise and view-shed
16	Cumulative Increase influx, housing demand and land use management issues	▪ Engage Local Municipality to identify and manage hotspot areas
17	Cumulative Increase in environmental interactions causing further socio-economic impacts	▪ The placement of monitoring points for both noise and air quality levels must be done, taking into consideration the cumulative impact and other developments in the area. ▪ Establishing an Environmental Monitoring Committee with other mining companies
18	Cumulative Increase in local disruption and traffic congestion	▪ Same as above
19	Cumulative Improved Skills Development and Employment	▪ Implementation of the Social and Labour Plan
20	Cumulative Improvement of local business development through procurement opportunities within the mining and construction industries	▪ Implement Preferential Procurement Strategy

7 SOCIAL MANAGEMENT AND MONITORING STRATEGIES

It is anticipated that the applicant already envisages some of these management and monitoring strategies. It is recommended that these strategies be aligned with other planned programmes being implemented.

7·1 Introduction

This section presents the proposed social management and monitoring strategies that would be implemented to ensure that all identified impacts are addressed and managed accordingly. The main aim of the strategies is to minimise negative impacts and maximise positive impacts using effective compensation and mitigation measures. Logical Framework Matrix (LFM) methodology was used to develop the strategies listed below.

- **Communication, Consultation and Awareness Management Plan**: Ensuring continuous engagement with project-affected parties and stakeholders
- **Issue and Grievance Management Strategy**: To ensure the appropriate management of issues and grievances
- **Social Monitoring and Evaluation Strategy:** to ensure that the project intervention process is monitored to implement corrective measures if and when required

In the following sections, the proposed strategies will be discussed in terms of a hierarchy of objectives, outputs and activities and targets.

- **Objectives** – objectives of strategy/policy which highlight the motivation behind each strategy.
- **Outputs** – the expected deliverables for the objectives to be achieved
- **Activities -** actions that should be undertaken to get the expected deliverables. These activities are referenced against the timeframe within which they should be undertaken and the parties that would take responsibility for carrying out the activities.
- **Targets** – probable key success factors/performance indicators by which implementation success of strategy should be monitored. In a significant number of cases, specific targets would only be set in the process of implementing the strategies.

7·2 Strategies

7·2·1 Communication, Consultation and Awareness Strategy

7·2·1·1 Objective

- To develop and **maintain an ongoing process of public participation** (refer Public Participation Programme Section of the report) to ensure the continued involvement of interested and affected parties in the project in a meaningful and responsible way

- To establish an Environmental Management Committee (EMC) to inform and monitor the environmental and social planning and implementation processes

7·2·1·2 Outputs

- A Monitoring Committee comprising of representatives from local landowners, community stakeholder sectors, the mining company and relevant national, provincial and local authorities.
- A database of project interested and affected parties, stakeholder groups and stakeholder sectors.

7·2·1·3 Activities

Table 47: Communication, Consultation and Awareness Strategy Action Plan

ACTIVITY	TIMEFRAME	RESPONSIBLE PARTIES
Consult and constitute a local Monitoring Committee	Pre-Construction	Mining Right Holder
Develop a constitution for the EMC to guide its operations	Pre-Construction	Mining Right Holder Monitoring Committee
Quarterly monitoring meetings	During construction and Operations	Mining Right Holder Monitoring Committee

7·2·1·4 Targets

- Quarterly Monitoring meetings
- Monitoring reports

7·2·2 Issue and Grievance Management Strategy

7·2·2·1 Objective

- Define mechanisms and procedures to manage the land use and influx that may result due to the mine development during construction and operational phases

7·2·2·2 Outputs

- Ensure communities and stakeholders are aware of the opportunity to express grievances and complaints.
- Ensure communities and stakeholders feel free to express their complaints/grievances
- Encourage communities and stakeholders to use the procedure, but also warned not to abuse it with false grievances.
- Ensure sensitive grievances are dealt with privately, and confidentiality of information is maintained.

7·2·2·3 Activities

Table 48: Issue and Grievance Management Strategy Action Plan

ACTIVITY	TIMEFRAME	RESPONSIBLE PARTIES
A Grievance is submitted in written form via fax or project email detailing the Party lodging the grievance, contact details, details of the grievance, location and proposed solution.	Pre-Construction Operational	Mining Right Holder Contractor Engagement Officer
The existence and conditions of access to this procedure and avenue shall be widely disseminated within the stakeholder environment and affected parties as part of the consultation undertaken for the development in general.	Pre-Construction Operational	Mining Right Holder Contractor Engagement Officer
The staff member responsible for Stakeholder Engagement at the mine which will receive the grievance (via fax or email) must ensure the Grievance Register has been correctly completed and the grievance is clearly understood.	Pre-Construction Operational	Mining Right Holder Contractor Engagement Officer
Grievances will be lodged (via email, fax or in-person) with the SEO at the mine	Pre-Construction Operational	Mining Right Holder Contractor Engagement Officer
The SEO will send a copy to Mining Right Holder / Management within 48 hours (2 working days).	Pre-Construction Operational	Mining Right Holder Contractor Engagement Officer
Within 7 days, management will submit a response to the stakeholder/community.	Pre-Construction Operational	Mining Right Holder Contractor Engagement Officer
If the response to the grievance has not been accepted or resolved, the SEO will engage the Grieving Party to facilitate an acceptable solution, if acceptable this would be put in writing as the final response to Grieving Party.	Pre-Construction Operational	Mining Right Holder Contractor Engagement Officer
If the response to the grievance has not been accepted or resolved the mine management will enter a Mediation phase, where a meeting will be held with the party that submitted the Grievance in an attempt to resolve.	Pre-Construction Operational	Mining Right Holder Contractor Engagement Officer
If Grievance is not resolved through Mediation, the Grieving Party are open to taking up any of the formal avenues available in terms of South African Legislation	Pre-Construction Operational	Mining Right Holder Contractor Engagement Officer

7·2·2·4 Targets

- Registration and Resolve of grievances
- Amicable mediation and settlement.

7·2·3 Social Monitoring and Evaluation Strategy

7·2·3·1 Objectives

- To ensure that all the activities listed in the social strategies are implemented to support the achievement thereof.
- To monitor, review and adapt social implementation strategies if and when required
- To ensure that the monitoring information is captured in a structured and organised fashion, according to an agreed system by responsible parties, to ensure ex-post analysis of the data.

- Integration with ECO monitoring functions of the bio-physical and construction environments.

7·2·3·2 Outputs

- Drafting of Monitoring and Evaluation Policy
- Definition of a Conflict Resolution Procedure
- Implementation of corrective measures
- Compilation of Monitoring Reports to Monitoring Committee and project proponent

7·2·3·3 Activities

Table 49: Social Monitoring and Evaluation Strategy Action Plan

ACTIVITIES	TIMEFRAME	RESPONSIBLE PARTIES
Compile Monitoring and Evaluation Policy and Procedures Definition of Conflict Resolution Procedure	Pre-Construction	Mining Right Holder, Social Scientist, Monitoring Committee, Engineer, Contractor
Define monitoring role and functions of the EMC with regards to various project components, e.g. social aspects, bio-physical environmental aspects, construction issues etc.	Before and during construction	Mining Right Holder, EMC
Design and implementation of monitoring and evaluation methodologies (e.g. checklists, PRA etc.)	Before and during construction	Mining Right Holder, Social Scientist, Monitoring Committee
Design and implementation of a Complaint Register	During construction	Mining Right Holder, Social Scientist, Monitoring Committee
Drafting of regular process and compliance monitoring reports Timeous implementation of corrective measures based on recommendations from the process and compliance monitoring reports	During and after construction	Mining Right Holder, Social Scientist, Monitoring Committee

7·2·3·4 Targets

- Efficient and effective project management
- Timeous information flow to support decision-making processes
- Triangulation of monitoring data

8 CONCLUSIONS AND RECOMMENDATIONS

Recent legislation in South Africa, such as the Broad-Based Socio-Economic Empowerment Charter (BBSEEC) for the Mining Industry and the Mineral and Petroleum Resources Development Act (MPRDA) has confirmed the requirement for mining companies to assess the social impacts of their activities from start to closure, and beyond. Unless a mining operation has considered the social impact and documented it, the Department of Minerals Resources (DMR) will not issue a mining right to the applicant (MPRDA Regulations, 2002). Mining companies also have to compile and implement a Social and Labour Plan (SLP) to promote socio-economic development in their affected communities and to prevent or reduce negative social impacts.

Therefore, although the growth of the South African economy is of strategic importance, consideration should be given to social and natural resources when considering proposed developments. Given the concept of sustainability, the proposed project will have to contribute towards achieving sustainable development while contributing to achieving these higher-level objectives.

Although the proposed Gruisfontein Project will have a potential negative impact on land value as well as employment and economic opportunities, the positive contributions from sustained employment and revenue generation from the project will significantly outweigh these over 16 years. It should, however, be noted that with mitigation the mining infrastructure will be removed and the area will be restored to agricultural land, in particular grazing, and the negative impacts will, therefore, be negated to a certain extent. Some of the land use activities may be able to resume at pre-mining levels although other activities will be at a reduced capacity due to the impact the project may have.

The proposed project may furthermore have a positive impact on Eskom power generation plant through a sustained and secure coal supply. The potential impact in the event that the project is not going ahead may not significantly impact Eskom as alternative coal sources may be available.

From an economic perspective, it is recommended that the project proceed as it will positively contribute towards the local, regional and national economy through its capital investment, creation of employment opportunities and revenue generation potential. The project is also in line with National, Provincial and Local development planning.

On a national level, the project will support amongst others, following South Africa's strategies and initiatives:

- Elimination of poverty and reduction of inequality by 2030 as outlined in the National Development Plan

- Creation of five million jobs and reduce unemployment from 25% to 15% over the next ten (10) years as outlined in the New Growth Path (2010), which aims to address unemployment, inequality and poverty by unlocking employment opportunities in South Africa's private sector.
- State's drive towards ensuring greater economic growth, buoyant and sustained job creation and the eradication of poverty.

Implementing management measures and commitments as outlined in the EMPr will ensure that the project is executed within the framework of sustainable development, which will ensure that potential negative impacts are minimised and positive impacts enhanced.

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9.2 Legislation

- International Best Practice
    - Equator Principles
    - IFC Standards
    - Project Classification
    - Human Rights
- South African Legislation
    - The Constitution, Act 108 of 1996
    - The National Environmental Management Act 107 of 1998 (NEMA)
    - National Heritage Resources Act (Act No. 25 of 1999) (NHRA)
    - Conservation of Agricultural Resources Act (Act No. 43 of 1983)
    - Mine Health and Safety Act, 1996 (Act 29 of 1996)
    - Development Facilitation Act, Act 67 of 1995
    - Land Use Planning Ordinance (Ordinance No. 15 of 1985)
    - Town Planning and Townships Ordinance No 15 of 1986
    - Spatial Planning and Land Use Management Act (SPLUMA)
    - Special Economic Zones Act, No. 16 of 2014
    - Promotion of Access to Information Act (No. 2 of 2000)
    - Promotion of Administrative Justice (No. 3 of 2000)
    - Basic Conditions of Employment Act (No. 75 of 1997)
    - The Labour Relations Act (No. 66 of 1995)
    - Promotion of Equality and Prevention of Unfair Discrimination Act (No. 4 of 2000)
    - Occupational Health and Safety Act (No. 85 of 1993)
    - Broad-Based Black Economic Empowerment Act (No. 53 of 2003)
    - National Road Safety Act (No. 9 of 1972)
    - National Road Traffic Act (No. 93 of 1996)
    - Prevention of Illegal Eviction from and Unlawful Occupation of Land Act 19 of 1998
    - Restitution of Land Rights Act 3 of 1996
    - Amendment of the Upgrading of Land Tenure Rights Act 112 of 1991
    - Subdivision of Agricultural Land Act 70 of 1970

- Housing Act No 107 of 1997
- National Land Transport Act 5 of 2009

9.3 Government Policies and Documents

- Provincial Growth and Economic Development Strategies for Limpopo
- Provincial and District Spatial Development Framework
- District and Local Integrated Development Plan
- Census 2011 data
- Community survey 2007
- Quarterly Employment Statistics, 2016
- General household survey, 2011
- Income and Expenditure Survey 2010/2011
- Mortality and causes of death survey, 2010

APPENDIX A: CURRICULUM VITAE

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Email: lizinda@diphororo.com
Reg nr: 2004/012381/07

CURRICULUM VITAE	Surname:	Dickson (previously Grobbelaar)
	First Name:	Lizinda
	Contact:	0829222261 / lizinda@diphororo.com
	Birth date:	11 Nov 1975
	Nationality:	South African
	Gender:	Female
Profession	Project Director: Social Assessment, Management and Facilitation	
Education	BA Degree specialising in Geography / GIS; University of Stellenbosch; 1994 – 1996 BA (Hons) specialisting in Environmental Management & Analysis; University of Pretoria; 1997 – 1998 Masters specialisting in Environment and Society; University of Pretoria; commenced 2013/2014, still in progress	
Other Formal Training / Education	Certificate in Database management; Microsoft Accredited Certificate in Geographic Information Systems: ArcGIS; ESRI Accredited Certificate in Geographic Information Systems: PlanetGIS; PlanetGIS Accredited HIV/AIDS Peer educator; SETA Accredited Certificate	
Professional Societies	Member of the International Association of Impact Assessments Member of the International Resettlement Specialist Association	
Publications	van Koppen, B., Joubert, C. & Grobbelaar(Dickson), L (2000). Gender and Irrigation in Mathabatha Land. South Africa Working Paper. Colombo, Sri Lanka: International Water Management Institute (IWMI)	
Employment Record	University of Pretoria; Research Assistant; 1996 – 1997 Naledi Development; Project Assistant; 1998 – 2000 Naledi Development; Project Leader / Manager; 2000 – 2004 Diphororo Development; Director / Owner; 2004 – 2017	
Language Proficiency	English – excellent	
Computer Aptitude	Windows 8, 10; Adobe Acrobat Reader / Writer 2017 Microsoft Office 2003, 2007, 2010, 2016; Microsoft Project 2003, 2007, 2010 Microsoft Access 2003, 2007, 2010, 2016 Corel Office and Corel Draw Mapping: ESRI ArcGIS; Planet GIS; QGIS; Global Mapper SAS Statistical analysis (database management)	

Client	Project	Environmental Assessment / Management	Social Assessment / Management	Housing Resettlement Planning / Implementation	Stakeholder Engagement / Management	Geographic Information Systems	Social Development and labour Plans	Land access / acquisition facilitation
Consol Glass	Rietkol Project		X		X	X		
ESKOM	Neptune Poseidon 400kV Transmission Line		X	X	X	X	X	X
Subiflex	The Duel Project		X	X	X	X	X	
BHP Billiton / South 32	Khutala Life Extension Project		X	X		X		
BHP Billiton / South 32	Leandra Underground Coal Project		X		X	X	X	
Ibutho Coal	Fuleni Coal Project		X	X	X	X	X	
Taung Gold	Evander Project		X			X		
Coal of Africa Limited	Greater Soutpansberg Mining Right Applications		X		X	X	X	X
Department of Housing / Urban Dynamics	Bekkersdal Urban Renewal		X	X	X		X	X
Coal of Africa Limited	Makhado Colliery		X	X	X	X	X	X
Coal of Africa Limited	Vele Colliery		X		X		X	
Glencore	Goedgevonden Colliery Expansion		X		X	X		
Sefateng Chrome	Sefateng Chrome Mine		X	X	X	X	X	X
Ergosat	Ergosat Project	X	X	X	X	X	X	X
Tivani (Pty) Ltd	Tivani Project	X	X	X	X	X	X	X
Coal of Africa Limited	Mooiplaats Colliery / Vuna Colliery						X	
Glencore	Vlakfontein Colliery		X		X		X	
Tivani (Pty) Ltd	Mohlabas Localtion	X	X	X	X	X	X	X
Bengwenyama Minerals	Eerstegeluk Project	X	X		X		X	X
Barrick Gold	Sedibelo project		X	X	X	X		X
Magalies Water	Drought relief programme	X			X			
Sekhukhune District Municipality	Mooihoek Burgersfort Bulk Water Scheme	X	X		X			X
Department of Housing	Affordable Rental Accommodation		X	X	X		X	
Department of Housing	Hostel regeneration		X	X	X		X	
Department of Housing	Bekkersdal Urban Renewal		X	X	X		X	
Lebabelo Water User Association	Lebalelo Bulk Water Scheme		X		X	X	X	X

Client	Project	Environmental Assessment / Management	Social Assessment / Management	Housing Resettlement Planning / Implementation	Stakeholder Engagement / Management	Geographic Information Systems	Social Development and labour Plans	Land access / acquisition facilitation
VILDEV	Taung Commercial Project	X	X		X			
Anglo American	Twickenham Platinum Mine	X	X	X	X	X	X	X
Anglo American	Brakfontein Project		X	X	X	X	X	X
Impala Platinum	OR Tambo Essential Oil Project	X	X			X	X	X
Impala Platinum	Marula Platinum		X	X	X	X		
Tip Trans Resources	Sand mining projects	X	X		X	X		
SAMREC (Pty) Ltd	Annesley Andulusite Mine Development		X	X	X	X		
Boitumelo Diamonds	Boitumelo Diamonds						X	
Peermont Global Resort	Limpopo Casino Development	X	X		X	X		
Mbombela Local Municipality	Mbombela Sport Stadium		X		X	X		
NWPTB	Taung Dam Protected Area development	X	X		X	X	X	
Desert Charm Trading	Giyani Mining Development	X			X			X
Great Basin Gold	Burnstone Mine Development				X		X	
Wandma Consulting	Lothlokwane Power line		X		X			
Department of Water Affairs	Rooipoort Dam Development	X	X	X	X	X		X
Department of Water Affairs	Flag Boshielo Dam Development		X	X	X	X		X
Mbombela Local Municipality	Mbombela Sport Stadium		X				X	
Grant Thornton	Polokwane Stadium		X				X	
Department of Water Affairs	Crocodile-West Catchment Management Agency		X		X		X	
Department of Water Affairs	Letaba / Luvhuvhu Catchment Management Agency		X		X		X	
Mvula Trust	Seroka / Rapitsi Upgrading of Water Supply		X		X		X	
Mvula Trust	Sanitation Awareness & Education in Schools		X		X		X	
National Road Agency	Capricorn Toll Plaza		X		X			X
Margate Local Municipality	Margate Landfil Site Rehabilitation	X	X		X			
Mini-Waste	Mooiplaats Landfill Site	X	X		X			

Client	**Project**	**Environmental Assessment / Management**	**Social Assessment / Management**	**Housing Resettlement Planning / Implementation**	**Stakeholder Engagement / Management**	**Geographic Information Systems**	**Social Development and labour Plans**	**Land access / acquisition facilitation**
Department of Water Affairs	Olifants River In stream Flow Requirements		X		X			
Department of Water Affairs	Nondweni Weir		X		X			X
Department of Water Affairs	Lebowakgomo Water "Turnaround" Projects -		X		X	X		X
National Road Agency	Baobab Toll Plaza		X		X			X
Lefika	Coronation Park Development		X			X		
National Road Agency	Diamond Hill Toll Plaza		X		X			X

Werner Neethling

CONTACT DETAILS

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Rustenburg, 0299, South Africa

werner@mercuryfc.co.za

Professional Profile

Werner is a qualified Chartered Management Accountant with more than 17 years of experience. Werner is the founding director at Mercury Financial Consultants (Pty) Ltd (Mercury) which was established in 2013. Mercury comprises of a small team of professionals and established strategic partners with key environmental and social consultants. Mercury's sole focus is on delivering strategic and sustainable solutions to its clients.

At Mercury, Werner primarily undertakes economic impact assessments in support of environmental impact assessment processes as well as business development and support services to SMMEs (Small, Medium and Micro-sized Enterprises). Werner, also provides specialised enterprise development consultation services to various clients.

Work History

2013 - Present:
Mercury Financial Consultants (Pty) Ltd
Managing Director

Duties include:

- Economic impact assessments in support of Environmental Impact Assessment (EIA) processes;
- Economic impact assessment and alternative land use analysis for mining projects in South Africa and Southern Africa;
- Facilitating, managing and co-ordinating SMME (Small, Medium and Micro-sized Enterprises) business development;
- SMME financial due diligence and compliance assessments
- SMME accounting and statutory returns
- Risk identification and solution formulation for SMME's; and
- Enterprise development strategy formulation and implementation.

August 2013 – March 2018
Enterprise Development Department – Impala Platinum (Pty) Ltd)
Specialist services provider

Duties include:

- Developing and overseeing of enterprise development strategy for the Implats group
- Managing of inter-departmental cross-functional teams on commercial issues surrounding tender opportunities.
- Analysing and reporting specific risks associated with new suppliers
- Mentor and monitor businesses identified and engaged through internal processes for the Implats Group
- Forming, evaluating and overseeing the implementation of turnaround strategies
- Commercially evaluate all business proposals submitted to the sustainable development department.
- High level engagement of untransformed Suppliers
- Overseeing job creation initiatives

August 2010 – 2013 – Sustainable Development Department
Project Manager , Impala Platinum (Pty) Ltd

- Establish and maintaining of a commercial project reporting system for all sustainable development projects
- Reviewing and reporting of financial results for the sustainable development department
- Management of service providers and finance personnel
- Facilitating of financial review meetings
- Operational management of enterprise development projects
- Building and maintaining relationships with third party stakeholders

Achievements

- Established an industry leading Enterprise Development Department
- Successfully implemented financial and reporting systems for all Sustainable Development Projects

January 2008- September 2010:
Calidris Development Group (SA)
Senior Management Accountant,
Calidris Development Group (SA) specialises in property development

Duties included:

- Overall responsibility for the finance function
- Overseeing of monthly, quarterly and annual budgets
- Review and reporting of monthly financial information
- Responsible for long, medium and short term financial planning
- Reporting of management accounts for all divisions
- Negotiating of contract terms on all new projects.
- Conducting of feasibility studies on new projects.
- Implementation of control systems and IT infrastructure
- Managing the marketing team
- Financial assistance to project team

Achievements

- Established an reporting systems for all Calidris Subsidiary companies
- Chief negotiator for the sale of shares in Destiny Africa development worth R100m

December 2005- December 2007
Freeman and Edwards Ltd (UK)
Financial Controller
Freeman and Edwards Ltd delivers 5 star catering, hospitality and logistical support services to numerous F1, Super Bikes and British Touring Car Teams

Duties included:

- Day to day running of the company's financial and human resource departments
- Daily, monthly and yearly cash forecasting
- Creating and implementing of financial modules that form the core for contract tendering
- Negotiating and liaising with clients, directors, marketing executives, logistical and other departments to Improve customer services and our companies overall cost efficiency
- Variance and efficiency reporting.
- Preparation of Monthly, Quarterly and Yearly management accounts
- Quarterly VAT returns UK and EU
- Preparation of company accounts up to Trial Balance for External Auditors
- Direct supervising of 4 finance staff members and indirect responsibility and management of 32 other members of staff

Achievements

- Restructuring of the company's European VAT policy, this saved the Company £190 000 in 2006
- Revamp of the billing process
- Implementation of numerous control measures along with excellent forecasting and budgeting skills increased the companies Gross Profit margins from 21 to 30%
- Youngest Financial Controller in the Motorsport Industry

October 2004- November 2005
UK Journal Division, Taylor and Francis Ltd
Financial Accountant
UK Journal Division, Taylor and Francis Ltd is a world leader in academic publishing.

Duties included:

- Analysing and preparing the Work in Progress modules, including variance investigation, actual vs budget, costing, closing of work in progress modules and posting of accruals

- Analysing and reporting of day end sales figures, adhoc and deferred income
- Costing forecasting and apportioning of production costs
- Overview and reporting on T&F Sterling and Dollar bank accounts
- Calculating and posting of the production creditor journals
- Analysing of marketing expenditure and drafting reports to the FD
- Cash forecasting
- Balance sheet reconciliations
- Month end accruals
- Ad hoc projects

August 2001- October 2004:
Gainsborough-stud Management Ltd (UK)
Assistant Accountant
Gainsborough stud is the Management Centre for Sheik Maktoum al Maktoum's worldwide thorough bred racing and breeding operation. Turnover is in excess of £100million per year.

Duties included:

- Preparation and producing of monthly accounts
- Overviewing and reporting of the bank reconciliation's and funding positions to the Financial Director on a weekly basis
- Preparation of quarterly reports
- Variance investigation and reporting actual vs budgeted figures
- Reconciliation of Inter and related company accounts transactions
- Assisting in calculating VAT returns
- Various P&L reconciliation's
- Maintaining of stock schedule, fixed asset, sales and audit schedules
- Analysing work done on the purchase and sales ledger
- Preparation in conjunction with line management, of annual budgets and forecasts.

Education

Professional Qualifications:
CIMA – Chartered Management Accountant
CGMA – Chartered Global Management Accountant
CFA – Level 1 Candidate 2017
JSE Qualifications Completed
Registered Person in Equity
SAIFM – Introduction to Financial Markets
SAIFM-The Regulation and Ethics of the SA Financial Markets
SAIFM – The Equity Markets

References

A list of project/management experience is attached below

Work experience summary

Client	Period/Date	Role/Responsibility
Impala Platinum	2010 -2018	Specialist Consulting Services
Royal Bafokeng Enterprise Development	2014-2018	Specialised Business Mentoring and support services.
A-Cap Uranium Mine Botswana	2015	Economic Impact Assessment
Siyanda Chrome Smelter	2014-2015	Economic Impact Assessment
Mokala Manganese (Pty) Ltd	2014	Economic Impact Assessment
Evander Gold Mine (Pty) Ltd	2014-2015	Economic impact Assessment, Social Economic Impact Assessment
Commissiekraal Coal Mine	2015	Economic impact Assessment, Social Economic Impact Assessment
UMK Manganese Mine	2016-2017	Economic Impact Assessment
COZA Iron Ore, Jenkins Mine	2016	Economic Impact Assessment
Lehating Manganeze Mine	2017	Economic Impact Assessment
Khutala Colliery	2017	Economic Impact Assessment
Maize Wet Mill Plant (SAB)	2018	Economic Impact Assessment
Glass Bottling Plant (SAB)	2018	Economic Impact Assessment
West Wits Mining Projects	2018/19	Economic Impact Assessments
PPM Plant Expansion	2019	Economic Impact Assessment
Kitwe Tailings Retreatment, Zambia	2019	Economic Impact Assessment

Updated: May 2019

Werner Neethling (ACMA)(CGMA)(MIFM)

Suan Mulder

CONTACT DETAILS

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Professional Profile

Suan has over 23 years of experience in the mining and environmental field. Suan joined Emerald Sustainable Solutions (Pty) Ltd (Emerald) in October 2014 as an Environmental Consultant and co-owner. Prior to joining Emerald, Suan was employed at SLR Consulting (Africa) (SLR) as an Environmental Consultant. Suan's main responsibilities at SLR included environmental impact assessments and environmental auditing. Her auditing expertise includes assessments of environmental and socio-economic management practices, environmental management programmes and environmental authorisations and licences as well as assessments against the Equator Principles, IFC (International Finance Corporation) standards and World Bank guidelines. Suan's other areas of expertise include the development and implementation of environmental strategies and operational plans to address a range of environmental aspects. She has been involved with the implementation of numerous IS014001 based environmental managements systems. She furthermore assists companies with the development and implementation of management plans to ensure compliance Equator Principles, IFC standards and relevant guidelines. Suan is furthermore responsible for undertaking economic impact assessments and alternative land use analysis in partnership with financial consultants at Mercury Financial Consultants for various mining projects.

Before joining SLR, Suan was employed by Impala Platinum (a member of the Implats group of companies) as the Group Environmental Consultant responsible for the various South African and Zimbabwean based operations. She was a member of the Implats Safety Heath and Environmental Executive Committee. She joined the Implats group in 1996 where she gained 16 years of experience in mineral and environmental management in South Africa and Zimbabwe.

At Impala Platinum Suan's primary objective was to define strategy, manage and monitor aspects related to the physical environment, environmental legal compliance, environmental management systems (ISO14001 based), community relations and relationships with external and internal stakeholders, including landowners, in order to ensure Implats obtained/maintained licenses to operate. She was furthermore involved in a number of community development initiatives.

During her time at Impala she was also involved in a number environmental authorisation processes and was responsible for coordinating multidisciplinary Environmental Impact Assessment (EIA) teams and for the review and quality control of the EIA and Environmental Management Programme (EMP) and related reports.

Work History

October 2014 -Current
Environmental Management Consultant, Emerald Sustainable Solutions Pty Ltd

	October 2011 – September 2014 Environmental Consultant, SLR Consulting (Africa) Pty Ltd **1 April 2009 – September 2011** Group Environmental Consultant, Impala Platinum Pty Ltd **1 May 2005** Technical Services Manager – Environment, Impala Platinum Pty Ltd **1 May 2000** Environmental Manager, Impala Platinum Pty Ltd **1 October 1998** Environmental Superintendent, Impala Platinum Pty Ltd **22 February 1996** Plant Metallurgist , Impala Platinum Pty Ltd
Education	B Eng Chemical University of Stellenbosch 1996
References	Personal references are available on request
	A list of project/management experience is attached below

Work experience summary/Client	Period/Date	Role/Responsibility
Environmental capital and operational business plans	2000-2011	Development and implementation of long and short term environmental operational and capital business plans.
Fifteen EIA/EMP projects for Impala Platinum, Marula Platinum and Zimplats. These relate to changes in the mine plan, infrastructure changes, new project developments and a consolidation project to integrate the various individual EIA/EMP reports.	2000- 2011	Responsible for developing the scope of the EIA/EMPs in consultation with the relevant project managers and for coordinating the multi-disciplinary team and for reviewing the EIA/EMP and related reports.
Stakeholder engagement	2000-2011	Responsible for development and implementation of the stakeholder engagement processes for each of these EIA/EMP projects. Responsible for routine stakeholder engagement interaction, in particular with the local communities, landowners, traditional and political leadership structures. Responsible for identification and implementation of community development initiatives. Specific examples include a tailings dam rehabilitation project and the operation of the Impala landfill site in which members of the local community were empowered.
Reporting	2000-2011	Initiated the first Implats Corporate Responsibility Report in 2001 and was responsible for co-ordinating the compilation of the report for 3 years. Responsible for routine reporting to the Implats Board
Physical environment	2005-2011	Development and implementation of management strategies and plans related to monitoring, waste, water, air, biodiversity, rehabilitation and carbon. Responsible for synthesizing the EIA/EMP content and for producing management plans that are relevant to operations and practical from an implementation perspective
Environmental Management Systems (ISO14001)	2004-2014	Involved with the implementation of numerous IS014001 based environmental managements systems.
Multiple mining clients (confidential)	2011- 2014	Compliance assessments against Equator Principles and IFC guidelines. Development of actions plans to assist clients with compliance to the relevant requirements. Compilation of IFC compliant policies, management plans and procedures

Work experience summary/Client	Period/Date	Role/Responsibility
Coal mine (confidential)	2011	Environmental and socio-economic feasibility assessment in preparation for a mining right application
Arandis Power (Namibia)	2012-2013	Social and Environmental Impact Assessment for a waste oil to energy project in line with Equator Principles and relevant IFC guidelines.
Various manganese mining companies	2012-current	Assessment of environmental and social management practices, including assessments against the Equator Principles and relevant IFC guidelines. Development of environmental and social management strategies and practices
Various mining companies	2011-current	Compliance assessments of Social and Environmental Management Programmes
Sedibelo Platinum Mine (South Africa)	2012-2015	Social and environmental impact assessment for changes to surface infrastructure, including the amendment to the integrated water use licence and a waste licence application.
Magazynskraal Platinum Mine	2013-2014	Integrated waste and water use application process
Pilanesberg Platinum Mine	2013-2014	Social and environmental impact assessment for changes to surface infrastructure.
Pilanesberg Platinum Mine	2014-2015	Social and environmental impact assessment for a housing development
Sedibelo Platinum Mine (South Africa) Musonoi Underground Mine (DRC)	2013	Waste characterisation study in support of the development of a waste management strategy
Kudumane Manganese Mine (South Africa)	2012-2014	Social and environmental impact assessment for changes to surface infrastructure.
Bishop Mine (South Africa)	2013	Compilation of the annual South African Mining Charter progress report.
Kilken Platinum Imbani Minerals Joint Venture	2014	Environmental compliance assessment
GreenSource PLC (South Africa)	2014-2015	Water use licence application and ad hoc environmental support for the installation of water purification units
Glencore (Rustenburg based operations)	2015-current	Undertaking compliance assessments of various environmental authorisations, permits and licences.

Work experience summary/Client	Period/Date	Role/Responsibility
Northam Platinum Mine	2017- current	Environmental consulting support services
Tshipi Borwa Mine	2017-current	Implementation of an ISO14001 based EMS
Mercury Financial Consultants (Pty) Ltd	2014-2019	Economic impact assessments and alternative land use analysis in partnership with financial consultants at Mercury Financial Consultants for various mining projects.

Updated: May 2019