



KONGIWE
ENVIRONMENTAL SCIENCE & ENGINEERING

THE DEVELOPMENT OF THE PROPOSED LESLIE 1 COAL MINING PROJECT, MPUMALANGA PROVINCE.

FINAL SCOPING REPORT

07 May 2018

DMR Reference: MP 30/5/1/2/2/10207 MR



mineral resources

Department:
Mineral Resources
REPUBLIC OF SOUTH AFRICA

FINAL SCOPING REPORT

**FOR LISTED ACTIVITIES ASSOCIATED WITH THE DEVELOPMENT OF THE
PROPOSED LESLIE 1 COAL MINING PROJECT, MPUMALANGA PROVINCE.**

DMR Reference Number: MP 30/5/1/2/2/10207 MR

Mining Right Application

SUBMITTED FOR ENVIRONMENTAL AUTHORISATIONS IN TERMS OF THE NATIONAL ENVIRONMENTAL MANAGEMENT ACT, 1998 AND THE NATIONAL ENVIRONMENTAL MANAGEMENT WASTE ACT, 2008 IN RESPECT OF LISTED ACTIVITIES THAT HAVE BEEN TRIGGERED BY APPLICATIONS IN TERMS OF THE MINERAL AND PETROLEUM RESOURCES DEVELOPMENT ACT, 2002 (MPRDA) (AS AMENDED).

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SECTION 1:

SCOPING REPORT OVERVIEW

Important Notice

In terms of the Mineral and Petroleum Resources Development Act, 2002 (Act 28 of 2002), as amended (MPRDA), the Minister must grant a prospecting or mining right if among others the mining “will not result in unacceptable pollution, ecological degradation or damage to the environment”.

Unless an Environmental Authorisation can be granted following the evaluation of an Environmental Impact Assessment and an Environmental Management Programme report in terms of the National Environmental Management Act, 1998 (Act 107 of 1998) (NEMA), it cannot be concluded that the said activities will not result in unacceptable pollution, ecological degradation or damage to the environment.

In terms of Regulation 16(3) (b) of the Environmental Impact Assessment Regulations 2017, any report submitted as part of an application must be prepared in a format that may be determined by the Competent Authority and in terms of Regulation 17 (1) (c) the Competent Authority must check whether the application has considered any minimum requirements applicable or instructions or guidance provided by the Competent Authority to the submission of applications.

It is therefore an instruction that the prescribed reports required in respect of applications for an environmental authorisation for listed activities triggered by an application for a right or permit are submitted in the exact format of, and provide all the information required in terms of, this template. Furthermore, please be advised that failure to submit the information required in the format provided in this template will be regarded as a failure to meet the requirements of the Regulations and will lead to the Environmental Authorisation being refused.

It is furthermore an instruction that the Environmental Assessment Practitioner (EAP) must process and interpret his/her research and analysis and use the findings thereof to compile the information required herein. (Unprocessed supporting information may be attached as appendices). The EAP must ensure that the information required is placed correctly in the relevant sections of the Report, in the order, and under the provided headings as set out below, and ensure that the report is not cluttered with un-interpreted information and that it unambiguously represents the interpretation of the applicant.

Objective of the Scoping Process

1) The objective of the scoping process is to, through a consultative process—

- (a) identify the relevant policies and legislation relevant to the activity;
- (b) motivate the need and desirability of the proposed activity, including the need and desirability of the activity in the context of the preferred location;
- (c) identify and confirm the preferred activity and technology alternative through an impact and risk assessment and ranking process;
- (d) identify and confirm the preferred site, through a detailed site selection process, which includes an impact and risk assessment process inclusive of cumulative impacts and a ranking process of all the identified alternatives focusing on the geographical, physical, biological, social, economic, and cultural aspects of the environment;
- (e) identify the key issues to be addressed in the assessment phase;
- (f) agree on the level of assessment to be undertaken, including the methodology to be applied, the expertise required as well as the extent of further consultation to be undertaken to determine the impacts and risks the activity will impose on the preferred site through the life of the activity, including the nature, significance, consequence, extent, duration and probability of the impacts to inform the location of the development footprint within the preferred site; and
- (g) identify suitable measures to avoid, manage, or mitigate identified impacts and to determine the extent of the residual risks that need to be managed and monitored.

Foreword

Kongwe Environmental (Pty) Ltd (hereafter Kongwe) is committed to Environmental Quality. Environmental Quality refers to the total environment, not just the natural environment. It is a measure of the health of the environment itself (including the fauna and flora it supports), and of the effects it has on the health, comfort, and psychological state of the people that inhabit it. Environmental Quality ensures that the value of South Africa's land is preserved, protected and sustained, and not unacceptably exploited or degraded.

All members of this project team, including the appointed specialist professionals, are committed to protecting the environment and encouraging its sustainability. To ensure that Environmental Quality is achieved, Kongwe has been involved since the earliest design stage of the project, and this will be extended through to closure. Throughout all these stages, Kongwe is committed to working closely with the client, stakeholders, landowners and community members.

Kongwe believes that with the co-operation of I&APs throughout the project process, Environmental Quality can be achieved in all mining development stages.

Executive Summary: Scoping Report

Anglo Operations (Pty) Ltd (hereafter Anglo) holds a Prospecting Right (PR) (PR No: MP 30/5/1/1/2/344 PR) over farms covering approximately 9 750 hectares (ha) in the Govan Mbeki Local Municipality (GMLM). Anglo has lodged an application for a Mining Right (MRA) over the Project properties, as well as to obtain the relevant environmental authorisations (EAs) required to construct and operate the Project. Thereafter the rights would be ceded to a Joint Venture (JV), namely Leslie Coal Mine (Pty) Ltd (hereafter Leslie Coal Mine).

Kongiwe, an independent and contemporary consulting company, has been appointed to conduct a Scoping and Environmental Impact Assessment (S&EIA) as part of a MRA. The S&EIA is aimed at critically evaluating the potential environmental, social and economic impacts of the proposed **Leslie 1 Coal Mining Project** (hereafter the Proposed Project). Based on surveys and studies done over the land currently held under the PR, five mining areas have been identified as containing sufficient coal resources and reserves. **The MRA and the EA have been submitted to the DMR on 28 March 2018.** The DSR was made available for public review on 28 March 2018, until 2 May 2018.

Anglo proposes to develop an underground coal mining operation (approximately 9 705 ha), with minimal surface disturbance, near Leandra in the Mpumalanga Province. Five (5) mining areas have been identified. These mining areas will be discussed in greater detail in Chapter 2. The infrastructure layout for the development footprint is described in Chapter 2.5.

Extracted raw coal will be supplied directly to the local or export market, and/or to the nearest Eskom beneficiation plant or colliery at a rate of approximately 4 million tonnes per annum (mtpa) of Run of Mine (ROM) coal. It is anticipated that the mines will be active for a total mine life of at least 35 years¹, including rehabilitation and closure periods. Where possible, infrastructure will be shared between the mining areas. Where the sharing of infrastructure is not possible, ROM coal will be transported via various transport modes, including access/haul roads.

The Department of Environmental Affairs (DEA), in consultation with the DMR identified the need for the alignment of EAs and promulgated a single environmental system under the National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA) whereby the DMR has become the competent authority for the authorisation of mining-related projects under the EIA Regulations of 2017. This has resulted in simultaneous decisions in terms of NEMA, the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) (NEM:WA) and other specific environmental management Acts.

As from 2 September 2014 the statutory dispensation regarding environmental management on mines changed with the implementation of the *One Environmental System and the commencement of the National Environmental Management Laws Amendment Act (Act No. 25 of 2014) (NEMLAA).* In line with the *One Environmental System* the Environmental Impact Assessment Regulations (EIA 2014 Regulations) were promulgated and came into force on 8 December 2014. The EIA 2014 Regulations have subsequently

¹ Although the Mining Right application will be in respect of the maximum period of 30 years as set out in the Mineral and Petroleum Resources Development Act, 2002, applications for extension will be lodged when required.

been amended on the 7th of April 2017. With reference to the aforementioned, this S&EIA, prepared in support of the EA application and MRA, will comply with the requirements of the EIA 2014 Regulations, as amended, read with the Regulations published in terms of the MPRDA (GNR 527 of 23 April 2004).

The proposed Leslie 1 MRA process therefore requires EA in terms of the NEMA and the NEM:WA and will follow a S&EIA process in terms of the EIA 2014 Regulations, as amended. The aforesaid regulations enforce a strict timeframe and require a decision by the competent authority, the DMR, within **300 days** from submission of the EA application.

The nature and extent of the Proposed Project, as well as the potential environmental impacts associated with the construction, operation and decommissioning of a facility of this nature is assessed and presented in this DSR.

Legal Background and Requirements

This DSR has been compiled in terms of the provisions of Appendix 2 of the EIA 2014 Regulations, as amended, and the Directive set out in the template prescribed by the DMR. Table 1 cross-references the various sections in this report with these requirements.

Table 1: Structure of the Scoping Report in line with the Appendix 2 of the EIA 2014 Regulations, as amended.

No.	Regulation Requirement	Report Section	Page Number
(a)	Details of -		
(i)	The EAP who prepared the report and;	1.5.1	p32
(ii)	The expertise of the EAP including a CV	1.5.2 Appendix A	p32
(b)	The location of the activity, including –	2.1	p34
(i)	The 21-digit Surveyor General code of each cadastral land parcel	Table 2.2	p37
(ii)	Where available, the physical address and farm name	Table 2.2	p37
(iii)	Where the required information in terms of (i) and (ii) is not available, the coordinates of the boundary of the property or properties	N/A	-
(c)	A plan which locates the proposed activity or activities applied for at an appropriate scale, or, if it is –	Figure 2.1 Appendix B	p34
(i)	A linear activity, a description and coordinates of the corridor in which the proposed activity or activities is to be undertaken		

No.	Regulation Requirement	Report Section	Page Number
(ii)	On land where the property has not been defined, the coordinates within which the activity is to be undertaken		
(d)	A description of the scope of the proposed activity, including –	Section 2.4 Section 2.6 Table 2.5	p40
(i)	All listed and specified activities triggered	Section 2.7 Figures 2.3 – 2.8	p45 p45 – p67
(ii)	A description of the activities to be undertaken, including associated structures and infrastructure	Section 2.4 Section 2.5	p40 p41
(e)	A description of the policy and legislative context within which the development is proposed including an identification of all legislation, policies, plans, guidelines, spatial tools, municipal development planning frameworks and instruments that are applicable to this activity and are to be considered in the assessment process	Section 3 Table 3.1	p73 p74
(f)	A motivation for the need and desirability for the proposed development including the need and desirability of the activity in the context of the preferred location	Section 4	p93
(g)	Period of environmental authorisation	Section 1.4.1	P29
(h)	A full description of the process followed to reach the proposed preferred activity, site and location within the site, including -	Section 5	p98
(i)	Details of the alternatives considered	Section 5.1	P98
(ii)	Details of the public participation process undertaken in terms of regulation 41 of the Regulations, including copies of the supporting documents and inputs	Section 6	p105
(iii)	A summary of the issues raised by interested and affected parties, and an indication of the manner in which the issues were incorporated, or the reasons for not including them.	Section 6.2 Appendix C9	p106
(iv)	The environmental attributes associated with the alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects	Section 7	p112

No.	Regulation Requirement	Report Section	Page Number
(v)	The impacts and risks identified for each alternative, including the nature, significance, consequence, extent, duration and probability of the impacts, including the degree to which these impacts – (aa) can be reversed; (bb) may cause irreplaceable loss of resources; and (cc) can be avoided, managed or mitigated	Section 8 .2	p144
(vi)	The methodology used in determining and ranking the nature, significance, consequences, extent, duration and probability of potential environmental impacts and risks associated with the alternatives	Section 8.1	p138
(vii)	Positive and negative impacts that the proposed activity and alternatives will have on the environment and on the community that may be affected focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects	Section 8.2	p144
(viii)	The possible mitigation measures that could be applied and level of residual risk	Section 9.4.5	p189
(ix)	The outcome of the selection matrix	Section 8.5	p148
(x)	If no alternatives, including alternative locations for the activity were investigated, the motivation for no considering such	Section 8.5	p149
(xi)	A concluding statement indicating the preferred alternatives, including preferred locations of the activity	Section 8.6	p148
(i)	A plan of study for undertaking the environmental impact assessment process to be undertaken, including -	Section 9	p150
(i)	A description of the alternatives to be considered and assessed within the preferred site	Section 9.1 Section 5.1	p150 p98
(ii)	A description of the aspects to be assessed as part of the environmental impact assessment process	Section 9.2	p150
(iii)	Aspects to be assessed by specialists	Section 9.2	p150
(iv)	A description of the proposed method of assessing the environmental aspects, including aspects to be assessed by specialists	Section 9.3 Table 9-1	p150 p151 - 185
(v)	A description of the proposed method assessing duration significance	Section 9.4	p186
(vi)	An indication of the stages at which the competent authority will be consulted	Section 9.4.2	p186

No.	Regulation Requirement	Report Section	Page Number
(vii)	Particulars of the public participation process that will be conducted during the environmental impact assessment process	Section 9.4.3	p187
(viii)	A description of the tasks that will be undertaken as part of the environmental impact assessment process	Section 9.4.4	p187
(ix)	Identify suitable measures to avoid, reverse, mitigate or manage identified impacts and to determine the extent of the residual risks that need to be managed and monitored	Section 9.4.5 Table 9-2	p188 p189 - 199
(j)	An undertaking under oath or affirmation by the EAP in relation to – (i) The correctness of the information provided in the report; ^{[[1]]} _{[[2]]} (ii) The inclusion of comments and inputs from stakeholders and interested ^{[[1]]} _{[[2]]} and affected parties; (iii) Any information provided by the EAP to interested and affected parties ^{[[1]]} _{[[2]]} and any responses by the EAP to comments or inputs made by interested or affected parties ^{[[1]]} _{[[2]]}	Section 10	p201
(k)	An undertaking under oath or affirmation by the EAP in relation to the level of agreement between the EAP and interested and affected parties on the plan of study for undertaking the environmental impact assessment	Section 10	p201
(l)	Where applicable, any specific information required by the competent authority	Section 9.5	p200
(m)	Any other matter required in terms of section 24(4)(a) and (b) of the Act	Section 9.5	p200

Environmental Considerations

The Proposed Project will adopt the best practice standards as set out in the Anglo Environmental and Sustainability Policy. The policy is based on both international and industry-specific environmental standards and follows a plan-do-check-act method. The policy requires specialists to undertake detailed risk assessment reviews, identify appropriate mitigation actions, and determine the capital expenditure required. Furthermore, the specialists are required to develop environmental management plans based on the risk reviews, which focus on:

- ❖ Maintaining the integrity of the mining facilities to avoid environmental incidents;
- ❖ To ensure efficient resource use;
- ❖ Ensure that the applicant undertakes to preserve protected areas and biodiversity; and
- ❖ Develop and Implement closure planning and rehabilitation.

Lastly, standard procedures for safety, health and environmental considerations will be applied at the Leslie 1 Project.

Key Findings of the Scoping Report

The report provides a scoping-level identification of potential environmental impacts (physical, biological, social and economic) associated with the Proposed Project, as well as a strategy for how these impacts will be investigated and assessed further in the EIA Phase. The baseline environmental information provided in this DSR was compiled as a high-level desktop investigation, and the project information is sourced from existing background information, relevant to the Proposed Project. The preliminary environmental impacts identified in Table 2 will be further refined, calculated and assessed for all the feasible alternatives identified. Mitigation and management measures will also be suggested by the specialists for all impacts identified. The potential positive and negative impacts which may arise as a consequence of the Proposed Project have been summarised in Table 2 below:

Table 2: Potential identified impact because of the Proposed Project.

Environmental Component	Component Type	Potential Impact	Specialist Study Planned
Physical Environment (non-living)	Climate	<ul style="list-style-type: none"> ❖ Spontaneous combustion and burning in stockpiles. ❖ Exposure and fracturing of coal seams containing gaseous components such as sulphur and methane. ❖ Creation of microclimates within the mine footprint: <ul style="list-style-type: none"> ▪ Removal of vegetation over large tracts of lands ▪ Loss of corridor and movement paths for flora in the region. 	<ul style="list-style-type: none"> ❖ Carbon Impact and Sustainability Study
	Topography	<ul style="list-style-type: none"> ❖ Change in the natural topography. ❖ Disturbance to geophysical and landscape features. 	<ul style="list-style-type: none"> ❖ Soil, Land Use and Land Capability Study ❖ Hydropedology Study ❖ Visual Study
	Geology	<ul style="list-style-type: none"> ❖ Destruction of geology due to extraction of coal. 	<ul style="list-style-type: none"> ❖ Soil, Land Use and Land Capability Study ❖ Geological Survey
	Soils	<ul style="list-style-type: none"> ❖ Loss of soil as vegetation growth medium. ❖ Loss of soil productivity. ❖ Erosion. ❖ Contamination of soils. ❖ Potential deficit of available soil to act as growth medium after rehabilitation. 	<ul style="list-style-type: none"> ❖ Soil, Land Use and Land Capability Study ❖ Hydropedology Study
	Hydrology (including wetlands, surface water and groundwater)	<ul style="list-style-type: none"> ❖ Contamination of surface water and groundwater. ❖ Potential for acid mine drainage (AMD). ❖ Changes to raw water quality and drinking water quality. ❖ Sedimentation of downstream areas. ❖ Decant/release of contaminated water to the environment. 	<ul style="list-style-type: none"> ❖ Surface Water Study ❖ Groundwater Study ❖ Wetland and Hydropedology Study

Environmental Component	Component Type	Potential Impact	Specialist Study Planned
		<ul style="list-style-type: none"> ❖ Changes in natural surface water flow parameters. ❖ Disruption of stream banks and wetlands. ❖ Reduced catchment yield and water availability to downstream users and environments. ❖ Changes to the water regime of pans, wetlands and affected streams. ❖ Lowering of groundwater levels. ❖ Downstream movement of a pollution plume within the weathered zone aquifer. ❖ Reduced or eliminated production in domestic supply boreholes due to the groundwater drawdown. 	
Biological Environment (living)	Ecology and Biodiversity (including fauna and flora)	<ul style="list-style-type: none"> ❖ Disturbance of sites of conservation importance. ❖ Loss of species of conservation importance. ❖ Fragmentation and loss of habitats. ❖ Restriction on animal movement patterns. ❖ Loss of migration corridors, and access to nesting and refuge areas, watering points, food supplies. ❖ Displacement of animal species, increased competition in areas where carrying capacity is already compromised. ❖ Biodiversity impacts. ❖ Spreading of invasive species. 	<ul style="list-style-type: none"> ❖ Terrestrial Ecology Study
Social Environment	Heritage Resources	<ul style="list-style-type: none"> ❖ Loss of, or damage to, heritage and/or archaeological resources 	<ul style="list-style-type: none"> ❖ Heritage and Archaeological Study
	Employment	<ul style="list-style-type: none"> ❖ Job security. ❖ Continued investment in local economy and negative impacts associated with mine closure. ❖ Up-skilling. 	<ul style="list-style-type: none"> ❖ Socio-economic Study

Environmental Component	Component Type	Potential Impact	Specialist Study Planned
	Land-use	<ul style="list-style-type: none"> ❖ Impact on existing agricultural, tourism and residential uses. ❖ Impact on future conservation land uses. 	❖ Socio-economic Study
	Visual	<ul style="list-style-type: none"> ❖ Changes to landscape character, visual appeal and sense of place of the area. 	❖ Visual Study
	Noise	<ul style="list-style-type: none"> ❖ Increase in ambient noise levels. ❖ Disturbance to sensitive receptors. 	❖ Noise Study
	Air Quality	<ul style="list-style-type: none"> ❖ Increase in dust levels. ❖ Fallout dust nuisances. ❖ Air quality impacts on fauna and flora. ❖ Odours, smoke and noxious gasses associated with burning of carbonaceous material: <ul style="list-style-type: none"> ▪ Coal seam fires, mainly associated with the underground workings. ▪ Spontaneous combustion of oxidised coal found in overburden and coal discard. ❖ Health impacts due to fine particulate emissions and gaseous emissions. 	❖ Air Quality Study
Economic Environment	Existing Services and Infrastructure	<ul style="list-style-type: none"> ❖ Disturbance of roads by project-related traffic. ❖ Damage to existing infrastructure through over-use. 	<ul style="list-style-type: none"> ❖ Socio-economic Study ❖ Traffic Impact Study
	Mineral Resources	<ul style="list-style-type: none"> ❖ Sterilisation of coal resources due to positioning of infrastructure, overburden dumps, and other structures. 	❖ Socio-economic Study

Overall Conclusions

At this stage, the findings of this SR indicate that no environmental fatal flaws have been identified for the Proposed Project and its associated infrastructure. While some limitations do exist, it is anticipated that the implementation of appropriate mitigation measures would assist in reducing the significance of such impacts to acceptable levels. Impacts associated with the Proposed Project need to be considered further during the EIA Phase according to the Way Forward and the Plan of Study contained in this report.

The FSR includes the comments of I&APs received during the Public Participation Process (PPP) notification phase and collected during the initial Public Meeting. The PPP is on-going and any additional comments collected from I&APs during the EIA Phase will be included in the EIA Report, which like the Scoping Report, will be reviewed by I&APs prior to submission.

Way Forward

This Scoping Study has been undertaken with the aim of identifying potential positive and negative impacts on the environment and gathering issues, concerns and queries from I&APs. This Scoping Report documents the process followed, the findings and recommendations of the Scoping Phase study, and the proposed Plan of Study for the EIA Phase to follow. The overarching objectives of the EIA process will be to:

- ❖ Prepare integrated sensitivity maps for the study area based on the findings of environmental, socio-economic and cultural assessments as input into the project design process;
- ❖ Identify and assess the significance of potential impacts associated with the project activities; and
- ❖ Recommend mitigation and enhancement measures to ensure that the development is undertaken in such a way as to promote the positive impacts and to minimise the negative impacts.

The procedure for this study is as follows:

- ❖ Submit the Final Scoping Report (FSR) to the competent authority for permission to undertake the EIA Phase of the project;
- ❖ Upon approval of the Scoping Report, all I&APs will be notified of the conditions of the DMR for proceeding with the EIA Phase of the project;
- ❖ Execute the Plan of Study for the Impact Assessment during the EIA Phase of the project;
- ❖ Incorporate and address comments and issues raised during the consultation period on the Scoping Report into the EIA, and make changes to the report where relevant;
- ❖ Make the EIA Report and Environmental Management Programme report (EMPr) available to the public, stakeholders and authorities;
- ❖ Finalise the EIA Report and submit the final EIA Report to the Competent Authority (CA); and
- ❖ Authority review period and decision-making for 107 calendar days.

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Abbreviations

Abbreviation/ Symbol	Description
%	Percent
AQIA	Air Quality Impact Assessment
AQMP	Air Quality Management Plan
AEL	Atmospheric Emissions Licence
AP	Action Plan
BAR	Basic Assessment Report
BBBEE	Broad Based Black Economic Empowerment
BID	Background Information Document
Bgl	Below Ground Level
CA	Competent Authority/Authorities
CARA	Conservation of Agricultural Resources Act (No. 43 of 1983)
Capex	Capital expenditure
CBA	Critical Biodiversity area
CBD	Convention on Biological Diversity
CER	Centre for Environmental Rights
COP	Code of Practice
CRR	Comments and Response Report
CV	Calorific Value
DEA	Department of Environmental Affairs
DMR	Department of Mineral Resources
DRDLR	Mpumalanga Department Rural Development and Land Reform
DSR	Draft Scoping Report
DWS	Department of Water and Sanitation
EA	Environmental Authorisation
EAD	Environmental Authorisation Decision
EAP	Environmental Assessment Practitioner
EHS	Environmental, Health, and Safety
EIA	Environmental Impact Assessment
EMF	Environmental Management Framework
EMPr	Environmental Management Programme Report
EP	Equator Principles
ESMP	Environmental and Social Management Plan
ESMS	Environmental and Social Management System
FSR	Final Scoping Report
GDP	Gross Domestic Product
GHG	Greenhouse Gas
GMLM	Govan Mbeki Local Municipality
GSDM	Gert Sibande District Municipality

Abbreviation/ Symbol	Description
GVA	Gross Value Added
ha	Hectare
HDV	Heavy duty vehicle
HDPE	high-density polyethylene
I&AP	Interested and Affected Party
IDP	Integrated Development Plan
IFC	International Finance Corporation
IUCN	International Union for Conservation of Nature
IWULA	Integrated Water Use Licence Application
IWWMP	Integrated Water and Waste Management Plan
JV	Joint Venture
Km	Kilometre
kV	Kilovolt
L/s	Litres per second
LOM	Life of Mine
LDV	Light duty vehicle
M	Metre
Ma	Million years
Mamsl	Metres above mean sea level
MAP	Mean annual precipitation
mg/m ³ /day	Milligram per cubic metre per day
MJ/kg	Mega joule per kilogram
MI	Megalitre
mm/a	Millimetres per annum
MPRDA	Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002)
MPHRA	Mpumalanga Heritage Resources Authority
MRA	Mining Right Application
MDARDLEA	Mpumalanga Department of Agriculture and Rural Development and Land Administration
MEGDP	Mpumalanga Economic Growth and Development Path
mS/m	Millisiemens/ metre
Mtpa	Million tonnes per annum
MVA	Megavoltampere ^[1]
MWP	Mining Work Programme
NDP	National development Plan
NEMA	National Environmental Management Act, 1998 (Act No. 107 of 1998)
NEM:AQA	National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004)
NEM:BA	National Environmental Management: Biodiversity Act, 2004 (Act No.10 of 2004)

Abbreviation/ Symbol	Description
NEM:PAA	National Environmental Management: Protected Areas Act (Act No. 57 of 2003)
NEM:WA	National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008)
NEMLAA	National Environmental Laws Amendment Act, 2014 (Act No. 25 of 2014)
NFA	National Forest Act, 1998 (Act No 84 of 1998)
NHRA	National Heritage Resources Act, 1999 (Act No. 25 of 1999)
NWA	National Water Act, 1998 (Act No. 36 of 1998)
Opex	Operational expenditure
PCD	Pollution control dam
PGDS	Provincial Growth and Development Strategy
PPP	Public participation process
PR	Prospecting Right
PS	Performance Standards
RoD	Record of Decision
ROM	Run-of-mine
S&EIA	Scoping, Environmental Impact Assessment and Environmental Management Programme
SAHRA	South African Heritage Resources Agency
SDF	Spatial Development Framework
SER	Stakeholder engagement report
SIA	Social Impact Assessment
SLP	Social and Labour Plan
SOP	Standard Operating Procedures
SPLUMA	Spatial Planning and Land Use Management Act, 2013 (Act No. 16 of 2013)
SSC	Species of special concern
WMA	Water Management Area
TSF	Tailings storage facility
WML	Waste Management Licence
WRD	Waste rock dump

SECTION 2:

THE LESLIE 1 MINING PROJECT

1 Introduction and Background

1.1 A Brief History of Coal Mining in South Africa

The efforts to reduce South Africa's dependence on coal as an energy source are well intentioned. Reducing dependence on coal, coal production and coal exploration would significantly reduce the loss of arable agricultural land, greenhouse gas emissions, revenue losses in other industries, and the overall environmental risk of coal mining. However, this is not yet entirely feasible in South Africa as most of the country still depends heavily on the mineral as a source of economic value, employment and energy.

The history of coal mining in South Africa is closely linked with the economic development of the country. Commercial coal was first discovered in 1699 in Franschhoek in the Western Cape. It is believed that the indigenous people at that time exploited some of the easily accessible coal reserves prior to the arrival of the European Settlers in the interior of the country (Peatfield, 2003). The earliest recorded exploitation of coal was in the Molteno-Indwe field in the Eastern Cape in 1870. However, with the discovery of the first diamond fields in the 1870s and the Witwatersrand gold fields 10 years after, the need for fuel supply from coal mines became imperative. This need is what led to the development of coal mines near Vereeniging, on the East Rand and in northern Natal.

Following World War II, the South African economy peaked in terms of production and development. More gold fields were discovered, and a local steel industry was established with mills being built at Pretoria, Newcastle and Vanderbijlpark. In addition, an oil-from-coal industry was established, initially at Sasolburg and later at Secunda. Mining of various minerals (iron, manganese, chromium, vanadium, platinum) commenced and expanded, and power stations were erected on the coalfields to supply energy to these developing industries and to the growing urban population in the country. In addition to meeting local needs, coal mining companies began to develop an export market, making South Africa a major international supplier of coal (Africoal, 2017). Today, the majority of coal is derived from open-cast mines ($\pm 53\%$) and underground bord-and-pillar operations (40%), while stooping (4%) and longwall mining (3%) make up the balance.

1.2 Regional Geology of the Highveld Coalfield

The Highveld Coalfield is located in the province of Mpumalanga in South Africa, in the northern section of the main Karoo Basin. Stratigraphically, the sedimentary sequence occurring in the Karoo Basin can be subdivided into the following units, described from the base up:

- ❖ **Dwyka Group:** Formed as the base of the Karoo Basin during the late Carboniferous to Early Permian (~320Ma), this group comprises a mixed sequence of glacial and peri-glacial sedimentary strata.
- ❖ **Ecca Group:** This sedimentary stratum overlies the Dwyka Group and has formed as a result of erosion and sedimentation occurring during the Dwyka glacial episode in the Early to Late Permian (~260Ma). The sequence comprises reworked tillites and in places varved shales, as well as sandstone and mudstone. The Ecca Group is extensive, covering around two thirds of South Africa with several significant coal seams deposited in a fluvio-deltaic environment. Coal seams of the Witbank Coalfield are found in the Vryheid Formation of the lower Ecca Group.
- ❖ **Beaufort Group:** This group overlies the Ecca Group and is of Early Triassic age (~260-210Ma). Strata are typically comprised of multi-coloured mudstone and sandstone units with very minor coal. These sediments were deposited in a predominately fluvial environment.

The Ecca Group is further subdivided into 16 individual formations that can be grouped into 3 groups (southern, western-northwestern, and northeastern). These rocks were deposited in a vast inland lake or sea, when Africa was part of Gondwana. It was only along the northern and north-eastern shores of this body of water where marshes formed peat, and eventually turned into coal.

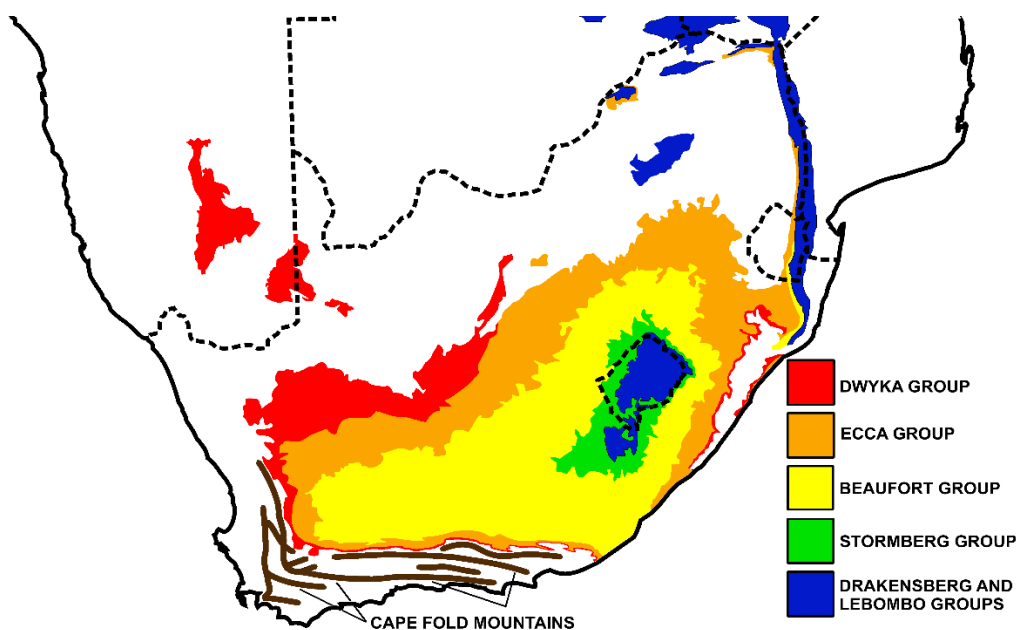


Figure 1-1: The surface exposure of the rocks belonging to the Karoo Supergroup (Chamber of Mines).

In South Africa, the coal provinces are subdivided into distinct coalfields based on variations in sedimentation, origin, formation, distribution and quality of coal, with current mining largely focused in the Highveld, Ermelo and Witbank coalfields of the Mpumalanga Province. Together, these coalfields produce a significant amount of South Africa's saleable coal. Of these, the Witbank coalfield is the most important centre of South Africa's current coal mining activity, with about 55 collieries in operation (Banks & Palumbo-Roe, 2011) able to supply coal to existing Eskom Power Stations in the area. Figure 1-2 provides an overview of the contribution of some the major coalfields to the total coal reserves in South Africa, notably, the Highveld (29%) and the Witbank (26%) coalfields support the greatest coal measures.

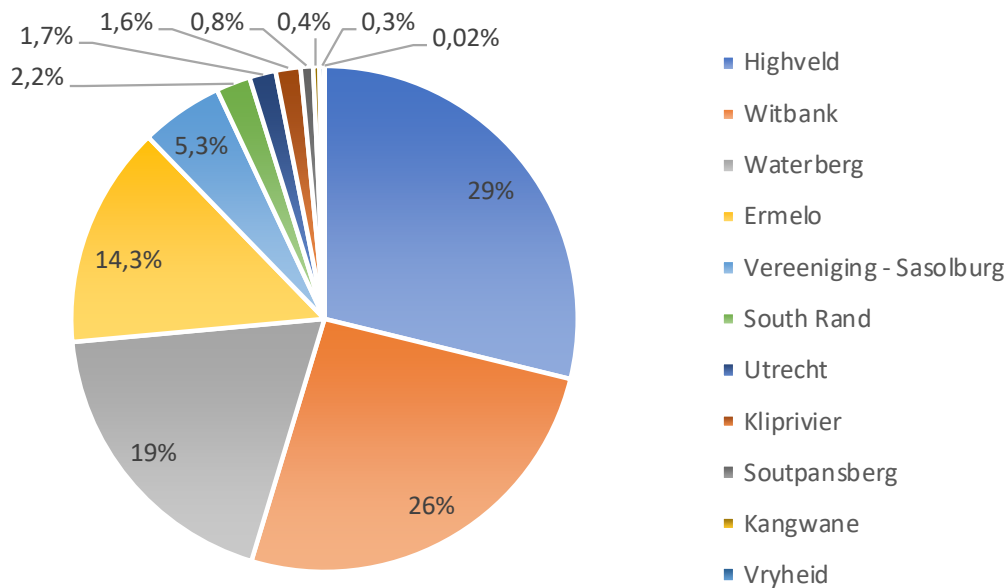


Figure 1-2: Coal Reserves of South Africa. Data was captured in 2010 (Jeffrey, 2015).

1.3 Coal Seams in the Highveld Coalfield

The Highveld Coalfield is host to up to five coal seams within the middle Ecca Group sediments of the Karoo Supergroup. The five identified coal Seams contained in the Vryheid Formation (middle Ecca Group) are named, from the base up, as follows: No.1 Seam, No.2 Seam, No.3 Seam, No.4 Seam and No.5 Seam.

In certain areas of the Coalfield, both the No.4 and No.2 Seams are split by clastic partings into the No.4 upper and No.4 lower units, and No. 2 upper and No. 2 lower, respectively. The Coalfield is characterized by the fact that in the northern regions, all the coal seams, with the exception of the No.3 Seam, attain mineable thicknesses with economic potential, while in the southern regions, only the No.4 Seam, and in very localised areas, the No.2 and No.5 Seams, attain mineable dimensions of economic importance. The depth to the coal seams increases in a southerly direction, e.g. the No.4 Seam can be mined by opencast in the Kriel (northern) district, while it occurs at a depth of around 200m in the Standerton (southern) district. The coal seams are generally flat-lying to gently undulating with a slight regional dip to the south. Structurally, the Coalfield is relatively un-deformed with no prominent folding having been identified. Small-scale faulting (less than 1m) is not uncommon although large-scale faulting is. The only large-scale displacements identified are almost always associated with transgressive dolerite sills, intruded during the waning stages of the Karoo times. These intrusive dolerite sills and dykes are related to the Drakensberg Formation flood basalts. The dolerite intrusions adversely affect the coal seams in the vicinity of the intrusions in terms of coal quality by devolatilising and burning the coal. Large areas of coal have been rendered uneconomical due to the effects of these dolerite intrusions (Figure 1-3).

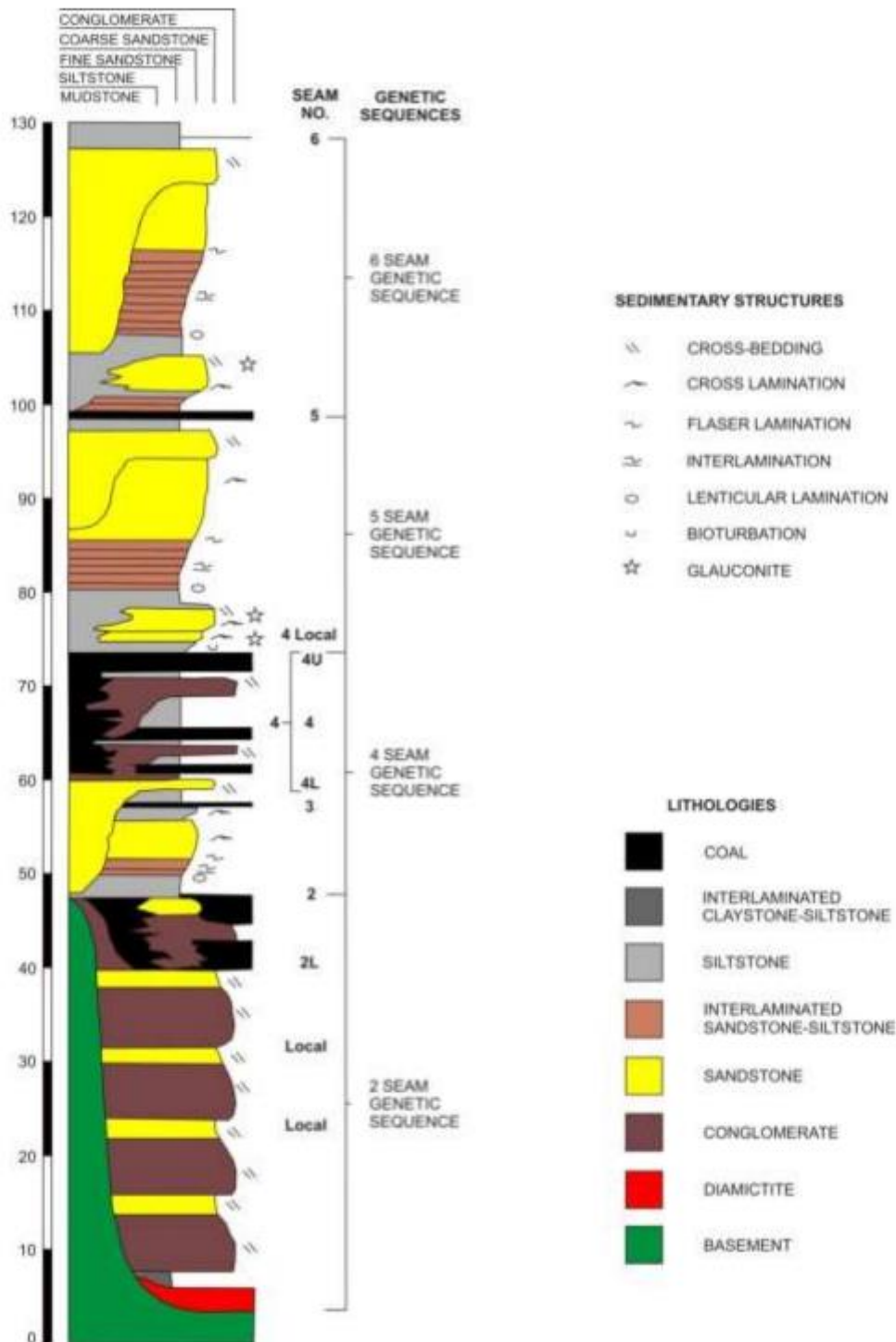


Figure 1-3: Sequence of coal seams within the Highveld Coalfield.

The characteristics of the seams are as follows:

- ❖ **No. 2 Seam.** The No. 2 Seam contains low-grade bituminous coal with an ash content of 22–35% and a CV of 20–23 MJ/kg. In areas where the No. 2 Seam is of better quality and has good washability characteristics, like in Leandra, a coal product of 27 MJ/kg at yields of greater than 70% can be

produced.

- ❖ **No. 4 Seam.** The No. 4 Seam generally contains mainly low-grade bituminous coal with an ash content of 20–35% and a CV of 18–25 MJ/kg. However, the ash content can increase to 40% and CV can drop to 15 MJ/kg in the upper one to two metres. In areas where the seam is much thicker the ash can be as low as 21% with the CV about 23 MJ/kg in the lower three to four metres of the seam. The No. 4 Upper Seam quality is extremely variable, but the seam generally contains low-grade bituminous coal with approximately 25% ash content and a Calorific Value (CV) of 22 MJ/kg.
- ❖ **No. 5 Seam.** The No. 5 Seam has better quality coal than the other seams, with a raw in situ CV of > 25 MJ/kg, ash and volatile matter contents of 19% and 32% respectively. It can be a source of metallurgical coal, such as is mined at the No. 2 Mine at Kriel Colliery.

The most important economic coal seams are the No.4 Seam and the No.2 Seam. The No.4 Seam accounts for approximately 80% of the economically recoverable coal within the Highveld Coalfield. The No. 2 and No. 4 Seams are mined in the northern parts of the Coalfield while only the No. 4 Seam is mined in the southern parts. The bulk of the coal produced from the No. 2 and No. 4 seams is consumed in power stations and for the production of synthetic fuels. A very limited quantity is exported.

1.4 Scoping and Environmental Impact Assessment Process

1.4.1 Applications Relevant to the S&EIA Process

Kongiwe has been appointed to undertake a S&EIA process which evaluates the environmental impacts associated with the Proposed Project as part of a MRA as well as other EAs. The S&EIA and specialist studies to be undertaken will support the applications for the required approvals. The following applications will be made to the DMR, acting as the CA for the Proposed Project:

1. **MRA** in terms of the MPRDA;
2. **Application for EA** for listed activities triggered in Listing Notices GN R983, GN R984 and GN R985² published pursuant to the EIA 2014 Regulations (as amended), promulgated in terms of the NEMA; and
3. **Application for a waste management licence (WML) authorising waste management activities listed** in GN R921 of 29 November 2013 published in terms of the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) (as amended) (NEM:WA).

In addition, the following applications will be made to the relevant Competent Authorities:

- ❖ An Integrated Water Use Licence Application (IWULA) in terms of the National Water Act, 1998 (Act No. 36 of 1998) (NWA) will be submitted to the Department of Water and Sanitation (DWS) for any potential impact to water resources by the Proposed Project; and

² These Listing Notices have been amended by GN R327, GN R325 and GN R324 of 7 April 2017

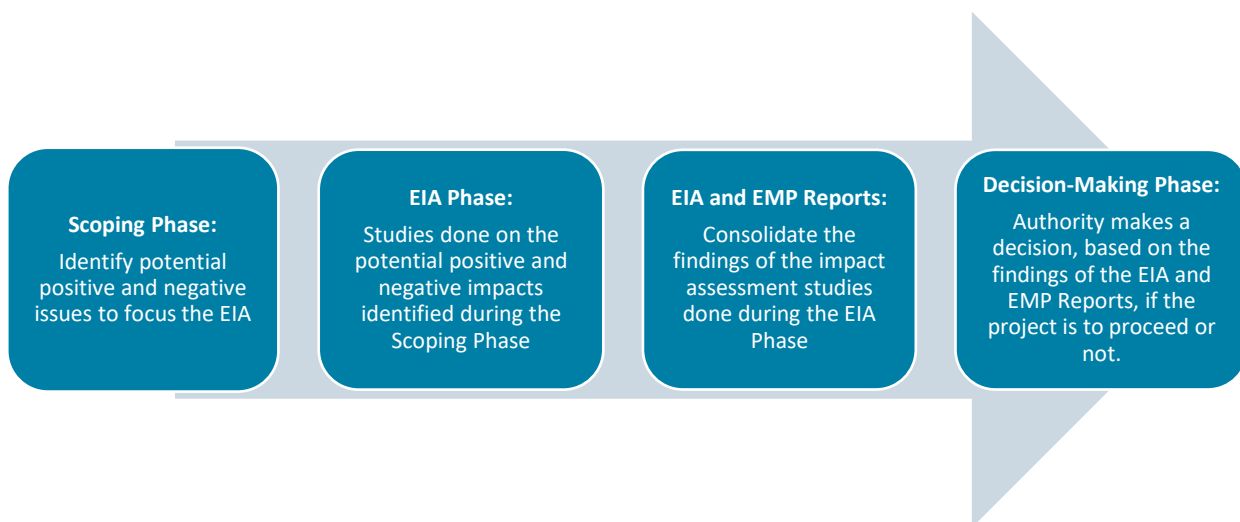
- ❖ Permit applications, where relevant, will also be made in terms of sections 34, 35 and 36 of the National Heritage Resources Act, 1999 (Act No. 25 of 1999) (NHRA). The South African Heritage Resources Agency (SAHRA) and/or the Mpumalanga Heritage Resources Authority (MPHRA) will be the competent authorities.

The period of the EA applied for is **30 years with the intention to renew**, although the anticipated Life of Mine (LOM) is approximately 32 years.

The EIA findings, including specialist findings, are used by the applicant and authorities to obtain an objective view of the potential environmental, social, cultural and economic impacts that could arise during the mining of the proposed area. Measures for the avoidance or mitigation of negative impacts will be proposed and positive impacts will be enhanced.

1.4.2 Methodology applied to conducting the Scoping Process

The outcome of the first phase of the S&EIR is the Scoping Report, which provides the terms of reference for undertaking the EIA Phase of the project. The figure below indicates the methodology that is applied in conducting the S&EIA process.



1.4.3 S&EIA Timeframes

The DSR was submitted for a 30-day public review period. Comments received during this period were captured in a Comments and Responses Report (CRR) attached in Appendix C9.

Once the FSR has been submitted to the DMR, the Department must either accept or reject the Scoping Report within **43 days**. Once confirmation of acceptance has been received from the DMR, the EIA Phase commences and will run for a period of **106 days**, in which time I&AP's will be afforded a 30-day period in which to review and comment on the S&EIR documentation.

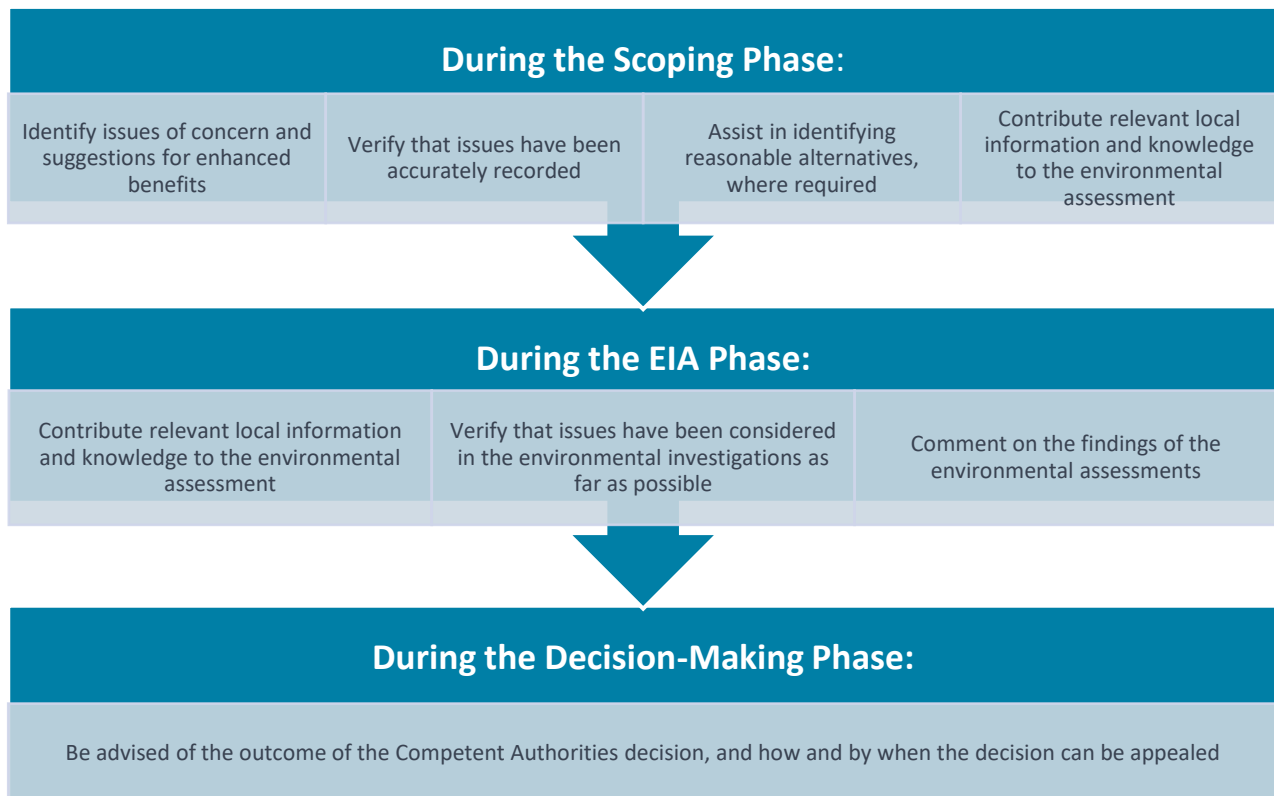
Upon submission of the EIA/EMPr document the DMR will have **107 days** to reach a decision on the project (Record of Decision (RoD)). The RoD is otherwise referred to as the EA which authorises the activities to proceed. The decision to grant the EA may be appealed (within 20 days) by the I&APs following the process outlined in the National Appeal Regulations (GNR 993 of 8 December 2014) published in terms of the NEMA. The decision to grant the mining right may be appealed (within 30 days) by the I&APs following the process outlined in the MPRDA and its Regulations.

In the event that significant changes to the EIA/EMPr are required which significant changes were not consulted on during the initial public participation process, a notice may be submitted to the DMR stating that the EIA/EMPr will be submitted within 156 days from date of acceptance of the Scoping Report. During the aforesaid 156-day period, I&APs will be afforded a further 30-day period in which to review the amended EIA/EMPr documentation.

1.4.4 Public Participation Process

The PPP has been designed to comply with the regulatory requirements set out in the EIA Regulations of 2014 (as amended). The PPP provides the opportunity for communication between agencies making decisions and the public. This communication can be an early warning system for public concerns, a means through which accurate and timely information can be disseminated, and can contribute to sustainable decision-making (IAP2, 2006).

Kongwe encourages I&APs to provide input into the S&EIA. The sharing of information forms the basis of PPP, with an aim to encourage the public to have meaningful input into the decision-making process from the onset of the project. I&APs can become involved in the project in the following ways:



The DSR was made available for public comment from 28 March 2018 – 02 May 2018. A public meeting was held with I&AP’s at the Tholuwazi Thusong Service Centre Boardroom in Leandra on 18 April 2018. During the meeting, the DSR content was presented and discussed. Comments received during the DSR comment period were captured in the CRR attached as Appendix C9 in this report.

1.5 Details of the Environmental Consultant

Kongiwe is a contemporary, problem-solving consultancy specialising in solving real-world environmental challenges. We pride ourselves in using the latest technology available to realise pragmatic solutions for our clients. The company was created with the essential intent: *‘To solve environmental challenges for a world driven towards a sustainable future.’*

Based in Johannesburg, South Africa, our team of professional Environmental Scientists are highly trained in various environmental disciplines and have significant, hands-on experience in an array of projects across numerous industries. The company has extensive environmental and project management experience in multiple sectors, with significant experience in South Africa, as well as internationally. **Kongiwe** focuses on the integration of environmental studies and processes into larger engineering and mining projects. Moreover, **Kongiwe** provides clients with strategic environmental assessments and compliance advice, the identification of environmental management solutions and mitigation / risk minimising measures throughout the project lifecycle.

1.5.1 Contact Person and Corresponding Address

Details of the Environmental Assessment Practitioner (EAP) who prepared the report:

Table 1-1:Details of EAP.

Name of Practitioner	Gerlinde Wilreker, Kongiwe Environmental (Pty) Ltd
Tel No	+27 (10) 140 6508
Fax No	083 476 6438
e-mail address	gwilreker@kongiwe.co.za

1.5.2 Expertise of the EAP

Gerlinde Wilreker has an M.Sc. in Environmental Management from the previous Rand Afrikaans University (RAU), now the University of Johannesburg, and is a registered Professional Natural Scientist (Environmental Management) (Registration No:400261/09). She has over twelve years' work experience, predominantly in the mining industry. Qualifications in Appendix A.

1.5.3 Summary of the EAP's Past Experience

Gerlinde Wilreker has over 12 years' work experience as an environmental consultant, predominantly in the mining industry. Her practical experience in the mining and construction industry has given her a depth of knowledge regarding project processes from pre-feasibility phase through to implementation. She is adept at working in different contexts, and problem-solving with her team to meet client needs. She has particular expertise in relation to Environmental Authorisation Processes in terms of the South African legal regime.

2 Project Description

2.1 Description and Location of the Property

The dominant land use of the area and its surrounds is cultivated land/agriculture, predominately maize cropping and to a lesser extent soya. Natural vegetation is heavily utilized for livestock grazing predominately by cattle and sheep. A number of mining rights for coal mining have been applied for in the area, namely the proposed Leslie 2 project and Springboklaagte.

The following infrastructure is encountered in the area:

- ❖ National and provincial roads (N17, R50, R29);
- ❖ The town of Leandra;
- ❖ Railways running through the town of Leandra.

2.1.1. Description of the Properties affected by the Project

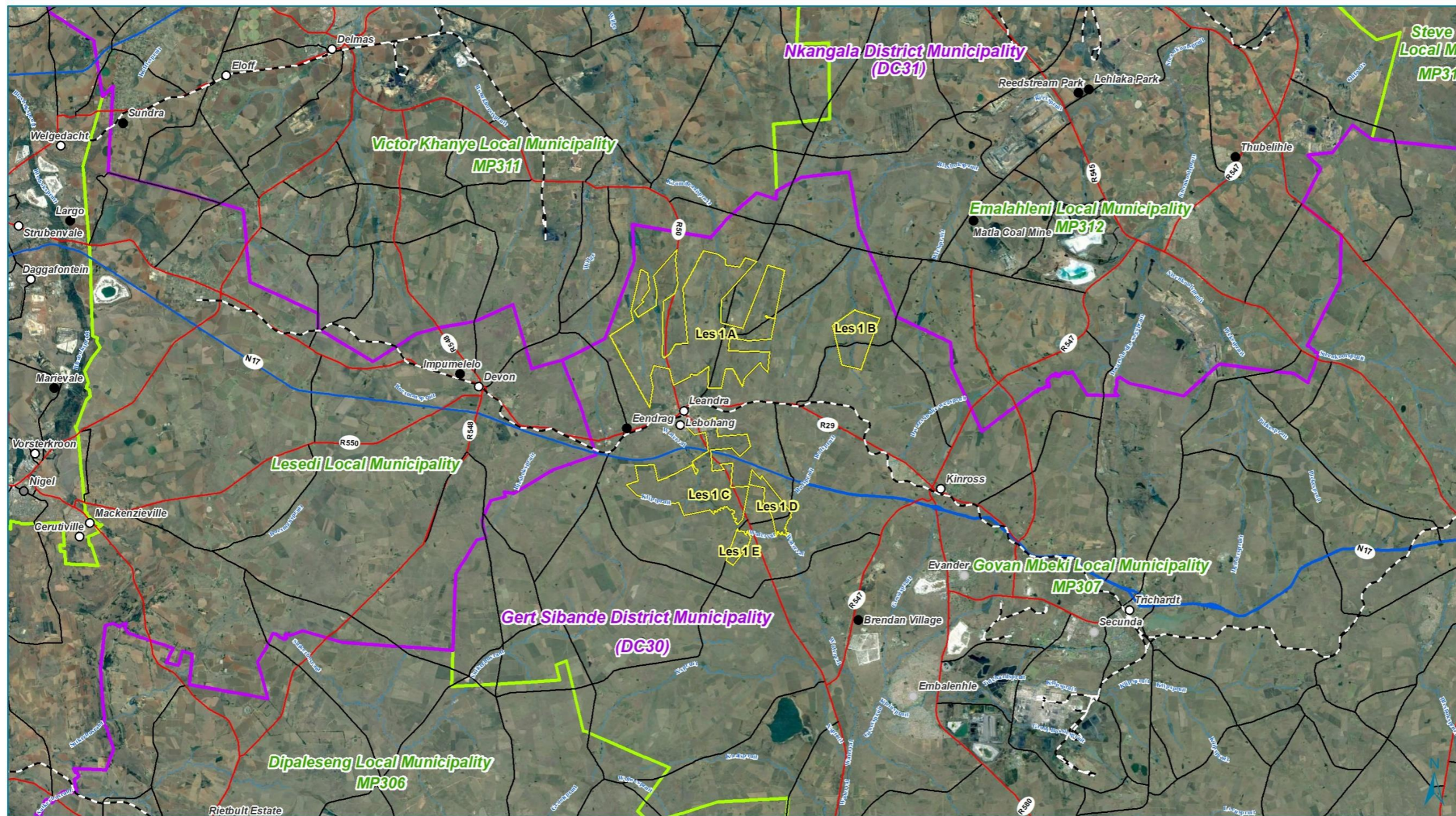
Anglo holds PR No: MP 30/2/1/1/2/344 PR over farms covering approximately 9 750 ha in the GMLM, refer to Table 2-1. This PR has been renewed and will expire on 23rd April 2018. This S&EIA process is being conducted in parallel to the MRA that will be confined to portions of the farms listed in Table 2-1 and Table 2-2.

Table 2-1 Farms included in the Project Area

Leslie 1A	
❖ Brakfontein 310 IR	❖ Goedehoop 308 IR
❖ Springboklaagte 306IR	❖ Weltevreden 307 IR
Leslie 1B	
❖ Frishgewaad 87 IS	
Leslie 1C, D and E	
❖ Watervalshoek 350IR	❖ Grootlaagte 311 IR
❖ Salpeterkranz 351	❖ Klipfontein 357 IR

Figure 2-1 indicates the locality of the Proposed Project.

Environmental Authorisations - Leslie 1: Locality



Legend

Towns	Roads	Municipality
● Major Town	— National Road	— District Municipality
○ Secondary Town	— Main Road	— Local Municipality
○ Other Town	— Secondary Road	
● Settlement		
— Mining Right Area Leslie 1		
— Railway Line		

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Scale: 1:250 000

0 5 10 20 Kilometers

Project: Environmental Authorisation- Leslie 1 | Client: Leslie Coal Mine(Pty) LTD | Drawn By: NK Ndala | Date: 12 February 2018 | Ref: GLEN#003 - Anglo Leslie 1 EIA | DataSource: ESRI Imagery | Projection: Geographic | Datum: WGS84 | © 2017 Kongiwe Environmental (Pty) Ltd. www.kongiwe.co.za

Figure 2-1: Locality map depicting the location of the project area.

Table 2-2 below provides a summary of the affected properties under consideration for the MRA.

The final route for the access roads will only be determined during the EIA. Depending on the preferred route selected, some of the above land owners may not be directly affected as the selection of routes will be done so as to impact minimally on individual properties.

Since no previous mining has taken place on the properties, this project is considered a “Greenfields Project”. The potential negative and positive impacts of the Proposed Project on the environmental, social (including cultural) and economic aspects will be objectively considered through studies undertaken by specialist professionals.

Table 2-2: Description of the Property.

Farm Names	<u>Farm Name:</u>	<u>Portion</u>	<u>Landowner</u>
	The farm Weltevreden 307 IR		
		Re/307	Cameron John Benjamin Robert
		3 / 307	Frederik Christoffel Truter
		4 /307	Bezuidenhout Daniel Jacobus Opperman
		5/ 307	Hermanus Arnoldus Erasmus
		7 /307	Moedverloren Pty Ltd
		8 /307	Erasmus Hermanus Arnoldus
		9/ 307	Erasmus Hermanus Arnoldus
		12/ 307	Vooros Boerdery Pty Ltd
		13 /307	Daniel Cornelius Saaiman
		15 / 307	Tobias Jacobus Janse
		16 / 307	Bauermeister Anna Helena Petronella
		17 /307	Vooros Boerdery Pty Ltd
		18 /307	Vooros Boerdery Pty Ltd
	The farm Goedehoop 308 IR		
		RE/308	Goedehoop Beleggings Pty Ltd
		1/ 308	Andries Hansen Familie Trust
		5 /308	Jabula Plant Hire Pty Ltd
		10 /308	John Roderick Graeme Polson
		15 /308	Wallin Farming cc
		16/ 308	Wallin Farming cc
		18 /308	John Cameron Trust
		19 /308	Moedverloren Pty Ltd
		26 /308	Van Niekerk Andries Jacobus
		27/ 308	Van Niekerk Andries Jacobus
		29/ 308	Jabula Plant Hire Pty Ltd
	The farm Brakfontein 310 IR		
		Re/1/310	P Z J P Boerdery
		12 /310	Boshoff Boerdery Pty Ltd
		13 / 310	B & G Van Coller Trust
		Re/14/ 310	Katz Michael Saul
		15 /310	Boshoff Boerdery Pty Ltd
		18 /310	Brakfontein Trust
		19 / 310	Van Niekerk Andries Jacobus
		20/ 310	Leshiba Mokgotledi Ben
		21/ 310	P Z J P Boerdery
			Swanepoel Petrus Wilhelmus Schalkwyk & Cornelia Susanna Swanepoel
		3/ 310	

The farm Springboklaagte 306 IR	
11/ 306	Springboklaagte Boerdery Pty Ltd
8 /306	Springboklaagte Boerdery Pty Ltd
The farm Grootlaagte 311 IR	
7 /311	Pfuka Africa Business Channel cc
RE/8/311	Nu_Way Housing Developments Pty Ltd
Lebohang Ext 17 (subdivision of Re/311)	Local Council of Leandra
Lebohang Ext 18 (subdivision of Re/311)	Local Council of Leandra
Lebohang Ext 19 (subdivision of Re/311)	Local Council of Leandra
Lebohang Ext 20 (subdivision of Re/311)	Local Council of Leandra
Lebohang Ext 21 (previously 18/311)	Local Council of Leandra
Lebohang Ext 22(Previously 19/311)	Local Council of Leandra
Lebohang Ext 23(Previously 17/311)	Local Council of Leandra
24 /311	SANRAL
25 / 311	SANRAL
Re/12 / 311	SANRAL
7 /311	Pfuka Africa Business Channel cc
The farm Watervalshoek 350 IR	
Re/ 11/ 350	Haig Kelly Douglas
Re/12/ 350	Govan Mbeki Municipality
13/ 350	Wasserman Johan George
15 / 350	Johan George Wasserman
16/ 350	National Government of The Republic of South Africa
17 /350	National Government of The Republic of South Africa
18 / 350	National Government of The Republic of South Africa
19 / 350	Ammarensia Stoffelina Maria Kruger
20/ 350	National Government of The Republic of South Africa
21 /350	National Government of The Republic of South Africa
27 / 350	Ammarensia Stoffelina Maria Kruger
28 / 350	Ammarensia Stoffelina Maria Kruger
33 / 350	Nicolaas Franscois Jansen Van Rensburg
34 / 350	Ernest Hannes Rachmann
4/ 350	Ammarensia Stoffelina Maria Kruger
Re/9/350	Nu-Way Housing Developments Pty Ltd
51 /350- subdivision of Ptn	SANRAL

	12	
	52/ 350-subdivision of Ptn 9	SANRAL
	63 /350 - subdivision of Ptn 11	SANRAL
	The farm Salpeterkranz 351 IR	
	1/ 351	Bitou Landgoed Pty Ltd National Government Of The Republic Of South Africa
	10 / 351	South Africa
	13/ 351	Mako Piet Land & Agricultural Development Bank Of South Africa
	18 / 351	South Africa
	4/ 351	Magaretha Helena Liversage
	9 /351	Bitou Landgoed Pty Ltd
	The Farm Klipfontein 357 IR	
	6	De La Rey Mattheus Hendrikus
	The Farm Frischgewaag 87 IS	
	1	Witwatersrand Gold Mining Realisation Trust

Application Area (ha)	9 750 ha
Magisterial District	GMLM of the Gert Sibande District Municipality (GSDM)
Distance and Direction from Nearest Town	The Proposed Project is situated North and South of the town of Leandra (comprising the former Eendrag and Leslie) in the Mpumalanga Province.

21-digit Surveyor General Code for each Farm Portion	Farm Name:	Portion	SG Code
	The farm Weltevreden 307 IR		
		Re/307	TOIR00000000030700000
		3 / 307	TOIR00000000030700003
		4 /307	TOIR00000000030700004
		5/ 307	TOIR00000000030700005
		7 /307	TOIR00000000030700007
		8 /307	TOIR00000000030700008
		9/ 307	TOIR00000000030700009
		12/ 307	TOIR00000000030700012
		13 /307	TOIR00000000030700013
		15 / 307	TOIR00000000030700015
		16 / 307	TOIR00000000030700016
		17 /307	TOIR00000000030700017
	The farm Goedehoop 308 IR		
		RE/308	TOIR00000000030800000
		1/ 308	TOIR00000000030800001
		5 /308	TOIR00000000030800005
		10 /308	TOIR00000000030800010
		15 /308	TOIR00000000030800015
		16/ 308	TOIR00000000030800016
		18 /308	TOIR00000000030800018
		19 /308	TOIR00000000030800019
		26 /308	TOIR00000000030800026

27/ 308	TOIR00000000030800027
29/ 308	TOIR00000000030800029
The farm Brakfontein 310 IR	
Re/1/310	TOIR00000000031000001
12 /310	TOIR00000000031000012
13 / 310	TOIR00000000031000013
Re/14/ 310	TOIR00000000031000014
15 /310	TOIR00000000031000015
18 /310	TOIR00000000031000018
19 / 310	TOIR00000000031000019
20/ 310	TOIR00000000031000020
21/ 310	TOIR00000000031000021
3/ 310	TOIR00000000031000003
The farm Springboklaagte 306 IR	
11/ 306	TOIR00000000030600011
8 /306	TOIR00000000030600008
The farm Grootlaagte 311 IR	
7 /311	TOIR00000000031100007
RE/8/311	TOIR00000000031100008
Lebohang Ext 17 (subdivision of Re/311)	TOIR00000000031100000
Lebohang Ext 18 (subdivision of Re/311)	TOIR00000000031100000
Lebohang Ext 19 (subdivision of Re/311)	TOIR00000000031100000
Lebohang Ext 20 (subdivision of Re/311)	TOIR00000000031100000
Lebohang Ext 21 (previously 18/311)	TOIR00000000031100018
Lebohang Ext 22(Previously 19/311)	TOIR00000000031100019
Lebohang Ext 23(Previously 17/311)	TOIR00000000031100017
24 /311	TOIR00000000031100024
25 / 311	TOIR00000000031100025
Re/12 / 311	TOIR00000000031100012
The farm Watervalshoek 350 IR	
Re/ 11/ 350	TOIR00000000035000011
Re/12/ 350	TOIR00000000035000012
13/ 350	TOIR00000000035000013
15 / 350	TOIR00000000035000015
16/ 350	TOIR00000000035000016
17 /350	TOIR00000000035000017
18 / 350	TOIR00000000035000018
19 / 350	TOIR00000000035000019
20/ 350	TOIR00000000035000020
21 /350	TOIR00000000035000021
27 / 350	TOIR00000000035000027

	28 / 350	TOIR00000000035000028
	33 / 350	TOIR00000000035000033
	34 / 350	TOIR00000000035000034
	4/ 350	TOIR00000000035000004
	Re/9/350	TOIR00000000035000009
	51 /350- subdivision of Ptn 12	TOIR00000000035000051
	52/ 350-subdivion of Ptn 9	TOIR00000000035000052
	63 /350 - subdivision of Ptn 11	TOIR00000000035000063
	The farm Salpeterkranz 351 IR	
	1/ 351	TOIR00000000035100001
	10 / 351	TOIR00000000035100010
	13/ 351	TOIR00000000035100013
	18 / 351	TOIR00000000035100018
	4/ 351	TOIR00000000035100004
	9 /351	TOIR00000000035100009
	The Farm Klipfontein 357 IR	
	6/ 357	TOIR00000000035700001
	The Farm Frischgewaag 87 IS	
	1/ 87	TOIS00000000008700001

2.2 Description of the current Land Uses Applicable

Current land use in the GSDM is dominated by agriculture with 3 urban conglomerates, namely Leandra (Leslie, Lebohang and Eendracht) in the western edge; the Greater Secunda (Trichardt, Evander, Kinross and Secunda / Embalenhle) conurbation in the central part; and Bethal / Emzinoni in the east. The land use across the project area is predominantly agricultural in nature.

2.3 Other known Mining Rights held in the Area

The assessment of cumulative impacts is required under the EIA Regulations 2014 (as amended) promulgated in accordance with Section 44 of the NEMA. In support of the above, Kongiwe will assess the impact of the Proposed Project in context of other similar activities in the local area. This will be undertaken during the EIA Phase of the project.

There are several mining operations within the region. Mines adjacent to the Proposed Project area include the proposed Springboklaagte mine (MP30/5/1/1/2/10065 MR, 17/2/3N-158 and 17/2/3GS-109) and proposed Leslie 2 (GP 30/5/1/2/3/2/1 (10045) EM).

2.4 Description of the Activities to be Undertaken

The farms covered by the Proposed Project approximate **9 750 ha in extent**. It is Anglo's intention to develop underground mining operations, with mining predominantly exploiting the No. 2 and No. 4 coal seams within the Witbank Coalfield. The mineral to be mined will be Bituminous Coal, with Pseudocoal and Torbanite being mined if encountered. Coal produced by the Proposed Project will be for the local South African market, primarily Eskom and some for other domestic and export markets. It is expected that the following infrastructure and ancillary buildings will be constructed:

- ❖ Offices, workshops, change houses, storehouses, warehouses;
- ❖ Internal roads, fuel storage facilities, possible railway siding and railway line;
- ❖ Underground sections, crushing circuits, a wash plant, conveyors (should this be required);
- ❖ Water supply networks, storm water networks, pollution control dams, raw water dams, effluent dams, water treatment works; and
- ❖ Topsoil stockpiles, discard dumps, and ROM stockpiles.

Based on previous prospecting work conducted within the development footprint, five (5) mining areas have been identified as containing feasible ore deposits worth developing (these are discussed separately below in subsection 2.6 of this chapter). It is envisaged that two (2) plants will be operated, one situated at Leslie 1A and one at Leslie 1C.

The proposed mine infrastructure requirements include existing private (farm) and public roads (including the N17), as well as Eskom electricity infrastructure. Water will be sourced from boreholes and recycled from underground dewatering and pollution control dams. Potable water will be sourced from GMLM or groundwater sources. The water usage strategy for the colliery is being designed to operate as a closed water system and most of the water on site is to be recycled where possible. Electricity for the project is to be supplied by Eskom. Other ancillary infrastructure may include stockpile areas, loading bays, water diversion berms for dirty water/clean water separation, storm water management systems, mobile security offices for access control, a weighbridge(s), potable water tanks, bulk diesel storage facility, oil storage facilities, explosive storage facilities and stores (for spares and material), and mobile ablution facilities.

It is expected that the total LOM period will be approximately **35** years, including 1 year for a ramp-up period, and a 2 year tapering-down and rehabilitation period. The mining areas will be designed to process a total of approximately 125 million tonnes of coal during the LOM. At full production, the project is expected to employ approximately up to 685 people, with the intention that most of the labour is sourced from the GMLM and the surrounding areas. All employment will take place in line with the relevant legislation, codes and statutes. Each mining area may be reached via a network of all-weather gravel roads that branch off from the main tar roads, linked to the N17 and R50.

The nearest sizeable town is Leandra (comprising the former Eendrag and Leslie).

Information that provides perspective on the scale of the Proposed Project is presented in the table below.

It should however be noted that this information may be refined further during the EIA Phase.

Table 2-3: Project perspective and technical details.

Group	Specific	Details
Mining	Target Mineral	Bituminous Coal mined from No 2. and No 4 coal seams.
	Minable Area	MRA: 9 705 ha, of which estimated 8 486 ha may be impacted.
	Depth of minerals	The depth of the coal seams generally varies from sub-outcrop to 80 to 120m.
	Rate	Average ROM of 4 Mt/pa
	Extent of area for infrastructure	To be determined.
	Product	Coal
Mine Residues	Waste Rock Co-disposal Discard	Minimal waste rock is expected. Coal discard is expected.
Resource use	Water demand	To be determined.
	Power demand	To be determined.
Employment	Staff allocation: construction	To be determined.
	Staff allocation: operation	Approximately up to 685 at full capacity
	Operating Times	From 6am – 10pm, 7 days a week

2.5 Infrastructure Plan for activities at each Mine Area

The following mining areas have been delineated:

- ❖ Leslie 1A;
- ❖ Leslie 1B;
- ❖ Leslie 1C;
- ❖ Leslie 1D; and
- ❖ Leslie 1E.

Plant areas are planned at Leslie 1A and 1C. A combination of crushing and screening and partial washing of the ROM coal is planned. Coal from some of the areas is of a suitable quality to be trucked directly to the local market and/or Eskom plant. The layout of infrastructure at each plant area will be informed by the relevant high-level studies, aerial surveys, geotechnical surveys, borehole drill testing and investigations. For instance, pollution control dam will be strategically placed at the lowest topographical point within the development footprints as to ensure that all clean/dirty surface water is separated (via berms) and channelled into the dam. This water will be recycled and re-used where possible. Figure 2-2 and Figure 2-3 below are representations of the infrastructure proposed for Leslie 1A and 1C.

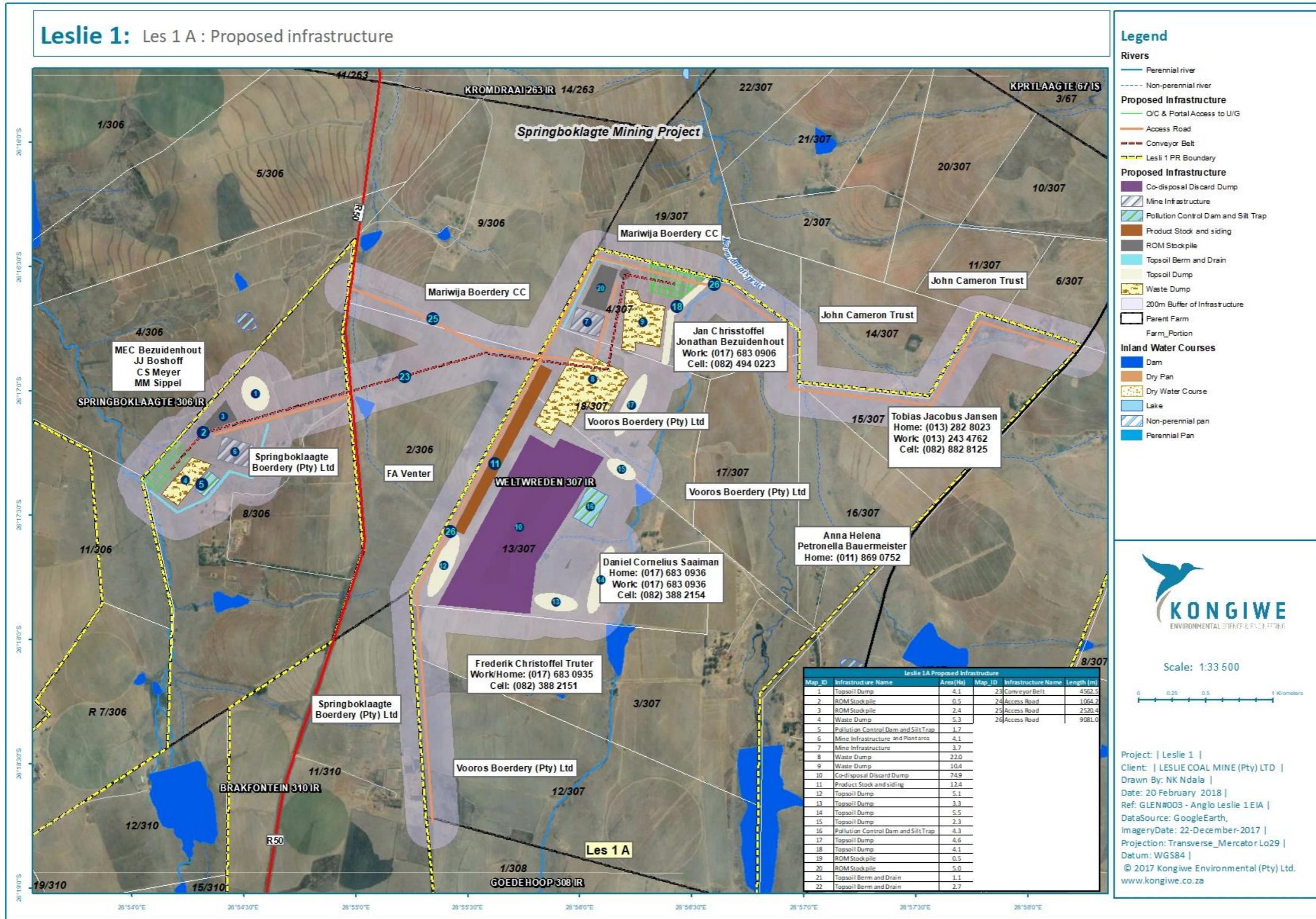


Figure 2-2: Project infrastructure proposed on Leslie 1A.

Leslie 1: Les 1C: Proposed Infrastructure

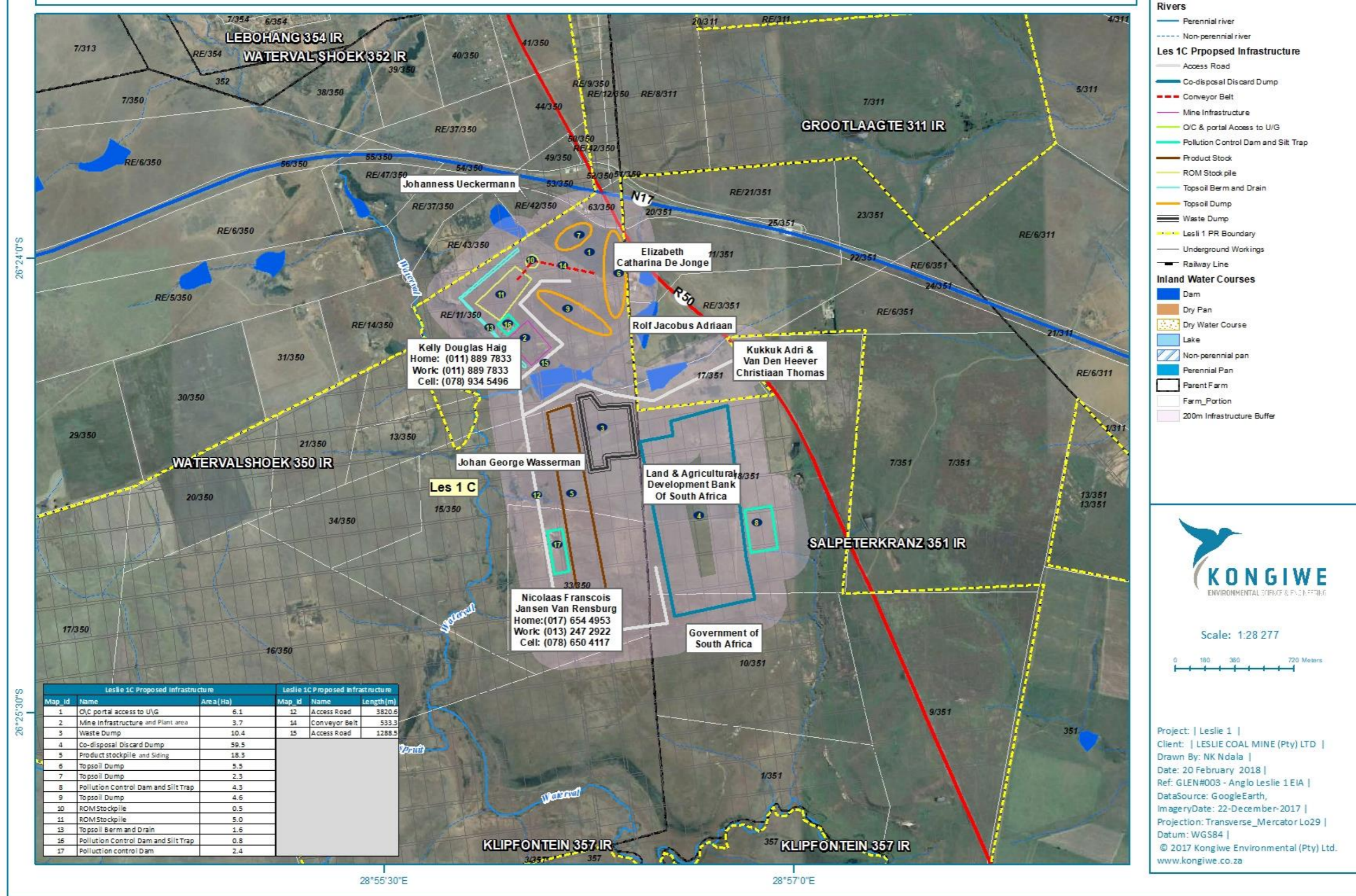


Figure 2-3: Project infrastructure proposed on Leslie 1C.

2.6 Listed and Specified Activities

Listed activities are activities identified in terms of Section 24 of NEMA which are likely to have a detrimental effect on the environment, and which may not commence without an EA from the Competent Authority. An EA required for a listed activity is subject to the completion of an environmental process, either a Basic Assessment (BA) or a S&EIA.

Table 2-4 below contains all the listed activities identified in terms of NEMA, NEM:WA, and the EIA Regulations of 2014 (GN R982 of December 2014, as amended by GNR 326 of April 2017) and Listing Notices 1, 2 and 3 (GN R983, GN R984 and GN R985 of December 2014, as amended by GNR 327, GNR 325, and GNR 324 of April 2017, respectively) which may be triggered by the Proposed Project, and for which an application for EA has been submitted. The table also includes a description of those project activities which relate to the applicable listed activities. The DMR will act as the Competent Authority on the project, with the Mpumalanga Department of Agriculture and Rural Development and Land Administration (MDARDLEA) and the Department of Water and Sanitation (DWAS) acting as the Commenting Authorities (CA).

Table 2-4: Listed Activities Triggered by the Proposed Project.

Name of activity <i>Mining (E.g. Excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, stormwater control, berms, roads pipelines, power lines, conveyors, etc.)</i>	Aerial extent of the activity (ha) ³ <i>Ha or m² Expressed in m² unless otherwise stated</i>	Listed activity <i>Mark with an X where applicable or affected.</i>	Applicable listing notice as amended <i>GNR 327, GNR 325 or GNR 324</i>	Waste management authorisation <i>(Indicate whether an authorisation is required in terms of the Waste Management Act). (Mark with an X)</i>	Water use licence authorisation ⁴
Underground Mining					
Leslie 1A					
Incline shaft East Entry Incline shaft West Entry Ventilation shaft	0.25 ha 0.25 ha 0.25 ha	X	GNR 983 (amended by GN 327) – 12, 19, 27 GNR 984 (as amended by GN 325) – 6, 15, 17 GNR 985 (as amended by GN 324) – 12		X
Leslie 1B					
Incline shaft Ventilation shaft	0.25 ha 0.25 ha	X	GNR 983 (amended by GN 327) – 12, 19, 27 GNR 984 (as amended by GN 325) – 6, 15, 17 GNR 985 (as amended by GN 324) – 12		X
Leslie 1C					

³ The total area of the mining and associated areas is approximately 9 507 hectares. The approximate area to be mined is 8 486 ha.

⁴ Water use licences in terms of Section 21 of that National Water Act, 1998, will be required for various of the Listed Activities. These have not been specifically listed in this Application, but the necessary application will be submitted to the Department of Water and Sanitation

Name of activity <i>Mining (E.g. Excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, stormwater control, berms, roads pipelines, power lines, conveyors, etc.)</i>	Aerial extent of the activity (ha) ³ <i>Ha or m² Expressed in m² unless otherwise stated</i>	Listed activity <i>Mark with an X where applicable or affected.</i>	Applicable listing notice as amended <i>GNR 327, GNR 325 or GNR 324</i>	Waste management authorisation <i>(Indicate whether an authorisation is required in terms of the Waste Management Act). (Mark with an X)</i>	Water use licence authorisation ⁴
Incline shaft Ventilation shaft	0.25 ha 0.25 ha	X	GNR 983 (amended by GN 327) – 12, 19, 27 GNR 984 (as amended by GN 325) – 6, 15, 17 GNR 985 (as amended by GN 324) – 12		X
Leslie 1D					
Incline shaft Ventilation shaft	0.25 ha 0.25 ha	X	GNR 983 (amended by GN 327) – 12, 19, 27 GNR 984 (as amended by GN 325) – 6, 15, 17 GNR 985 (as amended by GN 324) – 12		X
Leslie 1E					
Incline shaft Ventilation shaft	0.25 ha 0.25 ha	X	GNR 983 (amended by GN 327) – 12, 19, 27 GNR 984 (as amended by GN 325) – 6, 15, 17 GNR 985 (as amended by GN 324) – 12		X
Storage Dumps, Residue Stockpiles & Deposits and Waste Dumps					
Leslie 1A					

Name of activity <i>Mining (E.g. Excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, stormwater control, berms, roads pipelines, power lines, conveyors, etc.)</i>	Aerial extent of the activity (ha) ³ <i>Ha or m² Expressed in m² unless otherwise stated</i>	Listed activity <i>Mark with an X where applicable or affected.</i>	Applicable listing notice as amended <i>GNR 327, GNR 325 or GNR 324</i>	Waste management authorisation <i>(Indicate whether an authorisation is required in terms of the Waste Management Act). (Mark with an X)</i>	Water use licence authorisation ⁴
Topsoil stockpiles	4.1 5.1 3.3 5.5 2.3 4.6 4.1	X	GNR 983 (amended by GN 327) – 12, 19 GNR 985 (as amended by GN 324) – 14		X
Topsoil Berm	1.1 2.7	X	GNR 983 (amended by GN 327) – 12, 19 GNR 985 (as amended by GN 324) – 14		X
Co-disposal Discard dump	74.9	X	GNR 983 (amended by GN 327) – 12, 19 GNR 985 (as amended by GN 324) – 14	GN 921 ⁵ (Category B – 7, 10, 11)	X
Waste dump	5.3 22.0 10.4	X	GNR 983 (amended by GN 327) – 12, 19 GNR 985 (as amended by GN 324) – 14		X
Overburden stockpile	Total area not yet determined	X	GNR 983 (amended by GN 327) – 12, 19 GNR 985 (as amended by GN 324) – 14	GN 921 (Category B – 9, 10, 11)	X

⁵ List of Waste Management Activities that have, or are likely to have, a detrimental effect on the environment published in Government Notice 921 in Government Gazette 37083 on 29 November 2013 (as amended)

Name of activity <i>Mining (E.g. Excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, stormwater control, berms, roads pipelines, power lines, conveyors, etc.)</i>	Aerial extent of the activity (ha) ³ <i>Ha or m² Expressed in m² unless otherwise stated</i>	Listed activity <i>Mark with an X where applicable or affected.</i>	Applicable listing notice as amended <i>GNR 327, GNR 325 or GNR 324</i>	Waste management authorisation <i>(Indicate whether an authorisation is required in terms of the Waste Management Act). (Mark with an X)</i>	Water use licence authorisation ⁴
ROM/ raw material stockpile	0.5 2.4 0.5 5.0	X	GNR 983 (amended by GN 327) – 12, 19 GNR 985 (as amended by GN 324) – 14		
Leslie 1C					
Topsoil stockpiles	5.5 2.3 4.6	X	GNR 983 (amended by GN 327) – 12, 19 GNR 985 (as amended by GN 324) – 14		X
Topsoil Berm	1.6	X	GNR 983 (amended by GN 327) – 12, 19 GNR 985 (as amended by GN 324) – 14		X
Co-disposal dump	59.5	X	GNR 983 (amended by GN 327) – 12, 19 GNR 985 (as amended by GN 324) – 14	GN 921 ⁶ (Category B – 7, 10, 11)	X
Waste dump	10.4	X	GNR 983 (amended by GN 327) – 12, 19 GNR 985 (as amended by GN 324) – 14		X
Overburden stockpile		X	GNR 983 (amended by GN 327) – 12, 19 GNR 985 (as amended by GN 324) – 14	GN 921 (Category B – 9, 10, 11)	X

⁶ List of Waste Management Activities that have, or are likely to have, a detrimental effect on the environment published in Government Notice 921 in Government Gazette 37083 on 29 November 2013 (as amended)

Name of activity <i>Mining (E.g. Excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, stormwater control, berms, roads pipelines, power lines, conveyors, etc.)</i>	Aerial extent of the activity (ha) ³ <i>Ha or m² Expressed in m² unless otherwise stated</i>	Listed activity <i>Mark with an X where applicable or affected.</i>	Applicable listing notice as amended <i>GNR 327, GNR 325 or GNR 324</i>	Waste management authorisation <i>(Indicate whether an authorisation is required in terms of the Waste Management Act). (Mark with an X)</i>	Water use licence authorisation ⁴
ROM/ raw material stockpile	18.3 0.5 5.0	X	GNR 983 (amended by GN 327) – 12, 19 GNR 985 (as amended by GN 324) – 14		
Infrastructure					
<i>Infrastructure for the two plant areas situated at Leslie 1A and 1C is inclusive of structures and facilities below, precise areas not yet determined, except where stipulated.</i>					
Leslie 1A	4.1 3.7				
Fencing		X	GNR 983 (amended by GN 327) – 12, 19 GNR 985 (as amended by GN 324) – 14		
Gate house complex		X	GNR 983 (amended by GN 327) – 12, 19 GNR 985 (as amended by GN 324) – 14		
Entrance/ exit and 2 x weighbridges		X	GNR 983 (amended by GN 327) – 12, 19 GNR 985 (as amended by GN 324) – 14		
Employees under cover waiting areas		X	GNR 983 (amended by GN 327) – 12, 19 GNR 985 (as amended by GN 324) – 14		

Name of activity <i>Mining (E.g. Excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, stormwater control, berms, roads pipelines, power lines, conveyors, etc.)</i>	Aerial extent of the activity (ha) ³ <i>Ha or m² Expressed in m² unless otherwise stated</i>	Listed activity <i>Mark with an X where applicable or affected.</i>	Applicable listing notice as amended <i>GNR 327, GNR 325 or GNR 324</i>	Waste management authorisation <i>(Indicate whether an authorisation is required in terms of the Waste Management Act). (Mark with an X)</i>	Water use licence authorisation ⁴
Employees turnstile access control and induction office		X	GNR 983 (amended by GN 327) – 12, 19 GNR 985 (as amended by GN 324) – 14		
Office complex		X	GNR 983 (amended by GN 327)– 12, 19 GNR 985 (as amended by GN 324) – 14		
Change houses		X	GNR 983 (amended by GN 327) – 12, 19 GNR 985 (as amended by GN 324) – 14		
Clinic		X	GNR 983 (amended by GN 327)– 12, 19 GNR 985 (as amended by GN 324) – 14		
Canteen		X	GNR 983 (amended by GN 327) – 12, 19 GNR 985 (as amended by GN 324) – 14		
Fire control facility		X	GNR 983 (amended by GN 327) – 12, 19 GNR 985 (as amended by GN 324) – 14		
Solid waste sorting facility		X	GNR 983 (amended by GN 327) – 12, 19 GNR 985 (as amended by GN 324) – 14		

Name of activity <i>Mining (E.g. Excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, stormwater control, berms, roads pipelines, power lines, conveyors, etc.)</i>	Aerial extent of the activity (ha) ³ <i>Ha or m² Expressed in m² unless otherwise stated</i>	Listed activity <i>Mark with an X where applicable or affected.</i>	Applicable listing notice as amended <i>GNR 327, GNR 325 or GNR 324</i>	Waste management authorisation <i>(Indicate whether an authorisation is required in terms of the Waste Management Act). (Mark with an X)</i>	Water use licence authorisation ⁴
Gas store		X	GNR 327 (amended by GN 327) – 12, 19 GNR 985 (as amended by GN 324) – 14		
General workshop		X	GNR 983 (amended by GN 327) – 12, 19 GNR 324 – 14		
Chemical store		X	GNR 983 (amended by GN 327)– 14, 19 GNR 984 (as amended by GN 325) – 4 GNR 985 (as amended by GN 324) – 10		
Flammable store		X	GNR 983 (amended by GN 327)– 14, 19 GNR 984 (as amended by GN 325) – 4 GNR 985 (as amended by GN 324) – 10		
Hazardous material store		X	GNR 983 (amended by GN 327) – 14, 19 GNR 984 (as amended by GN 325) – 4 GNR 985 (as amended by GN 324) – 10		

Name of activity <i>Mining (E.g. Excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, stormwater control, berms, roads pipelines, power lines, conveyors, etc.)</i>	Aerial extent of the activity (ha) ³ <i>Ha or m² Expressed in m² unless otherwise stated</i>	Listed activity <i>Mark with an X where applicable or affected.</i>	Applicable listing notice as amended <i>GNR 327, GNR 325 or GNR 324</i>	Waste management authorisation <i>(Indicate whether an authorisation is required in terms of the Waste Management Act). (Mark with an X)</i>	Water use licence authorisation ⁴
Electrical workshop		X	GNR 983 (amended by GN 327) – 12, 19 GNR 985 (as amended by GN 324) – 14		
Instrumentation workshop		X	GNR 983 (amended by GN 327) – 12, 19 GNR 985 (as amended by GN 324) – 14		
Welding shop		X	GNR 983 (amended by GN 327) – 12, 19 GNR 985 (as amended by GN 324) – 14		
Combined stores		X	GNR 983 (amended by GN 327) – 12, 19 GNR 985 (as amended by GN 324) – 14		
LDV/ HDV workshop		X	GNR 983 (amended by GN 327) – 12, 19 GNR 985 (as amended by GN 324) – 14		
LDV/ HDV wash bay		X	GNR 983 (amended by GN 327) – 12, 19 GNR 985 (as amended by GN 324) – 14		

Name of activity <i>Mining (E.g. Excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, stormwater control, berms, roads pipelines, power lines, conveyors, etc.)</i>	Aerial extent of the activity (ha) ³ <i>Ha or m² Expressed in m² unless otherwise stated</i>	Listed activity <i>Mark with an X where applicable or affected.</i>	Applicable listing notice as amended <i>GNR 327, GNR 325 or GNR 324</i>	Waste management authorisation <i>(Indicate whether an authorisation is required in terms of the Waste Management Act). (Mark with an X)</i>	Water use licence authorisation ⁴
LDV/HDV fuel storage and refuelling		X	GNR 983 (amended by GN 327)– 12, 14, 19 GNR 984 (as amended by GN 325) – 4 GNR 985 (as amended by GN 324) – 10, 14		
Used oil storage tanks		X	GNR 983 (amended by GN 327) – 12, 14, 19 GNR 324 – 14		
Under crane warehouse		X	GNR 983 (amended by GN 327)– 12, 19 GNR 985 (as amended by GN 324) – 14		
HDV tyre storage		X	GNR 983 (amended by GN 327)– 12, 19 GNR 985 (as amended by GN 324) – 14		
HDV tyre change assembly station		X	GNR 983 (amended by GN 327) – 12, 19 GNR 985 (as amended by GN 324) – 14		
HDV tyre change hard stand		X	GNR 327 (amended by GN 327)– 12, 19 GNR 985 (as amended by GN 324) – 14		
Leslie 1C	3.7				

Name of activity <i>Mining (E.g. Excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, stormwater control, berms, roads pipelines, power lines, conveyors, etc.)</i>	Aerial extent of the activity (ha) ³ <i>Ha or m² Expressed in m² unless otherwise stated</i>	Listed activity <i>Mark with an X where applicable or affected.</i>	Applicable listing notice as amended <i>GNR 327, GNR 325 or GNR 324</i>	Waste management authorisation <i>(Indicate whether an authorisation is required in terms of the Waste Management Act). (Mark with an X)</i>	Water use licence authorisation ⁴
Fencing		X	GNR 983 (amended by GN 327) – 12, 19 GNR 985 (as amended by GN 324) – 14		
Gate house complex		X	GNR 983 (amended by GN 327) – 12, 19 GNR 985 (as amended by GN 324) – 14		
Entrance/ exit and 2 x weighbridges			GNR 983 (amended by GN 327) – 12, 19 GNR 985 (as amended by GN 324) – 14		
Employees under cover waiting areas		X	GNR 983 (amended by GN 327) – 12, 19 GNR 985 (as amended by GN 324) – 14		
Employees turnstile access control and induction office		X	GNR 983 (amended by GN 327) – 12, 19 GNR 985 (as amended by GN 324) – 14		
Office complex		X	GNR 983 (amended by GN 327)– 12, 19 GNR 985 (as amended by GN 324) – 14		
Change houses		X	GNR 983 (amended by GN 327) – 12, 19 GNR 985 (as amended by GN 324) – 14		

Name of activity <i>Mining (E.g. Excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, stormwater control, berms, roads pipelines, power lines, conveyors, etc.)</i>	Aerial extent of the activity (ha) ³ <i>Ha or m² Expressed in m² unless otherwise stated</i>	Listed activity <i>Mark with an X where applicable or affected.</i>	Applicable listing notice as amended <i>GNR 327, GNR 325 or GNR 324</i>	Waste management authorisation <i>(Indicate whether an authorisation is required in terms of the Waste Management Act). (Mark with an X)</i>	Water use licence authorisation ⁴
Clinic		X	GNR 983 (amended by GN 327)– 12, 19 GNR 985 (as amended by GN 324) – 14		
Canteen		X	GNR 983 (amended by GN 327) – 12, 19 GNR 985 (as amended by GN 324) – 14		
Fire control facility		X	GNR 983 (amended by GN 327) – 12, 19 GNR 985 (as amended by GN 324) – 14		
Solid waste sorting facility		X	GNR 983 (amended by GN 327) – 12, 19 GNR 985 (as amended by GN 324) – 14		
Gas store		X	GNR 327 (amended by GN 327) – 12, 19 GNR 985 (as amended by GN 324) – 14		
General workshop		X	GNR 983 (amended by GN 327) – 12, 19 GNR 324 – 14		

Name of activity <i>Mining (E.g. Excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, stormwater control, berms, roads pipelines, power lines, conveyors, etc.)</i>	Aerial extent of the activity (ha) ³ <i>Ha or m² Expressed in m² unless otherwise stated</i>	Listed activity <i>Mark with an X where applicable or affected.</i>	Applicable listing notice as amended <i>GNR 327, GNR 325 or GNR 324</i>	Waste management authorisation <i>(Indicate whether an authorisation is required in terms of the Waste Management Act). (Mark with an X)</i>	Water use licence authorisation ⁴
Chemical store		X	GNR 983 (amended by GN 327)– 14, 19 GNR 984 (as amended by GN 325) – 4 GNR 985 (as amended by GN 324) – 10		
Flammable store		X	GNR 983 (amended by GN 327)– 14, 19 GNR 984 (as amended by GN 325) – 4 GNR 985 (as amended by GN 324) – 10		
Hazardous material store		X	GNR 983 (amended by GN 327) – 14, 19 GNR 984 (as amended by GN 325) – 4 GNR 985 (as amended by GN 324) – 10		
Electrical workshop		X	GNR 983 (amended by GN 327) – 12, 19 GNR 985 (as amended by GN 324) – 14		
Instrumentation workshop		X	GNR 983 (amended by GN 327) – 12, 19 GNR 985 (as amended by GN 324) – 14		

Name of activity <i>Mining (E.g. Excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, stormwater control, berms, roads pipelines, power lines, conveyors, etc.)</i>	Aerial extent of the activity (ha) ³ <i>Ha or m² Expressed in m² unless otherwise stated</i>	Listed activity <i>Mark with an X where applicable or affected.</i>	Applicable listing notice as amended <i>GNR 327, GNR 325 or GNR 324</i>	Waste management authorisation <i>(Indicate whether an authorisation is required in terms of the Waste Management Act). (Mark with an X)</i>	Water use licence authorisation ⁴
Welding shop		X	GNR 983 (amended by GN 327) – 12, 19 GNR 985 (as amended by GN 324) – 14		
Combined stores		X	GNR 983 (amended by GN 327) – 12, 19 GNR 985 (as amended by GN 324) – 14		
LDV/ HDV workshop		X	GNR 983 (amended by GN 327) – 12, 19 GNR 985 (as amended by GN 324) – 14		
LDV/ HDV wash bay		X	GNR 983 (amended by GN 327) – 12, 19 GNR 985 (as amended by GN 324) – 14		
LDV/HDV fuel storage and refuelling		X	GNR 983 (amended by GN 327)– 12, 14, 19 GNR 984 (as amended by GN 325) – 4 GNR 985 (as amended by GN 324) – 10, 14		
Used oil storage tanks		X	GNR 983 (amended by GN 327) – 12, 14, 19 GNR 324 – 14		

Name of activity <i>Mining (E.g. Excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, stormwater control, berms, roads pipelines, power lines, conveyors, etc.)</i>	Aerial extent of the activity (ha) ³ <i>Ha or m² Expressed in m² unless otherwise stated</i>	Listed activity <i>Mark with an X where applicable or affected.</i>	Applicable listing notice as amended <i>GNR 327, GNR 325 or GNR 324</i>	Waste management authorisation <i>(Indicate whether an authorisation is required in terms of the Waste Management Act). (Mark with an X)</i>	Water use licence authorisation ⁴
Under crane warehouse		X	GNR 983 (amended by GN 327)– 12, 19 GNR 985 (as amended by GN 324) – 14		
HDV tyre storage		X	GNR 983 (amended by GN 327)– 12, 19 GNR 985 (as amended by GN 324) – 14		
HDV tyre change assembly station		X	GNR 983 (amended by GN 327) – 12, 19 GNR 985 (as amended by GN 324) – 14		
HDV tyre change hard stand		X	GNR 983 (amended by GN 327)– 12, 19 GNR 985 (as amended by GN 324) – 14		
Beneficiation Plant Complex					
<i>The beneficiation plant will be situated within the Mine Infrastructure area</i>	4.1 3.7				
Leslie 1A					
Coal wash plant including -		X	GNR 983 (amended by GN 327) – 19 GNR 984 (as amended by GN 325) – 17, 27		

Name of activity <i>Mining (E.g. Excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, stormwater control, berms, roads pipelines, power lines, conveyors, etc.)</i>	Aerial extent of the activity (ha) ³ <i>Ha or m² Expressed in m² unless otherwise stated</i>	Listed activity <i>Mark with an X where applicable or affected.</i>	Applicable listing notice as amended <i>GNR 327, GNR 325 or GNR 324</i>	Waste management authorisation <i>(Indicate whether an authorisation is required in terms of the Waste Management Act). (Mark with an X)</i>	Water use licence authorisation ⁴
Primary crusher		X	GNR 983 (amended by GN 327) – 19 GNR 984 (as amended by GN 325) – 17		
Plant MCC control room					
Transformer bays					
Plant workshop		X	GNR 983 (amended by GN 327) – 12, 19 GNR 324 – 14		
Plant coal lab		X	GNR 983 (amended by GN 327)– 12, 19 GNR 985 (as amended by GN 324) – 14		
Plant geology grade control					
Plant office building		X	GNR 983 (amended by GN 327)– 12, 19 GNR 985 (as amended by GN 324) – 14		
Processed coal storage		X	GNR 983 (amended by GN 327)– 12, 19 GNR 985 (as amended by GN 324) – 14		X
Leslie 1C					
Coal wash plant including -		X	GNR 983 (amended by GN 327)– 19 GNR 984 (as amended by GN 325) – 17, 27		

Name of activity <i>Mining (E.g. Excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, stormwater control, berms, roads pipelines, power lines, conveyors, etc.)</i>	Aerial extent of the activity (ha) ³ <i>Ha or m² Expressed in m² unless otherwise stated</i>	Listed activity <i>Mark with an X where applicable or affected.</i>	Applicable listing notice as amended <i>GNR 327, GNR 325 or GNR 324</i>	Waste management authorisation <i>(Indicate whether an authorisation is required in terms of the Waste Management Act). (Mark with an X)</i>	Water use licence authorisation ⁴
Primary crusher		X	GNR 984 (as amended by GN 325) – 17		
Plant MCC control room					
Transformer bays					
Plant workshop		X	GNR 983 (amended by GN 327) – 12, 19 GNR 324 – 14		
Plant coal lab		X	GNR 983 (amended by GN 327)– 12, 19 GNR 985 (as amended by GN 324) – 14		
Plant geology grade control					
Plant office building		X	GNR 983 (amended by GN 327)– 12, 19 GNR 985 (as amended by GN 324) – 14		
Processed coal storage		X	GNR 983 (amended by GN 327)– 12, 19 GNR 985 (as amended by GN 324) – 14		X
Roads and Access					
Leslie 1A roads (access roads) *8 m wide	1 064.2m 2 520.4m 9 081.0m	X	GNR 983 (amended by GN 327) – 19, 24		X
Leslie 1B roads (access roads) *8 m wide		X	GNR 983 (amended by GN 327) – 19, 24		X
Leslie 1C roads (h access roads) *8 m wide	8 820.6m 1 288.5m	X	GNR 983 (amended by GN 327) – 19, 24		X

Name of activity <i>Mining (E.g. Excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, stormwater control, berms, roads pipelines, power lines, conveyors, etc.)</i>	Aerial extent of the activity (ha) ³ <i>Ha or m² Expressed in m² unless otherwise stated</i>	Listed activity <i>Mark with an X where applicable or affected.</i>	Applicable listing notice as amended <i>GNR 327, GNR 325 or GNR 324</i>	Waste management authorisation <i>(Indicate whether an authorisation is required in terms of the Waste Management Act). (Mark with an X)</i>	Water use licence authorisation ⁴
Leslie 1D roads (access roads) *8 m wide		X	GNR 983 (amended by GN 327) – 19, 24		X
Leslie 1E roads (access roads) *8 m wide		X	GNR 983 (amended by GN 327) – 19, 24		X
Railway Infrastructure					
Leslie 1A					
Railway Siding		X	GNR 983 (amended by GN 327) – 19 GNR 984 (as amended by GN 325) – 12		X
Railway Line		X	GNR 983 (amended by GN 327) – 19 GNR 984 (as amended by GN 325) – 12		X
Leslie 1C					
Railway Siding		X	GNR 983 (amended by GN 327) – 19 GNR 984 (as amended by GN 325) – 12		X
Railway Line		X	GNR 983 (amended by GN 327) – 19 GNR 984 (as amended by GN 325) – 12		X
Conveyor belt					
Leslie 1A	4 562.5 m	X	GNR 984 (as amended by GN 325) – 17		X
Leslie 1C	533.3m	X	GNR 984 (as amended by GN 325) – 17		

Name of activity <i>Mining (E.g. Excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, stormwater control, berms, roads pipelines, power lines, conveyors, etc.)</i>	Aerial extent of the activity (ha) ³ <i>Ha or m² Expressed in m² unless otherwise stated</i>	Listed activity <i>Mark with an X where applicable or affected.</i>	Applicable listing notice as amended <i>GNR 327, GNR 325 or GNR 324</i>	Waste management authorisation <i>(Indicate whether an authorisation is required in terms of the Waste Management Act). (Mark with an X)</i>	Water use licence authorisation ⁴
Waste and Water					
Leslie 1A					
Waste water treatment works		X	GNR 983 (amended by GN 327) – 12, 19, 25 GNR 984 (as amended by GN 325) – 6, 25 GNR 985 (as amended by GN 324) – 14		X
Pollution control dams	4.3 0.8 2.4	X	GNR 983 (amended by GN 327) – 12, 13, 19, 27 GNR 984 (as amended by GN 325) – 6, 16 GNR 985 (as amended by GN 324)– 14		X
Pipelines		X	GNR 983 (amended by GN 327)– 9, 10, 12, 19 GNR 984 (as amended by GN 325) 7 GNR 985 (as amended by GN 324) – 14		
Pump stations		X	GNR 983 (amended by GN 327) – 12, 19 GNR 985 (as amended by GN 324) – 14		
Storage tanks		X	GNR 983 (amended by GN 327) – 12, 19 GNR 985 (as amended by GN 324) – 14		

Name of activity <i>Mining (E.g. Excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, stormwater control, berms, roads pipelines, power lines, conveyors, etc.)</i>	Aerial extent of the activity (ha) ³ <i>Ha or m² Expressed in m² unless otherwise stated</i>	Listed activity <i>Mark with an X where applicable or affected.</i>	Applicable listing notice as amended <i>GNR 327, GNR 325 or GNR 324</i>	Waste management authorisation <i>(Indicate whether an authorisation is required in terms of the Waste Management Act). (Mark with an X)</i>	Water use licence authorisation ⁴
Leslie 1C					
Waste water treatment works		X	GNR 983 (amended by GN 327) – 12, 19, 25 GNR 984 (as amended by GN 325) – 6, 25 GNR 985 (as amended by GN 324) – 14		X
Pollution control dams		X	GNR 983 (amended by GN 327) – 12, 13, 19, 27 GNR 984 (as amended by GN 325) – 6, 16 GNR 985 (as amended by GN 324)– 14		X
Pipelines		X	GNR 983 (amended by GN 327)– 9, 10, 12, 19 GNR 984 (as amended by GN 325) 7 GNR 985 (as amended by GN 324) – 14		
Pump stations		X	GNR 983 (amended by GN 327) – 12, 19 GNR 985 (as amended by GN 324) – 14		
Storage tanks		X	GNR 983 (amended by GN 327) – 12, 19 GNR 985 (as amended by GN 324) – 14		
Electrical					

Name of activity <i>Mining (E.g. Excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, stormwater control, berms, roads pipelines, power lines, conveyors, etc.)</i>	Aerial extent of the activity (ha) ³ <i>Ha or m² Expressed in m² unless otherwise stated</i>	Listed activity <i>Mark with an X where applicable or affected.</i>	Applicable listing notice as amended <i>GNR 327, GNR 325 or GNR 324</i>	Waste management authorisation <i>(Indicate whether an authorisation is required in terms of the Waste Management Act). (Mark with an X)</i>	Water use licence authorisation ⁴
Leslie 1A					
Substation and miniature substations (11kV)		X	GNR 983 (amended by GN 327) – 11, 12, 19 GNR 984 (as amended by GN 325) – 9 GNR 985 (as amended by GN 324) – 14		
UPS generators		X	GNR 983 – 2		
11/ 33kV switching station		X	GNR 983 (amended by GN 327)– 11, 12, 19 GNR 984 (as amended by GN 325) – 9 GNR 985 (as amended by GN 324) – 14		
33kV power line		X	GNR 983 (amended by GN 327) – 11, 12, 19 GNR 984 (as amended by GN 325) – 9 GNR 985 (as amended by GN 324) – 14		
Leslie 1B					
Substation and miniature substations (11kV)		X	GNR 983 (amended by GN 327) – 11, 12, 19 GNR 984 (as amended by GN 325) – 9 GNR 985 (as amended by GN 324) – 14		
UPS generators		X	GNR 983 – 2		

Name of activity <i>Mining (E.g. Excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, stormwater control, berms, roads pipelines, power lines, conveyors, etc.)</i>	Aerial extent of the activity (ha) ³ <i>Ha or m² Expressed in m² unless otherwise stated</i>	Listed activity <i>Mark with an X where applicable or affected.</i>	Applicable listing notice as amended <i>GNR 327, GNR 325 or GNR 324</i>	Waste management authorisation <i>(Indicate whether an authorisation is required in terms of the Waste Management Act). (Mark with an X)</i>	Water use licence authorisation ⁴
11/ 33kV switching station		X	GNR 983 (amended by GN 327)– 11, 12, 19 GNR 984 (as amended by GN 325) – 9 GNR 985 (as amended by GN 324) – 14		
33kV power line		X	GNR 983 (amended by GN 327) – 11, 12, 19 GNR 984 (as amended by GN 325) – 9 GNR 985 (as amended by GN 324) – 14		
Leslie 1C					
Substation and miniature substations (11kV)		X	GNR 983 (amended by GN 327) – 11, 12, 19 GNR 984 (as amended by GN 325) – 9 GNR 985 (as amended by GN 324) – 14		
UPS generators		X	GNR 983 – 2		
11/ 33kV switching station		X	GNR 983 (amended by GN 327)– 11, 12, 19 GNR 984 (as amended by GN 325) – 9 GNR 985 (as amended by GN 324) – 14		

Name of activity <i>Mining (E.g. Excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, stormwater control, berms, roads pipelines, power lines, conveyors, etc.)</i>	Aerial extent of the activity (ha) ³ <i>Ha or m² Expressed in m² unless otherwise stated</i>	Listed activity <i>Mark with an X where applicable or affected.</i>	Applicable listing notice as amended <i>GNR 327, GNR 325 or GNR 324</i>	Waste management authorisation <i>(Indicate whether an authorisation is required in terms of the Waste Management Act). (Mark with an X)</i>	Water use licence authorisation ⁴
33kV power line		X	GNR 983 (amended by GN 327) – 11, 12, 19 GNR 984 (as amended by GN 325) – 9 GNR 985 (as amended by GN 324) – 14		
Leslie 1D					
Substation and miniature substations (11kV)		X	GNR 983 (amended by GN 327) – 11, 12, 19 GNR 984 (as amended by GN 325) – 9 GNR 985 (as amended by GN 324) – 14		
UPS generators		X	GNR 983 amended by GN 327) – 2, 19		
11/ 33kV switching station		X	GNR 983 (amended by GN 327)– 11, 12, 19 GNR 984 (as amended by GN 325) – 9 GNR 985 (as amended by GN 324) – 14		
33kV power line		X	GNR 983 (amended by GN 327) – 11, 12, 19 GNR 984 (as amended by GN 325) – 9 GNR 985 (as amended by GN 324) – 14		
Leslie 1E					

Name of activity <i>Mining (E.g. Excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, stormwater control, berms, roads pipelines, power lines, conveyors, etc.)</i>	Aerial extent of the activity (ha) ³ <i>Ha or m² Expressed in m² unless otherwise stated</i>	Listed activity <i>Mark with an X where applicable or affected.</i>	Applicable listing notice as amended <i>GNR 327, GNR 325 or GNR 324</i>	Waste management authorisation <i>(Indicate whether an authorisation is required in terms of the Waste Management Act). (Mark with an X)</i>	Water use licence authorisation ⁴
Substation and miniature substations (11kV)		X	GNR 983 (amended by GN 327) – 11, 12, 19 GNR 984 (as amended by GN 325) – 9 GNR 985 (as amended by GN 324) – 14		
UPS generators		X	GNR 983 (as amended by GN 327) – 2, 19		
11/ 33kV switching station		X	GNR 983 (amended by GN 327)– 11, 12, 19 GNR 984 (as amended by GN 325) – 9 GNR 985 (as amended by GN 324) – 14		
33kV power line		X	GNR 983 (amended by GN 327) – 11, 12, 19 GNR 984 (as amended by GN 325) – 9 GNR 985 (as amended by GN 324) – 14		

2.7 Mining Right Application: Activities and Infrastructure

2.7.1 Mining Method

It is proposed for the coal to be mined by underground mining methods, with Continuous Miners (CM). The “**bord and pillar**” mining technique will be used to ensure that the surface remains stable. In mechanized bord and pillar mining, extraction is achieved by developing a series of roadways (bords) in the coal seam and connecting them by splits (cut-through) to form pillars that act as the primary roof support system. No pillar extraction is envisaged.

A box cut will be mined and from there the seams will be accessed through an incline shaft. Leslie 1A will have an East and West incline shaft to access the east and west portions of the mining area. Leslie 1B, 1C, 1D and 1E will have one incline shaft each. The incline shafts allow for conveying and travelling, as well as return airways and escape routes. Ventilation within the underground pits will be via a mine ventilation shaft, where required. Coal will be transferred via conveyor belt from the underground to surface from where it will be sent to its final destination either by rail or truck.

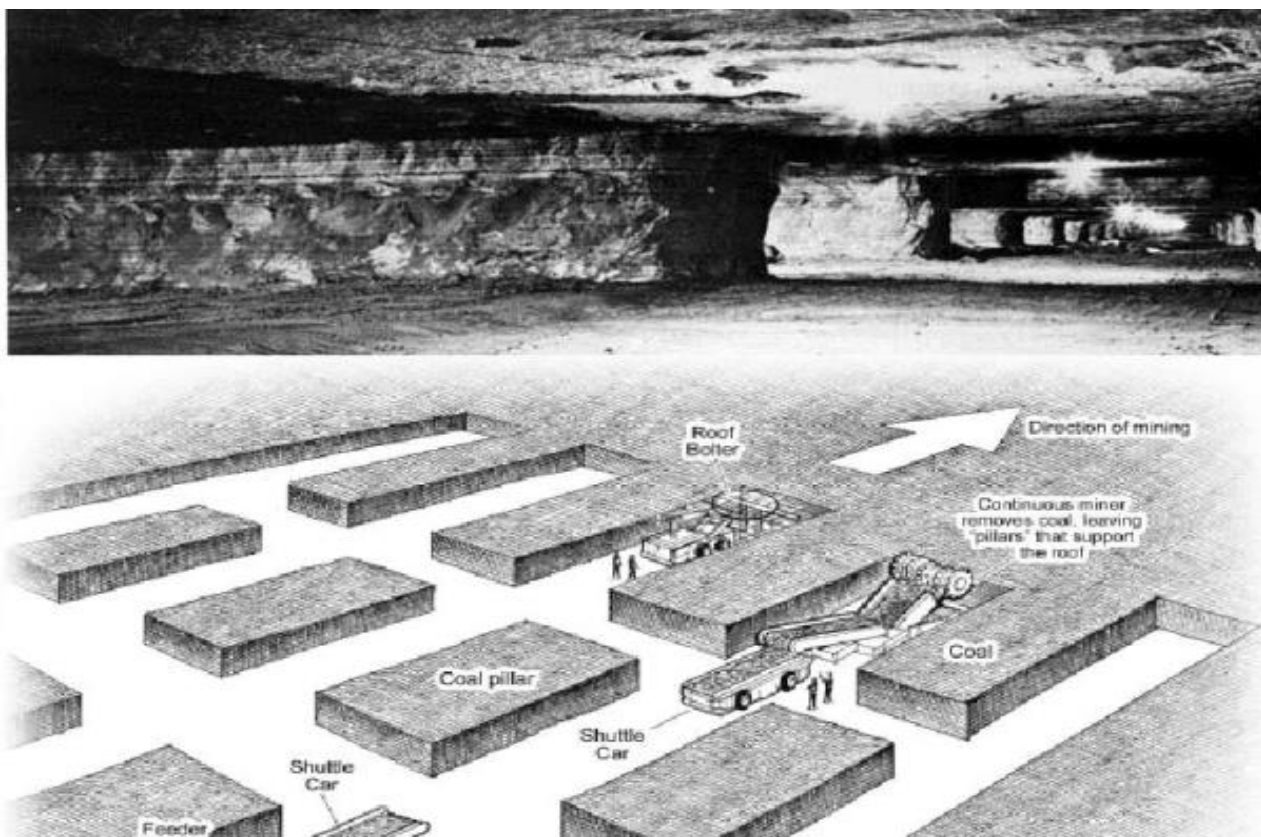


Figure 2-4: Underground mining using the Bord and Pillar Mining Technique (Source: <https://wvcoalassociation.wordpress.com>)

2.7.2 Spoil Handling

Overburden comprises the surface materials overlaying the mineral deposit/coal that require removal. Spoil refers to the excavated materials (i.e. removed overburden) that will be used during rehabilitation. To facilitate rehabilitation, Anglo will undertake stripping and rehabilitation practices that involve:

- ❖ Topsoil (the most fertile soils usually containing the vegetation seed bank) on the infrastructure and incline shaft areas is removed first and placed on stockpiles to be re-used in the final rehabilitation.
- ❖ Overburden/spoils will be removed by truck and shovel and stockpiled for reuse as fill material during Incline shaft closure.

2.7.3 Coal Handling and Processing

Coal beneficiation (also known as coal washing) involves crushing the coal into smaller pieces and passing it through a process called dense medium separation (DMS). This process utilises the differences in mass density (mass per unit volume) between the coal and the impurities such as ash, rock and soil particles to separate the coal from the impurities. The waste that is removed during the coal washing process, known as coal discard, is a combustible, physically and chemically unstable waste that requires special handling and long-term disposal and management. It is expected that the extracted coal will be crushed and placed on ROM stockpiles at the two plant areas. ROM or product coal will then be transported off site to its final destination which is expected to be primarily Eskom and possibly other domestic and export markets.

2.7.4 Infrastructure

Infrastructure required for coal beneficiation, as well as the beneficiation process has been included below:

Wash Plant

The primary plant will consist of a DMS drum and a cyclone. The plant will have the flexibility to bypass the fine fraction of the ROM coal whilst washing the coarse fraction. Some of the drum and cyclone products could also be washed for sized inland products.

Eskom Plant

This will be a crushing and screening facility where raw coal from the pit will be crushed to market specifications.

Water Supply

It is anticipated that the operations will require a volume of 3ML/day to ensure effective and efficient mining operations.

Domestic water requirements will be obtained from boreholes.

Water required for the wash plant, crusher, service systems and dust suppression will be extracted from the dirty water system. Water supply options are being considered for the project. These may include any of the following: recycling of water, collection of rainfall and runoff on site, water from the municipality, natural springs in the area, boreholes drilled into aquifers to provide water, or a combination of the above.

Run-off water collected from disturbed areas will be collected and stored in holding ponds/pollution control dams located near the pits. The water will be routed by utilising a series of diversion berms. Collected water will be used for the mining and treatment processes and all water generated by the mining activities will be stored in a high-density polyethylene-lined (HDPE) PCD and re-used in the beneficiation plant as well as for dust-control purposes on the haul roads.

The location of a water treatment plant has not been determined at this point, as it is considered that water treatment will only be required towards the end of the LOM.

Electricity Supply

Power will be required during the construction phase. At this stage in project planning, it is assumed that Eskom supply will be used during the construction phase.

2.7.5 Road Network

Direct access to the mine areas will be via main roads. As far as possible, existing access roads will be utilised, and where not possible, these will be constructed as a two-by-two road way, operating in both directions. Where access roads are to be constructed, these will be 4m wide gravel road with storm water earth channels and mitre drains to protect the road structure from flood damage. Intersections will be properly designed to provide safe entry and exit into the mining area. Approvals from the provincial roads authority will be obtained where necessary and a Water Use Licences (WUL) will be applied for where haul or access roads are anticipated to impact on water courses.

2.7.6 Railway Network

Railway sidings at the plants situated at Leslie 1A and 1C will be constructed, considering the potential establishment of a railway connection to the main railway line at Leandra.

2.7.7 Rehabilitation

Rehabilitation will consist of the incline shafts being sealed and levelled and the topsoil replaced on the levelled spoils, as well as the removal of infrastructure from site. Topsoil will be replaced after final levels have been achieved. Natural revegetation and succession will be encouraged.

2.7.8 Mine Works Schedule

It is anticipated that mining will commence in Year one (Y1) at Leslie 1A. The first operation would commence at the Leslie 1A East-block. Production from the underground sections will commence during the course of Year 2 (Y2).

The second operation will be towards the west of the Leslie 1A block (West-block). The establishment of the boxcut portal will commence in Year 6 (Y6), and underground production will commence in Year 7 (Y7).

The Leslie 1 Project will relocate to Leslie 1C as the reserves in Leslie 1A reach a point of depletion. Thereafter the reserves of Leslie 1D, 1E and finally 1B will be extracted. The decline in production will commence in Year 32 (Y32) when the underground sections will reduce production as the reserve is depleted.

Table 2-5 below illustrated the mine works schedule for the implementation of activities at the Mine Areas. Figure 2-5 to Figure 2-7 show the planned mine works schedule for each mining area.

Table 2-5: Indication of the mine works programme and mining method per mine area:

Mine area	Area (ha)	Mine schedule	LoM	Total ROM (tonnes)
Leslie 1A	4842.350367	Year 1 to Year 11	35	49 444 000
Leslie 1B	785.688292	As the reserves in Leslie 1E reach a point of depletion		14 041 000
Leslie 1C	2312.601909	As the reserves in Leslie 1A reach a point of depletion		46 612 000
Leslie 1D	345.81425	As the reserves in Leslie 1C reach a point of depletion		8 000 000
Leslie 1E	200.233237	As the reserves in Leslie 1D reach a point of depletion		6 483 000

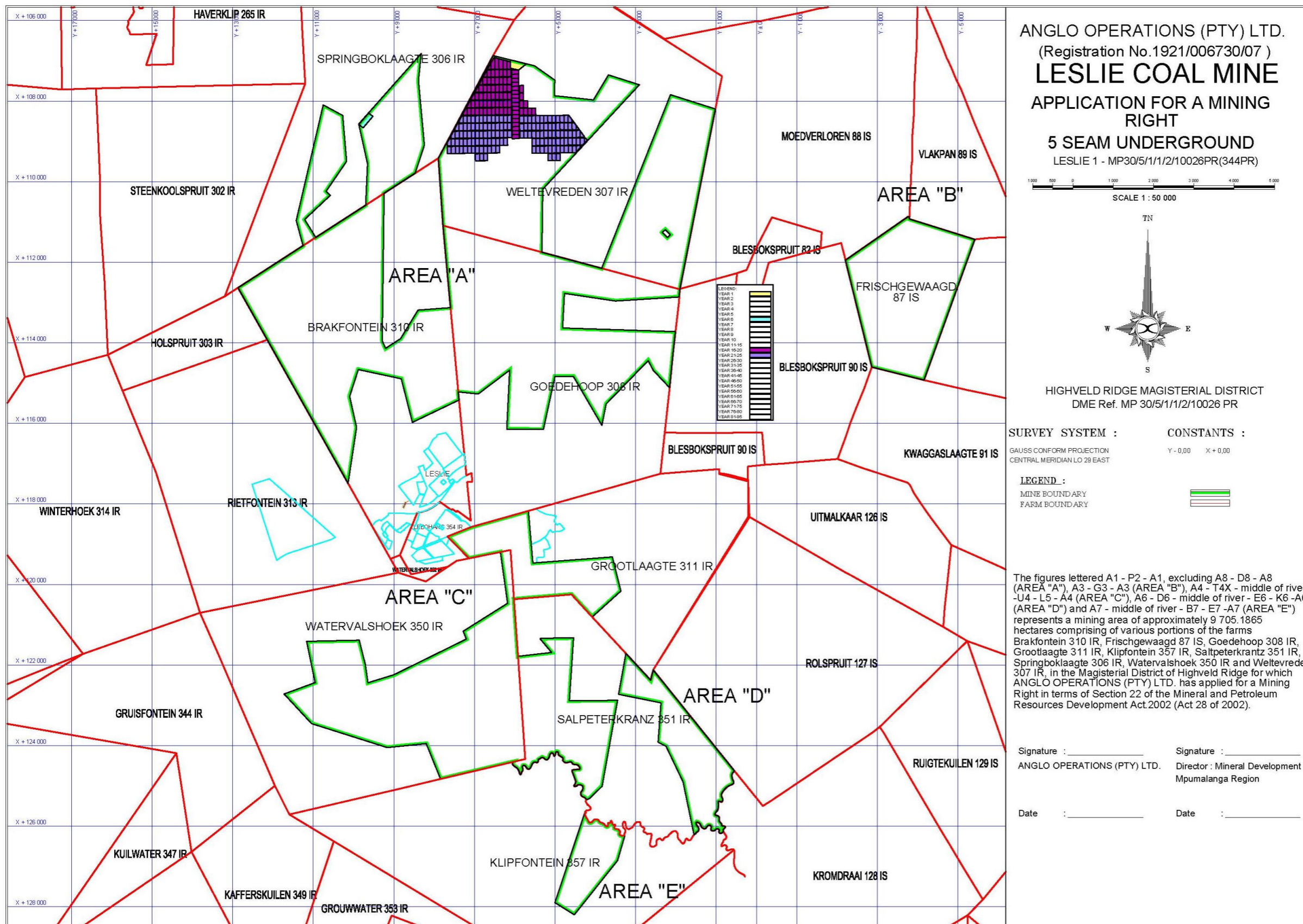


Figure 2-5: Leslie No. 5 Seam Mine Works Schedule.

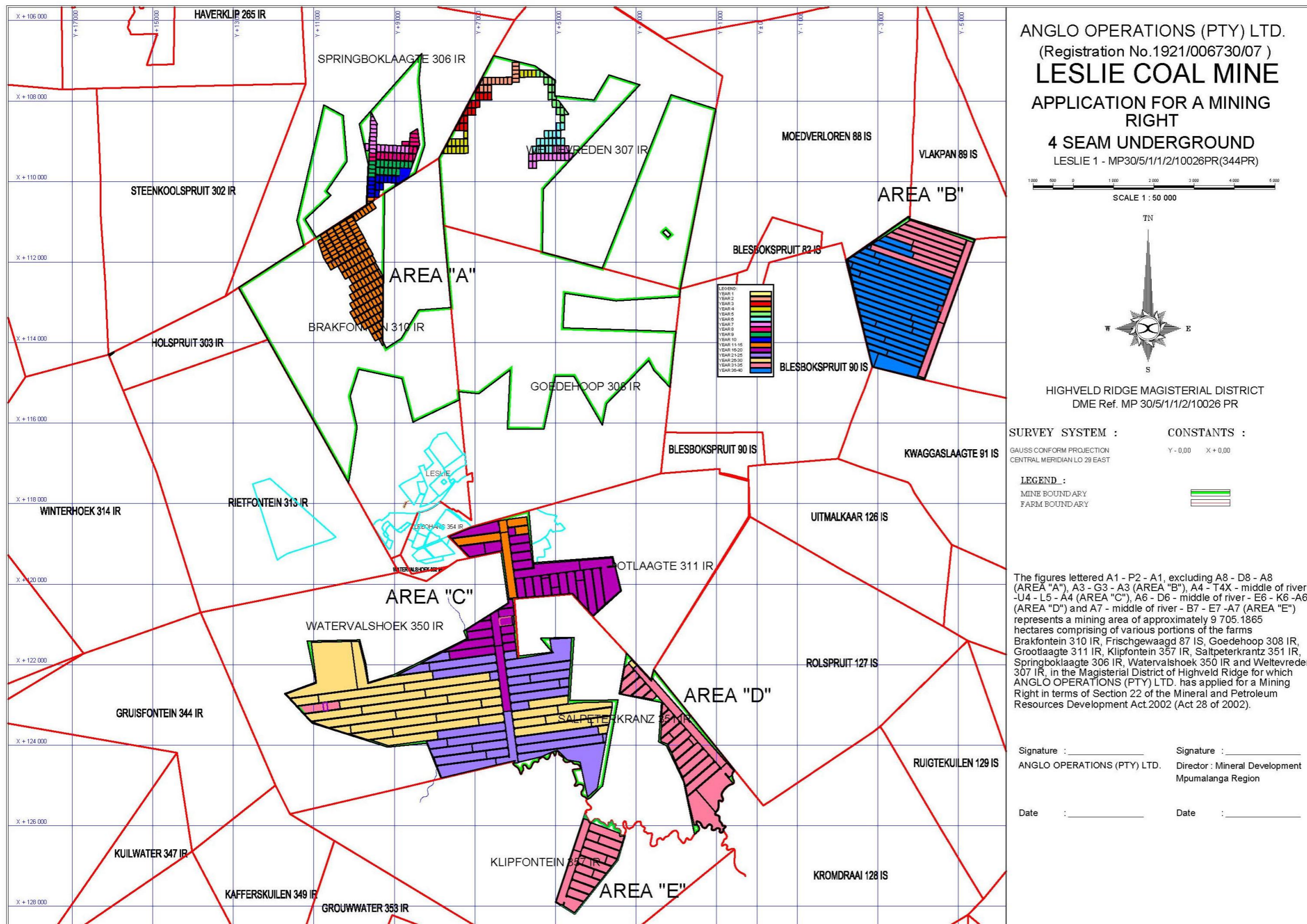


Figure 2-6: Leslie 1 No. 4 Seam Mine Works Schedule.

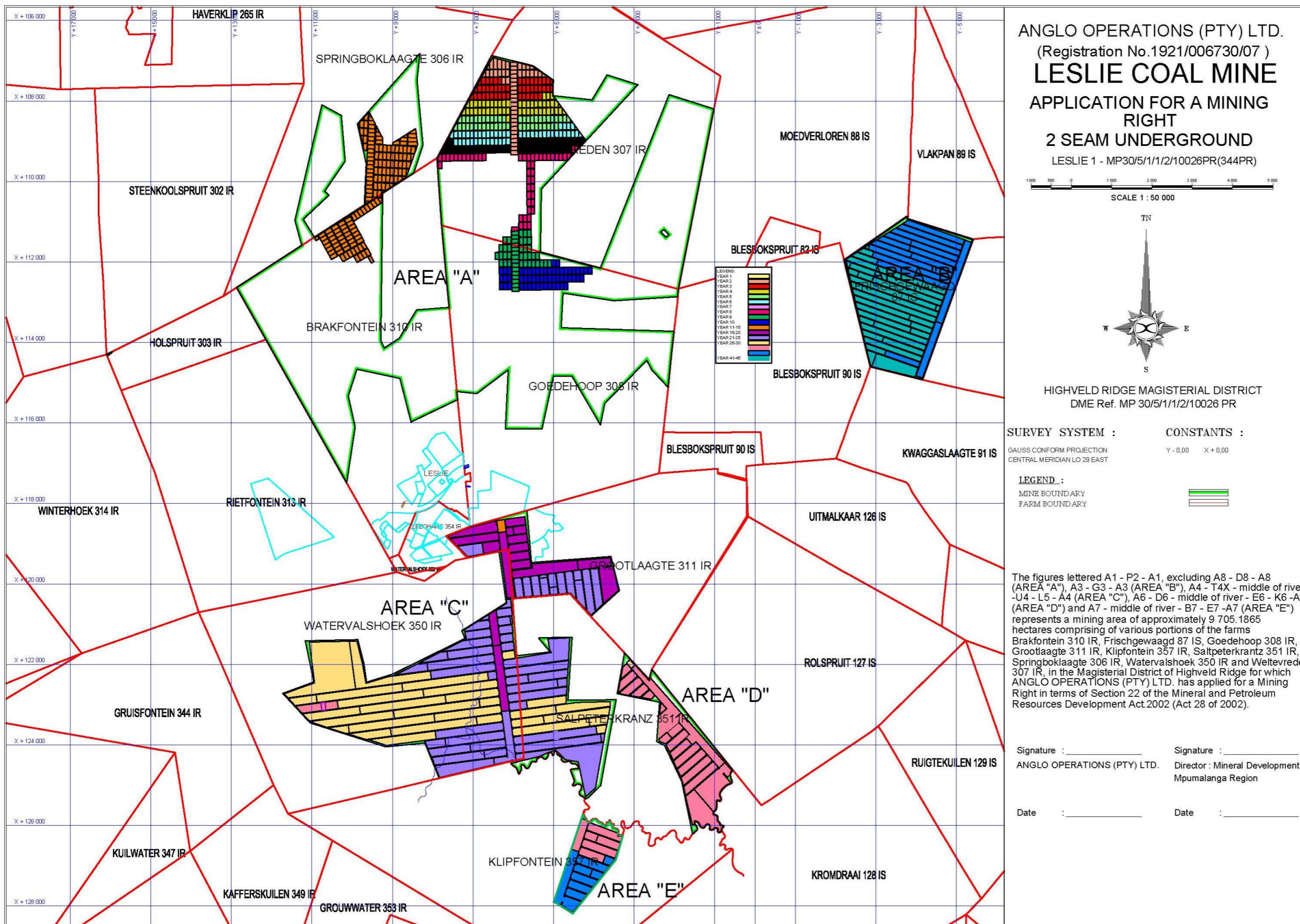


Figure 2-7: Leslie 1 No. 2 Seam Mine Works Schedule.

3 Policy and Legislative Context

This chapter provides an overview of the policy and legislative context relevant to the Proposed Project. It identifies all legislation, policies, plans, guidelines, spatial tools, municipal development planning frameworks and instruments that are applicable to the planned activities and are to be considered in the assessment process which may be applicable or have relevance to the Proposed Project.

The foundation for Environmental Preservation is entrenched in the **Constitution of South Africa (Act No. 108 of 1996)**. Following the birth of Democracy in South Africa, legislative and environmental policies and regulations have undergone a large transformation, and various laws and policies were promulgated with a strong emphasis on environmental concerns and the need for sustainable development. The Constitution provides environmental rights (contained in the Bill of Rights, Chapter 2 (Section 24)) and includes implications for environmental management. The environmental rights are guaranteed in Section 24 of the Constitution, and state that:

“Everyone has the right –

- ❖ To an environment that is not harmful to their health or well-being and*
- ❖ To have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that*
 - Prevent pollution and ecological degradation;*
 - Promote conservation and*
 - Secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development.”*

To ensure that the various spheres of the social and natural environmental resources are not over-looked, additional legislation and regulations have been promulgated in addition to those contained within the Constitution. The additional legislature and regulations ensure that there remains a key focus on various industries or components of the environment, and to ensure that the objectives of the Constitution are effectively implemented and upheld on an on-going basis. In terms of Section 7, a positive obligation is placed on the State to give effect to the environmental rights.

Table 3-1: Applicable National Legislation and Guidelines

Applicable Legislation and Guidelines used to compile the report.	Reference where Applied
<p><u>The Constitution of South Africa, 1996 (Act 108 of 1996)</u></p> <p>Section 24 of the Act states that everyone has the right to an environment that is not harmful to their health or well-being; to have the environment protected for the benefit of present and future generations, through reasonable legislative and other measures that prevent pollution and ecological degradation; promote conservation; and secure ecological sustainable development and use of natural resources while promoting justifiable economic and social development.</p> <p>Section 32 of the Act states that every person has a right to information held by the State and to information held by other people that is required in the exercise or protection of a right.</p> <p>Lastly, Section 33 of the Act states that everyone has a right to just and procedurally fair administrative action.</p>	<p>As per the Requirements of NEMA and the NEMA EIA Regulations, alternative activities that are less taxing on the environment and resources must be investigated where possible. The DSR & Draft EIA Report will be made available for public review as per the PPP section of this report. The Appeal Process will be described to all I&APs through the EA notification described in the PPP section of this report.</p>
<p><u>Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002) (MPRDA)</u></p> <p>The MRA must be made in accordance with the provisions of Section 22 of the MPRDA, read together with the EIA 2014 Regulations, as amended, promulgated in accordance with Section 44 of the National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA).</p> <p>The critical components of a MRA are a Mining Work Programme (MWP) and a Social and Labour Plan (SLP). The content of both of these is prescribed by the DMR.</p> <p>The applicant is also required to demonstrate that the mineral can be mined optimally in accordance with the MWP; that it has access to financial resources and the technical ability to conduct the proposed mining operation optimally; there is a financing plan compatible with the intended mining operation and its duration; the mining will not result in unacceptable pollution, ecological degradation or damage to the environment; the applicant has the ability to comply with the relevant provisions of the Mine Health and Safety Act, 1996; that it is not in contravention of any provision of this Act; and importantly, that the granting of a mining right will further the broad empowerment objects of the MPRDA and the SLP.</p> <p>The assessment of impacts relating to soil pollution and erosion control, where appropriate, must form part of the EMP.</p>	<p>A separate MRA, MWP and SLP has been submitted to the DMR for review and approval.</p>

Applicable Legislation and Guidelines used to compile the report.	Reference where Applied
<p>The MRA requires the preparation of an Application for EA in terms of the EIA 2014 Regulations, as amended, of which must be set out on the template prescribed by the DMR. Similarly, details relating to financial and technical competence and Black Economic Empowerment (BEE) status need to be set out on a prescribed template. Various supporting documents, such as a covering letter and corporate details, the Certificate of Incorporation, Certificate to Commence Business, Certificate of Change of Name (if relevant), Board Resolution authorising signature, must be collated.</p> <p>In terms of the One Environmental System established by the NEMLAA, an EA in respect of a MRA must be issued within 300 days of the application being submitted.</p>	
<p><u>Mine Health and Safety Act (MHSA), Act 29 of 1996 (as amended):</u></p> <p>The mine will operate in accordance to the MHSA and associated regulations. This includes creating a safe and healthy work environment and providing the necessary protection and training to staff to ensure their health and safety is not compromised.</p> <p>Hazardous substances will be adequately stored and labelled. All regulations pertaining to safe use, handling, processing, storage, transport and disposal of hazardous substances; explosives and mixing substances to make explosives; protection of equipment, structures and water sources and the surface of land; the making safe of undermined ground and dangerous excavations, dumps and structures connected to mining operations; the monitoring and control of those environmental aspects which may affect the health and safety of persons will be applied on site. Regulations pertaining to provision of water, ablution facilities and staff health and safety will be applied on site.</p>	<p>Although not strictly addressed in the Scoping Report or EMPr, protecting the environment contributes to a safe working environment. MHSA regulations will be worked into the mine’s Code of Practice (COP) and Standard Operating Procedures (SOPs).</p>
<p><u>National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA)</u></p> <p>The overarching principle of the NEMA is sustainable development. It defines sustainability as meaning the integration of social, economic and environmental factors into planning, implementation and decision making to ensure the development serves present and future generations. Section 2 of NEMA provides for the NEMA principle which apply throughout the Republic to the actions of all organs of state that may significantly affect the environment and in conjunction with other appropriate and relevant considerations. The NEMA principles serve as the general framework within which environmental management and implementation plans must be formulated and serve as a guideline by reference to which any organ of state must exercise any function when taking any</p>	<p>The NEMA is the overarching Act governing sustainable development and the NEMA principles apply to all prospecting and mining operations and any matter or activity relating to such operation.</p> <p>Listed activities as per the EIA 2014 Regulations, as amended, have been identified (refer to Chapter 2, subsection 2.6).</p>

Applicable Legislation and Guidelines used to compile the report.	Reference where Applied
<p>decision in terms of the NEMA or any statutory provision concerning the protection of the environment. In this regard the MPRDA specifically states that the NEMA principles apply to all prospecting and mining operations and any matter or activity relating to such operation and serve as guidelines for the interpretation, administration and implementation of the environmental requirements of the MPRDA.</p> <p>NEMA authorises the Minister of the DEA to issue Regulations relating to the administration of the Act⁷, which has been done with the publication of the EIA 2014 Regulations, as amended. Section 24(2) allows the Minister to identify activities which may not commence without environmental authorisation from the competent authority. This identification has been done in accordance with listing notices referred to as Listing Notice 1, Listing Notice 2 and Listing Notice 3. The NEMA also allows the Minister to determine which authority will be the competent authority to receive and evaluate applications for EAs.</p> <p>Listing Notice 1 identifies activities of limited scale and effect, which need to be assessed by a fairly simple process referred to as a BA, where after a Basic Assessment Report (BAR) is submitted to the competent authority. Listing Notice 2 identifies activities of significantly greater magnitude, which require evaluation through an initial Scoping Phase followed by an EIA and an EMPr. This process is generally referred to as the S&EIR process. Listing Notice 3 relates to activities limited to specified geographical areas and matters of concern to the various provinces which require a BAR process to be dealt with by the provincial authority concerned.</p> <p>Activity 17 of Listing Notice 2 relates to any activity including the operation of that activity which requires a mining right as contemplated in Section 22 of the MPRDA, including associated infrastructure, structures and earthworks, directly related to the extraction of a mineral resource or the primary processing of a mineral resource including winning, extraction, classifying, concentrating, crushing, screening or washing. Accordingly, the application for EA will require the undertaking of a full S&EIR process. All other identified activities will need to be dealt with in accordance with the S&EIR process.</p> <p>Regulation 16(1) prescribes the general application requirements and states that an application for an EA must be made on the official application form obtainable from the DMR (the competent authority) and must, amongst others, include proof of payment of the prescribed application fee.</p>	

⁷ Sections 24(5) and Section 44

Applicable Legislation and Guidelines used to compile the report.	Reference where Applied
<p>Regulation 21 provides for the submission of the Scoping Report to the DMR (the CA) for consideration and states that the scoping report must contain all the information set out in Appendix 2 to the EIA 2014 Regulations, as amended. In terms of regulation 22, the DMR must, after considering the Scoping Report, either accept the report, with or without conditions and advise the applicant to proceed with the plan of study for EIA or refuse the EA. Once the Scoping Report is accepted by the DMR, the applicant must submit the EIA Report inclusive of specialist reports and an EMPr which have been subjected to a PPP. The timeframes for submission of the Scoping Report and the EIA Report inclusive of the timeframes within which the DMR must consider the reports and approve the EA are prescribed in regulations 21 to 24 of the EIA 2014 Regulations.</p> <p>Once a decision on the EA application has been reached, the DMR (the competent authority) must notify the applicant in writing of the decision and give reasons for the decision.</p>	
<p><u>National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) (NEM: WA)</u></p> <p>As part of the waste management matters dealt with in the NEM: WA, waste activities have been identified in GN 921 of 29 November 2013⁸: List of Waste Management Activities that have, or are likely to have, a Detrimental Effect on the Environment. GN R921 provides that the waste management activities listed in Category A and B thereof may not commence, be undertaken or conducted without a Waste Management Licence (WML). Activities listed in Category C of GN 921 may only be commenced with, undertaken or conducted in accordance with the National Norms and Standards published in terms of the NEM: WA.⁹</p> <p>Category A activities require a BAR process while Category B Activities require a S&EIR process. It should be noted that previously residue deposits and residue stockpiles were regulated in terms of the MPRDA Regulations¹⁰ and in particular Regulation 73. However, with the commencement of the NEM:WA section 4(b) of the NEM:WA has been deleted and as such the NEM:WA now regulates residue stockpiles and residue deposits. In line with the aforesaid amendment, GN 921 was amended by GN 632 of 24 July 2015 by including Activity B 4(11) which provides for “the</p>	<p>Listed activities as per the NEM: WA regulations have been identified (refer to Chapter 2, subsection 2.6).</p>

⁸ Published in Government Gazette 37083

⁹ The following National Norms and Standards have been published: Norms and Standards for Storage of Waste, 2013 (GN 926 of 29 November 2013); Standards for Extraction, Flaring or Recovery of Landfill Gas, 2013 (GN 924 of 29 November 2013); and Standards for Scrapping or Recovery of Motor Vehicles, 2013 (GN 925 of 29 November 2013)

¹⁰ GN R527 of 2004

Applicable Legislation and Guidelines used to compile the report.	Reference where Applied
<p><i>establishment or reclamation of a residue stockpile or residue deposit resulting from activities which require a mining right, exploration right or production right in terms of the MPRDA</i>". Accordingly, the establishment of a residue stockpile (as defined in Schedule 3 of the NEM:WA) requires a WML authorising activity 4(11) in Category B of GN 921.</p> <p>In addition to the requirement for a WML for the mine discard dump (residue stockpile), the mine is likely to trigger the following waste activities, all of which require a Category B WML:</p> <ol style="list-style-type: none"> 1) The disposal of any quantity of hazardous waste to land; 2) The disposal of inert waste to land in excess of 25 000 tons, excluding the disposal of such waste for the purposes of levelling and building which has been authorised by or under other legislation; 3) The construction of a facility for a waste management activity listed in Category B of this schedule (not in isolation to associated waste management activity); and 4) The establishment or reclamation of a residue stockpile or residue deposit resulting from activities which require a mining right, exploration right or production right in terms of the MPRDA. <p>The Proposed Project will also need to comply with GN R632 of 24 July 2015 must be adhered to. These regulations regulate the assessment of impacts and analyses of risks relating to the management of residue stockpiles and residue deposits, the characterisation of residue stockpiles and residue deposits, the classification of residue stockpiles and residue deposits, the investigation and selection of site for residue stockpiling, the design of the residue stockpiles and residue deposits, impact management, the duties of the holder of right/ permit, the monitoring and reporting system for residue stockpiles and residue deposits, dust management and control, decommissioning, closure and post closure management of residue stockpiles and residue deposits.</p> <p>The EA and WML are being dealt with as integrated application.</p>	
<p><u>National Water Act, 1998 (Act No. 36 of 1998) (NWA)</u></p> <p>In terms of the NWA, the national government, acting through the Minister of Water and Sanitation, is the public trustee of South Africa's water resources, and must ensure that water is protected, used, development, conserved, managed and controlled in a sustainable and equitable manner for the benefit of all persons (section 3(1)).</p>	<p>An IWULA and IWWMP will be required for the Proposed Project and will be submitted to the DWS.</p>

Applicable Legislation and Guidelines used to compile the report.	Reference where Applied
<p>In terms of the NWA a person may only use water without a license if such water use is permissible under Schedule 1 (generally domestic type use) if that water use constitutes a continuation of an existing lawful water use (water uses being undertaken prior to the commencement of the NWA, generally in terms of the Water Act of 1956), or if that water use is permissible in terms of a general authorisation issued under section 39 (general authorisations allow for the use of certain section 21 uses provided that the criteria and thresholds described in the general authorisation is met). Permissible water use furthermore includes water use authorised by a license issued in terms of the NWA.</p> <p>Section 21 of the NWA defines water uses which are governed in terms of the Act and for which a WUL is required. In terms of section 40(1) of the NWA “a person who is required or wishes to obtain a licence to use water must apply to the relevant responsible authority for a licence.” These water uses, in terms of Section 21, are as follows:</p> <ul style="list-style-type: none"> (a) taking water from a water resource; (b) storing water; (c) impeding or diverting the flow of water in a watercourse; (d) engaging in a stream flow reduction activity contemplated in Section 36; (e) engaging in a controlled activity identified as such in Section 37(1) or declared under Section 38(1); (f) discharging waste or water containing waste into a water resource through a pipe, canal, sewer, sea outfall or other conduit; (g) disposing of waste in a manner which may detrimentally impact on a water resource; (h) disposing in any manner of water which contains waste from, or which has been heated in, any industrial or power generation process; (i) altering the bed, banks, course or characteristic of a watercourse; (j) removing, discharging or disposing of water found underground if it is necessary for the efficient continuation of an activity or for the safety of people; and (k) using water for recreational purposes. <p>It is not likely that sub-sections (c), (d), (e), (h), (i) or (k) will apply to the Proposed Project.</p> <p>Water uses associated with the mining activities, may include the development of PCDs, placement of material on a waste rock dump (WRD), construction and operation of a tailings storage facility (TSF), pumping of water from the</p>	

Applicable Legislation and Guidelines used to compile the report.	Reference where Applied
<p>underground workings, dust suppression and the storage and use of process and potable water. These water uses will require an IWUL and will be reassessed once final placement and conceptual designs have been completed.</p> <p>The IWULA must be prepared and submitted in accordance with the Water Use Licence Application and Appeals Regulations 2017 published in GNR 267 on 24 March 2017 and must generally be supported by a Technical Report and Integrated Water and Waste Management Plan (IWWMP) with conceptual design drawing of all water related infrastructure including infrastructures that could potentially contaminate the receiving environment.</p>	
<p><u>National Environmental Management: Biodiversity Act, 2004 (Act No.10 of 2004) (NEM:BA)</u></p> <p>The NEM:BA provides for the management and conservation of South Africa’s biodiversity within the framework of NEMA, as well as the protection of species and ecosystems that warrant national protection and the sustainable use of indigenous biological resources. SANBI website and GIS tools were utilised to determine whether any nationally protected and threatened ecosystems occur on site. Therefore, NEMA Listing Notice 3 activities have been included in the EA application.</p> <p>The Proposed Project falls within the Mpumalanga Province, which has a provincial Biodiversity Assessment Protected Area Expansion Strategy. This strategy has been incorporated and considered throughout the compilation of this report.</p>	<p>NEM:BA was used to inform the activities triggered by Listing Notice 3 (refer to Chapter 2, subsection 2.6).</p>
<p><u>National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004) (NEM: AQA)</u></p> <p>The NEM: AQA came into effect in April 2010 and is applied in accordance with the principals stipulated in NEMA. The Act outlines norms and standards with regards to air quality management planning, monitoring, compliance and management measures to protect and enhance the quality of air and reduce risks to human health. NEM: AQA also promotes sustainable development.</p> <p>An Air Emissions Licence (AEL) may be required for this project, and the mine must investigate, assess and evaluate the impact of dust fall out on the environment. Atmospheric emissions particularly in the form of dust must be adequately maintained to prevent dust pollution.</p> <p>The National Ambient Air Quality Standards were published on 24 December 2009 and provide <i>inter alia</i> for national ambient air quality standards for PM₁₀. In addition to these standards, the National Ambient Air Quality Standards for PM_{2.5} came into effect on 29 June 2012. The Standards do not provide for the reporting of exceedances.</p>	<p>An Air Quality Impact Assessment (AQIA) will be completed as part of the EIA Phase to investigate, assess and evaluate the impact of dust fall out on the environment.</p>

Applicable Legislation and Guidelines used to compile the report.	Reference where Applied
<p>The National Dust Control Regulations, 2013 (GNR 827 of 1 November 2013) provide acceptable dust fall rates at and beyond the boundary of the premises where dust originates. The dust fall-out rates are measured using the American Standard for Testing Materials method D1739 (ASTM D1739:1970) which provides that dust fall out at the boundary or beyond the boundary of the premises where it originates cannot exceed - 600 mg/m²/day averaged over 30 days in residential areas; or 1200 mg/m²/day averaged over 30 days in non-residential areas. Permitted exceedances are provided for.</p>	
<p><u>National Environmental Management: Protected Areas Act (NEM:PAA), Act 57 of 2003 as amended</u></p> <p>The National Environmental Management Protected Areas Act (No. 57 of 2003) (NEM:PAA) concerns the protection and conservation of ecologically viable areas representative of South Africa’s diversity and its natural landscapes and seascapes, and includes <i>inter alia</i>:</p> <ul style="list-style-type: none"> ❖ The establishment of a national register of all national, provincial and local protected areas; ❖ The management of those areas in accordance with national standards; and ❖ Inter-governmental co-operation and public consultation in matters concerning protected areas. <p>Sections 48 to 53 of the NEM:PAA lists restricted activities that may not be conducted in a protected area. Section 48 states that no person may conduct commercial prospecting or mining activities in a:</p> <ul style="list-style-type: none"> ❖ Special nature reserve or nature reserve; ❖ Protected environment without the written permission of the Minister and the Cabinet member responsible for minerals and energy affairs; and <p>Protected area referred to in Section 9:</p> <ul style="list-style-type: none"> ❖ (b) world heritage sites; and ❖ (d) specially protected forest areas, forest nature reserves and forest wilderness areas declared in terms of the National Forests Act (No. 84 of 1998); 	<p>SANBI website and GIS tools were utilised to determine if the project area overlaps with CBAs. Some sections of the project were rated as irreplaceable. Therefore, it is anticipated that some restrictions will apply to the mining in terms of protected areas.</p> <p>The Regulations were utilised to determine the need for any additional listed scheduled activities under GNR 985.</p>
<p><u>National Forest Act, 1998 (Act No 84 of 1998)</u></p> <p>The purposes of National Forest Act, 1998 (Act No. 84 of 1998) (NFA) includes <i>inter alia</i>:</p>	<p>A Terrestrial Biodiversity Study will be done to determine the tree species in the project area and specify if there are any endangered</p>

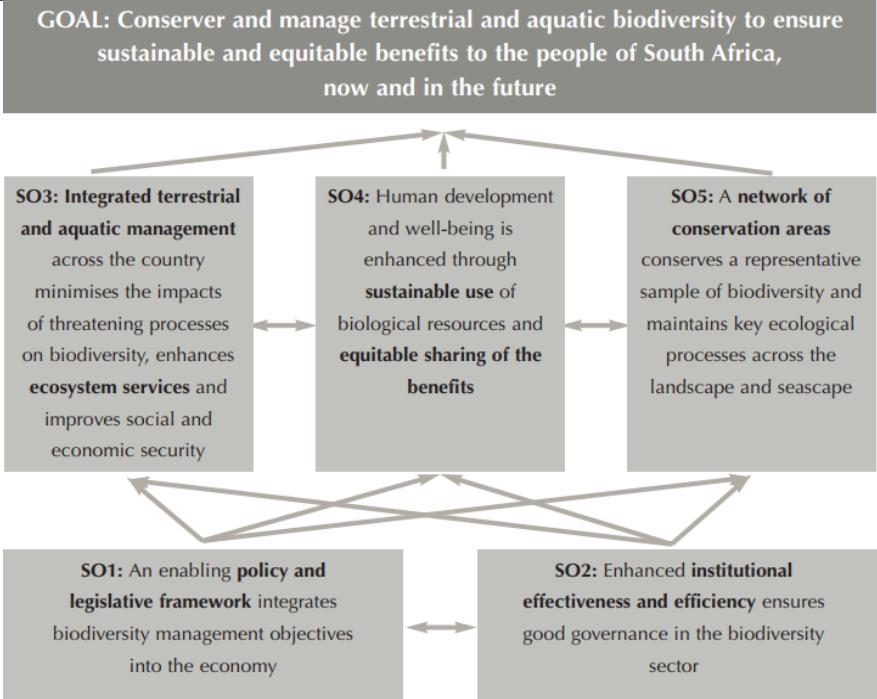
Applicable Legislation and Guidelines used to compile the report.	Reference where Applied
<p><i>(c) provide special measures for the protection of certain forests and trees:</i></p> <p><i>(d) promote the sustainable use of forests for environmental, economic, educational, recreational, cultural, health and spiritual purposes.</i></p>	<p>species. A permit for the removal / destruction of protected trees will be applied for with the relevant department in terms of Section 15 of the NFA.</p>
<p><u>National Heritage Resources Act, 1999 (Act No. 25 of 1999) (NHRA)</u></p> <p>The NHRA aims to promote good management of cultural heritage resources and encourages the nurturing and conservation of cultural legacy so that it may be bestowed to future generations.</p> <p>The Act requires all developers (including mines) to undertake cultural heritage studies for any development exceeding 0.5 ha. It also provides guidelines for impact assessment studies to be undertaken where cultural resources may be disturbed by development activities.</p> <p>The South African Heritage Resources Agency (SAHRA) will need to approve the heritage assessment undertaken as part of the impact assessment process.</p>	<p>A Heritage Impact Assessment will be undertaken as part of the EIA Phase and the assessment will be uploaded on the SAHRA web site along with the EIA Report.</p>
<p><u>Conservation of Agricultural Resources Act (No. 43 of 1983)</u></p> <p>The Conservation of Agricultural Resources Act (No. 43 of 1983) (CARA) includes the use and protection of land, soil, wetlands and vegetation and the control of weeds and invader plants. This is the only legislation that is directly aimed at conservation of wetlands in agriculture. The Act contains a comprehensive list of species that are declared weeds and invader plants dividing them into three categories. These categories are as follows:</p> <ul style="list-style-type: none"> ❖ Category 1: Declared weeds that are prohibited on any land or water surface in South Africa. These species must be controlled, or eradicated where possible; ❖ Category 2: Declared invader species that are only allowed in demarcated areas under controlled conditions and prohibited within 30m of the 1:50 year floodline of any watercourse or wetland; and ❖ Category 3: Declared invader species that may remain but must be prevented from spreading. No further planting of these species is allowed. <p>In terms of the Act, landowners are legally responsible for the control of alien species on their properties. Failure to comply with the Act may result in various infringement consequences and in some instances imprisonment and other penalties for contravening the law.</p>	<p>The protection of land, soil, wetlands and vegetation and the control of weeds and invader plants will be contained within the EIA Report and well as in the Rehabilitation and Closure Plan.</p>

Applicable Legislation and Guidelines used to compile the report.	Reference where Applied
<p><u>The South African National Roads Agency Limited and National Roads Act, 1998 (Act No. 7 of 1998)</u></p> <p>The National Road Traffic Regulations, 2000 places specific duties on the consignor and consignee of dangerous goods. A consignor means the person who offers dangerous goods for transport (i.e. hazardous waste) and a consignee is the person who accepts dangerous goods, which have been transported in a vehicle. Both consignor and consignee must comply with the requirements of several SANS standard specifications and codes of practice relevant to dangerous goods which have been incorporated into the regulations.</p> <p>The mine owner is responsible for:</p> <ul style="list-style-type: none"> ❖ Offloading of the dangerous goods; ❖ Providing the dangerous goods offloading supervisor; and ❖ Ensuring that the loading and offloading are carried out by qualified employees trained in the relevant procedures. <p>The mine must, in line with Section 54 of the Act and GN R225, provide evidence that the company has appointed responsible personnel to oversee the off-loading of dangerous goods at its operations. A driver of a vehicle transporting dangerous goods is required to undergo training at an approved training body.</p>	<p>The requirements of the Act and Regulations will be considered when assessing the project impacts and developing the associated mitigation measures in the EIA Phase.</p>
<p><u>Spatial Planning and Land Use Management Act, 2013 (Act No. 16 of 2013) (SPLUMA)</u></p> <p>The SPLUMA was promulgated in May 2015. SPLUMA is a framework act for all spatial planning and land use management legislation in South Africa. It seeks to promote consistency and uniformity in procedures and decision-making in this field. SPLUMA will also assist municipalities to address historical spatial imbalances and the integration of the principles of sustainable development into land use and planning regulatory tools and legislative instruments.</p>	<p>Anglo will apply for rezoning from agricultural use to mining.</p> <p>This is a separate application and will be submitted to the GMLM.</p>
<p><u>Explosives Act, 1956 (Act No. 26 of 1956)</u></p> <p>A licence will be required for any explosive magazines on the premises used for the storage of explosives. The licence is issued by the Chief Inspector of Explosives or his delegate.</p>	<p>Should explosives be stored on site, Anglo will apply for a permit.</p> <p>This is a separate application and will be submitted to the South African Police Service.</p>

Applicable Legislation and Guidelines used to compile the report.	Reference where Applied
<p><u>Hazardous Substances Act, 1973 (Act No. 15 of 1973)</u></p> <p>The Regulations for Hazardous Chemical Substances apply to an employer or a self-employed person who carries out work at a workplace which may expose any person to the intake of hazardous chemical substances at that workplace. Regulations 14 and 15 provide for the labelling, packaging, transportation and storage and the disposal of hazardous chemical substances respectively. These regulations set out specific requirements which form part of an employer’s duty to provide and maintain, as far as reasonably practicable, a working environment that is safe and without risk to the health of his or her employees.</p>	<p>The requirements of the Act and Regulations will be considered when assessing the project impacts and developing the associated mitigation measures in the EIA Phase.</p>
<p><u>Fencing Act, 1963 (Act No. 31 of 1963)</u></p> <p>The Fencing Act was promulgated with the aim of consolidating laws relating to fencing and the fencing of farms and other small holdings. When a landowner erects a fence in a designated area, he / she may insist that the adjacent owner contribute towards the erection or maintenance costs. In areas where contributions are not mandatory / have not been published in the Government Gazette, a contribution can be claimed from the adjacent owner if the fence offers beneficial use for such a person. The Act also makes provision for a mechanism to deal with disputes between adjacent owners regarding a contribution towards erecting or repairing a fence.</p> <p>In terms of the Act, Section 17 requires that any individual erecting a boundary fence may clear any bush along the line of the fence up to 1.5 metres on each side thereof and may remove any tree species that may stand in the immediate line of the fence. It must be noted here that this legislation must be read in conjunction with the applicability of the NEM:BA, the MTPA and any other environmental legal provisions relevant to the protection of flora.</p>	<p>The Proposed Project will require the erection of new, or the upgrading of existing fences to prevent unauthorised access to the proposed mining activities.</p>
Applicable International and National Guidelines and Standards	
<p><u>International Guidelines</u></p> <p>To the extent demanded by possible international funding institutions, or as required by the project proponent to meet best practice, international guidelines will be applied, namely:</p> <p>The International Finance Corporation Performance Standards -</p> <ul style="list-style-type: none"> ❖ Environmental and Social Assessment and Management System; 	<p>The IFC requirements will guide and inform the EIA Phase activities.</p>

Applicable Legislation and Guidelines used to compile the report.	Reference where Applied
<ul style="list-style-type: none"> ❖ Labour and Working Conditions; ❖ Pollution Prevention and Abatement; ❖ Community Health, Safety and Security; ❖ Land Acquisition and Involuntary Resettlement; ❖ Biodiversity Conservation; and ❖ Sustainable Natural Resource Management–Protection of Indigenous Peoples; and Cultural Heritage 	
<p><u>The Equator Principles</u></p> <p>The Equator Principles (EP) are a risk management framework, adopted by financial institutions, for determining, assessing and managing environmental and social risk in projects and are primarily intended to provide a minimum standard for due diligence and monitoring to support responsible risk decision-making.</p> <p>Aspects of the EP include: Project Review and Categorisation; Environmental and Social Assessment, including greenhouse gas emissions; Applicable Environmental and Social Standards; Environmental and Social Management System and Equator Principles Action Plan; Stakeholder Engagement; Grievance Mechanism; Independent Review Project Finance; Financing Covenants; Independent Monitoring and Reporting; and Reporting and Transparency Client Reporting Requirements</p>	<p>The EP requirements will guide and inform the EIA Phase activities.</p>
<p><u>Action Plan of the Environmental Initiative of the New Partnership of Africa’s Development, 2003.</u></p> <p>This Action Plan was established with the aim of encouraging sustainable development, conservation and acceptable use of biodiversity in Africa. It has been recognised that a healthy and productive environment is a prerequisite for the success of New Partnership of Africa’s Development (NEPAD), together with the need to systematically address and sustain ecosystems, biodiversity and wildlife. Six areas have been identified:</p> <ul style="list-style-type: none"> ❖ Combating land degradation, drought and desertification; ❖ Conserving Africa’s wetlands; ❖ Preventing and controlling invasive alien species; ❖ Conservation and sustainable use of coastal and marine resources; ❖ Combating climate change in Africa; and ❖ Cross-border conservation and management of natural resources. 	<p>As the Proposed Project may affect the local biodiversity, this action plan will be considered.</p>

Applicable Legislation and Guidelines used to compile the report.	Reference where Applied
<p><u>Mining and Biodiversity Guideline, 2013.</u></p> <p>This guideline is founded on six fundamental principles:</p> <ul style="list-style-type: none"> ❖ Apply the law; ❖ Use the best available biodiversity information; ❖ Engage relevant stakeholders thoroughly; ❖ Use best practice in EIA to identify, assess and evaluate impacts on biodiversity; ❖ Apply the mitigation hierarchy when planning any mining-related activities and develop robust EMPs; and ❖ Ensure effective implementation of EMPs, including adaptive management. <p>The guideline stipulates the requirements for both utilising and integrating biodiversity information and informants into the assessment of impacts (i.e. this S&EIA process) of mining on biodiversity and ecosystem services and recommends good practice throughout the mining life cycle.</p>	<p>As the Proposed Project may affect the local biodiversity, this guideline document will inform the impact assess process to be completed as part of the EIA Phase.</p>
<p><u>South Africa’s National Biodiversity Strategy and Action Plan</u></p> <p>The National Biodiversity Strategy and Action Plan (NBSAP) sets out a framework and a plan of action for the conservation and sustainable use of South Africa’s biological diversity and the equitable sharing of benefits derived from this use. The NBSAP was prepared by the former Department of Environmental Affairs and Tourism (DEAT), during the period May 2003 to May 2005. The goal of the NBSAP is to conserve and manage terrestrial and aquatic biodiversity to ensure sustainable and equitable benefits to the people of South Africa, now and in the future. In support of this goal, five key strategic objectives (SOs) have been identified, each with a number of outcomes and activities. The schematic below represents the objectives and their interconnection in achieving the NBSAP “Goal”:</p>	<p>The Proposed Project is cognisant of the obligation to protect and preserve the integrity of the environment as well as its biodiversity. Principles of this plan will be taken into consideration during the EIA Phase.</p>

Applicable Legislation and Guidelines used to compile the report.	Reference where Applied
<p style="text-align: center;">GOAL: Conserve and manage terrestrial and aquatic biodiversity to ensure sustainable and equitable benefits to the people of South Africa, now and in the future</p>  <p>Through the NSBA, it is recognised that biodiversity cannot be conserved through protected area networks only. All stakeholders, from private landowners and communities to business and industry must get involved in biodiversity management. NBSAP further identified mining as one of the activities that causes habitat transformation and degradation, and seriously threatens aquatic and terrestrial biodiversity. The strategy therefore promotes the inclusion of biodiversity considerations in mining regulations, guidelines and best practice codes to mitigate negative impacts and encourage sustainable mining practices through partnerships</p>	
<p>Best Practice Guideline Series</p> <p>The Department of Water and Sanitation has developed a number of best practice guidelines for water resource protection in the South African mining industry. The best practice guidelines include international principles and</p>	<p>The guidelines define and document best practices for water and waste management associated with mining and will be considered</p>

Applicable Legislation and Guidelines used to compile the report.	Reference where Applied
<p>approaches towards sustainability. There best practice guidelines include viz.:</p> <ul style="list-style-type: none"> ❖ A water management hierarchy; ❖ General water management strategies, techniques and tools; and ❖ Guidelines for mining related activities and aspects. 	<p>throughout the S&EIA process and reporting.</p>

Table 3-2: Applicable Provincial and Local Policies, Guidelines and By-Laws

Policies, Guidelines and By-Laws	
<p><u>Mpumalanga Parks Board Act (No. 6 of 1995)</u></p> <p>The Act was amended in 2005, and contains the following objectives:</p> <ul style="list-style-type: none"> ❖ To provide effective conservation management of natural resources of the Mpumalanga Province; ❖ To promote the creation of economic and employment opportunities in pursuit of nature conservation and biodiversity; ❖ To ensure that natural systems, biodiversity and ecological functions and processes in the Mpumalanga Province are maintained; ❖ To determine and enforce limits to sustainable utilization of natural resources; ❖ To contribute to the advancement of scientific knowledge, and facilitate technology transfer in respect of conservation; and ❖ Provide information and extension services to the public on conservation management, problem species, legal aspects of conservation and other conservation matters. 	<p>Aspects of this Act are applicable to the Proposed Project. Where applicable, these will be considered throughout the S&EIA process and will be included within the reporting documents.</p>
<p><u>Mpumalanga Conservation Act (No. 10 of 1998)</u></p> <p>This Act was established with an aim to consolidate and amend the laws relating to nature conservation within the Mpumalanga Province and to provide for matters connected therewith. Aspects included in the Act include, but are not limited to, administration of wild animals, administration of fisheries, administration of indigenous plants,</p>	<p>Aspects of this Act are applicable to the Proposed Project. Where applicable, these will be considered throughout the S&EIA process and will be included within the</p>

Policies, Guidelines and By-Laws	
endangered and rare species of fauna and flora (including protected ecosystems, plants and unique communities).	reporting documents.
<p><u>Mpumalanga Conservation Plan</u></p> <p>Mpumalanga Conservation Plan Version 2 (C-Plan 2) database (MPB, 2006), is intended to guide conservation and land-use decisions in support of sustainable development at a strategic level. These have been identified and cognisance has been taken to recognise these within this FSR. The C-Plan 2 maps the distribution of the Provinces known biodiversity into categories according to ecological and biodiversity importance and their contribution to meeting the quantitative targets set for each individual biodiversity feature.</p>	Aspects of this Act are applicable to the Proposed Project. Where applicable, these will be considered throughout the S&EIA process and will be included within the reporting documents.
<p><u>Mpumalanga Parks and Tourism Agency Act (No. 5 of 2005)</u></p> <p>This Act provides for the establishment of the Mpumalanga Tourism and Parks Agency and for the management thereof by a Board; to provide for the sustainable development and improvement of the tourism industry in Mpumalanga; to provide for conservation management of the natural resources of Mpumalanga; to confer powers and functions upon the Agency; to provide for the registration of certain persons and entities directly involved in tourism; to provide for transitional arrangements; and to provide for matters incidental thereto.</p>	Aspects of this Act are applicable to the Proposed Project. Where applicable, these will be considered throughout the S&EIA process and will be included within the reporting documents.
<p><u>Mpumalanga Parks and Tourism Agency Guidelines for Biodiversity Management</u></p> <p>To promote national uniform standards in Environmental Management Programmes the Mpumalanga Tourism and Parks Agency (MTPA) have set minimum standards that need to be conformed to in terms of Biodiversity Assessments for development applications. These guidelines cover flora, fauna, aquatic and wetland systems.</p>	Aspects of this Act are applicable to the Proposed Project. Where applicable, these will be considered throughout the S&EIA process and will be included within the reporting documents.
<p><u>Mpumalanga Economic Growth and Development Path, 2011.</u></p> <p>One of the primary aims of the Mpumalanga Economic Growth and Development Path (MEGDP) is to improve labour absorption within the economy. The path modelled two scenarios to qualify what rate of Economic Growth is desired to significantly reduce unemployment in the Province in the foreseeable future. It was identified that an achievement of 15% would be desired by 2025, this will be done through:</p> <ul style="list-style-type: none"> ❖ Creating 70 600 net jobs annually for the next 15 years, and ❖ By achieving an accelerated and sustained economic growth of about 4.6% annually. 	The Proposed Project will contribute towards employment creation within the Province and will also contribute positively towards economic growth within the region through both its development and operation.

Policies, Guidelines and By-Laws	
<p><u>Gert Sibande District Municipality Final Integrated Development Plan (2016/17)</u></p> <p>Economic Development and job creation is one of the key issues identified by the GSDM in the 2016/2017 IDP. Mining is one of the leading industries in terms of employment in the District.</p> <p>Natural resources make a significant and direct contribution to the District economy in the mining and energy generation sectors, however socio-economic challenges and unemployment still persist.</p>	<p>The Proposed Project will contribute towards employment creation within the District. This contribution would contribute to reducing unemployment and poverty within the District.</p>
<p><u>Govan Mbeki Local Municipality Integrated Development Plan (IDP) (2017 – 2022)</u></p> <p>The primary objective of the Mpumalanga Economic Growth and Development Path (MEGDP) is to foster economic growth that creates jobs, reduce poverty and inequality in the province.</p> <p>The mining sector is one of the main contributors to the Province’s Gross Value Added (GVA) with the major concentration within GMLM.</p> <p>In terms of alignment with the NDP, the ELM seeks to focus on creating jobs in infrastructure development, agriculture, mining and beneficiation, manufacturing, the green economy and tourism.</p>	<p>The Proposed Project seeks to fulfil the objectives of the GMLM IDP by contributing to economic upliftment, creating jobs and reducing poverty. The proposed project is committed to BBBEEE entrepreneurial enhancement.</p> <p>Specialist studies will be undertaken which assess the impacts of the Proposed Project on the surrounding environment. The findings of the specialist reports will be included as part of the EIA Phase.</p> <p>All mitigation measures will be presented in the EIA Report.</p>
<p><u>The Centre for Environmental Rights - Mining and your Community: Know your Environmental Rights</u></p> <p>To exploit a mineral, mining companies must get permission to mine from the government. This is known as EA. To get permission, the mining company is required to assess the environment and learn about the community and consult with everyone who will be affected by the proposed mining. The Guide published in 2014 by the CER discusses what rights communities and individuals who are affected by mining have, and what laws and processes must be followed by a mining company before it can start mining.</p>	<p>This DSR incorporates the recommendations and guidelines listed in the guide when undertaking PP. All PP is implemented according to the requirements listed in the NEMA EIA Regulations of 2017.</p> <p>Refer to Chapter 6 for an overview of Public Participation to be undertaken.</p>

4 The Need and Desirability of the Project

There are obvious direct negative impacts associated with coal mining which includes acid-mine drainage (AMD), other forms of water pollution, the destruction of habitats, related biodiversity, air and noise pollution, and the degradation of landscapes and soil profiles. Yet coal remains central to the South African economy. It is the predominant fuel source for electricity, providing over 90% of the country's energy needs. Without coal-derived electricity, industries such as manufacturing, financial services, and social services would be severely crippled. South Africa, therefore, currently still needs coal to ensure that the economy continues to grow as it diversifies its energy mix into the future.

4.1 National and Regional Perspective

Currently, the 13 coal-fired power stations that exist (with Medupi and Kusile under construction), produce approximately 95% of the electricity generated in South Africa (Pretorius et al., 2015), and until such time as alternative energy generation can be implemented successfully, Eskom is largely dependent on coal mining.

There are traditional trade-offs that exist between economic-social-environmental systems such as represented in Figure 4-1. These systems are inextricably bound. The health of the ecological systems and associated natural capital underpins social and economic growth. These trade-offs have different meanings for different stakeholders. In terms of the Proposed Project, the greatest trade-off that exists is that between Agriculture and Mining. The loss of arable land, the loss of revenue for farmers, and the unemployment of farm workers needs to be taken into consideration. However, in South Africa the coal industry totals more than 12% of the mining workforce – more than 65 000 workers – and it is estimated that more than US\$1 billion in wages are paid to its workforce each year. It has been estimated that the impact of one employee's salary in the mining industry on average feeds and clothes the equivalent of ten people, including children and the elderly. The average farm workers salary would be a lot less.

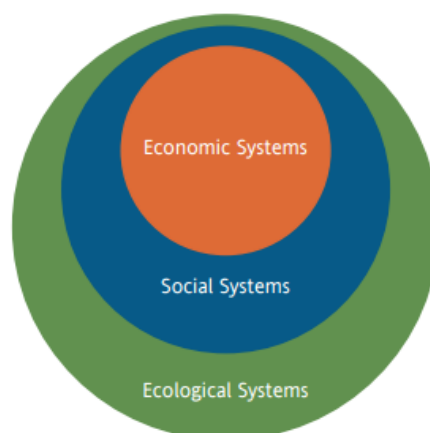


Figure 4-1: The Economic, Social and Environmental systems that are inextricably bound

The following three needs and desirability of the Proposed Project are discussed below:

Need and Desirability #1: The growth in peak electricity demand in South Africa is increasing. The demand for electricity has increased by more than 3% over the last five years, placing immense pressure on Eskom power stations as they are scheduled to operate at their optimum output. Without more coal to feed these power station (which are already running at maximum capacity), South Africa can expect to see more “load shedding” in the future. Productivity is vital for any business, especially small and medium sized enterprises and tourism, and concerns are raised over higher crime rates, fuel costs, food costs and even interest rates. It is expected that Load shedding costs the South African economy between 8 to 10 billion rand a month, understandably as Eskom currently provides 95% of South Africa’s power.

Need and Desirability #2: Thermal coal remains strategically critical to the South African economy with 248 Mtpa of production being used to generate over 90 % of the country’s electricity requirements. South Africa is the world’s 5th largest coal exporter at 77 Mtpa (refer to Figure 4-2). The coal sector is also a major employer and contributes ~3 % to GDP and ~6 % to export revenues, being the third largest export contributor after gold and iron ore. The availability and access of coal in the Mpumalanga Province is becoming increasingly important as coal is expected to be the second largest source of primary energy and the largest source for electricity generation in the next 30 years, during which time Eskom will need about four billion tons of coal.



Figure 4-2: Top 10 Global Coal Exports (2015) Mt.

**Values are based on imports with net exporting represented by a negative value*

The South African domestic market principally comprises the acquisition by Eskom of ~130 Mtpa of thermal coal to fire its fleet of power stations. Sasol mines ~40 Mtpa of coal for gasification and conversion into liquid fuels and ~20 Mtpa of thermal coal is burned by various internal industries including sugar, paper and healthcare. In South Africa, thermal coal is currently responsible for >90 % of the countries’ power generation, with coal-fired power expected to remain the base load power feed to the national energy grid well into 2030 and beyond (refer to Figure 4-3).

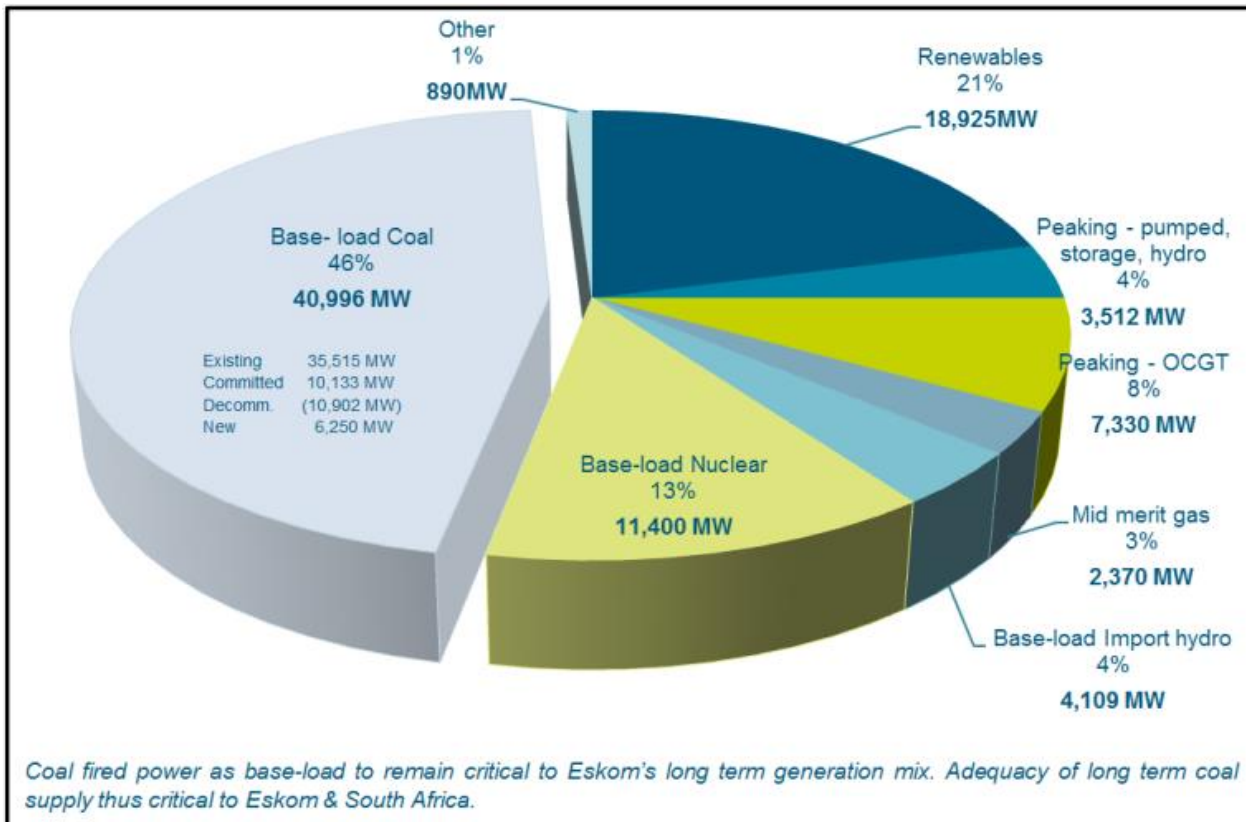


Figure 4-3: Estimated South African Electricity Capacity in 2030

Need and Desirability #3: In terms of implementing the National Development Plan (NDP), the Government of South Africa Government intends to provide policy certainty to encourage long-term investment in mining. The NDP aims to reduce the costs of living and of doing business, resulting in improved consumer and business confidence, rising levels of private investment, and higher growth and employment. A key implement and area of focus for National Policy is to “*Create jobs in infrastructure development, agriculture, mining and beneficiation, manufacturing, the green economy and tourism*”. The Proposed Project will contribute to achieving this objective.

As stated in the GSDM Integrated Development Plan (IDP) (2016/2017), the primary objective of the Mpumalanga Economic Growth and Development Path (MEGDP) is to foster economic growth that creates jobs, reduces poverty and inequality in the province. Although not specifically allocated to the GSDM in the list of projects as contained in the Mpumalanga Growth Path, Mining Supplier Parks are some of the larger scale (regional) projects high on the priority list for Gert Sibande District Municipality.

Leading industries in terms of employment in the district are trade (18.8%), community services (17.0%), mining (14.5%) and agriculture (13.9%). There has been a decrease in the role of agriculture & trade as employer and an increase in the role of community services & mining as employer. One of the GSDM’s strategic Development Initiatives is the implementation of Mining Beneficiation Master Plan.

In addition, a Spatial Development Framework (SDF), which creates guidelines for consideration of spatial and potential development areas, is included in the GSDM IDP. These areas are designated to ensure sustainable growth of already established communities through the development of the municipality into a

mining, industrial and energy producing region. The Proposed Project is located in an area ear-marked for mining and agriculture.

To foster economic growth and create jobs, Leslie 1 will employ approximately up to 685 people during the LOM at full capacity, with most of the labour coming from the GSDM and the surrounding areas.

4.2 Local Perspective

Although coal mining may be controversial, there are several reasons which substantiate the need and desirability for the development of the Proposed Project. Firstly, there is a market demand for coal produced in the Witbank Coalfields, both of 'low-quality' and 'export-grade'. Secondly, the anticipated market prices in the medium and long-term are considered to be favourable for project development. Thirdly, it is anticipated that approximately 4 million tonnes/annum ROM will be mined which will be sold to the local market and as Eskom product, contributing significantly to supplying South Africa with energy and electricity. The production of materials, manufacturing of products, packaging, even the cars on the road each day would at some stage required energy and electricity to operate as intended. Since South Africa has not yet transitioned into a self-sustaining economy, dependent on advanced technology and renewable energy, coal mining is responsible for supplying energy and electricity. Lastly, with approximately 40% of South Africans unemployed, the project is anticipated to create up to 685 direct employment opportunities at full capacity, also having a positive impact on both indirect businesses and employment.

Mining, agriculture and tourism are in constant conflict over the use of land. More often, this results in the loss of high value agricultural land, land featuring high biodiversity or eco-tourism areas. The Leslie 1 project is an underground project, which will result in minimal land use loss, except for the two proposed plant areas.

5 Description of the process followed to reach the proposed preferred site

The five mining areas have been selected by the Anglo technical project team. The mining areas were selected based on the following criteria:

- ❖ The measured, indicated and inferred coal resources belonging to Anglo within the landscape;
- ❖ The practical and least invasive requirements for gaining access to the coal seams from the surface;
- ❖ The initial findings of the prospecting activities;
- ❖ Existing infrastructure within the landscape to be utilised by the project (access roads, railways, existing collieries); and
- ❖ Existing land-uses of the immediate and broader regional setting.

The full project site will be evaluated as part of the EIA process, and a site sensitivity assessment will be carried out at each mining area. The assessment will be conducted using desktop and mapping data to ensure that the mining areas can be suitably positioned within the PR area, and that areas of environmental sensitivity are avoided as far as practically possible. Environmental sensitivities which might be identified and mapped for the project may include the following:

- ❖ **Low Sensitivities:** Low sensitivity areas are likely to be transformed with the risk of significant ecological impact being very low.
 - Grazing areas and pastures
 - Areas of historically cultivated land
 - Areas that are already heavily modified
- ❖ **Medium Sensitivities:** Medium sensitivity areas are likely to contain natural vegetation without any known highly sensitive features.
 - Areas of natural vegetation
 - Protected environments that have been modified
- ❖ **High Sensitivities:** High sensitivity areas are likely to contain some sensitive ecological features or processes that need to be addressed before development can be considered.
 - Sensitive areas that are species specific
 - Non-perennial and perennial pans and watercourses identified under the National Freshwater Ecosystem Priority Area (NFEPA)
 - Farm dams
 - Sensitive areas with landscape and local corridors
- ❖ **Very High Sensitivities:** Very high sensitivity areas are potentially unsuited for development owing to their high ecological importance.
 - Areas identified under the Mpumalanga Conservation Plan (MCP) as “Optimal” or

“Irreplaceable” Critical Biodiversity Areas (CBA).

- Areas identified under the Mpumalanga Conservation Plan (MCP) as “Species Specific” Ecologically Sensitive Areas (ESA).
- Areas identified under the Mpumalanga Biodiversity Sector Plan as “National Park/Nature Reserve” and a “Protected Environment: Natural” Protected Areas (PA).

Following the completion of the specialist studies during the EIA Phase of the project, the infrastructure Plans will be amended, where practical and feasible, based on specialist recommendations to have the least possible negative environmental impacts.

5.1 The Consideration of Alternatives

In accordance with the requirements outlined in Appendix 2 of the EIA 2014 Regulations, as amended, a consideration of reasonable and feasible alternatives, including site and technology alternatives and the “do-nothing” alternative must be undertaken. Each alternative is to be accompanied by a description and comparative assessment of the advantages and disadvantages that such development and activities will pose on the environment and socio-economy. When no feasible and/or reasonable alternatives can be identified and investigated in terms of a comparative assessment during the Scoping Phase, the EIA Report will then not contain a section with alternatives.

The EIA 2014 Regulations, as amended, define alternatives as the different means of meeting the general purpose and requirements of the activity, which may include alternatives to:

- ❖ The property on which or location where it is proposed to undertake the activity;
- ❖ The type of activity to be undertaken;
- ❖ The design or layout of the activity;
- ❖ The technology to be used in the activity;
- ❖ The operational aspects of the activity; and
- ❖ The option of not implementing the activity.

Although a collection of alternatives may exist for the Proposed Project, only feasible alternatives have been considered for this DSR and are discussed in greater detail below. Kongiwe will strive to seek alternatives that maximise efficient and sustainable resource utilisation and minimise environmental impacts.

5.1.1 The Property on which or location where it is proposed to undertake the activity

No alternatives have been investigated in terms of location of the Proposed Project. Anglo currently holds the PR to the areas under investigation and the geological formation of the area is controlled by the current weathering surface. The ROM coal expected to be extracted has been deposited as ‘multiple Seams’ with the development of five major Seam horizons, which may in places be composite Seams. The geological structure

has been interpreted based on borehole intersections, both historical and from Anglo’s phased drilling programme, and with reference to the published surface geological map. There is therefore no alternative mining site.

5.1.2 The Type of activity to be undertaken

5.1.2.1 Alternative means of Power Generation in Mpumalanga Province¹¹

Coal mining is a form of Energy Generation and forms part of the Energy Sector. In terms of alternatives investigated for energy generation, two alternatives are present, these are “Green” energy generation and energy generated from the mining of coal. Only one option exists for the Generation of Energy for the Proposed Project and that is **Coal Mining**.

Renewable energy generation was not considered as an alternative for this project as it is not deemed practical, feasible or reasonable within the context of the Proposed Project. Although the area considered for coal mining may be viable for renewable energy generation, Anglo does not operate within the Renewable Energy Sector, and has a history within the coal mining sector. Lastly, the development of a renewable energy project would result in the sterilisation of the existing coal resource.

The table below describes the advantages and disadvantages of coal mining in the context of the Proposed Project:

Table 5-1 The advantages and disadvantages of alternative energy generation options:

Option	Advantage	Disadvantage
Energy Generated from Coal Mining (Preferred Option)	<ul style="list-style-type: none"> ❖ Continuous, Predictable, Reliable Source of Power ❖ Lower Capital Investment ❖ Low Cost/Inexpensive energy source ❖ High Load Factor ❖ Large established industrial base ❖ Large amounts of jobs are created, with the potential for “own business” opportunities 	<ul style="list-style-type: none"> ❖ Greenhouse Gas Emissions and emissions of harmful substances ❖ Health and Safety impacts ❖ Direct and Indirect Environmental Degradation

5.1.3 The Design and Layout of the Activity

The normal objective of any design is to ensure that the size of the project is economically viable within the given constraints of reserve size, CAPEX requirements, payback period and transport constraints. The initial aim of the Proposed Project was to determine the best possible size for the whole operation from the mine areas to the market, and an important driver during mine design and layout was to make optimal use of the reserve, i.e. to get maximum mine life out of the reserve. During the specialist reporting period of the EIA

¹¹ Information extracted from City Press: Fin24. Written by Sizwe Yende. Available online at: <http://www.fin24.com/Economy/mpumalanga-aims-to-go-green-by-2030-20161125>

Phase, specialist investigations will critically, and objectively, assess the direct, indirect and cumulative impacts of the mining activities at each mine area. Their reports will highlighted measures to mitigate the potential negative impacts, which will be incorporated to produce the alternative layouts

Underground mining impacts do not affect the surface as significantly as open pit mining, and it is concluded that such mining would only impact on the wetlands and watercourses in the event that there will be infrastructure or access points on the surface.

No alternatives have been identified for Proposed Project. The table below indicates the advantages and disadvantages of each alternative considered at for the mining areas.

Table 5-2: Advantages and disadvantages of each alternative considered.

Option	Advantage	Disadvantage
Open mine the entire coal reserve at Mine Area	<ul style="list-style-type: none"> ❖ All the coal reserve will be mined out, which makes this option the best in terms of mining yield. ❖ Decant of mine water can be better managed 	<ul style="list-style-type: none"> ❖ High-Yield agricultural land and potential sensitive sites within the coal reserve area will be severely impacted or destroyed.
Use underground mining (Preferred Option)	<ul style="list-style-type: none"> ❖ Agricultural areas will be conserved by mining underneath. 	<ul style="list-style-type: none"> ❖ Mine water decant challenges ❖ Portion of coal reserve will not be mined

5.1.4 The Technology to be used in the Activity

5.1.4.1 Coal Extraction Methods

The nature of the coal seams determines the preferred mining method. The location of the feasible coal determines the location of the mining operation. These two factors limit mining alternatives that are available. The depth of coal within the 5 Mine Areas lends itself to underground mining. The No. 2 seam is considered the most economical seam, and at certain mine areas can be extracted as ROM without processing. The tonnage of the resource and the LOM indicates the optimal mining rate and this in turn determines the mining method. Dragline operations or large-scale mining will not be feasible. The alternative extraction methods that exist are:

❖ **Open Pit Mining:**

- Truck and Shovel
- Dragline

❖ **Underground Mining:**

- Bord and Pillar by continuous miner (Preferred Option)
- Longwall

Table 5-3: The advantages and disadvantages of alternative mining extraction technology options

Option	Advantage	Disadvantage
Truck and Shovel (not preferred)	<ul style="list-style-type: none"> ❖ Most appropriate for bulk extraction of variable coal seams. ❖ Commonly used in South Africa mining. ❖ Employment opportunities. ❖ Lower operating costs ❖ Can exploit small and remote coal reserves economically ❖ Reduced working area per ton of capacity ❖ Less technical support needed ❖ Ease of linking the mining system to new transportation or extraction technologies 	<ul style="list-style-type: none"> ❖ Increase in soil erosion resulting from the removal of vegetation. ❖ Increased dust generation due to open pit blasting and operations. ❖ Increased noise generation due to construction and operational vehicles. ❖ Increased rehabilitation costs. ❖ Decrease in surface water runoff due to open pit capturing rain water. ❖ Potential formation of groundwater cone of depression. ❖ Potential for acid mine drainage to due contamination of groundwater and surface water.
Dragline (not preferred)	<ul style="list-style-type: none"> ❖ Employment Opportunities ❖ Productivity increases ❖ Higher extraction rates 	<ul style="list-style-type: none"> ❖ Capital cost ❖ Burden units not thick enough to warrant usage. ❖ Increase in soil erosion resulting from the removal of vegetation. ❖ Increased dust generation due to open pit blasting and operations. ❖ Increased noise generation due to construction and operational vehicles. ❖ Increased rehabilitation costs. ❖ Decrease in surface water runoff due to open pit capturing rain water. ❖ Potential formation of groundwater cone of depression. ❖ Potential for acid mine drainage to due contamination of groundwater and surface water.
Bord and Pillar by continuous miner (Preferred)	<ul style="list-style-type: none"> ❖ Fast initiation of mining activities ❖ Lower cost ❖ High degree of flexibility (allows variable thickness in the ore); method easily modifiable; may operate simultaneously on multiple levels 	<ul style="list-style-type: none"> ❖ Requires ongoing maintenance of the roof and eventually the pillars. The tension in the open spaces increases with depth. ❖ Significant capital investment for extensive mechanization. ❖ Loss of ore in pillars. ❖ May be difficult to achieve good ventilation to dilute contaminants in due to low air velocity panel in large open spaces.

Option	Advantage	Disadvantage
		❖ Requires good technical and engineering support
Longwall (not preferred)	<ul style="list-style-type: none"> ❖ Employment opportunities ❖ Productivity increases ❖ Higher extraction rates 	<ul style="list-style-type: none"> ❖ Capital cost ❖ Not appropriate for small underground deposits ❖ Surface subsidence, which may considerably alter the landscape above the mine which can damage natural or man-made structures or features, ❖ Deterioration in groundwater quality, as it can become more brackish with increased sulfate levels. ❖ Disruption of ecosystems and loss of stream and wetland functions.

5.1.5 The Operational aspects of the Activity

The alternative activities considered during operation will be assessed by specialists. Each alternative activity option considered will be discussed in terms of their advantages and disadvantages.

5.1.5.1 Type of Beneficiation

The following alternatives were identified with regards to the options for the type of beneficiation to be utilised. The preferred option would be Single Stage washing. The following alternatives were investigated:

- ❖ De-Stoning
- ❖ Dry Separation
- ❖ Single Stage Wash (Preferred Option)
- ❖ Multiple Stage Wash

Table 5-4: The advantages and disadvantages of alternative beneficiation options

Option	Advantage	Disadvantage
De-Stoning	❖ None	<ul style="list-style-type: none"> ❖ Sulphur content too high and Net CV too low. ❖ Increased dust and noise impacts.
Dry Separation	❖ Reduced water consumption	❖ Comparatively inefficient
Single Stage Wash (Preferred Option)	<ul style="list-style-type: none"> ❖ Provides a reliable product ❖ Reduced dust and noise impacts 	<ul style="list-style-type: none"> ❖ Higher cost ❖ Increased water consumption
Multiple Stage Wash	❖ Provided a reliable product	❖ Higher cost

Option	Advantage	Disadvantage
	❖ Reduced dust and noise impacts	❖ Products may not be obtainable due to size ❖ Increased water consumption comparatively

5.1.5.2 Processing Plant options

The following alternatives were identified with regards to the options for the processing plant to be utilised. The preferred option would be an onsite stationary process plant. The following alternatives were investigated:

- ❖ Option 1: Onsite mobile processing plant
- ❖ Option 2: Onsite stationary process plant (preferred option)

Table 5-5: The advantages and disadvantages of alternative processing plant options

Option	Advantage	Disadvantage
Onsite mobile processing plant	<ul style="list-style-type: none"> ❖ Lower Environmental Impacts ❖ Can service more than one Mine Area ❖ More jobs are created as transportation would be required 	❖ Higher capital costs
Onsite stationary process plant	❖ Coal beneficiation would be more efficient as less transportation would be required.	<ul style="list-style-type: none"> ❖ More equipment is required ❖ The plant will require a greater footprint ❖ Greater environmental impacts

5.1.5.3 Transport options

The following alternatives were identified with regards to the options for the transportation of coal:

- ❖ Via haul truck to the final destination (preferred option);
- ❖ Via overland conveyor to the final destination; and
- ❖ Via railway.

The advantages and disadvantages of each alternative are discussed:

Table 5-6: The advantages and disadvantages of alternative transport options

Option	Advantage	Disadvantage
Via Haul Truck (preferred)	<ul style="list-style-type: none"> ❖ Opportunities for haul truck drivers to own and operate their own trucks ❖ Job stimulation, upskilling ❖ More financially viable in the initial stages of mining 	<ul style="list-style-type: none"> ❖ Traffic Impacts ❖ Emissions Impacts ❖ Greater maintenance requirements

Option	Advantage	Disadvantage
Via Overland Conveyor	<ul style="list-style-type: none"> ❖ Larger quantities of coal can be transported ❖ Less negative environmental and road impacts 	<ul style="list-style-type: none"> ❖ Less job stimulation and potential for entrepreneurship. ❖ Costlier in the long term as the quantity of coal to be transported is not large enough to substantiate the costs involved.
Via Railway	<ul style="list-style-type: none"> ❖ Larger quantities of coal can be transported ❖ Less negative environmental and road impacts 	<ul style="list-style-type: none"> ❖ Less job stimulation and potential for entrepreneurship.

5.1.6 The “No-Go” option

The Option of the project not proceeding would mean that the environmental and social status would remain the same as current. This implies that both negative and positive impacts would not take place. As such, negative impacts on biodiversity, water resources, air quality land use etc. would not transpire, but also that the positive impacts such as economic development, employment creation, skills development and poverty alleviation would not occur. The “No-Go” Option also assumes the continuation of the current land use of the proposed mining area, implying the absence of any mining and associated infrastructures.

The main land-uses occurring at mine area are grazing and agriculture. If the Proposed Project had to proceed, there would be some loss of arable agricultural land, and possibly the loss of farm worker livelihood, economic and physical displacement of people residing on these farms, an increased health and safety risk etc.

The no-mining option will result in the continuation of such land use. Although economically viable, the continuation of agriculture will not provide the level of economic growth to the area that mining would offer, such as increased employment of residents in the area, greater economic input into the area allowing better development of the towns and surrounding areas, and greater socio-economic stability in the area. The mine will also promote sustainable local economic development, to give communities the skills required to remain economically viable and successful after mine closure. Moreover, not mining the available coal will prevent the use of a valuable coal reserve for the generation of electricity at a time where a societal backlash against the inability to generate enough electricity to sustain economic growth exists.

If the project were not to proceed, the expected revenue, economic activity, skills development, job opportunities, and the continued upliftment of the surrounding communities as a whole would not be realised. Furthermore, the coal reserves at the project area would remain unmined and the continued supply of coal to the local and national markets, and subsequent contribution to local, provincial and national economy would not be realised.

6 Public Participation

This Public Participation process (PPP) was developed to ensure compliance with all environmental regulatory requirements and to provide I&APs with an opportunity to evaluate the proposed project, provide their inputs, and receive feedback from the project team, specialists and applicant.

This chapter will discuss key aspects regarding the Public Participation Process (PPP) that was undertaken for the proposed Leslie 1 project. The report will discuss the following items:

- ❖ The Objective of the PPP;
- ❖ The process of identifying stakeholders and capturing them in the project database;
- ❖ The status of identifying land claims relevant to the Proposed Project;
- ❖ Materials for undertaking the PPP;
- ❖ The Draft Scoping consultation process;
- ❖ The Final Scoping consultation process;
- ❖ A summary of activities, which have been undertaken as part of the Scoping Phase;
- ❖ A summary of activities to be undertaken as part of the EIA Phase; and
- ❖ Public Participation to be conducted during the decision-making Phase.

6.1 Public Participation Process Objectives

The PPP objectives are to:

- ❖ Ensure that I&APs are informed about the Proposed Project;
- ❖ Provide I&APs the opportunity to engage and provide comment;
- ❖ Draw on local knowledge by identifying environmental and social concerns associated with the Proposed Project;
- ❖ Involve I&APs in identifying ways in which concerns can be addressed;
- ❖ Verify that stakeholder comments have been recorded; and
- ❖ Comply with the legal requirements.

The PPP has four phases of consultation with I&APs during the environmental regulatory process. These are presented in Table 6-1 below:

Table 6-1: Activities undertaken and to be undertaken during the public participation process

PROJECT PHASE	ACTIVITIES UNDERTAKEN
Pre-scoping Phase	❖ Identification of stakeholders;

PROJECT PHASE	ACTIVITIES UNDERTAKEN
	<ul style="list-style-type: none"> ❖ Providing project information to I&APs; ❖ Consultation with I&APs; and ❖ Obtaining comments, suggestions and concerns from I&APs.
Scoping Phase	<ul style="list-style-type: none"> ❖ Distribution and placement of project announcement materials; ❖ Updating of the stakeholder database; ❖ Making the Scoping Report available for public comment; ❖ Providing I&APs with further details of the Proposed Project and associated specialist studies; ❖ Consultation with I&APs; ❖ Obtaining further comments, suggestions and concerns from I&APs; and ❖ Informing specialists and the proponent of I&AP comments.
EIA Phase	<ul style="list-style-type: none"> ❖ Provide feedback about the specialist studies conducted and mitigation measures proposed by means of consultation with I&APs; ❖ Make the relevant environmental reports available for public comment; ❖ Consult with I&APs; ❖ Provide opportunity for I&APs to comment on specialist findings, impacts assessments and recommendations; ❖ Verify that comments raised by I&APs have been accurately recorded; and ❖ Inform specialists and the proponent of I&AP comments.
Decision Making Phase	<ul style="list-style-type: none"> ❖ Once the competent authority has come to a decision regarding the authorisation of the project, all registered I&APs will be notified of the decision made and the appeal process will be explained.

6.2 Identification of Stakeholders

To ensure representation of stakeholders, the methods below were utilised to develop a comprehensive stakeholder database.

- ❖ WinDeed searches were undertaken for farm portions in and around the project site to verify land ownership and obtain contact details;
- ❖ Desktop and online research;
- ❖ Stakeholder networking and discussions to source additional stakeholder details:
 - This entailed telephonic consultation and meetings with landowners, Local and Provincial Government and community representatives; and
- ❖ Site visits were also undertaken to identify I&APs for which no contact details could be obtained.

Stakeholders identified who are affected by or interested in the Proposed Project are grouped into the following broad categories:

- ❖ Government: National, Provincial, District and Local Authorities;
- ❖ Parastatals: Various semi-Government entities, Organs of State;
- ❖ Landowners: Directly or indirectly affected and adjacent;

- ❖ Land occupiers: Directly or indirectly affected and adjacent;
- ❖ Surrounding communities;
- ❖ Agriculture and Water Sectors: Farmers' associations, entities responsible for water management and/or regulation;
- ❖ Non-Governmental Organisations (NGOs): Environmental organisations, community-based organisations; and
- ❖ Business and industry: small to medium enterprises, mines, industrial and large business organisations.

A stakeholder database has been compiled and will be updated throughout the environmental regulatory process (**refer to Appendix C1**).

6.3 Land Claims

A formal enquiry, which contained a list of all the directly and indirectly affected land portions for the project, was submitted via letter to Mr Sam Nkosi, Chief Director: Land Restitution Support from the Mpumalanga Department Rural development and Land Reform (DRDLR), Land Claims Commission, on Friday, 23 February 2018 (refer to **Appendix C2**). Feedback was received by means of a letter dated 23 March 2018 (refer to **Appendix C2**) which indicated that there are land claims on some of the directly affected properties. The properties/farms listed below have land claims submitted, please note that none of these land claims have been finalised.

- ❖ Watersvalshoek 350 IR, Portions 4, 13, 15 (RE), 16-21, 27, 28, 33, 34, 51, 52, 63, Re/11, Re/12 and Re/9;
- ❖ Brakfontein 310 IR, Portions 3, 12, 13, 15, 18, 19, 20 and 21; and
- ❖ Weltevreden 307 IR, Portions 3,4/RE, 5, 7-9, 12,13,15-18 and RE.

6.4 Public Participation Materials

Considering the legislative requirements and good practice, the following documents below have been developed and distributed to stakeholders. The various PPP materials which were used during the Pre-Scoping and Scoping Phases are included as appendices to this report.

Background Information Document: The BID (**Appendix C3**) provides a detailed description of the full project area, regional setting map, EIA process, specialist studies to be undertaken, PPP and relevant contact details. The BID has also been translated into Afrikaans and isiZulu.

Newspaper advertisements: A newspaper advert (**Appendix C4**) was placed in the Daily Sun, which is a local newspaper in the project area, on Tuesday, 13 March 2018. The advert included a brief project description,

information about the required legislation, the competent authorities and details of the appointed EAP. The advertisement set out the details of the Public Meeting. The venues where the DSR could be reviewed was provided in the advertisement. In addition to the above, the advertisement invited stakeholders to register formally as I&APs.

Site notice: Similar to the advertisement, the site notice provided an overview of the Proposed Project and highlighted the applicable legislation for the EIA process. It stipulated the competent authority, PPP and where relevant information could be obtained from. Stakeholders were invited to register formally as I&APs. Site notices were placed at prominent places in and around the project area. See **Appendix C5** for the site notice, and site notice report.

Notification Letter with a Comment and Registration Form: A process notification letter was sent which contained information about the proposed Leslie 1 project, applicable legislation and competent authorities. The letter also shared details of the public meeting to be held at the Tholulwazi Thusong Service Centre Boardroom, 307 Norda Street Leandra / Leslie on Wednesday, 18 April 2018 and invited stakeholders to register formally as I&APs. A Comment and Registration Form was also provided for stakeholders to use to formally register as I&APs or to submit comments. A second announcement letter was emailed on Wednesday 28 March 2018, to remind stakeholders of the availability of the Draft Scoping Report public review period and the public meeting (**Appendix C6**).

Telephonic discussions: Stakeholders were consulted by means of telephonic discussions. Furthermore, these discussions aided with the process of invitation to the Public Meeting.

Pre-scoping consultation: Pre-scoping consultation was aimed at providing stakeholders with an overview of the proposed Leslie 1 Project and to obtain initial comments which informed specialist studies and for project planning. This was done by means of a Background Information Document and a map showing the properties. Consultation with stakeholders was focused on one-on-one meetings and Focus Group meetings which were held with authorities and landowners along with telephonic consultation. Refer to **Appendix C7** for a list of meetings and consultations that were under taken. All comments raised by stakeholders during these meetings are captured in the Comments and Responses Report (CRR). Responses to comments will be provided in line with the overall project scope and available information.

6.5 Draft Scoping Consultation

The aim of consultation during the Scoping Phase is focused on the formal EIA process, specialist impact studies terms of reference and addressing stakeholder comments already submitted. A Public Meeting has been held on Wednesday, 18 April 2018 at the Tholulwazi Thusong Service Centre Boardroom, 307 Norda Street Leandra / Leslie. The purpose of the meeting was to facilitate stakeholder dialogue between the project team and landowners, authorities, NGOs and communities. The minutes of the public meeting are included in **Appendix C8**.



Figure 6-1: Public meeting held at the Tholulwazi Thusong Service Centre Boardroom, Leandra / Leslie

All comments raised by stakeholders were captured in the CRR **Appendix C9**. Stakeholder comments will be closely considered and addressed, where applicable, by the project team to ensure that the scope for specialist studies to be undertaken is well defined. Responses will be provided to the comments raised by stakeholders and are included in the CRR throughout the PPP.

Presentations: A Power Point presentation was used at the public meeting as well as at the landowners meeting to present the project. CDs containing the DSR and comment sheets were made available at the public meeting. The minutes of the meeting and the presentation are included in (**Appendix C8**) of the Final Scoping Report.

The presentations at the meeting covered the following aspects:

- ❖ Introductions
- ❖ Project Description
- ❖ Environmental Authorisations
- ❖ Specialist Studies

- ❖ Questions & answers
- ❖ Closing (followed by tea and snacks).

A separate Landowners meeting will be held on 10 May 2018 with all directly affected and adjacent landowners/occupiers, the same format as the public meeting will be followed.

The DSR was made available to stakeholders on the Kongiwe Environmental website and in public places for a 30-day comment period from 28 March 2018 to 02 May 2018. Notification of the availability of the documentation for review was distributed on 22 March 2018 and a second announcement was published on Wednesday, 28 March 2018. With the submission of the Final Scoping Report, Stakeholders will have the opportunity to verify that their comments were captured during the Draft Scoping Report phase and to review responses provided by the project team as the final scoping document will be placed on the Kongiwe website.

Table 6-2 below provides details of the activities that formed part of the Draft Scoping Phase.

Table 6-2: Summary of PP activities during the Draft Scoping Phase

Activity	Details	Reference in report
Pre-scoping Phase		
Identification of stakeholders	Stakeholders, with associated details, were identified by means of WinDeed searches, stakeholder networking and research for the compilation of a stakeholder database.	Appendix C1 Stakeholder database
Identification of land claims	<p>A formal enquiry, which contained a list of all the directly and indirectly affected land portions for the project, was submitted via letter to Mr Sam Nkosi, Chief Director: Land Restitution Support from the Mpumalanga Department Rural development and Land Reform (DRDLR), Land Claims Commission, on Friday, 23 February 2018 (refer to Appendix C2). Feedback was received by means of a letter dated 23 March 2018 (refer to Appendix C2) which indicated that there are land claims on some of the directly affected properties. The properties/farms listed below have land claims, please note that none of these land claims have been finalised.</p> <ul style="list-style-type: none"> ❖ Watersvalshoek 350 IR, Portions 4, 13, 15 (RE), 16-21, 27, 28, 33, 34, 51, 52, 63, Re/11, Re/12 and Re/9 ❖ Brakfontein 310 IR, Portions 3, 12, 13, 15, 18, 19, 20 and 21 ❖ Weltevreden 307 IR, Portions 3,4/RE, 5, 7-9, 12,13,15-18 and RE 	Appendix C2 Land claims letters

Activity	Details	Reference in report
Development of the Background Information Document	The BID was developed and was mailed to the stakeholder database and distributed at stakeholder meetings.	Appendix C3 BID
Placing of media advertisements	An advertisement was placed in the Daily Sun on Tuesday, 13 March 2018.	Appendix C4 Advertisements
Placing of site notices	<p>Site notices were put up within the Proposed Project site and at publicly accessible venues within proximity to the project area, these were placed on Monday, 19 March 2018. A copy of a Site Notice was also placed at the</p> <ul style="list-style-type: none"> ❖ Leandra Public Library ❖ Lebohang Public Library ❖ Devon Public Library <p>A site notice placement report and map have been developed, indicating the exact locations where site notices were placed, with photos and GPS coordinates.</p>	Appendix C5 Site notice report and placement map
Announcement of the project and Draft Scoping Report	<p>The announcement letter was emailed to the full database on 22 March 2018 and then a second announcement to remind stakeholders on Wednesday, 28 March 2018.</p> <p>The Draft Scoping Report and the BID were made available on Kongiwe's website. http://www.kongiwe.co.za/publications-view/public-documents/</p>	Appendix C6 Announcement Letter Appendix C3 BID
Stakeholder meetings	<p>One-on-one meetings and Focus Group meetings took place with directly and indirectly affected landowners and key authorities.</p> <p>A high-level overview of the Proposed Project was discussed, and stakeholder inputs captured. All stakeholder comments were captured and responded to in the CRR.</p>	Appendix C8 List of meetings & Meeting Minutes Appendix C9 Comment and Response Report
Public Meeting	A Public meeting was held with stakeholders from 10:00 -13:00 at the Tholulwazi Thusong Service Centre Boardroom, 307 Norda Street Leandra / Leslie on Wednesday, 18 April 2018. Minutes of this meeting have been distributed to everyone who attended the meeting.	Appendix C8 Minutes from meeting
Landowners Meeting	A Landowners meeting will be held with directly and adjacent landowners on 10 May 2018.	To be included in the DEIR/EMPR

6.6 Consultation Undertaken as Part of the Final Scoping Phase

The aim of consultation during the Final Scoping Phase was focused on the formal EIA process, specialist impact studies terms of reference and addressing stakeholder comments already submitted.

Notification of the availability of the documentation for review was distributed on 09 May 2018 (Appendix C6). In the submission of the FSR, Stakeholders will have the opportunity to verify that their comments were captured during the draft Scoping phase and to review responses provided by the project team.

Table 6-3 below illustrates the PPP activities that were undertaken as part of the Final Scoping Phase of the project:

Table 6-3: Summary of PPP activities that will be undertaken during the Final Scoping Phase

Activity	Details
Update of stakeholder information	The stakeholder database was updated with new I&APs who formally registered, attended stakeholder meetings or submitted comments.
Placement of the FSR	The Final Scoping Report was made available on the Kongiwe Environmental website http://www.kongiwe.co.za/publications-view/public-documents/ from 09 May 2018.
Announcement of the FSR	A notification letter announcing the availability of the Final Scoping Report for comment was emailed to the full stakeholder database on 09 May 2018.

6.7 Consultation with Stakeholders during the EIA Phase

Consultation with stakeholders during the EIA Phase will revolve around I&APs providing comments on specialist study findings, recommendations and mitigation measures proposed. These studies and recommendations will be included as part of the Draft EIA/EMP Report. A public meeting will also be held to present the findings of the specialist studies and to get comments from I&APs. All stakeholders will be informed of the details of the public meeting during the Impact Assessment Phase.

7 The Baseline Environment

Data in this section was obtained from the Leslie 2 EIA/EMPR (Shangoni Management Services (Pty) Ltd, 2017), as well as from the Springboklaagte EIA/EMPR (Jaco-K Consulting, 2014). Leslie 1A shares its northern boundary with Springboklaagte, while Leslie 2 is situated directly west of Leandra, on the western boundary of Leslie 1C, and therefore the baseline data from both reports can be considered to be similar to that of Leslie 1.

7.1 Climate

7.1.1 Temperature

The average monthly summer (approximately 18°C) and winter (approximately 10°C) temperatures in the MM5 data set for 2013 to 2015 (Figure 7-1) correlates with the monthly temperatures measured at the Leandra ambient air quality station (Figure 7-2). It must be noted that a few months data is missing for Leandra’s ambient air quality station and therefore there is a gap in the recorded temperatures.

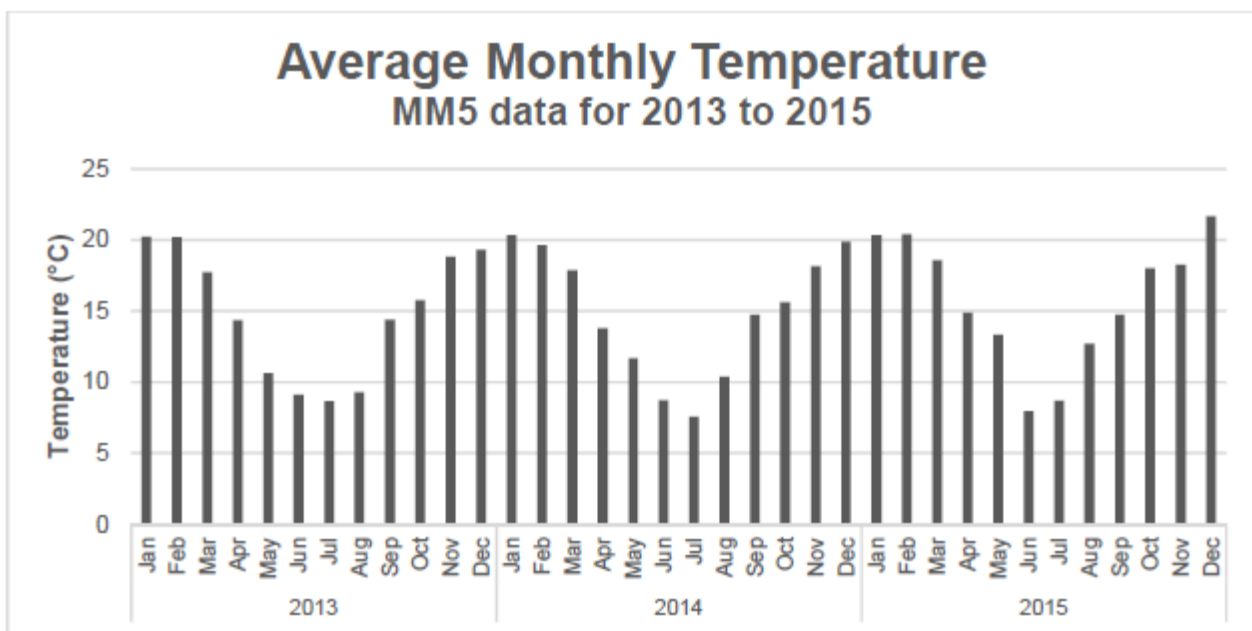


Figure 7-1: Average monthly temperature (MM5 data from 2013 to 2015).

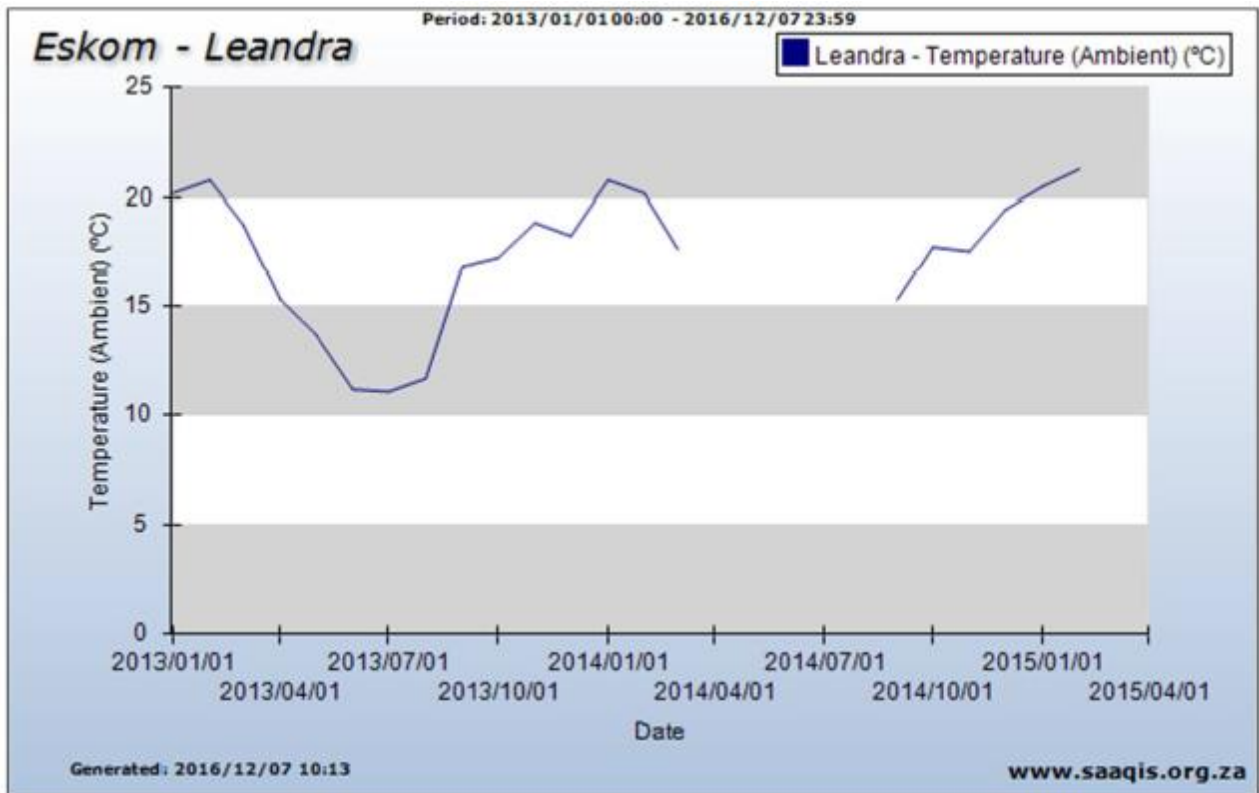


Figure 7-2: Average monthly temperature (Leandra ambient air quality station).

7.1.2 Precipitation and Evaporation

Precipitation in the area is highly seasonal with a mean annual rainfall of 723.0 mm according to the rainfall data from the DWS hydrological datasets collected at station B1E004. Most of the rainfall occurs during the summer months with the majority of rain events between September and April. The region receives the highest rainfall in December and the lowest in July. Evaporation is measured at station B1E004 for an S class pan located approximately 40 km from the site. Table 7-1 below lists the rainfall and evaporation recordings.

Table 7-1: Average annual precipitation and evaporation

Date	Rainfall (mm)	Evaporation (mm)
January	108.7	207.1
February	81.5	178.3
March	80.9	165.6
April	38.0	135.7
May	11.1	122.1
June	8.7	91.5
July	2.2	105.1
August	9.0	141.1
September	23.7	128.8
October	97.6	198.4
November	122.3	202.4

Date	Rainfall (mm)	Evaporation (mm)
December	134.4	204.6
Annual	723.0	2 067.2

7.1.3 Extreme weather conditions

According to Mucina & Rutherford, 2006, there is frequent occurrence of frost and large thermic diurnal differences especially in autumn and spring in the Soweto Highveld Grassland area.

7.1.4 Wind direction and speed

From the MM5 data it can be derived that the predominant wind field throughout the years 2013 to 2015 is from a north and north northwesterly direction (0° to 357°). During the day time the wind blows mainly from a north northwesterly (342° to 357°) direction and during night time the wind blows mainly from a north northeasterly (19° to 29°) direction. The wind rose from Kendall Power station for the period 2004-2007, corroborates the MM5 data (Figure 7-3).

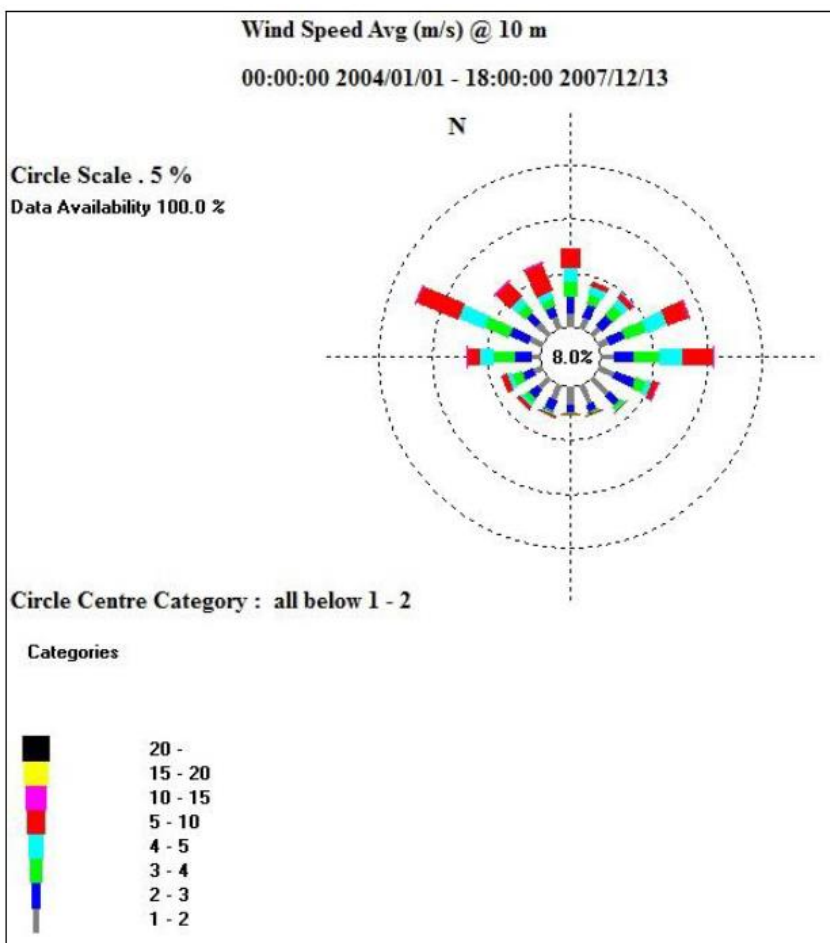


Figure 7-3: Kendal Power station wind speed and direction information.

7.2 Topography

The topography of the area associated with the proposed location of the Leslie 1 mining operation is flat and gently undulating. Elevations range between 1 580 mamsl and 1 680 mamsl. The undulating topography is largely associated with outcroppings of a dolerite sill, which is more resistant to weathering compared to the adjacent sandstone (Ecca Group). Where the dolerite and the sandstones intersect, springs and resultant streams/rivers occasionally develop.

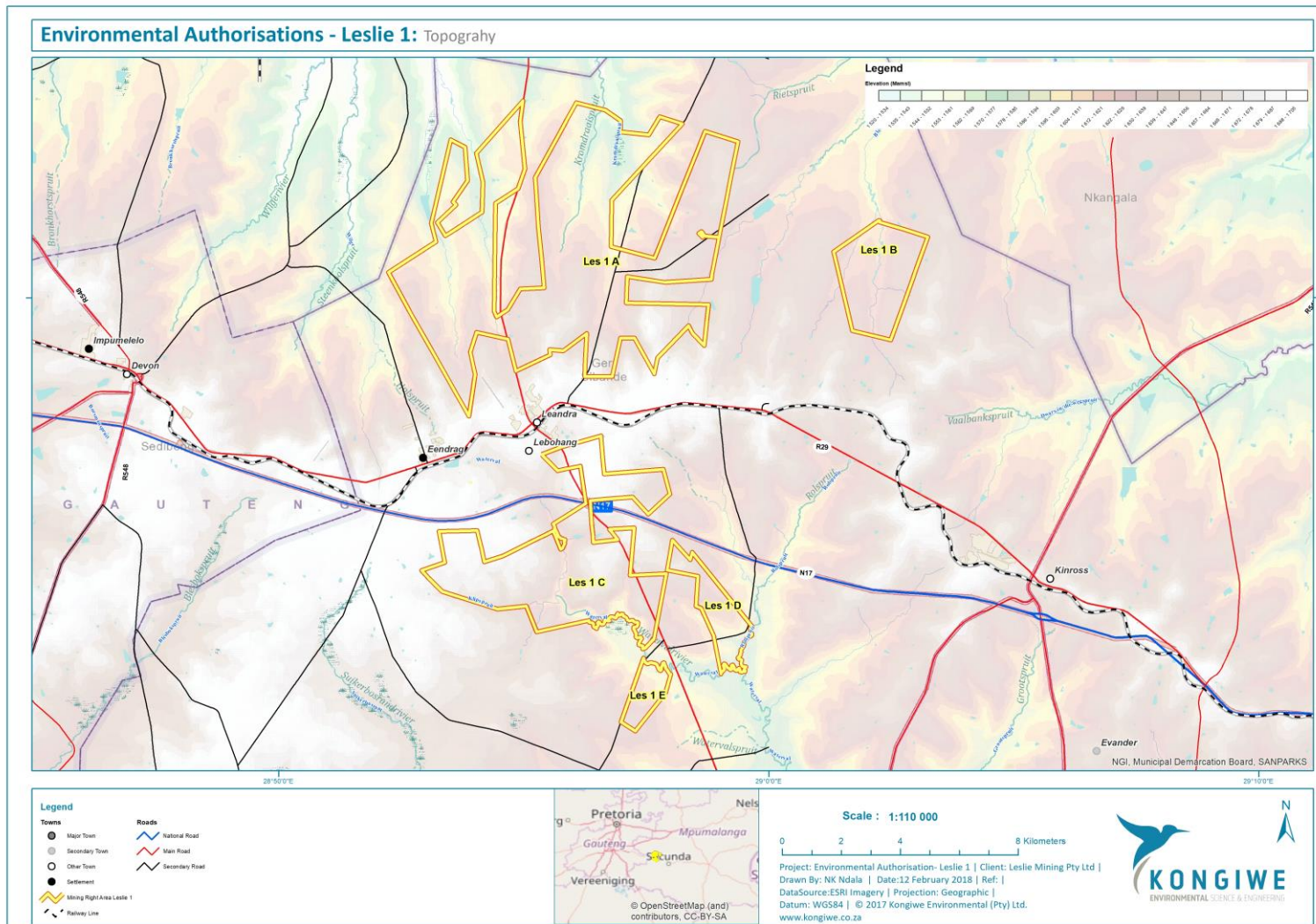


Figure 7-4: The relief map for the project area.

7.3 Geology

All of the known coal deposits in South Africa are hosted in sedimentary rocks of the Karoo Basin, a large retroforeland basin which developed on the Kaapvaal Craton and filled between the Late Carboniferous and Middle Jurassic periods.

The Karoo Supergroup is lithostratigraphically subdivided into the Dwyka, Ecca, and Beaufort Groups, succeeded by the Molteno, Elliot, and Clarens Formations, and the Drakensburg Formation (S.A.C.S., 1980). The coal ranges in age from Early Permian (Ecca Group) through to Late Triassic (Molteno Formation) and are predominantly bituminous to anthracite in rank. This is a classification in terms of metamorphism under the influence of temperature and pressure.

Based on variations in sedimentation, origin, formation, distribution, and quality of the coal seams, 19 coalfields are defined within the Karoo Basin. These variations are in turn attributed to specific conditions of deposition and the local tectonic history characteristic of each area.

The coal bearing Ecca Group has been divided into three subunits: the Pietermaritzburg, Vryheid, and Volksrust Formations. Within the main Karoo Basin of South Africa, the primary economically important coal seams occur in the Vryheid Formation of the Ecca Group.

The Vryheid Formation rests nonconformably on sedimentary rocks of the Dwyka Group, which are interpreted to be the products of glacial, fluvioglacial, and glaciolacustrine depositional environments. Documenting and understanding these glacial deposits is important for understanding coal seam thicknesses and qualities, particularly for the 1 Seam and the 2 Seam. The Dwyka Group in the Witbank and Highveld coalfield areas is mainly represented by glacially deposited diamictites and varved shales.

7.3.1 Highveld coalfield geology

The Leslie 1 project area is situated in the Highveld Coalfield of the Karoo Basin. The Highveld and Witbank coalfields are regarded as one morphological province, because of a marked consistency in the coal succession stratigraphy. The two coalfields are separated from each other by an east to west felsite ridge of Pre Karoo age. The coal seams occur in the Vryheid Formation of the Ecca Group.

The strata in which the coal seams occur consist predominantly of fine, medium, and coarse-grained sandstone with subordinate mudstone, shale, siltstone, and carbonaceous shale.

Seven coal seams, with varying degrees of persistence, occur in the Coalfield. They are numbered from the bottom upward, namely 1 Seam, 2 Seam, 3 Seam, Lower 4 Seam, Upper 4 Seam, 4A Seam, and 5 Seam.

Coal deposition was largely controlled by the glacial Pre Karoo topography. This undulating floor strongly influenced the sedimentation patterns and extent of the different coal seams. Lower stratigraphic units lie against highs of Dwyka Tillite and Pre Karoo Bushveld Complex felsites. Thick coal deposits were formed in the deeper parts of the basin, while the coal seams thinned rapidly and petered out against the major palaeo

high areas.

7.3.2 Local project deposit geology

The Leslie 1 project area (which forms part of the Highveld Coalfield), has a stratigraphic sequence that is broadly similar to that of the Witbank Coalfield. It is located around the town of Leandra. All of the major seams of the Highveld Coalfield are present, including the 5 Seam, 4A Seam, 4 Seam, 3 Seam, 2 Seam, and 1 Seam. The 4A Seam, 3 Seam, and 1 Seam may not be present throughout the Coalfield and is too thin to mine.

7.4 Soils, Land Use, and Land Capability

7.4.1 Soils

The soil associations provide GMLM with the agriculture potential needed for the production of food and the geotechnical basis supporting or restricting the physical development on land. The dominant soil types in the Leslie 1 project area are Arcadia form (Ar), Mayo form (My), and Valsrivier (Va) (Figure 7-5).

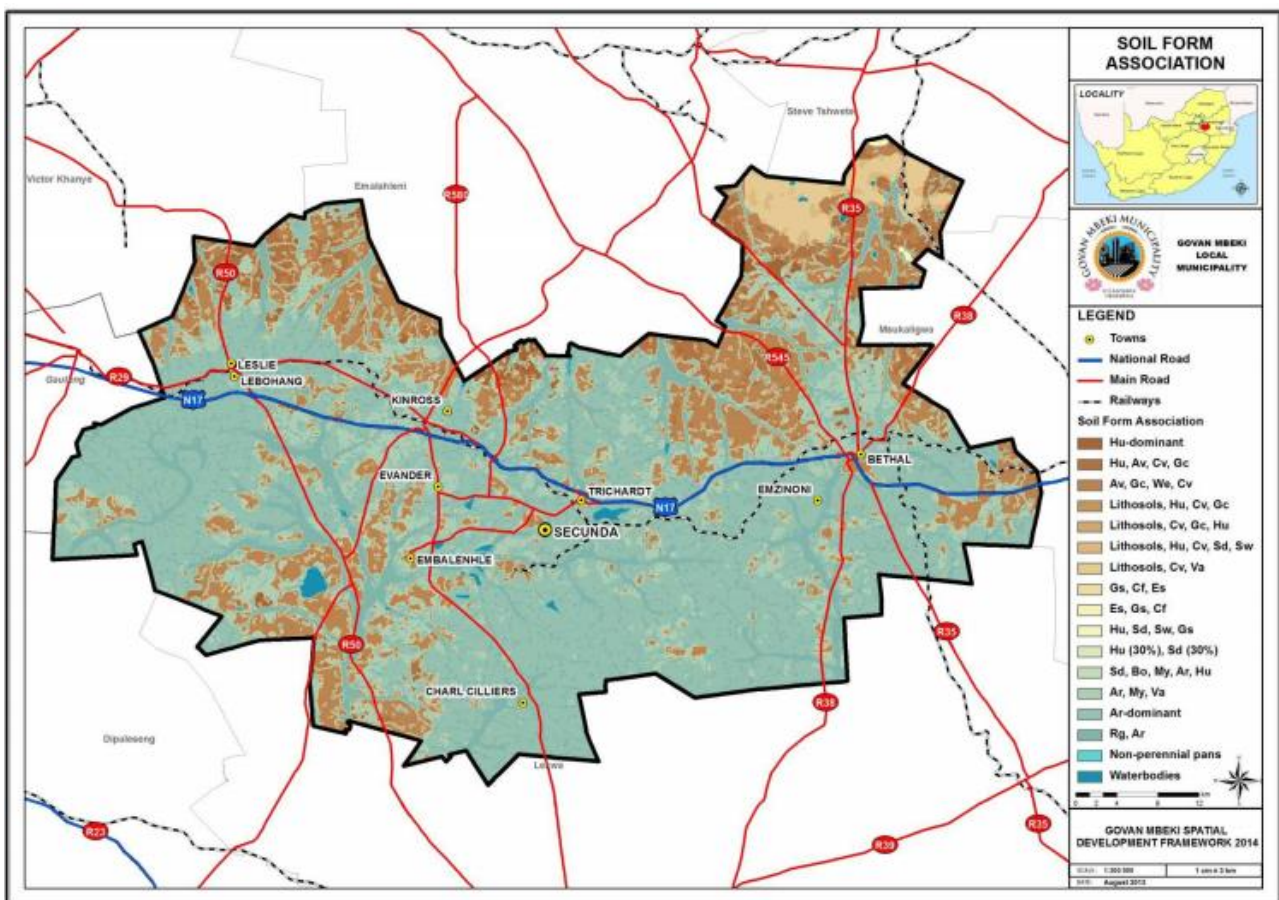


Figure 7-5: Soil map (GMLM SDF 2014)

7.4.2 Agricultural Potential

The agricultural potential of the soils is determined in terms of the soil type, the soils depth and the clay contents of the soils. In terms of agriculture potential, the soils can be categorised as High, Medium High, Medium, Medium Low, and Low. The Leslie 1 project area falls mainly in area with low potential soils according to the 2014 SDF (Figure 7-6).

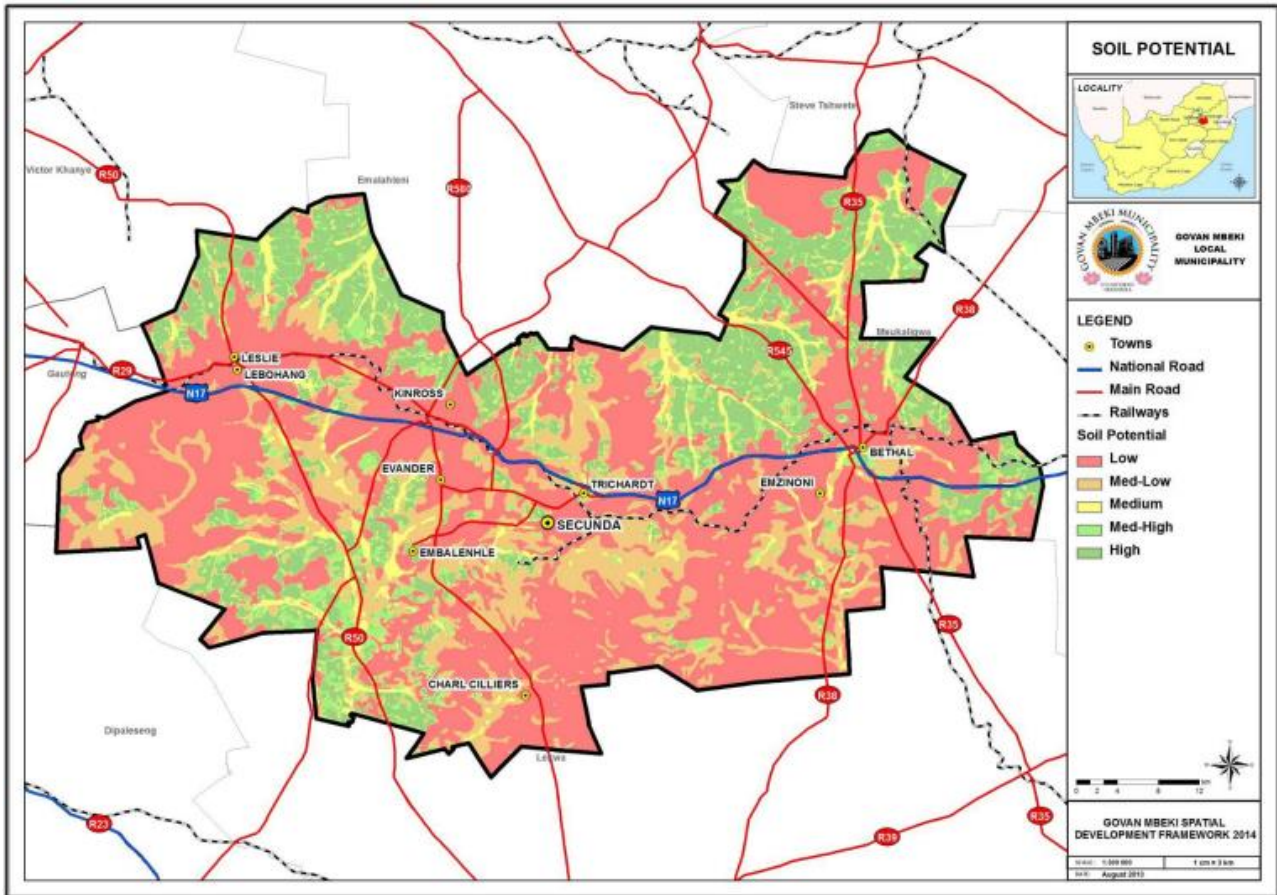


Figure 7-6: Agricultural Potential (GMLM SDF 2014).

7.4.3 Land Use

The predominant land use for the Leslie 1A, 1B, 1D and 1E project areas consists of crops, with some natural grassland, while grassland dominates on Leslie 1C (Figure 7-7). Wetlands occur in the grassland areas.

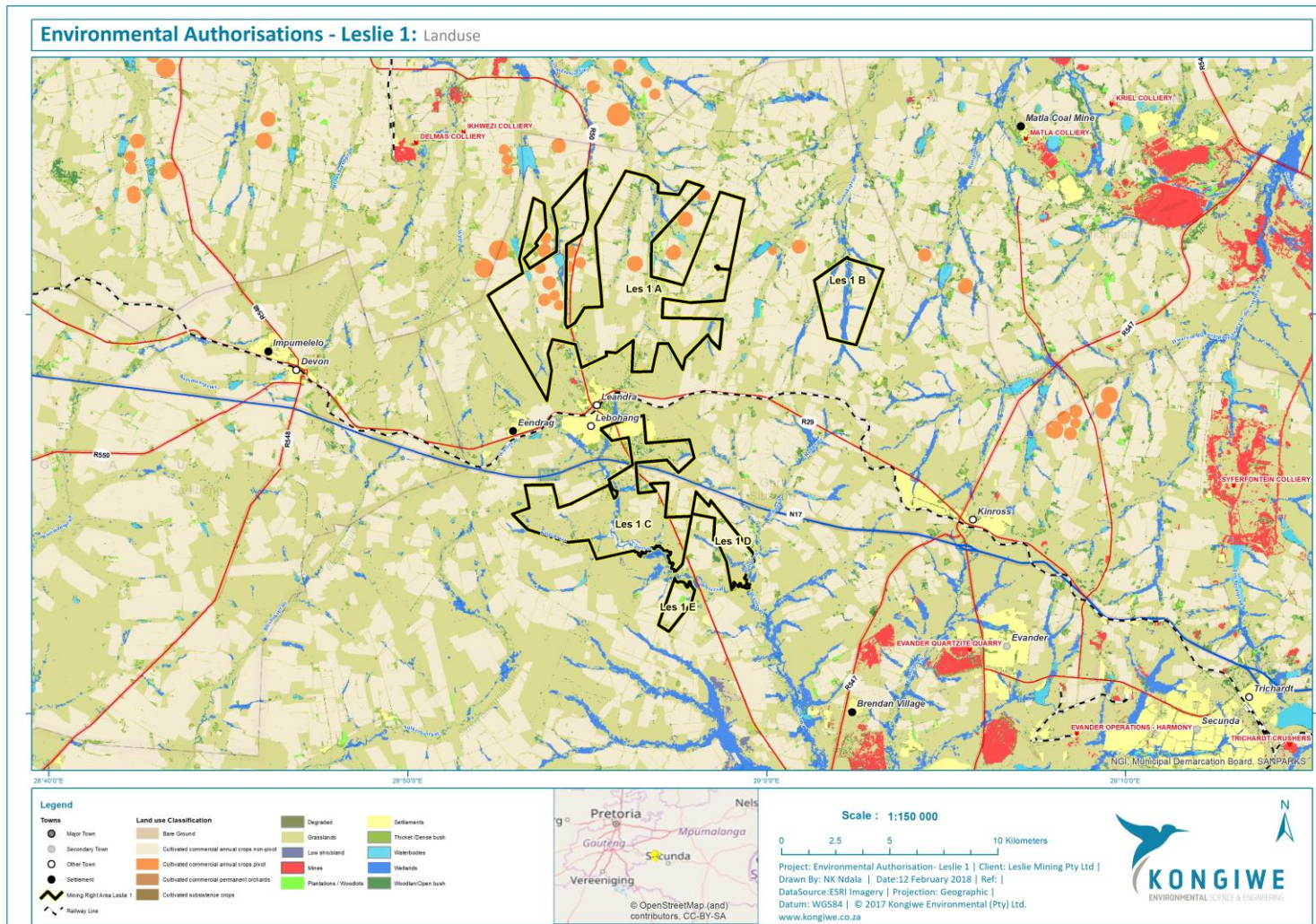


Figure 7-7: Land use in the project area.

7.5 Fauna and Flora

7.5.1 Mpumalanga Biodiversity Conservation Plan

According to the MBCP, there are sections of Leslie 1A categorised as optimal and irreplaceable, notably along the watercourses. Leslie 1C, 1D and 1E have large sections categorised as optimal and irreplaceable, with a local corridor running through Leslie 1C (Figure 7-8).

7.5.2 Threatened Ecosystems

According to the South African National Biodiversity Institute (SANBI), the sites are mostly situated in areas listed as vulnerable (Figure 7-9).

7.5.3 Flora

The properties are located within the district are utilised for cultivation of maize with gravel roads and farm infrastructure encountered throughout, with a northern portion of Leslie 1C falling under the town of Leandra and its extensions as well as a graveyard. Therefore, the majority of the subject property as well as surroundings are considered transformed.

The proposed sites fall within the Grassland biome (Rutherford & Westfall, 1994) within the Mesic Highveld Grassland Bioregion. (Mucina & Rutherford, 2006). More than half of Leslie 1A, and all of Leslie 1B, is situated in the Eastern Highveld Grassland, while the rest of Leslie 1A, 1C, 1D and 1E are all within the Soweto Highveld Grassland (Figure 7-10).

Eastern Highveld Grassland occurs in the Mpumalanga and Gauteng Provinces. It occurs in the plains between Belfast in the east and the eastern side of Johannesburg in the west and extends southwards to Bethal, Ermelo and west of Piet Retief. Altitude ranges from 1520 m to 1780 m, but also declines as low as 1300 m (Mucina & Rutherford, 2006).

Key indicator species of this vegetation type include:

- ❖ Succulent herbs: *Aloe ecklonis*;
- ❖ Low Shrub: *Anthospermum rigidium* subsp. *pumilum*, *Stoebe plumosa*;
- ❖ Geophytic herbs: *Gladiolus crassifolius*, *Haemanthus humilis* subsp. *hirsutus*, *Hypoxis rigidula* var. *pilosissima*, *Ledebouria ovatifolia*;
- ❖ Grass: *Aristida aequiglumis*, *A. congesta*, *A. junciformis* subsp. *galpinii*, *Brachiaria serrata*, *Cynodon dactylon*, *Digitaria monodactyla*, *D. tricholaenoides*, *Elionurus muticus*, *Eragrostis chloromelas*, *E. curvula*, *E. plana*, *E. racemosa*, *E. sclerantha*, *Heteropogon contortus*, *Loudetia simplex*, *Microchloa caffra*, *Monocymbium ceresiiforme*, *Setaria sphacelata*, *Sporobolus africanus*, *Sporobolus pectinatus*, *Themeda triandra*, *Trachypogon spicatus*, *Tristachya leucothrix*, *T. rehmannii*, *Alloteropsis semialata*

subsp. *eckloniana*, *Andropogon appendiculatus*, *A. schirensis*, *Bewisia biflora*, *Ctenium concinnum*, *Diheteropogon amplexans*, *Harpochloa falx*, *panicum natalense*, *Rendlia altera*, *Schizachyrium sanguineum*, *Setaria nigrirostris*, *Urelytrum agropyroides*;

- ❖ Herbs: *Berkheya setifera*, *Haplocarpha scaposa*, *Justicia anagalloides*, *Pelargonium luridum*, *Acalypha angustata*, *Chamaecrista mimosoides*, *Dicoma anomala*, *Euryops gilfillanii*, *E. transvaalensis* subsp. *setilobus*, *Helichrysum aureonitens*, *H. caespitium*, *H. callicomum*, *H. oreophilum*, *H. rugulosum*, *Ipomoea crassipes*, *Pentanisia prunelloides* subsp. *latifolia*, *Selago densiflora*, *Senecio coronatus*, *Vernonia oligocephala*, *Wahlenbergia undulata*.

Eastern Highveld Grassland is considered endangered. Only a very small fraction is conserved in statutory reserves (Nooitgedacht Dam and Jericho Dam Nature Reserves) and in private reserves (Holkransse, Kransbank, Morgenstond). Some 44% is transformed primarily by cultivation, plantations, mines, and urbanisation and by building of dams. Cultivation may have had a more extensive impact, indicated by land-cover data. No serious alien invasions are reported, but *Acacia mearnsii* can become dominant in disturbed areas. Erosion is very low (Mucina & Rutherford, 2006).

Soweto Highveld Grassland occurs on gently to moderately undulating landscape on the Highveld plateau, supporting short to medium-high, dense, tufted grassland dominated almost entirely by *Themeda triandra*. In places not disturbed, only scattered small wetlands, narrow stream alluvia, pans and occasional ridges or rocky outcrops interrupt the continuous grassland cover. Only a handful of patches statutorily conserved or privately conserved. Almost half of the area already transformed by cultivation, urban sprawl, mining and building of road infrastructure. Dams have flooded some areas.

Important taxa include:

- ❖ Graminoids: *Andropogon appendiculatus* (d), *Brachiaria serrata* (d), *Cymbopogon pospischillii* (d), *Cynodon dactylon* (d), *Elionurus muticus* (d), *Eragrostis capensis* (d), *E. chloromelas* (d), *E. curvula* (d), *E. plana* (d), *E. planiculmis* (d), *E. racemosa* (d), *Heteropogon contortus* (d), *Hyparrhenia hirta* (d), *Setaria nigrirostris* (d), *S. sphacelata* (d), *Themeda triandra* (d), *Tristachya leucothrix* (d), *Andropogon schirensis*, *Aristida adscensionis*, *A. bipartita*, *A. congesta*, *A. junciformis* subsp. *galpinii*, *Cymbopogon caesius*, *Digitaria diagonalis*, *Diheteropogon amplexans*, *Eragrostis micrantha*, *E. superba*, *Harpochloa falx*, *Microchloa caffra*, *Paspalum dilatatum*;
- ❖ Herbs: *Hermannia depressa* (d), *Acalypha angustata*, *Berkheya setifera*, *Dicoma anomala*, *Euryops gilfillanii*, *Geigeria aspera* var. *aspera*, *Graderia subintergra*, *Haplocarpha scaposa*, *Helichrysum miconiifolium*, *H. nudifolium* var. *nudifolium*, *H. rugulosum*, *Hibiscus pusillus*, *Justicia anagalloides*, *Lippia scaberrima*, *Rhynchosia effusa*, *Schistostephium crataegifolium*, *Selago densiflora*, *Senecio coronatus*, *Vernonia oligocephala*, *Wahlenbergia undulata*;
- ❖ Geophytic herbs: *Haemanthus humillis* subsp. *hirsutus*, *H. montanus*; herbaceous climber: *Rhynchosia totta*; and
- ❖ Low shrubs: *Anthospermum hispidulum*, *A. rigidum* subsp. *pumilum*, *Berkheya annectens*, *Felicia muricata*, *Ziziphus zeyheriana*

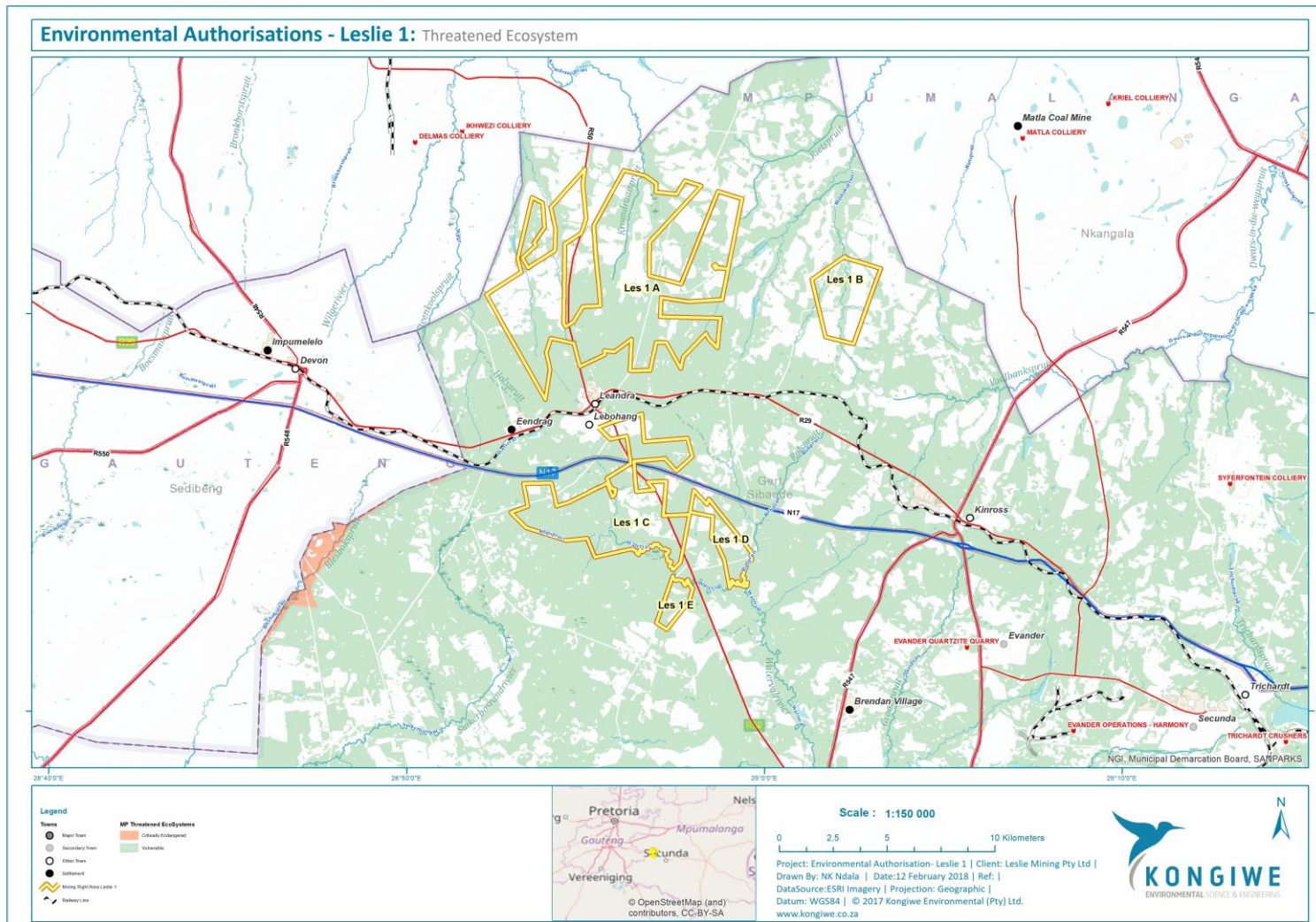


Figure 7-9: Threatened Ecosystem.

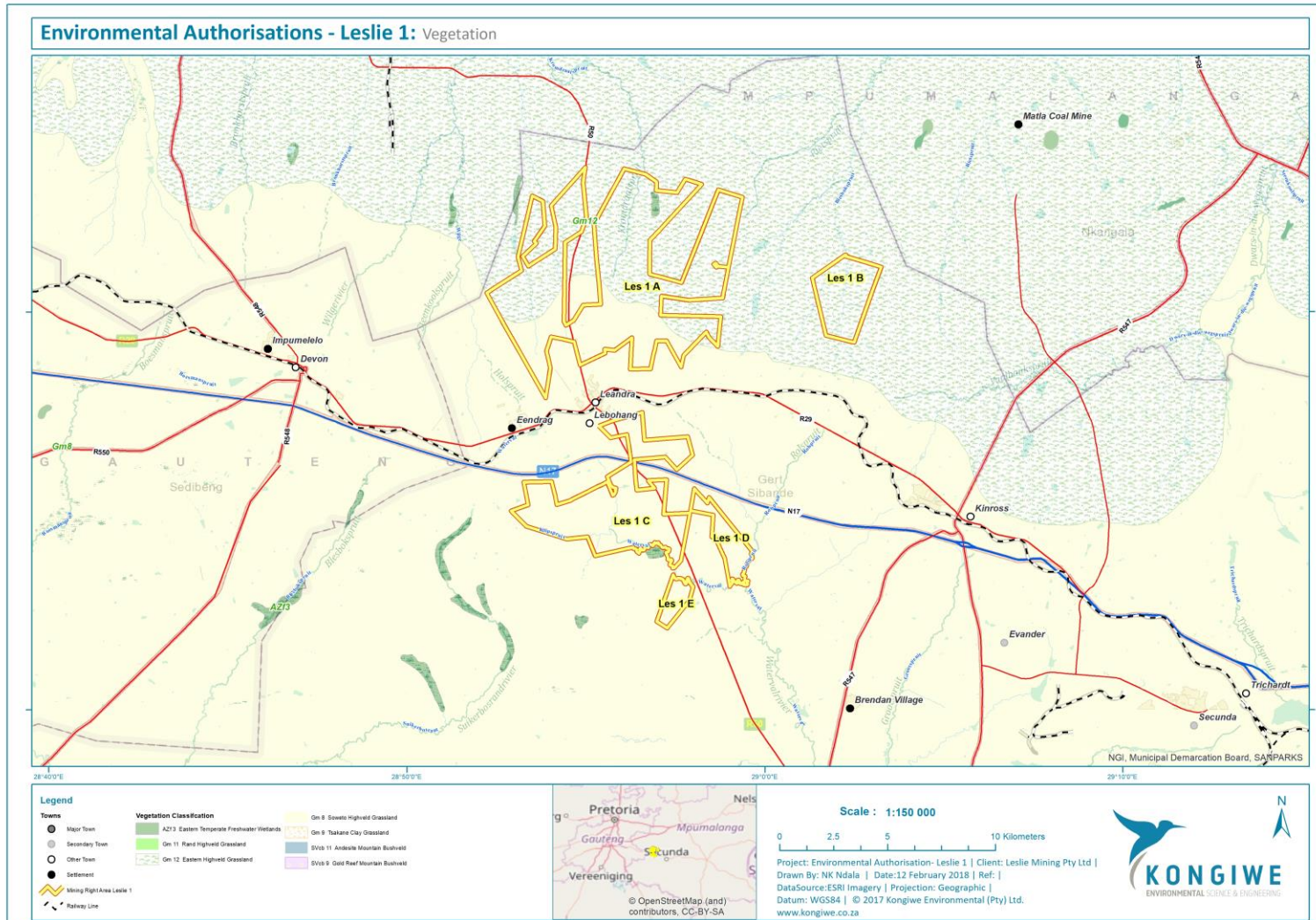


Figure 7-10: Proposed Project area superimposed on the Vegetation map of South Africa showing the vegetation types on site.

7.5.4 Fauna

The majority of the study area has been transformed by agricultural activities in the form of commercial crop farming. Throughout the study area, wetlands occur. The faunal assessment for Springboklaagte, adjacent to the Leslie 1 project, indicates that signs of Cape Clawless Otter (*Aonyx capensis*), Serval (*Leptailurus serval*), and other small omnivorous predators were noted within the proposed development areas. A Black Backed Jackal (*Canis mesomelas*) was also spotted during the survey. A high probability also exists that Brown Hyena (*Parahyaena brunnea*) will inhabit the study area or at least utilise it for migratory and foraging purposes. There were no Red Data List (RDL) highly threatened mammal species that were encountered in the survey with a Probability of Occurrence (POC) of more than 60%. It can be assumed that similar findings will occur for Leslie 1.

The African Grass Owl (*Tyto capensis*) is classified by the IUCN as *Vulnerable*. Large numbers of these owls were encountered for the Springboklaagte assessment, especially in and near the wetlands. Large numbers were also found next to roadways where they had been killed by vehicles. The Marsh Owl (*Asio capensis*) was also abundant. Some dead individuals were encountered, but not in the same abundance as *Tyto capensis*. It can be assumed that these will also be encountered on the Leslie 1 Project area.

7.6 Surface Water

The project sites are situated in the catchments of the Blesbokspruit and Waterval River, which are in the Upper Vaal Water Management Area (WMA) as well as the catchments of Olifants and Rietspruit which are in the Olifants River WMA. The sites will be situated in the quarternary catchments B20E, B11E and C12D.

Leslie 1A and 1B is situated within the Wilge River catchment (secondary catchment). Leslie 1A drains towards the Kromdraai (flowing through the site) and a tributary of the Kromdraai on the west. The Kromdraai River drains towards the Wilge River approximately 5 km north west from the site. Leslie 1B drains northwards into the Blesbokspruit. The Waterval River runs along the southern boundary of Leslie 1C, joining up with the Rolspruit which runs along the eastern boundary of Leslie 1D (Figure 7-11).

7.7 Wetlands

Valley floor wetlands on site occur along the rivers in Leslie 1A, within some slope and seep wetlands occurring along the Blesbokspruit in Leslie 1B (Figure 7-11). According to the 2016 SDF and the National Freshwater Ecosystem Priority Areas (NFEPA), Leslie 1C, D and E are situated in an important sub-catchment area (Figure 7-12).

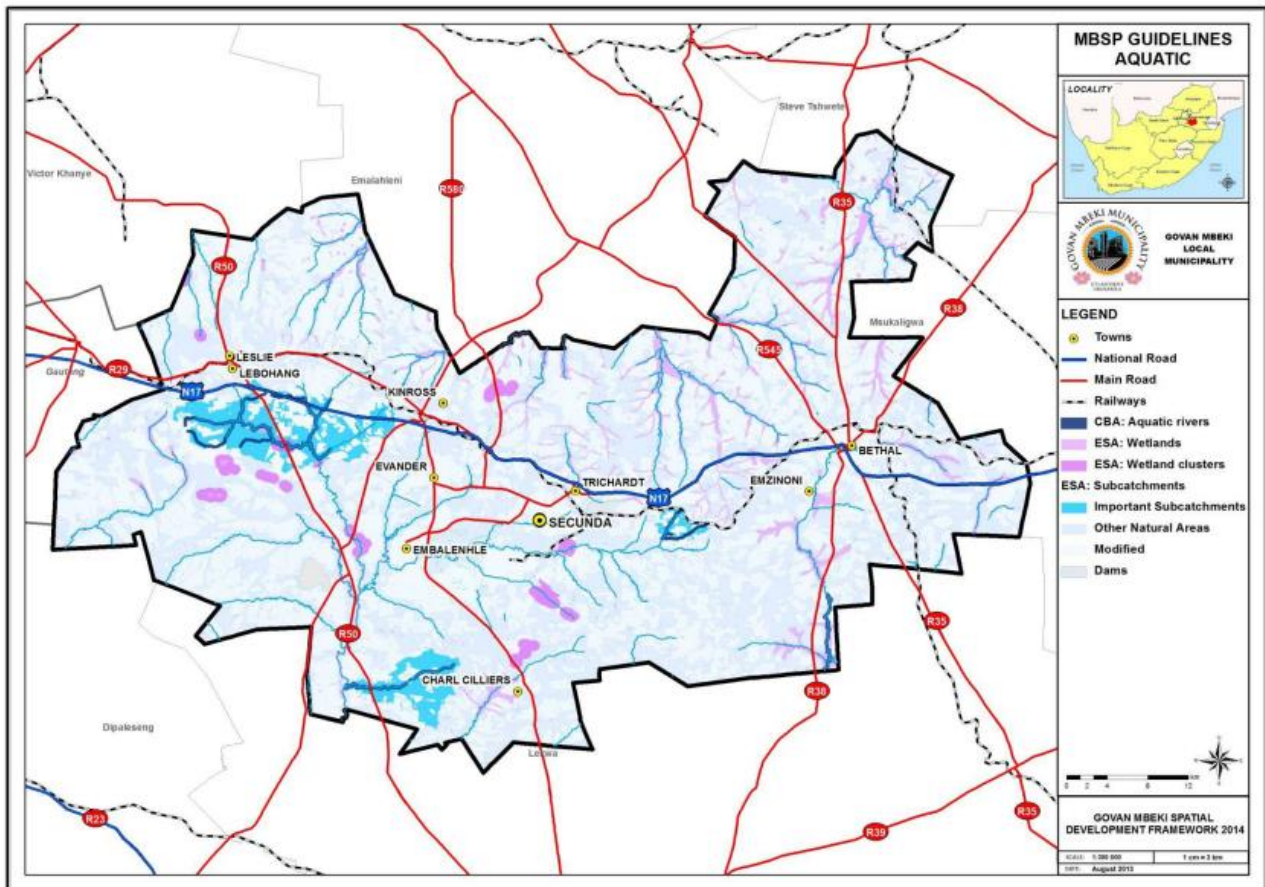


Figure 7-12: GMLM Aquatic Assessment (SDF, 2014)

7.8 Groundwater

The study area is directly underlain by rocks of the Vryheid Formation occurring in the Ecca Group of the Karoo Supergroup. The Vryheid Formation consists predominantly of thick beds of yellowish to white cross bedded sandstone and grit alternating with beds of soft sandy shale. The Vryheid Formation also contains coal seams and is widely intruded by dolerite sills. The Ecca Group overlies the Dwyka Group (tillites) of rocks.

According to the regional aquifer classification map of South Africa, the surrounding Karoo aquifer has been identified as a minor aquifer with good groundwater quality (<300 mg/l TDS), a medium to high vulnerability and a medium to high susceptibility towards contamination. Based on the underlying hydrogeology the

aquifers can be classified per Parsons Classification System as follows:

- ❖ Perched/wetland aquifer (0 ~ 2 m)
 - a. Non-aquifer
- ❖ Shallow weathered aquifer of the Vryheid Formation (5 ~ 20 m)
 - a. Minor aquifer
- ❖ Fractured confined or semiconfined sandstone aquifer in the Vryheid Formation (20 ~ 150 m)
 - a. Minor aquifer

7.8.1 Current Groundwater Use

It is anticipated that the boreholes are used primarily for stock watering and agricultural practices, as well as domestic use. Groundwater may form the sole source of water supply to the local landowners. A hydrocensus will be undertaken during the EIA Phase to identify the groundwater users in the area, plus assess the current groundwater levels, water qualities and borehole and spring localities.

7.9 Air Quality

The Proposed Project falls immediately adjacent to the declared Highveld Priority Area (HPA) for Air Quality (Government Notice No. 1123, 2007). The Highveld experiences a wide range of both natural and anthropogenic sources of air pollution ranging from veld fires and wind erosion of exposed areas to industrial processes, agriculture, mining activities, power generation, vehicle use and domestic use of fossil fuels. Different pollutants are associated with each of these activities, ranging from volatile organic compounds and heavy metals to dusts and odours.

The Proposed Project falls outside the hotspot areas, however, graphs illustrating daily ambient PM₁₀ concentrations at Phola, Secunda, Balfour and Leandra ambient air quality monitoring stations show that the PM₁₀ concentrations in these areas exceed the national ambient air quality standards for daily PM₁₀ (Table 7-2).

Table 7-2: Hotspot areas in HPA (DEA, 2011).

Hot Spot	PM ₁₀	SO ₂	NO ₂
Emalahleni	X	X	
Kriel		X	
Steve Tshwete	X	X	X
Ermelo	X	X	
Secunda	X	X	X
Ekhuruleni	X	X	
Lekwa	X	X	
Balfour	X		

Hot Spot	PM ₁₀	SO ₂	NO ₂
Delmas		X	

7.10 Climate Impact and Sustainability

The potential future effects of climate change are complex and subject to other drivers that make precise prediction difficult. The current understanding is that Southern Africa will on average increase in temperature and experience decreased winter and spring rainfall (IPCC, 2007a). This will not be a uniform change in temperature or rainfall. Western areas of Southern Africa are likely to become drier while eastern areas are likely to be wetter. These changes have large scale knock on effects in that changes in rainfall affect which plants can survive within a given area; this alters natural vegetation ranges and habitat as well as impacts on what food crops can be produced. Changes in rainfall may also impact on water supply and lead to increased desertification. On a global scale as polar ice retreats and oceans warm, sea level rise may affect coastal regions (IPCC, 2007b).

There are many mechanisms currently being tested globally by countries attempting to reduce their emissions in line with international pledges and agreements. South Africa's treasury department has been circulating concept and draft plans examining carbon taxation as a means to encourage businesses to reduce their climate related emissions (World Bank Group 2016).

7.11 Noise

The Proposed Project site is located in an area with a mixed-use development character, with agricultural activities being the predominant activities in the area. The R50 and N17 transect the Proposed Project sites. The N17 road carries significant heavy traffic.

7.12 Traffic

This project area enjoys very good regional accessibility in that it is located within an area with existing road networks. The N17 is a National Road, offering road network connectivity to the wider surrounding areas. The Proposed Project sites are transected by the R50 (north-south). The N17 National Highway cuts directly through the top of Leslie 1C.

Road Classification

The Road Classification and Access Management (RCAM) guideline 2010 provides for roads classification into the following six class systems:

- ❖ Class 1 Principal arterial
- ❖ Class 2 Major arterial

- ❖ Class 3 Minor arterial
- ❖ Class 4 Collector
- ❖ Class 5 Local street
- ❖ Class 6 Walkway

The first three classes (the arterials) are mobility roads, the second three classes are activity/access streets. The Proposed Project area is serviced well with Class 1 network (N17) which is fed by Class 2 (R50) and Class 3 networks. Access to the Mine Areas will remain at the current primary access off the R50. To ensure road safety, it is recommended that where necessary, temporary intersections be constructed. All appropriate signage must be viable through out the LOM.

The status quo and the potential impacts on the road networks will be assessed during the EIA Phase.

7.13 Visual

Based on the preliminary viewshed, incorporating an offset height of 30 m (expected height of surface infrastructure above ground level), the visual footprint associated with the proposed mining areas are anticipated to be visible in all directions for at least 2 km and somewhat visible in a 5-km radius, affecting a number of potentially sensitive receptors (tourists, residents and motorists).

Little natural visual screening is expected as a result of the generally flat, undulating terrain and shortage of high screening vegetation.

7.14 Heritage and Palaeontology

The province of Mpumalanga is known to be rich in archaeological sites that tell the story of humans and their predecessors in the region going back some 1,7 million years (Delius & Hay, 2009). The pre-colonial period is divided broadly into the Stone Age and the Iron Age. The archaeological literature does not contain much information on the Stone Age archaeology of this area, since this period has not been researched extensively in Mpumalanga (Esterhuysen & Smith, 2007). However, it is clear from the general archaeological record that the larger Mpumalanga region has been inhabited by humans since Earlier Stone Age (ESA) times.

Heritage sites have been identified for Springboklaagte and there is a possibility that heritage sites and graves might be found at the Leslie 1 Project sites.

7.15 Socio-Economic

GMLM is situated in the south-eastern part of Mpumalanga Province, abutting Gauteng Province in the south-west; approximately 150km east of Johannesburg and 300km south-west of Nelspruit (capital city of

Mpumalanga). It is one of the 7 local municipalities under the jurisdiction of GSDM (the other districts being Ehlanzeni and Nkangala) and one of the 18 local municipalities within Mpumalanga.

GMLM has the most diversified economy within the GSDM, dominated by the petrochemical industry (the SASOL II and III complexes) and coal and gold mining. GMLM has the largest underground coal mining complex in the world which makes it an important strategic area within the national context.

7.15.1 Demographics and Population characteristics

The GMLM population grew from 294 538 people in 2011 to 340 091 people in 2016. This represents 108 894 households, at an average of 3.3 people per household and a population growth rate of 3.1%. Of this population, 66% of the population is black, 27.3 % is white and 6.7% coloured, Indian, Asian or other (GMLM SDF 2014-2034).

The gender ratio over the period 2001 – 2011 indicates that there are more males than females in GMLM, indicating the presence of migrant workers.

Over the period 2001-2011, the economically active age group (15-65) increased. The size of this group (69.4% of the population) puts pressure on the local economy to provide jobs. There was also an increase in the percentage of elderly, putting pressure on the provision of care for the elderly.

7.15.2 Employment and Household Income

The distribution of household income in the period 2001 to 2011 reveals that:

- ❖ The households with no income declined from 30.5% to 13.5%;
- ❖ The households receiving an income received less than R 19 200 per annum decreased from 52% to 46.4%;
- ❖ The households between R 19 200 and 76 800 per annum increased from 13.4% to 29.6%;
- ❖ The group earning more than R 76 800 per annum increased from 4.1% to 10.4%; and
- ❖ The average household annual income for Leandra is R40 000 and R12 594 in Lebohang.

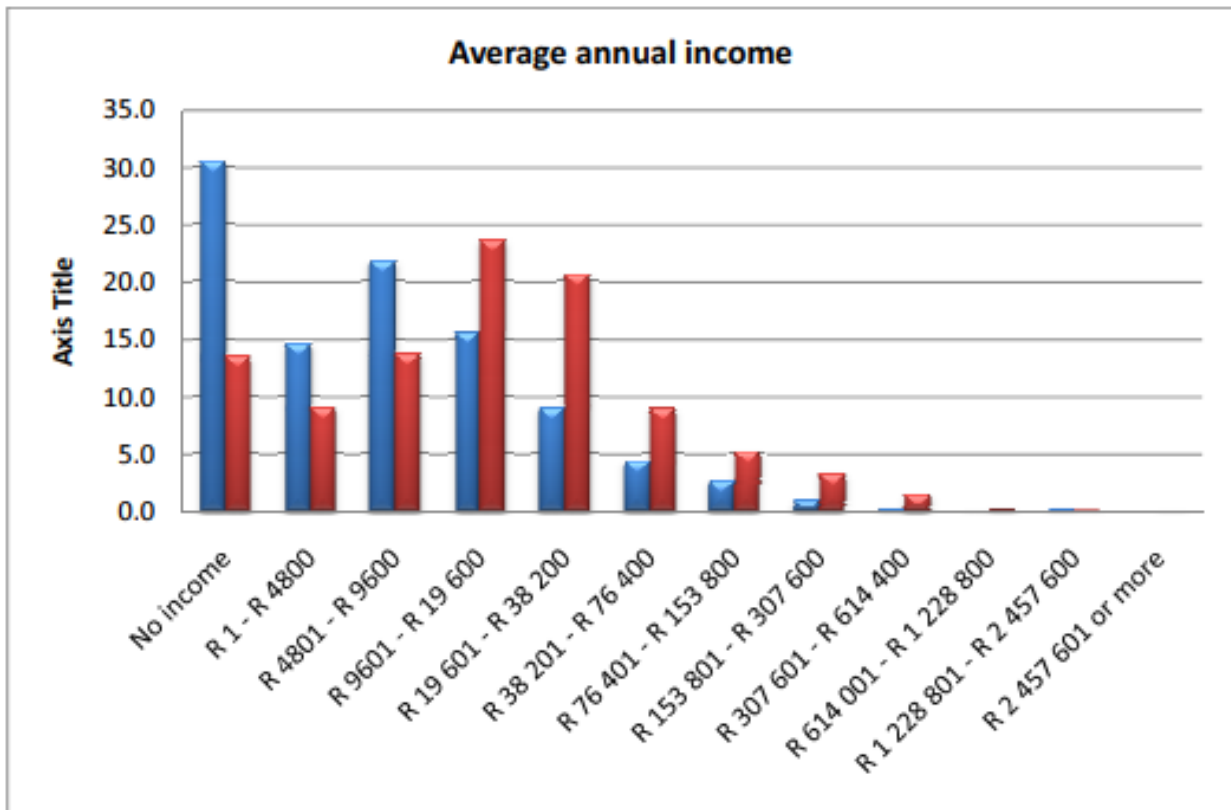


Figure 7-13: Annual Household income 2011 (GMLM SDF 2014-2034)

Approximately 21.5% of the population of GMLM is economically active, with 33.7% employed and 12% of the 21.5% economically active population is unemployed implying that dependency and unemployment rate is moderate.

7.15.3 Educational Levels

31.3% of those aged 20 years and older have qualified with a matric certificate, and 12.6% have achieved higher qualification.

Table 7-3: Education Profile (%)

	No Schooling		Matric		Higher Education	
	2001	2011	2001	2011	2001	2011
South Africa	18,2	8,6	20,7	28,4	8,6	12,1
Mpumalanga	28,8	14	17,9	28,9	6	9,6
Gret Sibande District Municipality	26,7	13,3	16,6	27,9	5,5	9,1
Govan Mbeki Local Municipality	16,7	1,9	21,5	31,3	7,6	12,6

7.15.4 Labour Force and Employment Structure

Unemployment remains one of the most pressing socio-economic challenge throughout South Africa, Mpumalanga and globally. High rates of unemployment have direct links with the other social issues and problems such as poverty, inequality, social instability and crime.

Unemployment in the GMLM in 2011 was a 26.23%, lower than the Mpumalanga average of 31.6% (Figure 7-14).

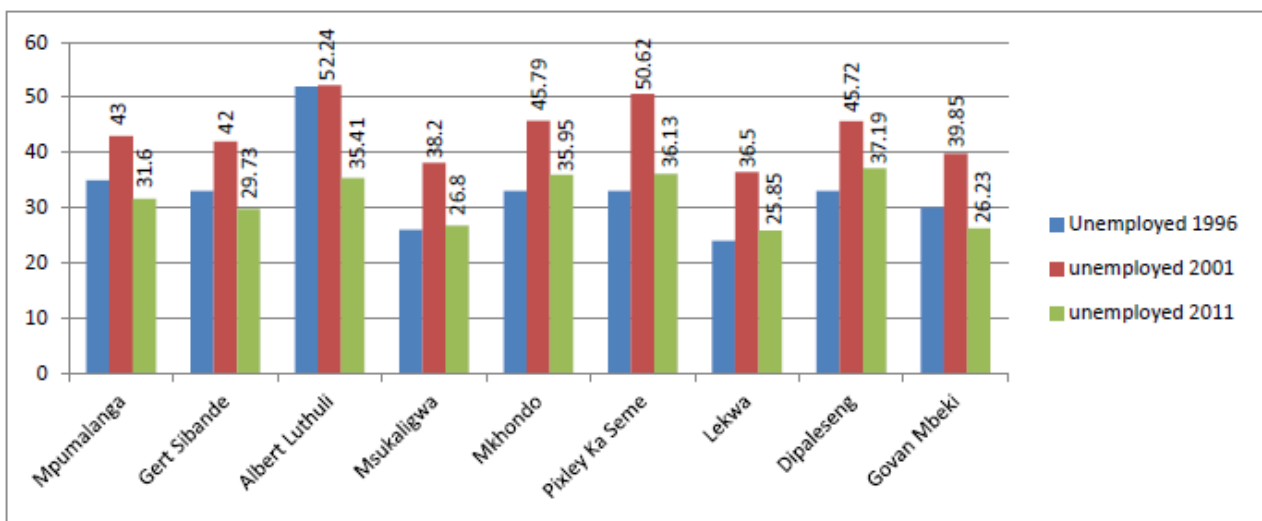


Figure 7-14: Unemployment rates in Mpumalanga, Gert Sibande and its local municipalities, 1996 – 2011 (Stats SA, 2011)

7.15.5 Local Economy

The GVA product of GMLM, the district and province provides an indication of the economic performance of the relevant study area is presented in Table 7-4.

Table 7-4: GVA contribution (%)

Sector	Govan Mbeki to Mpumalanga	Govan Mbeki to District	Govan Mbeki to Cluster (adjoining municipalities)
Agriculture	3,5	8,4	1,9
Mining	16,6	68,2	7,9
Manufacturing	52	95,8	22,4
Utilities	6,1	24	2,8
Construction	14,7	57,8	8,6
Trade	11	45,2	6,6

Sector	Govan Mbeki to Mpumalanga	Govan Mbeki to District	Govan Mbeki to Cluster (adjoining municipalities)
Transport	9	51,7	5,3
Finance	8	40,1	5,2
Community Service	6,2	27,3	3,9
Total GVA	19,8	63,3	10,4

GMLM contributes:

- ❖ 63% to the district and the district 19.8% to the Mpumalanga economy;
- ❖ 52% to the manufacturing sector within Mpumalanga;
- ❖ 95.8% to the manufacturing sector within the GSDM;
- ❖ 33.1 % to the cluster consisting of GMLM and neighbouring municipalities;
- ❖ 66.5% to the manufacturing sector within the cluster; and
- ❖ Mining contributes 68.8% to the district.

7.15.6 Access to Services

According to census 2011 the majority of the population in GSDM used Electricity (49.5%), while 17% used coal and 1.5 % used paraffin. The majority of the households (44.3%) had access to pipe water inside their house and 37% had access to pipe water inside the yard. 5.8% had access to piped water at a distance greater than 200M from their house and 11% had piped water at a distance of between 200 and 500 metres from their households.

7.16 Community Health

7.16.1 Epidemiological Profile

Mpumalanga Province, like the rest of the country, faces a quadruple burden of diseases. HIV and AIDS, Tuberculosis, high Maternal and Child Mortality, Non-Communicable Diseases and Violence and Injuries continue to take a toll on the Province's citizens. There is still high inequity to provision of health care services where majority of the population relying on a public health care system, relative to the private sector serving approximately 12% of the population. The distribution of key health professionals between the two sectors is also skewed for example, the doctor patient ratio is as high as 1:4000 in the public sector while it is 1:250 in the private sector.

7.16.2 Maternal and Child Mortality

The trend in the province of the under-5 deaths has shown an upswing after years of steady downward trends. Child facility mortality rate increased from 5.5/1 000 (2012/13) to 8.3/1 000 in 2014/15. Infant mortality also increased from 8.3/1 000 (2012/13) to 12/1 000. The Second Report of the Committee on Morbidity and Mortality in Children under 5 years (CoMMiC) (2014), reported that the cause of deaths of the under 5 had a quarter (25.3%) of the total reported deaths being due to neonatal causes, whilst gastroenteritis accounted for (15%) and acute respiratory infections (mostly pneumonia) (13%), non-natural causes (6%), malnutrition (4%), congenital abnormalities (4%) and tuberculosis (2%).

7.16.3 HIV Prevalence

In 2013, the Mpumalanga provincial HIV prevalence amongst antenatal women was 37.3%, a slight increase from 35.5% in 2012. This is the highest recorded figure so far in the province. In Mpumalanga, the age distribution of pregnant women who participated in the survey, ranged from 15 – 49 years old with some outliers. The majority of the survey participants were teenagers and young women (15-24 year olds). In 2013, the HIV prevalence among 15-24 year olds (Millennium Development Goal 6, Target 7) showed a slight increase from 23.9% in 2012 to 25.3% in 2013. HIV prevalence among the age group 15-19 also increased by 2% in 2013 from 14.3% in 2012 to 16.1% in 2013.

7.16.4 Tuberculosis Management

In Mpumalanga, a decrease was recorded in the number of TB case findings from 23 312 in 2010, to 19 263 in 2013. Of these, 9 166 were from Ehlanzeni, 5 526 from Gert Sibande and 4,571 from Nkangala district as represented in Figure 7-15.

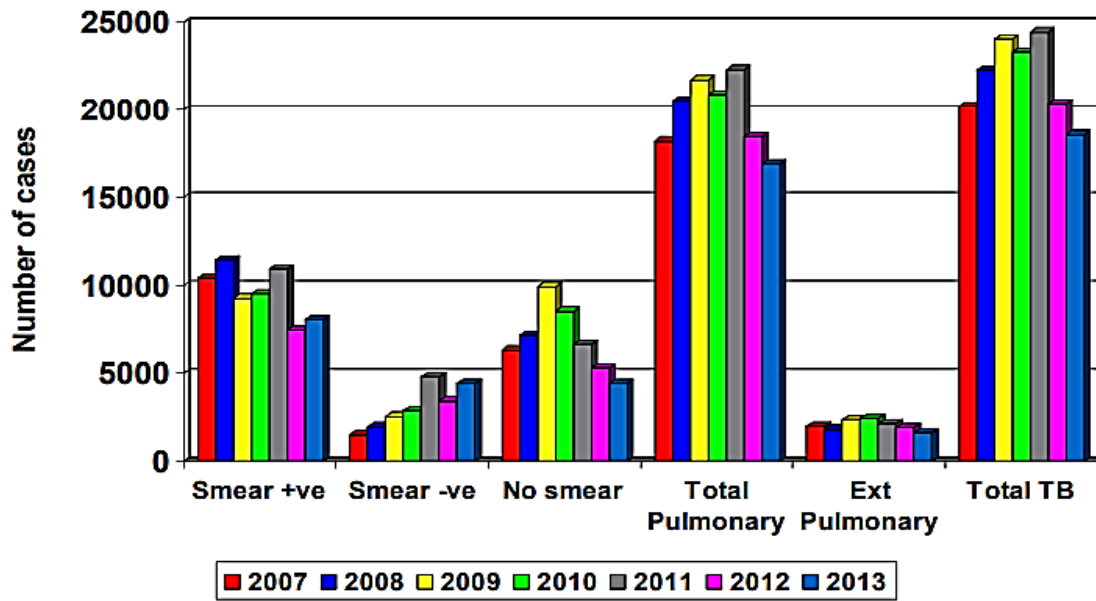


Figure 7-15: Mpumalanga TB Case Findings: 2007 to 2013

7.16.5 Mortality

According to the “Findings of the Mortality and Causes of Death in South Africa Report, 2010” released by Statistics South Africa, TB continued to be the most commonly mentioned cause of death on death notification forms, as well as the leading underlying natural cause of death in the country however, the number of deaths has been decreasing since 2007. Influenza and pneumonia were the second leading cause of death followed by intestinal infectious diseases, cerebro-vascular diseases and other forms of heart disease. HIV was the sixth leading cause of death in Mpumalanga in 2010.

8 Potential Impacts Identified during the Scoping Phase

8.1 Methodology for determining the Significance of Environmental Impacts

This part of the document focuses on the identification of the major potential impacts the activities, processes and actions may have on the surrounding environment. Table 8-1 will be inserted into the EIA report once all specialist studies have been completed. The table represents compliance with the EIA Regulations of 2014 in terms of assessing the significant of direct, indirect, cumulative and residual impacts. Each specialist has been requested to include Table 8-1 whilst compiling their reports to streamline the coherence of the EIA Report.

Potential environmental impacts (physical, biological, social and economic) associated with the Proposed Project listed in Table 8-1. The significance of these impacts will be systematically assessed and rated, using the assessment mythology described in Section 8.1, once the results of the various specialist studies are available. The EIA will include a full risk assessment of all environmental impacts. The EIA/EMPr Report will set out mitigation measures to be implemented during the Construction, Operational, Decommissioning and Closure and Post-Closure Phases in accordance with NEMA requirements.

Table 8-1: Typical tables used to identify and classify the significance of identified impacts

Nature of The Impact: Describe the Impact in Respect to The Activity to be Undertaken		
	Impact Rating Without Mitigation	Impact Rating With Mitigation
<i>Extent (Local, Regional, International)</i>		
<i>Duration (Short term, Medium term, Long term)</i>		
<i>Magnitude (Major, Moderate, Minor)</i>		
<i>Probability (Definite, Possible, Unlikely)</i>		
<i>Calculated Significance Rating (Low, Medium, High)</i>		
Impact Status: (positive or negative)		
Reversibility: (Reversible or Irreversible)		
Irreplaceable loss of resources: (Yes or No)		
Can impacts be enhanced: (Yes or No)		
Residual impacts		
❖ (List these below)		
Cumulative Impacts		
❖ (List these below)		
Mitigation measures		

Table 8-2 below will be used during the EIA Phase to describe the identified impacts of the Proposed Project, as well as describe the relevant mitigation measures proposed by specialist studies. It must be noted that as the project is an underground project, surface impacts will be restricted the plant areas.

Table 8-2: Potential Impacts Identified for the Project

Environmental Component	Component Type	Potential Impact	Specialist Study Planned for EIA
Physical Environment (non-living)	Climate	<ul style="list-style-type: none"> ❖ Spontaneous Combustion and burning in stockpiles ❖ Exposure and Fracturing of coal seams containing gaseous components such as Sulphur and Methane 	Carbon Impact and Sustainability Study
	Topography	<ul style="list-style-type: none"> ❖ Change in the natural topography ❖ Disturbance to geophysical and landscape features 	Soil, Land Use and Land Capability Study Hydropedology Study
	Geology	<ul style="list-style-type: none"> ❖ Destruction of geology due to extraction of coal. 	Soil, Land Use and Land Capability Study Hydropedology Study
	Soils	<ul style="list-style-type: none"> ❖ Loss of soil as vegetation growth medium. Loss of soil productivity ❖ Erosion ❖ Contamination of Soils ❖ Potential deficit of available soil to act as growth medium after rehabilitation 	Soil, Land Use and Land Capability Study Hydropedology Study
	Hydrology (including wetlands, surface water and ground water)	<ul style="list-style-type: none"> ❖ Contamination of surface water and groundwater. ❖ Potential for Acid mine drainage (AMD). ❖ Changes to raw water quality and drinking water quality ❖ Sedimentation of downstream areas. ❖ Decant / release of contaminated water to the environment. ❖ Changes in natural surface water flow parameters. ❖ Disruption stream banks and wetlands. 	Surface Water Study Groundwater Study Wetland and Hydrogeological study

Environmental Component	Component Type	Potential Impact	Specialist Study Planned for EIA
		<ul style="list-style-type: none"> ❖ Reduced catchment yield and water available to downstream users and environments. ❖ Changes to water regime of pans, wetlands and affected streams. ❖ Lowering of groundwater levels. ❖ Downstream movement of a pollution plume within the weathered zone aquifer ❖ Reduced or eliminated production in domestic supply boreholes due to the groundwater drawdown. 	
Biological Environment (living)	Ecology and Biodiversity (including fauna and flora)	<ul style="list-style-type: none"> ❖ Disturbance of sites of conservation importance. ❖ Loss of species of conservation importance. ❖ Fragmentation and loss of habitats. ❖ Restriction on animal movement patterns. ❖ Loss of migration corridors, and access to nesting and refuge areas, watering points, food supplies. ❖ Displacement of animal species, increased competition in areas where carrying capacity is already compromised. ❖ Biodiversity impacts. ❖ Spreading of invasive species. 	Terrestrial Ecology Study
Social Environment	Heritage Resources	<ul style="list-style-type: none"> ❖ Loss of or damage to heritage and/or paleontological resources 	Heritage and Archaeological Study
	Employment	<ul style="list-style-type: none"> ❖ Job security ❖ Continued investment in local economy and negative impacts associated with mine closure ❖ Up-skilling 	Socio-economic Study

Environmental Component	Component Type	Potential Impact	Specialist Study Planned for EIA
	Land-use	<ul style="list-style-type: none"> ❖ Impact on existing agricultural, tourism and residential uses ❖ Impact on future conservation land uses 	Socio-economic Study
	Visual	<ul style="list-style-type: none"> ❖ Changes to landscape character, visual appeal and sense of place of the area. 	Visual Study
	Noise	<ul style="list-style-type: none"> ❖ Increase in ambient noise levels. ❖ Disturbances to sensitive receptors. 	Noise Study
	Air Quality	<ul style="list-style-type: none"> ❖ Increase in dust levels. ❖ Fallout dust nuisances. ❖ Air quality impacts on fauna and flora. ❖ Odours, smoke and noxious gasses associated with burning of carbonaceous material: <ul style="list-style-type: none"> ▪ Coal seam fires, mainly associated with old underground workings. ▪ Spontaneous combustion of oxidised coal found in overburden and coal discard. ❖ Health impacts due to fine particulate emissions and gaseous emissions. 	Air Quality Study
Economic Environment	Existing Services and Infrastructure	<ul style="list-style-type: none"> ❖ Disturbance of roads by project-related traffic ❖ Damage to existing infrastructure through over-use 	Socio-economic Study Traffic Impact Study
	Mineral Resources	<ul style="list-style-type: none"> ❖ Sterilisation of coal resources due to positioning of infrastructure, overburden dumps, and other structures. 	Socio-economic Study

The impact significance rating process serves two purposes: firstly, it helps to highlight the critical impacts requiring consideration in the management and approval process; secondly, it shows the primary impact characteristics, as defined above, used to evaluate impact significance.

The impact significance rating system is presented in Table 8-3, Table 8-4, and Table 8-5 and involves three parts:

- ❖ **Part A:** Define impact consequence using the three primary impact characteristics of magnitude, spatial scale/ population and duration;
- ❖ **Part B:** Use the matrix to determine a rating for impact consequence based on the definitions identified in Part A; and
- ❖ **Part C:** Use the matrix to determine the impact significance rating, which is a function of the impact consequence rating (from **Part B**) and the probability of occurrence.

8.1.1 Part A: Defining Consequence in Terms of Magnitude, Duration and Spatial Scale

Use these definitions to define the consequence in Part B.

Table 8-3: Consequence Rating Methodology

Impact characteristics	Definition	Criteria
Magnitude	Major -	Substantial deterioration or harm to receptors; receiving environment has an inherent value to stakeholders; receptors of impact are of conservation importance; or identified threshold often exceeded
	Moderate -	Moderate/measurable deterioration or harm to receptors; receiving environment moderately sensitive; or identified threshold occasionally exceeded
	Minor -	Minor deterioration (nuisance or minor deterioration) or harm to receptors; change to receiving environment not measurable; or identified threshold never exceeded
	Minor +	Minor improvement; change not measurable; or threshold never exceeded
	Moderate +	Moderate improvement; within or better than the threshold; or no observed reaction
	Major +	Substantial improvement; within or better than the threshold; or favourable publicity
Spatial scale or	Site or local	Site specific or confined to the immediate project area

Impact characteristics	Definition	Criteria
population	Regional	May be defined in various ways, e.g. cadastral, catchment, topographic
	National/ International	Nationally or beyond
Duration	Short term	Up to 18 months.
	Medium term	18 months to 5 years
	Long term	Longer than 5 years

8.1.2 Part B: Determining Consequence Rating

Rate consequence based on definition of magnitude, spatial extent and duration.

Table 8-4: Consequence Rating Methodology

		SPATIAL SCALE/ POPULATION			
		Site or Local	Regional	National/ international	
MAGNITUDE					
Minor	DURATION	Long term	Medium	Medium	High
		Medium term	Low	Low	Medium
		Short term	Low	Low	Medium
Moderate	DURATION	Long term	Medium	High	High
		Medium term	Medium	Medium	High
		Short term	Low	Medium	Medium
Major	DURATION	Long term	High	High	High
		Medium term	Medium	Medium	High
		Short term	Medium	Medium	High

8.1.3 Part C: Determining Significance Rating

Rate significance based on consequence and probability.

Table 8-5: Significance Rating Methodology

		CONSEQUENCE		
		Low	Medium	High
PROBABILITY (of exposure to impacts)	Definite	Medium	Medium	High
	Possible	Low	Medium	High
	Unlikely	Low	Low	Medium

8.2 Possible Positive and Negative Impacts identified

The table below identifies the positive and negative impacts associated with each alternative identified for the Proposed Project:

Table 8-6: Positive and negative impacts regarding project alternatives for the Project

OPTION	POSITIVE IMPACTS	NEGATIVE IMPACTS
The property on which or location where it is proposed to undertake the activity		
None – No reasonable and feasible alternatives exist for the Proposed Project		
The Type of Activity to be undertaken		
1. Alternative means of Power Generation in Mpumalanga Province		
<i>Energy Generated from coal mining (Preferred Option)</i>	<ul style="list-style-type: none"> ❖ Continuous, Predictable, Reliable Source of Power ❖ Lower Capital Investment ❖ Low Cost/Inexpensive energy source ❖ High Load Factor ❖ Large established industrial base ❖ Large amounts of jobs are created, with the potential for “own business” opportunities 	<ul style="list-style-type: none"> ❖ Greenhouse Gas Emissions and emissions of harmful substances ❖ Health and Safety impacts ❖ Direct and Indirect Environmental Degradation
2. Coal Extraction in the Open Pit and Underground Mine Areas		
<i>Truck and Shovel</i>	<ul style="list-style-type: none"> ❖ Most appropriate for bulk extraction of variable coal seams. 	<ul style="list-style-type: none"> ❖ Increase in soil erosion resulting from the removal of vegetation. ❖ Increased dust generation due to open pit blasting and operations.

OPTION	POSITIVE IMPACTS	NEGATIVE IMPACTS
	<ul style="list-style-type: none"> ❖ Commonly used in Witbank Coalfield. ❖ Employment opportunities. 	<ul style="list-style-type: none"> ❖ Increased noise generation due to construction and operational vehicles. ❖ Increased rehabilitation costs. ❖ Decrease in surface water runoff due to open pit capturing rain water. ❖ Potential formation of groundwater cone of depression. ❖ Potential for acid mine drainage to due contamination of groundwater and surface water.
<i>Dragline</i>	<ul style="list-style-type: none"> ❖ Employment Opportunities 	<ul style="list-style-type: none"> ❖ Burden units not thick enough to warrant usage ❖ Decrease in agricultural land. ❖ Increase in soil erosion resulting from the removal of vegetation. ❖ Increased dust generation due to open pit blasting and operations. ❖ Increased noise generation due to construction and operational vehicles. ❖ Increased rehabilitation costs. ❖ Decrease in surface water runoff due to open pit capturing rain water. ❖ Potential formation of groundwater cone of depression. ❖ Potential for acid mine drainage to due contamination of groundwater and surface water.
<i>Bord and Pillar (Preferred Option)</i>	<ul style="list-style-type: none"> ❖ Fast initiation of mining activities ❖ Lower cost ❖ Greater extraction tonnage ❖ High degree of flexibility (allows for variable thickness in the ore); method easily modifiable; may operate simultaneously on multiple levels 	<ul style="list-style-type: none"> ❖ Requires ongoing maintenance of the roof and eventually the pillars. The tension in the open spaces increases with depth. ❖ Significant capital investment for extensive mechanization. ❖ Loss of ore in pillars. ❖ May be difficult to achieve good ventilation to dilute contaminants in due to low air velocity panel in large open spaces. ❖ Requires good technical and engineering support
<i>Longwall</i>	<ul style="list-style-type: none"> ❖ Employment opportunities 	<ul style="list-style-type: none"> ❖ surface subsidence, which may considerably alter the landscape above

OPTION	POSITIVE IMPACTS	NEGATIVE IMPACTS
		<p>the mine which can damage natural or man-made structures or features,</p> <ul style="list-style-type: none"> ❖ deterioration in groundwater quality, as it can become more brackish with increased sulfate levels. ❖ disruption of ecosystems and loss of stream and wetland functions. ❖ shock waves on the surface.
The Design and Layout of the Activity		
1. Mine Design and Layout alternatives at Mine Areas		
None – No reasonable and feasible alternatives exist for the Proposed Project		
Technology to be used in the Activity		
None – No reasonable and feasible alternatives exist for the Proposed Project as only Best Practice methods will be utilised. The mining project will in its operational phase implement recycling policies and measures for optimal utilisation of resources and minimisation of waste generation. Water utilisation will be maximised through recycling of dirty water within the process operations. Fuel types will be investigated as well as energy conserving measures will be implemented i.e. mining times will be during the day to save on using lights in the evening. Where solar energy can be utilised it will be implemented.		
The operational aspects of the activity		
1. Type of Beneficiation		
<i>De-Stoning</i>	❖ None	<ul style="list-style-type: none"> ❖ Sulphur content too high and inherent CV too low. ❖ Increased dust and noise impacts.
<i>Dry Separation</i>	❖ Reduced water consumption	❖ Comparatively inefficient
<i>Single Stage Wash (Preferred Option)</i>	<ul style="list-style-type: none"> ❖ Provides a reliable product ❖ Reduced dust and noise impacts 	<ul style="list-style-type: none"> ❖ Higher cost ❖ Increased water consumption
<i>Multiple Stage Wash</i>	<ul style="list-style-type: none"> ❖ Provided a reliable product ❖ Reduced dust and noise impacts 	<ul style="list-style-type: none"> ❖ Higher cost ❖ Products may not be obtainable due to size ❖ Increased water consumption comparatively
2. Processing Plant Options		
<i>Onsite mobile processing plant (Preferred Option)</i>	<ul style="list-style-type: none"> ❖ Lower Environmental Impacts ❖ Can service more than one Mine Area 	❖ Higher capital costs

OPTION	POSITIVE IMPACTS	NEGATIVE IMPACTS
	<ul style="list-style-type: none"> ❖ More jobs are created as transportation would be required 	
<i>Onsite stationary process plant</i>	<ul style="list-style-type: none"> ❖ Coal beneficiation would be more efficient as less transportation would be required. 	<ul style="list-style-type: none"> ❖ More equipment is required ❖ The plant will require a greater footprint ❖ Greater environmental impacts ❖ Less job stimulation
3. Transport Options		
<i>Via Haul Truck (Preferred Option)</i>	<ul style="list-style-type: none"> ❖ Opportunities for haul truck drivers to own and operate their own trucks ❖ Job stimulation, upskilling ❖ More financially viable in the initial stages of mining 	<ul style="list-style-type: none"> ❖ Traffic Impacts ❖ Emissions Impacts ❖ Greater maintenance requirements
<i>Via Overland Conveyor</i>	<ul style="list-style-type: none"> ❖ Larger quantities of coal can be transported ❖ Less negative environmental and road impacts 	<ul style="list-style-type: none"> ❖ Less job stimulation and potential for entrepreneurship. ❖ Costlier in the long term as the quantity of coal to be transported is not large enough to substantiate the costs involved.
No-Go Option		
<p>The Option of the project not proceeding would mean that the environmental and social status would remain the same as current. This implies that both negative and positive impacts would not take place. As such, negative impacts on biodiversity, water resources, air quality land use etc. would not transpire, but also that the positive impacts such as economic development, employment creation, skills development and poverty alleviation would not occur.</p> <p>The ‘No Project’ alternative is not yet considered due to the anticipated benefits of the proposed Leslie 1 Project. The expected indirect benefits of the Proposed Project include:</p> <ul style="list-style-type: none"> ❖ Potential for the creation of additional jobs. ❖ Continued upliftment of the surrounding communities. ❖ Continued supply of coal to the local and national markets, and therefore contribution to local, provincial and national economy. 		

8.3 Cumulative Impacts

Due to the close proximity of the Proposed Project and the presence of other large mining operations in the area, cumulative impacts and their assessment is of great importance. The identification and assessment of

cumulative impacts will be undertaken and mitigation measures suggested during the detailed EIA level investigation. The impact identification and calculation methodology employed by all specialists incorporates cumulative impacts in a quantitative manner to determine the final impact score and corresponding rating.

8.4 Application of possible mitigation measures

Mitigation measures are implemented to ensure that the identified impacts from the Proposed Project activities are reduced as far as possible. Mitigation measures will be provided in the specialist reports to be undertaken in the EIA Phase of the project. Specialist will be informed to be cognisant of the following mitigation measure objectives:

- ❖ To find more environmentally sound ways of undertaking specific activities;
- ❖ To enhance any environmental and social benefits of a proposed activity;
- ❖ To avoid, minimise or remedy negative environmental impacts; and
- ❖ To ensure that any residual negative environmental impacts are environmentally acceptable.

The identification of appropriate mitigation measures will be conducted in a hierarchal manner:

1. Preventative measures will be identified to avoid, where possible, negative impacts that may arise as a result of the proposed activity;
2. Measures will be identified to minimise and/or reduce the negative impacts to “as low as practicable” levels; and
3. Measures will be identified to compensate or remedy residual negative impacts that are unavoidable and cannot be minimised or reduced any further (Department of Environmental Affairs, 2006).

Proposed mitigation measures will be communicated to the applicant for review as part of draft EMP. The applicant will comment on the feasibility and practicality of implementing the mitigation measures. The mitigation measures may be adjusted based on the applicant’s comments.

8.5 Outcome of the site selection matrix. The Final Site Layout Plan

The finalisation of specialist studies and recommendations made within the reports will help to inform a final site layout plan. At the time of compiling this DSR, preliminary site layout plans have been included in **Appendix B** and these maps will be presented as part of the pre-application process with stakeholders.

8.6 Motivation where no Alternative sites were considered

Alternatives were considering during this DSR as per Chapter 5 above and the site selected was chosen based

on economic and environmental criteria.

8.7 Statement motivating the Preferred Site

The preferred sites were chosen as per Chapter 5.

9 Plan of Study for the Environmental Impacts Assessment

9.1 Alternatives to be considered, including the “No-Go” Option

Alternatives have and will continue to be investigated and the “No-Go Option” will be included in the assessment. The EIA document will further discuss the alternatives identified and investigated for the Proposed Project, as well as the advantages and disadvantages of the identified alternatives.

Alternatives addressed in Chapter 5, will be investigated during the EIA Phase of the project.

9.2 Aspects to be assessed as part of the Environmental Impact Process

Kongiwe has subjected this report to a full Legal Review, undertaken by Ms Kim Haycock and Mr Michael Hennessy.

The following aspects will be assessed as part of the EIA process:

- ❖ Terrestrial Ecology, Aquatic Ecology & Wetlands;
- ❖ Soils, Land Use & Land Capability, Hydopedology;
- ❖ Surface Water;
- ❖ Groundwater;
- ❖ Traffic Impact Assessment;
- ❖ Air Quality;
- ❖ Socio-Economics;
- ❖ Community Health;
- ❖ Heritage & Paleontology;
- ❖ Noise;
- ❖ Blasting & Vibration;
- ❖ Visual; and
- ❖ Climate change.

9.3 Terms of Reference for Specialist Studies

Table 9-1 outlines the studies proposed during the EIA Phase of the project and the proposed scope of work to be undertaken as part of the S&EIA process:

Table 9-1: Terms of Reference for Specialist Studies

Study	Terms of reference
Terrestrial Ecology	<p><u>Scoping Assessment:</u></p> <p>The scoping assessment will consist of a desktop assessment only. This will include:</p> <p>1. Literature review</p> <ul style="list-style-type: none"> ❖ Prior to the field survey a literature review will be conducted based on the following: ❖ The Vegetation of South Africa, Lesotho & Swaziland (Mucina & Rutherford, 2006); ❖ The Southern Africa Bird Atlas Project (SABAP2, 2017) and BirdLife South Africa website (2017); ❖ Mammal information was referenced from the Animal Demography Unit (ADU, 2016), Skinner & Chimimba (2005) and the IUCN spatial database (IUCN, 2017); and ❖ Reptiles and amphibians were referenced from ADU (2016), Bates et al. (2014), Du Preez and Carruthers (2009) and the IUCN spatial database (IUCN, 2017) respectively. <p>The identification of potential species of conservation concern was one of the primary ecological requirements of the literature review.</p> <p>2. The terrestrial biodiversity Scoping Report will include the following:</p> <p>Results of literature review detailing the known presence of terrestrial and freshwater flora (including vegetation types/habitats and wetlands) and fauna (mammals, avifauna, amphibians, reptiles, and aquatic biota) with particular emphasis to be placed on IUCN Red List (Threatened), Protected, local endemic, and dominant species/habitat types. The Scoping Report will contain the following:</p>

Study	Terms of reference
	<ul style="list-style-type: none"> ❖ Biodiversity Baseline: Field surveys will be conducted to confirm presence of species identified in the desktop report. The field surveys will be divided into the following specialist disciplines: Botanical; Mammals; Herpetology (reptiles and amphibians); and Avifauna. <p>Baseline biodiversity data will be collected during seasonally representative (wet and dry season surveys). Brief descriptions of the standardised methodologies applied in each of the specialist disciplines are provided below. More detailed descriptions of survey methodologies are available upon request. The outcome of the baseline assessment will be an integrated biodiversity baseline report consisting of the reports compiled for each of the sub-specialist disciplines. The report will include maps for the various specialist disciplines including the locations of observed red data species, if any were found as well as potential critical habitats for these species (as per the requirements of IFC Performance Standards).</p> <p><u>Impact Assessment</u></p> <p>1. The terrestrial biodiversity impact assessment report will consist of the following:</p> <ul style="list-style-type: none"> ❖ Assess impacts of ongoing and proposed activities on biodiversity of the project area; ❖ Assess whether proposed activities are likely to have significant impacts on biodiversity and specifically species of conservation concern; ❖ Identify practically implementable mitigation measures to reduce the significance of proposed activities on biodiversity; ❖ Assess residual and cumulative impacts after implementation of mitigation measures; and ❖ Compilation of biodiversity management and monitoring plan. <p>The outcome of the impact assessment phase will be an integrated biodiversity impact assessment report detailing the findings of each of the various sub-specialist studies. The impact assessment report will provide an integrated assessment of the significance of the potential impacts on the biodiversity of the project area with specific emphasis on observed red data species. The report will identify suitable mitigation measures and assess the revised significance of potential impacts on biodiversity post-</p>

Study	Terms of reference
	<p>implementation of mitigation measures. The integrated biodiversity impact assessment report will also include a biodiversity monitoring programme.</p>
<p>Aquatic Ecology</p>	<p><u>Scoping Assessment</u></p> <p>The scoping assessment will consist of a desktop assessment only.</p> <p>1. Literature review</p> <p>A literature review will be conducted based on the following:</p> <ul style="list-style-type: none"> ❖ A Desktop Assessment of the Present Ecological State, Ecological Importance and Ecological Sensitivity per Sub Quaternary Reaches for Secondary Catchments in South Africa. Draft. Compiled by RQS-RDM (DWS, 2013); ❖ The National Freshwater Ecosystem Priority Areas (Nel et al., 2011); ❖ Mpumalanga Highveld Wetlands (2014); ❖ Land Type Data; ❖ Mining and Biodiversity Guideline (DEA et al., 2013); and ❖ Contour data (5m). <p>The objective of the scoping level assessment will be to inform subsequent water resource baseline studies and to also identify potential red flags (significant issues) related to the project.</p> <p>2. The water resource Scoping Report will include the following:</p> <p>Results of literature review providing a desktop delineation of all the local water resources, including rivers, drainage lines and wetland areas. The scoping assessment will also describe the ecological status of these systems based on the available desktop</p>

Study	Terms of reference
	<p>data. This information will be considered in the light of the proposed mining operation to identify any high-risk aspects and / or project flags which would need to be considered.</p> <p>2.1 Water Resource Baseline</p> <p>Field surveys will be conducted to delineate the local water resources, and establish the ecological status, significance and functioning of these systems which were identified in the desktop report. The field surveys will be divided into the following specialist disciplines:</p> <ul style="list-style-type: none"> ❖ Aquatic ecology; and ❖ Wetlands. <p>Baseline water resource data will be collected during a single season survey, and it is preferable that the surveys be conducted during the wet season period (not shortly after heavy rains). Brief descriptions of the standardised methodologies applied in each of the specialist disciplines are provided below. More detailed descriptions of survey methodologies are available upon request.</p> <p>2.1.1. Aquatic Assessment</p> <p>The methods are aligned with the current River Ecosystem Monitoring Programme (REMP) which are endorsed by the Department of Water and Sanitation (DWS). In addition, it is further noted that the methods provided below will allow for the fulfilment of the SASS5 and IHAS conditions provided in the approved Water Use Licences (WUL's).</p> <p>The Present Ecological Status (PES) determination methods will be implemented for this study. The method provides an effective starting point for aquatic monitoring and encompasses the majority of the ecological drivers of water and habitat quality. This method for determining PES thus serves as a best practice method and is detailed further below.</p> <p>The abiotic driver assessment:</p>

Study	Terms of reference
	<ul style="list-style-type: none"> ❖ In situ water quality (DWAF standards for aquatic ecology); ❖ The Invertebrate Habitat Assessment System (IHAS); ❖ The Intermediate Habitat Integrity Assessment (IHIA); and ❖ Hydrological descriptions. <p>The biotic response indicator assessment:</p> <ul style="list-style-type: none"> ❖ South African Scoring System ver 5 (SASS 5); ❖ The Average Score Per Taxon (ASPT); ❖ Macroinvertebrate community structure study; and ❖ Fish community structure study. <p>The overall PES of the associated aquatic ecosystems will be determined using the REMP Ecological Classification manual (Kleynhans and Louw, 2007). The PES will be calculated based on the results of the various abovementioned biological indexes</p> <p>2.1.2 Wetland Assessment</p> <p>The National Wetland Classification Systems (NWCS) developed by the South African National Biodiversity Institute (SANBI) will be considered for this study. This system comprises a hierarchical classification process of defining a wetland based on the principles of the hydrogeomorphic (HGM) approach at higher levels and then includes structural features at the lower levels of classification (Ollis et al., 2013).</p> <p>The following wetland guideline and tools will be used to delineate and assess the ecological status and functioning of the systems:</p>

Study	Terms of reference
	<ul style="list-style-type: none"> ❖ The wetland areas will be delineated in accordance with the DWAF (2005) guidelines, whereby the outer edges of the wetland areas were identified; ❖ The PES or health for the wetland as a whole will be calculated, whereby the hydrology, geomorphology and vegetation scores are aggregated to obtain an overall PES health score (Macfarlane et al., 2009); ❖ The assessment of the ecosystem services supplied by the identified wetlands will be conducted per the guidelines as described in WET-EcoServices (Kotze et al., 2009); and ❖ The Ecological Importance and Sensitivity (EIS) tool was derived to assess the system’s ability to resist disturbance and its capability to recover from disturbance once it has occurred (Rountree et al., 2013) <p>The outcome of the baseline assessment will be an integrated water resource baseline report consisting of the respective specialist disciplines. The report will include maps for the various specialist disciplines including the delineation and extent of wetland areas, sample site locations and a sensitivity description.</p> <p><u>Impact Assessment</u></p> <p>The water resource impact assessment will consist of the following:</p> <ul style="list-style-type: none"> ❖ Assess impacts of ongoing and proposed activities on the local water resources; ❖ Assess whether proposed activities are likely to have significant impacts on the water resources; ❖ Identify practically implementable mitigation measures to reduce the significance of proposed activities on the water resources; and ❖ Assess residual and cumulative impacts after implementation of mitigation measures.
Soils, Land Use & Land Capability	<u>Scoping Assessment</u>

Study	Terms of reference
	<p>The scoping assessment will consist of a desktop assessment only.</p> <p>1. Literature review</p> <ul style="list-style-type: none"> ❖ A literature review will be conducted based on the following: ❖ Land Type Data; ❖ Google Earth Pro imagery; ❖ Contour data (5m); and ❖ Historic climate conditions <p>The objective of the scoping level assessment will be to inform subsequent soils, land capability and land use baseline study and to also identify potential red flags (significant issues) related to the project.</p> <p>2. The soils, land capability and land use Scoping Report will include the following:</p> <p>The desktop results from the literature review along with any areas that are considered high risk areas. These areas would need to be looked at in more detail during the EIA Phase.</p> <p>3. Soil Baseline</p> <p>A soil auger will be used to determine the soil form/family and depth. The soil will be hand augured to the first restricting layer or 1.5 m. Soil survey positions will be recorded as waypoints using a handheld GPS. Soils will be identified to the soil family level as per the “Soil Classification: A Taxonomic System for South Africa” Invalid source specified.. Landscape features such as existing open trenches will also be helpful in determining soil types and depth.</p> <p>4. Agricultural Potential Assessment</p>

Study	Terms of reference									
	<p>Land capability and agricultural potential is determined by a combination of soil, terrain and climate features. Land capability is defined by the most intensive long term sustainable use of land under rain-fed conditions. At the same time, an indication is given about the permanent limitations associated with the different land use classes. Land capability is divided into eight classes and these may be divided into three capability group. The Table below shows how the land classes and groups are arranged in order of decreasing capability and ranges of use. The risk of use increases from class I to class VIII (Smith, 2006).</p>									
	Land Capability Class	Increased Intensity of Use								Land Capability Groups
I	W	F	LG	MG	IG	LC	MC	IC	VIC	Arable Land
II	W	F	LG	MG	IG	LC	MC	IC		
III	W	F	LG	MG	IG	LC	MC			
IV	W	F	LG	MG	IG	LC				
V	W		LG	MG						Grazing Land
VI	W	F	LG	MG						
VII	W	F	LG							
VIII	W									Wildlife
W - Wildlife		MG - Moderate Grazing			MC - Moderate Cultivation					

Study	Terms of reference									
	F- Forestry		IG - Intensive Grazing	IC - Intensive Cultivation						
	LG - Light Grazing		LC - Light Cultivation	VIC - Very Intensive Cultivation						
<p>The land potential classes are determined by combining the land capability results and the climate capability of a region as shown in the table directly below. The final land potential results are then described in the following table.</p>										
	Land capability class		Climate capability class							
			C1	C2	C3	C4	C5	C6	C7	C8
	I		L1	L1	L2	L2	L3	L3	L4	L4
	II		L1	L2	L2	L3	L3	L4	L4	L5
	III		L2	L2	L3	L3	L4	L4	L5	L6
	IV		L2	L3	L3	L4	L4	L5	L5	L6
	V		Vlei	Vlei	Vlei	Vlei	Vlei	Vlei	Vlei	Vlei
	VI		L4	L4	L5	L5	L5	L6	L6	L7
	VII		L5	L5	L6	L6	L7	L7	L7	L8
	VIII		L6	L6	L7	L7	L8	L8	L8	L8

Study	Terms of reference	
	Land potential	Description of land potential class
	L1	Very high potential: No limitations. Appropriate contour protection must be implemented and inspected.
	L2	High potential: Very infrequent and/or minor limitations due to soil, slope, temperatures or rainfall. Appropriate contour protection must be implemented and inspected.
	L3	Good potential: Infrequent and/or moderate limitations due to soil, slope, temperatures or rainfall. Appropriate contour protection must be implemented and inspected.
	L4	Moderate potential: Moderately regular and/or severe to moderate limitations due to soil, slope, temperatures or rainfall. Appropriate permission is required before ploughing virgin land.
	L5	Restricted potential: Regular and/or severe to moderate limitations due to soil, slope, temperatures or rainfall.
	L6	Very restricted potential: Regular and/or severe limitations due to soil, slope, temperatures or rainfall. Non-arable
	L7	Low potential: Severe limitations due to soil, slope, temperatures or rainfall. Non-arable
	L8	Very low potential: Very severe limitations due to soil, slope, temperatures or rainfall. Non-arable
	<p><u>Impact Assessment</u></p> <p>The soils, land capability, and land use impact assessment will consist of the following:</p>	

Study	Terms of reference
	<ul style="list-style-type: none"> ❖ Assess impacts of ongoing and proposed activities on the local water resources; ❖ Assess whether proposed activities are likely to have significant impacts on the soil resource; ❖ Identify practically implementable mitigation measures to reduce the significance of proposed activities on the soil resources; and ❖ Assess residual and cumulative impacts after implementation of mitigation measures.
Wetlands including hydropedology	<p>The process of the high-level soil and hydropedology assessment entails the aspects listed in the methodology description below:</p> <p>1. Aerial Photograph Interpretation, Land Use and Soil Investigation Units:</p> <p>An aerial photograph interpretation exercise will be conducted through the use of Google Earth images and historical aerial photographs of the site. Due to the position of the site, the plinthic catena and the availability of multiple google earth images it as possible to conduct a high-level soil surface colour interpretation of the site. The surface soil colour corresponds to the subsoil horizons in the manner as explained in Van der Waals (2013) and could therefore be used as a first approximation of the soil distribution on the site.</p> <p>2. Terrain Unit Indicator</p> <p>Contours of the site (5 m intervals) will be used to provide an indication of drainage depressions and drainage lines. From this data, the terrain unit indicator will be deduced through the use of a topographic wetness index (TWI) determination. The TWI also provides an indication of curvature characteristics (concave vs convex) of the landscape and was used in the generation of the soil map.</p> <p>From extensive experience on the field of hydropedology it is evident that the TWI provides a very accurate indication of water flow paths and areas of water accumulation that are often correlated with wetlands – if soil and topographic conditions are conducive to the formation of redoximorphic features in the soils. This is a function of the topography of the site and ties in with the dominant water flow regime in the soils and the landscape (refer to previous sections where the concept of these flows was</p>

Study	Terms of reference
	<p>elucidated). Areas in blue indicate concentration of water in flow paths with lighter shades of blue indicating areas of regular water flows in the soils and on the surface of the wetland/ terrestrial zone interface.</p> <p>3. Reconnaissance Site Soil Survey:</p> <p>The reconnaissance site soil survey will be conducted. This survey will focus on the interpretation of surface soil colour characteristic correlation with subsurface soil characteristics as reported on by Van der Waals (2013).</p> <p>4. Site Hydropedology Context Determination</p> <p>For the purposes of the hydropedology assessment the context of the specific site will be determined. This will be done through the thorough consideration of the geological, topographical, climatic, soil, hydropedological and catchment context of the site. The elements of context are described in more detail below in the various sections.</p>
Surface Water	<p>A full, detailed hydrological assessment will be undertaken for the EIA Phase of the project.</p> <p><u>Impact Assessment:</u></p> <p>1. Flood Lines</p> <p>The flood peaks for the 1:50- and 1:100-year return intervals will be calculated for the contributing catchment area associated with each river. Flood peak determination will factor in regional rainfall and relevant catchment characteristics influences. Based on the provided elevations, and utilising the calculated flood peaks, the flood lines for current conditions will be generated using the HEC-RAS one dimensional backwater flow model. The model is able to simulate the effects of various control points/obstructions located within the watercourse. It assumed that topographical data at an acceptable resolution of the site will be provided.</p> <p>2. Conceptual Stormwater Management Plan</p> <p>Based on the information gathered during the desktop review and the site walkover, a conceptual stormwater management</p>

Study	Terms of reference
	<p>plan will be developed for the Project. ‘Dirty’ and ‘clean’ contributing catchments will be discretised based on topographical fall, associated activities and key areas of concern identified by WSP during the site walkover. Furthermore, the discretisation of the catchments will factor in existing stormwater infrastructure and the overall functionality and the most practical and feasible implementation of the final stormwater management plan. Based on the discretised catchments, the required stormwater management drainage elements (including channels, pipes, berms, and pollution control dams) will be defined to ensure appropriate stormwater management according to the management principles outlined in the GN704 and BPGs.</p> <p>3. Water and Salt Balance</p> <p>An annual average static water balance associated with the mine will be developed using Excel, based on a Process Flow Diagram (PFD) developed in conjunction with the Client. The PFD will indicate sources and movement of water within the mine and projected volumes. A final project site plan is required to finalise the water balance. The salt balance calculations will be based on the volumes calculated within the water balance and water quality data provided. If available, Total Dissolved Solids (TDS) data will be used to calculate the salt balance, unless the Client would prefer for this to be based on an alternative parameter for which data are available. If insufficient water quality data are currently available, a WSP specialist will measure TDS using a multi-parameter probe, during the site visit.</p> <p>4. Water Quality Analysis and Monitoring Data</p> <p>A surface water quality analysis will be undertaken and a monitoring programme will be developed for the mine to allow for the appraisal of impacts to surface water as a result of onsite activities and to allow for the formulation of various management actions associated with the protection of water resources. Sampling locations, methodology, sampling frequency and an analytical programme (i.e. analytes) will be rationalised as part of the assessment. Water quality data obtained from the site will be compared against the relevant DWS water quality standard limits. A water quality monitoring plan will be developed to determine key water quality monitoring points, chemical monitoring suites and the frequency of water quality sampling and analysis.</p> <p>5. Detailed Risk Assessment</p> <p>A detailed risk and mitigation assessment will be undertaken with adherence to environmental risk assessment methodology</p>

Study	Terms of reference
	<p>for construction, operational and decommissioning phases of the mine. This methodology accounts for the magnitude, significance and duration of the proposed risk and assigns each risk a status (High, Medium or Low). Mitigation measures for each risk will be recommended and the potential risk status will be reassessed assuming the proposed mitigation measures are put in place.</p>
Ground Water Assessment	<p><u>Impact Assessment:</u></p> <p>The Impact Assessment phase will involve several tasks, as explained below. The results will help characterise the underlying aquifer systems and define potential impacts on the local aquifers, but also groundwater users and sensitive receptors in the Project area</p> <p>1. Hydrocensus</p> <p>A hydrocensus covering the Project footprint area will be conducted. The hydrocensus will concentrated on identifying existing boreholes throughout the project area to enhance the knowledge of the groundwater system and current groundwater use. During the hydrocensus the following information will be collected for each borehole:</p> <ul style="list-style-type: none"> ❖ Borehole position (X, Y, Z-coordinates); ❖ Information relating to equipment installed; ❖ Borehole construction details; ❖ Borehole yield – if known by the land owner; ❖ Groundwater level, if possible; and ❖ Current use. <p>Groundwater levels will be measured by using a dip meter to measure the distance from the mouth of the borehole (borehole collar elevation) to the groundwater table depth in the borehole. The height of the borehole collar will be subtracted from the</p>

Study	Terms of reference
	<p>measured water level to define a water level below surface (measured in m bgl). Water samples will be collected to define the current groundwater quality across the project area and identified possible current chemicals of concern.</p> <p>2. Geophysical Survey</p> <p>A ground geophysical survey will be conducted to delineate weathered zones and vertical to sub-vertical geological structures underlying the proposed Project area. The geophysical survey will also assist in identifying suitable drilling targets for aquifer characterisation and potential water supply purposes. Electromagnetic (EM34-3) and magnetic surveys are proposed to identify linear geological structures like fractures and dykes, or delineate deeper weathered zones that could act as preferred groundwater flow paths.</p> <p>3. Drilling Programme</p> <p>A drilling programme has been proposed using the rotary air percussion method. The borehole depths will be based on the proposed depths of the mining areas; a final depth of 80 metres below surface has been proposed. It is important to assess the full extent of the geological horizons to be penetrated by the mining operations; to help define geological and hydrogeological properties and define conditions below the mine floor. The boreholes will be drilled relatively close to the proposed mining and mine infrastructure areas. The new boreholes will be used for aquifer characterisation and will ultimately be used as groundwater monitoring boreholes during the various mining phases. Core drilling is included in the drilling programme to obtain sample material for ARD analysis. It is important to use geological material from the proposed pit areas for the ARD assessment as site conditions (geological, mineralogical and water impacts) may be different to other mines in the area and therefore using results from another site is not recommended.</p> <p>4. Geochemistry Assessment</p> <p>The host rock and coal seams in the area will be subjected to geochemical assessments at Waterlab to determine their metal leach and acid generation potential. The samples will be submitted for static leachate tests and analysed according to the NEM:WA guidelines and regulations for waste classification. The results will determine the mineral composition of the rock sample, what elements could potentially leach from the rock or waste material during storage on surface or within the pit, a</p>

Study	Terms of reference
	<p>waste assessment and liner requirements for the storage of the material on surface.</p> <p>Eighteen (18) geological core samples will be submitted for geochemical laboratory tests to define its mineral and chemical content and to determine the potential for acid generation or neutralisation, as well as the leachability of elements in concentrations that can potentially be harmful to the receiving environment.</p> <p>Tests proposed for the Project include:</p> <ul style="list-style-type: none"> ❖ XRD and XRF analysis; ❖ Acid-Base Accounting (ABA) – acid-neutralizing potential and acid-generating potential analysis to calculate the Net Neutralizing Potential; ❖ Net Acid Generation and neutralizing potential tests; and ❖ Leachate tests. <p>Leachate tests will be done to simulate the heavy metal and anion leachate potential of soils, waste material and waste water left in-situ under the expected conditions, with the solution type and pH determined based on guidelines or the expected conditions on site. These tests will simulate and evaluate the potential of any heavy metal or ion contamination from the waste material that will be produced. Total Concentration values will be determined by aqua regia digestion and analysis with ICP methods to determine the complete chemical make-up of the material before being leached or altered.</p> <p>5. Aquifer Testing</p> <p>An aquifer testing programme has been proposed to determine the aquifer and formation characteristics underlying the Project area. The aquifer testing programme will not only assist to define aquifer / borehole yields in the area, but also help define the potential rate of groundwater movement, as well as cone of dewatering extent and plume migration rate and extent. A recommendation has been made to test the 12 new percussion boreholes (12-hour constant discharge test plus recovery).</p> <p>Groundwater quality samples will be collected during the aquifer testing and will be sent to Aquatico Laboratories for chemical</p>

Study	Terms of reference
	<p>analysis. All water samples collected will be assessed against the SANS241:2015 Drinking Water Standards, as well as the Olifants- and Inkomati-Usuthu Catchment Resource Quality Objectives.</p> <p>6. Numerical Model</p> <p>A groundwater numerical model for the Project will be created to assess the extent and possible impacts of contamination originating from the mine and its associated infrastructure, as well as what impacts the cone of dewatering or possible decant might have on local groundwater systems and sensitive receptors. MODFLOW will be used as modelling software.</p> <p>The model domain will extend to the closest groundwater boundaries not expected to be impacted by the Project and its activities. The model will be calibrated to the latest water levels (steady state), as well as historic water level monitoring (transient). After calibration, the model will be utilised to run various transport scenarios to determine the likely impacts from the Project on the receiving environment. The modelling will cover impacts post closure should the need for groundwater recovery prediction arise. The model will also be used to define an effective groundwater monitoring network.</p> <p>6. Reporting</p> <p>The outcome of the impact assessment phase will be an integrated groundwater impact assessment report detailing the findings of each of the various sub-task studies. The impact assessment report will provide an integrated assessment of the significance of the potential impacts on the groundwater environment underlying the project area. The report will identify suitable mitigation measures and assess the significance of potential impacts on the groundwater environment and its users, post-implementation of mitigation measures.</p> <p><u>Deliverables:</u></p> <ul style="list-style-type: none"> ❖ The groundwater specialist report will define: ❖ The current groundwater use in the Project area; ❖ Impacts on potential receptors in the project area for example surface water resources and wetlands;

Study	Terms of reference
	<ul style="list-style-type: none"> ❖ The aquifers underlying the Project area, as well as current groundwater table depth, groundwater quality, and flow characteristics; ❖ Groundwater related impacts and groundwater inflow into the mining areas; ❖ The radius of influence that will be created by mine dewatering, plus the extent of possible contamination originating from the proposed areas a mine infrastructure; ❖ The acid rock drainage potential associated with the host rock material, the coal seams and the discard material; ❖ Whether decant will occur during the operational phase or post closure; and ❖ A groundwater monitoring network that will effectively monitor the groundwater quality and level changes during the operational and post-closure phases.
Traffic Impact Assessment	<p><u>Impact Assessment:</u></p> <p>The Impact Assessment Methodology assists in evaluating the overall effect of a proposed activity on the environment. The environmental impact is determined through a systematic analysis of the various components of the impact. This is undertaken using information that is available to the environmental practitioner through the process of the environmental impact assessment. The impact evaluation of predicted impacts is undertaken through an assessment of the significance of the impacts.</p> <p>Significance is determined through a synthesis of impact characteristics which include context and intensity of an impact. Context refers to the geographical scale i.e. site, local, national or global whereas intensity is defined by the severity of the impact e.g. the magnitude of deviation from background conditions, the size of the area affected, the duration of the impact and the overall probability of occurrence. Significance is an indication of the importance of the impact in terms of both physical extent and time scale, and therefore indicates the level of mitigation required. The total number of points scored for each impact indicates the level of significance of the impact. Significance is calculated using the Ratings Table which will be used in the Impact Assessment.</p>

Study	Terms of reference
	<p>Impact assessment takes account of the nature, scale and duration of the effects on the environment whether such effects are positive (beneficial) or negative (detrimental). Each issue / impact is also assessed according to the project stages:</p> <ul style="list-style-type: none"> ❖ Planning (Not applicable in this instance – no traffic impact) ❖ Construction ❖ Operation ❖ Decommissioning (Not evaluated during site selection, will cope with short term traffic of less intensity than compared to constructing traffic) ❖ Closure and Rehabilitation <p>Where necessary, the proposal for mitigation or optimisation of an impact is detailed. A brief discussion of the impact and the rationale behind the assessment of its significance is included. A rating system is used to classify the impacts. The rating system is applied to the potential impact on the receiving environment and includes an objective evaluation of the mitigation of the impact. Impacts have been consolidated into one rating. In assessing the significance of each issue, the following criteria (including an allocated point system) is used.</p>
Air Quality	<p><u>Scoping Assessment</u></p> <p>The scoping/baseline assessment will consist of a desktop assessment. The objective will be to inform the subsequent Air Quality Impact Assessment Study and will include the following:</p> <ul style="list-style-type: none"> ❖ Literature review of air pollutant emissions from opencast and underground coal mines and coal processing plants. ❖ Literature review of potential health effects associated with these emissions. ❖ Outlining of relevant air quality legislation and ambient air quality standards.

Study	Terms of reference
	<ul style="list-style-type: none"> ❖ Description of the site location, topography, general surroundings of the site, as well as the relevant site-specific environment. ❖ Establishment of the baseline air quality from Air Quality Management Plans and Air Quality Monitoring Reports in the area. ❖ Description of the nature of other major sources of air pollution in the study area. ❖ Sourcing and evaluation of local meteorological data to determine the prevailing meteorological conditions. ❖ Sourcing and evaluation of MM5 meteorological data to facilitate modelling. <p><u>Deliverables</u></p> <p>The baseline assessment will include:</p> <ul style="list-style-type: none"> ❖ Site Location and Topography ❖ Air Quality Legislation and Standards ❖ Health Effects of Particulate Pollutants ❖ Regional Meteorological Overview ❖ Ambient Air Quality ❖ Local Meteorology <p><u>Impact Assessment</u></p> <p>Preparation of the Air Quality Impact Assessment will include and be based on the information from the scoping/baseline</p>

Study	Terms of reference
	<p>assessment and will also include:</p> <ul style="list-style-type: none"> ❖ Description of the process flow of the proposed project. This will form the basis for identifying sources of emissions for the emissions inventory. ❖ An emissions inventory – a list of activities which are sources of air pollution in the project. ❖ Characterisation of the emission sources and the pollutants emitted from them. ❖ Calculations of emission rates from the sources identified in the emissions inventory. ❖ Preparation of Met data for modelling. ❖ Selecting an appropriate atmospheric dispersion model. ❖ Determining and preparing the input parameters for modelling will include the following components <ul style="list-style-type: none"> ▪ Source type: Area source, point source, volume source or open pit source. ▪ Source dimensions: lateral, vertical. ▪ Source location and orientation. ▪ Emission parameters: emission rate/ emission height, emission temperature and emission velocity. ▪ Emission times. ▪ Receptor grid. ❖ Dispersion modelling of the emissions to predict ambient concentrations of particulate pollutants emissions from the

Study	Terms of reference
	<p>activities and determine the zones of influence around the emission sources accordingly.</p> <ul style="list-style-type: none"> ❖ Presentation of model outputs/results in the form of contour plots and a summary of the results. ❖ An assessment of the significance of impacts to the receiving air quality environment and sensitive receptors within the zone of influence based on National Ambient Air Quality Standards. ❖ An assessment of any potential cumulative impacts in terms of the National Ambient Air Quality Standards. ❖ An outline of practical and implementable mitigation measures by which to manage and reduce the identified impacts (Any changes to the significance of impacts resulting from implementation of mitigation or management measures will be illustrated). ❖ A recommendation in terms of an air quality monitoring programme.
Socio-Economics & Tourism	<p><u>Scoping Assessment:</u></p> <p>The study will be designed to comply with the relevant national legislative requirements, such as those stipulated in National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA) and Mineral and Petroleum Resources Development Act, 2002 (MPRDA) (Act No. 28 of 2002), as well as with the relevant international best-practice standards, such as the Equator Principles, World Bank Standards and International Finance Corporation (IFC) Principles and Performance Standards. The activities which will be undertaken as part of the study will comprise the following:</p> <ul style="list-style-type: none"> ❖ Defining the site-specific, local and regional study areas; ❖ Data collection, including a desktop review, investigative site visit, interviews with key informants, and a review of information from other specialist studies and the public participation process; ❖ The compilation of a baseline profile, including information on demographics, education, skills levels, employment, local and regional economic conditions, infrastructure and service delivery, health and gender-related issues, community

Study	Terms of reference
	<p>needs and challenges, spatial development and land claims. Information pertaining to other projects operating in the local municipal area is also presented, as are the prevalent concerns regarding and attitudes towards the proposed Project;</p> <ul style="list-style-type: none"> ❖ Assessment of impacts based on issues identified through specialist opinion, interviews with key informants and the public participation process. Identified impacts will be categorised in terms of the Project phase in which it is most likely to originate, namely the construction, operational or decommissioning phases; ❖ Rating of impacts in terms of their anticipated duration, extent, intensity and probability. Duration, extent and intensity ratings will be combined into a measure of an impact’s expected consequence. Consequence ratings, in turn, will be combined with probability ratings to give a measure of an impact’s overall significance; ❖ Identification of appropriate mitigation measures to avoid or ameliorate negative social impacts and to enhance positive ones. The rating procedure described above will then be repeated to assess the expected consequence, probability and significance of each impact after mitigation. This post-mitigation rating will give an indication of the significance of residual impacts, while the difference between an impact’s pre-and post-mitigation ratings therefore represents the degree to which the recommended mitigation measures are expected to be effective in reducing or ameliorating that impact; and ❖ Formulating recommendations regarding the identified mitigation and enhancement measures, as well as other general recommendations that may aid the successful implementation of the proposed Project. ❖ Definition of the site-specific study area: it is envisioned that the site-specific study area will consist of the directly affected municipal wards (that is, the wards in which the surface infrastructure will be placed and the areas that will be mined). This will, however, depend on the latest version of the mine plan available at the start of the impact assessment phase. ❖ Secondary data collection for the purposes of updating the existing socio-economic baseline profile to include the site-specific study area. A desktop review of specifically the Census 2011 data has been conducted to update the baseline profile. Other documents reviewed during this scoping phase will also be revisited to extract information of relevance to the site-specific area.

Study	Terms of reference
	<ul style="list-style-type: none"> ❖ Primary data collection: Conducting a maximum of eight focus group discussions and/or key informant interviews with relevant stakeholders. The main aims of such consultation will be as follows: ❖ Assess stakeholders' perceptions, concerns and expectations about the proposed Project; ❖ Verify baseline socio-economic information collected through the desktop review; ❖ Identify potential impacts of the proposed Project on people's lives and livelihoods; and ❖ Help identify possible mitigation measures to avoid or reduce negative impacts of the Project. <p><u>Impact Assessment</u></p> <ul style="list-style-type: none"> ❖ The compilation of a detailed socio-economic baseline profile will be undertaken based on the information collected through the desktop review and investigative fieldwork. Socio-economic attributes to be described in the baseline profile will include, inter alia, demographics and population distribution, prevalent livelihood activities, levels of education and skills, access to basic services, and main challenges faced by the community. ❖ The identification, assessment and rating of likely socio-economic impacts that may result from the proposed project will be based on the detailed baseline profile of the affected communities, experience with similar projects in the area and specialist opinion. These impacts will be presented in the SIA which will consist of the following: ❖ The baseline socio-economic profile mentioned above; ❖ A graphic representation of the sensitivity mapping exercise (in the form of a detailed map of the areas immediately surrounding the resource areas in the primary study area); ❖ A preliminary list of expected social impacts that may arise because of the proposed Project; ❖ The scope of work for the impact assessment phase of the study, based on the information collected in this baseline

Study	Terms of reference
	<p>phase.</p> <ul style="list-style-type: none"> ❖ A socially-relevant project description, including information pertaining to the size, origin and skills levels of the workforce, anticipated budgets, as well as mine employment and procurement practices, etc.; ❖ A supplemented baseline socio-economic profile, including the site-specific study area, more detailed information pertaining to community needs, and concerns about or attitudes towards the proposed Project; ❖ The identification, description and assessment of potential social impacts that may arise because of the proposed Project. The significance of impacts will be rated using a recognized rating system; ❖ A description of potential cumulative impacts and social risks; and ❖ Project-specific, cost effective and practical mitigation measures to eliminate or ameliorate adverse social impacts, and enhances positive ones.
Community Health	<p><u>Impact Assessment:</u></p> <p>The following deliverables will be provided for the Health Impacts Assessment:</p> <ol style="list-style-type: none"> 1. A single HIA Report directed by the Guideline document on Environmental Health Impacts of Development Projects in South Africa generated by the Department of Health (DoH) in 2014. 2. A standardised approach will be considered for the HIA to ensure that evidence-based recommendations supported the impact assessment. To ensure compliance with the IFC performance standards, and especially PS4, the methodology outlined in the Good Practice Note for HIA from the IFC, was adopted (IFC, 2009). <p>Achieving the above-mentioned deliverable requires the use and adherence to the following process:</p> <ul style="list-style-type: none"> ❖ Screening (preliminary evaluation to determine the necessity of an HIA) -this step has been completed;

Study	Terms of reference
	<ul style="list-style-type: none"> ❖ Scoping (identifying the range of potential Project-related health impacts and defining the terms of reference for the HIA, based on published literature, local data and broad stakeholder consultation and how these may be influenced by the Project) -this is the current step/ phase; ❖ Risk assessment (qualitative and quantitative appraisal of the potential health impacts in relation to defined communities and the Project development, including stakeholder participation) -this will be conducted during impact assessment phase; ❖ Appraisal and mitigation (development of a CHMP) based on the findings of the risk assessment) -this will be completed during the impact assessment phase; ❖ Implementation and monitoring (realisation of the CHMP including monitoring activities that allow for adaptation) -during operational phase; and ❖ Evaluation and verification of performance and effectiveness (key step to analyse the HIA process) -during operational to closure and decommissioning phases.
Heritage & Palaeontology	<p><u>Scoping Assessment:</u></p> <p>The HSR report will be compiled in compliance with NHRA (no 25 of 1999) and the National Environmental Management Act (NEMA) (No. 107 of 1998). The HIA process consists of three steps:</p> <ol style="list-style-type: none"> 1. Literature Review and initial site analysis (this HSR): <p>The background information to the field survey relies greatly on the Heritage Background Research which was undertaken through archival research and evaluation of aerial photography and topographical maps of the study area.</p> <p><u>Impact Assessment:</u></p> <ol style="list-style-type: none"> 2. Physical Survey: A physical survey is subsequently conducted on foot through the proposed project area by a qualified heritage

Study	Terms of reference
	<p>specialist/s (e.g. an archaeologist and a palaeontologist)), and is aimed at locating and documenting sites falling within and adjacent to the proposed development footprint.</p> <p>3. The final step involves the recording and documentation of relevant heritage resources identified in the physical survey, the assessment of resources in terms of the HIA criteria and report writing, as well as mapping and constructive recommendations.</p> <p>The significance of heritage sites is based on four main criteria in accordance with site integrity (i.e. primary vs. secondary context), amount of deposit, range of features (e.g., stonewalling, stone tools and enclosures), and density of scatter (dispersed scatter):</p> <ul style="list-style-type: none"> ❖ Low - <10/50m² ❖ Medium - 10-50/50m² ❖ High - >50/50m² ❖ Uniqueness; and <p>Management actions and recommended mitigation, which will result in a reduction in the impact on the sites, will be expressed as follows:</p> <ul style="list-style-type: none"> A - No further action necessary; B - Mapping of the site and controlled sampling required; C - No-go or relocate development activity position; D - Preserve site, or extensive data collection and mapping of the site; and E - Preserve site.

Study	Terms of reference																																
	<p>Impacts on these sites by the development will be evaluated as follows:</p> <p>Site significance classification standards prescribed by the SAHRA (2006) and approved by the ASAPA for the Southern African Development Community (SADC) region, were used for the purpose of this report.</p> <table border="1" data-bbox="607 480 1975 1193"> <thead> <tr> <th>Field rating</th> <th>Grade</th> <th>Significance</th> <th>Recommended mitigation</th> </tr> </thead> <tbody> <tr> <td>National Significance (NS)</td> <td>Grade 1</td> <td>-</td> <td>Conservation; National Site nomination</td> </tr> <tr> <td>Provincial Significance (PS)</td> <td>Grade 2</td> <td>-</td> <td>Conservation; Provincial Site nomination</td> </tr> <tr> <td>Local Significance (LS)</td> <td>Grade 3A</td> <td>High Significance</td> <td>Conservation; Mitigation not advised</td> </tr> <tr> <td>Local Significance (LS)</td> <td>Grade 3B</td> <td>High Significance</td> <td>Mitigation (Part of site should be retained)</td> </tr> <tr> <td>Generally Protected A (GP.A)</td> <td>-</td> <td>High / Medium Significance</td> <td>Mitigation before destruction</td> </tr> <tr> <td>Generally Protected B (GP.B)</td> <td>-</td> <td>Medium Significance</td> <td>Recording before destruction</td> </tr> <tr> <td>Generally Protected C (GP.A)</td> <td>-</td> <td>Low Significance</td> <td>Destruction</td> </tr> </tbody> </table>	Field rating	Grade	Significance	Recommended mitigation	National Significance (NS)	Grade 1	-	Conservation; National Site nomination	Provincial Significance (PS)	Grade 2	-	Conservation; Provincial Site nomination	Local Significance (LS)	Grade 3A	High Significance	Conservation; Mitigation not advised	Local Significance (LS)	Grade 3B	High Significance	Mitigation (Part of site should be retained)	Generally Protected A (GP.A)	-	High / Medium Significance	Mitigation before destruction	Generally Protected B (GP.B)	-	Medium Significance	Recording before destruction	Generally Protected C (GP.A)	-	Low Significance	Destruction
Field rating	Grade	Significance	Recommended mitigation																														
National Significance (NS)	Grade 1	-	Conservation; National Site nomination																														
Provincial Significance (PS)	Grade 2	-	Conservation; Provincial Site nomination																														
Local Significance (LS)	Grade 3A	High Significance	Conservation; Mitigation not advised																														
Local Significance (LS)	Grade 3B	High Significance	Mitigation (Part of site should be retained)																														
Generally Protected A (GP.A)	-	High / Medium Significance	Mitigation before destruction																														
Generally Protected B (GP.B)	-	Medium Significance	Recording before destruction																														
Generally Protected C (GP.A)	-	Low Significance	Destruction																														
Noise	<p>Scoping Assessment</p> <p>The scoping assessment will consist of a brief desktop assessment. The extent and the magnitude of the proposed mining project is such that a full environmental noise impact assessment must be conducted.</p>																																

Study	Terms of reference
	<p>1. Literature review - Noise and Environmental Acoustics</p> <p>The scoping assessment included an internet search for the Noise Studies for the surrounding collieries in the area. Unfortunately only the Environmental Impact Assessment report was located (Marsh Environmental Services, 2012) and not the supporting Noise Impact Assessment. This study however does highlight the numerous comments received for the Exxaro Belfast Project. Being in the same area, these comments will also be considered for this project.</p> <p>2. Field Survey - Noise and Environmental Acoustics</p> <p>A field survey will only be undertaken during the EIA Phase of the project. The purpose of the field survey would be to:</p> <ul style="list-style-type: none"> ❖ Identify and confirm the status of potentially noise-sensitive receptors within the vicinity of the proposed mining projects. ❖ The measure ambient sound levels in the vicinity of the proposed project. <p><u>Impact Assessment</u></p> <p>The level of detail as depicted in the EIA regulations will be used to assess the significance of the noise impact during the EIA Phase. A rating system developed by the main EAP will be used, using a rating system, where the potential extent of the noise impact, the magnitude or intensity of noise levels, the duration of the increased noise levels will be considered, together with the probability of an impact occurring.</p> <p>The outcome of the environmental impact assessment phase will be Noise study with:</p> <ul style="list-style-type: none"> ❖ The identification of potential noise-sensitive areas in the vicinity of the project site; ❖ Ambient sound levels describing the sound character in the vicinity of the project site; ❖ Detail noise level contours of the project, concentrating on the next 5 years, with general noise contours for the total mining project (maximum expected equivalent noise levels over the LOM);

Study	Terms of reference
	<ul style="list-style-type: none"> ❖ Tables highlighting the potential significance of the noise impact on the receptors in the vicinity of the project area, as well as the revised significance of the potential impacts post-implementation of mitigation measures; ❖ Findings as well as proposing environmental (acoustics) objectives with which the mine will have to comply; ❖ If required - Management measures for the construction and operational phase to assist in the mitigation of the potential significance of the noise impact; ❖ If required – Monitoring recommendations to assess the performance of the mining project with the proposed environmental objectives.
Blasting & Vibration	<p><u>The scoping assessment</u></p> <p>This will consist of a desktop assessment with literature review and sensitivity review with reporting of outcome. Review of the information and documentation provided from the client. Planned and type of operations is required to determine possible sensitive areas. Google earth imagery will be reviewed for possible surface installations that may be present around each of the sites.</p> <p>The scope of work can be summarised as follows:</p> <ul style="list-style-type: none"> ❖ Legislative Requirements applicable ❖ The required legislation applicable is identified ❖ Existing Status of project ❖ Define the current status of the planned project operations ❖ Source and receiving Environment

Study	Terms of reference
	<ul style="list-style-type: none"> ❖ Defining areas regarded as source and receiving environment. ❖ Anticipated impacts ❖ Summary of anticipated impacts due to the type of operations planned. ❖ Sensitivity review ❖ Marking of identified surface infrastructure on a plan. ❖ Identifying ranges of sensitivity from the operations. ❖ Plotting of sensitivity areas on plan in with operations and infrastructure. <p><u>Impact Assessment Plan of Study</u></p> <ul style="list-style-type: none"> ❖ Recommendations to be considered in the impact assessment for the EIA. ❖ Reporting ❖ Prepare a report that provides the discussion and outcomes of the scoping evaluations. ❖ Present the outcomes to interested and affected parties if required. <p><u>Undertaking the Impact Assessment</u></p> <p>The proposed plan for environmental impact assessment will be as follows:</p> <ul style="list-style-type: none"> ❖ A site visit will be done to ascertain the types and locations of mining operations planned. ❖ A review of the surface infrastructure to be found in the vicinity of the operations to be done.

Study	Terms of reference
	<ul style="list-style-type: none"> ❖ The mining operations blasting operations will be evaluated regarding possible impact from blasting operations. In particular the effect of ground vibration, air blast and fly rock will be addressed. ❖ The evaluation will identify the possible impacts and levels of possible influence. ❖ Where required mitigation measures to be put in place will be recommended. ❖ The impact assessment reported with detail of the outcomes and recommendations.
Visual	<p><u>Scoping Assessment:</u></p> <p>The following method was used to for the assessment of this phase:</p> <ul style="list-style-type: none"> ❖ To evaluate the preliminary impacts of the proposed activity, the inherent scenic value of the landscape first needs to be determined. Data collected during site visit allowed for a description and valuation of the receiving environment. The following method was used for the scoping phase of the project: <ul style="list-style-type: none"> ▪ Site visit - one field survey was undertaken (24 July 2017) and the study area scrutinized to the extent that the study area environment could be evaluated and described in terms of the landscape / terrain type, and visual protection in the form of vegetation and terrain screening. ▪ Project components - the physical characteristics of the project components were described and illustrated through the collection of site layout drawings and dimensions. ▪ Determine the setting, visual character and land use of the area surrounding the proposed mining operations, and the sense of place through objective techniques. Land mapping, terrain mapping and remote sensing applications were used to determine the landuse and terrain of the proposed study area and surrounding terrestrial environment. ▪ Identification of major sensitive receptors within a 10km buffer of the study area. Geographic Information System (GIS) procedures based on aerial photographs and the South African 1:50000 topographic map series were used to

Study	Terms of reference
	<p>identify receptors in the form of residents, motorists and tourists. The most sensitive receptors are tourists and residents, whilst the least sensitive receptors are motorists, all such receptors have been identified within 10km of the proposed development area.</p> <ul style="list-style-type: none"> ▪ Define the extent of the affected visual environmental, the viewing distance and the visual receptors that may be affected by the proposed project using a viewshed procedure that models the visual footprint of the proposed operations. <p><u>Impact Assessment:</u></p> <p>The plan of study going forward includes:</p> <ul style="list-style-type: none"> ❖ Collection of more detailed site layout plans, including detailed vertical offset designs for all infrastructure. This includes a detailed lighting plan. ❖ Processing of a comprehensive viewshed model to accurately assess the impact on sensitive receptors ❖ Detailed revision of any legislative requirements in place that apply directly to the proposed development area and the proposed operations associated with the mine areas. ❖ 3-dimensional and graphic simulation of the proposed mining operations. ❖ Detailed analysis using GIS and simulation procedures are planned within the comprehensive visual impact study. ❖ Detail impacts associated with each proposed mine area and provide specific mitigation measures to limit such impacts.
Carbon Impacts & Sustainability	<p><u>Scoping Assessment:</u></p> <p>The Carbon Footprint and Sustainability report will attempt to predict, where possible, the carbon footprint of the Proposed Project and its activities. The proposed boundaries for the assessment are within the footprint of the project, that is, it is a “gate-to-gate assessment”, meaning that the carbon emissions for deliveries to the site, of equipment and building supplies will not</p>

Study	Terms of reference
	<p>be assessed. This is due to the myriad of ways these items could be sourced and supplied making data collection difficult. The assessment includes where possible all activities relating to coal extraction on the premises controlled by the Leslie 1 Project; it envisions the coal as a product. If the coal is shipped off site to be burned at facilities not controlled by the mine the carbon emissions of using or burning that coal leave with it. If the coal is exported, unless the vehicles transporting the product belong to the mine these emissions will be viewed as part of the customers’ Scope 1 emissions as they will be responsible for extracting the energy from the coal.</p> <p>Emission data, factors and sources will be extracted from a variety of literature including but not limited to the following:</p> <ul style="list-style-type: none"> ❖ Eskom integrated report (Eskom 2016). ❖ GHG Inventory for South Africa (DEA 2014) ❖ Technical guidelines for monitoring, reporting and verification of greenhouse gas emissions by industry. (Department of Environmental Affairs 2017) ❖ Climate Support Programme (CSP) Climate Change Adaptation Strategies, Adaptation Strategies for Mpumalanga Province (Agriculture, rural development, land & environmental affairs Mpumalanga Province and Department of Environmental Affairs – Draft version) ❖ World Bank (data available at http://data.worldbank.org/indicator/EN.ATM.CO2E.PC) <p><u>Impact assessment</u></p> <p>The climate change impact assessment will determine the level of risk the proposed project poses to increasing levels of GHGs in the atmosphere thereby contributing to anthropogenic climate change.</p> <p><u>Deliverables</u></p> <p>The outcome of the impact assessment phase will be a climate change impact assessment report. The proposed impact assessment will determine the level of climate change related risk the proposed development has when compared to similar</p>

Study	Terms of reference
	projects as well as the current land use. Mitigation and management options will be proposed within the climate change impact assessment report to reduce, adapt and offset the potential climate related risks.

9.4 Methodology proposed

The EIA will be undertaken according to the method detailed below. This methodology is compliant with the NEMA 2014 EIA Regulations, as amended in 2017.

Generally, the impact assessment is divided into three parts:

- ❖ **Issue identification** – each specialist will be asked to evaluate the ‘aspects’ arising from the project description and ensure that all issues in their area of expertise have been identified;
- ❖ **Impact definition** – positive and negative impacts associated with these issues (and any others not included) then need to be defined – the definition statement should include the activity (source of impact), aspect and receptor as well as whether the impact is direct, indirect or cumulative. Fatal flaws should also be identified at this stage; and
- ❖ **Impact evaluation** – this is not a purely objective and quantitative exercise. It has a subjective element, often using judgement and values as much as science-based criteria and standards. The need therefore exists to clearly explain how impacts have been interpreted so that others can see the weight attached to different factors and can understand the rationale of the assessment.

To understand the impact evaluation, the sensitivity of the receiving environment, the effect on the receiving environment and the significance of the impacts, these three points above need to be clearly described. The impact assessment methodology that will be used during the EIA Phase is described in **Chapter 8**.

9.4.1 Assessment of the Duration of significance

Duration of significance of impacts will be assessed using the following criteria, where the duration of time relates to how long that impact will occur for during that phase of the project. Specific durations will be allocated to each project phase in the EIA document where the detailed impact assessment rating will be undertaken. For example, for the operational phase:

- ❖ Short term: Up to 18 months;
- ❖ Medium term: 18 months to 5 years; and
- ❖ Long term: Longer than 5 years.

9.4.2 Stages at which the Competent Authority will be consulted

The DMR and MDARDLEA will be consulted at various stages during the EIA process. This includes:

- ❖ Pre-application meetings;
- ❖ Announcement and Scoping Phase; and
- ❖ EIA Phase.

9.4.3 Public Participation to be undertaken during the EIA Phase

Stakeholder engagement during the EIA Phase involves a review of the findings of the impact assessment presented in the EIA Report for public comment which will be made available. Stakeholders will be notified using the following:

- ❖ Media advertisements in the same newspapers used during the Scoping Phase to announce the availability of the EIA Report for public comment;
- ❖ Registered stakeholders will be informed by way of personal letters/ SMS distributed by mail and e-mail in advance of the report being available; and
- ❖ Stakeholders will be invited to attend one of two public meetings where the contents of the EIA Report will be presented and stakeholders will have an opportunity to comment. Details of the meetings will be confirmed closer to the time of the meetings.

Following the availability of the EIA Report, meetings with relevant stakeholders will be undertaken. During the EIA Phase, stakeholders will be invited to comment on the EIA Report in any of the following ways:

- ❖ By raising comments during key stakeholder/ public meetings where the content of the EIA Report will be presented;
- ❖ By completing comments sheets available with the report at public places, and by submitting additional written comments, by email, fax or by telephone, to Kongiwe;
- ❖ The EIA Report will be available for comment for a period of 30 days at public places in the project area, sent to stakeholders who request a copy, and placed on the Kongiwe website.

All comments and issues raised during the 30-day public comment period will be incorporated into the EIA Report to be submitted to the competent and commenting authorities.

Description of the information to be provided to I&APs includes:

- ❖ The project description (final site layout, all alternatives investigated) and the surrounding baseline environment;
- ❖ Findings from the specialist studies undertaken;
- ❖ Potential biophysical and socio-economic impacts during construction, operations, closure and decommissioning phases of the project;
- ❖ Management/ mitigation measures developed to address the potential impacts;
- ❖ The closure objectives, plan and financial provision; and
- ❖ Details on how stakeholders can comment on the EIA Report.

9.4.4 Tasks to be undertaken during the Environmental Impact Phase

The plan of study for the EIA Report is set out below for review by the authorities and I&APs. The rationale

for the different levels of study for the various environmental components will be taken from the issues raised by I&APs, the expected severity of impacts and the level of confidence required in their prediction. The level of information required to develop adequate, practical management and mitigation measures was also a consideration in determining the terms of reference of studies.

Within the EIA Phase, the EIA Report, IWUL and stakeholder engagement activities will run concurrently.

During the EIA Phase, the following will be undertaken:

- ❖ Specialists will conduct and complete specialist impact assessments. Workshops will be held with specialists to workshop all potential impacts and integrate specialist studies;
- ❖ Stakeholder engagement materials will be prepared (advertisements, notification letters, site notices), and public meetings, focused group meetings and consultation with affected landowners will be undertaken;
- ❖ An EIA Report will be compiled, and management measures and commitments workshopped with Anglo;
- ❖ The EIA Report will be made available for public review and comment; and
- ❖ The revised EIA Report, including public comments and responses, will be submitted to authorities for decision-making.

9.4.5 Mitigation, Management and Monitoring of Identified Impacts

The summary of potential issues identified during the Scoping Phase of the project have been indicated in Section 8. These impacts require further investigation during the EIA Phase. Section 0 provides an indication of the independent specialist studies, field surveys and assessments that are required to form part of the EIA Phase. The specialist studies will consider the development footprint proposed for the various Mine Areas, and the Mining Rights areas as a whole, including all associated infrastructure. With this information, the Proposed Project will be able to fully assess and investigate the feasible and reasonable alternatives proposed in **Chapter 5**. The possible mitigation measures that could be applied and the level of risk is depicted as follows:

Table 9-2: High Level Mitigation Measures for Potential Impacts Identified for the Leslie 1 Project

Activity	Potential Impact	Stakeholder Comment	Mitigation Measures
Construction			
Construction of box cut and incline, related surface infrastructure	Loss of carbon sink capacity due to vegetation clearing		<ul style="list-style-type: none"> ❖ Clear only the necessary areas required for construction. ❖ Avoid wetlands as these systems have been demonstrated to sequester carbon at a greater rate than most other vegetation types.
	Increase in anthropogenic CO ₂ e.g. associated with the operation of heavy machinery and mobile generators		<ul style="list-style-type: none"> ❖ Use solar panels for lighting and small-scale power supply. ❖ Ensure machinery is properly serviced.
	Increase in emissions associated with the production and use of steel and concrete		<ul style="list-style-type: none"> ❖ Investigate suppliers and material use.
	Loss of vegetation and subsequent loss of habitat for fauna during site clearance and site establishment.		<ul style="list-style-type: none"> ❖ Removal of vegetation should be restricted to the relevant infrastructure footprints only. ❖ Topsoil should be stored separately to be used in rehabilitation and landscaping. ❖ Transformation of natural areas should exclude any areas designated as having high or very high sensitivities. ❖ Prevent all effluent from the mining activities from entering wetland habitats. ❖ Management of the topsoil stockpile to preserve the seedbed. ❖ Fence development footprint area prior to commencement construction.

Activity	Potential Impact	Stakeholder Comment	Mitigation Measures
			<ul style="list-style-type: none"> ❖ No off-road driving. ❖ Implement alien invasive species eradication programme.
	Loss of soil resource and land use during site clearance and site establishment		<ul style="list-style-type: none"> ❖ Limiting the area of impact to as small a footprint as possible, inclusive of waste management facilities, resource stockpiles and the length of servitudes, access and haulage ways and conveyancing systems wherever possible. ❖ Implement a soil utilization plan. ❖ Separation of the utilisable soils and ferricrete base materials from each other and from the soft overburden. ❖ Restriction of vehicle movement over unprotected or sensitive areas, this will reduce compaction. ❖ Topsoil to be stripped and stockpiled separately.
	Increased risk of erosion during site clearance and site establishment		<ul style="list-style-type: none"> ❖ Clearly demarcate the required construction servitude and maintain all activities within the demarcated area. ❖ Maintain flow connectivity in any valley bottom wetlands during the construction phase by temporarily diverting streams around the construction area. ❖ Install erosion prevention measures prior to the onset of construction activities; ❖ Development of erosion gullies ❖ Implement stormwater management plan.
	Increase in ambient dust levels from site clearance and vehicular activity		<ul style="list-style-type: none"> ❖ Regular watering of the site roads ❖ Dressing off of tip faces, unused roads and

Activity	Potential Impact	Stakeholder Comment	Mitigation Measures
	on dust roads		<ul style="list-style-type: none"> ❖ disturbed areas ❖ Minimising unnecessary disturbance of non-operational areas ❖ Use of chemical additives to control dust to be employed if necessary under BATNEEC (Best Available Techniques Not Entailing Excessive Cost) principles.
	Increase in ambient noise levels from equipment use and vehicular activity on dust roads		<ul style="list-style-type: none"> ❖ Regular planned mobile plant maintenance, with special attention paid to the maintenance of engine efficiency and silencer effectiveness. ❖ Regular planned vehicle services
	<p>Pollution of surface water resource from:</p> <ul style="list-style-type: none"> ▪ Erosion of soils during rainfall events, with elevated suspended solids in runoff water ▪ Resultant elevated suspended solids and sedimentation in watercourses ▪ Hydrocarbon spillages from fuel storage, servicing areas or construction equipment, with resultant elevated hydrocarbon concentrations in runoff water and watercourses 		<ul style="list-style-type: none"> ❖ Appropriate storm water management measures will be implemented ❖ Servicing of construction vehicles will take place only in dedicated areas that are equipped with drip trays; ❖ Bunded containment and settlement facilities will be provided for hazardous materials, such as fuel and oil; ❖ Spill-sorb or a similar product will be kept on site, and used to clean up hydrocarbon spills in the event that they should occur; ❖ Water quality monitoring will be undertaken downstream of the construction areas, before and during construction where practical, to detect any increase in suspended solids or turbidity; ❖ Implement appropriate stormwater management measures ❖ Service of vehicles will take place at dedicated areas with drip trays

Activity	Potential Impact	Stakeholder Comment	Mitigation Measures
			<ul style="list-style-type: none"> ❖ Hazardous material will be placed in bunded areas ❖ Spill kits to clean up hydrocarbon spills will be available ❖ Clean upslope runoff will be diverted around construction areas
	Decrease in surface and groundwater quality as a result of water coming into contact with carbonaceous and pyritic materials in the box cut		<ul style="list-style-type: none"> ❖ Surface water management measures, such as storm water canals, sediment traps and PCDs are to be constructed first to ensure that runoff and dirty water spills are contained; ❖ A Water Use Licence for the dewatering of groundwater encountered during mining will be applied for, including the reuse of this water for dust suppression.
	Potential ground vibration from blasting activities		<ul style="list-style-type: none"> ❖ Undertake blast design ❖ Undertake blast impact assessment to determine potential for ground vibration, air blasts and fly rock ❖ Determine minimum safe distance from any blasting done ❖ Ensure that ground vibration is within limits ❖ Blasting will not be undertaken during night time
	Potential loss and disturbance of wetland and aquatic habitat due to the clearing of vegetation and soil stripping		<ul style="list-style-type: none"> ❖ Locate all temporary stockpiles, constructors' camps, laydown areas, ablution facilities etc. a minimum of the prescribed distance from any delineated wetland area; ❖ Develop and implement a construction stormwater management plan prior to the commencement of site clearing activities; ❖ Rehabilitate and re-vegetate all disturbed

Activity	Potential Impact	Stakeholder Comment	Mitigation Measures
			<p>areas as soon as possible following disturbance;</p>
	<p>Potential impact on heritage resources</p>		<ul style="list-style-type: none"> ❖ Conduct heritage impact assessment to identify heritage sites within the project area ❖ If any heritage sites are identified, appropriate steps as per the Heritage Resources Act will be undertaken
	<p>Increase in traffic volumes on existing traffic network</p>		<ul style="list-style-type: none"> ❖ Traffic signage at site access points ❖ Undertake traffic impact study ❖ Traffic signage at site access points ❖ Upgrade gravel roads to tarred roads where required
	<p>Increase in CO₂ emissions</p>		<ul style="list-style-type: none"> ❖ Passive climate control design: the buildings, on footprint level, must be designed to their optimal orientation, while treating the facades to react appropriately to the specific sun paths to maximise building interior daylighting and/ or shading; ❖ Thermal mass design: thermal mass must be integrated into the buildings as this will result in a lower demand on air conditioning systems thus saving energy and cost ❖ Local material selection and detailing: materials must be sourced ensuring that the point of origin for the materials is as close to the site as practically possible. This will minimise the production of CO₂ emissions in the construction phase through reduction in construction vehicles travel distances; ❖ Optimally naturally ventilated spaces: all building spaces must be given the opportunity

Activity	Potential Impact	Stakeholder Comment	Mitigation Measures
			<ul style="list-style-type: none"> ❖ of naturally ventilating the internal spaces. ❖ Low energy services: the building demand for energy must be reduced, namely: air conditioning, water heating, lighting and wastage
	Spontaneous settlement due to perceived employment opportunities		<ul style="list-style-type: none"> ❖ Develop a clear and concise employment and recruitment policy that prioritizes local recruitment. ❖ Identify and support community development programs that address challenges raised by population influx and spontaneous settlement. ❖ Support local government capacity for integrated development planning.
	Increase pressure on social services due to influx of job seekers		<ul style="list-style-type: none"> ❖ Develop an employment and recruitment policy that prioritizes local recruitment ❖ Identify and support community development programmes
	Benefits resulting from employment and income opportunities created by the mine		
	Improved relations with local communities and local government		<ul style="list-style-type: none"> ❖ Detail life of mine engagement in a Stakeholder Engagement Plan (SEP) ❖ Provide regular and transparent feedback to local communities ❖ Include affected communities in all decision-making processes round CSI and CDP initiatives
Operation			

Activity	Potential Impact	Stakeholder Comment	Mitigation Measures
Extraction of coal, conveying of coal and operation of CHPP	Release of fugitive emissions in the form of N ₂ O, CH ₄ and CO ₂ due to blasting and vehicle operations		<ul style="list-style-type: none"> ❖ Efficiency will be applied to reduce wastage and unnecessary fuel consumption. ❖ Efficient sorting of coal will reduce waste and allow supply to be met without unnecessarily directing usable coal to mine dumps ❖ Carbon offsets will be considered if required ❖ Concurrent best practice rehabilitation and vegetation monitoring will be applied to allow for the restoration of some the carbon sink functionality within the mining right area.
	Influx of groundwater into the pits, leading to a decrease in groundwater quality and yield		<ul style="list-style-type: none"> ❖ Detailed geological mapping to identify geological features ❖ Mining will take place according to design mine stability safety factors ❖ Mining will not take place in the weathered overlying strata ❖ Identify boreholes (undertake hydrocensus) within mining area and plug deep boreholes to prevent inflow into the pit ❖ Monitor groundwater levels and yields of external borehole users
	The formation of acid mine drainage in groundwater resources		<ul style="list-style-type: none"> ❖ Optimise storage of mine water to minimise exposure to oxygen ❖ Develop a groundwater monitoring programme to assess the groundwater quality ❖ Should AMD be identified within the groundwater resources, the polluted water will be remediated accordingly
	Contamination of soil, surface water and wetland resources during operation due to hydrocarbon spills		<ul style="list-style-type: none"> ❖ Implement stormwater management plan ❖ Divert clean stormwater around construction areas

Activity	Potential Impact	Stakeholder Comment	Mitigation Measures
	and carbonaceous material		<ul style="list-style-type: none"> ❖ Surface water management structures be constructed first as to ensure that runoff and dirty water spills are contained ❖ Spill leak detection plan should be implemented
	Pollution of surface water resources due to contaminated storm water runoff entering the environment		<ul style="list-style-type: none"> ❖ All facilities with the potential to generate dirty storm water run-off will be located within the dedicated dirty water area ❖ Clean run off will be diverted around the designated dirty water areas by means of cut off canals ❖ All dirty storm water and wash-down water will be collected in the pollution control dam
	Contamination of surface and groundwater resulting from the storage of waste		<ul style="list-style-type: none"> ❖ All waste streams will be characterised to identify any potential risk ❖ A suitable pollution control barrier system will be developed ❖ A surface and groundwater monitoring systems will be implemented
	Increase in dust fallout		<ul style="list-style-type: none"> ❖ Regular watering of the site roads ❖ Dressing off of tip faces, unused roads and disturbed areas ❖ Minimising unnecessary disturbance of non-operational areas ❖ Use of chemical additives to control dust to be employed if necessary under BATNEEC (Best Available Techniques Not Entailing Excessive Cost) principles.
	General increase in ambient noise		<ul style="list-style-type: none"> ❖ Regular planned mobile plant maintenance, with special attention paid to the

Activity	Potential Impact	Stakeholder Comment	Mitigation Measures
	levels		<ul style="list-style-type: none"> ❖ maintenance of engine efficiency and silencer effectiveness. ❖ Regular planned vehicle services
	Spontaneous settlement due to perceived employment opportunities		<ul style="list-style-type: none"> ❖ Develop an employment and recruitment policy that prioritises local recruitment ❖ Identify and support community development programmes ❖ Support local government capacity for integrated development planning
	Increase pressure on social services due to influx of job seekers		<ul style="list-style-type: none"> ❖ SLP to focus on enterprise development and capacity building ❖ Support local government in skills development and training initiatives ❖ Implement employment policy prioritizing local employment
	Benefits resulting from employment and income opportunities created by the mine		
Decommissioning and Closure			
Decommissioning of all surface infrastructure and rehabilitation of all disturbed surface areas	Release of GHG due to the oxidisation of mine dumps containing carboniferous		<ul style="list-style-type: none"> ❖ Rehabilitation monitoring and maintenance will be applied to allow for revegetation and therefore carbon dioxide uptake to be reinstated ❖ Carboniferous material will be sealed away from the oxygen rich atmosphere
	Release of GHGs due to the removal of infrastructure using heavy machinery		<ul style="list-style-type: none"> ❖ Where possible infrastructure will be repurposed
	Compaction of soil and contamination		<ul style="list-style-type: none"> ❖ Reinstatement of stored soils onto areas of disturbance where infrastructure has been demolished

Activity	Potential Impact	Stakeholder Comment	Mitigation Measures
	of soil resources from heavy vehicles		<ul style="list-style-type: none"> ❖ Contour and stabilize slopes to be free-draining ❖ Cultivation of growing medium, the planting of required vegetative cover and irrigation if required
	Potential for establishment of alien invasive vegetation		<ul style="list-style-type: none"> ❖ Ensure the removal of any alien invasive vegetation encountered on the rehabilitated area ❖ Regular inspection of established vegetation
	Pollution of surface water resources during decommissioning activities		<ul style="list-style-type: none"> ❖ The stormwater management infrastructure, including the PCD, will be decommissioned last to ensure adequate stormwater management during the rehabilitation phase ❖ Erosion protection measures will be implemented at steep areas ❖ Spill kits will available and hydrocarbon spills will be cleaned up immediately ❖ All traces of hydrocarbons and residual waste will be removed before infrastructure is demolished
	Potential disturbance of wetland habitats		<ul style="list-style-type: none"> ❖ Alien vegetation management will be implemented following revegetation to clear alien species ❖ Develop a watercourse crossing method statement for demolition of crossings
	Increase in dust fallout		<ul style="list-style-type: none"> ❖ Regular watering of the site roads ❖ Dressing off of tip faces, unused roads and disturbed areas ❖ Minimising unnecessary disturbance of non-operational areas

Activity	Potential Impact	Stakeholder Comment	Mitigation Measures
			<ul style="list-style-type: none"> ❖ Use of chemical additives to control dust to be employed if necessary under BATNEEC (Best Available Techniques Not Entailing Excessive Cost) principles.
	General increase in ambient noise levels		<ul style="list-style-type: none"> ❖ Regular planned mobile plant maintenance, with special attention paid to the maintenance of engine efficiency and silencer effectiveness. ❖ Regular planned vehicle services
	Loss of employment and enterprise development opportunities		<ul style="list-style-type: none"> ❖ Develop and implement Labour and Human Resources Plan (LHRP) that addressed the impacts associated with retrenchment, job losses and reduced demand for local goods and services ❖ Develop a closure plan which will aim to reinforce the objectives of the SLP by reducing the reliance on Anglo for employment by promoting skills transfer to ensure alternative livelihoods

9.5 Other Information Requirements

9.5.1 Impact on the Socio-economic Conditions of any Directly Affected Parties

A Socio-economic Impact Assessment will be undertaken and will be finalised during the EIA Phase. Potential high-level socio-economic impacts have been included in Table 8-2.

9.5.2 Impact on any National Estate referred to in Section 3(2) of the National Heritage Resources Act

A Heritage Impact Assessment will be undertaken and will be finalised during the EIA Phase. Potential high-level heritage impacts have been included in Chapter 7.

10 Declaration of Independence

10.1 Undertaking Regarding Correctness of Information

I, Gerlinde Wilreker, herewith undertake that the information provided in the foregoing report is correct, and that the comments and inputs from stakeholders and Interested and Affected parties have been correctly recorded in the report.



Signature of EAP

DATE: 28 March 2018

10.2 Undertaking Regarding Level of Agreement

I, Gerlinde Wilreker, herewith undertake that the information provided in the foregoing report is correct, and that the level of agreement with interested and Affected Parties and stakeholders has been correctly recorded and reported herein.



Signature of EAP

DATE: 28 March 2018

11 References

Acocks, J.H.P, 1988. Veld types of South Africa. 3rd ed. *Memoirs of the Botanical Survey of South Africa* 57: 1-147

Africoal.co.za., 2017. The History of Coal Mining in South Africa | Afri Coal Investments (Pty) Ltd. [online] Available at: <http://www.africoal.co.za/the-history-of-coal-mining-in-south-africa/> [Accessed 8 Aug. 2017].

Banks, V.J., Palumbo-Roe, Van Tonder, D.B., Davies, J., Fleming, C. and Chevrel, S., 2011. Conceptual models of Witbank coalfield, South Africa. Earth Observation for Monitoring and Observing Environmental and Societal Impacts of Mineral Resources Exploration and Exploitation, CEC FP7 Project EO-MINERS, Deliverable D3.1- 2, 107 pp

Barnard, H.C, 2000. An Explanation of the 1:500 000 General Hydrological Map. DWAF.

Census 2001 population statistics (Accessed from the website of the Municipal Demarcation Board – April 17-19, 2012): www.demarcation.org.za

Cowherd C., Muleski G.E. and Kinsey J.S., 1988. Control of Open Fugitive Dust Sources, EPA-450/3-88-008, US Environmental Protection Agency, Research Triangle Park, North Carolina.

Gert Sibande District Municipality, 2014. Spatial Development Framework Final Report.

Govan Mbeki Municipality, 2017. Draft Integrated Development Plan: 01 July 2017 – 30 June 2022.

Hancox, P.J. and Götz, A.E., 2014. South Africa's coalfields—A 2014 perspective. *International Journal of Coal Geology*, 132, pp.170-254.

IFC, International Finance Corporation, 2006: *IFC Performance Standard*. Guidance Note, April 2006, World Bank

IUCN, 2017. Red List of threatened species. Version 2017. Online: [Available at: <https://www.iucnredlist.org/>]

Jaco-K Consulting, 2014. Springboklaagte Environmental Impact Assessment and Environmental Management Programme.

Jeffrey, L.S., 2005. Characterization of the coal resources of South Africa. *Journal of the Southern African Institute of Mining and Metallurgy*, 105(2), pp.95-102.

Jeffrey, L., Henry, G. and McGill, J., 2015. Introduction to South African coal mining and exploration. Struik Nature.

Jordaan, A., 2014. Centre for Environmental Rights and Lawyers for Human Rights. *Mining and your Community: Know your Environmental Rights*. Pg 1-32.

Matthews, C., 2017. Eskom's coal-fired power struggle. [online] Available at: <https://www.businesslive.co.za/fm/features/2017-03-23-eskoms-coal-fired-power-struggle2/> [Accessed 8 Aug. 2017].

Mucina, L. and Rutherford, M.C. (eds) 2006. The vegetation of South Africa, Lesotho and Swaziland. *Strelitzia* 19. South African National Biodiversity Institute, Pretoria.

Peatfield, D., 2003. Coal and coal preparation in South Africa-A 2002 review. *Journal of the Southern African Institute of Mining and Metallurgy*, 103(6), pp.355-372.

Pretorius, I., Piketh, S., Burger, R. and Neomagus, H., 2015. A perspective on South African coal fired power station emissions. *Journal of Energy in Southern Africa*, 26(3), pp.27-40.

Principles and Guidelines for Social Impact Assessment. *Impact Assessment and Project Appraisal*, 21(3), 231-250.

Shangoni Management Services (Pty) Ltd, 2017. Leslie 2 Environmental Impact Assessment and Environmental Management Programme.

South African National Standards (SANS), 2011. South African National Standard, Ambient Air Quality – Limits for Common Pollutants. SANS 1929:2011. Standards South Africa, Pretoria.