mineral resources

Department:
Mineral Resources
REPUBLIC OF SOUTH AFRICA

THE GIYANI GOLD PROJECT SCOPING REPORT FOR A MINING RIGHT APPLICATION BY KUSILE INVEST 133 (PTY) LTD.

SUBMITTED FOR ENVIRONMENTAL AUTHORIZATIONS 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).

Reference Number: LP 30/5/1/2/2 10188MR

Compiled By:

ARCHEAN RESOURCES PTY LTD

Date: 10 July 2020

REPORT INFORMATION

Report Title:	Scoping Report for the Gold underground and surface mining right application on Un-Surveyed State land of Greater Giyani 891 LT and a portion of portion 0 of the farm 246 located in the Greater Giyani Municipality, within Mopani District Municipality in Limpopo Province.	
Report Reference:	Scoping report for the proposed Giyani Gold Mine Project	
Reference	LP 30/5/1/2/2 10188MR	
Report Status:	Draft report for I&AP comments	
REVISION	DATE	REASON FOR CHANGE
001	10 July 2020- 17 August 2020	Draft Scoping
002	18 August 2020	Final Scoping Report: Additional Environmental information and consolidation of I&AP comments

DETAILS OF APPLICANT AND EAP

Table 1: Applicant Details

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FILE REFERENCE NUMBER DMR:	LP 30/5/1/2/2 10188MR

Contact Person and correspondence address

Table 2: EAP Details

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EXECUTIVE SUMMARY

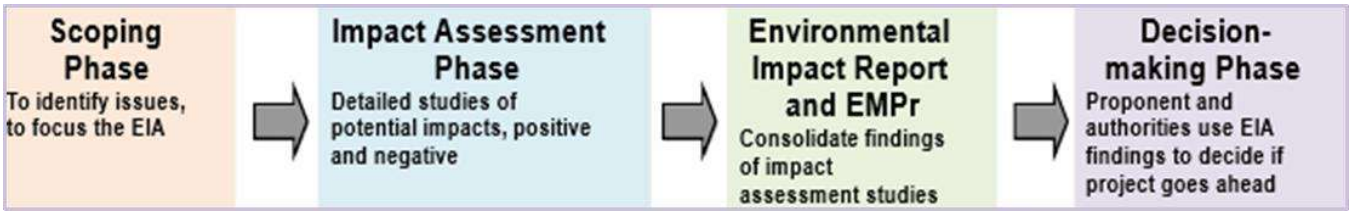
Kusile Invest 133 (Pty) Ltd has appointed Archean Resources (Pty) Ltd, an independent consulting company, to conduct an Environmental Impact Assessment (EIA) process to evaluate the potential environmental and social impacts of the proposed project. The project is referred to as the Giyani Gold Mine Project. The applicant Kusile Invest has lodged a mining right on Un-Surveyed State land of Greater Giyani 891 LT and a portion of portion 0 of the farm 246 located within the town of Giyani, Limpopo Province. and intends to establish an underground and open cast mine. The mine development activities will commence by establishing and installing the required mining infrastructure such as pit establishment, shaft headgear and winders, service water, compressed air and power supply, processing plant and installation of surface ventilations fans. The type and size of the mining infrastructure to be installed will be designed to support the proposed Life of Mine (LOM) production rate of 12 000 tons per month of Run of Mine material (ROM) for 30 (thirty) years.

In terms of the National Environmental Management Act (NEMA), in addition to the mining right application submitted to the DMR an Environmental Authorisation needs to be applied for. An integrated scoping and environmental impact assessment process will be conducted for the Environmental Authorisation application, and Water Use License application for the mining right application. The applicant is doing an integrated application process for a Scoping and Environmental Impact Assessment in terms of the National Environmental Management ACT (NEMA): EIA Regulations 2017. An application for Environmental Authorisation (EA) in term of Section 16 of the NEMA EIA 2017 regulations was submitted to the DMR. Kusile Invest 133 (Pty) Ltd holds the following prospecting right (PR) and mining permit which form part of the mining application:

- (LP) 30/5/1/1//2/2724 PR on Un-Surveyed State land of Greater Giyani 891 LT and a portion of portion 0 of the farm 246.
- (LP) 30/5/1/3/2/10708MP on Un-Surveyed State land of Greater Giyani 891 LT.

According to the EIA Regulations, Interested and Affected Parties (I&APs) must have the opportunity to comment on the proposed project and verify that all the issues raised during the Scoping Phase have been recorded. This is the main purpose of the Scoping Report (SR), which will be available for public comment for the 30-day period. Comments received during this phase will be considered and addressed in the Environmental Impact Assessment (EIA/EMPr) which will be submitted to the competent authority Department of Minerals (DMR) for approval.

AN EIA CONSISTS OF THE FOLLOWING PHASES



Purpose of this Report

This report addresses the requirements for Scoping Phase and the Plan of Study (PoS) for the Environmental Authorisation Process as outlined in the NEMA regulations and the MPRDA regulations. The aim of this SR is to:

- Provide information to the authorities as well as interested and affected parties (I&APs) on the proposed project;
- Provide information regarding alternatives that are being considered;
- Indicate how I&APs have been and are still being afforded the opportunity to contribute to the project, verify that the issues raised during the scoping phase are incorporated in the impact assessment phase of the environmental authorization process;
- Describe the baseline receiving environment;
- Define the Terms of Reference (ToR) for specialist studies to be undertaken in the Impact Assessment Phase of the EIA; and
- Present the findings of the Scoping Phase in a manner that facilitates input by the I&AP's and decision-making by the relevant authorities.

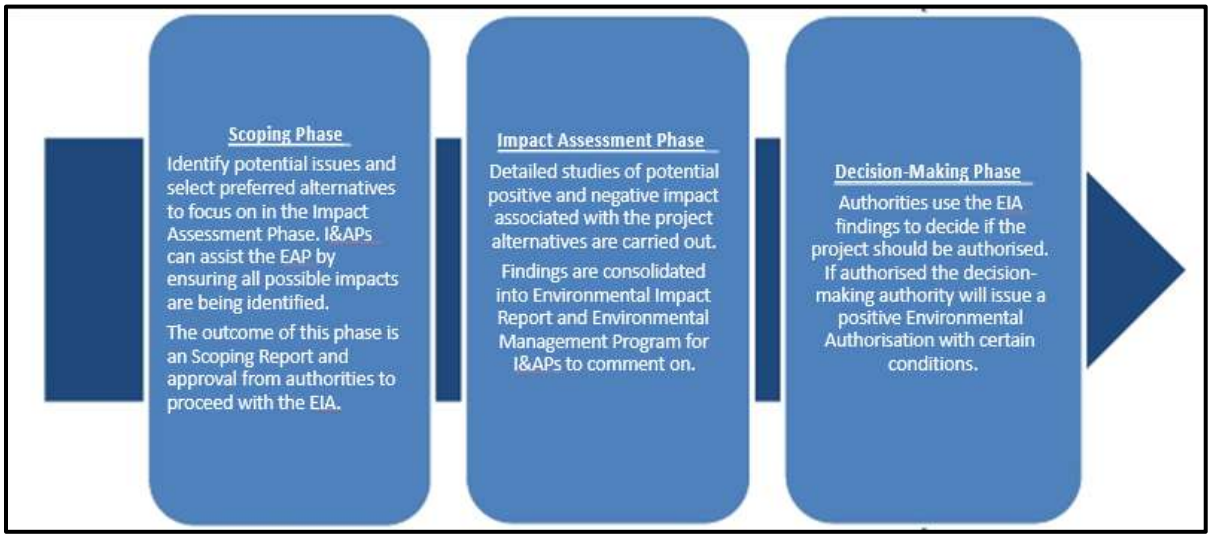
The Process

As part of the project, the environmental authorizations and licenses required to start the mining need to be obtained. In order to do so, a Scoping and Environmental Impact Assessment Process (S&EIR) is being undertaken in line with the provisions of the National Environmental Management Act (EIA regulations of April 2017). The S&EIR process and specialist studies to be undertaken will also support the applications for the required licenses and environmental authorizations.

The EIA findings are used by the applicant and authorities to obtain an objective view of the potential environmental, social and cultural 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. The outcome of the first phase of the S&EIR is the Scoping Report, which provides the basis for undertaking the Impact Assessment Phase of the project.

The process is summarized in the illustration below



Environmental Baseline and Potential Impacts

The mining right area has been identified in Giyani and this assessment is aimed at identifying the general environmental sensitivities across the mining right area. This will involve desktop plus specialist studies and draws extensively on information contained in these studies. To assess these potential impacts the following baseline information will be assessed:

- Air quality impact assessment;
- Geo - Hydrological assessment (Underground and Surface water)
- Ecological Assessment;
- Soil and land Capability;
- Social Impact Assessment;
- Visual Impact Assessment;
- Noise & Air Quality Impact;
- Traffic Impact; and
- Heritage Impact Assessment
- Paleontological Assessment

The following key environmental issues – potential negative impacts and potential benefits – have been identified:

- Ecology - Introduction of invader species; and the loss of freshwater resources, such as wetlands and pans and riparian habitat (although, where feasible and ecologically viable, these areas will not be mined);

- Botany - Potential loss of vegetation, habitat and endemic species;
- Soils, land use and land capability – Potential loss of agricultural potential;
- Terrestrial fauna – potential impact on faunal habitats;
- Surface and Ground water – Potential impact on surface water quality and flows;
- Visual and Sense of Place – Visual impacts associated with mining infrastructure, landscape alteration and vegetation loss;
- Socio-economic – Job security, continued investment in local economy and negative impacts associated with mine closure; and
- Heritage – Potential impacts on sites of archaeological or palaeontological significance.

Way Forward

The EIA process is being carried out in accordance with the NEMA 2017 EIA regulations and the public participation will be in line with the GOVERNMENT GAZETTE No. 43412, published on the 5 JUNE 2020 by the Department of Environment, Forestry and Fisheries. Each of the specialist's studies will undertake a detailed EIA assessment. Included in this report is a detailed plan of study provided by each of the appointed specialists to be implemented during the EIA phase. Potential impacts identified during the Scoping and EIA will be assessed by the specialists for each feasible development alternative and for each phase of the project. The EIA and specialist studies will provide input into the EMPR which will provide the necessary action plans and management measures to mitigate the identified impacts.

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. The 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 way forward recommended by this study is as follows:

- Make the Scoping Report available for public comment for a period of 30 calendar days;
- Submit the Scoping Report to the competent authority for permission to undertake the Impact Assessment Phase of the project;
- Upon approval of the Scoping Report, all I&APs are to be notified of the conditions of the Department of Mineral Resources for proceeding with the Impact Assessment Phase of the project;
- Execute the Plan of Study for Impact Assessment during the Impact Assessment Phase of the project.

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LIST OF ABBREVIATIONS

AIA	Archaeological Impact Assessment
ASAPA	Association of Southern African Professional Archaeologists
BID	Background Information Document
CA	Competent Authority
CARA	Conservation of Agricultural Resources Act (Act 43 of 1983)
CSA	Constitution of South Africa (Act No. 108 of 1996)
DEA	Department of Environmental Affairs
LEDET	Limpopo Department of Economic Development, Environment and Tourism
DMR	Department of Mineral Resources
DWS	Department of Water and Sanitation
EA	Environmental Authorisation
EAP	Environmental Assessment Practitioner
ECA	Environment Conservation Act (ECA), 1989 (Act No. 73 of 1989)
EIA	Environmental Impact Assessment
EIAR	Environmental Impact Assessment Report
GN	Government Notice
HIA	Heritage Impact Assessment
I&APs	Interested and Affected Parties
IEM	Integrated Environmental Management
IWULA	Integrated Water Use License Application
IWWMP	Integrated Water and Waste Management Plan
MPRDA	Minerals and Petroleum Resources Development Act (Act No. 28 of 2002) (as amended)
NEMA	National Environmental Management Act (EIA regulations of April 2017)
NEMAQA	National Environmental Management: Air Quality Act (Act No. 39 of 2004)
NEMBA	National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004)
NEMWA	National Environmental Management: Waste Act (Act No. 59 of 2008)
NHRA	National Heritage Resources Act, 1999 (Act No. 25 of 1999)
NWA	National Water Act, 1998 (Act No. 36 of 1998)
OHSA	Occupational Health and Safety Act (Act No. 85 of 1993)
PPP	Public Participation Process
SAHRA	South African Heritage Resources Agency
SANBI	South African National Biodiversity Institute
SR	Scoping Report

GLOSSARY OF TERMS

Anthropogenic: Change induced by human intervention.

Applicant: Any person who applies for an authorisation to undertake an activity or undertake an Environmental Process in terms of the Environmental Impact Assessment (EIA) Regulations – National Environmental Management Act (EIA regulations of April 2017) as contemplated in the scheduled activities listed in Government Notice (GN) No 983, 984 and 985 (2014 listing number still apply).

Archaeological resources: This includes:

- material remains resulting from human activity which are in a state of disuse and are in or on land and which are older than 100 years including artefacts, human and hominid remains and artificial features and structures;
- rock art, being any form of painting, engraving or other graphic representation on a fixed rock surface or loose rock or stone, which was executed by human agency and which is older than 100 years, including any area within 10m of such representation;
- wrecks, being any vessel or aircraft, or any part thereof which was wrecked in South Africa, whether on land, in the internal waters, the territorial waters or in the maritime culture zone of the republic as defined in the Maritimes Zones Act, and any cargo, debris or artefacts found or associated therewith, which is older than 60 years or which South African Heritage Resources Agency (SAHRA) considers to be worthy of conservation; features, structures and artefacts associated with military history which are older than 75 years and the site on which they are found.

Biodiversity: The variety of life in an area, including the number of different species, the genetic wealth within each species, and the natural areas where they are found.

Cultural significance: This means aesthetic, architectural, historical, scientific, social, spiritual, linguistic or technological value or significance.

Cumulative Impact: In relation to an activity, cumulative impact means the impact of an activity that in itself may not be significant, but may become significant when added to the existing and potential impacts eventuating from similar or diverse activities or undertakings in the area.

Environment: All physical, chemical and biological factors and conditions that influence an object.

Environmental Impact Assessment: In relation to an application, to which Scoping must be applied, means the process of collecting, organising, analysing, interpreting and communicating information that is relevant to the consideration of the application.

Environmental Impact Assessment Report: In-depth assessment of impacts associated with a proposed development. This forms the second phase of an EIA and follows on the Scoping Report (SR).

Heritage resources: This means any place or object of cultural significance. See also archaeological resources above.

Precipitation: Any form of water, such as rain, snow, sleet, or hail that falls to the earth's surface.

Red Data species: All those species included in the categories of endangered, vulnerable or rare, as defined by the International Union for the Conservation of Nature and Natural Resources.

Riparian: The area of land adjacent to a stream or river that is influenced by stream induced or related processes.

1 PROJECT INFORMATION

1.1 Introduction

Kusile Invest 133 (Pty) Ltd has appointed Archean Resources (Pty) Ltd, an independent consulting company, to conduct an Environmental Impact Assessment (EIA) process to evaluate the potential environmental and social impacts of the proposed project. The project is referred to as the Giyani Gold Mine Project. The applicant Kusile Invest has lodged a mining right on Un-Surveyed State land of Greater Giyani 891 LT and a portion of portion 0 of the farm 246 located within the town of Giyani, Limpopo Province and intends to establish an underground and open cast mine.

The mine development activities will commence by establishing and installing the required mining infrastructure such as pit establishment, shaft headgear and winders, service water, compressed air and power supply, processing plant and installation of surface ventilations fans. The type and size of the mining infrastructure to be installed will be designed to support the proposed Life of Mine (LOM) production rate of 12 000 tons per month of Run of Mine material (ROM) for 30 (thirty) years.

Mining operations will commence from five open cast pits which will later be developed into underground workings and expand into four working levels to reach the steady state production of 12 000 tons per month. Additional working areas will be established for sustainability and to replace the depletion of ore reserves being mined from the start-up working areas.

The open pit mine design shows the orebody being located centrally to the pit outer walls or pit shell. The waste surrounding the orebody will be stripped, with topsoil stored separately from waste rock for re-use during rehabilitation of the pit at closure of mining operations. The stripping will include the removal of surrounding topsoil and waste rock to fully expose the orebody and have enough area for movement of machinery inside the pit.

The sidewalls of the excavation, surrounding the orebody, referred to as Benches, will be excavated at intervals to a maximum depth 12 metres and must be slanted to ensure slope stability as per specifications determined by the project's Rock Engineering expert. The pit development will include the creation of Berms, representing the flat area or horizontal distance of approximately 5 metres in width, when measured from the bottom of the preceding or top bench to the edge of the next bench as the pit goes dipper. An access ramp and haul road will also be created from the top bench on the outer limits of the pit, traversing the lower benches in order to have mining equipment and personnel accessing the pit floor where excavating or blasting of the ore bearing rock will be conducted.

The pit will be excavated to an optimal operating final depth of 400 metres below surface level, thereafter, the conversion of the mining operation from open pit to underground mining operation will be affected. The timing for the development of the underground mining infrastructure will be scheduled to reach its completion such that the commencement of underground operations will overlap with the final phase of the open pit mining operation for a period of 6 months. The basic design or layout for the underground mining operation, entails the conventional use of shafts and declines, with the development of footwall haulages, cross-cuts and raise-lines to establish conventional steep stoping and cut and fill mining panels.

In terms of the National Environmental Management Act (NEMA), in addition to the mining right application submitted to the DMR an Environmental Authorisation needs to be applied for. An integrated scoping and environmental impact assessment process will be conducted for the Environmental Authorisation application, and Water Use License application for the mining right application. The applicant is doing an integrated application process for a Scoping and Environmental Impact Assessment in terms of the National Environmental Management ACT (NEMA): EIA Regulations 2017. An application for Environmental Authorisation (EA) in term of Section 16 of the NEMA EIA 2017 regulations was submitted to the DMR. Kusile Invest 133 (Pty) Ltd holds the following prospecting right (PR) and mining permit which form part of the mining application:

- (LP) 30/5/1/1//2/2724 PR on Un-Surveyed State land of Greater Giyani 891 LT and a portion of portion 0 of the farm 246.
- (LP) 30/5/1/3/2/10708MP on Un-Surveyed State land of Greater Giyani 891 LT.

The report has been designed to meet the requirements for conducting an Environmental Impact Assessment (EIA) and Environmental Management Programme (EMPR) as stipulated in the Regulations contained in both the Mineral and Petroleum Resources Development Act (Act No. 28 of 2002-MPRDA) and National Environmental Management Act (EIA regulations of April 2017) respectively.

The National Water Act 36 of 1998 (NWA) specifies certain activities that require registration or licensing from the Department of Water Affairs (DWA). Given the nature of the receiving environment and the occurrence of certain drainage and water features the mine will require a Water Use Licence (WUL). The EIA and a separate Technical Motivation Report are required to inform the decision to issue a Water Use Licence. This application will be made concurrently with the current EIA process, including stakeholder engagement.

1.2 Purpose of the report

In terms of relevant legislation, the applicant may not commence prior to a suite of authorisations. This document is the Scoping Report, the purpose of which is to provide stakeholders with the preliminary results of the Scoping Phase of the study and with an opportunity to verify that all issues have been identified and, if not, provides an opportunity for stakeholders to raise them and for them to be captured and considered in the EIA process.

1.3 Assumptions and Limitations

As is standard practice, this Scoping Report is based on a number of assumptions and is subject to certain limitations. These are as follows:

- It is assumed that information provided by the applicant and the specialists once the reports are compiled will be accurate.
- A more detailed project site layout will be presented in the Impact Assessment Phase; and
- Detailed assessment of the potential positive and negative environmental impacts of the proposed development will only be undertaken during the Impact Assessment Phase.

Notwithstanding the above, Archean Resources is confident that these assumptions and limitations do not compromise the overall findings of this report.

1.4 Description of the property and Locality

Table 3: Project Details

Farm Name:	Un-Surveyed State land of Greater Giyani 891 LT and a portion of portion 0 of the farm 246.
Application area (Ha)	The project area covers a surface area of 13894.66 hectares (Extent of surface area required for mining is 1000 Hectares and extent of the area required for infrastructure, roads, servitudes etc. is 150 Hectares)
Magisterial district:	Greater Giyani Municipality, within Mopani District Municipality in Limpopo Province
Distance and direction from nearest town	The application area is located approximately 10km North East town of Giyani and approximately 140 km north-east of Polokwane, accessible along the R81 road from the N1 National Road in Polokwane.
21-digit Surveyor General Code for each farm portion	T0LT00000000089100000 T0LT00000000024600000

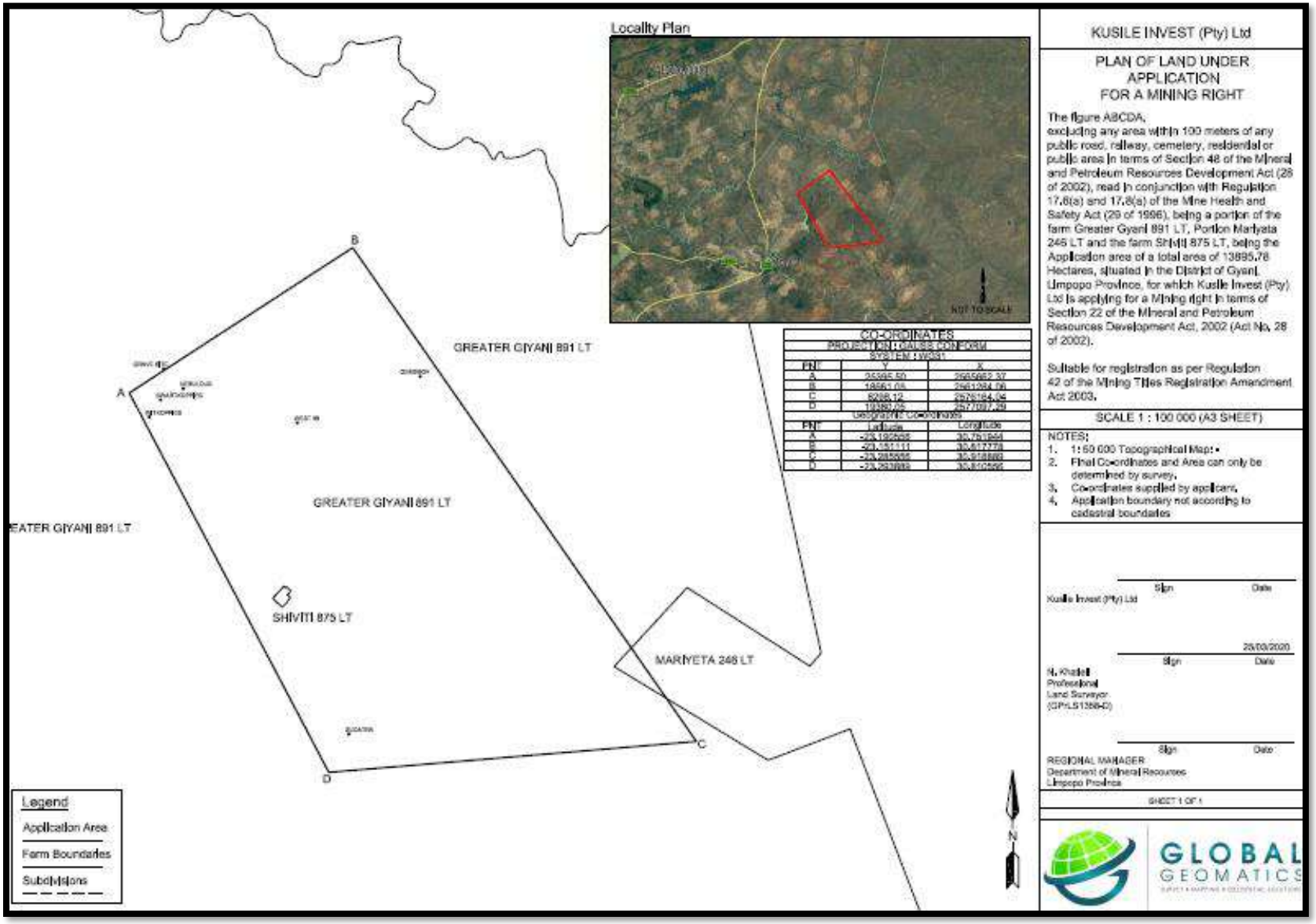

Figure 1: Regulation Map

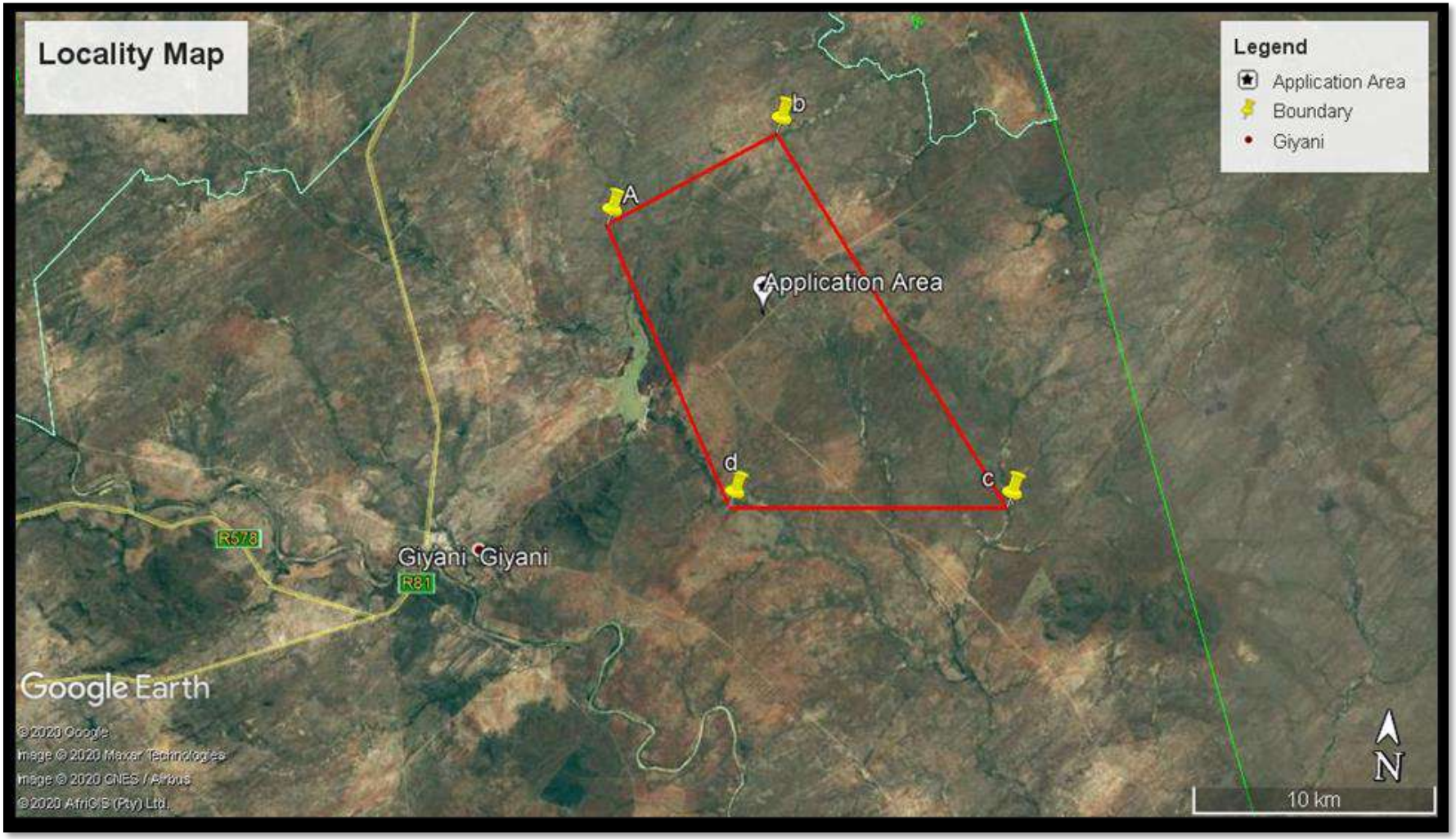

Figure 2: Project Locality

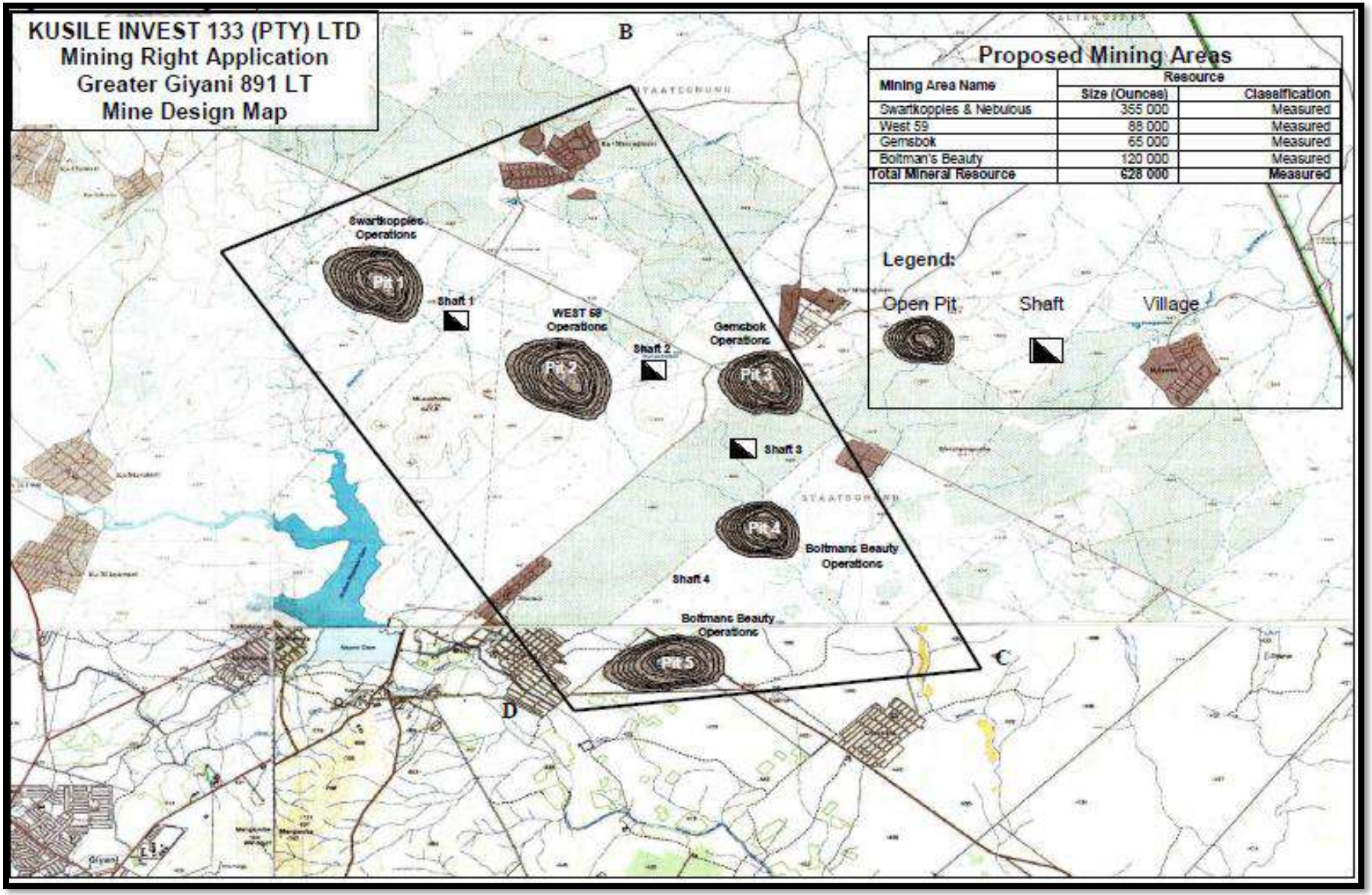

Figure 3: Proposed Site Layout

2 DESCRIPTION OF THE SCOPE OF THE PROPOSED OVERALL ACTIVITY

i) Listed and specified activities

Table 4: NEMA Listed Activities

NAME OF ACTIVITY **(E.g. For prospecting -** drill site, site camp, ablution facility, accommodation, equipment storage, sample storage, site office, access route **etc…etc…etc** **E.g. for mining**,- excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc…etc…etc.)	**Aerial extent of the Activity Ha or m²**	**LISTED ACTIVITY** (Mark with an **X** where applicable or affected).	**APPLICABLE LISTING NOTICE** (***GNR 983, 984, 985***	**WASTE MANAGEMENT AUTHORISATION** (Indicate whether an authorisation is required in terms of the Waste Management Act). **(Mark with an X)**
GNR 983 Listing Notice 1: Activities requiring an environmental authorisation subject to a Basic Assessment				
The development of facilities or infrastructure for the transmission and distribution of electricity- (i) outside urban areas or industrial complexes with a capacity of more than 33 but less than 275 kilovolts; Relevance: A power distribution switch yard will be constructed (substation).	2ha	X	**GNR 983 Listing Notice 1:** Activity 11	N/A
The development of – (ii) channels exceeding 100 square metres in size (iv) dams where the dam including infrastructure and water surface area, exceeds 100 square meters in size (vi) bulk storm water outlet structures exceeding 100 square metres in size; (xii) Infrastructure or structures with a physical footprint of 100 square meters or more. ***Relevance: A pollution control dams will be constructed.***	20 ha	X	**GNR 983 Listing Notice 1:** Activity 12	N/A
The development of a road where no reserve exists where the road is wider than 8 meters but excluding roads which are identified and included in activity 27 in listing Notice 2 of 2014. ***Relevance: Access roads will be upgraded, and mine haul roads constructed.***	20km	X	**GNR 983 Listing Notice 1:** Activity 24	N/A
GNR 984Listing Notice 2: Activities requiring an environmental authorisation subject to a Scoping and Environmental Impact Assessment.				
The development of facilities or infrastructure, for the storage, or storage and handling of a dangerous good, where such storage occurs in containers with a combined capacity of more than 500 cubic metres. ***Relevance: Hydrocarbon fuels and explosives***	1000m³	X	**GNR 984 Listing 2:** Activity 4	N/A

The development of facilities or infrastructure for any process or activity which requires a permit or licence or an amended permit or licence in terms of national or provincial legislation governing the generation or release of emissions, pollution, or effluent. Relevance: Processing of gold (smelting)	20ha	X	**GNR 984 Listing 2: Activity 6**	N/A
The clearance of an area of 20 hectares or more of indigenous vegetation ***Relevance: clearing of mining area***	1200 Ha.	X	GNR 984 Listing 2: Activity 15	N/A
Any activity including the operation of that activity which requires a mining right as contemplated in section 22 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002), including associated infrastructure, structures and earthworks, directly related to the extraction of a mineral resource.. ***Relevance: Mining activity***	13894.66 hectares	X	GNR 984 Listing 2: Activity 17	N/A
Any activity including the operation of that activity associated with the primary processing of a mineral resource including winning, reduction, extraction, classifying, concentrating, crushing, screening, and washing	20 ha	X	GNR 984 Listing 2: Activity 21	N/A
GNR 983 Listing Notice 3: Activities requiring an environmental authorisation subject to a Basic Assessment				
The development of-(xii) infrastructure or structures with a physical footprint of 10 square metres or more in Limpopo. (a) within a watercourse (c) if no development setback has been adopted, within 32 metres of a watercourse, measured from the edge of a watercourse. Relevance: Drainage and watercourses on site	1200ha	X	**GNR 985 Listing Notice 3:** Activity 14	N/A
The clearance of an area of 300 square metres or more of indigenous vegetation in Limpopo where: iv. On land, where, at the time of the coming into effect of this Notice or thereafter such land was zoned open space, conservation or had an equivalent zoning. Relevance: The application area is zoned open space.	1200ha	X	**GNR 985 Listing Notice 3:** Activity 12	N/A

2.1 Description of the activities to be undertaken

The planned mining methods will include both open cast/surface mining and conventional stoping underground. Mining activities will be carried out on the reef horizon by means of excavating, drilling, blasting, and cleaning of ore using heavy earth moving equipment and blasting using commercial explosives scraper cleaning operations and truck loading or hoisting. The broken ore will be loaded on

to trucks and transported through the declines which will be developed below the reef horizon/stoping area for transporting to surface by conveyor belts. For underground mining, the excavation that remains after blasting and cleaning of ore on reef is supported by installing roof bolting to ensure a safe working environment.

Exploitation of the gold bearing ore using the techniques above is associated with costs for procurement of diesel; equipment maintenance; explosives; rock support material and transport costs, in addition to labour costs. Other costs related to general stores and consumables, water, electricity, and compressed air. During the build-up phase, it is expected that a high unit cost will be incurred for each ton of broken ore produced due to initial high fixed and variable costs compared to low production rate when establishing the working areas. The unit cost will gradually decrease and stabilize as production rate increases to reach a steady state.
The planned conventional open cast mining and stope mining methods will utilize compressed air powered rock-drills and electricity powered scraper winches. This equipment will increase electricity consumption and inefficient use of equipment will negatively impact on the operating cost for the mine.

2.2 Mining Right: Description of Mining Method

Mining operations will commence from five open cast pits which will later be developed into underground workings and expand into four working levels to reach the steady state production of 12 000 tons per month. Additional working areas will be established for sustainability and to replace the depletion of ore reserves being mined from the start-up working areas.

The open pit mine design shows the orebody being located centrally to the pit outer walls or pit shell. The waste surrounding the orebody will be stripped, with topsoil stored separately from waste rock for re-use during rehabilitation of the pit at closure of mining operations. The stripping will include the removal of surrounding topsoil and waste rock to fully expose the orebody and have enough area for movement of machinery inside the pit.

The sidewalls of the excavation, surrounding the orebody, referred to as Benches, will be excavated at intervals to a maximum depth 12 metres and must be slanted to ensure slope stability as per specifications determined by the project's Rock Engineering expert. The pit development will include the creation of Berms, representing the flat area or horizontal distance of approximately 5 metres in width, when measured from the bottom of the preceding or top bench to the edge of the next bench as the pit goes dipper. An access ramp and haul road will also be created from the top bench on the

outer limits of the pit, traversing the lower benches in order to have mining equipment and personnel accessing the pit floor where excavating or blasting of the ore bearing rock will be conducted.

The pit will be excavated to an optimal operating final depth of 400 metres below surface level, thereafter, the conversion of the mining operation from open pit to underground mining operation will be affected. The timing for the development of the underground mining infrastructure will be scheduled to reach its completion such that the commencement of underground operations will overlap with the final phase of the open pit mining operation for a period of 6 months. The basic design or layout for the underground mining operation, entails the conventional use of shafts and declines, with the development of footwall haulages, cross-cuts and raise-lines to establish conventional steep stoping and cut and fill mining panels.

2.2.1 Mining – Mining Method

The basic mining methods to be utilised for the Giyani gold mining operation are both surface mining using open pit and conventional stoping methods applied underground to excavate hard rock or ore containing gold and associated minerals such as copper, zinc, nickel and lead and uranium. The existing mine shafts in the area, which form part of the project, were generally mined by conventional breast stoping mining until they were mothballed during the mid-1990's.

Mining will commence using open pits on outcrops and later develop into underground workings. Typically, underground working areas are accessed through a vertical shaft positioned a distance away from the reef horizon to be mined. A mine shaft is vertical excavation sunk and equipped with conveyances to transport men, material, and rock when mining operations are being conducted. A number of horizontal haulages are developed from the shaft at equal vertical intervals of approximately 60m, to access and intersect the reef horizon by developing a tunnel referred to as a crosscut. A raise development is then carried out from the cross-cut intersection on true dip or angle of inclination of the reef plane to make a holing on the cross-cut developed on the haulage above. Instead of using the shaft system, an option exists to utilize a decline system, where inclines are developed from the bottom of surface pit limit to provide underground access to deeper lying orebodies.

Separate declines will be developed for men and material access and rock handling. Footwall haulages will be developed from the declines to create crosscuts and raise lines similar to those used in a shaft system.

Stoping or conventional breast mining commences from the raise line with mining panels laid out at 20 - 30m lengths. The rock breaking process or excavation entails drilling of blast holes and charging of holes. Blasting of ore is done from both sides of the raise advancing on strike along the reef horizon. The broken ore will be loaded by LHD's on to trucks and transported through the declines which will be developed below the reef horizon/stoping area for transporting to surface by conveyor belts. In a typical SA gold mine, cleaning of broken ore is conducted by scraper winches to collect ore from the panel into an ore-pass for loading onto a hoppers on the haulage below the stope. The development of the access haulage and the on-reef development is carried out using hand-held rock-drills and pneumatic loaders employed for cleaning of the broken rock into hoppers. The broken rock loaded onto the hoppers is transported/trammed by a locomotive into an ore-pass or rock handling system for hoisting to surface.

One of the most important aspects of underground hard rock mining is ventilation. Ventilation is required to clear toxic fumes from blasting. In deep hot mines ventilation is also required for cooling the workplace for miners. Ventilation raises are excavated to provide ventilation for the workplaces and can be modified to be used as escape routes in case of emergency. The main sources of heat in underground hard rock mines are virgin rock temperature, machinery, auto compression, and fissure water although other small factors contribute like people breathing, inefficiency of machinery, and blasting operations. Each mining area will have a dedicated ventilation shaft to extract hot air and underground fumes to keep the working places free of nauseous fumes and keep the temperature to within statutory requirements.

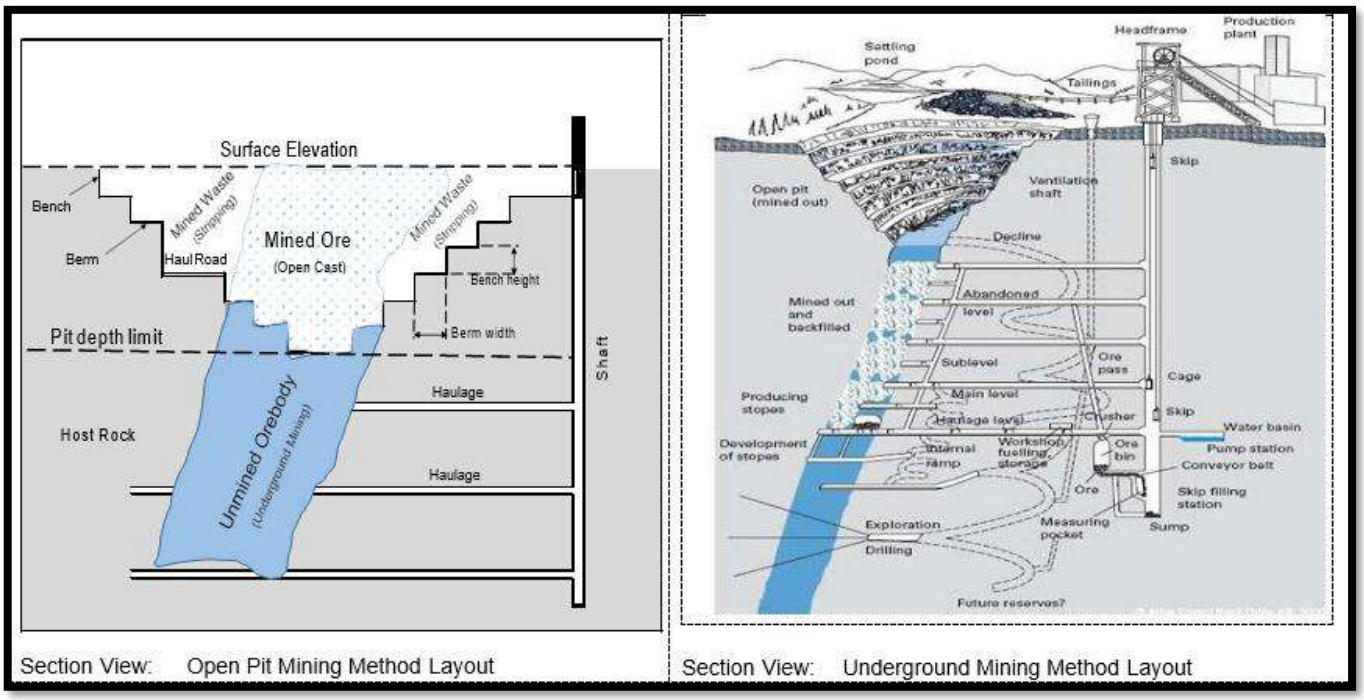

Figure 4: Schematic Diagram of Proposed Mining Methods (Open Cast and Underground)

2.3 High level description of the processing plant

Gold ore mined will be transported by Articulated Dump Truck (ADT) from open cast pits and hoist skips or conveyor belts from underground to stockpiles and storage areas, where it will be transported to the central processing plant by side tipper trucks for stockpiling onto a ROM pad in front of a crusher unit. A ramp will be utilized to provide access for the loading and dumping of ore on the tipping station for crusher feed. A conveyor belt will carry the ore from the tipping station and feed the load on top of a grizzly above the feed bin of a crusher.

The key installations and stages of the processing plant for gold recovery are crushing, milling, gravity concentration, flotation, leaching or cyanidation, concentration/elution and smelting. Summarized below is a high-level description of the processing plant:

Crushing - ore extracted from the mine will be trucked and delivered to the ROM pad where it will be stockpiled. It will then be fed through a two-stage crushing process. The Primary Crusher will be a single toggle jaw crusher with the Secondary Crusher being a cone crusher.

Milling – the process is used to further agglomerate the crushed ore being fed into a semi autogenous grinding (SAG) mill with lime, water and steel balls to liberate the gold contained in the rock. The larger particles from this mill are returned to the SAG mill for more grinding. The finer particles receive more grinding in a ball mill and are size classified to give a final product of 80% <70 microns. Crushed ore will be ground using a 4.2m diameter, 5.3m long primary ball mill with 1650kw motor.

Gravity concentration – this stage of the process separates gold from the milling process using the metal's higher specific gravity to settle in a solution and separate from other metals and material. This will be done in two centrifugal concentrators installed as part of the plant.

Flotation – a process for producing a mineral concentrate through the use of chemical conditioning agents followed by intense agitation and air sparging of the agitated ore slurry to produce a mineral rich foam concentrate. The installation comprises a bank of eight forced air, mechanically agitated cells ($8m^3$ each).

Cyanidation/leaching - this process involves the dissolution of gold containing ores in dilute cyanide solution in the presence of lime and oxygen contained in acid resistant leach tank.

Concentration/elution – this process is called Carbon in Pulp (CIP) and is applied to control the gold

precipitation from the cyanide solution by use of activated charcoal (carbon). The final loaded carbon then is removed and washed before undergoing "elution" desorption of gold cyanide at high temperature and pH

Smelting - The rich eluate solution that emerges from the elution process is passed through electro-winning cells where gold and other metals are precipitated onto the cathodes. After precipitation, the product is treated with dilute sulfuric acid to dissolve residual zinc and most of the copper. The gold precipitate is then filtered out of the solution, mixed with fluxes and smelted to form crude and impure bars which are sent to a refinery to separate the copper; PGMs; silver and other associated base metal minerals

Basic plant design. (supported by a process flow diagram, of the plant).

The basic plant design and anticipated process flow diagram (see diagram below) is based on the proven metallurgical technology currently being used by mines in South Africa and represents a typical free milling carbon-in-leach (CIL)/carbon-in-pulp (CIP) gold processing circuit comprising:

- Two stage crushing.
- Single stage milling designed for a grind size of 105 micron;
- Knelson Concentrator or Gravity recovery cyclone;
- Thickeners.
- CIL/CIP leaching and adsorption with a retention requirement of only 16 hours.
- Elution, gold smelting and carbon regeneration.
- Tailings disposal.

The modular nature of the proposed process plant layout will allow for modifications, including increasing plant throughput, to be undertaken when required. The process flow diagram of the processing plant showing the key components of the plant is as below:

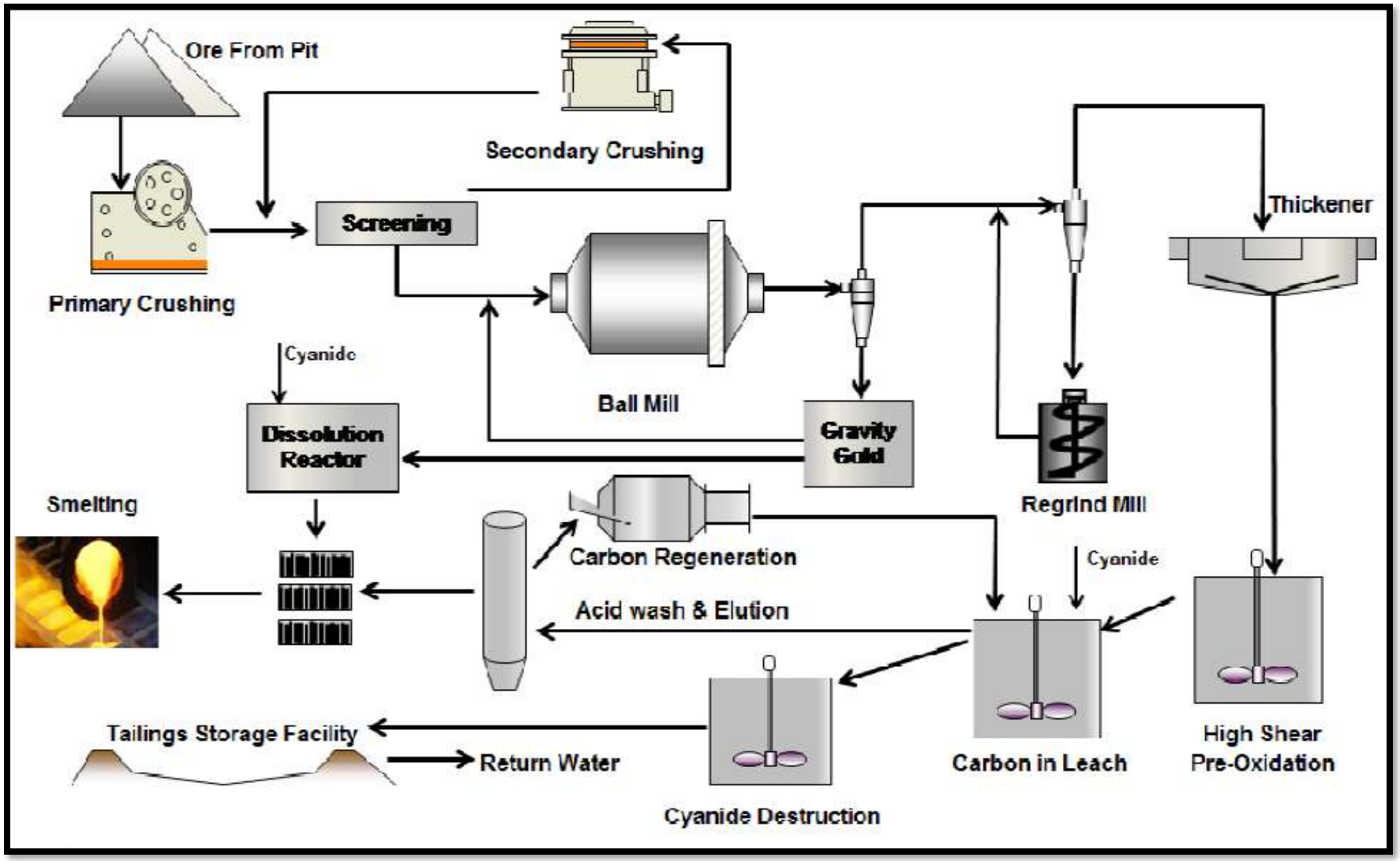

Figure 5: Schematic layout of processing plant

2.4 Summary of infrastructure such as roads, rail, electricity and water

2.4.1 Access roads

The Giyani gold mine is located within the town of Giyani, approximately 140 km to the north- east of the N1 National Road from Polokwane. A well maintained R81 road, from the N1 will provide as the main access to the mine. The mining area will be accessed through existing tarred roads that will link the mine to the various villages such as Thomo, Mninginisi, Mbatlo, Mavalani and Shikukwani.

The existing town roads will be utilized for trucking of ore to the processing plant which will be located within a 20km radius from various mining pits and shafts. These roads will form part of the road infrastructure to be utilized for the development of the mine. The initial capital costs to be incurred by the company will be limited to re-establishment and maintenance costs for the access roads within the pits and shaft areas and this will be provided for by the mine.

2.4.2 Rail Infrastructure

The Giyani mine is located approximately 80km to the east of the Soekmekaar-Polokwane railway line, with the nearest station at Soekmekaar. The mine will not utilise any rail for the transport of ore or delivery of mine material as these will be done by means of trucking to and fro the mine to the central processing plant.

2.4.3 Power Supply - Electricity

There is an existing powerline located some 4km from the central processing area. A dedicated power feeder will be obtained by establishing a connection to this existing powerline. A new sub-station connection will installed at the central processing plant as a step-down transformer to reduce the voltage from the high tension overhead power line to 6.6kV, where this will be reduced further to levels suitable for use in the plant and nearby shafts and mine offices. The planned power usage at the mine is as summarized below:

Table 5: Planned mine power usage

Area	**Usage**
Processing Plant	500kVA
Mine Shafts/Winding Engine Room	500kVA
Surface Compressors	300kVA
Engineering Workshops	200kVA
Mine Offices	100kVA
Total	**1600kVA**

2.4.4 Water Supply

Water requirements on the mine will include the supply of water for drilling underground; dust suppression on surface and underground; general office use; cleaning of equipment; workshops and hauling roads. Potable water will also be needed for human consumption and change house facilities. The mine will source its water supply from the Giyani water scheme which is under the management of Greater Giyani Municipality. A pipe connection will be used to direct the water supply to the mine, where it will be stored in a mounted tank, with enough capacity to hold at least 100m3 required for mine services. There is an existing pipeline within a 10km distance, which supply water to Giyani town and surrounding villages.

Other sources of water will include ground water seepage into the pits and underground mine working and storm water in the event of heavy rains. Any excess water will be channeled into settling ponds and used as make-up water in the event of losses associated with mining operations, discard streams and evaporation.

2.4.5 Site Offices

To minimize the establishment cost and due to the relatively short life of mine plan for the envisaged mine operation, pre-fabricated buildings will be erected to function as workshops and mine offices, change houses, laboratories, first aid rooms, and warehousing..

2.4.5.1 Underground Infrastructure

- Decline lateral;
- Exhaust raises;
- Footwall drives;
- Ventilation lateral access;
- Cross cuts from decline;
- Sumps;
- Escapeway access;
- Escapeway raise;
- Decline rehandle bays;
- Production rehandle bays;
- Other lateral waste;

- Backfill tipping bay;
- Truck loop/loading access;
- Diamond drill chambers;
- Ore pass;
- Upper ventilation drive connection to surface;
- Intake Raise vertical;
- Main pump station;
- Longitudinal stope access;
- Transverse stope access lateral; and
- Exploration drive.

2.4.6 Surface infrastructure

The proposed project would comprise of the design and construction of all building structures, related earthworks and building services, electrical and mechanical installations. This would include *inter alia*:

- Central Plant and Mobile Process plant
- Loading area
- Stockpile areas
- Site clearing and storm water berms and trenches;
- Administration building and first aid;
- Change house and laundry;
- Lamp room, self-rescuer and proto room;
- Access control and security centre;
- TMM Maintenance workshop, services, lubrication, bays;
- Wash bay and oil skimmer;
- Bulk fuel storage area;
- Refueling bay;
- Tyre storage, repair and pump area;
- LVD workshop;
- Fitting, electrical and boiler making workshop;
- Main stores and yard;

- Salvage yard;
- External parking, shade ports and walkways;
- Electrical, water and sewage reticulation;
- Terraces, pavements, access, internal and haul roads;
- Perimeter and internal fencing; and
- Explosives off-loading, storage and distribution.
- One Slimes Dam and PCD"s

2.5 Minerals applied for:

- Gold Ore/Bearing Minerals: Code: (Au),
- Copper Ore/Bearing minerals: Code: (Cu),
- Silver Ore/Bearing minerals: Code: (Ag),
- Nickel Ore/Bearing minerals: Code: (Ni),
- Platinum Group Minerals: Code: (PGM),
- Zinc Ore/Bearing Minerals: Code: (Zn),
- Lead Ore/Bearing Minerals: Code: (Pb),
- Uranium Ore/Bearing Minerals: Code: (U),
- Chrome Ore/Bearing Minerals: Code (Cr),
- Aggregate Material

3 POLICY AND LEGISLATIVE CONTEXT

3.1.1 The South African Constitution

This section provides an overview of the legislative requirements applicable to this project and it includes the Acts, guidelines and policies considered in the compilation of this report. The legislative motivation for this project is underpinned by the Constitution of South Africa, 1996 (Act No. 108 of 1996), which states that:

The State must, in compliance with Section 7(2) of the Constitution, respect, protect, promote and fulfil the rights enshrined in the Bill of Rights, which is the cornerstone of democracy in South Africa. Section 24 of the Constitution:

24. Environment

-Everyone has the right-

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

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

(i) prevent pollution and ecological degradation;

(ii) promote conservation; and

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

Section 24 of the Constitution of South Africa (Act No. 108 of 1996) requires that all activities that may significantly affect the environment and require authorisation by law must be assessed prior to approval. In addition, it provides for the Minister of Environmental Affairs or the relevant provincial Ministers to identify:

- new activities that require approval;
- areas within which activities require approval; and
- existing activities that should be assessed and reported on.

Section 28(1) of the Constitution of South Africa (Act No. 108 of 1996) states that: *"every person who causes, has caused or may cause significant pollution or degradation of the environment must take reasonable measures to prevent such pollution or degradation from occurring, continuing or recurring".* If such pollution or degradation cannot be prevented then appropriate measures must be taken to minimise or rectify such pollution or degradation. These measures may include:

- Assessing the impact on the environment;
- Informing and educating employees about the environmental risks of their work and ways of minimising these risks;
- Ceasing, modifying or controlling actions which cause pollution/degradation;
- Containing pollutants or preventing movement of pollutants;
- Eliminating the source of pollution or degradation; and
- Remedying the effects of the pollution or degradation.

Applicability: Public participation process and consultation will be done at every stage of the EIA phase. The public participation process to be followed and consultations to be done regarding the proposed project. An EMP and awareness plan will be designed according to the issues raised during this process

3.1.2 National Environmental Management Act

The NEMA Act under sections 24(2), 24(5), 24D and 44, read with section 47A (1) (b) of National Environmental Management Act (107/1998): Environmental Impact Assessment Regulations, 2017 (as amended), is regarded as one of the important pieces of general environmental legislation as it provides a framework for environmental law reform. The main objective of this act is to ensure that ecosystem services and biodiversity are protected and maintained for sustainable development. Furthermore, Section 28 (1) of the NEMA requires that "every person who causes has caused or may cause significant pollution or degradation of the environment must take reasonable measures to prevent such pollution or degradation from occurring, continuing or recurring".

NEMA strives to regulate national environmental management policy and is focussed primarily on co-operative governance, public participation and sustainable development. NEMA makes provisions for co-operative environmental governance by establishing principles for decision making on matters affecting the environment, institutions that will promote co-operative governance and procedures for

co-ordinating environmental functions exercised by Organs of State and to provide for matters connected therewith.

A scoping report must contain the information that is necessary for a proper understanding of the process, informing all preferred alternatives, including location alternatives, the scope of the assessment, and the consultation process to be undertaken through the environmental impact assessment process, and must include-

(a) details of-

I. the EAP who prepared the report; and

II. the expertise of the EAP, including a curriculum vitae; (See Annexure 1)

(b) the location of the activity, including-

I. the 21-digit Surveyor General code of each cadastral land parcel;

II. where available, the physical address and farm name;

III. where the required information in items (i) and (ii) is not available, the coordinates of the boundary of the property or properties;

(c) a plan which locates the proposed activity or activities applied for at an appropriate scale, or, if it is-

I. a linear activity, a description and coordinates of the corridor in which the proposed activity or activities is to be undertaken; or

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-

I. all listed and specified activities triggered;

II. a description of the activities to be undertaken, including associated structures and infrastructure;

(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;

(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;

(h) a full description of the process followed to reach the proposed preferred activity, site and location within the site, including-

I. details of all the alternatives considered;

II. *details of the public participation process undertaken in terms of regulation 41 of the Regulations, including copies of the supporting documents and inputs;*
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;*
IV. *the environmental attributes associated with the alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects;*
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-*
    a) *can be reversed;*
    b) *may cause irreplaceable loss of resources; and*
    c) *can be avoided, managed or mitigated;*
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;*
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;*
VIII. *the possible mitigation measures that could be applied and level of residual risk;*
IX. *the outcome of the site selection matrix;*
X. *if no alternatives, including alternative locations for the activity were investigated, the motivation for not considering such and*
XI. *a concluding statement indicating the preferred alternatives, including preferred location of the activity;*

Applicability: Baseline environmental information of the project area will be assessed. Mitigation measures and recommendations where provided according to best practice standards. This scoping report complies with the requirements of the NEMA act.

3.1.3 Mineral and Petroleum Resources Development Act

The MPRDA makes provision, for persons to apply for a mining right. A mining right granted in terms of the MPRDA is a limited real right in respect of the type of resources and the land to which the right relates. The holder of a mining right is entitled to the rights referred to in the MPRDA or any other law.

The applicant requires a mining right and environmental authorisation from the DMR. Acceptance of the application by DMR only right the applicant to continue with the necessary process and does not constitute authorisation. The acceptance details the outstanding requirements for the application, which includes:

(a) the submission of an EMP; and

(b) notification and consultation with IAPs, including land owners or lawful occupiers of land, on which the proposed mining is to be conducted;

(c) Details on how the applicant will substantially and meaningfully expand opportunities for historically disadvantaged persons**.**

Applicability: A mining right was lodged with the DMR

3.1.4 National Environmental Management: Biodiversity Act, 2004 (Act 10 of 2004)

The overarching aim of the National Environmental Management: Biodiversity Act, 2004 (NEMBA), within the framework of NEMA, is to provide for:

- *The management and conservation of biological diversity within South Africa as well as for the components of such biological diversity;*
- *The use of indigenous biological resources in a sustainable manner and*
- *The fair and equitable sharing among stakeholders of benefits arising from bio-prospecting involving indigenous biological resources.*

As part of its implementation strategy of NEMBA, the National Spatial Biodiversity Assessment was developed. This assessment classifies areas as worthy of protection based on its biophysical characteristics, which are ranked according to priority levels. The approach used for biodiversity planning is systematic and entails the following three key principles:

- *The need to conserve a representative sample of biodiversity pattern, such as species and habitats (the principle of representation);*
- *The need to conserve the ecological and evolutionary processes that allow biodiversity to persist over time (the principle of persistence); and*
- *The need to set quantitative biodiversity targets that quantifies the degree of conservation required for each biodiversity feature in order to maintain functioning landscapes and seascapes.*

Furthermore, the South African National Biodiversity Institute (SANBI) was established by the NEMBA, its purpose being (*inter alia*) to report on the status of the country's biodiversity and the conservation

status of all listed threatened or protected species and ecosystems. NEMBA provides for a range of measures to protect ecosystems and for the protection of species that are threatened or in need of protection to ensure their survival in the wild, including a prohibition on carrying out a "restricted activity" involving a specimen of a listed threatened or protected species without a permit issued in terms of Chapter 8 of the Act. Lists of critically endangered, endangered, vulnerable and protected species have been published and a permit system for listed species has been established.

The Applicant is therefore required to take appropriate reasonable measures to limit the impacts on biodiversity, to obtain permits if required.

Applicability: An Ecological (Fauna and Flora) Impact Assessment is undertaken for developments in an area that is considered ecologically sensitive and which requires environmental authorisation in terms of NEMA, with such assessment taking place during the Scoping or EIA phase.

3.1.5 National Forest Act, 1998 (Act 84 of 1998)

The purposes of National Forest Act, 1998 (act 84 of 1998) (NFA) includes *inter alia:*

(*c) provide special measures for the protection of certain forests and trees:*

(d) promote the sustainable use of forests for environmental, economic, educational, recreational, cultural, health and spiritual purposes.

Applicability: A flora and fauna study will be conducted to determine the tree species in the project area and specify if there are any endangered species. A permit for the removal / destruction of protected trees will be applied for with the relevant Agriculture and F in terms of Section 15 of the forestry department NFA.

3.1.6 National Environmental Management: Air Quality Act (Act No 39 of 2004)

Section 28 (1) of NEMA places a general duty of care on any person who causes pollution, to take reasonable measures to prevent such pollution from occurring. The objective of the National Environmental Management: Air Quality Act, 2004 (NEM:AQA) is to regulate air quality in order to protect, restore and enhance the quality of air in the Republic, taking into account the need for

sustainable development. Furthermore, the provision of national norms and standards regulating air quality monitoring, management and the control by all spheres of government determine that specific air quality measures should be adhered to. Dust created during the construction and operational phases of the proposed Kusile Invest 133 could influence air quality and thus make this legislation relevant to this development. Air quality management and mitigation measures during the mining phase will be considered to be a measure to exercise this duty of care, since it aims to minimise volumes of dust emissions emanating from the operational activities.

Applicability: An air emission license will be required for the processing plant and air quality monitoring will be implemented at the mine.

3.1.7 Conservation of Agricultural Resources Act (Act 43 of 1983)

The aim of the Conservation of Agricultural Resources Act,1983 (Act 43 of 1983) (CARA) is to provide for control over the utilisation of the natural agricultural resources of the Republic in order to promote the conservation of the soil, the water sources and the vegetation and the combating of weeds and invader plants and for matters connected therewith. The EIA phase of the project will take into account the requirements of CARA as well as determine the potential direct and indirect impacts on agricultural resources as a result of the proposed mining development.

Applicability: A soil and land capability impact assessment will be undertaken.

3.1.8 National Environmental Management: Waste Act (Act 59 of 2008)

The National Environmental Management: Waste Act, 2008 (Act 59 of 2008) (NEM:WA) and Waste Classification and Management Regulations, 2003 (GNR: 634 – 635): To reform the law regulating waste management in order to protect health and the environment by providing reasonable measures for the prevention of pollution and ecological degradation and for securing ecologically sustainable development; to provide for institutional arrangements and planning matters; to provide for national norms and standards for regulating the management of waste by all spheres of government; to provide for specific waste management activities; to provide for the remediation of contaminated land; to provide for the national waste information system; to provide for compliance and enforcement; and to provide for matters connected therewith.

The operational activities associated with the proposed mining program shall be in accordance with the requirements of National Environmental Management: Waste Act, 2008 (Act 59 of 2008) (NEM:WA) and Waste Classification and Management Regulations, 2003 (GNR: 634 – 635).

The Key Waste Streams

According to the available information, the following waste streams might be generated at the proposed Giyani Gold Mine:

- General domestic waste (e.g. food waste, papers, plastics, glass, cans, garden waste, etc.)
- Sewage and sullage from the office, change house and workshop
- Waste rock/overburden material
- Slime waste
- Spent oil and grease from mine workshops, as well as hydrocarbon containers
- Fluorescent tubes, old batteries, waste paints
- Scrap waste (scrap metals, empty chemical containers, and metal off-cuts)
- Wood waste (packaging material)
- Disused electronic equipment

The waste rock/overburden material and slimes dam are mine residues falling within the ambit of hazardous waste requiring authorisation under the National Environmental Management: Waste Act, 2008.

Applicability: Kusile Invest 133 Mine will require a waste licence in terms of NEM:WA). The mine will dispose of the waste offsite to disposal facilities until they apply for a waste management licence and it is granted.

3.1.9 Occupational Health and Safety Act (Act 85 of 1993)

The aim of the Occupational Health and Safety Act, 1993 (act 85 of 1993) (OHSA) is to provide for the health and safety of persons at work and for the health and safety of persons in connection with the use of plant and machinery ; the protection of persons other than persons at work against hazards to health and safety arising out of or in connection with the activities of persons at work; to establish an advisory council for occupational health and safety as well as to provide for matters connected therewith.

Section 8 which deals with the general duties of employers and their employees states that:

1) *"Every employer shall provide and maintain, as far as is reasonably practicable, a working environment that is safe and without risk to the health of the employees."*
2) *''Without derogating from the generality of an employer's duties under subsection (1), the matters to which those duties refer include in particular:*
    a. *The provision and maintenance of systems of work, plant and machinery that, as far as reasonably practicable, are safe and without risk to health;*
    b. *Taking such steps as may be reasonably practicable to eliminate or mitigate any hazard or potential hazard to the safety and health of employees;*
    c. *Making arrangement for ensuring as far as reasonably practicable, the safety and absence of risks to health in connection with the production, processing, use, handling, storage and transport of articles or substances;*
    d. *Establishing, as far as reasonably practicable, what hazards to the health or safety of persons are attached to any work which is performed, any article or substance which is produced, processed, used, handled, stored or transported and any plant or machinery which is used in his business, and he shall, as far as reasonably practicable, further establish what precautionary measures should be taken with respect to such work, article, substance, plant or machinery in order to protect the health and safety of persons, and he shall provide the necessary means to apply such precautionary measures;*
    e. *Providing such information, instruction, training and supervision as may be necessary to ensure, as far as reasonably practicable, the health and safety of employees;*
    f. *As far as reasonably practicable, not permitting any employee to do any work or to produce, process, use, handle, store, or transport any article or substance or to operate any plant or machinery, unless precautionary measures contemplated in paragraph (b) and (d), or any precautionary measures which may be prescribed, have been taken;*
    g. *Taking all necessary measures to ensure that the requirements of this act are complied with by every person in his employment or on the premises under his control where plant and machinery is used;*
    h. *Enforcing such measures as may be necessary in the interest of health and safety;*

i. *Ensuring that work is performed and that plant and machinery is used under the general supervision of a person trained to understand the hazards associated with it and who has the authority to ensure that precautionary measures taken by the employer are implemented and*

j. *Causing any employees to be informed regarding the scope of their authority as contemplated in section 37(1)(b).''*

3.1.10 National Heritage Resources Act

National Heritage Resource Act, 1999 (Act No. 25 of 1999)

The proposed Kusile Invest 133 project must comply with the requirements stipulated in the National Heritage Resources Act, 1999 (Act 25 of 1998) (NHRA). The NHRA legislates the necessity for cultural and Heritage Impact Assessment (HIA) in areas earmarked for development, which exceed 0.5 ha or linear development exceeding 300 metres in length. The Act makes provision for the potential destruction to existing sites, pending the archaeologist's recommendations through permitting procedures. Permits are administered by the South African Heritage Resources Agency (SAHRA).

Section 38(1) of NHRA, subject to the provisions of subsections (7), (8) and (9), requires that any person who intends to undertake a development categorised as:

*(a) The construction of **a road**, wall, power line, pipeline, canal or other similar form of linear development or barrier exceeding 300m in length;*

(b) The construction of a bridge or similar structure exceeding 50m in length;

(c) Any development or other activity which will change the character of a site-

(i)Exceeding 5 000 m^2 in extent; or

(ii)Involving three or more existing erven or subdivisions thereof; or

(iii)Involving three or more erven or divisions thereof which have been consolidated within the past five years; or

(iv)The costs of which will exceed a sum set in terms of regulations by SAHRA or a provincial heritage resources authority;

(d) The re-zoning of a site exceeding 10 000 m^2 in extent; or

(e) Any other category of development provided for in regulations by SAHRA or a provincial heritage resources authority, must at the very earliest stages of initiating such a development, notify the responsible heritage resources authority and furnish it with details regarding the location, nature and extent of the proposed development.

Archaeological impact assessments (AIAs) are often commissioned as part of the heritage component of an EIA and are required under Section 38(1) of the NHRA of 1999, Section 38(8) of the NEMA and the MPRDA.

The process of archaeological assessment usually takes the form of:

1. A scoping or initial pre-assessment phase where the archaeologist and developer's representative establish the scope of the project and terms of reference for the project;
2. A Phase 1 AIA;
3. A Phase 2 archaeological mitigation proposal; and
4. A Phase 3 heritage site management plan.

Phase 1: Archaeological Impact Assessment

A Phase 1 AIA generally involves the identification and assessment of sites during a field survey of a portion of land that is going to be affected by a potentially destructive or landscape altering activity. The locations of the sites are recorded and the sites are described and characterised. The archaeologist assesses the significance of the sites and the potential impact of the development on the sites and makes recommendations. It is essential that the report supply the heritage authority with sufficient information about the sites to assess, with confidence, whether or not it has any objection to a development, indicate the conditions upon which such development might proceed and assess which sites require permits for destruction, which sites require mitigation and what measures should be put in place to protect sites that should be conserved.

Minimum standards for reports, site documentation and descriptions are clearly set out by the SAHRA and supported by the Association of Southern African Professional Archaeologists (ASAPA). The sustainable conservation of archaeological material (*in situ*) is always the best option for any sites that are deemed to be of importance. The report needs to indicate which sites these are, explain why they

are significant and recommend management measures. In certain kinds of developments which involve massive intervention (mining, dam construction, etc.), it is not possible to reach a conservation solution other than to develop a programme of mitigation which is likely to involve the total or partial "rescue" of archaeological material and its indefinite storage in a place of safety.

Phase 2: Archaeological Mitigation Proposal

If the Phase 1 report finds that certain archaeological sites in a development area are of low significance, it is possible to seek permission from the heritage authority for their destruction. The final decision is then taken by the heritage resources authority, which should give a permit or a formal letter of permission, or in the case of an EIA issue a comment allowing destruction.

Phase 2 archaeological projects are primarily based on salvage or mitigation excavations preceding development that will destroy or impact on a site. This may involve collecting of artefacts from the surface, excavation of representative samples of the artefact material to allow characterisation of the site and the collection of suitable materials for dating the sites. The purpose is to obtain a general idea of the age, significance and meaning of the site that is to be lost and to store a sample that can be consulted at a later date for research purposes. Phase 2 excavations should be done under a permit issued by SAHRA, or other appropriate heritage agency, to the appointed archaeologist. Permit conditions are prescribed by SAHRA, or other appropriate heritage agencies. Conditions may include as minimum requirements reporting back strategies to SAHRA, or other appropriate heritage agencies and/or deposition of excavated material at an accredited repository.

Should further material be discovered during the course of development, this must be reported to the archaeologist or to the heritage resources authority and it may be necessary to give the archaeologist time to rescue and document the findings. In situations where the area is considered archaeologically sensitive the developer will be asked to have an archaeologist monitor earth-moving activities.

Phase 3: Management plan for conservation and planning, site museums and displays

On occasion Phase 2 may require a Phase 3 program involving one of the following:

- The modification of the site;
- The incorporation of the site into the development itself as a site museum;

- A special conservation area; or
- A display.

Alternatively, it is often possible to re-locate or plan the development in such a way as to conserve the archaeological site or any other special heritage significance the area may have. For example in a wilderness or open space areas where such sites are of public interest, the development of interpretative material is recommended since it adds value to the development. Permission for the development to proceed can be given only once the heritage resources authority is satisfied that measures are in place to ensure that the archaeological sites will not be damaged by the impact of the development or that they have been adequately recorded and sampled. Careful planning can minimise the impact of archaeological surveys on development projects by selecting options that cause the least amount of inconvenience and delay. The process as explained above allows the rescue and preservation of information relating to our past heritage for future generations. It balances the requirements of developers and the conservation and protection of our cultural heritage as required of SAHRA and the provincial heritage resources authorities.

Applicability: A heritage and paleontological assessment will be undertaken

3.1.11 National Water Act, 1998 (Act No.36 of 1998)

The National Water Act, 1998 (Act 36 of 1998) (NWA) aims to provide management of the national water resources to achieve sustainable use of water for the benefit of all water users. This requires that the quality of water resources is protected as well as integrated management of water resources with the delegation of powers to institutions at the regional or catchment level.

The purpose of the NWA is to ensure that the nation's water resources are protected, used, developed, conserved, managed and controlled in ways, which takes into account:

- Meeting the basic human needs of present and future generations;
- Promoting equitable access to water;
- Redressing the results of past racial discrimination;
- Promoting the efficient, sustainable and beneficial use of water in the public interest;
- Facilitating social and economic development;
- Providing for growing demand for water use;

- Protecting aquatic and associated ecosystems and their biological diversity;
- Reducing and preventing pollution and degradation of water resources;
- Meeting international obligations and
- Managing floods and droughts.

Section 21 of the National Water Act, 1998 (No. 36 of 1998) (NWA) lists water uses for which a Water Use License (WUL) must be obtained. Uses with potential relevance to the proposed mining include:

Table 6: **Summary of Key Water Uses**

Section 21 Water Use	***Activity Description***	***Operational Status***
21(a) taking water from a water resource	*Groundwater abstraction boreholes*	*Proposed*
	Use of water removed from underground mine pit workings	*Proposed*
21 (b) Storing Water	*Raw water reservoir*	*Proposed*
	Potable water storage tank	*Proposed*
21(g) disposing of waste in a manner which may detrimentally impact on a water resource		
	Pollution control dam	*Proposed*
	Stormwater dam	*Proposed*
	Slimes dam	*Proposed*
	Waste rock dump/overburden material	*Proposed*
	Dust suppression	*Proposed*
21(j) removing, discharging or disposing of water found underground if it is necessary for the efficient continuation of an activity or the safety of people	*Dewatering of the underground mine workings*	*Proposed*

The Department of Water and Sanitation (DWS) has published various General Authorizations (GA) in terms of Section39 of the NWA which, replace the need for a water user to apply for a license in terms of the NWA for specific activities. The GAs have been revised and amended at different times.

The GAs set out specific conditions under which a water use may occur without a license and also specify the conditions or thresholds at which a user must register the use with the DWA.

Other Applicable National legislations

- Hazardous Substances Act, 1973 (Act No. 15 of 1973);
- Roads Ordinance Amendment Act, 1998 (Act No. 17 of 1998);
- South African National Roads Agency Limited and National Roads Act, 1998 (Act No. 7 of 1998);

3.2 Provincial Legislative Framework

Table 7: Provincial legislation, policies and guidelines considered

TITLE OF LEGISLATION, POLICY OR GUIDELINE	APPLICABILITY TO THIS PROJECT	ADMINISTERING AUTHORITY	DATE
DEA&DP and DEA Guidelines on Public Participation	Used as a guide to inform of the public participation process.	Department of Environmental Affairs and Development Planning Department of Environmental Affairs	2012 2014
DEA&DP and DEA Guidelines on Alternatives	Used as a guide to inform on the use and presentation of alternatives in the EIA process.	Department of Environmental Affairs and Development Planning Department of Environmental Affairs	2012
DEA&DP and DEA Guidelines on Need and Desirability	Used as a guide to inform on the need and desirability of the upgrade in conjunction with the above mentioned SDF's and IDP's.	Department of Environmental Affairs and Development Planning Department of Environmental Affairs	
The Vegetation of South Africa, Lesotho and Swaziland. Mucina & Rutherford (2006). SANBI, Pretoria	Utilised as a reference guide for the identification specific environmental information	LEDET	

3.2.1 Applicable Legislation and Approvals Required

The proposed Giyani Gold Mine Project requires the following approvals before the project may commence:

- Mining right and Environmental authorization from the Department of Mineral Resources in terms of the MPRDA (Act 28 of 2002) and National Environmental Management Act (107/1998): Environmental Impact Assessment Regulations, 2017.
- Approval of an environmental management programme, in terms of the **Mineral and Petroleum Resources Development Act** (No 28 of 2002) (MPRDA), by the Department of Mineral Resources.
- A water use license in terms of section 21 of the National Water Act, 1998 (Act No. 36 of 1998)

In addition to the main legal approvals, the following approvals will be required:

- The South African Heritage Resources Agency needs to approve a heritage assessment, to be conducted as part of the overall EIA process, in terms of the **National Heritage Resources Act** (No 25 of 1999). Permits will be required for the destruction or removal of any heritage resources affected by the development.
- Should protected species be affected, permits will have to be obtained for their removal, relocation or destruction. This is in terms of the **National Environmental Management: Biodiversity Act** (No 10 of 2004).

Other applicable legislation includes:

- **Conservation of Agricultural Resources Act** (No 43 of 1983).
- **Environment Conservation Act** (No 73 of 1989).
- **National Forests Act** (No 84 of 1998).
- **National Veld and Forest Fire Act** (No 10 1998).

4 PROJECT ALTERNATIVES

According to the EIA Guidelines feasible and reasonable alternatives have to be identified for a development as required by the NEMA EIA Regulations and applicable to EIA. 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 could be identified and investigated in terms of a comparative assessment during the Scoping phase, the EIAR will then not contain a section with alternative. Alternatives forms a vital part of the initial assessment process through the consideration of modifications in order to prevent and/or mitigate environmental impacts associated with a particular development. Alternatives are to be amended when the development's scope of work is amended. It is vital that original as well as amended alternative identification, investigation and assessment together with the generation and consideration of modifications and changes to the development and activities are documented.

The EIA Regulations (2017) defines alternatives as the different means of meeting the general purpose and requirements of the activity, which may include alternatives to:

a) The property on which or location where it is proposed to undertake the activity;
b) The type of activity to be undertaken;
c) The design or layout of the activity;
d) The technology to be used in the activity
e) The operational aspects of the activity and
f) The option of not implementing the activity.

Although an array of alternatives could be investigated for each project, such alternatives will not necessarily be applicable to each project and/or project phase. However there must always be strived to seek alternatives that maximises efficient and sustainable resource utilisation and minimise environmental impacts.

4.1 Feasible alternatives

4.1.1 Location

No alternatives have been investigated in terms of location due to the geological formation of the area as well as the availability of the previously mined shafts, relevant studies have been done and show of the availability of a deposit. Should the proposed mining site be relocated to another location the applicant will not be able to utilise the resource potential.

4.1.2 Activity

The basic mining methods to be utilised for the Giyani gold mining operation are both surface mining using open pit and conventional stoping methods applied underground to excavate hard rock or ore containing gold and associated minerals such as copper, zinc, nickel and lead and uranium. The existing mine shafts in the area, which form part of the project, were generally mined by conventional breast stoping mining until they were mothballed during the mid-1990's.

4.1.3 Design

There are other possible layout design possibilities, but the current design is the most efficient for this type of mining activity.

4.1.4 Technological

Recycling:

The mining project will in its operational phase implement recycling policies and measures for optimal utilisation of resources and minimisation of waste generation.

Water:

Water utilisation will be maximised through recycling of dirty water within the process operations.

Energy:

Fuel types will be investigated as well as energy conserving measures will be implemented. Where solar energy can be utilised it will be implemented.

4.1.5 Operational Aspects

Kusile Invest 133 intend to make use of standard mining methods that enable safe mining which has the having the lowest risk of causing health risks or environmental degradation

4.1.6 No Project Alternative

Not undertaking the mining activity in these shafts will lead to sterilisation of resources as well as the potential socio-economic benefits that will arise with this opportunity.

4.1.7 Need and desirability of the proposed activities.

Mining is of great importance to the South African economy. There is a need that the environment is left in a safe manner that is not harmful to the neighbouring community. The surface are to be disturbed is minimal based on the total size of the application area, and specialist will confirm the apparent aesthetic or conservation value, in terms of heritage aspects, fauna, and flora. The shaft already exist which makes the project desirable. The project will stimulate the local and regional economy as it will facilitate refining of gold at a cheaper and time efficient. The project will create jobs both skilled, semi-skilled and unskilled. The aim of the strategic focus area is to create an economically enabling environment in which investment can grow and jobs can be created. Various initiatives and programmes are identified which will aid to stimulate economic growth and create more employment opportunities.

4.1.7.1 Analysis of the 'Need' of the Project

The Project is in line with the relevant IDP, SDF, EMF and PDP. There is no reason why this development should not be considered at this particular point in time considering the market parice for gold.

4.1.7.2 Analysis of the 'Desirability' of the Project

Not only does it meed market demand but the economic contribution to the locan economy is significant. Potential impact on the social, social, cultural and environmental aspects were identified. These impacts were assessed for their effect on the social, cultural and environmental aspects. The significance of the impacts was also detemined.

Mitigation measures are aimed at lessening negative consequences of the proposed mining operation. The mitigation measures include designs and management practises that will be embarked on, to prevent the identified impacts on the social, cultural and environmental aspects. For each significance

identified, mitigation measures were specified. These mitigation measures are described in more detail in the environmental management programme.

Opportunities that exist within mining are as follows:

- Constant demand on the market for commodities;
- Establishment of a permanent working group between the Municipality and the mine managers responsible from developing local economic development initiative;
- Encourage local SMME's and entrepreneurs to take advantage of procurement;
- Develop a database of available labour and skills to encourage the employment of local people;
- Provide skills training and support programmes;
- Instigate mining procurement opportunities in consultation with the mines, develop a database of such opportunities and ensure that this information is made available to local businesses and communities.

For these to be achievable, investment and skills development, technology and infrastructure, as well as broadening of the supplier base, will need to be addressed.

The proposed mining operation will employ approximately 400 permanent employees when operating at a steady state. The majority of the workforce will be recruited from the local and surrounding communities. The aggregate wages that will be paid to these employees will contribute towards poverty alleviation and also improve the local economic activities. The mine will also contribute towards the development of small business enterprises and support local suppliers of capital goods and services, in so doing help create other jobs in the community.

Kusile Invest will also contribute in stimulating the economy in the area through local procurement. The mine will implement a preferential procurement policy to ensure that the bulk of its procurement spend is used for purchasing goods and services from companies that comply with the BBBEE requirements. Preference will be given to local or regional suppliers which have a broad-based empowerment shareholding.

Initiatives will be taken to promote entrepreneurship for HDSA from local communities and to provide the group with business opportunities linked to the mining operations.

5 PUBLIC PARTICIPATION (Refer to Appendix 4 – 15 for proof of preliminary consultation)

5.1 Public Participation Process Followed to be followed

This section of the report provides an overview of the tasks undertaken for the PPP to date. All PPP undertaken is in accordance with the requirements of the EIA Regulations (2017). It further provides an outline of the next steps in the PPP and makes recommendations for tasks to be undertaken during the environmental assessment phase of the environmental authorisation process.

5.1.1 Landowner Information and consultation

Landowners have identified through a search conducted via online search engines accessing the Title Deed office database. Due to the size of the area municipal ward councillors will be engaged to assist with the notification and liaising with the legal occupiers of the application farms. In addition to land owners (state land), other relevant organisations have been identified and will be notified of the application. This includes municipal and State departments with jurisdiction in the area and Non-governmental Organisations (NGOs) with an interest.

5.1.1.1 Community Meetings

Meetings with members of the community were held between the 12th and 20th of March 2020 in accordance to the attendance registrar.

The land is owned by the government and the following communities are affected:

- Shiviti Tribal Community
- Thomo Tribal Community
- Makosha Tribal Community
- Xikukwani Tribal Community
- Mavalani Tribal Community
- Mninginisi Tribal Community
- Khakhala Tribal Community

An initial consult meeting with I&AP's was held in March with the traditional council leaders to introduce the project and identify more I&AP's. Following the DEAFCOVID consultation protocols, continuous engagement with the leaders to assist with the sharing of reports telephonically will be emphasised to address issues regarding the published draft scoping report.

The PPP tasks include:

1. Identification of key Interested and Affected Parties (affected and adjacent landowners) and other stakeholders (organs of state and other parties);
2. Formal notification of the application to key Interested and Affected Parties (all adjacent landowners) and other stakeholders;
3. Consultation and correspondence with I&Aps and Stakeholders and the addressing of their comments; and
4. Newspaper adverts.

5.2 I&AP and Stakeholder identification, registration and the creation of an electronic database

Public Participation is the involvement of all parties who are either potentially interested and or affected by the proposed development. The principle objective of public participation is to inform and enrich decision-making. This is also its key role in this Environmental Impact Assessment (EIA) process.

Interested and Affected parties (I&Aps) representing the following sectors of society has been identified:

- National, provincial and local government.
- Agriculture, including local landowners.
- Community Based Organisations.
- Non-Governmental Organisations.
- Water bodies.
- Tourism.
- Industry and mining.
- Commerce; and
- Other stakeholders.

5.2.1 Formal notification of the application to key Interested and Affected Parties (adjacent landowners) and other stakeholders

The project was announced as follows:

5.2.1.1 Newspaper advertisement

Publication of media advertisement will be placed in the Giyani News announcing the project, the availability of the scoping report and encourage I&AP's to register and submit their comments to Archean. The advert will be published on the 16th of July 2020 in English and Tsonga.

5.2.1.2 Site notice placement

In order to inform surrounding communities and adjacent landowners of the proposed development, site notices were erected on site and at visible locations close to the site. Additional notices were placed at local post office, shops, local library, Giyani Municipality, on the 10th of July 2020.

5.2.1.3 Written notification

I&AP's and other key stakeholders where notified via email of the project and the scoping report on the 10th of July 2020. A background information document, draft scoping report and landowner notification letters will be sent out to the identified I&AP's. In addition, I&AP's have been given extra time to comment on the report so that during the EIA phase these issues can be addressed to avoid delays that may arise during consultation.

5.2.1.4 Background Information Document

A Background Information Document (BID) will be distributed (by email, WhatsApp and SMS) to adjacent landowners. The BID provides information concerning the proposed project and invites IAPs to register and submit their concerns and comments during the 30-day consultation period. IAPs are free to distribute the documents to other parties who may be interested or affected by the project. The BID will be distributed on the 10th of July 2020.

5.2.1.5 Public Meeting

No public meeting will be held during the scoping phase. Virtual Meetings and telephone calls will be emphasised. Preliminary consultation was done which the EAP will also utilise through the dispersion of information to registered I&AP's.

5.2.2 Consultation and correspondence with I&AP's and Stakeholders and the addressing of their comments (continuous).

Acknowledgements from I&APs, queries or registration requests are expected from stakeholders. A final public meeting report with minutes will be compiled.

5.2.3 Release of the revised and amended Scoping Report to I&AP's and stakeholders for review and comment.

This serves to notify I&AP of the availability of the Scoping Report for public review for at least 30 days for review by interested and affected parties. The reports are available from the 10th July 2020 to the 17th of August 2020 via email, we transfer link and as hardcopies at the following locations:

- Greater Giyani Library
- Shiviti Tribal Office
- Thomo Tribal Office
- Makosha Tribal Office
- Xikukwani Tribal Office
- Mavalani Tribal Office
- Mninginisi Tribal Office
- Khakhala Tribal Office

In order to ensure that you are identified as interested and/or affected party, please submit your name, contact details and interest in the matter, in writing, to the consultant contact person provided below within 30 days of the publication of this notice ending on the 17th of August 2020.

Additional electronic and or hard copies will be made available to interested and affected parties and stakeholders who request for them in accordance to the COVID19 safety requirements.

5.3 Next Phases of the Public Participation Process

All comments and responses received and sent throughout the entire process will be updated and included in the comments and responses report which will be submitted to the Department of Mineral Resources. Note that this PPP Report shall be updated at each phase as required.

The draft and final EIAR/EMPr will be released for public review for 30 days each excluding public and school holidays. A final Consultation report with stakeholder comments from each phase will be submitted.

5.4 Summary of issues raised by I&AP's

Preliminary consultation meetings and site notice placement regarding the project notification and the intention to conduct an EIA process was conducted from the 12th to the 20th of March 2020. I&AP's registered, no objections and no comments have been received. The directly affected communities will be continuously engaged throughout the process.

6 BASELINE RECEIVING ENVIRONMENT

6.1 Regional Setting

Limpopo Province is South Africa's northernmost province which shares borders with Mozambique, Zimbabwe and Botswana, making it the ideal entrance to Africa. Named after the great Limpopo River that flows along its northern border, this province is rich in wildlife, spectacular scenery and a wealth of historical and cultural treasures. The province contains much of the Waterberg Biosphere, a designated Biosphere Reserve. The Waterberg Biosphere, a massif of approximately 15,000 km² shaped by hundreds of millions of years of riverine erosion to yield diverse bluff and butte landforms. The Waterberg ecosystem can be characterised as a dry deciduous forest or Bushveld. Within the Waterberg, archaeological finds date to the Stone Age. Nearby are early evolutionary finds related to the origin of humans.

Industry

Limpopo's rich mineral deposits include platinum group metals, iron ore, chromium high- and middle-grade coking coal, diamonds, antimony, phosphate and copper, as well as mineral reserves such as gold, emeralds, scheelite, magnetite, vermiculite, silicon and mica. Base commodities such as black granite, corundum and feldspar are also found. Mining contributes to more than a fifth of the provincial economy.

The province is a typical developing area, exporting primary products and importing manufactured goods and services. It has a high potential for development, with resources such as tourism, rain-fed agriculture, minerals and abundant labour offering excellent investment opportunities.

Agriculture

The bushveld is cattle country, where extensive ranching operations are often supplemented by controlled hunting. About 80% of South Africa's hunting industry is found in Limpopo. Sunflowers, cotton, maize and peanuts are cultivated in the Bela-Bela and Modimolle areas. Modimolle is also known for its table-grape crops. Tropical fruit, such as bananas, litchis, pineapples, mangoes and pawpaws, as well as a variety of nuts, are grown in the Tzaneen and Makhado areas. Tzaneen is also at the centre of extensive tea and coffee plantations. Limpopo, known as the "garden of South Africa" produces about the majority of South Africa's mangoes, papayas, avocados and tomatoes. As well as thousands of tons of potatoes, the province also produces tea, citrus, bananas, and litchis in abundance. Extensive forestry plantations are also found in the region, including hardwood for furniture manufacture.

In addition to commercial agriculture, subsistence farming is the mainstay of a large section of the rural population.

Figure 6: Location of the Limpopo Province of South Africa.

Limpopo Province is divided into five municipal districts, subdivided in 24 local municipalities:

- **Capricorn District**
  - Aganang
  - Blouberg
  - Lepele-Nkumpi
  - Molemole
  - Polokwane
- **Mopani District**
  - Ba-Phalaborwa
  - Greater Giyani
  - Greater Letaba
  - Greater Tzaneen
  - Maruleng
- **Sekhukhune District**
  - Elias Motsoaledi
  - Fetakgomo
  - Ephraim Mogale
  - Greater Tubatse
  - Makhuduthamaga
- **Vhembe District**
  - Makhado
  - Musina
  - Mutale
  - Thulamela
- **Waterberg District**
  - Bela-Bela
  - Lephalale
  - Modimolle
  - Mogalakwena
  - Mookgopong
  - Thabazimbi

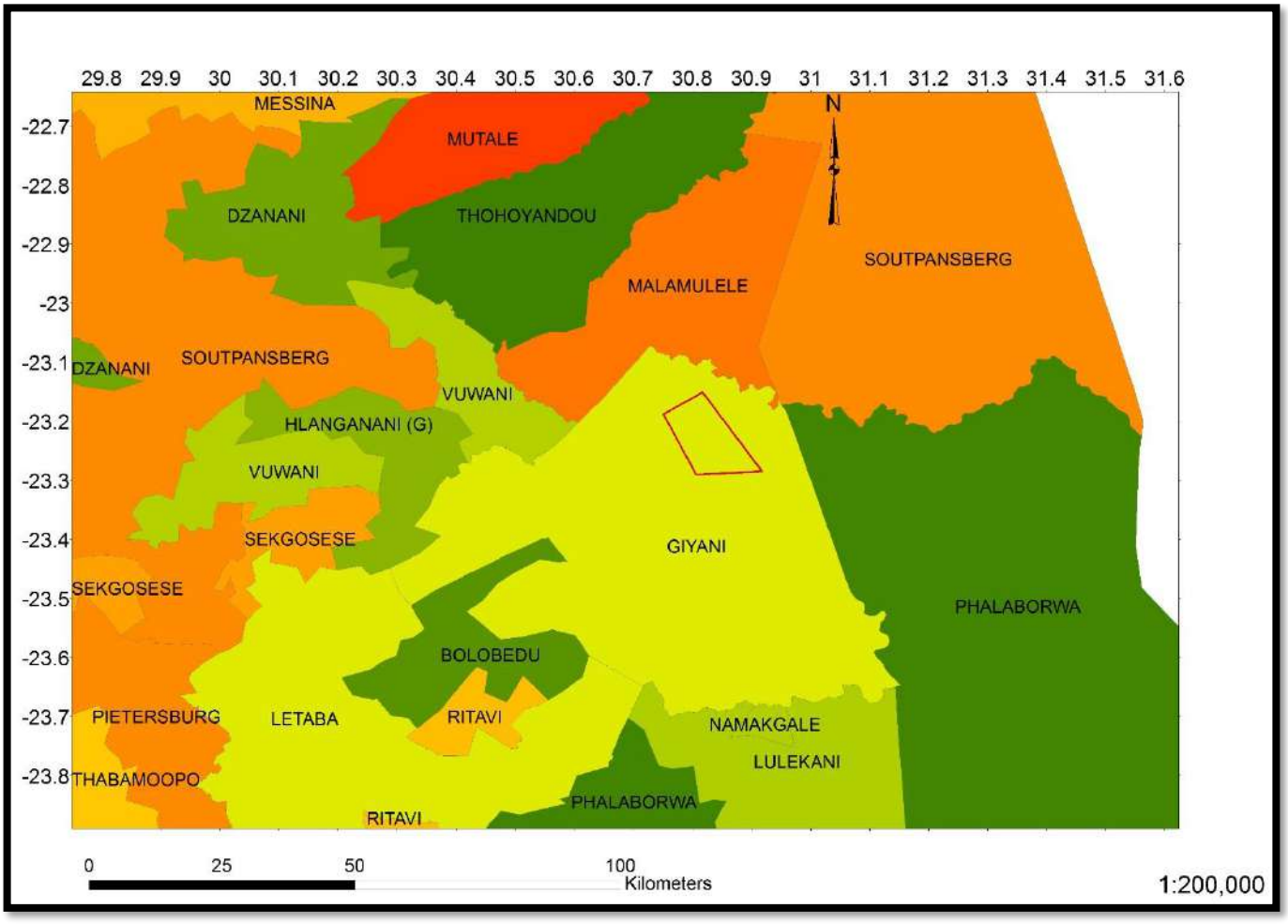

Figure 7: Location of the project in the Giyani Municipality.

The municipal area has amazing biological diversity of flora and fauna; this rich biodiversity can be attributed to its biogeographically location and diverse topography. The district falls within the greater Savanna Biome, commonly known as the Bushveld with some small pockets of grassland and forest

Biomes. These and other factors have produced a unique assortment of ecological niches which are in turn occupied by a wide variety of plant and animal species. The area is comprised of Sacred Forests.

6.2 Baseline Environmental attributes associated with the sites

Key aspects of the baseline environment that are likely to impact on the scope of the impact assessment and management measures that are implemented as well as project decisions regarding alternatives are listed below.

6.2.1 Site Assessment

The mining permit is currently operational and the infrastructure setup as well as current surface disturbances are shown below:

6.2.2 Climate

The climate of Giyani is characterized by low rainfalls with a very hot summer. This could be caused by its position in the Lowveld. The municipal area received between 200 – 400ml of rain annually. The

general rainfall has a direct impact on development, especially on agriculture. This results in the shortage of surface water, leaving the municipality to rely on ground water.

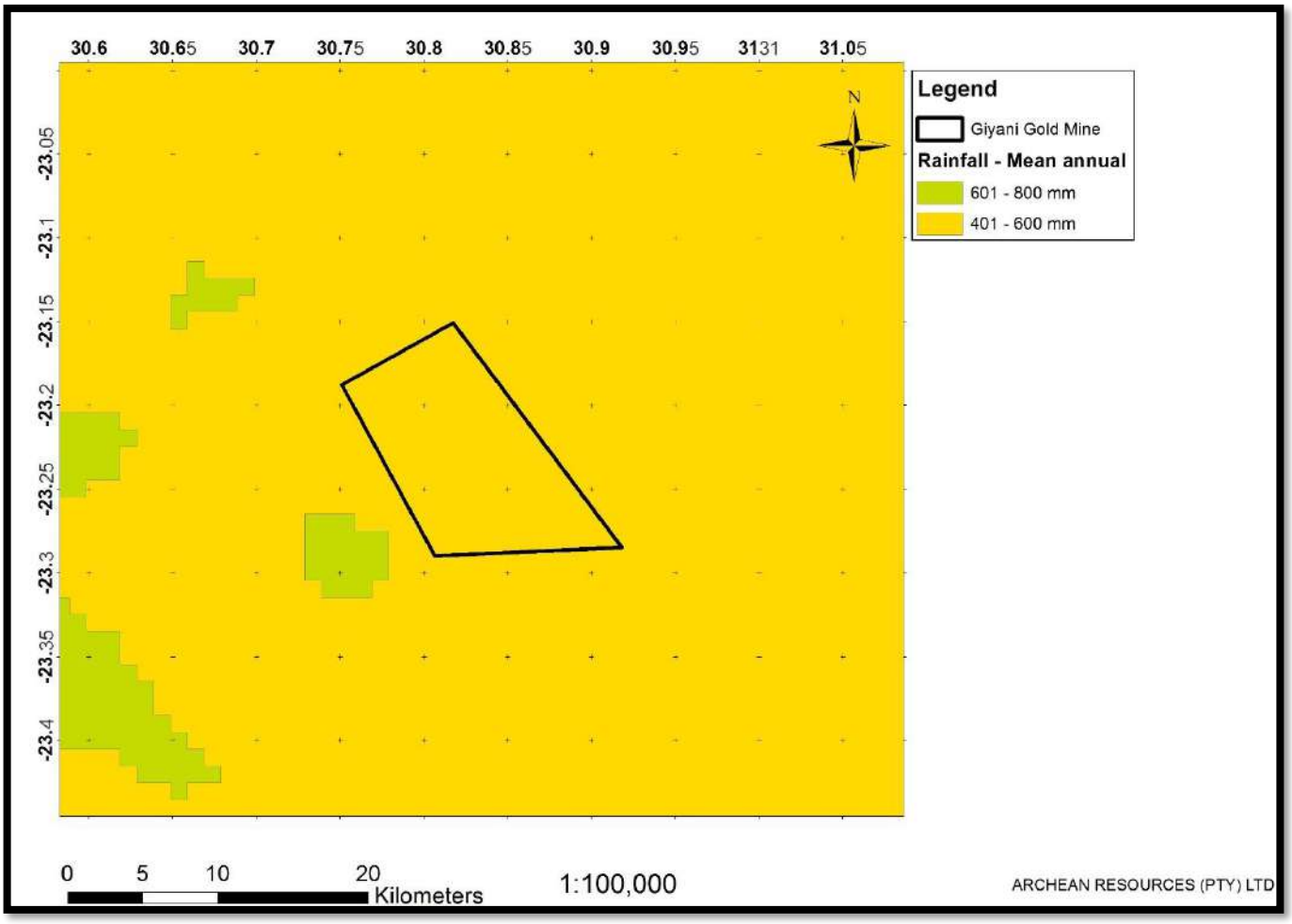

Figure 8: Rainfall Average

6.2.3 Regional Geology

The regional geological setting relating to the area of the mining right application is depicted by the characteristics of the Archaean crust of southern Africa, comprising the Kaapvaal Craton, the Zimbabwe Craton and the Limpopo Metamorphic Complex. The Kaapvaal Craton has three major crustal elements, namely a core of Palaeo- to Meso-Archaean metamorphic rocks termed the Kaapvaal Shield and exemplified by the Barberton granitoid-greenstone terrane; the northern and western “rims” to this shield formed by granitoid-greenstone terranes accreted to the Kaapvaal Shield in the Neoarchaean and the Cratonic Basin successions.

The northern rim to the Kaapvaal Shield comprises the Murchison, Pietersburg and Giyani greenstone belts. The Giyani Greenstone Belt (GGB) is the main focus in relation to the area of application. The rock stratigraphy within the Giyani Greenstone Belt forms part of the Kaapvaal Craton sequence. The below shows the geological setting and extent of the Kaapvaal Craton, and the northern rim in which the application area is located.

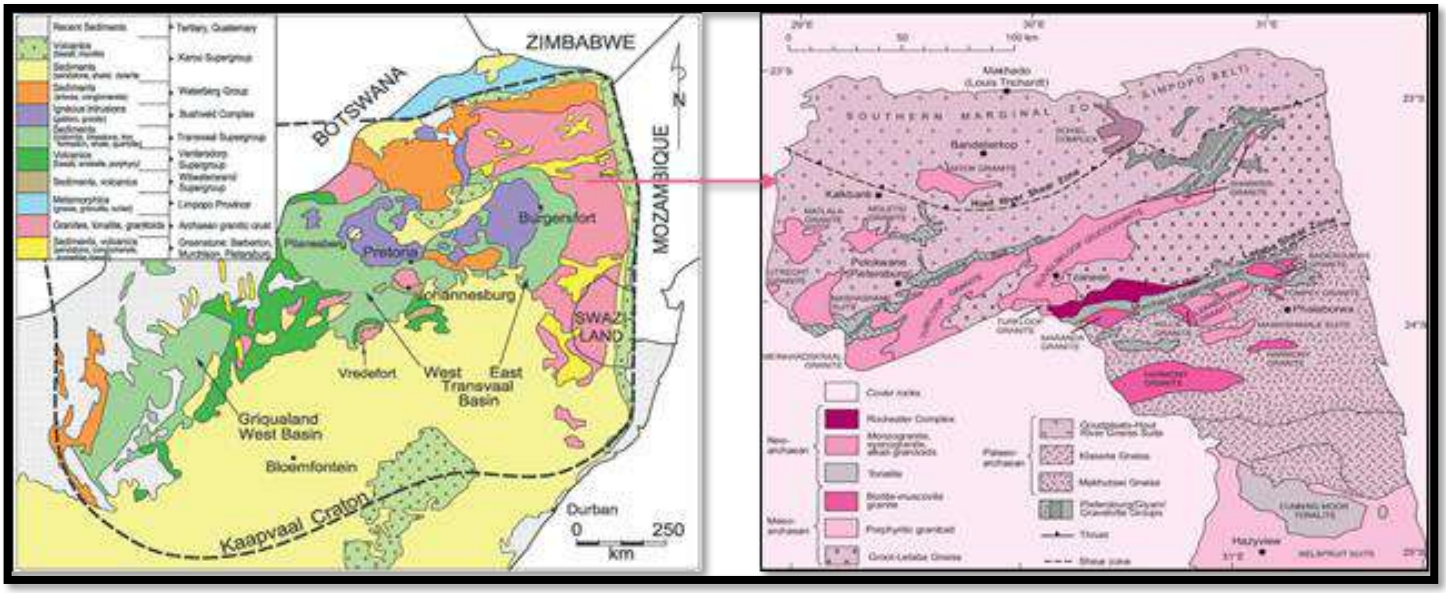

Figure 9: The Regional Geological Setting and Depositional Environment

The Cratonic Basin successions were deposited on the Kaapvaal Shield during the Mesoarchaean and are preserved as the Dominion Group and Witwatersrand Supergroup in the central part of the craton and the Pongola Supergroup in the southeast.

6.2.3.1 Regional Geological Structure and Stratigraphy

The regional geology depicting the area of interest comprise the Murchison, Pietersburg, Giyani, and Barberton greenstone belts. These belts are situated in the granite-gneiss terrain of the Kaapvaal Craton which is located south of the Southern Marginal Zone (SMZ). The supracrustal rocks of the GGB are classified as the Giyani Group and are dominated by mafic and ultramafic rocks with subordinate metasedimentary units but due to structural complexity, with no reliable stratigraphy being recognized within the sequence. Pillow-like structures in the tremolite schists near Klein Letaba Mine, and in amphibolite schists east of Giyani town, is evidence that the greenstone were originally volcanic rocks.

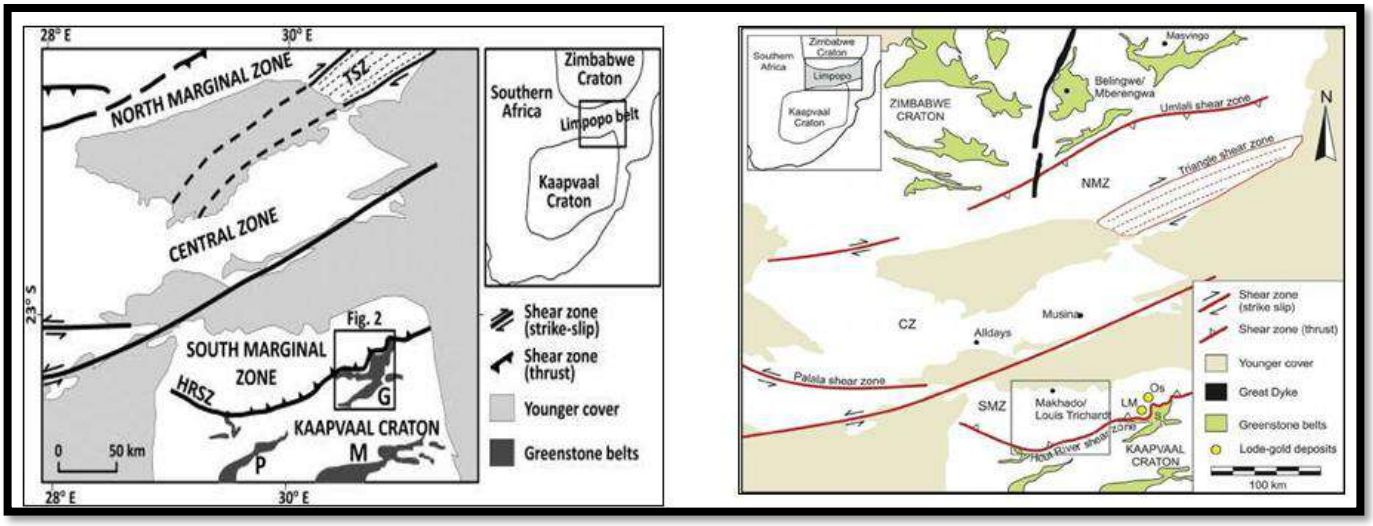

Figure 10: Regional Structure along the Giyani Greenstone Belt

6.2.4 Project Geological Setting

The GGB is approximately 17km wide and has a strike length of 70km. The belt has an overall NE-trend, but to the west, the GGB splits into a northern Khavagari arm and a southern Lwaji arm separated by granitoid gneiss (the Klein Letaba Gneiss) and younger granite. The Lwaji arm has more or less the same trend as the main part of the belt but the Khavagari arm has been rotated into an E-W orientation. The GGB is a shallow structure with a down dip extension of around 1.5km in the NW and 4km in the SE.

The predominant rocks in the project area include the ultramafic (tremolite) schists; mafic (chlorite) schists which are common throughout the belt. Also present in the area are the metasedimentary rocks which comprise Banded-Iron-Formation (BIF), quartzite, metapelite and rare dolomite. Although these formations are discontinuous, they form important structural markers throughout the belt. They are best developed in the northern sections including the Khavagari arm and the clastic metasedimentary rocks with obvious primary structures are abundant along the Nsama River in the central part of the belt.

The supracrustal rocks of the GGB have been subjected to amphibolite facies metamorphism. Peak metamorphism was followed by uplift and the influx of CO2 rich aqueous fluids. This rehydration event occurred during the exhumation of the Limpopo Complex along the Hout River Shear Zone and was responsible for shear-zone hosted alteration of the rocks in the GGB and the formation of the orogenic gold deposits.

The local geological setting and depositional environment described above is as shown in the diagram below.

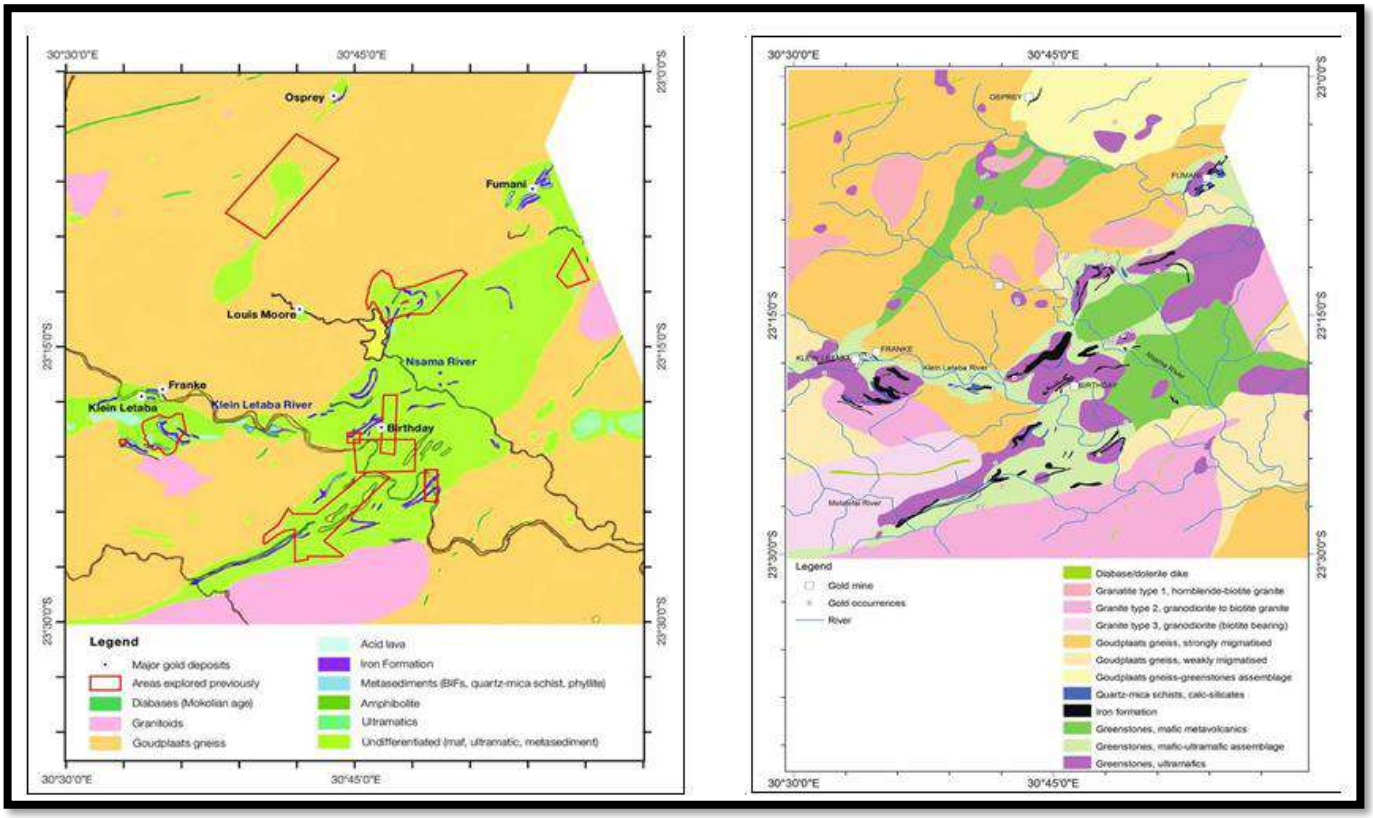

Figure 11: Local Geological Setting and Depositional Environment

The application area is located in the Greater Giyani magisterial district, Limpopo Province and covers an area known to have historical mining activities, with a number of disused mining areas found within the application area as shown in below.

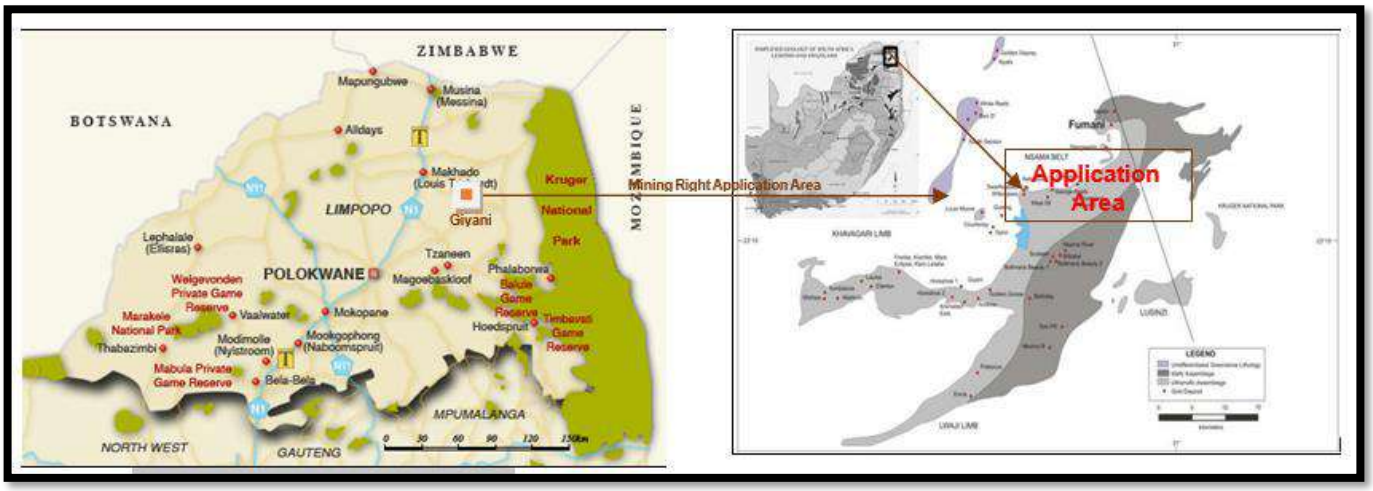

Figure 12: Giyani Gold Project Locality Plan

6.2.4.1 Structural Geology in Project Area

The structural configuration of the GGB is one of a north-east trending syncline forming an apex in the south-western corner of the Giyani Greenstone Belt. The established profile across the belt shows a 4km down dip extension into the crust for Lwaji and 1km depth for Khavagari arms respectively. The central portion of the belt is known to be shallow. The GGB is mainly made up of supra-crustal rocks of the Giyani Group which consists mainly of mafic-ultramafic rocks as detailed in the diagram below.

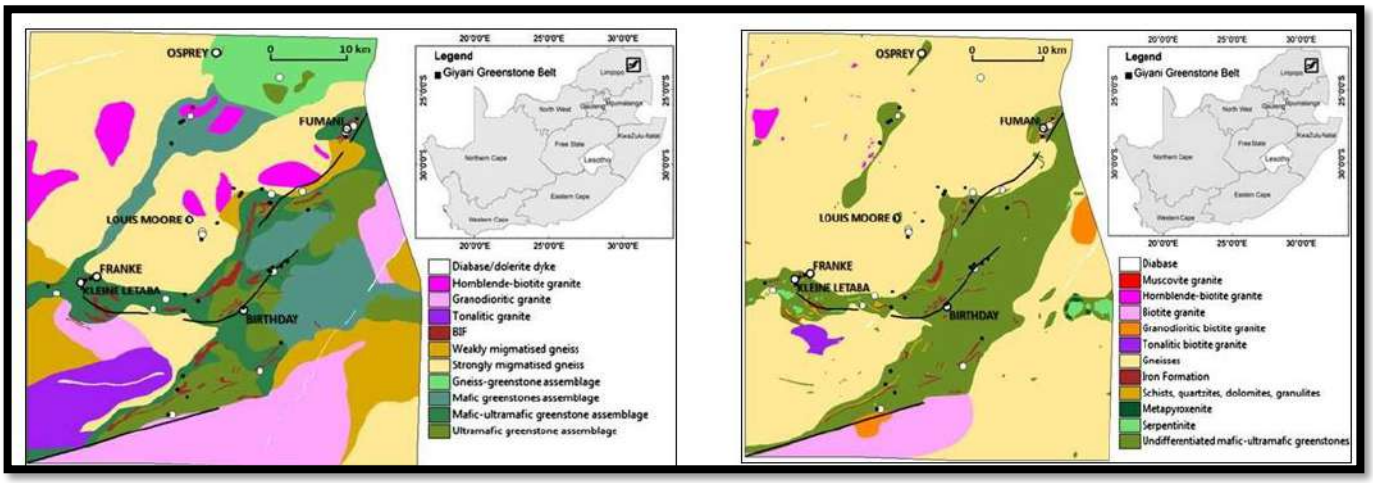

Figure 13: Geological Structure of the Giyani Greenstone Belt.

6.2.4.2 Mineralisation in the area

The origin of gold in the Giyani Greenstone Belt (GGB) can be classified into the modified placer theory, the syn-genetic theory, and the epigenetic theory. Gold mineralization in the GGB is orogenic in character and origin and can be directly linked to the exhumation phase of the Neo-archaean Limpopo Orogeny. Gold mineralization was late in the tectonic evolution of the GGB and related to the regional flow of CO2-rich aqueous fluids along foliation parallel ductile shear zones in the schists of the GGB. These fluids caused rehydration and hydrothermal alteration of suitable Fe-rich rocks in the GGB and the resultant deposition of gold. The gold occurrence is associated with hydrothermally altered mafic and ultramafic meta-volcanic schists and BIF, but is structurally controlled, due to being hosted in north-dipping anastomosing shear zones in the immediate footwall of the Hout River Shear Zone (HRSZ).

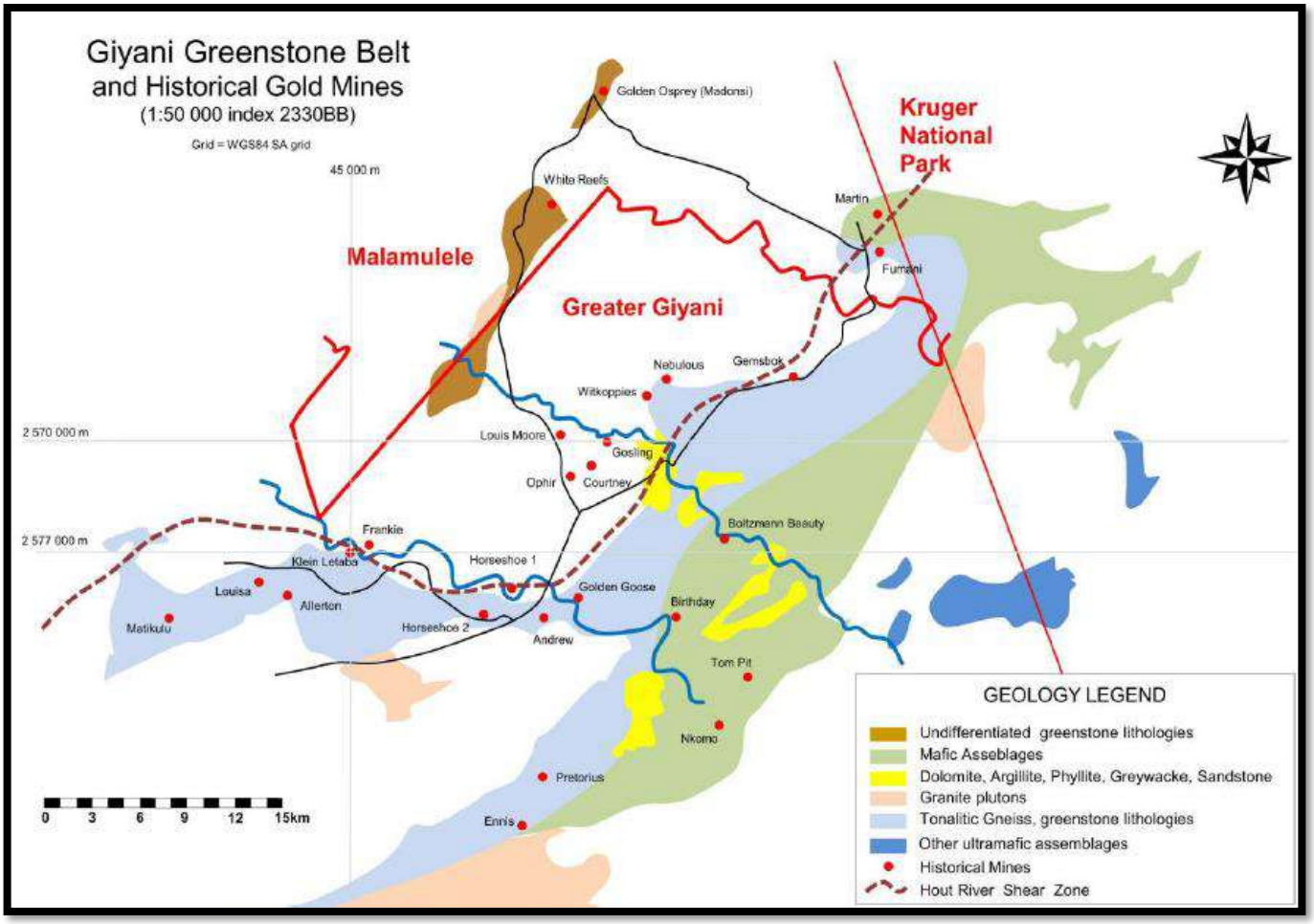

Figure 14: Depositional Environments within the Giyani Greenstone Belt

There are several known gold occurrences in the GGB and related satellite bodies to the north of the belt. A number of the occurrences were prospected and exploited in the past, evident in inactive mines which are found in the area. Six of the inactive mines (Klein Letaba, Louis Moore, Osprey, Fumani, Franke and Birthday) are known to have produced and recovered gold from the GGB. The distribution of the mineralization is strongly asymmetric with most deposits, including the main ones, located along the northern margin of the belt. Gold mineralization in the area is associated with mafic and ultramafic metavolcanic schists and BIF but is hosted in north-dipping anastomosing shear zones in the immediate footwall of the HRSZ. Gold is concentrated along the foliation in these shear zones and ore shoots plunge with the elongation lineation implying a direct relationship between mineralization and deformation along the shear zones.

6.2.5 Soils

The application area has Red, massive or weakly structured soils with high base status (association of well drained Lixisols, Cambisols, Luvisols) and Soils with minimal development, usually shallow on hard or weathering rock, with or without intermittent diverse soils with (association of Leptosols, Regosols, Calcisols and Durisols. In addition one or more of Cambisols, Luvisols.

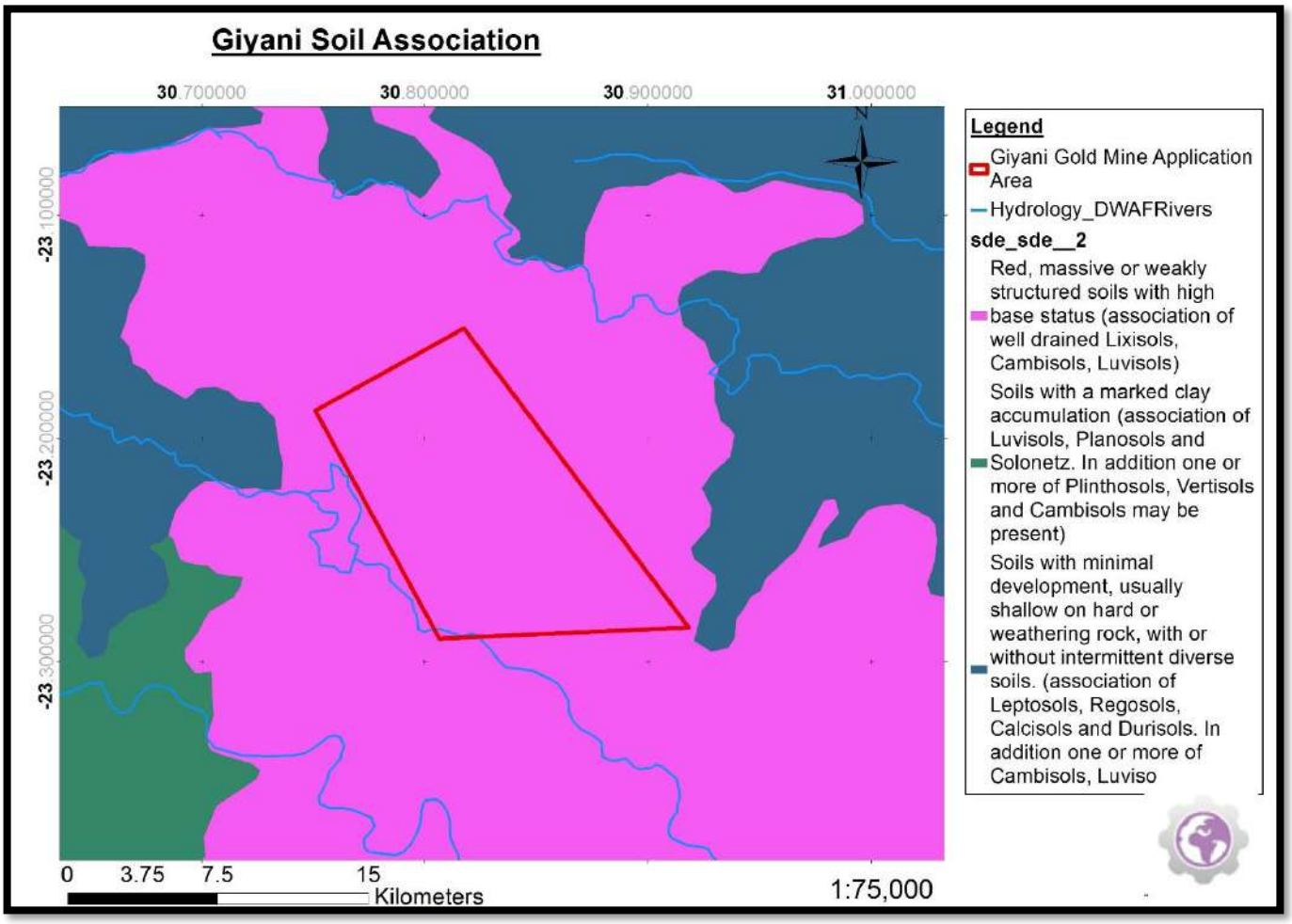

Figure 15: Soils

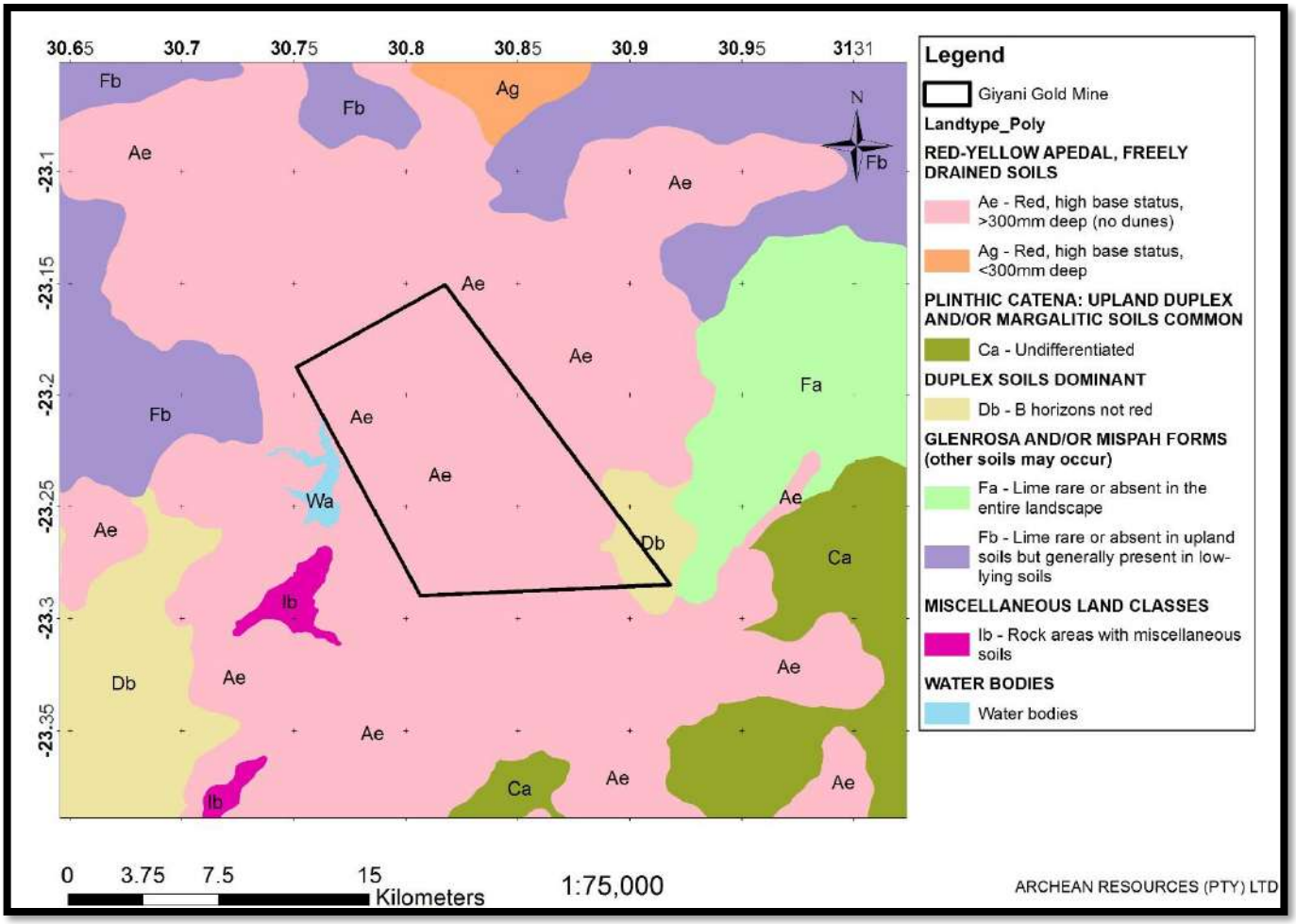

Figure 16: Land type

6.2.6 Biodiversity

6.2.6.1 Veld Description

Part of the area lies within the Granite Lowveld occurring on the uplands comprises tall shrubland with few trees to moderately dense low woodland dominated by Terminalia sericea, Combretum zeyheri and C. apiculatum and a ground layer consisting of Pogonarthria squarrosa, Tricholaena monachne and Eragrostis rigidior. In the lowland areas dense thicket to open savanna with Acacia nigrescens, Dichrostachys cinerea and Grewia bicolor dominate the woody layer. The dense herbaceous layer is mainly comprised of Digitaria eriantha, Panicum maximum and Aristida congesta on fine-textured soils, while brackish bottomland soils support Sporobolus mitens. A dense fringe of T. sericea and Eragrostis gummiflua occurs in areas where the topography changes from convex to concave.

The majority of the application area is Mopaneveld characterised by medium to high shrub dominated savannah, with scattered trees and a dense field layer. Tree and shrub species include A.nigrescens and Sclerocarya birrea subsp. caffra (tall trees); C. mopane and C. apiculatum (small trees);
and C. hereroense, D. cinerea, Euclea divinorum and Grewia bicolor (tall shrubs), amongst others. The field layer comprises of Clerodendrum ternatum and Indigofera schimperi (low shrubs); Bothriochloa radicans, Digitaria eriantha subsp. pentzii, Heteropogon contortus and Panicum maximum (grasses); and Blepharis integrifolia, Ceratotheca triloba and Chamaecrista absus (herbs), amongst others.

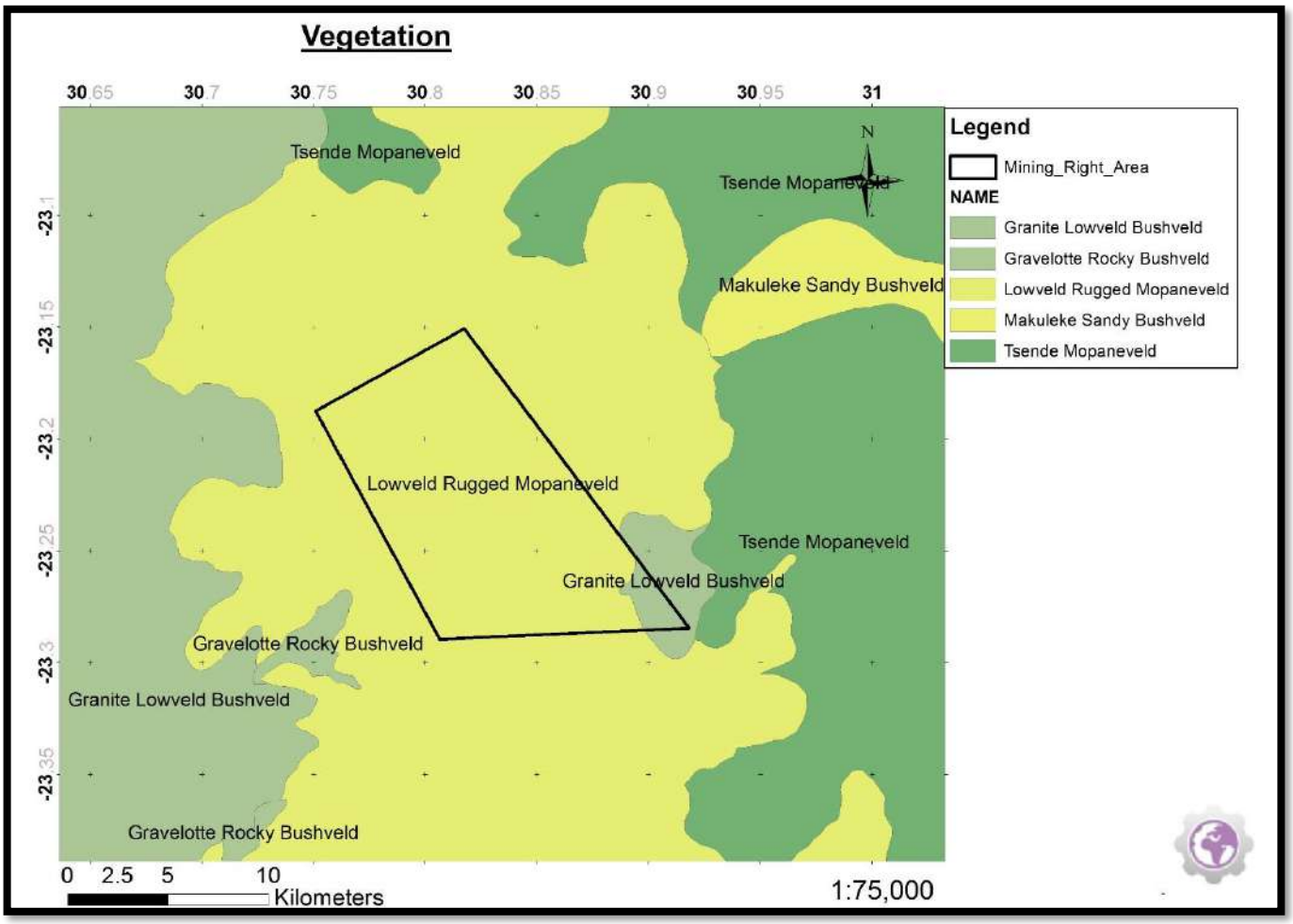

Figure 17: Vegetation

6.2.6.2 Conservation Status

The granite Lowveld bushveld in listed as vulnerable. A biodiversity assessment will be conducted to assess to what extent the surface area will be disturbed as well as identify the flora and fauna species on the project area.

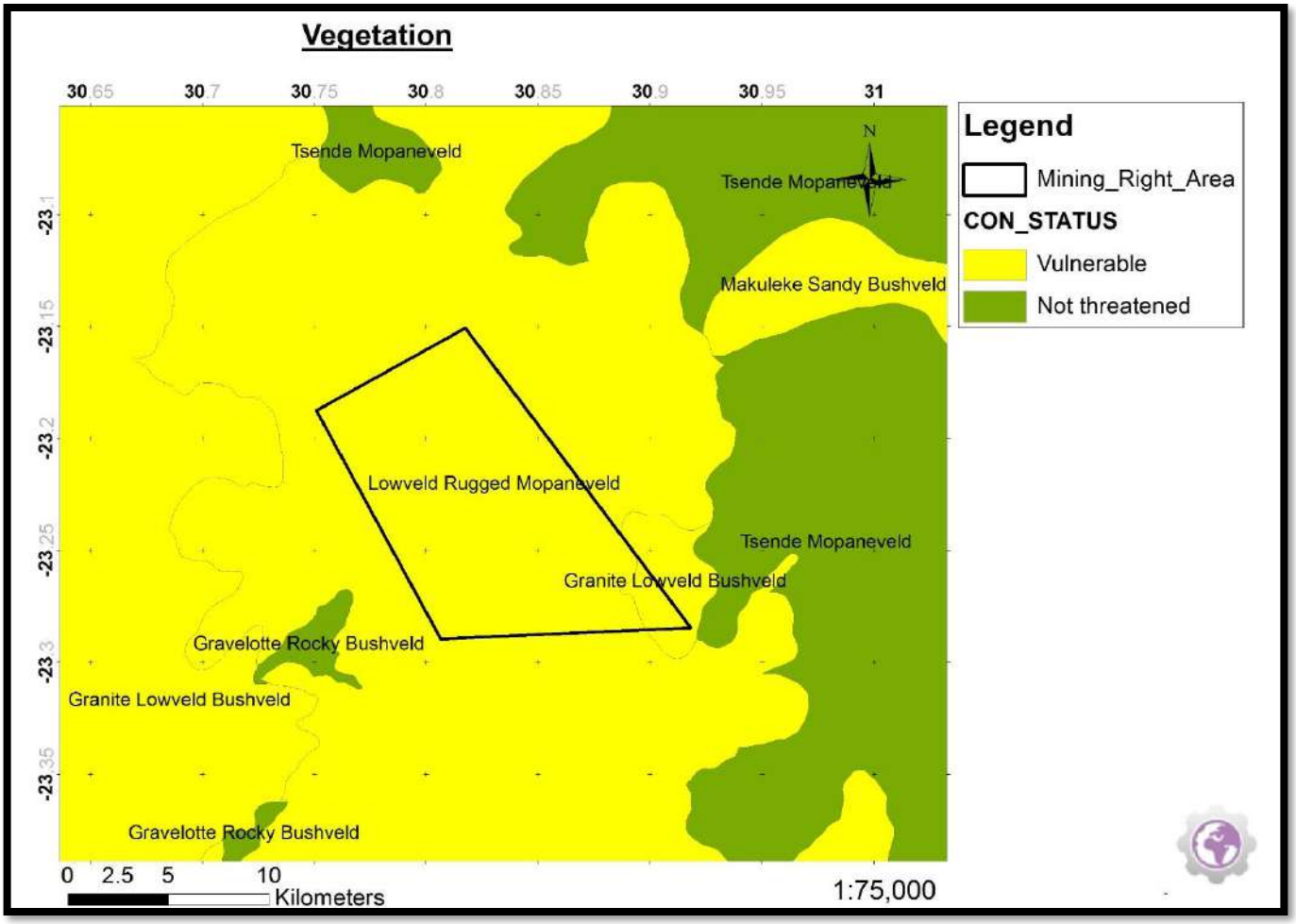

Figure 18: Conservation Status

6.2.7 Topography

The application area lies within a low level plain with the topography ranging from 500masl to 580masl.

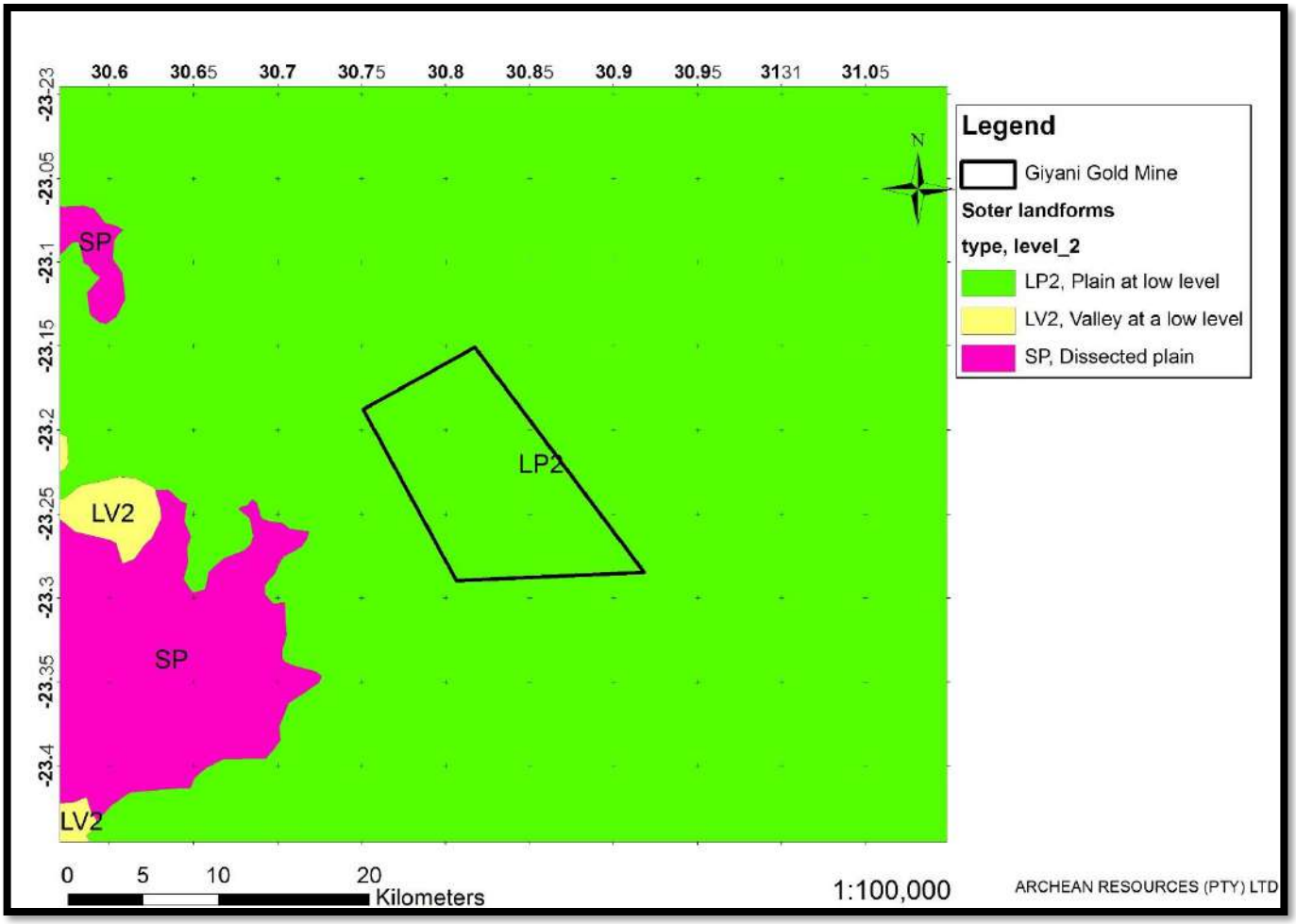

Figure 19: Soter Landforms

6.2.8 Surface Hydrology

There is one borehole on site that will be used only for the operation process at the gold mine. The borehole is equipped with a submersible pump. Drinking water will be purchased in town and transported to site.

A volume of 120m3/day will be abstracted from the borehole for the operation process and stored in a 60 000 liter jojo tank.

There are no streams located in 5km radius of the location of the gold mine. There is Nsami Dam which is located approximately ±7km south of where the mine is located.

The proposed Giyani Gold Mine falls within the Letaba water management area.

The Letaba water management area is located in the north-eastern corner of South Africa, where it borders on Zimbabwe in the north and on Mozambique along the eastern side. It falls entirely within the Northern Province, and adjoins the Olifants and Limpopo water management areas to the south and west respectively. The Luvuhu and Letaba water management area also forms part of the Limpopo River Basin, which is an international river shared by South Africa, Botswana, Zimbabwe and Mozambique. The Kruger National Park lies along the eastern boundary, and occupies approximately 35% of the land area of the water management area.

6.2.9 Heritage

A number of archaeological sites / resource of significance are likely to be distributed across the study area. These will most likely include graves, homesteads and other resources of the Late Stone Age (LSA). Furthermore, it is important to note that since archaeological artefacts generally occur below surface, the possibility exists that culturally significant material and skeletal remains may be exposed during the development and construction phases, in which case all activities must be suspended pending further archaeological investigations by a qualified archaeologist (See National Heritage and Resources Act, 25 of 1999 section 36 (6)).

A Heritage and Cultural Impact Assessment will be undertaken as part of the EIA. This assessment determines the archaeological significances of all the identified resources as well as the possible impacts that the proposed development might have.

6.2.10 Socio economic

Description: The Greater Giyani Municipality is one of five (5) local municipalities falling within Mopani District Municipality in the Limpopo Province. The other four local municipalities are Greater Tzaneen (+/-120km), Greater Letaba (+/-90km), Ba-Phalaborwa (+/-160km) and Maruleng (+/-195km). The town is located +/- 185km from Polokwane, +/-100km from Thohoyandou and +/- 550km from Tshwane. The municipality covers approximately 2967, 27km² areas with only one semi-urban area being Giyani.

The municipality is demarcated into 31 wards and has 62 councillors. It has 10 traditional authority (however as per the new provincial gazette three more traditional authorities are in the process of being recognized by office of the premier) areas comprising of +97 villages. Giyani town is the largest center of population concentration, employment opportunities, shopping and recreational facilities.

6.2.10.1 Demography

The total population is 256, 300 with a total number of households of 70,537. The municipality has 31 wards grouped into 5 clusters. In most wards, the population exceeds 5000 people. In the past few years, the population has shown a slight decline. In the 2011 census, the population was counted at 247 565 but according to the 2011 census, it has declined by almost 3000 people. The decline may be attributed to migration to other urban centers, such as Polokwane, Gauteng and Tzaneen in which the migrants search for better working conditions (2016 Census)

6.2.10.2 Population per Gender and Age

There are various factors contributing to the age group population patterns, such as mortality rate, migration and death. The table below depicts that from the age group 0-4, 5-14 and 15-34. The population patterns do not differ much. In the age groups 35-64 and over 65, there is a clear decrease in population growth patterns, with females exceeding males.

Estimated Population for Greater Giyani, 2001& 2011by Gender and Age						
	Gender	2001	%	2011	%	2011
0-4	Male	15135	49.3	13559	49.7	16436
	Female	15566	50.7	13725	50.3	12151
5 to 14	Male	34728	49.3	35850	49.5	16424
	Female	35692	50.7	36509	50.5	17964
15 to 34	Male	32123	44.1	37640	44.4	18749
	Female	40659	55.9	47117	55.6	18749
35 to 64	Male	11976	35.2	14966	35.1	4436
	Female	22054	64.8	27633	64.9	7166
Over 65	Male	2732	32.4	3091	29.6	1845
	Female	5712	67.6	7345	70.4	3473
Total	**Male**	**96694**	**44.7**	**105106**	**44.3**	**107094**
	Female	**119683**	**55.3**	**132329**	**55.7**	**140473**
Total	***All***	***216377***	***100***	***244 217***	***100***	***256 300***

Figure 20: Population per age and gender

6.2.10.3 Level of Education

The majority of people in the age groups 5 to 24 years, did attend school in 2007 (74.4%). It is indicated that 22.6% of the population in this age bracket, does not attend any educational institution; possible factors contributing to this may be accessibility of schools and affordability of higher learning institutions.

Persons	2016	%
None	29217	22.6
Pre-school	2773	2.1
School	95970	74.4
College	635	0.5
Technikon	134	0.1
University	73	0.1
Adult Education Centre (ABET)	113	0.1
Other	106	0.1
Total	**129021**	**100**

Figure 21: Educational Institutions being attended

The figure above statistics on the highest level of education attained by persons older than 20 years, between 2001 and 2007. It indicates that the population with no schooling decreased from 47.6% to 42.1% in 2001. The percentage of the population with an educational level higher than Secondary school increased from 4.7% in 1996 to 7.4% in 2001 with the actual number almost doubling during this period. A factor that may contribute to the lower percentages on higher learning institution is the capacity and the variety of qualification offered by our local institutions.

6.2.10.4 Employment Profile

The figure below indicates that the number of unemployed people has increased from 20 534 (50.7%) in 1996 to 31 636 (60.4%) in 2001. Unemployment has a negative impact on society which might eventually result in an increase in crime, grant dependency, and non-payment of services.

Persons	2011	%	2016	%
Employed	19979	49.3	20759	39.6
Unemployed	20534	50.7	31636	60.4
Total Labour Force	40513	100	52395	100
Not economically active			75829	

Figure 22: Labour Force

	Male	Female
Employed	16206	17360
Unemployed	10919	16178
Not economically active	31701	44720
Not applicable	2247	1833

Figure 23: Labour Status

The figure above indicates that most females are employed than males; this may be a result of job opportunities within the municipality. This might also be due to the effort done to address gender equity in labour intensive work opportunities such as construction and mining.

6.2.10.5 Household Income

The average income for all members of community within Greater Giyani can be categorized as presented in Table 9. The percentage of people earning no income decreased from 82.34% in 2007 to 78.04% in 2011. The percentage of people earning less than R400 per month did increase tremendously (the number of persons doubled from 5764 in 2007 to 18631 in 2011) and there was a decline in those earning between R401 and R800 per month. The high statistic of low earning people may be in relation to the employment industry. Agriculture in general, employs more people, but with the lower wages. People that are earning higher incomes are professionals which are usually fewer in number.

Persons	2011	2016
None	185284	130,547
R1 – 400	19631	62076
R401 – 800	18131	9968
R801 – 1600	4668	24584
R1601 – 3200	4867	5010
R3201 – 6400	3216	5586
R6401 – 12800	1257	4280
R12801 – 25600	143	773
R25601 – 51200	76	56
R51201 – 102400	70	59
R102401 – 204800	58	65
Over R204801	35	127
Total	**244 217**	**256 300**

Figure 24: Population by Individual Monthly Income, Greater Giyani, 2011 & 2016

A detailed socio- economic impact assessment will be conducted as part of the EIA to review the opportunities that might arise due to the commencement of the project. A social and labour plan will also be compiled detailing the company's commitment to developing the community.

7 ENVIRONMENTAL IMPACT ASSESSMENT

7.1 Assessment Criteria

The assessment of the impacts will be conducted according to a synthesis of criteria required by the integrated environmental management procedure.

7.1.1 Extent

The physical and spatial scale of the impact is classified as:

a) Footprint
   The impacted area extends only as far as the activity, such as footprint occurring within the total site area.
b) Site
   The impact could affect the whole, or a significant portion of the site.
c) Regional
   The impact could affect the area including the neighbouring properties, the transport routes and the adjoining towns.
d) National
   The impact could have an effect that expands throughout the country (South Africa).
e) International
   Where the impact has international ramifications that extent beyond the boundaries of South Africa.

7.1.2 Duration

The lifetime of the impact, that is measured in relation to the lifetime of the proposed development.

a) Short term
   The impact would either disappear with mitigation or will be mitigated through natural processes in a period shorter than that of the construction phase.
b) Short to Medium term
   The impact will be relevant through to the end of the construction phase.
c) Medium term

The impact will last up to the end of the development phases, where after it will be entirely negated.

d) Long term

The impact will continue or last for the entire operational lifetime of the development, but will be mitigated by direct human action or by natural processes thereafter.

e) Permanent

This is the only class of impact, which will be non-transitory. Mitigation either by man or natural process will not occur in such a way or in such a time span that the impact can be considered transient,

7.1.3 Intensity

The intensity of the impact is considered by examining whether the impact is destructive or benign, whether it destroys the impacted environment, alters its functioning, or slightly alters the environment itself. The intensity is rated as:

a) Low

The impact alters the affected environment in such a way that the natural processes or functions are not affected.

b) Medium

The affected environment is altered, but functions and processes continue, albeit in a modified way.

c) High

Function or process of the affected environment is disturbed to the extent where it temporarily or permanently ceases.

7.1.4 Probability

This describes the likelihood of the impacts actually occurring. The impact may occur for any length during the life cycle of the activity, and not at any given time. The classes are rated as follows:

a) Impossible

The possibility of the impact occurring is none, due either to the circumstances, design or experience. The chance of this impact occurring is zero (0%).

b) Possible

The possibility of the impact occurring is very low, due either to the circumstances, design or experience. The chances of this impact occurring is defined as 25%.

c) Likely

There is a possibility that the impact will occur to the extent that provisions must therefore be made. The chances of this impact occurring is defined as 50%.

d) Highly likely

It is most likely that the impacts will occur at some stage of the development. Plans must be drawn up before carrying out the activity. The chances of this impact occurring is defined as 75%.

e) Definite

The impacts will take place regardless of any provisional plans, and or mitigation actions or contingency plans to contain the effect can be relied on. The chance of this impact occurring is defined as 100%.

7.1.5 Mitigation

The impacts that are generated by the development can be minimised if measures are implemented in order to reduce the impacts. The mitigation measures ensure that the development considers the environment and the predicted impacts in order to minimise impacts and achieve sustainable development.

7.2 Determination of significance – Without Mitigation

Significance is determined through a synthesis of impacts as described in the above paragraphs. It provides an indication of the importance of the impact in terms of both tangible and intangible characteristics. The significance of the impact “without mitigation” is the prime determinant of the nature and degree of mitigation required. Where the impact is positive, significance is noted as “positive”. Significance is rated on the following scale:

a) No significance

The impact is not substantial and does not require any mitigation action.

b) Low

The impact is of little importance but may require limited mitigation.

c) Medium

The impact is of importance and is therefore considered to have a negative impact. Mitigation is required to reduce the negative impacts to acceptable levels.

d) High

The impact is of major importance. Failure to mitigate, with the objective of reducing the impact to acceptable levels, could render the entire development option or entire project proposal unacceptable. Mitigation is therefore essential.

7.3 Determination of significance – With Mitigation

Determination of significance refers to the foreseeable significance of the impact after the successful implementation of the necessary mitigation measures. Significance with mitigation is rated on the following scale:

a) No significance

The impact will be mitigated to the point where it is regarded as insubstantial.

b) Low

The impact will be mitigated to the point where it is of limited importance.

c) Low to Medium

The impact is of importance however, through the implementation of the correct mitigation measures such potential impacts can be reduced to acceptable levels.

d) Medium

Notwithstanding the successful implementation of the mitigation measures, to reduce the negative impacts to acceptable levels, the negative impact will remain of significance. However, taken within the overall context of the project, the persistent impact does not constitute a fatal flaw.

e) Medium to High

The impact is of major importance but through the implementation of the correct mitigation measures, the negative impacts will be reduced to acceptable levels.

f) High

The impact is of major importance. Mitigation of the impact is not possible on a cost-effective basis. The impact is regarded as high importance and taken within the overall context of the project, is regarded as a fatal flaw. An impact regarded as high significance, after mitigation could render the entire development option or entire project proposal unacceptable.

7.3.1 Assessment weighting

Each aspect within the impact description was assigned a series of quantitative criteria. Such criteria are likely to differ during the different stages of the project's life cycle. In order to establish a defined base upon which it becomes feasible to make an informed decision, it is necessary to weigh and rank all criteria.

7.3.2 Ranking, Weighting and Scaling

For each impact under scrutiny, a scale weighting Factor is attached to each respective impact (refer to Figure 25: Description of biophysical assessment parameters with its respective weighting), The purpose of assigning such weight serve to highlight those aspects considered most critical to the various stakeholders and ensure that each specialist's element of bias is taken into account. The weighting factor also provides a means whereby the impact assessor can successfully deal with the complexities that exist between the different impacts and associated aspects criteria.

Simply, such a weighting factor is indicative of the importance of the impact in terms of the potential effect that it could have on the surrounding environment. Therefore, the aspects considered to have a relatively high value will score a relatively higher weighting than that which is of lower importance.

Extent	Duration	Intensity	Probability	Weighting Factor (WF)	Significance Rating (SR)	Mitigation Efficiency (ME)	Significance Following Mitigation (SFM)
Footprint 1	Short term 1	Low 1	Probable 1	Low 1	Low 0-19	High 0,2	Low 0-19
Site 2	Short to medium 2		Possible 2	Low to medium 2	Low to medium 20-39	Medium to high 0,4	Low to medium 20-39
Regional 3	Medium term 3	Medium 3	Likely 3	Medium 3	Medium 40-59	Medium 0,6	Medium 40-59
National 4	Long term 4		Highly Likely 4	Medium to high 4	Medium to high 60-79	Low to medium 0,8	Medium to high 60-79
International 5	Permanent 5	High 5	Definite 5	High 5	High 80-100	Low 1,0	High 80-100

Figure 25: Description of biophysical assessment parameters with its respective weighting

7.3.3 Identifying the Potential Impacts without Mitigation (WOM)

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

Equation 1:

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

7.3.4 Identifying the Potential Impacts with Measures (WM)

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

a) Mitigation Efficiency (ME)

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

Thus, the lower the assigned value the greater the effectiveness of the proposed mitigation measures and subsequently, the lower the impacts with mitigation.

Equation 2:

Significance Rating (WM) = Significance Rating (WOM) x Mitigation Efficiency

Or WM = WOM x ME

b) Significance Following Mitigation (SFM)

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

7.3.5 Impacts identified

A number of negative impacts on the bio-physical environment could result from disturbances during mining. The significance of any potential impact is largely limited by the small physical size and short duration of the mining, but also by the sensitivity of the receiving environment or receptor(s).

Potential impacts resulting from the proposed project were identified using input from the following:

- Views of I&APs;
- Existing information;
- Site visit with the project team and
- Legal and policy requirements that need to be fulfilled for the proposed project

The following potential impacts were identified:

- Ground and surface water contamination;
- Geology, soil and land capability;
- Underground blasting;
- Socio-economic issues;
- Waste products;
- Floral and faunal displacement;
- Dust and noise impacts;
- Traffic; and
- Identified heritage sites.

The primary environmental impacts associated with mining detailed in this report are related to these main releases: dust emissions, produced water, ground water contamination and dewatering. Mining poses risks to these resources through contamination, sediment loads, water consumption and vegetation loss. The impact is largely mitigated by operational practices (drip trays, bunds, and container water storage units) and responsive management (safe waste storage and disposal, spill response). Restricting mining activities to further than 100 m from all watercourses largely eliminates the risk. Vehicles should not enter or cross water courses except on established roads.

All produced water must be stored in impervious containers until its quality is determined by laboratory analysis. In portions of the mining area where mining occurred testing the surface water and groundwater during prior and during mining will set monitoring parameters of the activities. The best practicable environmental option for the management of produced water can only be determined once its quality is known. Production water may only be utilised for activities for which the quality is suitable (as defined by the DWS Water Use Guidelines and SANS 241). If unsuited for use or release then the produced water will need to be treated or disposed of. With these management measures in place no significant impacts are anticipated. The volume of water produced and stored on surface must remain within the limits of the DWS and a WUL must be obtained.

Localised compaction and soil erosion is highly likely due to heavy vehicle movement. Small scale and isolated spillages of hydrocarbons or chemicals may occur but can generally be prevented or treated in-situ with a suitable remediation product.

Wear and tear or accidental damage to private infrastructure could result. The use of any existing infrastructure or placement of new infrastructure will be through an access agreement negotiated between the mining right holder and the landowner/occupier (The land is state owned). Thus, the landowner will have a direct say in which infrastructure is used. If there are any damages Kusile Invest 133 will be responsible for effecting satisfactory repairs for any damages

Sensitive sites will be identified by the National Protected Area Expansion Strategy (NPAES), Threatened Ecosystems, Provincial Biodiversity Conservation Plan and Birdlife's Important Bird Areas programme. Land use transformation is one of the key risks to the grassland habitat and has significant influence on the habitat quality, occurrence of species of conservation concern and ecosystem services provided. Mining will result in the disturbances to vegetation and could affect habitat quality. The scale of physical disturbances to the land surface is expected to be medium. Given that the location of the land is already transformed. No mining may take place within protected areas as defined in terms of the NEMPAA and in indigenous vegetation in areas of potential high biodiversity sensitivity.

The EMP defines the categories of biodiversity sensitivity in which mining may not be undertaken. Every potential site must be subjected to an Environmental Site Assessment by an independent Environmental Scientist.

Public access the mining area must be prevented and must be secure and provisioned with warning signage in appropriate languages. Open excavations must be fenced. Livestock must not be allowed to gain entry to the mine site or any of the mining equipment or materials. All gates on a property must be kept in the status as agreed with the land owner and livestock must not be allowed to escape.

Safety and security on farms is an acknowledged concern. Additional access points to farms and unfamiliar persons in the district could increase the risks. Access for mining must not be allowed to compromise safety and security. Mining personnel may only access farms in terms of an access agreement negotiated with the land owner/occupier (in this case the land is state owned). Where appropriate the access points to a farm must be fitted with locks. Mining personnel must report unknown persons to security and mine management.
Veld fires and resulting damages to assets are a high risk as the area has high fuel loads and experiences windy conditions. With planning, risks assessments, site management and emergency procedures in place the risk can be greatly reduced can be prevented. Specific measures may be required at each mining block site and these must be set out in the EMP.

Mining activities will provide employment opportunities and some stimulation of the local economy through the purchase of supplies and equipment. The applicant must, wherever possible, source the materials and equipment needed to operate the mining equipment and sustain the personnel locally. The employment and training of local persons, particularly HDIs, even for short-term jobs, should be prioritised by Kusile Invest 133 and all of their sub-contractors.

Impact statement

The following key issues and potential impacts (direct and cumulative), was identified during the Scoping phase, which will together with potential cumulative impacts, be assessed during the Environmental Impact Assessment phase of the project and appropriate mitigation measures to reduce the identified impacts will be proposed.

Potential Direct Impacts identified

IMPACT	
SURFACE WATER	**Alteration of the characteristics of a water resource Hydrological modification on storm water flow and watercourses.**
	Deterioration of water quality
	The impact on ground and surface water by migration of contaminated water from the construction and operational phases.
	Impacts on surface water during the construction and operational phases.
GROUNDWATER	**Impact on dewatering of the groundwater aquifer due to mining activities- Mining**
	Impact on ground and surface water by migration of contaminated water from the construction and operational phases.
	Deterioration of water quality
AIR QUALITY	**Dust impacts on air quality during the mining phases.**
SOIL, GEOLOGY AND MINERAL RESOURCE	**Impact of vegetation clearance on soil erosion and surface water runoff during the mining phase**
	Soil pollution during the mining phase
	Mining of resource underlying the site
TOPOGRAPHY	**Alteration of the surrounding topography**
ECOLOGICAL	**Destruction of sensitive habitat**
	Destruction of faunal habitat and faunal displacement
	Reduction in natural migratory routes and faunal dispersal patterns
VISUAL	**Minimisation of aesthetics and/or sense of place of the surrounding areas.**

IMPACT	
SOCIO-ECONOMICAL	**Development and upliftment of the surrounding communities and infrastructure**
	Development of the economic environment
HERITAGE	**Alteration of archaeological, historical and paleonthologic features**

Potential Cumulative Impacts identified

IMPACT	
TRAFFIC	**Increased traffic volumes within the mine and surrounding communities. (low)**
AIR QUALITY	**Decrease in air quality in the immediate surroundings of the mining site**
HYDROLOGICAL	**Cumulative loss of surface water functionality as a result of an increase in pollutants.**
	Cumulative impact of hydrological modifications
ECOLOGICAL	**Cumulative destruction of sensitive habitat.**
	Cumulative impact of faunal habitat and displacement.
	Cumulative impact on natural migratory routes and faunal dispersal patterns.
VISUAL	**Cumulative impact of visual distrubances**
NOISE, VIBRATION AND SHOCK	**Cumulative impact of construction and operational noise as well as noise due to mining heavy vehicle movement**
	Cumulative impact of vibration and shocks.
SOCIO-ECONOMICAL	**Postivie - Cumulative impact of development on the surrounding communities.**
	Positive - Cumulative impact of development on the economic environment.
	Positive - Cumulative impact of the employment opportunities provided.

This section provides a list of potential impacts on environmental aspects separately in respect of each of the main project actions / activities and processes. The potential impacts are presented for each of the project phases in tabular format.

Table 8: List of Potential Impacts

Activity	Phase	Potential impacts (unmitigated)
Site preparation Bush clearing, removal of infrastructure, establishing construction area	Construction Operation Decommissioning	Physical destruction and disturbance of biodiversity Air pollution Disturbing noise

		Visual impacts
Underground and Open cast Mining	Operation	Loss of soil resources and land capability Physical destruction and disturbance of biodiversity Pollution of surface water resources Contamination of groundwater Dewatering impacts Air pollution Disturbing noise Visual impact Blasting and vibration impacts
Water supply and use Delivery on site, storage of clean water	Construction Operation Decommissioning	Hazardous excavations during mining phase Loss of soil resources and land capability Disturbance of biodiversity Pollution of surface water resources Alteration of natural drainage patterns Contamination of groundwater Air pollution Visual impacts
Dirty water **management** Collection, storage of dirty water for re-use, recycling	Construction Operation Decommissioning	Hazardous excavations Loss of soil resources and land capability Pollution of surface water resources Contamination of groundwater Disturbing noise
Transport systems Use of access points, road transport to and from site for employees and supplies, movement within site boundary	Construction Operation Decommissioning	Loss of soil resources and land capability Disturbance of biodiversity Pollution of surface water resources Alteration of natural drainage patterns Contamination of groundwater Disturbing noise Traffic impacts Visual impacts
Site / contract management Appointment of workers/contractors, site Management (monitoring, inspections, maintenance, security, access control),	Construction Operation Decommissioning Closure	Management of the site plays a significant role in all identified impacts

awareness training, emergency response, implementing and maintaining programmes		
Rehabilitation Replacing soil, slope stabilization, landscaping, revegetation, restoration	Construction Operation Decommissioning Closure	Hazardous excavations Loss of soil resources and land capability Disturbance of biodiversity Pollution of surface water resources Alteration of natural drainage patterns Contamination of groundwater Air pollution Disturbing noise Visual impacts
Maintenance and aftercare Inspection and maintenance of remaining facilities and rehabilitated areas	Closure	Loss of soil resources and land capability Disturbance of biodiversity Pollution of surface water resources Air pollution Visual impacts

7.3.6 The positive and negative impacts that the proposed activity (in terms of the initial site layout) and alternatives will have on the environment and the community that may be affected.

During the EIA phase all potential negative and potential impact will be identified, ranked and mitigation measures will be prescribed.

7.3.7 The possible mitigation measures that could be applied and the level of risk.

During the EIA phase all possible impacts will be assessed and an EMP outlining the risk and mitigation measures will be compiled.

7.3.8 Draft Site Layout Plan

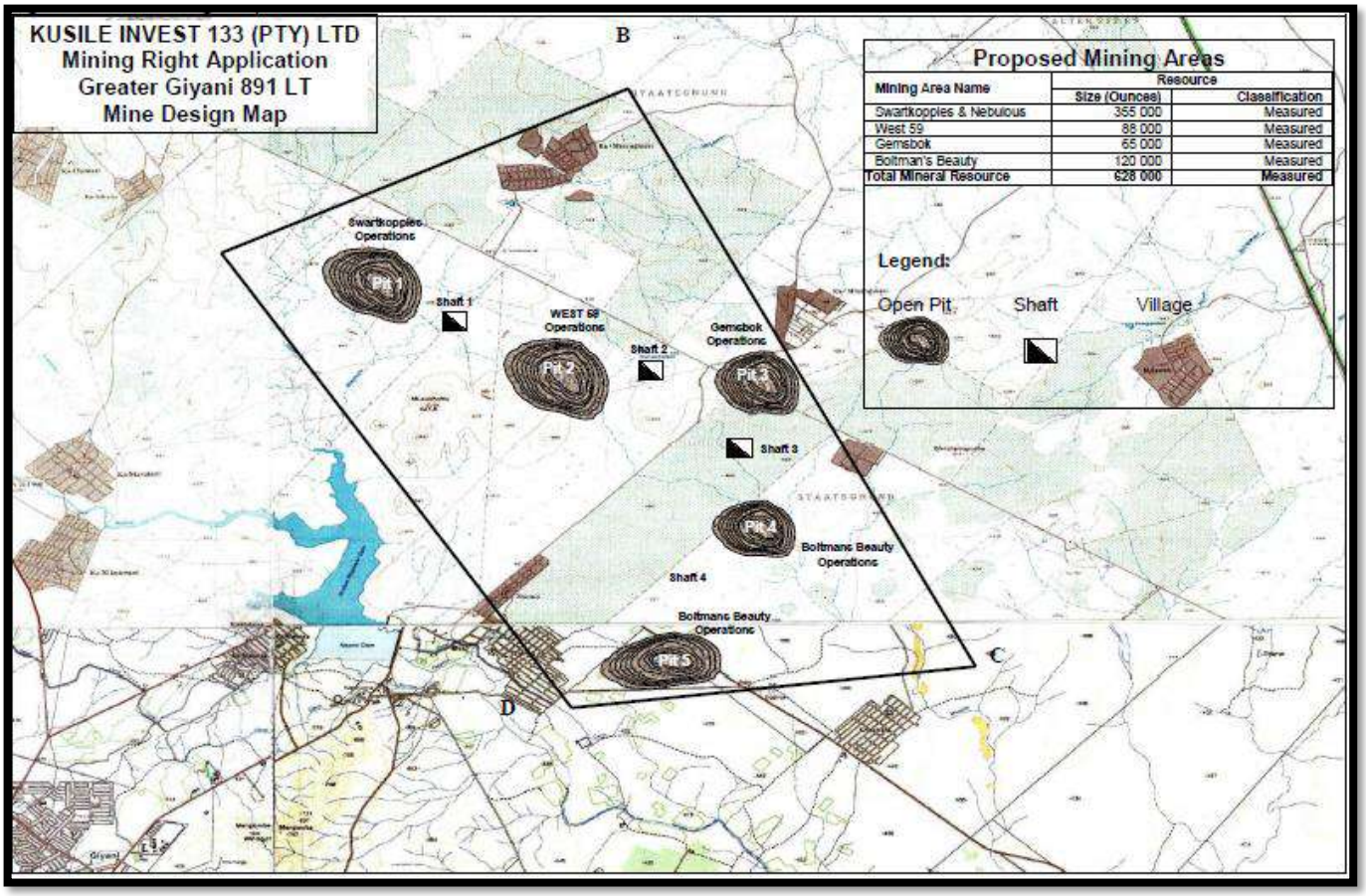

Figure 26: Proposed Site Layout

The Final Layout Plan will be provided in the EIA/EMP after public consultation as well as specialist recommendations excluding sensitive areas.

7.4 Plan of study for the Environmental Impact Assessment process

A plan of study for undertaking the environmental impact assessment process to be undertaken will include-

- a description of the alternatives to be considered and assessed within the preferred site, including the option of not proceeding with the activity;
- a description of the aspects to be assessed as part of the environmental impact assessment process;
- aspects to be assessed by specialists;

- a description of the proposed method of assessing the environmental aspects, including a description of the proposed method of assessing the environmental aspects including aspects to be assessed by specialists;
- a description of the proposed method of assessing duration and significance;
- An indication of the stages at which the competent authority will be consulted;
- particulars of the public participation process that will be conducted during the environmental impact assessment process; and
- a description of the tasks that will be undertaken as part of the environmental impact assessment process;
- 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.

The EIA phase will comprise of the following activities;

- Stakeholder Engagement;
- Assessing of Alternatives;
- Baseline and consideration of potential Specialist Studies;
- Identification of potential impacts
- Impact Assessment;
- Identification and Description of mitigation measures; and
- Reporting and decision-making.

7.4.1 Description of the aspects to be assessed as part of the environmental impact assessment process

The authorization process to be followed has been designed to meet the requirements of the MPRDA (Act 28 of 2002) and National Environmental Management Act (107/1998): Environmental Impact Assessment Regulations, 2017.The authorization process will include:

- Scoping Phase:
- Stakeholder Notification;
- Authority Consultation;
- Capturing of Issues and Concerns;
- Compilation of a Stakeholder Database;
- Identification of Potentially Significant Impacts;

- Identification of Potentially Sensitive Environmental Aspects;
- Identification of Required Specialist Studies;
- Compilation of a Scoping Report (this document), including:
- Plan of Study for EIA/EMP Amendment.
- Issues Report; and
- Stakeholder Review of Documentation;
- Submission and approval of Scoping Report by relevant authorities.
- Impact Assessment Phase:
- Undertake necessary specialist studies;
- Assessment of environmental impacts;
- Compilation of management plans;
- Compilation of an EMP Report;
- Stakeholder document review and comment;
- Submission of final report for decision-making.

The EMP Report will include a description of the proposed project, a list of identified environmental aspects that will potentially be impacted upon by the mining project, an Impact Assessment for these aspects, and an Environmental Management Programme for the mitigation and management of the identified impacts.

A plan of study for undertaking the environmental impact assessment process to be undertaken will include-

- a description of the alternatives to be considered and assessed within the preferred site, including the option of not proceeding with the activity;
- a description of the aspects to be assessed as part of the environmental impact assessment process;
- aspects to be assessed by specialists;
- a description of the proposed method of assessing the environmental aspects, including a description of the proposed method of assessing the environmental aspects including aspects to be assessed by specialists;
- a description of the proposed method of assessing duration and significance;
- An indication of the stages at which the competent authority will be consulted;
- particulars of the public participation process that will be conducted during the environmental impact assessment process; and

- a description of the tasks that will be undertaken as part of the environmental impact assessment process;
- 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.

Specialist Studies

To assess the environmental, social and cultural impacts of the proposed Giyani Gold Mine Project, several specialist studies will be commissioned. The findings of these studies will be incorporated into the Environmental Impact Assessment Report (EIR). The specialist studies consider the proposed structure and activities of the operations, as well as the associated risks to the receiving physical and socio-cultural environment.

The following aspects of the biophysical environment will be considered in the baseline studies:

- Surface Water and Groundwater;
- Noise;
- Air Quality;
- Vegetation and Fauna;
- Heritage and Archaeology;
- Traffic;
- Social Impact;
- Land Use;
- Visual Aspects
- Blast Assessment.

7.4.2 Description of aspects to be assessed by specialists

- Air quality impact assessment;

Identification of existing sources of emissions in the region and the characterisation of existing ambient pollution concentrations is fundamental to the assessment of cumulative air impacts. A change in ambient air quality can result in a range of impacts, which in turn, may cause a disturbance to nearby receptors.

- Geo - Hydrological assessment;

Identification of catchment area, water sources impacting the project area as well as the potential impact of the mining activity on water quality.

- Ecological Assessment;

Identification of flora and fauna and possible invasive species as part of the areas have been previously mined and agricultural activities were note on some of the farms.

- Social Impact Assessment;

The assessment of the possible socio- economic impact of the project area on the local and regional locality both negative and positive impacts are to be outlined.

- Visual Impact Assessment;

Project-related activities have the potential to alter the landscape character of the site and surrounding area through the establishment of both temporary and permanent infrastructure. As a baseline, this section provides an understanding of the pre-mining visual character of the project area against which to measure potential change because of project infrastructure and activities.

- Noise & Air Quality Impact;

Some of the noise generating activities associated with the project may cause an increase in ambient noise levels in and around the site. This may cause a disturbance to nearby receptors. As a baseline, this section provides a brief description of pre-mining conditions in the area from which to measure changes because of project-related noise.

Traffic Impact;

An increase in traffic on the existing roads and possible risks associated with the increased activities as well as the quality of the roads.

- Heritage Impact assessment

Identification and Protection of Heritage and historical and land marks and mitigation measures if such artefacts are encountered during mining.

- Soil and Land capability

Identification of the current land uses, soils as well as land capability as surface disturbances will lead to a loss in topsoil and fertility.

7.4.3 Proposed method of assessing the environmental aspects including the proposed method of assessing alternatives

Methodology for Assessing Environmental Issues and Alternatives

According to National Environmental Management Act (107/1998): Environmental Impact Assessment Regulations, 2017), the environment is described as the surrounding within which human exist and that are made up of:

(i) the land, water and atmosphere of the earth;

(ii) micro-organisms, plant and animal life;

(iii) any part or combination of (i) and (ii) and the interrelationships among and between them; and

(iv) the physical, chemical, aesthetic and cultural properties and conditions of the foregoing that influence human health and well-being.

Impact Assessment Methodology

(a) Nature of the impact

The NATURE of an impact can be defined as: "a *brief description of the impact being assessed, in terms of the proposed activity or project, including the socio-economic or environmental aspect affected by this impact*".

(b) Extent of the impact

The EXTENT of an impact can be defined as: "*a brief description of the spatial influence of the impact or the area that will be affected by the impact*".

EXTENT Extent or spatial influence of impact	**Footprint**	Only as far as the activity, such as footprint occurring within the total site area
	Site	Only the site and/or 500m radius from the site will be affected
	Local	Local area / district (neighbouring properties, transport routes and adjacent towns) is affected
	Region	Entire region / province is affected
	National	Country is affected

(a) Magnitude of the impact

The MAGNITUDE of an impact can be defined as: "*a brief description of the intensity or amplitude of the impact on socio-economic or environmental aspects".*

MAGNITUDE Magnitude / intensity of impact (at the specified scale)	**Zero**	Natural and/or social functions and/or processes remain *unaltered*
	Very low	Natural and/or social functions and/or processes are *negligibly* altered
	Low	Natural and/or social functions and/or processes are *slightly* altered
	Medium	Natural and/or social functions and/or processes are *notably* altered
	High	Natural and/or social functions and/or processes *severely* altered

(b) Duration of the impact

The DURATION of an impact can be defined as: "*a short description of the period of time the impact will have an effect on aspects*".

DURATION Duration of the impact	**Short term**	Construction phase up to 3 years after construction
	Medium term	Up to 6 years after construction
	Long term	More than 6 years after construction

(c) Probability of the impact occurring

The PROBABILITY of an impact can be defined as: "the *estimated chance of the impact happening*".

PROBABILITY	**Unlikely**	*Unlikely* to occur (0 – 25% probability of occurring)
	Possible	*May* occur (26 – 50% chance of occurring)
	Probable	*Likely* to occur (51 – 75% chance of occurring)
	Definite	Will *certainly* occur (76-100% chance of occurring)

(d) Degree to which impact can be reversed

The REVERSABILITY of an impact can be defined as: *"the ability of an impact to be changed from a state of affecting aspects to a state of not affecting aspects*".

REVERSABILITY	**Reversible**	Impacts can be reversed through the implementation of mitigation measures
	Irreversible	Impacts are permanent and can't be reversed by the implementation of mitigation measures

(e) Degree to which impact may cause irreplaceable loss of resources

The IRREPLACEABILITY of an impact can be defined as:" the amount of resources that can (not) be replaced".

IRREPLACEABILITY Irreplaceable loss of resources	**No loss**	*No* loss of any resources
	Low	*Marginal* loss of resources
	Medium	*Significant* loss of resources
	High	*Complete* loss of resources

(f) Degree to which the impact can be mitigated

The degree to which an impact can be MITIGATED can be defined as: "the effect of mitigation measures on the impact and its degree of effectiveness".

MITIGATION RATING	**MITIGATED** Degree impact can be mitigated	**High**	*Impact 100% mitigated*
		Medium	*Impact >50% mitigated*
		Low	*Impact <50% mitigated*

(g) Confidence rating

CONFIDENCE in the assessment of an impact can be defined as the:" *level of certainty of the impact occurring*".

CONFIDENCE RATING	**CONFIDENCE**	**Unsure**	Amount of information on and/or understanding of the environmental factors the potentially influence the impact is *limited*.
		Sure	Amount of information on and/or understanding of the environmental factors the potentially influence the impact is *reasonable and relatively sound.*
		Certain	Amount of information on and/or understanding of the environmental factors the potentially influence the impact is *unlimited and sound*.

(h) Cumulative impacts

The effect of CUMULATIVE impacts can be described as:" the effect the combination of past, present and "reasonably foreseeable" future actions have on aspects".

CUMULATIVE RATING	**CUMULATIVE EFFECTS**	**Low**	*Minor* cumulative effects
		Medium	*Moderate* cumulative effects
		High	*Significant* cumulative effects

7.4.4 The stages at which the competent authority will be consulted

The competent authority will be consulted during the

- Scoping phase
- Public Review of Documents
- EIA phase and release of the EMP
- Further Consultation after the EIA/EMP has been submitted if there are comments from I&AP's

8 PUBLIC PARTICIPATION DURING THE EIA PHASE

8.1 Particulars of the public participation process with regard to the Impact Assessment process that will be conducted

Public participation is an essential and regulatory requirement for an environmental authorization process and is guided by Regulations promulgated under NEMA, specifically the EIA Regulations. NEMA EIA Regulations defines the "Public Participation Process" as a process in which potential interested and affected parties (I&APs) are given an opportunity to comment on, or raise issues relevant to, specific matters".

The public participation process is designed to provide sufficient and accessible information to I&APs in an objective manner to assist them to:

During the Scoping Phase:

- Raise issues of concern and suggestions for enhanced benefits;
- Verify that their issues have been recorded;
- Assist in identifying reasonable alternatives; and
- Contribute relevant local information and traditional knowledge to the environmental assessment.

During the Impact Assessment Phase:

- Contribute relevant information and local and traditional knowledge to the environmental assessment;
- Verify that their issues have been considered in the environmental studies; and
- Comment on the findings of the environmental assessments.

The identified Interested and Affected Parties during the scoping phase will be made aware of the availability of the EIA report VIA

- A notification letter
- Emails and SMS
- Press advertisements
- Site Notices
- Public and Stakeholder Meetings

- The EIA will be made available for review to all IAPs for 30days. All registered IAPs will be notified by email, fax, SMS, or post of the report's availability. Hard copies of the draft report will be placed at:
- Public Libraries, Municipal Offices and other accessible places.

8.2 Details of the engagement process to be followed

- In addition to land owners, other relevant organisations will be identified and notified of the application. This includes municipal and State departments with jurisdiction in the area and Non-Governmental Organisations (NGOs) with an interest.
- A notification letter with the details of the availability of the EIA will be distributed (by email, fax or post) to all land owners. All IAPs will be asked to distribute the documents to anyone who may be interested or affected by the project.
- Site Notices
- Public and Stakeholder Meetings
- Register of IAPs during the scoping report will be used to notify the availability of the EIA
- EIAR/EMPr will be released for public review for 30 days each excluding public and school holidays.
- Hard copies of the draft report will be placed at: Public Libraries, Municipal Offices and other accessible places.
- A final Consultation report with stakeholder comments from each phase will be submitted.

Framework of a Stakeholder Engagement Plan

Regulations and requirements;

- Summary of previous engagement;
- Project stakeholders inclusive of an analysis and categorisation of all project stakeholders;
- Stakeholder engagement process inclusive of the regulatory process and separate engagement processes (i.e. with neighbouring facilities, or international NGOs);
- Timetable;
- Resources and responsibilities;
- Grievance mechanism;
- Key messages (code of conduct);
- Monitoring and reporting – i.e. comments and response tracking; and
- Management functions.

8.3 Description of the information to be provided to Interested and Affected Parties

Once the competent authority has approved the SR, the Impact Assessment Phase will commence. Stakeholders will receive notification of the start of the Impact Assessment Phase and opportunities for public review and comment.

Public participation during the Impact Assessment Phase revolves around a review of the findings of the EIA, presented in the Draft EIA Report. This report will be made available for public comment for a period of 30 days.

Stakeholders will be invited to comment on the Draft EIA Report and EMP in the following ways:

- By completing a comment sheet made available together with the report at the public places, and by submitting additional written comments, by email or fax, or by telephone, to Archean Resources the EAP's; and
- The Draft EIA Report and EMP Report and its accompanying Specialist Studies will be distributed for comment to public places in the project area, to everyone who requests a copy email.

The documents will contain a project location, map as well as detailed legislations triggered by the project and a project description as well as reference number of the project.

The scoping report will be made available to the public for review at public libraries. The scoping report will entail potential impacts, mitigation measures as well as specialist reports to be undertaken to supplement the background information of the proposed project.

8.4 Description of the tasks that will be undertaken during the environmental impact assessment process

The Environmental Impact Assessment Phase will include the following activities:

1) Undertake necessary specialist studies;
2) Assessment of environmental impacts;
3) Compilation of management plans;
4) Compilation of an EMP Amendment Report;

5) Stakeholder document review and comment;
6) Submission of Scoping and EIA report for decision-making

The EIA report must contain:

- A description of the property on which the activity is to be undertaken and the location of the activity on the property;
- A description of the environment that may be affected by the activity and the manner in which the physical, biological, social, economic and cultural aspects of the environment may be affected by the proposed activity;

- Details of the public participation process conducted including
  - Steps undertaken in accordance with the plan of study;
  - A list of persons, organisations and organs of state that were registered as interested and affected parties;
  - A summary of comments received from, and a summary of issues raised by registered interested and affected parties, the date of receipt of these comments and the response of the EAP to those comments; and
  - Copies of any representations and comments received from registered interested and affected parties;

- A description of the need and desirability of the proposed activity;
- A description of identified potential alternatives to the proposed activity, including advantages and disadvantages that the proposed activity or alternatives may have on the environment and the community that may be affected by the activity;
- An indication of the methodology used in determining the significance of potential environmental impacts;
- A description and comparative assessment of all alternatives identified during the environmental impact assessment process;
- A summary of the findings and recommendations of any specialist report or report on a specialized process;
- A description of all environmental issues that were identified during the environmental impact assessment process, an assessment of the significance of each issue and an indication of the extent to which the issue could be addressed by the adoption of mitigation measures;

- An assessment of each identified potentially significant impact, including:
  - Cumulative impacts;
  - The nature of the impact;
  - The extent and duration of the impact;
  - The probability of the impact occurring;
  - The degree to which the impact can be reversed;
  - The degree to which the impact may cause irreplaceable loss of resources; and
  - The degree to which the impact can be mitigated;
- A description of any assumptions, uncertainties and gaps in knowledge;
- A reasoned opinion as to whether the activity should or should not be authorised, and if the opinion is that it should be authorised, any conditions that should be made in respect of that authorisation;
- An environmental impact statement which contains:
  - A summary of the key findings of the environmental impact assessment; and
  - A comparative assessment of the positive and negative implications of the proposed activity and identified alternatives;

A draft environmental management programme containing;

- Copies of any specialist reports and reports on specialised processes; and
- Any specific information that may be required by the competent authority

9 MITIGATION MEASURES

9.1 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

Table 9: Mitigation Measures

Potential Environmental Impacts & Sources	Measures to prevent, mitigate, minimize or manage the impacts
CONSTRUCTION PHASE	
Activity: establishment/construction of camp site Impact: **Air pollution** (dust, gaseous emissions) Source: Establishment of camp site, movement of vehicles.	• Dust suppression measures such as spraying with water • Speed limits will be established and enforced • Equipment and vehicles equipped with standard exhaust systems which minimize the amount of emissions
Activity: food preparation Impact: **Destruction of fauna and flora** Source: Open fires	• Restrict open fires • Prohibit hunting and poaching • Collection of firewood will be prohibited • Maintain firebreaks
Activity: maintenance of vehicles Impact: **Water pollution (surface water, groundwater)** Source: spillages from vehicles	• Use oil trays • Use modern vehicles in good working condition • Take vehicles to accredited workshop in town • Use absorbents to trap hydrocarbons
Activity: Disposal of Waste Impact: **Land degradation, land-use and capability** Source: Poor waste management	• Place waste receptacles at strategic points • Monitor housekeeping behaviour and insist on corrective action • Waste will be disposed off in approved site
Activity: establishment/construction of camp site Impact: **Safety and security** Source: Employees	• Employ locals who will be transported home after hours • Make necessary arrangements with the landowner for security measures, access to site and other logistical matters
OPERATIONAL PHASE	
Activity: Preparation of mining area (Underground and reworking of surface stockpiles and tailings) Impact: **Land degradation, land-use and capability** Source: Poor waste management	• Mined areas will be rehabilitated and re-vegetated • Debris will be removed and disposed off in approved site • Areas which do not form part of mining site will not be disturbed.
Activity: Disposal of Waste Impact: **Land degradation, land-use and capability** Source: Poor waste management	• Place waste receptacles at strategic points • Monitor housekeeping behaviour and insist on corrective action • Waste will be disposed off in approved site
Activity: mining and lubrication of equipment Impact: **water pollution** (surface water, groundwater) Source: leaks, spillages from equipment and vehicles	• Operate outside 100 m distance from stream or any water body • Control and manage storm water • Prevent soil erosion and keep water channel clean, monitor groundwater

Activity: Vehicle movement during operational hours Impact: **Ecological degradation** Source: Uncontrolled vehicle movement and poor rehabilitation	• Most of the biodiversity will be restored after closure • Re-vegetation of the sites • Movement of vehicles will be restricted to designated areas
Activity: Accidental spillages Impact: **Land pollution** Source: Lack of proper house keeping	• Trays used to trap hydrocarbons • Absorbent agents to be used to trap hydrocarbons and grease • Any spillage will be recorded and remedial action taken immediately • Reporting of significant hazardous spillages
Activity: Mining (Underground and reworking of surface stockpiles and tailings) Impact: **Noise** Source: Machine and Vehicle engines	• The operation will comply with the provisions of the Mine Health and Safety Act, 1996 (Act 29 of 1996) and its regulations as well as other applicable legislation regarding noise control • Employees will be equipped with ear plugs and other protective gear. All vehicles will be equipped with silencers and maintained in a roadworthy condition
Activity: Mining (Underground and reworking of surface stockpiles and tailings) Impact: **Aesthetic pollution** Source: visibility of site	• Site selection to prioritize areas not to exposed to the public or local residences • Visual impact will be temporary
Activity: Establishment of tailings Impact: **Land degradation** Source: visibility of site	• Backfilling in accordance with original soil profile • Sloping and levelling of land • Re-vegetation of the sites
Activity: Establishment of pads Impact: **Destruction of fauna and flora** Source: visibility of site	• Most of the biodiversity will be restored after closure • Re-vegetation of the sites • Re-introduction of local species where applicable
Activity: Bulk Excavation Impact: **Land degradation** Source: visibility of site	• Backfilling in accordance with original soil profile • Sloping and levelling of land • Re-vegetation of the sites
Activity: Bulk sample Impact: **Land degradation** Source: visibility of site	• Backfilling in accordance with original soil profile • Sloping and levelling of land • Re-vegetation of the sites
DECOMMISSIONING AND CLOSURE PHASE	
Activity: establishment/construction of camp site Impact: **Air pollution** (dust, gaseous emissions) Source: movement of vehicles.	• Speed limits will be established and enforced • Very temporary in nature
Activity: De-establishment / removal of infrastructure Impact: **Noise** Source: vehicle movement	• The operation will comply with the provisions of the Mine Health and Safety Act, 1996 (Act 29 of 1996) and its regulations as well as other applicable legislation regarding noise control • Employees will be equipped with ear plugs and other protective gear. All vehicles will be equipped with silencers and maintained in a roadworthy condition

9.2 Other Information required by the competent Authority

Additional consultation and studies might be requested by the relevant authorities.

9.2.1 Impact on the socio-economic conditions of any directly affected person.

The socio-economic conditions will be identified and descried in the Social Impact Assessment report. Preliminary it can be assumed that livelihoods of the adjacent landowners will be impacted by the infusion of capital into the area.

9.2.2 Impact on any national estate referred to in section 3(2) of the National Heritage Resources Act.

There are human settlements in the vicinity of the study area. Therefore it may be assumed that the potential of existence of heritage resources is high. In terms of the National Heritage Resources Act, 1999 (Act no. 25 of 1999) an Archaeological Impact Assessment will undertaken in order to establish if any localities of heritage significane are present on the property.

9.2.3 Potential Cumulative impact and mitigation measures

Table 10: Cumulative Impacts and Mitigation Measures

TRIGGERS	**POTENTIAL CUMULATIVE IMPACT**	**SIGNI-FICANCE**	**MITIGATION AND MANAGEMENT MEASURES**	**SIGNI-FICANCE (with mitigation)**
Blasting	**Cracks on Instructure**	**High**	**Scheduled properly planned blasting**	**Moderate to low**
Use of hazardous substances (hydrocarbons), soil erosion	Contamination of water resources	Low	Avoidance of hazardous substances Prevention of spillages Proper house keeping Prevent soil erosion Concurrent rehabilitation	Low

Soil erosion	Reduction of land capability	High	Restriction on vehicular circulation Immediate rehabilitation of disturbed sites	Low
Loss of sense of place and serenity	Reduction of land land-use potential	High	Reduction of noise and visual aspects Immediate rehabilitation of disturbed sites	Low
Lack of supervision and site surveys	Loss of vegetation and land capability	Moderate	Use of existing roads and tracks. Limited vehicular movement Prospect in one area at a time to systematically open up access to other areas for rotational grazing and other land uses	Low
Improper use of machinery and vehicles	Generation of dust, smog and noise	Moderate	Maintenance of machinery and vehicles Operate within prescribed working hours	Moderate
Perception of job opportunities	Conflict between project team and the local community	Moderate	Employ local people, communicate the right messages about the project	Negligible

10 RECOMMENDATIONS

It is recommended that the applicant conducts the recommended specialist studies to assess that the risks that have been identified can be mitigated. The scoping report should be approved and recommendations by commenting authorities will be considered in the EIA phase. The activity should be granted with the conditions that the applicant implements the recommendations that have been provided in the risk assessment report.

This conclusion assumes that Kusile Invest 133 undertakes the mining as described and that the measures set out in the EMP are implemented in full.

10.1 Undertaking Regarding Correctness of Information

DECLARATION OF INDEPENDENCE

I, Yvonne Gutoona, on behalf of Archean Resources (Pty) Ltd in my capacity as an environmental consultant, hereby declare that I:-

- Act as an independent consultant;
- Do not have any financial interest in the undertaking of this project, other than remuneration for the work performed in terms of the National Environmental Management Act EIA Regulations Amendment of April 2017;
- Have and will not have vested interest in the proposed activity nor will I engage myself in any conflicting interest associated with this project
- I undertake to disclose and provide to the competent authority any material or information at my disposal regarding this project as required in terms of National Environmental Management Act (EIA regulations of April 2017);
- Based on the information provided to me by the client and in addition to information obtained during the course of this study, I have presented the results and conclusion with regard to this project to the best of my professional ability;

I Yvonne Gutoona **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 has been correctly recorded in the report.**

_____

Signature of the EAP

DATE:

10 July 2020

UNDERTAKING REGARDING LEVEL OF AGREEMENT

I Yvonne Gutoona **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 the EAP

DATE:

10 July 2020