

# **SOCIO-ECONOMIC IMPACT ASSESSMENT SCOPING REPORT**

## **Kalgold Expansion Project**

Ratlou Local Municipality, North West Province

**OCTOBER 2020**

**Revised FEBRUARY 2021**





This report has been prepared by NLN Consulting (Pty) Ltd.

<b>Report Type:</b>	Socio-Economic Impact Assessment Scoping Report
<b>Project Name:</b>	Kalgold Expansion Project
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14 October 2020

### **DECLARATION OF INDEPENDENCE**

I, Nonka Byker, as duly authorised representative of NLN Consulting, hereby confirm my independence (as well as that of the Company) as a specialist and declare that neither I nor NLN Consulting have any interest, be it business, financial, personal or other, in any proposed activity, application or appeal in respect of which Environmental Impact Management Services (EIMS) was appointed as environmental assessment practitioner in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), other than fair remuneration for work performed, specifically in connection with the **Socio-Economic Impact Assessment** for the **Kalgold Expansion Project** in the **Ratlou Local Municipality**, North West Province. I further declare that I am confident in the results of the studies undertaken and conclusions drawn as a result of it – as is described in my attached report.



#### **Signature**

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## EXECUTIVE SUMMARY

Harmony Kalgold operation wishes to expand its current production from the current production rate of 130 000 tons per month to 300 000 tons per month. A pre-feasibility study has been undertaken. The findings of the pre-feasibility study have concluded that the following new activities and expansions must be provided for:

- The pit footprint will increase (bigger than what is being applied for in the EA amendment application);
- Larger dewatering pipelines (size to be determined after water balance is done);
- Extension to Spanover waste rock dump;
- Road from the pit to new ROM pad;
- New ROM pad;
- New plant;
- Recommission old Tailings Storage Facility (TSF) at low deposition rate;
- Increase deposition rate at D zone pit;
- Install pipeline from Central dam to the new plant;
- Install a tailings pipeline from the new plant to old TSF and D zone pit;
- Install pipeline from old plant raw water pond to the new plant (D zone return water);
- Install two power lines from Ferndale substation to the new plant;
- Install evaporators at Central dam (to get rid of excess water);
- Install a water treatment plant at the new plant;
- Relocate and expand the explosives magazine; and
- Additional new road from the plant to the N18.

This report presents the results of the Socio-Economic Impact Assessment (SIA) Scoping phase for Harmony Gold's proposed Kalgold Expansion Project near Mahikeng in the North West Province, South Africa. The SIA is one of a suite of specialist studies conducted as part of the Environmental Impact Assessment (EIA) for the proposed Project and supports the integrated Environmental Authorisation (EA) application in terms of the National Environmental Management Act (Act No. 107 of 1988 – NEMA) and associated license applications.

Vanclay (2002) defines a social impact assessment as follows:

*“... the process of analysing (predicting, evaluating and reflecting) and managing the intended and unintended consequences on the human environment of planned interventions (policies, programmes, plans and projects) and any social change processes invoked by those interventions so as to bring about a more sustainable and equitable biophysical and human environment.”*

On the basis of the information collected through a desktop review, a socio-economic baseline profile was compiled. Topics considered as part of this profile include the following:

- **Demographic processes**, i.e. the composition of the local communities, considering variables such as population size, growth rate, migration, etc.
- **Economic processes**, i.e. livelihoods and economic activities of the local society;
- **Geographical processes**, i.e. land use patterns;
- **Institutional processes**, i.e. people's access to services and the capacity of local government to deliver the required services; and
- **Socio-cultural processes**, i.e. the culture and dynamics of the local society.

The key findings from the baseline profile that informed the likelihood of impacts occurring are as follows:

- The local study area has seen a rather significant change in the size and composition of the local population over recent years. This is suggestive of a changing landscape that leads to a change in economic opportunities, which in turn causes certain segments of the population (e.g. migratory or farm workers) to leave the area, while others enter or return to the area (e.g. mining professionals). It is expected that the project could continue to influence this process as further land use change would further reduce the number of jobs in the agriculture sector (causing out-migration), while on the other hand attracting newcomers and job seekers to the area (causing in-migration).
- Despite a fairly high employment rate, the majority of households still live in absolute poverty. This is indicative of minimum wage labour. This implies a need for fast growing industries to diversify the economy and create employment, but unfortunately many such industries (like the mining industry) are so advanced that they create minimal opportunities for unskilled labour. The Ratlou Local Municipality (RLM) has the lowest employment rate (at around 30%) and it can be expected that they would expect the mine to assist with increasing employment within the area.
- A number of social sensitive receptors have been identified within a 15 km radius of the mining area. The project itself will lead to land use changes from (what is presumably now) agricultural land to mining. This in turn would affect the visual landscape of the area and lead to secondary changes in the biophysical environment and the local economy.
- The baseline municipal profile of especially the RLM suggests that the local authority is taking strain delivering basic municipal services. The supply and quality of such services further diminishes towards the more rural areas where the project is located. This implies that Harmony would likely have to render support to the municipality in service delivery if it is to place additional strain on the system in the form of newcomers (and job seekers) seeking housing and access to services.

None of the preliminary impacts identified as part of the SIA scoping study are currently considered to be fatal flaws. However, mining remains a sensitive topic. It is therefore recommended that a detailed SIA study be undertaken once the scoping report has been

approved by the competent authority and that the detailed SIA includes a more detailed assessment of economic impacts to provide a balanced view of how impacts on the immediate environment could potentially be offset by wider and more long-term impacts on the region.

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## LIST OF ABBREVIATIONS

<b>Abbreviation</b>	<b>Meaning</b>
B-BBEE	Broad-based Black Economic Empowerment
EIA	Environmental Impact Assessment
EIMS	Environmental Impact Management Services
EMP	Environmental Management Plan
EMPr	Environmental Management Programme
FET	Further Education and Training
GN	Government Notice
HDSA	Historically Disadvantaged South African
IDP	Integrated Development Plan
IFC	International Finance Corporation
LED	Local Economic Development
MLM	Mahikeng Local Municipality
MPRDA	Minerals and Petroleum Resources Development Act
NEMA	National Environmental Management Act
NMMDM	Ngaka Modiri Molema District Municipality
PS	Performance Standard
RLM	Ratlou Local Municipality
RLM11	Ratlou Local Municipality Ward 11
SDF	Spatial Development Framework
SIA	Social (or Socio-Economic) Impact Assessment
StatsSA	Statistics South Africa
SLP	Social and Labour Plan
TSF	Tailings Storage Facility

# 1. BACKGROUND AND INTRODUCTION

## 1.1 Context and Scope of Work

This report presents the results of the Socio-Economic Impact Assessment (SIA) Scoping phase for Harmony Gold's proposed Kalgold Expansion Project near Mahikeng in the North West Province, South Africa. The SIA is one of a suite of specialist studies conducted as part of the Environmental Impact Assessment (EIA) for the proposed project and supports the integrated environmental authorisation application in terms of the National Environmental Management Act (Act No. 107 of 1988 – NEMA) and associated license applications.

NLN Consulting was appointed by Environmental Impact Management Services (EIMS) on behalf of Harmony Gold to conduct the SIA Specialist Study in accordance with the EIA requirements for a project of this nature. This specialist study will be conducted in two phases, namely a scoping phase and an impact assessment phase. The scope of work for the current phase included:

- Compiling a socio-economic baseline profile;
- Drafting a socio-economic sensitivity map;
- Identifying and assessing preliminary socio-economic impacts; and
- Outlining the detailed studies that will be undertaken in the impact assessment phase.

## 1.2 Definitions

Vanclay (2002) defines a social impact assessment as follows:

*“... the process of analysing (predicting, evaluating and reflecting) and managing the intended and unintended consequences on the human environment of planned interventions (policies, programmes, plans and projects) and any social change processes invoked by those interventions so as to bring about a more sustainable and equitable biophysical and human environment.”*

Given this definition, this study made a distinction between **change processes** and **impacts**. The latter refers to the effects that the project might have on people on either a physical (e.g., health) or cognitive (e.g., fear) level, whereas the former relates to the possible causes of an impact (e.g., a temporary influx of people). Vanclay (2002) defines socio-economic impacts as “the consequences to human populations... that alters the ways in which people live, work, play, relate to one another, organise to meet their needs and generally live and cope as members of a society”.

## 1.3 Structure of the Report

This report is structured as follows:

- Details of the proposed project are presented in Section 2, which includes background information, as well as a description of the various options that formed part of the assessment.

- Section 3 provides an overview of the regulatory framework guiding the SIA process.
- Section 4 details the methodology employed for the SIA Scoping study and includes details on the study areas, the data collection activities, information on the completion of the baseline profile, as well as the preliminary identification of project-related risks and impacts.
- Section 5 provides a baseline description of the study area, and includes the socio-economic context of all three study areas.
- Section 6 is dedicated to the preliminary identification and assessment of potential social risks and impacts as a result both the proposed project, including the identification of “triggers” (if any) that may give rise to additional social risks and impacts.
- Finally, Section 7 presents the conclusions of the SIA Scoping phase and provides recommendations for further studies to be conducted during the impact assessment phase.

## **2. PROJECT DESCRIPTION**

### **2.1 Background and Location**

Kalgold mine is an open pit mining operation located some 60 km from Mahikeng in the North West Province. The mine is owned and operated by Harmony Gold, who acquired the mine in 1999. The mine is located in the Kraaipan Greenstone Belt, which is part of the large Amalia-Kraaipan Greenstone terrain. The largest ore body is found in the D-Zone, which was mined out by a single pit operation along a strike length of 1 300 m and to a depth of approximately 290 m below surface. Mining at Kalgold Mine continued at the A-Zone, Windmill and Watertank Open Pits, which are all relatively new opencast operations.

The project footprint is situated in the Kraaipan Greenstone Belt in the Ratlou Local Municipality, located within the Ngaka Modiri Molema District Municipality, North West Province. The project area covers the remainder of portion 1 and portion 5 of the Farm Spanover 249 IO, the Farm Goldridge 632 IO, the remainder portion of Farm Spanover 552 IO and the Farm Ferndale 554 IO. The project area is situated approximately 55 km southwest of the town Mahikeng, 23 km west of the village Maipeng and approximately 15 km north of the village Kraaipan (see Figure 2-1).

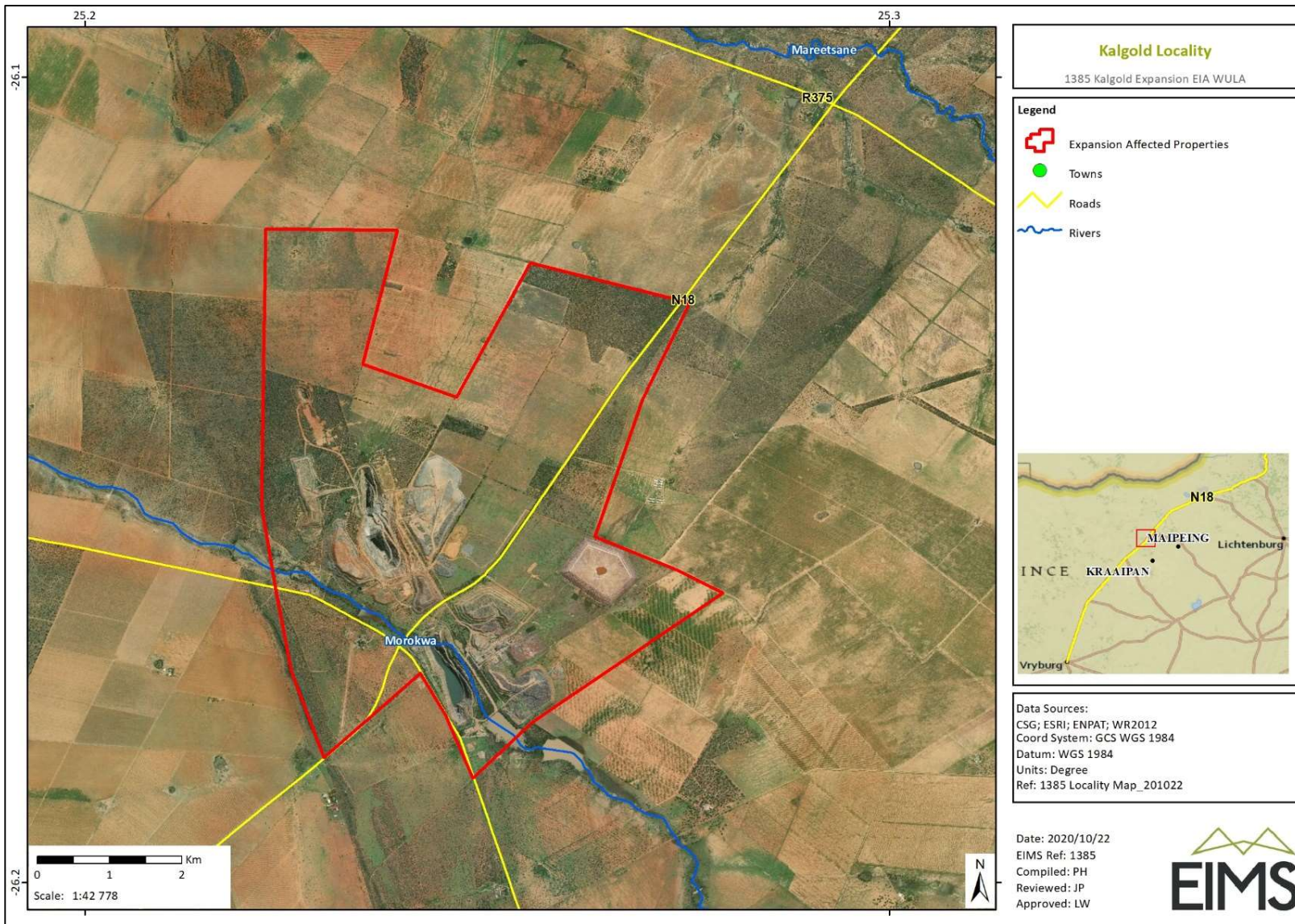


Figure 2-1: Project Location

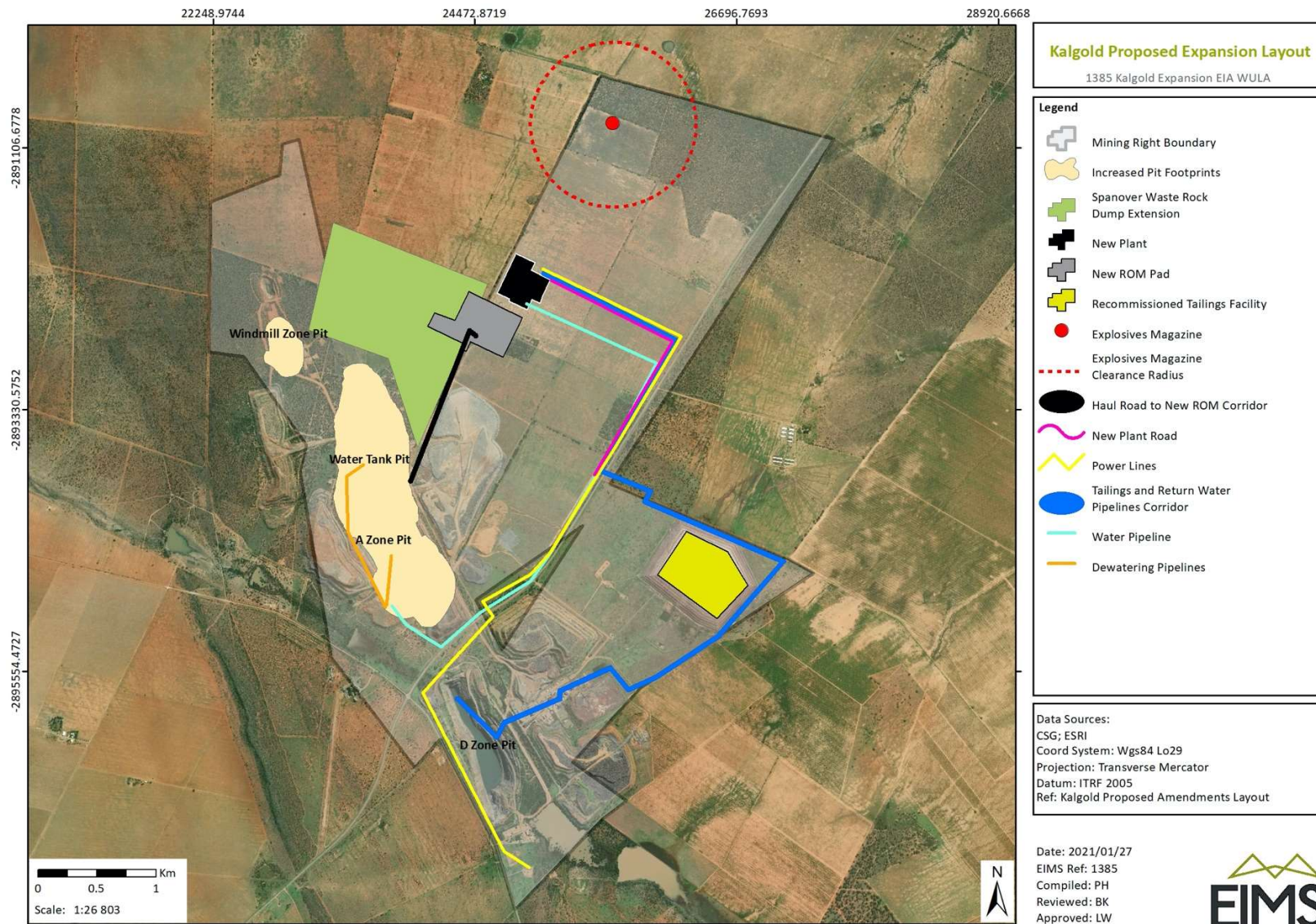
## 2.2 Project Activities

Harmony Kalgold operation wishes to expand its current production from the current production rate of 130 000 tons per month to 300 000 tons per month. A pre-feasibility study has been undertaken. The findings of the pre-feasibility study have concluded that the following new activities and expansions must be provided for:

- The pit footprint will increase (bigger than what is being applied for in the EA amendment application);
- Larger dewatering pipelines (size to be determined after water balance is done);
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- Install evaporators at Central dam (to get rid of excess water);
- Install a water treatment plant at the new plant;
- Relocate and expand the explosives magazine; and
- Additional new road from the plant to the N18.

See **Figure 2-2** for an overview of the Kalgold proposed expansion layout.





### **3. REGULATORY FRAMEWORK**

There is currently no legislation in South Africa that has any direct regulatory bearing on SIAs. However, there are laws that govern public participation and stakeholder engagement and these, either directly or indirectly, inform the socio-economic context of SIA studies. The relevant legislation and other regulatory guidelines are briefly summarised in the following subsections.

#### **3.1 The Constitution of South Africa (Act 108 of 1996)**

The Constitution mostly speaks of human rights with the intention of establishing “a society based on democratic values, social justice and fundamental human rights”, which is achieved through the promotion of human dignity, equality and the advancement of human rights and freedoms. Some of the human rights that are explicitly stated in the Constitution are a person’s right to equality, freedom of expression and association, political and property rights, housing, healthcare, education, access to information, and access to courts.

Section 24 of the Constitution stipulates that everyone has the right to an environment that is not harmful to their health or wellbeing. It also stipulates measures to be implemented to ensure that the environment is protected for both current and future generations.

Other relevant sections of the Constitution include Section 25 that refers to expropriation of property to enhance land redistribution or to achieve development objectives that are in the public’s interest. This section further prohibits the indiscriminate denial of property and the expropriation of property without just compensation.

#### **3.2 National Environmental Management Act (Act 107 of 1998)**

NEMA promotes people’s right to an environment that is not harmful to their health and wellbeing, which ties in with the Constitution as described above. It further stipulates that sustainable development requires an integrated approach to social, economic and environmental factors to ensure that development serves present and future generations. In this regard, NEMA defines “environment” not only as the natural environment, but also as the physical, chemical, aesthetic and cultural properties that influences a person’s health and wellbeing.

One of the core functions of NEMA is to facilitate and promote stakeholder engagement in environmental governance. To this end, NEMA stipulates that one of the general objectives of integrated environmental management is to “ensure adequate and appropriate opportunity for public participation in decisions that may affect the environment”.

Chapter 6 of Government Notice (GN) R659 details the requirements for public participation under NEMA. These requirements can also be applied to stakeholder engagement in general, namely that:

- All relevant information should be disclosed to stakeholders in timely fashion and in an appropriate format; and
- All stakeholders should have reasonable opportunity to participate in the process.

### **3.3 Mineral and Petroleum Resources Development Act (Act 28 of 2002)**

The Minerals and Petroleum Resources Development Act (MPRDA) provides for the equitable access to and the suitable development of the countries mineral and petroleum resources. Upon the acceptance of an application for a mining right, the applicant is required to prepare an Environmental Management Programme (EMP) in accordance with requirements of the MPRDA, to mitigate both biophysical and social impacts of the proposed development.

The MPRDA requires that mining companies assess the socio-economic impacts of their activities from start to closure and beyond. Companies must develop and implement a comprehensive Social and Labour Plan (SLP) to promote socio-economic development in their mine communities (host and labour sending) and to prevent or lessen negative social impacts.

The amendments to the MPRDA Regulations (2020) have included a definition for “mine community” to include communities where mining takes place, major labour sending areas of adjacent communities within a local or district municipality. It furthermore expanded on the definition of an “interested and affected party” to specifically refer to host communities, neighbouring landowners, traditional authorities, land claimants, lawful land occupiers, holders of informal rights, the Department of Agriculture, Land Reform and Rural Development, any persons whose socio-economic conditions may be directly affected by the proposed mining operation, the local municipality and other relevant government departments, agencies and institutions responsible for various aspects of the environment and infrastructure that might be affected by the proposed project. In addition, the amendment of 2020 envisages “meaningful consultation” as engaging with stakeholders in such a manner that they are given reasonable opportunity to provide comments and make informed decisions regarding the impact of the proposed project on their daily lives.

### **3.4 Municipal Systems Act (Act No. 32 of 2000)**

The Municipal Systems Act provides for the principles, mechanisms and processes that are necessary to enable municipalities to move progressively towards the social and economic upliftment of local communities, and to ensure universal access to essential services that are affordable to all. In accordance with this Act, all municipalities are required to develop and implement a five-year Integrated Development Plan (IDP) and Spatial Development Framework (SDF) for their areas of jurisdiction.

Section 35 of the Act confirms the statutory status of the Municipal IDP and SDF. The Act also states that apart from serving as principal strategic planning instruments to guide and inform municipal decisions on land use, the SDF and IDP binds a municipality in the exercise of its executive authority. However, where there is an inconsistency between a municipality’s policy and national or provincial legislation, national legislation should prevail.

The relevance of this Act for the project stems from the fact that development of the mining site would need to be compatible with the local municipality’s SDF, while SLP-related development projects should be consistent with priority areas identified in the local municipality’s IDP.



### **3.5 Mining Charter 2018**

The Mining Charter of 2018 requires that, for a new mining right to be issued, neighbouring communities must hold 8% of that mining right. This is likely to be done through community trusts. The updated charter also has a requirement that 1% of earnings before interest, taxes, depreciation and amortisation is paid to communities and employees as a trickle dividend from year 6 of the mining right. The target to procure services from Broad-based Black Economic Empowerment (B-BBEE) entities increased from 70% to 80% and the target to procure goods from such entities increased to 70%. The draft charter requires 50% Historically Disadvantaged South African (HDSA) Board representation, of which 20% must be female.

The MPRDA also requires a mining right applicant to prepare an Environmental Management Programme (EMPR) to mitigate the environmental and social impacts of the project.

### **3.6 International Guidelines**

As previously stated, national legislation in South Africa do not explicitly address issues related to the undertaking of a SIA. In view of this gap in national legislation, the SIA also adopts the guiding principles set out in the International Finance Corporation's (IFC) Performance Standard (PS) 1.

PS 1 deals with the assessment and management of environmental and social risks and impacts and highlights the importance of:

- An integrated assessment to identify the social and environmental impacts, risks, and opportunities of projects;
- Effective community engagement through disclosure of project-related information and consultation with local communities on matters that directly affect them; and
- Management of environmental and social performance throughout the life of the project.

The specific objectives of PS 1 are:

- To identify and assess social and environmental impacts, both adverse and beneficial, in the project's area of influence;
- To avoid, or (where avoidance is not possible,) minimise, mitigate, or compensate for adverse impacts on workers, affected communities, and the environment;
- To ensure that affected communities are appropriately engaged on issues that could potentially affect them; and
- To promote improved social and environmental performance of companies through the effective use of management systems.

## 4. METHODOLOGY

The activities undertaken as part of the assessment are outlined below.

### 4.1 Definition of Study Area

Socio-economic impacts can usually be divided into three broad categories, namely:

- **Physical intrusion** refers to project infrastructure and project-related activities' in the area. These typically impact on things like land use, nuisance factors, a change in the visual appearance of the area, etc. These impacts are more immediate to the site and its surrounding landowners and are usually negative in nature.
- As the name implies, **economic pull** occurs when the project attracts job seekers or other investors into the area who view the projects as economically attractive. Impacts related to in-migration is usually felt in the residential areas or towns closest to the project site. Impact associated with economic pull can be either positive (e.g. local job creation) or negative (e.g. an accumulation of job seekers in an area with poor services).
- **Indirect or induced impacts** are unintended by-products of the two socio-economic impacts mentioned above and usually have a wide geographic reach. Induced impacts can also be either positive (e.g. an increase in the district's tax base that enables development of further services), or negative (e.g. an increase in social ills such as an increase/expansion of informal settlements).

The relevance of mentioning these categories is that the type and level of baseline information required to inform the assessment of impacts, differs between these three categories. Accordingly, three types of study areas were identified – each area roughly corresponds to the geographical extent of one of the categories described above, while at the same time considering the manner in which publicly-available data is aggregated (i.e., the study areas were defined to correspond to existing administrative boundaries as per the 2016 municipal and ward boundary delineations). For the purpose of the scoping study, the three study areas were defined as follows:

- **Regional**, i.e. the area likely to experience indirect or induced impacts. This is defined as the Ngaka Modiri Molema District Municipality;
- **Local**, i.e. the area likely to experience the effects of economic pull. In this instance it is defined as the wider municipal area (Ratlou) and the Mahikeng Local Municipality (Mahikeng being the closest major town to the mine); and
- **Site-specific**, i.e. the area likely to experience impacts from physical intrusion of project infrastructure. It is defined as the local municipal ward within which the project is located (i.e. Ward 11 of the Ratlou Local Municipality).

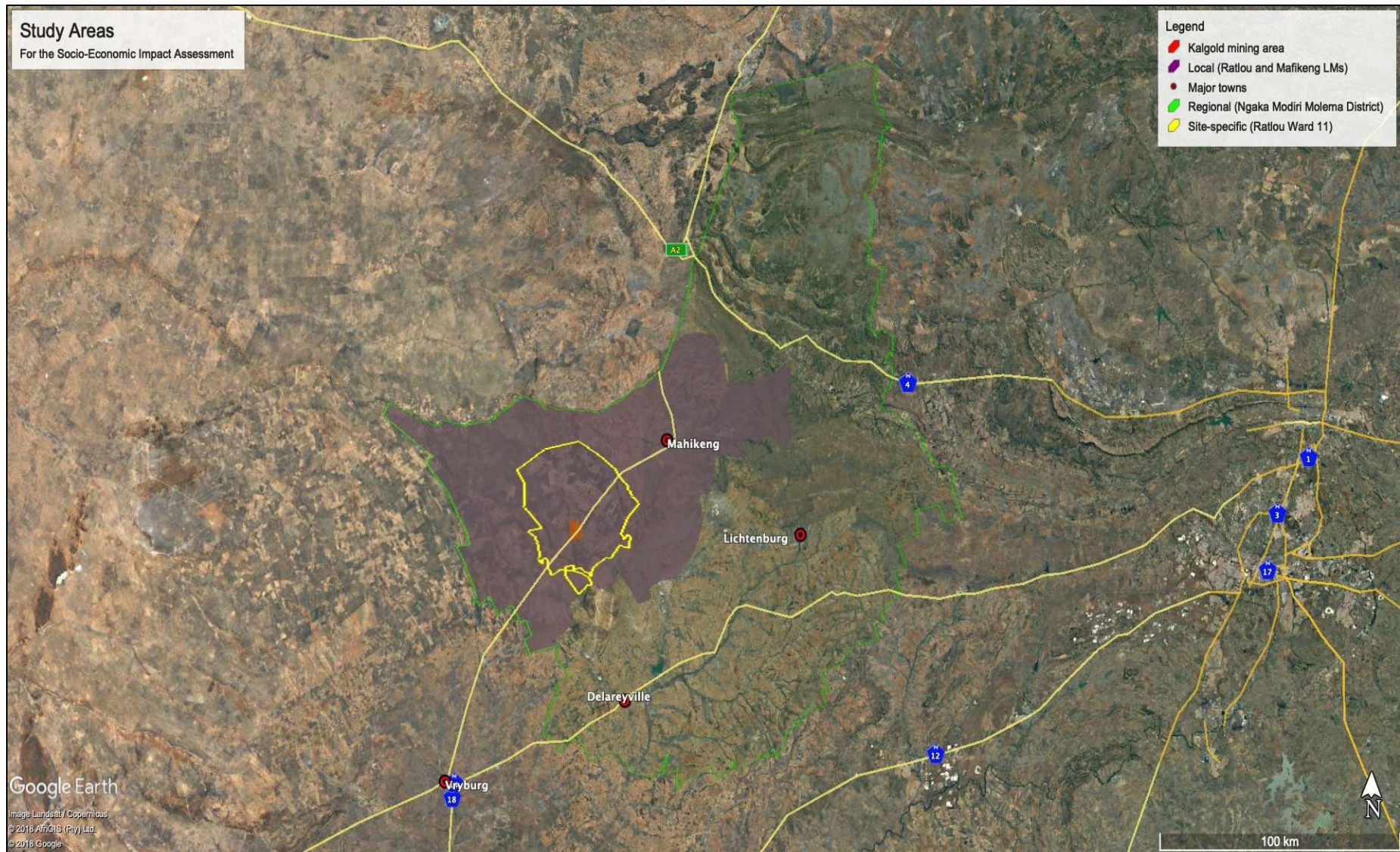


Figure 4-1: Overview of the Study Areas for the SIA

## 4.2 Data Collection

The information presented in this document was obtained through a **desktop review** of readily available documents to obtain relevant baseline socio-economic information on the different study areas. Documents reviewed include the following:

- Integrated Development Plans (IDPs) and Spatial Development Plans (SDFs) of the local and district municipalities;
- Census 2001 and 2011 and Community Survey 2016 data;
- Kalgold Mine's Social and Labour Plan (SLP) (2012-2017); and
- Available maps and satellite imagery.

Secondary data from Census 2011 and Community Survey 2016 was obtained from Wazimap ([www.wazimap.co.za](http://www.wazimap.co.za)), an online open source census data management database that reprocessed census data to conform to the new municipal ward boundaries established in 2016. Data obtained from Wazimap was processed in MS Excel and compared on various levels to determine socio-economic trends in the area. This data, together with the information obtained from the IDPs, were used to compile the baseline socio-economic profile.

## 4.3 Compilation of a Socio-Economic Baseline Profile

On the basis of the information collected through the desktop review, a socio-economic baseline profile was compiled of the study areas defined in Section 4.1. Topics considered as part of this profile include the following:

- **Demographic processes**, i.e. the composition of the local communities, considering variables such as population size, growth rate, migration, etc.
- **Economic processes**, i.e. livelihoods and economic activities of the local society;
- **Geographical processes**, i.e. land use patterns;
- **Institutional processes**, i.e. people's access to services and the capacity of local government to deliver the required services; and
- **Socio-cultural processes**, i.e. the culture and dynamics of the local society.

The social baseline profile starts with a broad overview of the regional and local study areas, followed by a more detailed description of the site specific study area, where most of the direct impacts are expected.

## 4.4 Identification of Potential Social Risks and Impacts

Based on the results of the baseline profile, the social sensitivity map, and the professional experience of the specialist, the social team were able to identify possible change processes that could be expected in the project area. These change processes and associated socio-economic impacts were assessed but it should be noted that the assessment as part of the Scoping phase is only **preliminary** in nature. More information is required to inform the detailed assessment of impacts and therefore the Scoping Report has listed certain



information gaps that will guide the scope of work for the subsequent impact assessment phase.

#### 4.5 Impact Assessment Methodology

Potential impacts were assessed following the impact assessment methodology provided by EIMS as described in the following subsections.

##### 4.5.1 Method of Assessing Impacts

The impact assessment methodology is guided by the requirements of the NEMA EIA Regulations (2014). The broad approach to the significance rating methodology is to determine the **environmental risk (ER)** by considering the **consequence (C)** of each impact (comprising Nature, Extent, Duration, Magnitude, and Reversibility) and relate this to the **probability/likelihood (P)** of the impact occurring. This determines the environmental risk. In addition, other factors, including cumulative impacts, public concern, and potential for irreplaceable loss of resources, are used to determine a **prioritisation factor (PF)** which is applied to the ER to determine the overall **significance (S)**.

##### 4.5.2 Determination of Environmental Risk

The significance (S) of an impact is determined by applying a prioritisation factor (PF) to the environmental risk (ER). The environmental risk is dependent on the consequence (C) of the particular impact and the probability (P) of the impact occurring. Consequence is determined through the consideration of the Nature (N), Extent (E), Duration (D), Magnitude (M), and reversibility (R) applicable to the specific impact. For the purpose of this methodology the consequence of the impact is represented by:

$$C = \frac{(E+D+M+R) \times N}{4}$$

Each individual aspect in the determination of the consequence is represented by a rating scale as defined in Table 4-1.

**Table 4-1: Criteria for Determining Impact Consequence**

Aspect	Score	Definition
Nature	- 1	Likely to result in a negative/ detrimental impact
	+1	Likely to result in a positive/ beneficial impact
Extent	1	Activity (i.e., limited to the area applicable to the specific activity)
	2	Site (i.e., within the development property boundary),
	3	Local (i.e., the area within 5 km of the site),
	4	Regional (i.e., extends between 5 and 50 km from the site)
	5	Provincial / National (i.e., extends beyond 50 km from the site)

Aspect	Score	Definition
Duration	1	Immediate (<1 year)
	2	Short term (1-5 years),
	3	Medium term (6-15 years),
	4	Long term (the impact will cease after the operational life span of the project),
	5	Permanent (no mitigation measure of natural process will reduce the impact after construction).
Magnitude/ Intensity	1	Minor (where the impact affects the environment in such a way that natural, cultural and social functions and processes are not affected),
	2	Low (where the impact affects the environment in such a way that natural, cultural and social functions and processes are slightly affected),
	3	Moderate (where the affected environment is altered but natural, cultural and social functions and processes continue albeit in a modified way),
	4	High (where natural, cultural or social functions or processes are altered to the extent that it will temporarily cease), or
	5	Very high / don't know (where natural, cultural or social functions or processes are altered to the extent that it will permanently cease).
Reversibility	1	Impact is reversible without any time and cost.
	2	Impact is reversible without incurring significant time and cost.
	3	Impact is reversible only by incurring significant time and cost.
	4	Impact is reversible only by incurring prohibitively high time and cost.
	5	Irreversible Impact

Once the C has been determined the ER is determined in accordance with the standard risk assessment relationship by multiplying the C and the P. Probability is rated/scored as per Table 4-2.

**Table 4-2: Probability Scoring**

Probability	1	Improbable (the possibility of the impact materialising is very low as a result of design, historic experience, or implementation of adequate corrective actions; <25%),
	2	Low probability (there is a possibility that the impact will occur; >25% and <50%),

Consequence	3	Medium probability (the impact may occur; >50% and <75%),
	4	High probability (it is most likely that the impact will occur- > 75% probability), or
	5	Definite (the impact will occur),

The result is a qualitative representation of relative ER associated with the impact. ER is therefore calculated as follows:

$$ER = C \times P$$

**Table 4-3: Determination of Environmental Risk**

Consequence	5	5	10	15	20	25
	4	4	8	12	16	20
	3	3	6	9	12	15
	2	2	4	6	8	10
	1	1	2	3	4	5
		1	2	3	4	5
	<b>Probability</b>					

The outcome of the environmental risk assessment will result in a range of scores, ranging from 1 through to 25. These ER scores are then grouped into respective classes as described in Table 4-4.

**Table 4-4: Significance Classes**

Environmental Risk Score	
Value	Description
< 9	Low (i.e., where this impact is unlikely to be a significant environmental risk),
≥9; <17	Medium (i.e., where the impact could have a significant environmental risk),
≥ 17	High (i.e., where the impact will have a significant environmental risk).

The impact ER will be determined for each impact without relevant management and mitigation measures (**pre-mitigation**), as well as post implementation of relevant management and mitigation measures (**post-mitigation**). This allows for a prediction in the degree to which the impact can be managed/mitigated.

### 4.5.3 Impact Prioritisation

In accordance with the requirements of Appendix 3(3)(j) the 2014 EIA Regulations (GNR 982), and further to the assessment criteria presented in the Section above it is necessary to assess each potentially significant impact in terms of:

- Cumulative impacts; and
- The degree to which the impact may cause irreplaceable loss of resources.

In addition, it is important that the public opinion and sentiment regarding a prospective development and consequent potential impacts is considered in the decision-making process.

In an effort to ensure that these factors are considered, an impact prioritisation factor (PF) will be applied to each impact ER (post-mitigation). This prioritisation factor does not aim to detract from the risk ratings but rather to focus the attention of the decision-making authority on the higher priority/significance issues and impacts. The PF will be applied to the ER score based on the assumption that relevant suggested management/mitigation impacts are implemented.

**Table 4-5: Criteria for Determining Prioritisation**

<b>Public response (PR)</b>	Low (1)	Issue not raised in public response.
	Medium (2)	Issue has received a meaningful and justifiable public response.
	High (3)	Issue has received an intense meaningful and justifiable public response.
<b>Cumulative Impact (CI)</b>	Low (1)	Considering the potential incremental, interactive, sequential, and synergistic cumulative impacts, it is unlikely that the impact will result in spatial and temporal cumulative change.
	Medium (2)	Considering the potential incremental, interactive, sequential, and synergistic cumulative impacts, it is probable that the impact will result in spatial and temporal cumulative change.
	High (3)	Considering the potential incremental, interactive, sequential, and synergistic cumulative impacts, it is highly probable/definite that the impact will result in spatial and temporal cumulative change.
<b>Irreplaceable loss of resources (LR)</b>	Low (1)	Where the impact is unlikely to result in irreplaceable loss of resources.
	Medium (2)	Where the impact may result in the irreplaceable loss (cannot be replaced or substituted) of resources but the value (services and/or functions) of these resources is limited.
	High (3)	Where the impact may result in the irreplaceable loss of resources of high value (services and/or functions).

The value for the final impact priority is represented as a single consolidated priority, determined as the sum of each individual criteria represented in Table 4-5. The impact priority is therefore determined as follows:



$$\text{Priority} = \text{PR} + \text{CI} + \text{LR}$$

The result is a priority score which ranges from 3 to 9 and a consequent PF ranging from 1 to 2 (Refer to Table 4-6).

**Table 4-6: Determination of Prioritisation Factor**

Priority	Ranking	Prioritisation Factor
3	Low	1
4	Medium	1.17
5	Medium	1.33
6	Medium	1.5
7	Medium	1.67
8	Medium	1.83
9	High	2

In order to determine the final impact significance, the PF is multiplied by the ER of the post mitigation scoring. The ultimate aim of the PF is to be able to increase the post mitigation environmental risk rating by a full ranking class, if all the priority attributes are high (i.e., if an impact comes out with a medium environmental risk after the conventional impact rating, but there is significant cumulative impact potential, significant public response, and significant potential for irreplaceable loss of resources, then the net result would be to upscale the impact to a high significance).

**Table 4-7: Final Environmental Significance Rating**

Environmental Significance Rating	
Value	Description
< 10	Low (i.e., where this impact would not have a direct influence on the decision to develop in the area),
≥10 <20	Medium (i.e., where the impact could influence the decision to develop in the area),
≥ 20	High (i.e., where the impact must have an influence on the decision process to develop in the area).

## **5. SOCIO-ECONOMIC BASELINE PROFILE**

### **5.1 Demographic Baseline Profile**

Demographic processes, according to Vanclay (2002), are those changes that affect the movement and/or composition of people in an area. However, to determine what these changes are and if they do occur, the baseline profile considers aspects such as current population size and composition, migration patterns, etc. The following subsections consider these aspects for the three study areas.

#### **5.1.1 Regional Study Area**

The regional study area is defined as the Ngaka Modiri Molema District Municipality (NMMDM). The district covers a geographical area of 28 440 km<sup>2</sup> and is bordered by Botswana to the north and west, the Dr Ruth Segomotsi Mompati District to the southwest, the Dr Kenneth Kuanda District to the southeast and the Bojanala District to the east. The district is one of four districts of the North West Province and consists of five local municipalities (Ratlou, Mahikeng, Ramotshere Moila, Ditsobotla and Tswaing).

In 2016, the NMMDM had a total population of 889 108 people, indicative of a fairly large population growth rate compared to 2011's population of 842 699 people (i.e., a population growth rate of around 1.1% p.a.). Based on the population growth, the 2018 population is an estimated 908 668 people. Given an increasing population size, it is to be expected that the population distribution would get denser – from 29.6 people per km<sup>2</sup> in 2011, to 31.3 in 2016 (and an estimated 32 in 2018).

The majority of the population are Black African (95.7% in 2016; 93.9% in 2011), followed by White (2.5% in 2016; 3.7% in 2011). There is an almost equal split between males and females with slightly more females in 2016 (50.6%) and in 2011 (50.9%). Setswana is the most predominant language spoken in the district (80.9%). By far the majority of the population (90.2%) are native to the North West Province – where people do not readily move away from an area, it is indicative of a strong sense of place attachment. Just over half of the population (54.5% in 2011; 58.1% in 2016) are in the economically active age range.

In 2016, slightly more than a quarter (27.3%) of the adult population have completed Grade 12 (up from 2011's 23.3%) with a further 5% (4.8% in 2011) who have completed tertiary education (undergrad and post-grad).

#### **5.1.2 Local Study Area**

In 2016, the Ratlou and Mahikeng Local Municipalities had a combined total population of 420 502 people, of which 75% (or around 314 400) lived in the Mahikeng municipal area. The Mahikeng Local Municipality (MLM) also has a much higher population density than that of the Ratlou Local Municipality (RLM) – 86.1 persons per km<sup>2</sup> in MLM compared to RLM's 21.7 per km<sup>2</sup>. The RLM experienced a slight population decline between 2011 and 2016 with around 1 230 people leaving the area (average population decrease of -0.2% p.a.), whereas the MLM experienced a population increase over the same period with an additional 22 866 people arriving in the area (average population increase of 1.6% p.a.). Assuming this trend continued

over the past 2 years, the 2018 population size in the local study area is an estimated 430 139 people.

By far the majority of the 2016 population in the study area are Black African (98.7% in the RLM and 97.1% in the MLM). Setswana is the most widely spoken language in the area – 90.9% in the RLM and 84.8% in MLM. Slightly more than half of the local study area’s population is female (52.7% in the RLM and 51.3% in MLM) and, similar to the site-specific area, fall within the economically active age range (50.6% in RLM and 61.9% in MLM).

As is the case for the site-specific study area, the education levels in the local study area are also fairly low – in 2016, more so in the RLM where only 14.4% (up from 12.7% in 2011) of the adult population completed Grade 12. More than double that (32.2%, 29.6% in 2011) have completed their secondary schooling in the MLM.

### 5.1.3 Site-Specific Study Area

The Kalgold mining area (including all existing and newly proposed infrastructure) is located in Ward 11 of the Ratlou Local Municipality (RLM11). RLM11 covers a geographical area of 1 589 km<sup>2</sup> and in 2011, was home to 7 155 people (with a population density of 4.5 people per km<sup>2</sup> – indicative of an area that is largely rural in nature). In 2001 the ward had a total population of 6 489 people, which means that the area experienced a positive population growth rate of around 1.03% per annum. Based on this growth rate, the 2018 population size is an estimated 7 670 people.

The majority of the current population in RLM11 are Black African (92.8%), followed by the White (6.1%) population group. Although more new Black African people settled in the ward (381), the largest proportional in-migration was under the White population group who more than doubled in population size – from 171 people in 2001 to 438 in 2011.

An overview of the change in population composition between 1996, 2001 and 2011 is shown in Figure 5-1.

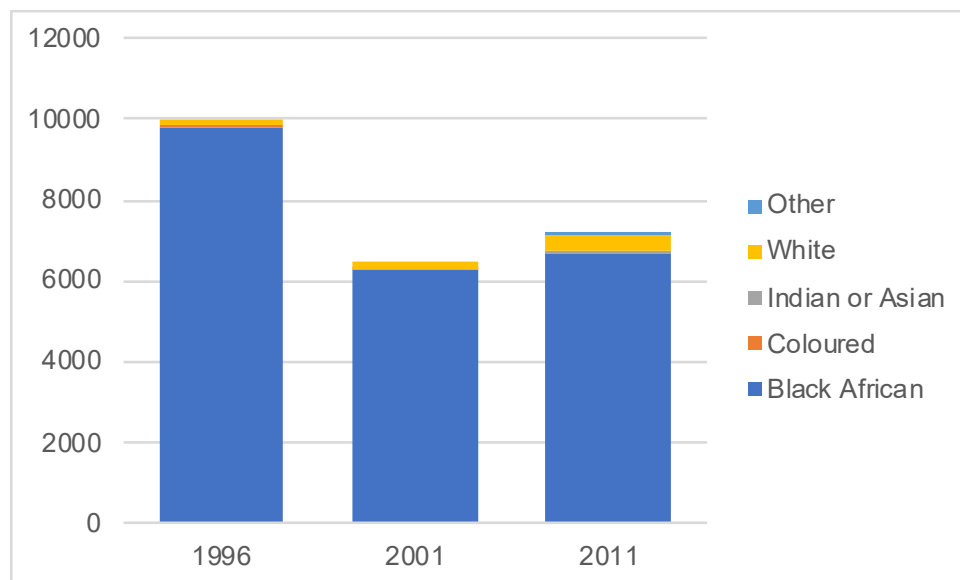


Figure 5-1: Overview of RLM11’s population between 1996 and 2011

The most widely spoken languages in the ward are Setswana (85.9%) and Afrikaans (6.2%). All the other official languages together account for the remaining 7.9%.

The majority of RLM11’s population (96.4%) are South African and native to the North West Province (91.4%). There has been a definite increase in the male population in RLM11 between 1996 (46.8%) and 2001 (49.2%) and 2011 (54.0%). This, coupled with the fact that the majority of the population are in the economically active age group of 15-64 (58.9%) and the positive population growth rate in a predominantly rural ward, is indicative of existing population in-migration, i.e., it is likely that the mining activities in the ward attract people to the area – either in the form of legitimate mine workers or in the form of job seekers.

The education levels in the ward are fairly low, with only 13.9% of the adult population (those aged 20 years and older) having completed their secondary education (Grade 12). Only 3.1% of the population have completed some form of tertiary education (diploma, degree, etc.). An overview of the educational profile of the ward is provided in Figure 5-2.

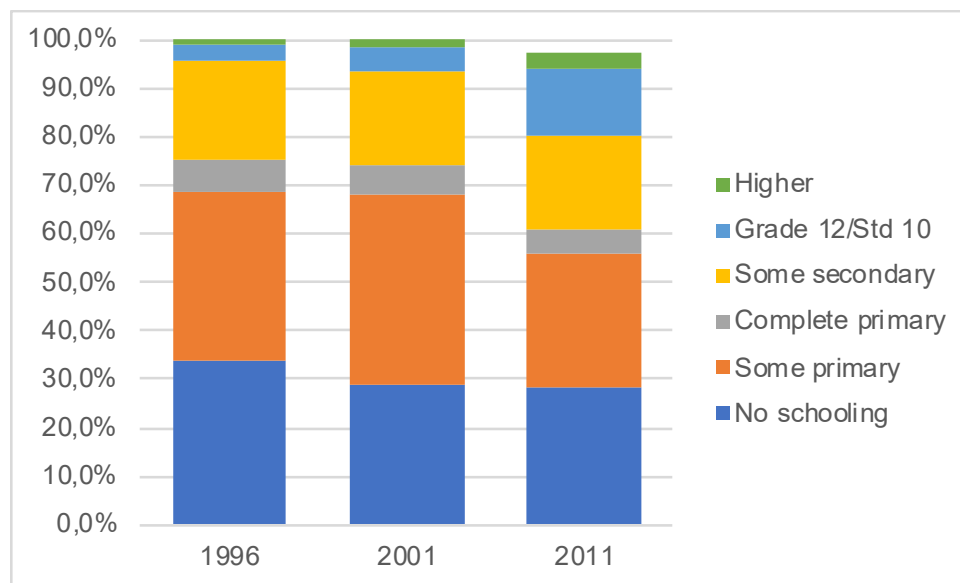


Figure 5-2: Overview of the Education Profile of RLM11 between 1996 and 2011

## 5.2 Economic Baseline Profile

The economic baseline profile considers the existing economic activities within the region to determine how, if at all, the project could affect the way in which local people make a living or affect the macro-economic factors of society as a whole (Vanclay, 2002). There are a few important concepts to understand when considering the employment profile of the study areas.

The unemployment rate does not refer to the percentage of people in the study area who do not have work, but rather represents the percentage of the labour force that has been jobless during the censuses. The labour force is defined as those who are able and willing to work. Unemployment, therefore, does not take into account minors under the age of 15, the elderly over the age of 64 (regardless of whether they are working), ill or disabled people, students, home-makers and discouraged workers – these are classified as “not economically active” as they do not contribute to the economy by providing goods or services, for financial gain or not. Because of this, the not economically active population was excluded from the unemployment statistics to reflect a more accurate picture of the employment rate in the labour force of the

various study areas. People who provide products or services for their own needs, such as subsistence farmers, are considered to be economically active and are counted as part of the labour force and employed.

Census 2011 added the category “discouraged work-seeker” to distinguish people who are economically active (i.e., willing and able), but who, for a variety of reasons, have given up looking for employment. Because these people are not actively seeking employment anymore, they are not counted as part of the unemployed (the latter are unable to find employment despite their efforts to do so).

### **5.2.1 Regional Study Area**

The employment rate in the district is more or less on par with that of the MLM at 56%. Of these, 64.3% are employed in the formal sector. However, despite this high employment rate, more than half (52.8%) of households in the district live in absolute poverty with a further 31.9% who fall in the lower middle-income bracket (defined as an annual household income of between R 19 201 and R 76 800 for a family of 4).

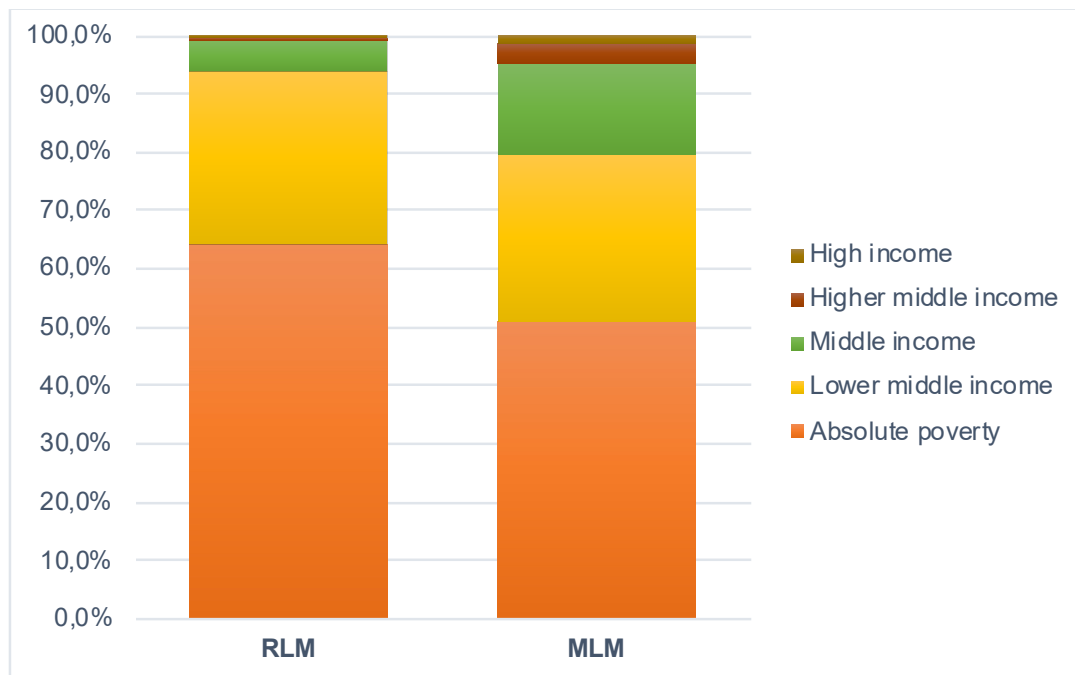
According to the NMMDM IDP (2018/19), mining and quarrying was the biggest contributor to the district’s economy with a contribution of close on R47 million to the district’s economy in the 2015/16 financial year.

### **5.2.2 Local Study Area**

Overall, the local study area has a combined employment rate of 53.3% but the employment rate in the MLM is much higher than in neighbouring RLM – 56.4% compared to 39.5%. The RLM also has the highest percentage of discouraged work-seekers – 29.6% compared to the MLM’s 12.3%. This would suggest that the RLM does not have an abundance of employment opportunities apart from the mining and agricultural sectors, and both these sectors are limited in the number of people it can employ. Close on a third of the MLM’s adult population have obtained Grade 12 compared to only 14.4% in RLM, which affects people’s employability.

The majority of those employed in MLM are employed in the formal sector (68.6%) compared to 53.9% in the RLM.

Given the employment rate and the employment sectors, it is to be expected that the household income profiles between the RLM and MLM would differ: in the former close on two thirds (64.2%) of household’s live in absolute poverty, whereas it is the case for just over half (50.8%) of households in MLM. The MLM also has a much larger proportion of middle to higher middle-income households than the RLM – 15.4% and 3.5% respectively against the RLM’s 5.1% and 0.6%. A comparative overview of the monthly household income between the RLM and the MLM for 2011 is provided in Figure 5-3.



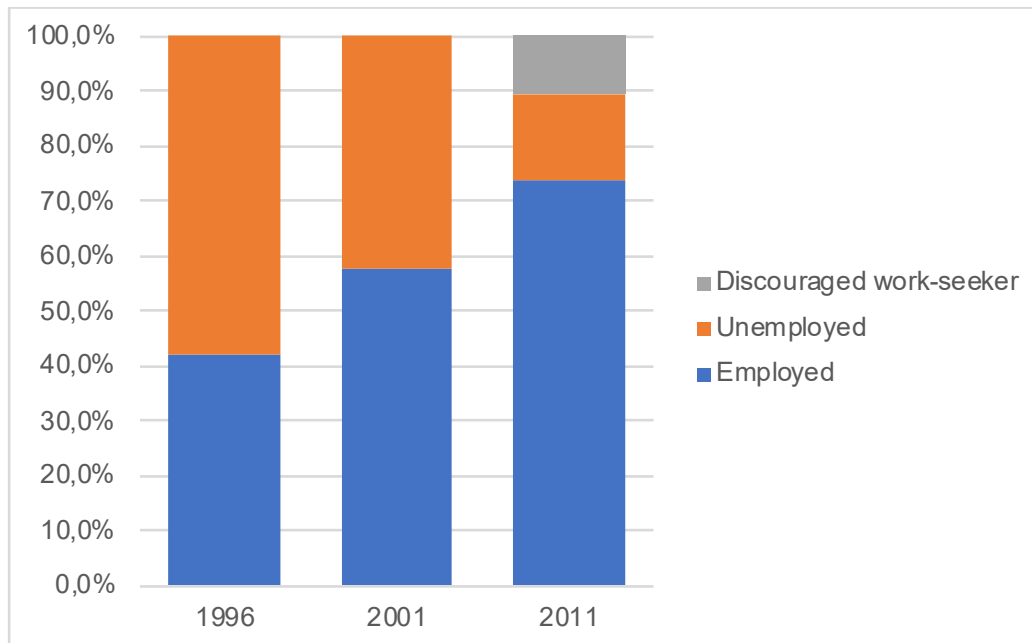
**Figure 5-3: Comparative Overview of Monthly Household Income between the RLM and the MLM (2011)**

The RLM has developed a Local Economic Development (LED) strategy as part of its Integrated Development Plan (IDP, 2016). The strategy provides the municipality with guidelines on how to create and sustain economic development. The LED strategy was adopted in August 2012 and identified ten short- and longer-term goals to focus the municipalities LED efforts. These include:

- Strengthening the municipality’s local stake in mining;
- Establishing a Further Education and Training (FET) college;
- The development and support of co-operatives;
- Rural development and agrarian reform;
- Branding and marketing;
- The implementation of learnerships, skills programmes and internships;
- Local business support (through procurement of services);
- Local and foreign investment attraction;
- Soft infrastructure development to increase the municipality’s competitive advantage; and
- Development and implementation of a tourism strategy.

### 5.2.3 Site-Specific Study Area

The employment rate in RLM11 amongst the labour force increased year on year – from 42.1% in 1996 to 57.7% in 2001, to 73.7% in 2011. In other words, in 2011, 73.7% of the site-specific study area’s economically active population (58.9% of the total population) were employed. An overview of the site-specific study area’s employment profile is provided in Figure 5-4.



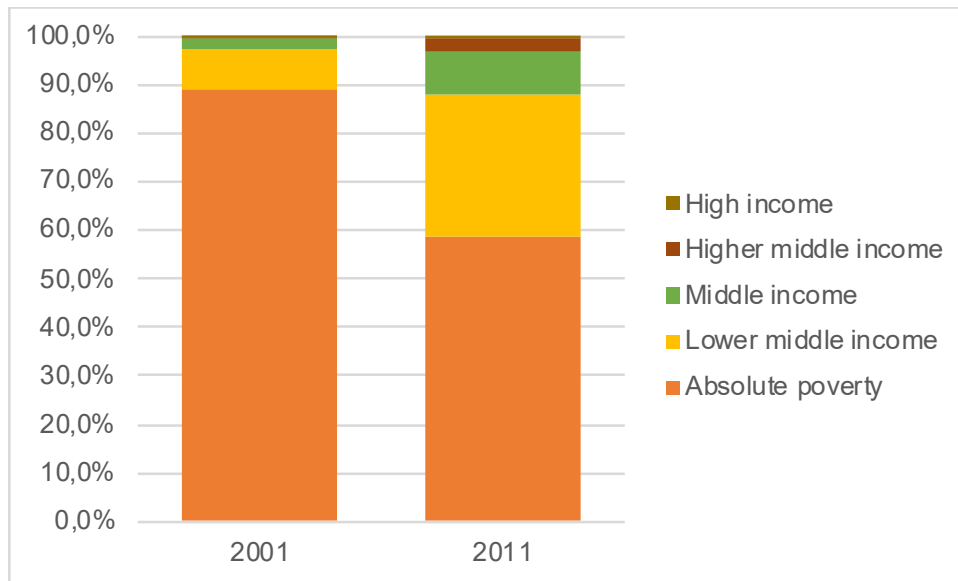
**Figure 5-4: Overview of the Site-Specific Study Area’s Employment Profile**

However, of those employed, more than half (57.1%) are employed in private households with a further 14.4% employed in the informal sector. Despite there being a consistent improvement in the monthly income profile of the local households (in 2001 almost all of the households in RLM11 - 88.8% - lived in absolute poverty<sup>1</sup>, which has been reduced to 58.4% of households in 2011), it would appear that the majority of those employed are still employed in minimum wage jobs (unskilled work such as house-keeping and gardening).

Figure 5-5 provides an overview of the change in monthly income for households in the study area between 2001 and 2011.

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<sup>1</sup> Defined as an income of R 1 600 or less per month for a family of 4, i.e. the family is unable to meet their own basic needs.



**Figure 5-5: Overview of Monthly Household Income between 2001 and 2011**

### 5.3 Geographical Baseline Profile

The geographical baseline profile describes the existing land use patterns at the various study area levels.

#### 5.3.1 Regional Study Area

According to the North West Province’s SDF, the MMDM has distinctive nodes that are linked with activity corridors to stimulate economic growth. The district’s strategic location makes it ideal to connect other development corridors including the Platinum corridor (N4) connecting the district to Botswana, the N18 west frontier corridor, and the N14 traversing the southern portion of the district. Mahikeng is the district’s primary node.

#### 5.3.2 Local Study Area

According to the RLM’s Spatial Development Plan (SDF) (in the RLM IDP, 2016), most people in the municipal area live in rural villages characterised by low economic activity forcing people into subsistence livelihoods. Places of employment are generally far from villages and therefore tend to be inaccessible.

Agriculture is the predominant sector in the Ratlou local economy. Development projects tied to land use in the local study area (as per the SDF), include the following:

- The redevelopment of the Setlagole Commercial Hub (located approximately 15 km southwest of the Kalgold mining development area, in neighbouring Ward 13 of the RLM);
- The provision of new amenity infrastructure with local development nodes determined through the Madibogo, Mareetsane and Kraaipan Local Area Plans (the northern portion of Kraaipan falls into the 15 km sensitivity radius and is ideally situated to experience in-migration impacts);



- Rural development and agricultural reform; and
- The development of the Ratlou Land Use Management Scheme (LUMS).

According to the MLM IDP (2017/18), the overall land use of the municipality is characterised by bushveld and thicket. Broad land-use categories include temporary cultivated semi-commercial, and subsistence dry-land farming, unimproved grasslands, and areas classified as degrade thicket and bushlands. Only a small portion of land in the northeast of the municipal area is considered prime agricultural land. Land in the MLM is generally degraded as a result of over grazing and bad management practices.

### 5.3.3 Site-Specific Study Area

The site-specific area (the area around Kalgold) is predominantly characterised by agricultural land. A river runs to the southwest of the mine with a number of houses on the banks of the river. Figure 5-6 provides a preliminary indication of the social sensitive receptors in the site-specific study area. The following criteria was applied to determine areas of preliminary social sensitivity:

**Table 5-1: Social Sensitivity Criteria**

Sensitivity Level	Criteria Description
High	<ul style="list-style-type: none"> <li>• Areas of human activity or settlement within a 5 km radius from roughly the centre point of the mining area (existing and future).</li> <li>• It is expected that these receptors would experience direct impacts on a continuous basis as a result of mining activities (e.g. dust, noise, vibration, blasting, etc.).</li> <li>• Marginal to no buffer between these receptors and the mine (e.g. little to no visual screening).</li> </ul>
Medium	<ul style="list-style-type: none"> <li>• Areas of human activity or settlement within a 10 km radius from the centre point of the mining area.</li> <li>• These receptors are further away from the mine's activities and are buffered to some extent by distance and from activities taking place in the 5 km radius.</li> <li>• It is expected that these receptors could still experience some direct impacts (e.g. noise and vibration) but these impacts would be diffused to some extent over the distance.</li> </ul>
Low	<ul style="list-style-type: none"> <li>• Areas of human activity or settlement within a 15 km radius from the centre point of the mining area.</li> <li>• These receptors are least likely to experience direct impacts on a continuous basis (e.g. dust emanating from the mine likely to have dissipated before it reaches any of these receptors).</li> <li>• Visual screening occurs naturally due to distance from the mine and activities occurring in the 5- and 10 km radii.</li> <li>• Likely to experience indirect impacts (e.g. economic pull) as it is close enough to the mine to be attractive as an area of settlement (in Kraaipan, for example).</li> </ul>

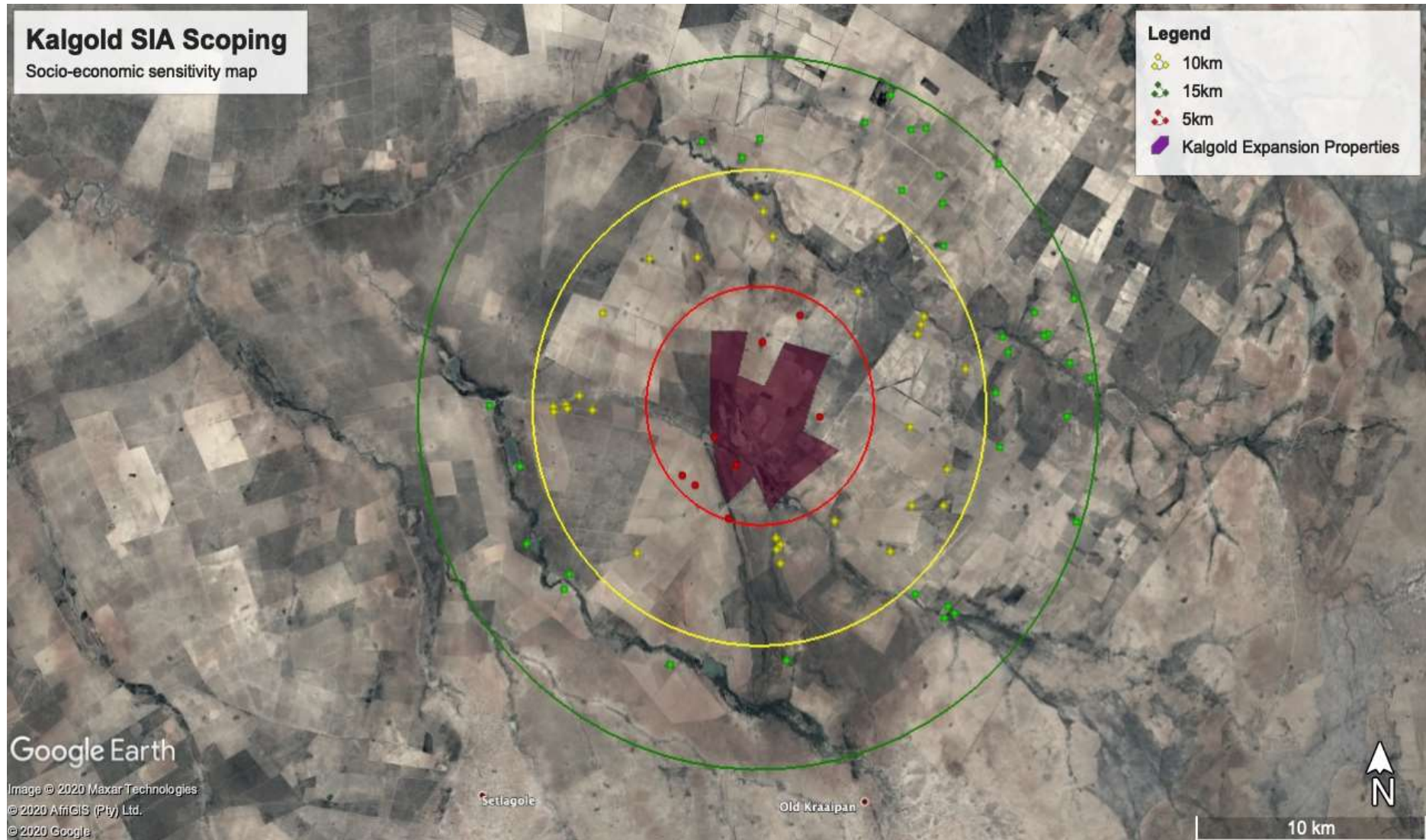


Figure 5-6: Preliminary Social Sensitivity Map

## **5.4 Institutional Baseline Profile**

The institutional baseline profile provides an overview of households' existing access to goods and services and the efficacy of local authorities to provide such services.

### **5.4.1 Regional Study Area**

The NMMDM consists of a total of 269 975 households, of which 38.3% are located in the MLM and 10.8% in the RLM. Of these, 10.9% (or 29 427 houses) are considered informal. This represents an increase in the informal housing sector by approximately 1 000 houses between 2011 and 2016.

Slightly more than half of all households (59.4%) in the district have access to piped water from a regional or local service provider. Most of the households in NMMDM (55.2%) also do not have access to sanitation services on par or above RDP standard (i.e., they make use of pit latrines without ventilation or have no or only informal sanitation services). Only about a third (31.7%) of households have their refuse removed on a regular basis by a local authority or private company. The other two thirds make use of their own waste disposal sites or communal dumps.

### **5.4.2 Local Study Area**

In 2016, the local study area consisted of 132 453 households of which 29 119 were located in the RLM and 103 334 in the MLM. This represents a positive growth rate for both municipalities from 2011, when the RLM had 27 123 households and the MLM had 86 797 households.

Around 8.5% (or 2 475) of houses were considered informal in the RLM in 2016. This suggests an increase in informal settlement in the municipal area, up from 5.2% (or 1 410) of houses in 2011, i.e., an additional 1 065 informal houses over a 5-year period. The extent of informal settlement in the MLM was fairly stagnant between 2011 and 2016 – although the overall percentage of informal houses decreased from 10.1% to 8.4%, the actual number of informal houses slightly increased due to overall increase in the number of households between 2011 and 2016 (from 8 680 up to 8 766 informal houses). The RLM IDP (2016/17) puts the current housing backlog in the RLM area at around 3 760 units.

The majority of households have access to electricity (90.5% in RLM and 94.7% in MLM). Of these, 88.8% of households in RLM and 85.3% in MLM acquired their electricity through an in-house prepaid meter.

Although the majority of households were getting their water from a regional or local water service provider in 2016 (57.9% in RLM and 61.1% in MLM), a fairly large proportion were dependent on boreholes and water schemes (36.4% in RLM and 32.9% in MLM). By far the majority of households in the RLM relied on VIP toilets (86%) – with a further backlog of approximately 6 179 units (RLM IDP, 2016/17).

No residential waste collection services are rendered in the RLM. Instead, residents make use of unlicensed dump sites or through other illegal disposal measures such as burying, burning and dumping. The nature of an unlicensed landfill site means that these sites are not managed

according to the minimum requirements for waste disposal in landfills. The practice of burning waste leads to the release of toxic pollutants into the air, whereas burying waste can have the same effect on groundwater. In contrast, the MLM regularly collects the waste of more than half (58.3%) of its households but this still leaves a large proportion of households who are reliant on their own forms of disposal, having the same effect on the environment and residents as is the case in the RLM.

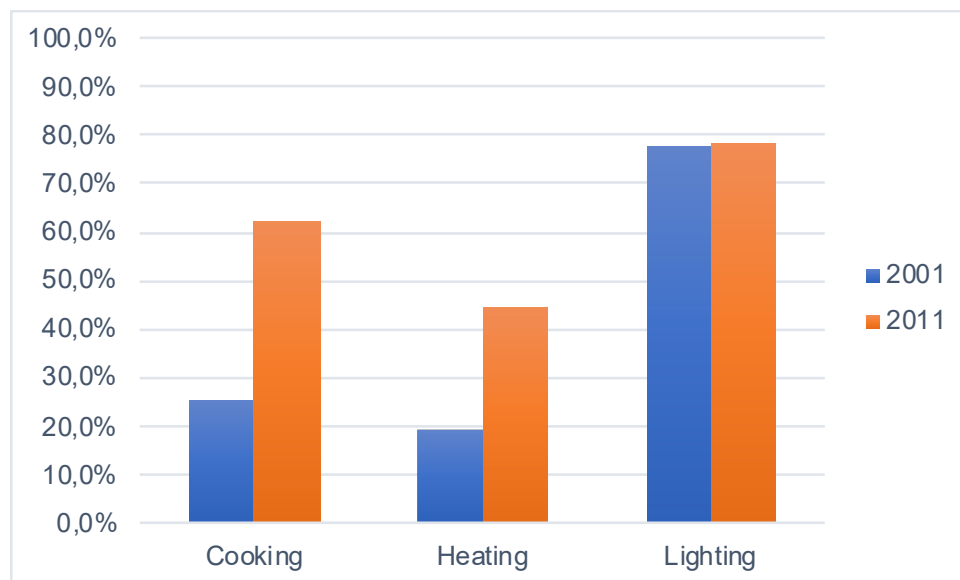
### 5.4.3 Site-Specific Study Area

RLM11 consisted of 2 049 households in 2011, which is an increase of almost 500 households over 2001 (1 542). Of these, approximately 3.8% (or 78 houses) were considered informal. More than two thirds of all households (67.7%) are male-headed.

The majority of households use electricity for lighting (78.3%), cooking (62.1%) and heating (44.6%). In the case of cooking and heating, a fairly large segment of the population still makes use of wood for this purpose – 33.3% for cooking and 42.5% for heating. In all cases, it is an improvement over 2001 (and in the case of cooking and heating, a vast improvement) when 77.6% used electricity for lighting, 25.3% for cooking and 19.2% for heating.

The number of houses who use electricity for lighting provides an indication of the overall state of the electricity network in the area, i.e., the majority (78.3%) have access to electricity. The use of electricity as a primary source of energy for cooking and heating is influenced by other factors, such as access to appliances (e.g., a stove and heater), which is a proxy indicator of a household’s general socio-economic wellbeing – for example, a household that uses wood for cooking might do so because they cannot afford to purchase or run an electrical stove.

Figure 5-7 provides an overview of the change in households’ access to electricity in the site-specific study area between 2001 and 2011.



**Figure 5-7: Overview of Electricity Use in RLM11 between 2001 and 2011**

About half of households have access to piped water supplied by the local authority (50.7%). The remainder are reliant on boreholes (44.3%) and other water sources such as rivers and

streams, which makes them vulnerable in the event of water contamination from mining activities.

Although 69.6% of households had access to toilet facilities on par or above RDP level (classified as at least a ventilated improved pit or waterborne system), more than half of these (54.5%) were dependent on VIP systems. Only 14.3% of all households in RLM11 had access to a flush or chemical toilet in 2011. The number of households who had no access to toilet facilities increased from 21.1% in 2001 to 29.8% in 2011. Also, most of the households (89.5%) do not have their refuse collected on a regular (weekly) basis and have to make use of their own refuse dumps. This is likely because of the rural nature of the area and its remoteness from large urban centres and, in view of the fact that the local authority could not supply the required sanitation services to new households, suggests that the local authority would not be in a position to supply sanitation services to the project, e.g., to temporary construction camps.

## **5.5 Socio-Cultural Baseline Profile**

The socio-cultural baseline profile describes the cultural dynamics of the local population in an effort to determine people's place attachment to the area (e.g., a longstanding resident will have stronger place attachment than a short-term seasonal worker) and their likelihood to try and determine the outcome of the project based on cultural influences and believes.

The entire study area (site-specific, local and regional) used to form part of Bophuthatswana, (meaning "gathering of the Tswana people") and refers to the area that was set up to house Setswana-speaking people (these areas were referred to as "Bantustan" or "homeland"). Bophuthatswana was declared nominally independent from South Africa in 1977 by the then apartheid regime. It was reintegrated into South Africa in 1994 and its territory was distributed between the Free State, Gauteng and Northwest. This is why the modern-day study area is predominantly characterised by Setswana-speaking Black Africans.

It is not possible to determine place attachment and cultural influences through a desktop study. The socio-cultural baseline will therefore be expanded on in more detail during the impact assessment phase when it would be possible to determine cultural place attachment through stakeholder consultations.

## **5.6 Summary of Baseline Profile**

Table 5-2 below provides a summary of the socio-economic baseline profile and the relevance of the findings to the SIA. This table only contains verified data (i.e., StatsSA data from either Community Survey 2016 or Census 2011, whichever was the latest available data).

**Table 5-2: Summary of Demographical Baseline Profile**

Variable	Regional Study Area	Local Study Area		Site-Specific Area	Relevance to the SIA
	NMMDM (2016)	MLM (2016)	RLM (2016)	RLM11 (2011)	
<b>Geographical area</b>	28 440 km <sup>2</sup> (27% of NWP)	3 652 km <sup>2</sup> (13% of NMMDM)	4 893 km <sup>2</sup> (17% of NMMDM)	1 589 km <sup>2</sup> (32% of RLM)	Gives an indication of the proportion of the project footprint in relation to the surrounding geographical area
<b>Population size</b>	889 108 (24% of the NWP)	314 394 (35% of NMMDM)	106 108 (12% of NMMDM)	7 155 (7% of RLM)	See population growth rate.
<b>Population density</b>	31.3 per km <sup>2</sup>	86.1 per km <sup>2</sup>	21.7 per km <sup>2</sup>	4.5 per km <sup>2</sup>	Provides an indication of uninhabited land available for development when measured against the geographical area.
<b>Population growth rate</b>	1.1% p.a.	1.6% p.a.	-0.2% p.a.	1% p.a.	The population growth rate provides an indication of the migration patterns (in and out) of an area, which is helpful to determine the level of existing (and likelihood of future) in-migration.
<b>Population group</b>	Black African (96%)	Black African (97%)	Black African (99%)	Black African (93%)	Ethnicity is used to determine the likelihood of cultural influences and place attachment.
<b>Predominant gender</b>	Female (51%)	Female (51%)	Female (53%)	Male (54%)	Gender also plays a role in determining cultural influences (e.g., a number of rural communities are still very patriarchal) and



Variable	Regional Study Area	Local Study Area		Site-Specific Area	Relevance to the SIA
	NMMDM (2016)	MLM (2016)	RLM (2016)	RLM11 (2011)	
					also provides an indication of the composition of the labour pool.
<b>Predominant language</b>	Setswana (87%)	Setswana (85%)	Setswana (91%)	Setswana (86%)	The predominant language(s) spoken in the area coupled with the population group, gives an indication of the cultural dynamics of the area. It is also helpful to be aware of the local languages spoken when preparing project documentation to ensure it is easily understandable.
<b>Predominant age group</b>	Economically active (69%)	Economically active (71%)	Economically active (61%)	Economically active (59%)	The segment of the population who are willing and able to work.
<b>Highest level of education (adults)</b>	Some secondary (33%)	Grade 12 (32%)	Some secondary (32%)	None (28.2%)	Provides an overview of the basic skills set of the project area. It would, for example, be challenging to draw labour from the site-specific study area if the mine requires a post-Matric qualification. It is also useful to know the highest level of education when preparing project documentation to ensure that local stakeholders are able to understand project processes.

Variable	Regional Study Area	Local Study Area		Site-Specific Area	Relevance to the SIA
	NMMDM (2016)	MLM (2016)	RLM (2016)	RLM11 (2011)	
<b>Size of the labour force</b>	613 485	218 140	64 726	4 214	The overall number of people that could possibly be drawn upon for local employment.
<b>Employment rate</b>	56.0%	56.4%	39.5%	73.7%	The higher the unemployment rate, the more likely people will be drawn to the project in search of employment, i.e., the economic pull factor is expected to be higher in areas with low employment rates.
<b>Monthly household income</b>	Absolute poverty (52.8%)	Absolute poverty (50.8%)	Absolute poverty (64.2%)	Absolute poverty (58.4%)	Provides an overview of the overall economic wellbeing of the project area. People living in poverty usually have subsistence-based livelihoods and therefore tend to have higher expectations of projects and developments in terms of job creation of local economic development.
<b>Land use</b>	No data available	No data available	No data available	Predominantly agriculture	Used to determine conflicting land use practices that could affect livelihoods.
<b>Number of households</b>	269 975	103 334 (38.3% of NMMDM)	29 119 (10.8% of NMMDM)	2 049 (7% of RLM)	Governmental priority spend on local infrastructure development will first go to areas with higher/denser human settlement, leaving smaller local government bodies unable to sustain and develop services.



Variable	Regional Study Area	Local Study Area		Site-Specific Area	Relevance to the SIA
	NMMDM (2016)	MLM (2016)	RLM (2016)	RLM11 (2011)	
					These municipalities tend to look to private developers to assist them with local municipal infrastructure development.
<b>Extent of informal settlement</b>	10.9% (29 427 houses)	8.4% (8 766 houses)	8.5% (2 475 houses)	3.8% (78 houses)	In the absence of an income or job security, job seekers tend to gravitate towards informal settlements – any number of job seekers drawn to the area are likely to expand informal settlement and further increase any housing backlogs (residual impact).
<b>Access to electricity (% of households)</b>	92.5%	94.7%	90.5%	78.3%	The availability of electricity is an important factor in determining the type of housing that the area can sustain during construction (and operation) if large-scale influx is expected. Developments are also dependent on electricity for construction and operational activities without placing too much strain on limited resources.
<b>Access to piped water (% of households)</b>	63.9%	61.1%	57.9%	50.7%	Water users who are dependent on natural water resources are more sensitive to groundwater contamination.
<b>Access to sanitation</b>	VIP (61.1%)	VIP (68.4%)	VIP (86.0%)	VIP (54.5%)	The sanitation services in the overall study area (on all levels) appears to be inadequate. Given the baseline profile on sanitation, it is

Variable	Regional Study Area	Local Study Area		Site-Specific Area	Relevance to the SIA
	NMMDM (2016)	MLM (2016)	RLM (2016)	RLM11 (2011)	
					assumed that local authorities will not be able to support the project with such services. Any additional demands on sanitation services could exert too much pressure on the system.
<b>Access to refuse</b>	Own disposal (54.4%)	Service provider (58.3%)	Own disposal (99.7%)	Own disposal (89.5%)	Depicts the local authority's capability to assist with waste management during construction and operation. Only the MLM on a local level might be able to render waste management services but it is expected to be limited.

## 6. PRELIMINARY IMPACT ASSESSMENT

This section provides a preliminary identification and assessment of possible socio-economic impacts as a result of the Kalgold expansion project. It follows the same social processes as described in the preceding baseline profile (Section 5).

The following subsections include a description of anticipated impacts associated with various social change processes, followed by a preliminary assessment of identified impacts. The significance rating scales also include preliminary mitigation/enhancement measures but in both instances, it should be noted that the significance rating and mitigation measures are currently **desktop based** and subject to change during the ensuing impact assessment phase when primary data will be collected to inform the impact assessment.

When considering the potential socio-economic impacts, a distinction was made between Category 1 and Category 2 impacts:

- **Category 1:** The significance of the impact will remain unchanged regardless of which option (and associated alternatives under the option) is chosen, e.g. in-migration can occur on all project options to a greater or lesser degree; and
- **Category 2:** The option chosen could influence the significance of the impact, e.g. project infrastructure located close to human settlement can be expected to have a more direct impact than project infrastructure located further away from human settlement.

Given that all proposed alternatives associated with the Project (see Section 0) are located within Harmony's Kalgold existing mining right area that is currently characterised by mining activities, the socio-economic impacts on a scoping level are all expected to be Category 1 impacts.

In the significance rating scales that follow, only Alternative 1 was assessed for Category 1 impacts as the significance rating scale is expected to remain unchanged for all alternatives. All alternatives were assessed for Category 2 impacts.

### 6.1 Demographical Change Processes and Potential Impacts

#### 6.1.1 Preliminary Impact Description

A preliminary identification of demographical change processes and potential impacts are summarised in Table 6-1.

**Table 6-1: Demographical Change Processes and Potential Impacts**

ISSUE	DISCUSSION
<b>Expected Change Process</b>	The project can affect migration patterns in the area.
<b>Potential Impact(s)</b>	<ul style="list-style-type: none"><li>• <b>In-migration:</b> rapid population growth can place strain on the local area and lead to economic, social and environmental impacts.</li></ul>

ISSUE	DISCUSSION
	<ul style="list-style-type: none"> <li>• <b>Out-migration:</b> the area affected by the project becomes less desirable. A decline in the local population can have an effect on the viability and vitality of the area.</li> <li>• <b>Presence of newcomers:</b> impacts of in-migration can be exacerbated if newcomers are different from (or perceived to be such) local communities. This can cause social friction and lead to conflict.</li> <li>• <b>Presence of construction workers:</b> the type and severity of impacts will depend on the number, composition and (dis)similarity of this group to local residents. Due to the temporary nature of their presence, they are unlikely to form place attachment and follow a 'work hard, play hard' mentality, impacting on social cohesion locally.</li> <li>• <b>Displacement:</b> local people can lose land or other assets, resulting in physical relocation or loss of income which could cause impoverishment or social disintegration.</li> </ul>
<b>Impact Category</b>	Category 1
<b>Expected Area of Impact</b>	Local study area
<b>Information Required</b>	<ol style="list-style-type: none"> <li>1. The size of the construction team and the skills required.</li> <li>2. The quotas that a contractor has to comply with in terms of the mine's SLP and other terms and conditions.</li> <li>3. The number of jobs that will be created overall, broken down per skills level, activity and duration of employment.</li> <li>4. The likelihood that local community members will communicate the availability of jobs to friends and family not from the area.</li> </ol>
<b>Terms of Reference for the EIA Phase</b>	<ol style="list-style-type: none"> <li>1. Consult with the project proponent and/or its appointed or shortlisted contractor(s) on aspects 1-3 mentioned above.</li> <li>2. Attend a public meeting within a Previously Disadvantaged Individuals (PDI) community (if such a meeting will be held) to determine the expressed interest for jobs and the likelihood that the availability of such jobs would be communicated to people outside the project area.</li> </ol>

### 6.1.2 Preliminary Impact Rating

Project-induced in-migration is not an impact in itself, but rather a catalyst to set other impacts in motion (such as those listed in the table above). These have been assessed in the relevant subsections below.

## 6.2 Economic Change Processes and Potential Impacts

### 6.2.1 Preliminary Impact Description

A preliminary identification of economic change processes and potential impacts are discussed in Table 6-2.

**Table 6-2: Economic Change Processes and Potential Impacts**

ISSUE	DISCUSSION
<b>Expected Change Process</b>	During construction and operation, the local area is likely to experience an economic injection in the form of employment creation, taxes, CSI and SLP spend, and increased business and consumer spending.
<b>Potential Impact(s)</b>	<p>The objective of the project is ultimately to expand Kalgold's life of mine. This creates further job opportunities for a current and future workforce and is likely to increase funds for local economic development (LED) spent as part of the mine's SLP commitments. This could lead to the following economic changes and impacts:</p> <ul style="list-style-type: none"> <li>• <b>Employment creation</b>, which impacts on people's livelihoods.</li> <li>• <b>Diversification of economic activities:</b> The project could stimulate a process of change from one type of production to another type (e.g., agricultural to mining). This will diversify the local economy but could also draw labour from other sectors.</li> <li>• <b>Increased tax income:</b> Continued and increased tax income for the local authority who can apply the money to LED.</li> <li>• <b>Dependency on a single industry:</b> This makes the local society vulnerable to the fortunes of a single commodity, which can lead to uneven economic development and, in certain cases, financial dependency on the mine through its local tax and additional LED spend.</li> </ul>
<b>Impact Category</b>	Category 1
<b>Expected Area of Impact</b>	Local and Regional study areas
<b>Information Required</b>	1. Financial information on current and future mining operations.
<b>Terms of Reference for the EIA Phase</b>	<p>Conduct a more detailed economic assessment, inclusive of economic modelling, to determine the following:</p> <ul style="list-style-type: none"> <li>• Direct impacts (income and employment created due to employment by the project);</li> <li>• Indirect impacts (backward linkages to local suppliers); and</li> <li>• Induced impacts due to the overall increase in income levels and increased spending on goods and services.</li> </ul>

## 6.2.2 Preliminary Impact Rating

A. Employment creation - Alternative 1					
<b>Impact Name</b>	<b>Employment creation</b>				
<b>Alternative</b>	<b>Alternative 1</b>				
<b>Environmental Risk</b>					
<b>Attribute</b>	<b>Pre-mitigation</b>	<b>Post-mitigation</b>	<b>Attribute</b>	<b>Pre-mitigation</b>	<b>Post-mitigation</b>
Nature	1	1	Magnitude	2	3
Extent	3	4	Reversibility	1	1
Duration	3	4	Probability	2	3
Environmental Risk (Pre-mitigation)					4,50
<b>Mitigation Measures</b>					
Prioritise local labour in the recruitment proces. Upskill unskilled labour where possible. Keep a register of local suppliers.					
Environmental Risk (Post-mitigation)					9,00
Degree of confidence in impact prediction:					High
<b>Impact Prioritisation</b>					
Public Response					1
Low: Issue not raised in public responses					
Cumulative Impacts					1
Low: Considering the potential incremental, interactive, sequential, and synergistic cumulative impacts, it is unlikely that the impact will result in spatial and temporal cumulative change.					
Degree of potential irreplaceable loss of resources					1
Low: Where the impact is unlikely to result in irreplaceable loss of resources.					
Prioritisation Factor					1,00
<b>Final Significance</b>					<b>9,00</b>

B. Diversification of economic activities - Alternative 1					
<b>Impact Name</b>	<b>Diversification of economic activities</b>				
<b>Alternative</b>	<b>Alternative 1</b>				
<b>Environmental Risk</b>					
<b>Attribute</b>	<b>Pre-mitigation</b>	<b>Post-mitigation</b>	<b>Attribute</b>	<b>Pre-mitigation</b>	<b>Post-mitigation</b>
Nature	1	1	Magnitude	2	3
Extent	4	4	Reversibility	1	1
Duration	3	4	Probability	2	3
Environmental Risk (Pre-mitigation)					5,00
<b>Mitigation Measures</b>					
Provide funding to other sectors for capacity building and training.					
Environmental Risk (Post-mitigation)					9,00
Degree of confidence in impact prediction:					Medium
<b>Impact Prioritisation</b>					
Public Response					1
Low: Issue not raised in public responses					
Cumulative Impacts					2
Medium: Considering the potential incremental, interactive, sequential, and synergistic cumulative impacts, it is probable that the impact will result in spatial and temporal cumulative change.					
Degree of potential irreplaceable loss of resources					2
Medium: Where the impact may result in the irreplaceable loss (cannot be replaced or substituted) of resources but the value (services and/or functions) of these resources is limited.					
Prioritisation Factor					1,33
<b>Final Significance</b>					<b>12,00</b>

### C. Increased tax income - Alternative 1

Impact Name	Increased tax income				
Alternative	Alternative 1				
<b>Environmental Risk</b>					
Attribute	Pre-mitigation	Post-mitigation	Attribute	Pre-mitigation	Post-mitigation
Nature	1	1	Magnitude	2	3
Extent	5	5	Reversibility	1	1
Duration	3	4	Probability	4	4
Environmental Risk (Pre-mitigation)					11,00
Mitigation Measures					
None					
Environmental Risk (Post-mitigation)					13,00
Degree of confidence in impact prediction:					High
<b>Impact Prioritisation</b>					
Public Response					1
Low: Issue not raised in public responses					
Cumulative Impacts					3
High: Considering the potential incremental, interactive, sequential, and synergistic cumulative impacts, it is highly probable/definite that the impact will result in spatial and temporal cumulative change.					
Degree of potential irreplaceable loss of resources					1
Low: Where the impact is unlikely to result in irreplaceable loss of resources.					
Prioritisation Factor					1,33
<b>Final Significance</b>					17,33

### D. Dependency on a single industry - Alternative 1

Impact Name	Dependency on a single industry				
Alternative	Alternative 1				
<b>Environmental Risk</b>					
Attribute	Pre-mitigation	Post-mitigation	Attribute	Pre-mitigation	Post-mitigation
Nature	-1	-1	Magnitude	4	2
Extent	3	3	Reversibility	3	3
Duration	4	3	Probability	3	3
Environmental Risk (Pre-mitigation)					-10,50
Mitigation Measures					
Invest in LED project that aim to build capacity in other sectors. Implement stakeholder engagement programmes aimed at informing stakeholders of opportunities outside of the mining sector. Invest in portable skills training for staff.					
Environmental Risk (Post-mitigation)					-8,25
Degree of confidence in impact prediction:					High
<b>Impact Prioritisation</b>					
Public Response					1
Low: Issue not raised in public responses					
Cumulative Impacts					3
High: Considering the potential incremental, interactive, sequential, and synergistic cumulative impacts, it is highly probable/definite that the impact will result in spatial and temporal cumulative change.					
Degree of potential irreplaceable loss of resources					2
Medium: Where the impact may result in the irreplaceable loss (cannot be replaced or substituted) of resources but the value (services and/or functions) of these resources is limited.					
Prioritisation Factor					1,50
<b>Final Significance</b>					-12,38



## 6.3 Geographical Change Processes and Potential Impacts

### 6.3.1 Preliminary Impact Description

A preliminary identification of geographical change processes and potential impacts are discussed in Table 6-3.

**Table 6-3: Geographic Change Processes and Potential Impacts**

ISSUE	DISCUSSION
<b>Expected Change Process</b>	Some portions of the mining (Project) area appear to be used as agricultural land currently. Eight social sensitive receptors were identified within the 5 km radius of which 3 are located within the demarcated mining area (see <b>Figure 5-6</b> ). At this stage it is unclear whether these structures/households would have to be relocated. A change in land use can also lead to a change in economic activity.
<b>Potential Impact(s)</b>	<p>A change in land use can lead to the following potential impacts:</p> <ul style="list-style-type: none"> <li>• Relocation: people lose their right to the use of land along with their access to certain resources. This impacts on their livelihoods and way of life.</li> <li>• Diversification of the local economy, as discussed in Section 6.2.</li> <li>• A change in land use can also create/intensify unemployment, e.g., farm workers who lose their jobs in the event that a farmer sells the land to the mine. This intensifies the dependency on the mining industry as unemployed work seekers turn their attention to the mine. This was also discussed in Section 6.2.</li> </ul>
<b>Impact Category</b>	Category 1
<b>Expected Area of Impact</b>	Site-specific study area
<b>Information Required</b>	<ol style="list-style-type: none"> <li>1. The current land use and ownership, as well as the extent of agricultural land use surrounding the project site.</li> <li>2. The agricultural potential of the project site– this will feed into the economic modelling process.</li> <li>3. The extent of similar developments in the area to determine the magnitude of land use change in the RLM.</li> <li>4. Determine the likelihood of relocating households/structures within the mining area.</li> </ol>
<b>Terms of Reference for the EIA Phase</b>	<ol style="list-style-type: none"> <li>1. Analyse the issues and response register compiled during the scoping phase public participation process to identify pertinent social issues raised by stakeholders.</li> </ol>

ISSUE	DISCUSSION
	<ol style="list-style-type: none"> <li>2. Conduct interviews with neighbouring landowners to determine the actual impact the existing mine has had on their lives.</li> <li>3. Conduct a desktop study to determine which other projects are taking place in the RLM area that could be relevant to the current study.</li> <li>4. Obtain confirmation from the client about the future plans for existing structures within the mining area.</li> </ol>

### 6.3.2 Preliminary Impact Rating

A change in land use is not an impact per se but a catalyst for economic and quality of life impacts. These have been discussed under the relevant sections.

## 6.4 Institutional and Legal Change Processes and Potential Impacts

### 6.4.1 Preliminary Impact Description

A preliminary identification of institutional and legal change processes and potential impacts are discussed in Table 6-4.

**Table 6-4: Institutional and Legal Change Processes and Potential Impacts**

ISSUE	DISCUSSION
<b>Expected Change Process</b>	Assuming people who work at the mine will move to the area, they will require housing and access to services.
<b>Potential Impact(s)</b>	People require housing and services, which places an additional strain on the local municipality's capacity to delivery such services. Where these are over capacity or not available, it causes a breakdown in infrastructure and can impact on the health and safety of local communities.
<b>Impact Category</b>	Category 1
<b>Expected Area of Impact</b>	Local study area
<b>Information Required</b>	<ol style="list-style-type: none"> <li>1. Housing requirements during construction and operation and how the mine plans to address these.</li> <li>2. Determine the extent and location of informal settlement(s) in close proximity to the mining area.</li> <li>3. Determine the extent of the RLM and MLM's backlog in terms of housing and services.</li> </ol>

ISSUE	DISCUSSION
<b>Terms of Reference for the EIA Phase</b>	<ol style="list-style-type: none"> <li>1. Conduct interviews with the client to determine housing needs and requirements and any plans that the mine has in place to address these (e.g., a construction camp during construction).</li> <li>2. Conduct interviews with local municipal officials and the ward councillor to determine the extent of informal settlement and associated problems. Also use these interviews to determine the existing housing and services backlog and determine the municipality's capacity to carry an additional strain.</li> <li>3. Conduct a focus group meeting with the farmers' organisation in the local area (if relevant) to determine their issues and concerns with current and future mining operations.</li> </ol>

#### 6.4.2 Preliminary Impact Rating

E. Additional demand on limited resources - Alternative 1					
<b>Impact Name</b>	Additional demand on limited resources				
<b>Alternative</b>	Alternative 1				
<b>Environmental Risk</b>					
<b>Attribute</b>	<b>Pre-mitigation</b>	<b>Post-mitigation</b>	<b>Attribute</b>	<b>Pre-mitigation</b>	<b>Post-mitigation</b>
Nature	-1	-1	Magnitude	4	2
Extent	3	3	Reversibility	3	2
Duration	4	2	Probability	3	2
Environmental Risk (Pre-mitigation)					-10,50
<b>Mitigation Measures</b>					
House workers in existing housing to curb additional demand on services. Do not hire at the gate to curb opportunistic influx that can lead to the formation/expansion of informal settlements.					
Environmental Risk (Post-mitigation)					-4,50
Degree of confidence in impact prediction:					Medium
<b>Impact Prioritisation</b>					
Public Response					1
Low: Issue not raised in public responses					
Cumulative Impacts					3
High: Considering the potential incremental, interactive, sequential, and synergistic cumulative impacts, it is highly probable/definite that the impact will result in spatial and temporal cumulative change.					
Degree of potential irreplaceable loss of resources					2
Medium: Where the impact may result in the irreplaceable loss (cannot be replaced or substituted) of resources but the value (services and/or functions) of these resources is limited.					
Prioritisation Factor					1,50
<b>Final Significance</b>					-6,75

## 6.5 Socio-Cultural Change Processes and Potential Impacts

### 6.5.1 Preliminary Impact Description

A preliminary identification of socio-cultural change processes and potential impacts are discussed in Table 6-5.

**Table 6-5: Socio-Cultural Change Processes and Potential Impacts**

ISSUE	DISCUSSION
<b>Expected Change Process</b>	<p>The expansion of Kalgold could change the natural and human capital landscape of the area. If not managed proactively through proper stakeholder engagement, it can lead to social mobilisation:</p> <ul style="list-style-type: none"> <li>• Local unemployed people could mobilise if they were under the impression that work was given to ‘outsiders’.</li> <li>• Local farmers feel unheard when mining developments continue unabated. They are likely to mobilise against the mine over ‘higher order’ issues that affect individuals but which they largely feel affect all of them – e.g., noise, dust, blasting effects, etc.</li> </ul>
<b>Potential Impact(s)</b>	<p>Depending on the form that social mobilisation takes, it could lead to work stoppages, violent protests (causing health and safety fears), and appeals against the project at the competent authority. All of this can cause delays, which could have an economic impact on the developer and its workforce. Changes can occur in the following areas:</p> <ul style="list-style-type: none"> <li>• Segregation: creating social difference within the community.</li> <li>• Social disintegration: the loss of social capital and the abandonment of social and cultural practices.</li> <li>• Cultural differentiation: an increase in cultural differences (or perceived differences), which enhances the process of ‘othering’.</li> <li>• Defiant social behaviour: e.g., an increase in prostitution, drug and alcohol use, violent protests, etc.</li> </ul>
<b>Impact Category</b>	Category 1
<b>Expected Area of Impact</b>	Site-specific and local study areas
<b>Information Required</b>	<ol style="list-style-type: none"> <li>1. Past and existing grievances with Kalgold, what sector of stakeholder raised these, and how it was addressed. This is required to determine further risk of social mobilisation.</li> <li>2. Where client intends to source labour for the project and the labour sourcing process.</li> <li>3. Other interventions planned by the mine (outside of mining) that could serve to buffer the impact of the project (e.g., an LED project in a nearby community aimed at developing non-mining related skills that could enhance employability in other sectors).</li> </ol>
<b>Terms of Reference for the EIA Phase</b>	<ol style="list-style-type: none"> <li>1. Conduct interviews with the client to determine labour hiring practices.</li> <li>2. Conduct a focus group meeting with any farmers’ organisation in RLM (if present) to determine their issues and concerns with current and future mining operations.</li> </ol>

ISSUE	DISCUSSION
	3. Through the above-mentioned interviews, determine the actual impacts that occurred at the mine (i.e., which of the predicted impacts in the previous SIAs associated with Kalgold materialised and to what extent).

### 6.5.2 Preliminary Impact Rating

F. Social mobilisation - Alternative 1					
Impact Name	Social mobilisation				
Alternative	Alternative 1				
Environmental Risk					
Attribute	Pre-mitigation	Post-mitigation	Attribute	Pre-mitigation	Post-mitigation
Nature	-1	-1	Magnitude	4	2
Extent	3	2	Reversibility	3	2
Duration	4	3	Probability	4	2
Environmental Risk (Pre-mitigation)					-14,00
Mitigation Measures					
Proactive engagement with stakeholders through a Stakeholder Engagement Plan. Effective grievance management is important.					
Environmental Risk (Post-mitigation)					-4,50
Degree of confidence in impact prediction:					Medium
Impact Prioritisation					
Public Response					1
Low: Issue not raised in public responses					
Cumulative Impacts					2
Medium: Considering the potential incremental, interactive, sequential, and synergistic cumulative impacts, it is probable that the impact will result in spatial and temporal cumulative change.					
Degree of potential irreplaceable loss of resources					2
Medium: Where the impact may result in the irreplaceable loss (cannot be replaced or substituted) of resources but the value (services and/or functions) of these resources is limited.					
Prioritisation Factor					1,33
<b>Final Significance</b>					<b>-6,00</b>

## 6.6 Summary of Preliminary Impacts

The pre- and post-mitigation ratings assigned to the various impacts discussed in the report are summarised as follows:

IMPACT DESCRIPTION			PRE - MITIGATION								POST - MITIGATION									IMPACT PRIORITISATION				
Impact	Alternative	Phase	Nature	Extent	Duration	Magnitude	Reversibility	Probability	Pre-mitigation	Nature	Extent	Duration	Magnitude	Reversibility	Probability	Post-mitigation	Confidence	Public response	Cumulative Impact	Irreplaceable loss	Priority Factor	Final score		
Employment creation	Alternative 1	Construction	1	3	3	2	1	2	4,5	1	4	4	3	1	3	9	High	1	1	1	1,00	9,00		
Diversification of economic activities	Alternative 1	Operation	1	4	3	2	1	2	5	1	4	4	3	1	3	9	Medium	1	2	2	1,33	12,00		
Increased tax income	Alternative 1	Operation	1	5	3	2	1	4	11	1	5	4	3	1	4	13	High	1	3	1	1,33	17,33		
Dependency on a single industry	Alternative 1	Operation	-1	3	4	4	3	3	-10,5	-1	3	3	2	3	3	-8,25	High	1	3	2	1,50	-12,38		
Additional demand on limited resources	Alternative 1	Construction	-1	3	4	4	3	3	-10,5	-1	3	2	2	2	2	-4,5	Medium	1	3	2	1,50	-6,75		
Social mobilisation	Alternative 1	Construction	-1	3	4	4	3	4	-14	-1	2	3	2	2	2	-4,5	Medium	1	2	2	1,33	-6,00		
Employment creation	Alternative 1	Operation	1	4	3	2	1	3	7,5	1	4	4	4	3	4	15	Medium	2	1	1	1,17	17,50		
Social mobilisation	Alternative 1	Operation	-1	3	3	3	2	4	-11	-1	2	2	2	2	2	-4	Medium	1	2	2	1,33	-5,33		

## 7. CONCLUSIONS AND RECOMMENDATIONS

The findings of this report took into consideration the project's proposed activities, location of the project, the status of the existing socio-economic environment, and the ultimate effect that the project will have on this environment. However, it should be noted that this assessment was only desktop based and did not consider any primary data (i.e. stakeholder participation or site investigations). It is likely that the identified impacts may change (including the significance of impacts and associated mitigation/enhancement measures) during the impact assessment phase as more information becomes available from both the client's side as well as through the collection and assessment of primary data.

The scoping phase of the SIA made no distinction between project alternatives at this stage, as sufficient information is not available to inform the specifics of each alternative that would alter the significance of the preliminary identified impacts. Also, the identified impacts are relevant to both the construction and operational phases, although it is expected that the duration of impacts during construction would be shorter due to the limited nature of this phase.

The key findings from the baseline profile that informed the likelihood of impacts occurring are as follows:

- The local study area has seen a rather significant change in the size and composition of the local population over recent years. This is suggestive of a changing landscape that leads to a change in economic opportunities, which in turn causes certain segments of the population (e.g. migratory or farm workers) to leave the area, while others enter or return to the area (e.g. mining professionals). It is expected that the project could continue to influence this process as further land use change would further reduce the number of jobs in the agriculture sector (causing out-migration), while on the other hand attracting newcomers and job seekers to the area (causing in-migration).
- Despite a fairly high employment rate, the majority of households still live in absolute poverty. This is indicative of minimum wage labour. This implies a need for fast growing industries to diversify the economy and create employment, but unfortunately many such industries (like the mining industry) are so advanced that they create minimal opportunities for unskilled labour. The RLM has the lowest employment rate (at around 30%) and it can be expected that they would expect the mine to assist with increasing employment within the area.
- A number of social sensitive receptors have been identified within a 15 km radius of the mining area. The project itself will lead to land use changes from (what is presumably now) agricultural land to mining. This in turn would affect the visual landscape of the area and lead to secondary changes in the biophysical environment and the local economy.
- The baseline municipal profile of especially the RLM suggests that the local authority is taking strain delivering basic municipal services. The supply and quality of such services further diminishes towards the more rural areas where the project is located. This implies that Harmony would likely have to render support to the municipality in

service delivery if it is to place additional strain on the system in the form of newcomers (and job seekers) seeking housing and access to services.

None of the preliminary impacts identified as part of the SIA scoping study are currently considered to be fatal flaws. However, mining remains a sensitive topic. It is therefore recommended that a detailed SIA study be undertaken once the scoping report has been approved by the competent authority and that the detailed SIA includes a more detailed assessment of economic impacts to provide a balanced view of how impacts on the immediate environment could potentially be offset by wider and more long-term impacts on the region.



## **8. REFERENCES**

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