

# CUCHRON (PTY) LTDSTEAMBOAT GRAPHITE (PTY) LTD

SOCIAL IMPACT ASSESSMENT

Fransis Stoltz

7/12/21

SIA

## **CUCHRON (PTY) LTD:** Mining Right Application

## **STEAMBOAT GRAPHITE (PTY) LTD:** Beneficiation Plant

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## **DECLARATION OF INDEPENDENCE**

I, Fransis Stoltz, social scientist and social impact assessment specialists, hereby declare that I am employed by Diphororo Development, an independent environmental consultancy company. With more than 20 years of practice in the environmental and social consulting industry, Diphororo has extensive experience in identification, assessment and mitigation of social impacts caused by mining and other development.

Diphororo, as independent consultants, also conducted the Social Impact Assessment in terms of the National Environmental Management Act and its Regulations for the Project. We hereby confirm that we have no business, financial, personal or other interest in the activity proceeding other than remuneration for work performed as defined under "independent" in the NEMA Environmental Impact Assessment Regulations, 2014 (as amended).

Fransis Stoltz

<u>25 June 2021</u> Date

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## DEFINITIONS

TERM	DEFINITION	
Affected household	A household that suffers assets losses as a result of the project activities, and for which compensation, and resettlement entitlements where applicable, are due	
Affected people	People that are defined as those whose livelihoods and standards of living adversely affected by project activities - whether through the loss of assets or act to assets, through being deprived of resources, through loss of income source means of livelihood, through physical relocation, or through other losses that ma identified during the process of resettlement planning.	
Affected settlement	A village that is completely or partially affected by the infrastructure or situated in a place regarded as dangerous in relation to the project.	
Area of influence	The geographical area under which the mine has potential social, economic or environmental impacts (can be subdivided into direct and indirect).	
Authorities	Include legislative and government administration representatives at the national, provincial and district/local level. In some locations (e.g. tribal areas) it may be appropriate to distinguish between modern and traditional forms of administration	
Compensation	Payment in kind or in cash (cheque or another acceptable mechanism) for an asset or a resource that is acquired or affected by the project at the time the asset needs to be replaced	
Community Means a group of historically disadvantaged persons with interests or rig particular area of land on which the members have or exercise communal terms of an agreement, custom or law. Provided that, whereas a consequen provisions of the Act negotiations or consultations with the community is requ community shall include the members or part of the community, directly aff prospecting activities, on land occupied by such members or part of the con For the sake of this project, the communities are referred to as the communities.		
Consultation	Means a two-way communication process between the applicant and the community or interested and affected party wherein the former is seeking, listening to, and considering the latter's response, which allows openness in the decision making process.	
Employment	An activity in which a person performs, work for pay, profit or family gains. Such a person can be self-employed, an employer, an employee or a working family member (STATS SA)	
Evaluation	Evaluation is a selective exercise that attempts to systematically and objectively assess progress towards and the achievement of an outcome. Evaluation is not a one-time event, but an exercise involving assessments of differing scope and depth carried out at several points in time in response to evolving needs for evaluative knowledge and learning during the effort to achieve an outcome. All evaluations—even project evaluations that assess relevance, performance and other criteria-need to be linked to outcomes as opposed to only implementation or immediate outputs. (United Nations Development Programme)	
Host community and population	Community residing in the area to be affected by the project.	
Interested and affected Parties	Host Communities Landowners (Traditional and Title Deed owners) Traditional Authority Land Claimants Lawful land occupier The Department of Rural Development Any other person (including on adjacent and non-adjacent properties) whose socio- economic conditions may be directly affected by the proposed mining activities The Local Municipality The relevant Government Departments, agencies and institutions responsible for the various aspects of the environment and for infrastructure which may be affected by the proposed mining.	
Medicinal plants	Naturally growing plants that are used for medicinal purposes	
Monitoring	Monitoring can be defined as a continuing function that aims primarily to provide the management and main stakeholders of an ongoing intervention with early indications of progress, or lack thereof, in the achievement of results. An ongoing intervention	

TERM	DEFINITION
	might be a project, programme or other kind of support to an outcome. (United Nations Development Programme)
Vulnerable household	A household that is headed by an orphan or a disabled person or an elderly, indigent person

## LIST OF ACRONYMS

**B-BBEE:** Broad-Based Black Economic Empowerment **BID:** Background Information Document **BLM:** Blouberg Local Municipality LEDET: Limpopo Department of Economic Development Environment and Tourism DMRE: Department of Mineral Resources and Energy **DWA:** Department of Water Affairs DWS: Department of Water and Sanitation **EA:** Environmental Authorisation **EAP:** Environmental Assessment Practitioner **EIA:** Environmental Impact Assessment **EIAR:** Environmental Impact Assessment Report **EMP:** Environmental Management Plan **EMPr:** Environmental Management Programme **GNR:** Government Notice Regulation ha: Hectare HIA: Heritage Impact Assessment **I&APs:** Interested and Affected Parties **CRR:** Comments and Response Register IWUL: Integrated Water Use Licence Diphororo: Diphororo Development (Pty) Ltd km: Kilometer LOM: Life of Mine **MAE:** Mean Annual Evaporation **MAP:** Mean Annual Precipitation mbsl: Metres below sea level m: Meter mm: Millimeter m<sub>2</sub>: Square meter m3: Cubic meter **MWP:** Mining Work Programme **CDM:** Capricorn District Municipality NEMA: National Environmental Management Act, 1998 (Act No. 107 of 1998) NEMBA: National Environmental Management: Biodiversity Act, 2004 (Act No.10 of 2004) NEMWA: National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) NWA: National Water Act, 1998 (Act 36 of 1998) PCD: Pollution Control Dam **PP:** Public Participation

PPE: Personal Protective Equipment
PPP: Public Participation Process
RDL: Red Data List
ROM: Run of Mine
RWQO: Resource Water Quality Objectives
SAHRA: South African Heritage Resources Agency
SCC: Species of Conservation Concern
S&EIR: Scoping & Environmental Impact Reporting
SLP: Social and Labour Plan
StatsSA: Statistics South Africa
WML: Waste Management Licence
WUL: Water Use Licence

## 1 INTRODUCTION

## 1.1 Introduction

The project name is the Steamboat Project, related to the farm name "Steamboat". Cuchron holds a valid Prospecting Right No LP/5/1/1/2/10321PR for Graphite over the farm's Steamboat 306MR and Inkom 305MR, covering an area of 1,453 hectares, situated along the Mogalakwena River in the Province of Limpopo.

Steamboat Graphite will establish a Beneficiation Plant in proximity to the mine, to beneficiate and process the graphite for a broader market.

A Mining Right Application has been submitted by Cuchron for the mine development, and acceptance was received on 12 November 2020.

Two Environmental Authorisation Applications has been submitted:

- Cuchron has applied for Environmental Authorisation for the Mine Development and Associated Infrastructure
- Steamboat Graphite has applied for the Environmental Authorisation for the Beneficiation Plant and associated infrastructure.

Approval has been received from DMR to follow a joint and consolidated approach to the Environmental Impact Assessment Process, and produce combined reports for the two applications as envisaged in terms of Regulation 11(4) of the EIA regulations 2014 (as amended) which states "*if* one or more proponents intend undertaking interrelated activities at the same or different locations within the area of jurisdiction of a competent authority, the competent authority may, in writing, agree that the proponent or proponents submit a single application in respect of all of those activities and to conduct a consolidated assessment process but the potential environmental impacts of each activity, including its cumulative impacts, must be considered in terms of the location where the activity is to be undertaken".

Further approval was received from DMRE on 2 December 2020 for an additional 30 days to finalise the Scoping Report. The final Scoping Report is therefore submitted on or before 15 February 2021.

Project Sections	Mining	Beneficiation
Name of Company / Applicant	Cuchron (Pty) Ltd	Steamboat Graphite (Pty) Ltd
Name of the Mine / Production Operation	Steamboat Graphite Mine	Steamboat Graphite Beneficiation
Responsible Person	Dawn Makwakwa	Wenzel Kerremans
Physical Address	174 Veale Street, Nieuw Muckleneuk, Pretoria 0181	20 The Gallops Drive, Blue Hills Country Estate, Beaulieu, Midrand 1684, Johannesburg

Project Sections	Mining	Beneficiation
Postal Address	PO Box 96023, Waterkloof Village 0146	PO Box 98407, Sloane Park, 2152
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## 1.2 Social Impact Assessment

The National Environmental Management Act (NEMA) (Act 107 of 1998) sets out a number of principles which underpin environmental management in South Africa. A number of these principles relate to the social dimension of sustainable development and public process requirements such as transparency, accountability, democracy and environmental justice. The following principle outlines the basis for a Social Impact Assessment:

• Environmental management must place people and their needs at the forefront of its concern, and serve their physical, psychological, developmental, cultural and social interests equitably.

More specifically, the social, economic and environmental impacts of activities must be considered and assessed. In this context, social impacts have been defined by Vanclay (2002: 190) as: Social impacts includes all social and cultural consequences to human populations of any public or private actions that alter the ways in which people live, work, play, relate to one another, organise to meet their needs, and generally cope as members of society.

## 2 DESCRIPTION OF THE PROJECT PARAMETERS

## 2.1 **Project Locality**

The projects are located on the farm's Steamboat 306MR and Inkom 305MR, which is situated approximately 36km south-west of Alldays and 54km north-west of Vivo in the Blouberg Local Municipality, Capricorn District of Limpopo Province. The total extent of the properties is 1453.5761ha. The projects will require the following footprints:

- Mining Open Pit and Associated infrastructure: 14ha (1% of properties)
- Beneficiation Plant and Associated infrastructure: 13ha (1% of properties)

The combined size of the two projects is 27ha in total.

The project is located within the Blouberg Municipal area that forms part of the Capricorn District Municipality in Limpopo Province. The project area is situated in Ward 17 and neighbored to the south by Ward 16.



Figure 2-1: Locality Map

## 2.2 Project Extent and Description

### 2.2.1 Cuchron Mine

The Cuchron Mine will be opencast mining and has a potential Life-of-Mine (LOM) of 20 years. The life of mine may be expanded as further resources are identified on the properties. The envisaged mining method for the opencast area is a conventional drill and blast operation with truck and shovel, load and haul.

The proposed mine associated infrastructure would include:

- Mining Office, Workshop and Storage Area
- Internal Roads



#### Figure 2-2: Project Extent

Alternative locations of the mining offices will have no effect on the social environment.

## 2.2.2 Steamboat Beneficiation Plant

Steamboat Graphite will establish a beneficiation plant for the further processing and beneficiating of the raw graphite ore. The main aspects of the beneficiation process are:

- Primary, Secondary and Tertiary Crushing
- Primary Milling and Flash Flotation
- Rougher Flotation
- Primary Concentrate Cleaning Circuit
- Fine-Flake Concentrate Cleaning Circuit
- Final Concentrate Attritioning and Cleaning Circuit
- Concentrate leaching
- Concentrate Handling
- Concentrate Screening and Bagging
- Final Tailings Handling and Disposal

Other associated infrastructure will include:

- Discard and Tailings Facilities
- Sewage Facility
- Power Supply: 3MW Biomass/Coal Gasification Facility
- Internal Roads
- Product Transport
- Security and Access Control

## 2.3 Land Use Alternatives

Current land use is grazing, and the objective is to return the land to grazing post mining. Site location alternatives will not have a significant different impact on the social environment, and therefore will not be evaluated separately.

The Land use alternative considered as part of the no-go options is that the land continue to be utilized for communal grazing.

## 2.4 **Project Benefits**

Both Cuchron (Pty) Ltd and Steamboat Graphite (Pty) Ltd is committed to the above actions in the form of:

- Job creation;
- Human resource development;
- Human and community development;
- Environmental sustainability; and

• Governance and policy.

## 2.4.1 Economic Benefits

The following economic benefits may be anticipated:

- Capital Investment and expected Revenue generation with a contribution to economic growth.
- Employment and the generation of household income for the duration of the mining activities, including indirect and induced impacts within the local and regional economies.
- Secondary benefits in the creation of electricity to supply the domestic demand. In addition to the quantifiable economic benefits that will result from this development, there are also a number of benefits that are not measurable in the same way, but that should be considered.

These benefits could include:

- Technology: Technology used on the mine will work towards improving knowledge on available technologies and skills in using such technology. This may enable local communities to run their own successful businesses in the future.
- Skills development: Local community members who may not have any marketable skills other than a basic education will be able to acquire skills through employment on the mine. In addition to technical skills, there will be numerous roles imparting valuable management and leadership skills as well.
- Asset base: The capital expenditure outlaid into the land in the area will result in an asset base upon which future development can occur. In addition to this, the asset base adds value to the municipality itself and provides a starting point for future developments.
- Local procurement and SMME opportunities: Local communities will be enabled and provided with opportunities to participate in contracts and other new businesses that would become available during the construction and operational phases.

## 2.4.2 Cuchron's Social and Labour Plan

Cuchron (Pty Ltd is committed to optimise opportunities in the local communities through the implementation of the Social and Labour Plan (SLP). The SLP implementation will only commence once a decision has been made by the DMR on the granting of the Mining Right.

## 2.4.3 Job Creation

The Cuchron and Steamboat Graphite Projects will create a combined number of approximately 82 temporary job opportunities at authorisation and commencement of construction. Within the first year of mining, there is an opportunity to create a combined estimated 78 permanent positions once both projects are operational. These will be made up as follows:

- Employment for the first phase of mining is not huge, approximately 10 20 employees including managers, technical / mining skilled, operators and support
- Employment for the beneficiation plant is approximately 58 permanent employees including managers, engineers, foreman, fitters, boilermakers, electricians, technicians, operators, storemen, cleaners, general workers and support in finance, admin and human resources.

Both Cuchron and Steamboat Graphite has signed a cooperation agreement with the Ga-Kibi Community with a commitment to localise recruitment as far as possible, provided sufficient skills are available.

## 2.4.4 Workforce Development

Both Cuchron and Steamboat Graphite plans to implement a comprehensive workforce development plan through adult basic education and training, core business training, artisan training, learnerships, bursaries and internships programmes. These will be supported by career-path planning and mentorship.

## 2.4.5 Community Development

To further support local communities, Cuchron is proposing Community Development projects and supporting small business development. The community will be further engaged to finalise the specific Community Development projects based on the needs within the community.

Although not required from a beneficiation project as part of an SLP, Steamboat Graphite plans to further implement Community Development Programmes in agreement with the local communities.

## 3 METHODOLOGY

## 3.1 Introduction

The SIA was undertaken in line with the Scoping and EIA process outlined in NEMA and therefore comprised two reporting phases. These are set out in Section below.

## 3.2 Scope of Study

#### 3.2.1 Scoping Phase

The scoping phase was largely desk-based drawing on a variety of policies, plans, statistics, reports, case studies, and guidelines. The process involved the compilation of the socio-economic baseline; identification of potential issues and impacts; as well as setting out of the plan of study, or the methodology for the impact assessment phase. The aim of this phase was to generate an understanding of the socio-economic context and potential receptor communities in the study area, and to propose an approach to address the identified issues.

## 3.2.2 Impact Assessment Phase

The SIA phase involved further desk-based research through an international literature review as well as primary research based on interviews with key stakeholders. Data collection is detailed in Section 2.3 below.

The spatial scope was considered and this included a definition of the potential area of influence which was linked to the context of the issues and impacts. For the purpose of describing the socioeconomic profile, the Blouberg Local Municipality, and Ward 17 where data is available, were used as the geographical units.

In terms of temporal scope, the duration of construction and the operational design life of the proposed project were considered. Impacts during each project stage were assessed, namely construction, operation and decommissioning phases.

The methodology in Section 2.5 applied the environmental impact assessment criteria to establish the significance of environmental impacts. Drawing on the data collected, both primary and secondary, professional judgement was applied to undertake the social assessment.

## 3.3 Data Collection

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

### 3.3.1 Review of Socio-economic and Planning Documents and Data

In order to document the socio-economic context of the study area within the Blouberg Local Municipality and the Capricorn District Municipality, a number of important documents or sources of information were reviewed and referenced and used to inform this SIA:

- The National Development Plan
- Provincial Growth and Development Plans
- Stats SA:
  - Census 2011 data
  - Community survey 2007
  - Quarterly Labour Force Survey 2012 & 2013
  - o General household survey, 2011
  - Income and Expenditure survey 2010/2011
- Municipal IDPs and SDFs.
  - o Blouberg Local Municipality IDP, 2021/2022
  - o Blouberg Local Municipality LED Strategy, 2013
  - Capricorn Spatial Development Framework, 2019
- Department of Environment:
  - o SANBI database on municipal environmental information
- Department of Water and Sanitation
  - Blue Drop and Green Drop status where available
  - Water and sanitation services (Access levels, backlogs, projects underway, plans for the future by all spheres of government, and water catchment areas etc)
- Transport
  - Roads and all transport Infrastructure (e.g. Airports, harbours etc.)
- Department of Basic Education and Dept of Higher Education:
  - o Schools
  - o Education districts
- Department of Rural Development and Land Reform and Department of Traditional Affairs:
  - o Land claims
  - Traditional communities
- Other Social Impact Assessment (SIA) for similar projects
- Maps and available orthophotos and satellite imagery of the proposed project sites and surrounding environment

### 3.3.2 Literature Review

A literature review has been undertaken and focuses on best practice derived from case studies and was sourced from academic journals and studies available on the internet or the media. See references for a list.

Additional documents such as planning documents which substantiate the baseline profile or provide context to the Project have been referred to where relevant. This provided a conceptual framework for designing the empirical data collection and interpretation.

### 3.3.3 Public Participation Process

The Public Participation Process (PPP) undertaken as part of the EIA included various activities such as community meetings, public meetings and written submissions received from interested and affected parties. These played an essential part in the EIA process. The communications during the PPP and written submission of comments have been reviewed. Issues raised through this process have been incorporated into the SIA where relevant. Where possible, the PPP and SIA processes have been integrated.

## 3.3.4 Reference to other Specialist Studies

The other technical specialist studies undertaken for the Scoping and EIA of the project have fed into the SIA where there have been cross-cutting issues.

#### 3.3.5 Field Research and Interviews

Field Research was undertaken for the SIA to collect information from community members and representatives. These surveys formed the basis of the primary data collection and assisted with the gathering of baseline information as well as establishing the stakeholder's perceptions, and interests and concerns. The following activities took place:

- Community Profile surveys
- Livestock owner survey

## 3.3.6 Site Visits and Observation

Site visits were undertaken in April and May 2021 as part of the EIA. Observations were also made whilst on site or within the wider study area, and these have supplemented the other findings.

## 3.4 Description of Issues and Identification of Impacts

The data collected from the range of stakeholders has been documented as 'social facts' which reflect the critical issues and concerns as raised by stakeholders. The issues have been described and interpreted through the application of a qualitative methodology. The following methods have been used interchangeably to predict impacts:

- Comparative approach: This method examines how an affected community has responded to change in the past, or the impact on other communities that have undergone a similar action. The present is compared to the future with the proposed action. Based on past research and experiences in similar cases, the determination of significance is made based on the comparative data presented.
- Straight-line trend projection: This method takes an existing trend and simply projecting the same rate of change into the future; we assume that what happened in the past is likely to happen in the future.
- Population multiplier methods: In this method, each specified increase in population implies designated multiples of other variables, such as jobs, housing units and other infrastructure needs.
- Statistical significance means: It involves calculations to determine probabilistic differences between with and without the proposed action. A social assessor could employ comparative statistical methods to determine statistical significance for appropriate SIA variables.
- Scenarios: These refer to logical-imaginations based on construction of hypothetical futures through a process of mentally modelling the assumptions about the SIA variables in question and fitted empirical-similar past cases used to analyse the present case with experts adjusting the scenario by taking into account the unique characteristics of the present case. Scenarios include exercises to develop the likely, alternative or preferred future of a community or society. Scenarios can be used to compare different outcomes (e.g., best versus worst case).
- Social Mapping; utilising existing baseline characteristics overlaid by project plans
- Calculation of 'futures forgone': several methods have been formulated to determine what options would be given up irrevocably as a result of a project, for instance, river recreation and agricultural land use after the building of a dam. The wetlands mitigation strategy is such an example. (Burdge 1994).

## 3.5 Study Zone Delineation

The social impact assessment was conducted based on the evaluation of potential impacts in various study zones. These have been determined at this stage based on buffer zones surrounding mine infrastructure. If it is determined by any of the specialist studies that an impact is likely outside this determined study zones, these areas would need to be included at that stage. It is however envisaged that with a conservative approach this in unlikely to be required. Utilising satellite imagery and aerial

photography, community structures, facilities and services were identified to be surveyed in more detail.

The study area has been divided into the following study zones:

- Study Zone 1 The surface mine footprint
- Study Zone 2 Mining Right Application Area
- Study Zone 3 The Kibi Traditional Authority jurisdiction
- Study Zone 4 Blouberg Local Municipal area



Figure 3-1: Study areas

## 3.6 Sensitive Receptors

The following sensitive receptors have been included in the Social Impact Assessment:

- Residential areas (houses)
- Small businesses
- Schools
- Clinics
- Conservation areas

The figure below indicates the sensitive receptors.



Figure 3-2: Sensitive Receptors

Refer to the community baseline in section 4.3.2 for more information on sensitive receptors in the nearest the nearest communities.

## 3.7 Assessing the Weight of Social Impacts

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

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

#### Status of Impact (S)

The impacts are assessed as either having a:

- Negative effect (i.e. at a `cost' to the environment),
- Positive effect (i.e. a `benefit' to the environment), or
- Neutral effect on the environment.

#### Extent of the Impact (E)

- (1) Site (site only),
- (2) Local (site boundary and immediate surrounds),
- (3) Regional,
- (4) National, or
- (5) International.

### **Duration of the Impact (D)**

The length that the impact will last for is described as either:

- (1) Immediate (<1 year)
- (2) Short term (1-5 years),
- (3) Medium term (5-15 years),
- (4) Long term (ceases after the operational life span of the project),
- (5) Permanent.

#### Magnitude of the Impact (M)

The intensity or severity of the impacts is indicated as either:

- (0) None,
- (2) Minor,
- (4) Low,
- (6) Moderate (environmental functions altered but continue),
- (8) High (environmental functions temporarily cease), or
- (10) Very high / unsure (environmental functions permanently cease).

#### **Probability of Occurrence (P)**

The likelihood of the impact actually occurring is indicated as either:

- (0) None (the impact will not occur),
- (1) Improbable (probability very low due to design or experience)
- (2) Low probability (unlikely to occur),
- (3) Medium probability (distinct probability that the impact will occur),
- (4) High probability (most likely to occur), or
- (5) Definite.

#### Significance of the Impact without Mitigation (SWOM)

Based on the information contained in the points above, the potential impacts are assigned a significance rating (S). This rating is formulated by adding the sum of the numbers assigned to extent (E), duration (D) and magnitude (M) and multiplying this sum by the probability (P) of the impact.

## SWOM = (E+D+M) x P

The significance ratings are given below;

- (<60) low (i.e. where this impact would not have a direct influence on the decision to develop in the area),
- (60-100) medium (i.e. where the impact could influence the decision to develop in the area unless it is effectively mitigated),
- (>100) high (i.e. where the impact must have an influence on the decision process to develop in the area).

### Mitigation Efficiency (ME)

The mitigation efficiency must be rated as follows:

- Low (0.8) the efficiency of the proposed mitigation measures will not have a substantial influence in the reduction of the impact.
- Medium (0.6) the efficiency of the proposed mitigation measures will have a moderate influence in the reduction of the impact.
- High (0.4) the efficiency of the proposed mitigation measures will have a high influence in the reduction of the impact and will reduce the impact to acceptable levels.
- Very High (0.2) the efficiency of the proposed mitigation measures will avoid or totally ameliorate the impact and will reduce the impact to normal levels.

#### Significance of the Impact with Mitigation (SWM)

Based on the information contained in the Significance without Mitigation and Mitigation Efficiency, the potential impacts are multiplied with the mitigation efficiency to determine Significance with mitigation.

#### SWM = SWOM x ME

The significance ratings are given below;

- (<60) low (i.e. where this impact would not have a direct influence on the decision to develop in the area),
- (60-100) medium (i.e. where the impact could influence the decision to develop in the area unless it is effectively mitigated),
- (>100) high (i.e. where the impact must have an influence on the decision process to develop in the area).

## 3.8 Limitations and Assumptions

Sources of uncertainty and risk commonly associated with projects are linked to:

- This study was carried out with the information available to the specialists at the time of executing the study, within the available timeframe and budget. The sources consulted are not exhaustive and additional information which might strengthen arguments or contradict information in this report might exist.
- The specialists did endeavor to take an evidence-based approach in the compilation of this report and did not intentionally exclude scientific information relevant to the assessment.
- It is assumed that a business case has been produced by the Applicant which has assessed the need for the project as well as the financial sustainability. This SIA has therefore not evaluated these aspects of the project.
- Areas that might yield socio-economic sensitivities have been identified through a desktop study utilising available Mapping, Orthophotos and Google Earth<sup>™</sup>. The areas that have been marked are the sensitive areas visible to the socioeconomic specialists at the time of the study, which are in close proximity to the proposed project location under investigation
- The 2011 Census is the most current source of official statistics and this has been used for generating a baseline profile of the study area. It should be noted that this data may now be out of date to some degree and may no longer accurately reflect the current socio-economic profile.
- Assessment of the impact on sense of place is based on the specialist's opinion as sense of place is a very personal experience, and is not easily measurable.

## 4 DESCRIPTION OF THE SOCIAL ENVIRONMENT

The Socio-economic baseline is provided for the Municipal area (regional perspective), and the Ward analysis for the Local / Project area.

## 4.1 Study Zone 4 – Blouberg Local Municipal area

### 4.1.1 Institutional Locality

The project is located within the Blouberg Municipal area that forms part of the Capricorn District Municipality in Limpopo Province. The project area is situated in Ward 17 and neighbored to the south by Ward 16.



Figure 4-1: Municipal Boundaries

## 4.1.2 Settlements

The principal settlement in Blouberg LM is the All-days town, with a large area of rural settlements under Traditional Authority jurisdiction.

#### Table 4-1: Settlements with distances from the operation

TOWN / AREA	APPROXIMATE DIRECT DISTANCE	DIRECTION
Ga-Moisamane Arrie	2.5KM	North
Thonasedimong	2.9KM	South
Alldays	35km	North-east
Botswana Border	34km	North-West
Bochum/Senwabarwana	55km	South-east
Groblersbrug	85km	West
Louis Trichardt/Makhado	117km	East
Musina	137km	North-East
Polokwane	134km	South-east



Figure 4-2: Main Towns

## 4.1.3 Road Network

Local and tertiary roads mostly serve the project area. Community roads link the project site with the D3297, D217 to the D572 to the north. The community roads link with the D3287, D3308, D1589 to the R521 to the east. See figure below.



Figure 4-3: Road Network

## 4.1.4 Demographics

The BLM will include the local mine communities, local employees within these communities, as well as local suppliers. The population of BLM is estimated at a total of 172,602 people, where 45% are male, and 55% are female.

AREA	POPULATION	HOUSEHOLDS	MEMBERS PER HOUSEHOLD
Limpopo	5,404,868	1,418,100	3.8
Capricorn District	1 330 436	378 301	3.5
Blouberg	172 602	43 747	3.9
Ward 16	7 548	1 855	4
Ward 17	7 334	1 830	4

Spatially, Blouberg is the largest municipality within the Capricorn DM. Yet, the total population of 172,602 (Community Survey, 2016) accounts for only 12% of the District's population and 11.5% of its household numbers. The population in Capricorn DM has increased by 0.95% from 1 261 462 in 2011. The population of Blouberg declined from 194 119 in 2007 to 175 085 in 2011, thereafter declined further to 172 602 in 2016. Of the four constituent municipalities of Capricorn District, Blouberg is the only municipality that saw a decline in its population. This decline can be attributed to

among other things, the low fertility rate, high mortality rate compared to birth rate or the out-migration by the economically active population to the industrial centres such as Polokwane and Gauteng to seek better economic prospects. Households, however, had increased steadily over the past 20 years from 33 468 in 2001 to 43 747 in 2016. Household sizes decreased from an average of 5 members per household in 2001 to 4 members per household in 2016.

The majority (98%) of the people in the Blouberg LM are Black African of whom the majority stay in the rural tribal areas. Sepedi is the language most spoken in the LM.



## 4.1.5 Gender Profile

Figure 4-4: Gender Profile

The predominant gender in the CDM and Blouberg LM is female. In the Blouberg LM, the female population (55%) exceeds the male population (45%). The gender distribution in Ward 16 consists of 45.5% males and 54.5% females.

## 4.1.6 Age Profile

The age structure in CDM and Blouberg LM has remained relatively constant since 2011. However, there has been a slight increase in the number of young people (0-9 years) in the local municipality. The number of older adults in the District has decreased slightly.



Figure 4-5: Age Profile

The younger generation (aged between 10 and 39 years) make up the majority of the people living in the Blouberg LM (50%), followed by the group between the ages of 0 and 9 years with 27.6%. The majority of people in Ward 16 are aged 10 - 19 years (29%), followed by 0 - 9 years (28%) and 20 - 29 years (13%). The majority of people in Ward 17 are aged 0 - 9 years (30%), followed by 10 - 19 years (27%) and 20 - 29 years (12%).

The population in the DM area is characterised by a high dependency ratio (53.5%). 45.1% of the population are within the ages of 0 to 19 and 8.4% are over 65 years old. The implications of this population structure are higher demand for the provision of social and physical facilities, like schools, primary health care centres, etc.

## 4.1.7 Education Profile

In terms of Education levels, 30% of the population is currently passed Matric. Apart from this group, the balance of the population has the following education profile:



Figure 4-6: Education Profile

In terms of education levels in the LM, 20% of the adult population (over 20 years of age) have no education at all, while 54% have primary or secondary level education (Community Survey, 2016). Those with Matric and higher educational qualifications accounted for 17% of the population. In Ward 16 32% and Ward 17, 27% of the population of individuals older than 20 has no formal schooling. 20% of the population aged 20 and older within the Blouberg LM area has no education, and only 17% of the individuals aged 20 and older have completed Matric or have a higher education qualification.

## 4.1.8 Basic Service Delivery



4.1.8.1 Access to Water

Figure 4-7: Access to Water

South Africa's policy frameworks for basic services are aimed at the rights of all citizens to basic services, including access to water and sanitation, energy and waste services. South Africa has set itself a target of achieving access to improved drinking water services to all its citizens.

According to the stats (Wazimap, 2016), the majority (53.6%) of people in the Blouberg LM area get their water from a service provider, followed receiving water from a water scheme (18.7%) and making use of their own services (18.1%).

#### 4.1.8.2 Sanitation

Pit latrines are mostly used in rural areas where there is no proper piped water system. The sanitation backlog requires a considerable amount of money to bring up to date. The scarcity of water resources exacerbates it, which poses a challenge to implement waterborne sanitation systems and to expand the reticulated water networks. Little improvement has taken place in the Blouberg LM during the period 2011 to 2016.

#### 4.1.8.3 Electricity

The 2016 census estimates that 97.8% of the Blouberg LM has access to electricity, meaning 2.2% use energy sources such as gas, paraffin, candles, solar and so forth. Challenges that are experienced include illegal connections, cable theft, vandalism of transformers, the cutting of trees leads to deforestation and soil erosion, limited Eskom capacities and budgetary constraints.

#### 4.1.8.4 Refuse Removal

Most of the people in the Municipal area are in rural areas. They do not have access to a formal refuse removal system. There is no plan to manage the waste generated in these areas. Many people do their own refuse removal as the refuse generated in rural areas is of insignificant proportions. The municipality requires a Waste Management Plan, especially for rural areas due to the high concentration of people with much refuse generated. Only 14.6% of the households in the Blouberg LM have access to refuse removal services regularly, while 83% depend mainly on backyard or communal dumping sites. The provision of the service is very limited in rural areas.

#### 4.1.9 Status of Infrastructure

## 4.1.9.1 Road infrastructure and public transport

Blouberg Local Municipality is a predominantly rural municipality situated to the northwestern boundary of the Republic of South Africa, with Botswana and Zimbabwe. Roads R521 (P94/1 and P94/2) provides a north-south link between Blouberg and Molemole, Polokwane and Makhado municipality. To the east, the municipality is served by road R523 (D1200) that allows access to the towns such as Mogwadi, Morebeng, Duiwelskloof, Tzaneen and Lephalale. There is another critical

road (N11) from Mokopane town to Botswana that passes through the municipality, which has the potential to stimulate the economy.

The roads network serves as essential vital linkages, which serve as corridors and gateways to major economic destinations. Inadequate roads are one of the five leading challenges faced by municipalities in Limpopo (CS 2016). According to the BLM IDP, their current focus is on improving access to the appropriate plant and machinery for the maintenance and improvement of existing roads.

Public transport in the municipal area is predominately minibus taxi's as bus services have been suspended. Another transport mode is donkey carts and bicycles mostly used by the communities.

#### 4.1.9.2 Social Infrastructure

Access to social infrastructure is indicative of a community's development. Social infrastructure inclusive of educational, social and health facilities, police stations, and recreational and sports facilities are determining factors concerning a community's welfare and ability to develop sustainably. The existence of a platform for dialogue between communities and local government is equally indicative of a community's social development. The figure below indicates the social infrastructure in the vicinity of the project area.



Figure 4-8: Social Infrastructure

## 4.2 Economic Profile

## 4.2.1 Employment Profile



Figure 4-9: Employment Profile (Census, 2011)

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

The Census 2011 data indicates that the Blouberg LM had about 93,647 people within the workingage population (54.3% of the total population). Of these, 17.7% of the people were economically active; 17.9% are unemployed or discouraged work seekers, and 64.4% of the working-age population was not economically active (NEA). The employed labour in the LM was estimated at 16,602. In contrast, the unemployed and discouraged work-seeker population was estimated at 16,756, reflecting an actual unemployment rate of 50.2% (excluding the non-economically active population). This is higher than the Limpopo real unemployment rate of 46.4%.

The situation in the project area Wards are even worse with 70.8% actual unemployment rate in Ward 16 (which is just south of the MRA), and 50.2% real unemployment rate in Ward 17. This relates to 1 363 people being unemployed in the two Wards.



Figure 4-10: Sector Employment

Of those employed within the municipality, 54.06% are employed in the formal sector, and 28.7% are employed in the informal sector. In the project wards, 77.5% in Ward 16 and 64.6% in Ward 17 are employed in the formal sector. The total employment in the informal sector increased by 8.3% between 2000 and 2010 and grew further by 7% in 2016 (BLM IDP, 2020). The year on year growth in the informal sector reflects a growing economy that is, however, not able to accommodate all the economically active population.

When considering the various economic sectors in South Africa, the General government & community, social and personal services generate the most jobs, followed by Trade, Financial and Business Services and then the Agriculture Sector. Within the project Wards, General government & Community, social and personal services generate the most jobs.

## 4.2.2 Income Profile

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



Figure 4-11: Income Profile of Employable population

The average household income in the Blouberg LM is about R15,000 per annum, with 14.4% of the households earning no income at all. On average, 83.6% of the income bearing population brings an income into the household; this includes pensions and social grants.

## 4.2.3 Economic Contribution and Activities

The contribution from the Wards, Local Municipality and District to each other and the Limpopo Province and South Africa's Gross Value Added, which is similar to the Gross Domestic Product, can be seen in the figure below.



Figure 4-12: GVA contribution (Quantec, 2016)

Ward 16 and 17 contribute 2.8% and 3.6% to the Blouberg Local Municipality, which in turn contributes 5.1% to the Capricorn District Municipality. Capricorn contributes about 23.8% to the Limpopo Province, which only provides approximately 7.1% to the National GVA.
The various contributing sectors within Blouberg is dominated by the General government & community, social and personal services sector, trade, financial and business services and then Agriculture. Mining only contributes about 3.9% to the Blouberg GVA.

According to the Limpopo Agro-Processing Strategy (2012), Blouberg Municipality is one of the biggest producers and exporters of tomatoes, onions and potatoes in the Limpopo Province alongside Molemole, and Makhado Municipalities. The strategy furthermore proposes that such products should be expanded. What is lacking is that the processing of these products is not made in the respective municipalities but mainly in the province of Gauteng where finished products are sold at higher prices to these exporting municipalities. Furthermore, the strategy also identifies tobacco farming as one of the strong pillars of agricultural development in the Blouberg area.

Blouberg has the lowest mining activities of the four constituent's municipalities in the Capricorn district. The most significant mining activities take place in Polokwane, followed by Lepelle- Nkumpi and Molemole municipalities. Blouberg mining activities are still at the exploration stage, which upon maturity will undoubtedly increase the mining GVA and employment (BLM IDP 2020).

# 4.2.4 Poverty Index

The National Development Plan strives to eliminate poverty by 2030. Poverty is measured through the reduction of people living below the poverty line (food poverty) that the NDP states are currently at US\$2.34 per capita per day (which relates at the current exchange rate to approximately R40 per person per day). This is a household income of roughly R4,800 per month or R57, 600 per annum.

The Statistics SA Poverty Report (2017) revealed that despite an increase in the social grant system covering almost 17 million people, poverty has worsened and nearly half of the population currently lives below the poverty line.

In the Blouberg LM, 60.5% of the population has an average income of R15,000 per annum or less, which relates to about R10.42 or US\$0.62 per person per day. A further 11.7% have a household income between R20,000 – R40,000 per annum. 25.8% of the households within Blouberg is above the poverty line and 72.2% below.

# 4.3 Study Zone 3 – The Kibi Traditional Authority jurisdiction

# 4.3.1 Traditional Authority Areas

The operations are located within the Bahanawa-Ba-Kibi Traditional Authority area. The Bahananoa Traditional Authority borders the MRA to the south.



Figure 4-13: Traditional Authorities

# 4.3.2 Communities

The following communities are located within the Ga-Kibi Traditional Authority jurisdiction:

- Voorhout
- Royston
- Arrie / Ga-Mosimane
- Sias
- Ga-Rakwele
- Longden
- Ga-Ramaswikana
- Deglade

### 4.3.2.1 Voorhout Community



Figure 4-14: Voorhout Social Map

A focus group interview was held with 5 representatives from the Voorhout community. Information regarding the community obtained in the interview as well as from small area statistics (Census 2011) was utilized to compile this community profile.

Voorhout have a population of approximately 304 people from 80 households. The average household size is 4 people per family.

Voorhout is a well-established settlement with brick housing and is a typical rural community with land-based livelihood activities. The settlement fall within the Ga-Kibi Traditional Authority's jurisdiction, whom have an induna representing the authority in the community (MD Sekube).

There are 2 shops within the community and 1 shebeen. The community have cellphone network access.

There are no pre-schools, primary or secondary schools located in the settlement, and the community utilizes the neighbouring settlement, Royston for education facilities. The community also do not have fixed or mobile health services and travel to the Radipetlane clinic for minor treatment and the Bochum

Hospital for more serious illnesses. Voorhout also attends church services in the neighbouring community, Royston.

The community have an area where arable plots can be worked for subsistence agriculture to augment household food. The community utilizes the project properties and the property Voorhout 310MR for grazing for their livestock. Livestock is held for an additional income and is seen as a symbol of wealth. Farmers from Voorhout struggle with a lack of rain and agricultural and livestock diseases. They do not receive any support from Agricultural Extension officers from the Department of Agriculture.

Of the 303 people residing in the community, 156 are adults of working age. Of these 13.5% is employed. The small area statistics show that the other 86.5% are not economically active. The interview revealed that those employed are either running their own business, works for Government, or in the Construction industry. Household income are very reliant on agricultural activities, employment, selling of natural resources and Government grants. It was also reported that many people leave the community for the city to find work and provide for their extended families. In terms of the Census data household income is low, but taking into consideration that the community obtains a number of resources from non-cash sources, indicates the dependency of this community on its land.

Water Supply are from a borehole and pipe network that supply 4 standpipes. The system, however, is old and does not service all areas of the community, and supply is very irregular with certain times of the day where there is not enough water in the system. The municipality is responsible for the operation and maintenance of the system. Some households have drilled their own boreholes (5) for their own water needs. The community is supplied with electricity from Eskom.

- Water
- Improved road infrastructure such as tar roads
- Street lighting (Apollo)

## 4.3.2.2 Royston/Ga-Dankie Community



Figure 4-15: Royston / Ga-Dankie Social Map

A focus group interview was held with 5 representatives from the Royston/Ga-Dankie community. Information regarding the community obtained in the interview as well as from small area statistics (Census 2011) was utilized to compile this community profile.

Royston/Ga-Dankie have a population of approximately 732 people from 183 households. The average household size is 4 people per family.

Royston/Ga-Dankie is a well-established settlement with brick housing and is a typical rural community with land-based livelihood activities. The settlement fall within the Ga-Kibi Traditional Authority's jurisdiction, whom have an induna representing the authority in the community (MJ Sekuba).

There are 3 shops within the community. The community have cellphone network access.

There are pre-schools, primary school consisting of 8 teachers, 281 children and 8 classrooms, secondary school consisting of 8 teachers, 280 children and 12 classrooms located in the settlement. The community also do not have fixed or mobile health services and travel to the Donkerhoek clinic

for minor treatment and the Bochum Hospital for more serious illnesses. Royston/Ga-Dankie attends church services in their own settlement.

The community have an area where arable plots can be worked for subsistence agriculture to augment household food. The community utilizes the project properties and Royston 326MR for grazing for their livestock. Livestock is held for an additional income and is seen as a symbol of wealth. Farmers from Voorhout struggle with a lack of rain and agricultural and livestock diseases. They do not receive any support from Agricultural Extension officers from the Department of Agriculture.

Of the 732 people residing in the community, 183 are adults of working age. Of these 17% are employed. The small area statistics show that the other 59% are not economically active. The interview revealed that those employed are either running their own business, works for Government, or in the Construction industry. Household income are very reliant on agricultural activities, employment, selling of natural resources and Government grants. It was also reported that many people leave the community for the city to find work and provide for their extended families. In terms of the Census data household income is low but taking into consideration that the community obtains several resources from non-cash sources, indicates the dependency of this community on its land.

Water Supply are from a borehole and pipe network that supply 5 standpipes. The system, however, is old and does not service all areas of the community, and supply is very irregular with certain times of the day where there is not enough water in the system. The municipality is responsible for the operation and maintenance of the system. Some households have drilled their own boreholes (10) for their own water needs. The community is supplied with electricity from Eskom.

- Water
- Improved road infrastructure such as tar roads
- Street lighting (Apollo)
- Community library

## 4.3.2.3 Raditshaba Community



Figure 4-16: Raditshaba Social Map

A focus group interview was held with 4 representatives from the Raditshaba community. Information regarding the community obtained in the interview as well as from small area statistics (Census 2011) was utilized to compile this community profile.

Raditshaba have a population of approximately 307 people from 92 households. The average household size is 3.3 people per family.

Raditshaba is a well-established settlement with brick housing and is a typical rural community with land-based livelihood activities. The settlement fall within the Ga-Kibi Traditional Authority's jurisdiction, whom have an induna representing the authority in the community (Dickson Leboho).

There are 2 shops, 2 hardware or building material and 2 shebeens within the community. The community have cellphone network access.

There are pre-schools, primary school consisting of 8 teachers, 281 children and 8 classrooms, secondary school consisting of 8 teachers, 280 children and 12 classrooms located in the settlement. The community also do not have fixed or mobile health services and travel to the Donkerhoek clinic

for minor treatment and the Bochum Hospital for more serious illnesses. Raditshaba also attends church services in their own settlement.

The community have an area where arable plots can be worked for subsistence agriculture to augment household food. The community does not utilize the project properties for grazing for their livestock, but rather utilize Donkerhoek 313MR and Juniorsloop 325 MR for grazing. Livestock is held for an additional income and is seen as a symbol of wealth. Farmers from Raditshaba struggle with a lack of rain and agricultural and livestock diseases. They do not receive any support from Agricultural Extension officers from the Department of Agriculture.

Of the 307 people residing in the community, 92 are adults of working age. Of these 15% are employed. The small area statistics show that the other 80% are not economically active. The interview revealed that those employed are either running their own business, works for Government, or in the Construction industry. Household income are very reliant on agricultural activities, employment, selling of natural resources and Government grants. It was also reported that many people leave the community for the city to find work and provide for their extended families. In terms of the Census data household income is low but taking into consideration that the community obtains several resources from non-cash sources, indicates the dependency of this community on its land.

Water Supply are from a borehole and pipe network that supply 17 standpipes. The system, however, is old and does not service all areas of the community, and supply is very irregular with certain times of the day where there is not enough water in the system. The municipality is responsible for the operation and maintenance of the system. Some households have drilled their own boreholes (7) for their own water needs. The community is supplied with electricity from Eskom.

- Water
- Improved road infrastructure such as tar roads
- Street lighting (Apollo)
- Community library
- Shopping Centre

# 4.3.2.4 Arrie (Ga-Moisimane) Community



Figure 4-17: Arrie (Ga-Moisimane) Social Map

A focus group interview was held with 5 representatives from the Arrie (Ga-Moisimane) community. Information regarding the community obtained in the interview as well as from small area statistics (Census 2011) was utilized to compile this community profile.

Arrie (Ga-Moisimane) have a population of approximately 620 people from 164 households. The average household size is 3.8 people per family.

Arrie (Ga-Moisimane) is a well-established settlement with brick housing and is a typical rural community with land-based livelihood activities. The settlement fall within the Ga-Kibi Traditional Authority's jurisdiction, whom have an induna representing the authority in the community (E Sekuba).

There are 3 shops within the community and 1 shebeen. The community have cellphone network access.

There are pre-schools, no primary or secondary schools located in the settlement, and the community utilizes the neighboring settlement, Sias for education facilities. The community also do not have fixed

or mobile health services and travel to the Ga-Kibi clinic for minor treatment and the Bochum Hospital for more serious illnesses. Arrie (Ga-Moisimane) attends church services in their own settlement.

The community have an area where arable plots can be worked for subsistence agriculture to augment household food. The community does not utilize the project properties for grazing for their livestock, but rather utilize Arrie 308 MR and Weg van My 278 MR for grazing. Livestock is held for an additional income and is seen as a symbol of wealth. Farmers from Arrie (Ga-Moisimane) struggle with a lack of rain and agricultural and livestock diseases. They do not receive any support from Agricultural Extension officers from the Department of Agriculture.

Of the 620 people residing in the community, 164 are adults of working age. Of these 26% are employed. The small area statistics show that the other 35% are not economically active. The interview revealed that those employed are either running their own business, works for Government, or in the Construction industry. Household income are very reliant on agricultural activities, employment, selling of natural resources and Government grants. It was also reported that many people leave the community for the city to find work and provide for their extended families. In terms of the Census data household income is low but taking into consideration that the community obtains several resources from non-cash sources, indicates the dependency of this community on its land.

Water Supply are from a borehole and pipe network that supply 10 standpipes. The system, however, is old and does not service all areas of the community, and supply is very irregular with certain times of the day where there is not enough water in the system. The municipality is responsible for the operation and maintenance of the system. Some households have drilled their own boreholes (12) for their own water needs. The community is supplied with electricity from Eskom.

- Water
- Improved road infrastructure such as tar roads
- Schools
- Grave site

## 4.3.2.5 Sias Community



Figure 4-18: Sias Social Map

A focus group interview was held with 5 representatives from the Sias community. Information regarding the community obtained in the interview as well as from small area statistics (Census 2011) was utilized to compile this community profile.

Sias have a population of approximately 639 people from 164 households. The average household size is 3.9 people per family.

Sias is a well-established settlement with brick housing and is a typical rural community with landbased livelihood activities. The settlement fall within the Ga-Kibi Traditional Authority's jurisdiction, whom have an induna representing the authority in the community (MD Sekube).

There are 4 shops, 1 hardware and 1 shebeen within the community. The community have cellphone network access.

There are pre-schools, primary school consisting of 5 teachers, 150 children and 10 classrooms, secondary school consisting of 8 teachers, 259 children and 9 classrooms located in the settlement. The community also do not have fixed or mobile health services and travel to the Donkerhoek clinic

for minor treatment and the Bochum Hospital for more serious illnesses. Sias community attends church services in their own settlement.

The community have an area where arable plots can be worked for subsistence agriculture to augment household food. The community does not utilize the project properties for grazing for their livestock, but rather utilize Sias 277 MR and Weg van My 278MR for grazing. Livestock is held for an additional income and is seen as a symbol of wealth. Farmers from Sias struggle with a lack of rain and agricultural and livestock diseases. They do not receive any support from Agricultural Extension officers from the Department of Agriculture.

Of the 639 people residing in the community, 164 are adults of working age. Of these 11% are employed. The small area statistics show that the other 86% are not economically active. The interview revealed that those employed are either running their own business, works for Government, or in the Construction industry. Household income are very reliant on agricultural activities, employment, selling of natural resources and Government grants. It was also reported that many people leave the community for the city to find work and provide for their extended families. In terms of the Census data household income is low but taking into consideration that the community obtains several resources from non-cash sources, indicates the dependency of this community on its land.

Water Supply are from a borehole and pipe network that supply 18 standpipes. The system, however, is old and does not service all areas of the community, and supply is very irregular with certain times of the day where there is not enough water in the system. The municipality is responsible for the operation and maintenance of the system. Some households have drilled their own boreholes (3) for their own water needs. The community is supplied with electricity from Eskom.

- Water
- Improved road infrastructure such as tar roads
- Government housing structures

# 4.3.2.6 Ga-Ramaswikana/Simson Community



Figure 4-19: Ga-Ramaswikana / Simson Social Map

A focus group interview was held with 5 representatives from the Ga-Ramaswikana/Simson community. Information regarding the community obtained in the interview as well as from small area statistics (Census 2011) was utilized to compile this community profile.

Ga-Ramaswikana/Simson have a population of approximately 1297 people from 306 households. The average household size is 4.2 people per family.

Ga-Ramaswikana/Simson is a well-established settlement with brick housing and is a typical rural community with land-based livelihood activities. The settlement fall within the Ga-Kibi Traditional Authority's jurisdiction, whom have an induna representing the authority in the community (S. Sepaela).

There are 8 shops, 1 hardware or building material and 4 shebeens or liquor store within the community. The community have cellphone network access.

There are pre-schools, primary school consists of 12 teachers, 428 children and 8 classrooms, secondary school consists of 8 teachers, 230 children and 8 classrooms located in their own

settlement. The community also do not have fixed or mobile health services and travel to the Donkerhoek clinic for minor treatment and the Bochum Hospital for more serious illnesses. Ga-Ramaswikana/Simson also attends church services in the neighbouring community, Royston.

The community have an area where arable plots can be worked for subsistence agriculture to augment household food. The community does not utilize the project properties for grazing for their livestock, but rather utilize Simson 276 MR and Zwolle 309 MR for grazing. Livestock is held for an additional income and is seen as a symbol of wealth. Farmers from Ga-Ramaswikana/Simson struggle with a lack of rain and agricultural and livestock diseases. They do not receive any support from Agricultural Extension officers from the Department of Agriculture.

Of the 1297 people residing in the community, 306 are adults of working age. Of these 17% are employed. The small area statistics show that the other 76% are not economically active. The interview revealed that those employed are either running their own business, works for Government, or in the Construction industry. Household income are very reliant on agricultural activities, employment, selling of natural resources and Government grants. It was also reported that many people leave the community for the city to find work and provide for their extended families. In terms of the Census data household income is low but taking into consideration that the community obtains several resources from non-cash sources, indicates the dependency of this community on its land.

Water Supply are from a borehole and pipe network that supply 14 standpipes. The system, however, is old and does not service all areas of the community, and supply is very irregular with certain times of the day where there is not enough water in the system. The municipality is responsible for the operation and maintenance of the system. Some households have drilled their own boreholes (7) for their own water needs. The community is supplied with electricity from Eskom.

- Water
- Improved road infrastructure such as tar roads
- Street lighting (Apollo)

# 4.3.2.7 Grootpan Community



Figure 4-20: Grootpan Social Map

A focus group interview was held with 5 representatives from the Grootpan community. Information regarding the community obtained in the interview as well as from small area statistics (Census 2011) was utilized to compile this community profile.

Grootpan have a population of approximately 1635 people from 398 households. The average household size is 4.1 people per family.

Grootpan is a well-established settlement with brick housing and is a typical rural community with land-based livelihood activities. The settlement fall within the Ga-Kibi Traditional Authority's jurisdiction, whom have an induna representing the authority in the community (S. Sepaela).

There are 2 shops and 2 shebeens or liquor store within the community. The community have cellphone network access.

There are pre-schools, primary school consists of 12 teachers, 469 children and 9 classrooms, secondary school consists of 11 teachers, 317 children and 8 classrooms located in their own

settlement. The community also do not have fixed or mobile health services and travel to the Ga-Kibi clinic for minor treatment and the Bochum Hospital for more serious illnesses. Grootpan also attends church services in their own settlement.

The community have an area where arable plots can be worked for subsistence agriculture to augment household food. The community does not utilize the project properties for grazing for their livestock, but rather utilize Grootpan 311MR for grazing. Livestock is held for an additional income and is seen as a symbol of wealth. Farmers from Ga-Grootpan struggle with a lack of rain and agricultural and livestock diseases. They do not receive any support from Agricultural Extension officers from the Department of Agriculture.

Of the 1635 people residing in the community, 398 are adults of working age. Of these 9% are employed. The small area statistics show that the other 86% are not economically active. The interview revealed that those employed are either running their own business, works for Government, or in the Construction industry. Household income are very reliant on agricultural activities, employment, selling of natural resources and Government grants. It was also reported that many people leave the community for the city to find work and provide for their extended families. In terms of the Census data household income is low but taking into consideration that the community obtains several resources from non-cash sources, indicates the dependency of this community on its land.

Water Supply are from a borehole and pipe network that supply 10 standpipes. The system, however, is old and does not service all areas of the community, and supply is very irregular with certain times of the day where there is not enough water in the system. The municipality is responsible for the operation and maintenance of the system. Some households have drilled their own boreholes (10) for their own water needs. The community is supplied with electricity from Eskom.

- Water
- Improved road infrastructure such as tar roads
- Street lighting (Apollo)

# 4.3.2.8 Longden/Modimvuhusi Community



Figure 4-21: Longden / Madimvuhusi Social Map

A focus group interview was held with 5 representatives from the Longden/Modimvuhusi community. Information regarding the community obtained in the interview as well as from small area statistics (Census 2011) was utilized to compile this community profile.

Longden/Modimvuhusi have a population of approximately 1347 people from 318 households. The average household size is 4.2 people per family.

Longden/Modimvuhusi is a well-established settlement with brick housing and is a typical rural community with land-based livelihood activities. The settlement fall within the Ga-Kibi Traditional Authority's jurisdiction, whom have an induna representing the authority in the community (MP Rakgoropo).

There are 5 shops, 1 hardware and 2 shebeens or liquor store within the community. The community have cellphone network access.

There are pre-schools, primary school consists of 10 teachers, 317 children and 5 classrooms, secondary school consists of 5 teachers, 167 children and 8 classrooms located in their own

settlement. The community also do not have fixed or mobile health services and travel to the Donkerhoek clinic for minor treatment and the Bochum Hospital for more serious illnesses. Longden/Modimvuhusi also attends church services in their own settlement.

The community have an area where arable plots can be worked for subsistence agriculture to augment household food. The community does not utilize the project properties for grazing for their livestock, but rather utilize Longden 312MR and Donkerhoek 313 MR for grazing. Livestock is held for an additional income and is seen as a symbol of wealth. Farmers from Ga- Longden/Modimvuhusi struggle with a lack of rain and agricultural and livestock diseases. They do not receive any support from Agricultural Extension officers from the Department of Agriculture.

Of the 1347 people residing in the community, 318 are adults of working age. Of these 13% are employed. The small area statistics show that the other 58% are not economically active. The interview revealed that those employed are either running their own business, works for Government, or in the Construction industry. Household income are very reliant on agricultural activities, employment, selling of natural resources and Government grants. It was also reported that many people leave the community for the city to find work and provide for their extended families. In terms of the Census data household income is low but taking into consideration that the community obtains several resources from non-cash sources, indicates the dependency of this community on its land.

Water Supply are from a borehole and pipe network that supply 0 standpipes. The system, however, is old and does not service all areas of the community, and supply is very irregular with certain times of the day where there is not enough water in the system. The municipality is responsible for the operation and maintenance of the system. Some households have drilled their own boreholes (65) for their own water needs. The community is supplied with electricity from Eskom.

The main needs for the community raised during the interview included:

- Water
- Street lighting (Apollo)
- Building of schools

# 4.3.2.9 Ga-Rakwele Community

A focus group interview was held with 5 representatives from the Ga-Rakwele community. Information regarding the community obtained in the interview as well as from small area statistics (Census 2011) was utilized to compile this community profile.

Ga-Rakwele have a population of approximately 456 people from 114 households. The average household size is 4 people per family.

Ga-Rakwele is a well-established settlement with brick housing and is a typical rural community with land-based livelihood activities. The settlement fall within the Ga-Kibi Traditional Authority's jurisdiction, whom have an induna representing the authority in the community (Elias Kwata).

There are 2 shops within the community and 1 shebeen. The community have no cellphone network access.

There are pre-schools, primary school consisting of 4 teachers, 171 children and 5 classrooms, community utilizes secondary school at the neighboring settlement, Royston for education facilities. The community also do not have fixed or mobile health services and travel to the Ga-Raditshaba clinic for minor treatment and the Bochum Hospital for more serious illnesses. Ga-Rakwele attends church services in their own settlement.

The community have an area where arable plots can be worked for subsistence agriculture to augment household food. The community does not utilize the project properties for grazing for their livestock, but rather utilize Juniorsloop 325 MR for grazing. Livestock is held for an additional income and is seen as a symbol of wealth. Farmers from Ga-Rakwele struggle with a lack of rain and agricultural and livestock diseases. They do not receive any support from Agricultural Extension officers from the Department of Agriculture.

Of the 456 people residing in the community, 114 are adults of working age. Of these 17% are employed. The small area statistics show that the other 70% are not economically active. The interview revealed that those employed are either running their own business, works for Government, or in the Construction industry. Household income are very reliant on agricultural activities, employment, selling of natural resources and Government grants. It was also reported that many people leave the community for the city to find work and provide for their extended families. In terms of the Census data household income is low but taking into consideration that the community obtains several resources from non-cash sources, indicates the dependency of this community on its land.

Water Supply are from a borehole and pipe network that supply 7 standpipes. The system, however, is old and does not service all areas of the community, and supply is very irregular with certain times of the day where there is not enough water in the system. The municipality is responsible for the operation and maintenance of the system. Some households have drilled their own boreholes (0) for their own water needs. The community is supplied with electricity from Eskom.

The main needs for the community raised during the interview included:

• Water

- Improved road infrastructure such as tar roads
- Street lighting (Apollo)
- Mobile Clinic

#### 4.3.2.10 Edwinsdale Community

A focus group interview was held with 5 representatives from the Edwinsdale community. Information regarding the community obtained in the interview as well as from small area statistics (Census 2011) was utilized to compile this community profile.

Edwinsdale have a population of approximately 717 people from 180 households. The average household size is 4 people per family.

Edwinsdale is a well-established settlement with brick housing and is a typical rural community with land-based livelihood activities. The settlement fall within the Ga-Kibi Traditional Authority's jurisdiction, whom have an induna representing the authority in the community (TM Rapanyane).

There are 5 shops within the community and 1 shebeen or liquor store. The community have cellphone network access.

There are pre-schools, primary school consists of 6 teachers, 220 children and 12 classrooms, secondary school consists of 4 teachers, 249 children and 7 classrooms located in their own settlement. The community also do not have fixed or mobile health services and travel to the Devrede clinic for minor treatment and the Bochum Hospital for more serious illnesses. Edwinsdale they attends church services in their own settlement.

The community have an area where arable plots can be worked for subsistence agriculture to augment household food. The community does not utilize the project properties for grazing for their livestock, but rather utilize Edwinsdale 440 MR for grazing. Livestock is held for an additional income and is seen as a symbol of wealth. Farmers from Edwinsdale struggle with a lack of rain and agricultural and livestock diseases. They do not receive any support from Agricultural Extension officers from the Department of Agriculture.

Of the 717 people residing in the community, 180 are adults of working age. Of these 13% are employed. The small area statistics show that the other 53% are not economically active. The interview revealed that those employed are either running their own business, works for Government, or in the Construction industry. Household income are very reliant on agricultural activities, employment, selling of natural resources and Government grants. It was also reported that many

people leave the community for the city to find work and provide for their extended families. In terms of the Census data household income is low but taking into consideration that the community obtains several resources from non-cash sources, indicates the dependency of this community on its land.

Water Supply are from a borehole and pipe network that supply 12 standpipes. The system, however, is old and does not service all areas of the community, and supply is very irregular with certain times of the day where there is not enough water in the system. The municipality is responsible for the operation and maintenance of the system. Some households have drilled their own boreholes (0) for their own water needs. The community is supplied with electricity from Eskom.

The main needs for the community raised during the interview included:

- Water
- Improved road infrastructure such as tar roads
- Street lighting (Apollo)
- Clinic

### 4.3.2.11 DeVrede Community

A focus group interview was held with 5 representatives from the DeVrede community. Information regarding the community obtained in the interview as well as from small area statistics (Census 2011) was utilized to compile this community profile.

DeVrede have a population of approximately 2406 people from 629 households. The average household size is 3.8 people per family.

DeVrede is a well-established settlement with brick housing and is a typical rural community with landbased livelihood activities. The settlement fall within the Ga-Kibi Traditional Authority's jurisdiction, whom have an induna representing the authority in the community (P. Nekota).

There are 6 shops, 3 hardware or building material and 3 shebeens or liquor store within the community. The community have cellphone network access.

There are pre-schools, primary school consists of 17 teachers, 358 children and 12 classrooms, secondary school consists of 11 teachers, 350 children and 12 classrooms located in their own settlement. The community also do not have fixed or mobile health services and they have their own clinic for minor treatment and the Bochum Hospital for more serious illnesses.

DeVrede community attends church services in their own settlement.

The community have an area where arable plots can be worked for subsistence agriculture to augment household food. The community does not utilize the project properties for grazing for their livestock, but rather utilize DeVrede 382 MR for grazing. Livestock is held for an additional income and is seen as a symbol of wealth. Farmers from DeVrede struggle with a lack of rain and agricultural and livestock diseases. They do not receive any support from Agricultural Extension officers from the Department of Agriculture.

Of the 2406 people residing in the community, 629 are adults of working age. Of these 14% are employed. The small area statistics show that the other 55% are not economically active. The interview revealed that those employed are either running their own business, works for Government, or in the Construction industry. Household income are very reliant on agricultural activities, employment, selling of natural resources and Government grants. It was also reported that many people leave the community for the city to find work and provide for their extended families. In terms of the Census data household income is low but taking into consideration that the community obtains several resources from non-cash sources, indicates the dependency of this community on its land.

Water Supply are from a borehole and pipe network that supply 15 standpipes. The system, however, is old and does not service all areas of the community, and supply is very irregular with certain times of the day where there is not enough water in the system. The municipality is responsible for the operation and maintenance of the system. Some households have drilled their own boreholes (300) for their own water needs. The community is supplied with electricity from Eskom.

The main needs for the community raised during the interview included:

- Water
- Improved road infrastructure such as tar roads
- Street lighting (Apollo)
- Clinic
- Government Housing

# 4.3.2.12 DeGlade Community

A focus group interview was held with 5 representatives from the DeGlade community. Information regarding the community obtained in the interview as well as from small area statistics (Census 2011) was utilized to compile this community profile.

DeGlade have a population of approximately 479 people from 109 households. The average household size is 4.4 people per family.

DeGlade is a well-established settlement with brick housing and is a typical rural community with landbased livelihood activities. The settlement fall within the Ga-Kibi Traditional Authority's jurisdiction, whom have an induna representing the authority in the community (Bethuel Chipu).

There are 1 shop, 1 hardware or building material and 1 shebeen or liquor store within the community. The community have cellphone network access.

There are pre-schools, primary school consists of 3 teachers, 119 children and 7 classrooms, community utilizes secondary school at the neighboring settlement, Ga-Manaka for education facilities. The community also do not have fixed or mobile health services and they have their own clinic for minor treatment and the Bochum Hospital for more serious illnesses. DeGlade community attends church services in their own settlement.

The community have an area where arable plots can be worked for subsistence agriculture to augment household food. The community does not utilize the project properties for grazing for their livestock, but rather utilize DeGlade 2 LS for grazing. Livestock is held for an additional income and is seen as a symbol of wealth. Farmers from DeGlade struggle with a lack of rain and agricultural and livestock diseases. They do not receive any support from Agricultural Extension officers from the Department of Agriculture.

Of the 479 people residing in the community, 109 are adults of working age. Of these 3% are employed. The small area statistics show that the other 71% are not economically active. The interview revealed that those employed are either running their own business, works for Government, or in the Construction industry. Household income are very reliant on agricultural activities, employment, selling of natural resources and Government grants. It was also reported that many people leave the community for the city to find work and provide for their extended families. In terms of the Census data household income is low but taking into consideration that the community obtains several resources from non-cash sources, indicates the dependency of this community on its land.

Water Supply are from a borehole and pipe network that supply 165 standpipes. The system, however, is old and does not service all areas of the community, and supply is very irregular with certain times of the day where there is not enough water in the system. The municipality is responsible for the operation and maintenance of the system. Some households have drilled their own boreholes (5) for their own water needs. The community is supplied with electricity from Eskom.

- Water
- New residential site

# 4.3.3 Adjacent Properties

The following adjacent properties are present:

Properties	Direction	Landowner	Comment
Arrie 308 MR	Arrie 308 MR North G		Part of the Ga-Kibi Traditional Authority area
Zondagfontein 300 MR Ptn 1	West	Government of the Republic of South Africa	
Zondagfontein 300 MR Ptn 3	West	Roman Catholic Church	
Zondagfontein 300 RE	West	Ramakwa Project Trust	LRAD community project
Goudmyn 327 MS RE South G		Government of Lebowa	Part of Bahananwa Traditional Authority
Royston 326 RE	East	Government of the Republic of South Africa	Part of the Ga-Kibi Traditional Authority area
Voorhout 310 RE	East	Government of the Republic of South Africa	Part of the Ga-Kibi Traditional Authority area

Table 4-3: Adjacent Properties

On the adjacent properties owned by Government it is mostly utilized for grazing. To the south, Goudmyn), there are some residential developments. Across the Mogalakwena River on Zondagfontein 300 MR Remaining Extent, there is an agricultural project that previously received support from Government. The project is more than 2.7km south-west from the project area and based on the specialist studies there are no impact on the agricultural project anticipated.

# 4.4 Study Zone 2 – Mining Right Application Area

# 4.4.1 Description of the Properties

Steamboat 306MR and Inkom 305MR are state-owned under the jurisdiction of the Ga-Kibi tribe and is currently utilised for livestock grazing.

Table	4-4:	Project	Properties	

Properties	Size (ha)	Title deed	Landowner
Steamboat 306MR	663.7223	T24557/1952PTA	National Government of the Republic of South Africa
Inkom 305MR	789.8538	T24557/1952PTA	National Government of the Republic of South Africa
Total	1453.5761		

# 4.4.2 Land Use

The project area and most of the surrounding area are used for grazing by the Voorhout, Royston and Arrie (Ga-Moisimane) communities. The properties provide the following grazing land:

Property	Available Grazing Land
Steamboat 306MR	663.7ha
Inkom 305MR	789.85ha
Voorhout 310MR	918.94ha
Royston 326MR	879.24ha
Arrie 308MR	677.64ha
Total	3929.4ha

Table 4-5: Available grazing land in and around the project area

Interviews with the livestock owners from these communities were held in May 2021. Interviews were completed with 156 livestock owners, (43 from Voorhout, 72 from Royston and 41 from Ga-Moisimane). During the interviews it was clear that households from Voorhout mostly utilizes grazing from Steamboat 306MR and Voorhout 310MR, Royston households mostly utilizes grazing from Inkom 305MR and Royston 326MR and households from Arrie (Ga-Moisimane) mostly utilizes grazing from Arrie 308MR.

The communities have the following large livestock units that graze these properties:

Propert(ies)	Voorhout	Royston	Arrie (Ga-	Total
			Moisimane)	
Arrie 308MR			994	994
Inkom 305MR / Royston 326MR	76	2078		2154
Steamboat 306MR / Voorhout 310MR	806	36		842
Total	882	2114	994	3990

Apart from the large livestock units, the households also owns 966 goats and sheep, that mostly grazes around the villages.

Grazing areas are already under strain and overgrazing takes place widely, at about 3 times the number of livestock that the grazing capacity indicates. The Ga-Kibi community need to improve the grazing quality and capacity of the land in consultation with Department of Agriculture (i.e. seeding, debushing, etc).

# 4.4.3 Profile of the Livestock Owners

Interviews were completed with 156 livestock owners:

- 43 from Voorhout 54% of Voorhout's total households
- 72 from Royston 39% of Royston's total households

• 41 from Arrie – 25% of Arrie (Ga-Moisimane)'s total households

Most of the livestock farmers are male in the age group of 60 - 69 (31%). Of the livestock farmers 6% is younger than 39 years, 13% is aged between 40 - 49 years, 22% between 50 - 59 years, and 28% is older than 70 years of age. This could be an indication that there is no interest in livestock farming from the youth, or that they are more interested in modern day employment than land-based livelihoods.



Figure 4-22: Gender and Age Profile

The livestock Farmers support a total of 869 people (207 in Voothout, 432 in Royston and 230 in Arrie).



Figure 4-23: Population supported by Livestock farming (and as % of total population)

Of the 156 owners 133 (85%) are registered with the Department of Agriculture and 103 utilize/employ cattle herders to look after their cattle.



Figure 4-24: Number of Livestock and primary use

All the communities farm in majority with cattle, with some also having donkeys, goats and sheep. Farmers reported that some of the livestock is used for additional meat or milk at home, but the majority sell the livestock for an additional income.

# 4.5 Study Zone 1 – The mine and beneficiation plant footprint footprint

The mine and beneficiation plant footprint are located on the farm's Steamboat 306MR and Inkom 305MR. The total extent of the properties is 1453.5761ha. The projects will require the following footprints:

- Mining Open Pit and Associated infrastructure: 14ha (1% of properties)
- Beneficiation Plant and Associated infrastructure: 13ha (1% of properties)

The footprint area is currently utilized for grazing. The footprint is small in size, and will reduce the grazing area of the two farms with less than 2%.

# 5.1 Population and Demographic Change due to Job seeker Influx

Typically, demographic change moves through three major phases commencing with construction of the project and movement to the area of a construction workforce, followed by the operational workforce and then the additional multiplier effects. The Cuchron and Steamboat projects will require a combined number of approximately 82 temporary job opportunities during construction and 78 employees (including staff and contractors) for the operational phase of the project.

Previous studies and experience in the field indicated that, in South Africa with its high levels of unemployment, any new development or rumour of a new development is likely to lead to an influx of people to the affected area. It is thus anticipated that potential job seekers would start moving to areas specifically near the proposed project (host and neighbouring communities), prior to the construction phase in an attempt to secure employment during the construction phase. The potential influx of job seekers and their anticipated settlement in the low-income areas are likely to lead to direct indirect and cumulative social impacts, for example, conflict amongst local communities and job seekers, social disintegration, pressures on existing infrastructure and services, housing, etc.

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

Population and Demographic Change are caused by the population growth and influx of job seekers and employees. There are impacts felt at the initial change, and impacts that manifest over time. It is anticipated that the influx of job seekers and employees from outside the area will have the following impacts:

- Increase (influx) of job seekers in the area may change the rural characteristics and dynamics of the rural traditional area, creating opportunities for social pathologies
- Increase (influx) of job seekers in the area may create competition for employment opportunities, that may lead to conflict between job seekers and local communities
- Local population growth creating additional pressure on community infrastructure and services
- Increase in social pathologies such as crime, safety, health, prostitution

The potential influence areas are:

• Neighbouring communities including Voorhout, Royston, Raditshaba and Arrie (Ga-Moisimane)

# 5.1.1 Construction and Development Phase

Influx of jobseekers during the construction phase is expected to be moderate due to the size of the mine. This will remain the case throughout the construction and development phase. Most construction accommodation will from the local, municipal and district area.

#### IMPACT EVALUATION – MINE DEVELOPMENT

Potential Impact	Туре	E	D	М	Р	SWOM	ME	SWM
Conflict between job seekers and local communities	Negative	Local	Short term	Moderate	High	Medium	High	Low
Conflict between job seekers and local communities	Negative	Local	Short term	Moderate	High	Medium	High	Low
Increase in social pathologies such as crime, safety, health, prostitution	Negative	Local	Short term	Moderate	Medium	Low	High	Low
Increase in social pathologies such as crime, safety, health, prostitution	Negative	Local	Short term	Moderate	Medium	Low	High	Low

#### IMPACT EVALUATION – BENEFICIATION PLANT DEVELOPMENT

Potential Impact	Туре	Е	D	М	Р	SWOM	ME	SWM
Conflict between job seekers and local communities	Negative	Local	Short term	Moderate	High	Medium	High	Low
Conflict between job seekers and local communities	Negative	Local	Short term	Moderate	High	Medium	High	Low
Increase in social pathologies such as crime, safety, health, prostitution	Negative	Local	Short term	Moderate	Medium	Low	High	Low
Increase in social pathologies such as crime, safety, health, prostitution	Negative	Local	Short term	Moderate	Medium	Low	High	Low

# 5.1.2 Operational Phase

A lower influx of job seekers during the operational phase is anticipated.

#### **IMPACT EVALUATION – MINE DEVELOPMENT**

Potential Impact	Туре	E	D	М	Р	SWOM	ME	SWM
Conflict between job seekers and local communities	Negative	Local	Medium term	Moderate	High probability	Medium	High	Low
Increase in social pathologies such as crime, safety, health, prostitution	Negative	Local	Medium term	Moderate	Medium probability	Medium	High	Low
Pressure on community infrastructure and services	Negative	Local	Medium term	Low	Medium probability	Low	High	Low

#### IMPACT EVALUATION – BENEFICIATION PLANT DEVELOPMENT

Potential Impact	Туре	E	D	М	Р	SWOM	ME	SWM
Conflict between job seekers and local communities	Negative	Local	Medium term	Moderate	High probability	Medium	High	Low

Increase in social pathologies such as crime, safety, health, prostitution	Negative	Local	Medium term	Moderate	Medium probability	Medium	High	Low
Pressure on community infrastructure and services	Negative	Local	Medium term	Low	Medium probability	Low	High	Low

# 5.1.3 Decommissioning Phase

During the decommissioning flow it is not expected that further job seekers will migrate into the local area. No impact anticipated.

# 5.1.4 Mitigation

The following mitigation measures are proposed to mitigate the impact:

- Priority employment from local communities with the development of recruitment procedures and utilizing the existing skills available from the local communities
- Establishing early on skills development programmes in areas where most employment opportunities will be available such as operators and artisans
- Implementation of bursary programme and practical skills programmes as part of the Social and Labour Plan
- Establishment of a local labour recruitment committee to monitor recruitment procedures and results
- Engage with Traditional Authority to manage and monitor site allocation to job seekers and/or employees in the local communities
- Induction of contractors and workforce with regard to their code of conduct in the local communities

# 5.2 Participation of Local Communities in Employment Opportunities and Skills Development

The socio-economic environment within which the projects will be implemented has indicated high levels of unemployment. However, as is the case in many areas within the Province, the supply of labour outnumbers the potential job opportunities by far. In the development a number of job opportunities will be available. It is proposed that a maximum number of opportunities are provided locally, keeping in mind the skill levels available. In communities with high levels of unemployment there is immense competition amongst each other for job opportunities, and therefore, the presence of outsiders, could cause conflict. Employing locally would add the benefit of obviating the need for additional housing for workers.

Apart from the direct employment opportunities that will be created due to the construction of the projects, a number of indirect jobs and business opportunities will also be created in the construction and operational phase.

The impacts include:

- Increase in available employment opportunities locally
- Increase in skills development programmes and therefore increased skill levels of the local communities
- Loss of job opportunities due to downscaling of the employment

The potential influence areas are:

• Ga-Kibi communities

# 5.2.1 Construction and Development Phase

The impacts indicated below in the Operational Phase will commence during the Construction Phase and continue into the Operational Phase and are therefore discussed under the Operational Phase impacts.

# 5.2.2 Operational Phase

#### **IMPACT EVALUATION – MINE DEVELOPMENT**

Potential Impact	Туре	E	D	М	Р	SWOM	ME	SWM
Participation of Local Communities in Employment Opportunities	Positive	Local	Medium term	Moderate	High probability	Low	High	Medium
Participation of Local Communities in Skills Development	Positive	Local	Medium term	Low	Medium probability	Low	High	Medium

#### IMPACT EVALUATION – BENEFICIATION PLANT DEVELOPMENT

Potential Impact	Туре	Е	D	М	Р	SWOM	ME	SWM
Participation of Local Communities in Employment Opportunities	Positive	Local	Medium term	Moderate	High	Medium	High	
Participation of Local Communities in Skills Development	Positive	Local	Medium term	Moderate	High	Medium	High	

# 5.2.3 Decommissioning Phase

#### IMPACT EVALUATION – MINE DEVELOPMENT

Potential Impact	Туре	E	D	М	Р	SWOM	ME	SWM
Downscaling	Negative		Medium		Medium			
		Local	term	High	probability	Medium	High	Low

#### IMPACT EVALUATION – BENEFICIATION PLANT DEVELOPMENT

Potential Impact	Туре	E	D	М	Р	SWOM	ME	SWM
Downscaling	Negative		Medium		Medium			
		Local	term	High	probability	Medium	High	Low

# 5.2.4 Mitigation

The following mitigation measures are proposed to mitigate the impact:

- Source the maximum number of employees from the local area for temporary job opportunities
- Implement skills development programmes in the areas where most job opportunities will be created, i.e. operators and drivers
- Make available bursary opportunities to build skill capital in the region
- Establish a database of local people with information on qualifications and skills, utilize this database to develop skills plans and recruit local people.
- Implement portable skills development programmes
- Design and implement economic development programmes that will assist people being retrenched in sustaining their livelihoods
- Establish a future forum with representation from the workforce to discuss potential difficulties and solutions
- Implementation of programmes to minimize and mitigate the impact of downscaling and retrenchment

# 5.3 Participation of local business in procurement opportunities

Both Cuchron and Steamboat has committed that local communities will be provided with opportunities and capacity to participate in contracts that would become available during construction and operational phase of the projects.

The impacts will include:

- Empowerment of local business through procurement and capacity building
- Loss of business opportunities during downscaling causing economic hardship and retrenchment

The potential influence areas are:

- Ga-Kibi Communities
- Blouberg Local Municipal area

# 5.3.1 Construction and Development Phase

The impacts indicated below in the Operational Phase will commence during the Construction Phase and continue into the Operational Phase and are therefore discussed under the Operational Phase impacts.

# 5.3.2 Operational Phase

#### **IMPACT EVALUATION – MINE DEVELOPMENT**

Potential Impact	Туре	E	D	М	Р	SWOM	ME	SWM
Participation of Local Communities in procurement Opportunities	Positive	Local	Long term	Moderate	High probability	Medium	High	High

#### IMPACT EVALUATION – BENEFICIATION PLANT DEVELOPMENT

Potential Impact	Туре	E	D	М	Р	SWOM	ME	SWM
Participation of Local Communities in procurement	Desitive	Level	Long	Madausta	High	Maaliaaa	LUcala	
Opportunities	Positive	Local	term	Moderate	probability	Medium	High	

# 5.3.3 Decommissioning Phase

#### **IMPACT EVALUATION – MINE DEVELOPMENT**

Potential Impact	Туре	E	D	М	Р	SWOM	ME	SWM
Downscaling of business opportunities			Medium		Medium			
	Negative	Local	term	High	probability	Medium	High	Low

#### IMPACT EVALUATION – BENEFICIATION PLANT DEVELOPMENT

Potential Impact	Туре	E	D	М	Р	SWOM	ME	SWM
Downscaling of business opportunities			Medium		Medium			
	Negative	Local	term	High	probability	Medium	High	Low

#### 5.3.4 Mitigation

The following mitigation measures are proposed to mitigate the impact:

- Establish a database of local businesses, utilize this database to establish partnerships between local and larger service providers as well as locally preferred work packages
- Consultation and Feedback on results on a regular basis
- Implementation of capacity building programmes to minimize and mitigate the impact of mine downscaling and closure.
- Closure plan implementation

# 5.4 Empowerment of the local community through ownership participation

The community has negotiated a percentage ownership within the mine development. This percentage will reside in a community trust with the intention of providing funds for community development in the Ga-Kibi communities.

#### 5.4.1 Construction and Development Phase

Ownership will only provide benefits during the Operational Phase.

# 5.4.2 Operational Phase

#### **IMPACT EVALUATION – MINE DEVELOPMENT**

Potential Impact	Туре	Е	D	М	Р	SWOM	ME	SWM
Empowerment of the local community through ownership participation	Positive	Local	Long term	Moderate	Definite	Medium	High	
Community development from ownership participation	Positive	Local	Long term	Moderate	Definite	Medium	High	

# 5.4.3 Mitigation

The following mitigation measures are proposed to mitigate the impact:

- Trasnfer of the shares into a community trust properly established and representative of the Ga-Kibi Communities
- Support to the Trust in management of the funds, selection of projects and implementation
- Community feedback on the projects selected, implemented and completed.

# 5.5 Impact on land use and livelihoods from the reduction in the grazing area

The development will have an impact on grazing land currently utilized by households from Voorhout, Royston, Arrie (Ga-Moisimane). A total 2996 large livestock units currently graze on the two project properties, owned by 114 households. The grazing areas are already under strain and overgrazing takes place widely, at about 3 times the amount of livestock that the grazing capacity indicates. The Ga-Kibi community need to improve the grazing quality and capacity of the land in consultation with Department of Agriculture (i.e. seeding, debushing, etc).

The projects will affect 27ha currently available for grazing. This translates to a 2% impact. During the assessment communities reported that the available grazing land is not adequate for their livestock, and that the mine should consider alternative grazing land.

The properties are also utilized for the gathering of medicinal plants.

The various impacts affecting daily living and movement patterns are:

- Loss of grazing land
- Loss of access to medicinal plants

The potential influence areas are:

• Voorhout, Royston, Arrie (Ga-Moisimane) communities

# 5.5.1 Construction and Development Phase

The impacts indicated below in the Operational Phase will commence during the Construction Phase and continue into the Operational Phase and are therefore discussed under the Operational Phase impacts.

# 5.5.2 Operational Phase

#### **IMPACT EVALUATION – MINE DEVELOPMENT**

Potential Impact	Туре	E	D	М	Р	SWOM	ME	SWM
Impact on land use and livelihoods from the reduction in the grazing area	Negative	Site	Long term	Low	Definite	Medium	Med	Medium

#### IMPACT EVALUATION - BENEFICIATION PLANT DEVELOPMENT

Potential Impact	Туре	E	D	М	Р	SWOM	ME	SWM
Impact on land use and livelihoods from the reduction in the grazing area	Negative	Site	Long term	Low	Definite	Medium	Med	Medium

# 5.5.3 Decommissioning Phase

These impacts will not continue into the Decommissioning phase.

# 5.5.4 Mitigation

The following mitigation measures are proposed to mitigate the impact:

- Demarcated areas where firewood can be collected that was cleared for the Construction Phase
- Application of the Avoidance Principle by reducing the footprints of infrastructure where possible
- Supporting the community in the increase of grazing capacity through seeding and debushing.
- Leasing of community land impacted by mining
- Monitoring the impact on livestock

# 5.6 Disruption in daily living and movement patterns

In terms of impacts on daily movement patterns, the main access road to the area (D1589) is already in poor condition and is the main access route to the area. Further disruption will take place in Voorhout and Royston, as the preferred access route will pass close to the community.

Change processes would result from construction vehicles accessing, crossing and using roads during construction of the proposed projects. The disruption of daily movement patterns (the impact) on the road mentioned, as a result of change processes associated with construction, would obtain in the case of: (1) the general population, e.g. individuals on their way to work; parents taking children to school; children walking to school; or people on their way to local towns and beyond; and (2)

businesses receiving goods or transporting goods. Impacts would present differentially for these groups, ranging potentially from a mere nuisance factor giving rise to frustration, to more serious ramifications where activities are impeded.

The various impacts affecting daily living and movement patterns are:

- Disruption of movement due to increased traffic during construction
- Disruption of movement due to increased traffic caused by staff transport, product transport, and supply of goods.

The potential influence areas are:

- Access from communities to schools (like Voorhout to Royston)
- Access to the clinic in Raditshaba
- To a lesser extent the other Ga-Kibi communities

# 5.6.1 Construction and Development Phase

#### IMPACT EVALUATION – MINE DEVELOPMENT

Potential Impact	Туре	E	D	М	Р	SWOM	ME	SWM
Disruption of Movement activities	Negative	Local	Short term	Moderate	Medium	Low	Med	Low

#### IMPACT EVALUATION – BENEFICIATION PLANT DEVELOPMENT

Potential Impact	Туре	E	D	М	Р	SWOM	ME	SWM
Disruption of Movement activities	Negative	Local	Short term	Moderate	Medium	Low	Med	Low

Most of the impacts indicated below in the Operational Phase will commence during the Construction Phase and continue into the Operational Phase and are therefore discussed under the Operational Phase impacts.

# 5.6.2 Operational Phase

#### IMPACT EVALUATION – MINE DEVELOPMENT

Potential Impact	Туре	E	D	М	Р	SWOM	ME	SWM
Disruption of Movement activities	Negative	Local	Medium term	Moderate	Low	Low	Med	Low

#### IMPACT EVALUATION – BENEFICIATION PLANT DEVELOPMENT

Potential Impact	Туре	E	D	М	Р	SWOM	ME	SWM
Disruption of Movement activities	Negative	Local	Medium	Moderate	High	Medium	Med	Medium
			term		probability			
### 5.6.3 Decommissioning Phase

Decommissioning of the proposed projects are expected to impact daily movement patterns in the same manner but to a lesser extent. The same mitigation measures should be applied.

### 5.6.4 Mitigation

The following mitigation measures are proposed to mitigate the impacts:

- Traffic minimized through bus and combi services to transport workers to the project site
- Low speed limits on access roads
- Road crossings should be managed by signing and traffic management measures
- Issues and Grievance Procedure available to local people to report bad driving or rules traversing

# 5.7 Social Impact Assessment Summary

### 5.7.1 Impact Summary – Mine Development

No	Potential Impact	Status	Extent	Duration	Magnitude	Probability	Significance without Mitigation	Mitigation Efficiency	Significance without Mitigation	Proposed Mitigation Measures
Construction and Development Phase										
1	Conflict between job seekers and local communities	Negative	Local	Short term	Moderate	High	Medium	High	Low	Priority employment from local communities with the development of recruitment procedures and utilizing the existing skills available from the local communities Establishing early on skills development programmes in areas where most employment opportunities will be available such as operators and artisans Implementation of bursary programme and practical skills programmes as part of the Social and Labour Plan Establishment of a local labour recruitment committee to monitor recruitment procedures and results Engage with Traditional Authority to manage and monitor site allocation to job seekers and/or employees in the local communities Induction of contractors and workforce with regard to their code of conduct in the local communities
2	Conflict between job seekers and local communities	Negative	Local	Short term	Moderate	High	Medium	High	Low	
3	Increase in social pathologies such as crime, safety, health, prostitution	Negative	Local	Short term	Moderate	Medium	Low	High	Low	
4	Increase in social pathologies such as crime, safety, health, prostitution	Negative	Local	Short term	Moderate	Medium	Low	High	Low	
Oper	ational Phase									

Table 5-1: Impact Summary for Mine Development

No	Potential Impact	Status	Extent	Duration	Magnitude	Probability	Significance without Mitigation	Mitigation Efficiency	Significance without Mitigation	Proposed Mitigation Measures
5	Conflict between job seekers and local communities	Negative	Local	Medium term	Moderate	High probability	Medium	High	Low	
6	Increase in social pathologies such as crime, safety, health, prostitution	Negative	Local	Medium term	Moderate	Medium probability	Medium	High	Low	
7	Pressure on community infrastructure and services	Negative	Local	Medium term	Low	Medium probability	Low	High	Low	
8	Participation of Local Communities in Employment Opportunities	Positive	Local	Medium term	Moderate	High probability	Low	High	Medium	
9	Participation of Local Communities in Skills Development	Positive	Local	Medium term	Low	Medium probability	Low	High	Medium	
Dec	ommissioning Phase									
10	Downscaling	Negative	Local	Medium term	High	Medium probability	Medium	High	Low	

### 5.7.2 Impact Summary – Beneficiation Plant

Table 5-2: Impact Summary for Denenciation Development	Table 5-2: Im	pact Summary	for Beneficiati	on Development
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No	Potential Impact	Status	Extent	Duration	Magnitude	Probability	Significance without Mitigation	Mitigation Efficiency	Significance without Mitigation	Proposed Mitigation Measures
Con	struction and Development Phase									
1	Conflict between job seekers and local communities	Negative	Local	Short term	Moderate	High	Medium	High	Low	
2	Conflict between job seekers and local communities	Negative	Local	Short term	Moderate	High	Medium	High	Low	
3	Increase in social pathologies such as crime, safety, health, prostitution	Negative	Local	Short term	Moderate	Medium	Low	High	Low	
4	Increase in social pathologies such as crime, safety, health, prostitution	Negative	Local	Short term	Moderate	Medium	Low	High	Low	
Operational Phase										
5	Conflict between job seekers and local communities	Negative	Local	Medium term	Moderate	High probability	Medium	High	Low	Source the maximum number of employees from the local area for temporary job opportunities
6	Increase in social pathologies such as crime, safety, health, prostitution	Negative	Local	Medium term	Moderate	Medium probability	Medium	High	Low	
7	Pressure on community infrastructure and services	Negative	Local	Medium term	Low	Medium probability	Low	High	Low	

8	Participation of Local Communities in	Positive	Local	Medium	Moderate	High	Medium	High	High	
9	Participation of Local Communities in Skills Development	Positive	Local	Medium term	Moderate	High	Medium	High	High	Implement skills development programmes in the areas where most job opportunities will be created, i.e. operators and drivers Make available bursary opportunities to build skill capital in the region Establish a database of local people with information on qualifications and skills, utilize this database to develop skills plans and recruit local people. Implement portable skills development programmes
Dec	ommissioning Phase									
10	Downscaling	Negative	Local	Medium	High	Medium	Medium	High	Low	

# 6 SOCIAL MANAGEMENT AND MONITORING STRATEGIES

### 6.1 Introduction

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

- **Communication and Consultation Plan**: Ensuring continuous engagement with project affected parties and stakeholders
- Issue and Grievance Management Strategy: To ensure the appropriate management of issues and grievances
- Recruitment Strategy: to maximise employment opportunities for the local communities and reduce the influx of a foreign labour force whilst ensuring an effective construction and operational process.
- **Procurement Policy:** to ensure that local business outfits, especially those of HDIs, women and

SMMEs get allocated a fair business share of project related business opportunities.

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

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

### 6.2 Strategies

### 6.2.1 Communication and Consultation Strategy

	Objectives		Output	ts					
-	To develop and maintain an ongoing process of stakeholder	-	An	CC	comprising	of	representatives	from	community
	engagement to ensure the continued involvement of interested		stak	cehold	er, the compa	anies	and relevant loca	I author	rities.

<ul> <li>and affected parties in the project in a meaningful and responsible way</li> <li>To establish a Coordinating Committee (CC) to participate in discussions on the community development, environment impacts and planning and implementation processes</li> </ul>	<ul> <li>Regular meetings and issues</li> </ul>	discussion outcomes on themes and
Activities	Timeframe	Responsible
Consult and constitute an CC	Before Construction	Companies CC
Develop a constitution for the CC to guide its operations	Before Construction	Companies CC
Hold Quarterly meetings	During Construction & Operation	
Targets		
- Quarterly CC meetings		
- CC reports		

# 6.2.2 Issue and Grievance Management Strategy

Objectives	Outputs	
<ul> <li>Define mechanisms and procedures to manage the land use and influx that may result due to the mine development during construction and operational phases</li> </ul>	<ul> <li>Ensure communities and opportunity to express grieval</li> <li>Ensure communities and stal complaints / grievances</li> <li>Encourage communities and but also warned not to abuse</li> <li>Ensure sensitive grievance confidentiality of information is</li> </ul>	stakeholders are aware of the nces and complaints. keholders feel free to express their stakeholders to use the procedure, it with false grievances. es are dealt with privately, and s maintained.
Activities	Timeframe	Responsible
Develop an Issue and Grievance Procedure to be signed-off by	Before	Companies
Implement the Issues and Grievance Procedure and raise awareness amongst communities and stakeholders	During Construction and operations	Companies CC Communities
Compile and provide report to the CC every quarter on issues and grievances and the resolution of these	During Construction and operations	Companies Stakeholder Officer CC
Targets	·	·
<ul> <li>Registration and Resolve of grievances</li> <li>Amicable mediation and settlement.</li> </ul>		

# 6.2.3 Recruitment Strategy

Objectives	Outputs					
<ul> <li>Maximise employment opportunities for the local communities, including identifying and encouraging use of labour intensive practices in such a way as not to negatively influence the operation quality or quantity, project timeframes;</li> <li>Ensure that pursuant to the completion of construction and operation phases, developed skills are retained in long-term employment opportunities, and where appropriate and possible, through the assistance of local business, be transferred to related local employment opportunities and businesses;</li> <li>Provide appropriate incentives for local businesses that provide skills transfer opportunities and new employment opportunities to the local community;</li> <li>Minimise the utilization of imported labour as far possible within the ambit of applicable legislation</li> </ul>	<ul> <li>To develop an official recr transparent and legally de project stakeholder group and Contractor</li> </ul>	uitment policy this seeks Fair, equitable, efensible recruitment policy accepted by s, Mining Right Holder and the Engineer				
Activities	Timeframe	Responsible				
Development of a Recruitment Policy that adheres to relevant labour legislation such as the Basic Employment Conditions Act and the Labour Relations Act	Before construction	Mining Right Holder, Contractor, Engineer, Legal Counsel				
Access to Recruitment Policy at Employment						
Targets	1					
<ul> <li>Recruitment Policy should be finalised before Tender process for suitable Engineer and</li> <li>Contractor commences.</li> </ul>						

- The policy should set targets for the following performance indicators:
- -
- Employment percentage of local labour recruited in unskilled, semi-skilled and management categories Employment percentage of HDIs Employment percentage of broader District & Provincial residents recruited in the professional category -
- Employment percentage of women, youth and disabled people -
- Meeting of targets should be ensured during the project implementation process and should be open to scrutiny by interested and affected \_ parties.

#### 6.2.4 **Procurement Policy**

Objectives	Outputs					
<ul> <li>To develop a procurement policy within the guidelines and stipulations of relevant legislation</li> <li>To maximise employment, training and development opportunities for local businesses, HDI- owned businesses, SMMEs, women-owned businesses, as well as disabled business people.</li> <li>To ensure transparent tendering and procurement procedures</li> <li>To offer assistance to local businesses in tender and procurement procedures</li> </ul>	<ul> <li>A practical and transparent Procurement Policy</li> <li>Access to Preferential Procurement Policy, advice and guidance at Employment Information Desk</li> </ul>					
Activities	Timeframe	Responsible				
Drafting of a Procurement Policy reflecting the objectives of the relevant legislation and project employment and procurement objectives. In cases of discrepancies between project objectives and legislation, legislation takes precedence.	Before construction	Mining Right Holder Contractor				
Monitoring of Procurement Policy implementation by relevant project role-players and EMC.	Before and during construction and during operations	Mining Right Holder EMC Employment Information Desk Contractor				
Targets	·					
<ul> <li>Setting targets to achieve in terms of local procurement and HDSA procurement (% of spend)</li> <li>An improvement of performance annually towards reaching set targets</li> </ul>						

# 7 CONCLUSIONS AND RECOMMENDATIONS

The proposed projects will have a potential negative impact on land use although on a low level. The land is currently utilised for grazing but only 2% of the grazing land will be lost. The properties however already have a low grazing capacity, and this is placing strain on the local community, as not enough land is available. The positive contributions from sustained employment and revenue generation from both the projects cumulatively will significantly outweigh the negative impacts over a period of 20 years. It should further be noted that with mitigation and rehabilitation the area will be restored to grazing land and the negative impacts will therefore be negated to a certain extent.

The objective of the project should be to establish and manage a balance between the benefits created and the mitigation and management of losses of the project. If Authorities, in reviewing the report, makes an affirmative decision, continuous management, monitoring and evaluation of social impacts must be implemented to ensure the effectiveness of the mitigation measures and management strategies.

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