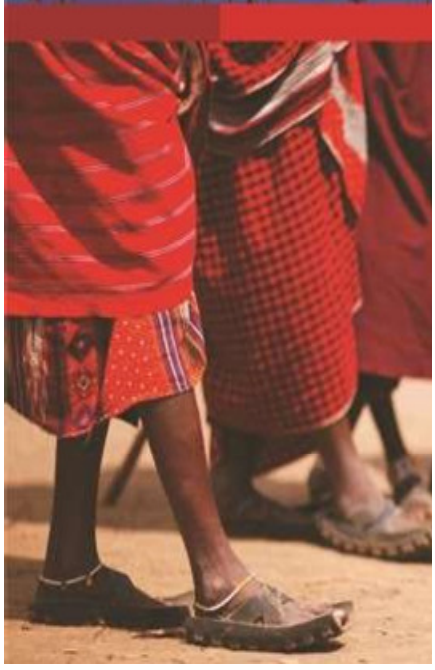

DIGBY WELLS
ENVIRONMENTAL

Proposed Open Pit Magnetite Mine and Concentrator Plant, Mokopane, Limpopo Province

Social Impact Assessment

Project Number:

VMC3049

Prepared for:

Pamish Investments No. 39 (Pty) Ltd

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EXECUTIVE SUMMARY

This document presents the results of the Social Impact Assessment (SIA) for Pamish Investments (Pty) Ltd proposed Open Pit Magnetite Mine and Concentrator Plant near the town of Mokopane in Limpopo Province, South Africa. The aims of this report, as stated in the terms of reference (ToR), are:

- To describe the baseline social environment of the proposed project site and surrounding area;
- To identify, describe and determine the likely significance of potential social impacts that may arise as a result of the proposed project;
- To recommend practical and cost-effective mitigation measures to minimise or avoid negative impacts, and enhancement measures to optimise the potential positive impacts of the proposed project; and
- To compile a social management plan, that defines practical steps for implementing the recommended mitigation measures.

Methodology

The study was designed to comply with the relevant national legislative requirements, such as those stipulated in National Environmental Management Act, 1998 (Act No. 107 of 1998) and Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002). The following activities were undertaken as part of the impact assessment:

- Defining the site-specific, local and regional study areas;
- Data collection, including a desktop review, investigative site visit, interviews with key informants, socio-economic household survey, and a review of information from other specialist studies and the public participation process;
- Social sensitivity mapping, which involved classifying land uses within the vicinity of the project in terms of their likely sensitivity to social impacts caused by the project;
- The compilation of a baseline profile, including information on demographics, education, skills levels, employment, local and regional economic conditions, infrastructure and service delivery, community needs and challenges, and spatial development and land use activities. Prevalent concerns regarding, and attitudes towards, the proposed project are also reported;
- Assessment of impacts (including impacts of various project alternatives and cumulative impacts) on the basis of issues identified through the public participation process, interviews with key informants and specialist opinion. Identified impacts were categorised in terms of the project phase in which it is most likely to originate, namely the construction, operational or decommissioning phases;

- Rating of impacts in terms of their anticipated duration, extent, intensity and probability. Duration, extent and intensity ratings were combined into a measure of an impact's expected consequence. Consequence ratings, in turn, were multiplied with probability ratings to give a measure of an impact's overall significance;
- Identification of appropriate mitigation measures to avoid or ameliorate negative social impacts and to enhance positive ones. The rating procedure described above was then repeated to assess the expected consequence, probability and significance of each impact after mitigation. This post-mitigation rating gives an indication of the significance of residual impacts, while the difference between an impact's pre-and post-mitigation ratings therefore represents the degree to which the recommended mitigation measures are expected to be effective in reducing or ameliorating that impact. Mitigation and enhancement measures were incorporated into a social management plan, which outlines steps for implementing these measures; and
- Formulating recommendations regarding the identified mitigation and enhancement measures, as well as other general recommendations that may aid the successful implementation of the proposed project.

Baseline Socio-Economic Profile

The table below provides a summary of the baseline profile of study area in which the proposed mine is to be situated; it highlights features and trends within the respective study areas that might have relevance for Pamish in terms of possible opportunities/ benefits and constraints/ challenges.

Summary of Socio-Economic Baseline Profile

Socio-economic attribute	Supporting data	Relevance to the project
Opportunities and Benefits		
From a development perspective the project is in line with National, Regional and Local Development planning	National Development Plan, Accelerated and Shared Growth Initiative for South Africa, Industrial Policy Action Plan, New Economic Growth Path, Limpopo Development Plan, Waterberg District's Local Economic Development Plan (LED), and Mogalakwena Local Municipality (MLM) LED	Pamish will be able to garner legitimate support from National, Provincial and Local Government for the proposed project as it is in line with their development trajectory.
Provincial and Local development plans are in place; however on a district level no up to date LED Plan is available	Local and District municipal Integrated Development Plans (IDP) are readily available as well as LED Plans for MLM and the Province	Opportunity for Pamish to align socio-economic development programmes contained in future iterations of their Social and Labour Plan (SLP) with existing development plans; this will increase sustainability and relevance of initiatives.
Several large mining operations are located within the local study area	District and Local Municipal Spatial Development Frameworks (SDFs); Field investigations; investigation of available spatial data	Opportunity to synergise any LED as part of the SLP with existing initiatives of other mines
Most people within the local and site-specific study area only have a relatively basic skill level	Only 14% of the MLM and 20% of the local study area have completed secondary school; those within the more rural outskirts of these study areas tend to have even lower levels of education; findings from the household survey	Opportunity for Pamish to contribute to community development through skills development programmes during construction and operational phases; however, low education levels usually have negative implications for the employment potential of the population and also for the feasibility of LED initiatives.

Socio-economic attribute	Supporting data	Relevance to the project
Mining is one of the dominant economic sectors in the MLM	Mining and quarrying sector employed a considerable number of people in the MLM; Mining is one of the primary contributors to the Municipal Gross Domestic Product (GDP) 32%	Procurement could potentially be from suppliers located within the MLM who are currently servicing mines in the area
Large potential labour force	The youth comprises a large proportion of the population within the regional, local and site-specific study area; high unemployment, especially among rural households; findings from the household survey	Pamish can likely meet any local recruitment targets for un-and semi-skilled positions
Surrounding communities have limited access to public infrastructure	Field investigations, findings from the household survey and MLM IDP: ▪ Rural households within the local study area mostly rely on pit toilets for sanitation purposes; ▪ Clinics in the surrounding towns is often short staffed; ▪ Most rural roads are deteriorated; ▪ Housing shortages is noted for the regional study area; and ▪ Intermittent shortages of groundwater supply.	Provides opportunities to make a significant contribution to local development as part of LED and Corporate Social Investment (CSI) (but may also hinder the productivity of the local workforce). In this regard Pamish could collaborate with existing municipal SLP and LED forums as well as the Bakenberg Traditional Authority (TA).
Gender disparity in employment rates – financial vulnerability among females	Statistics South Africa (StatsSA) (2013) and household survey - Unemployment amongst females is significantly higher than males across all study areas	Pamish could contribute to gender equity by implementing female employment targets – this requirement, if feasible, could be formalised by incorporating it into the construction contractor's conditions of contract.

Socio-economic attribute	Supporting data	Relevance to the project
High degree of poverty and socio-economic vulnerability among site-specific population	StatsSA (2013); Socio-economic survey	Any LED, CSI or local employment will likely contribute significantly to socio-economic development among the site-specific and local population
Constraints and Challenges		
Land claims on Schoonoord 786 LR, Bellevue 808 LR, Vriesland 781 LR and Vogelstruisfontein 765 LR	MLM and WDM IDPs; Field investigation	Land claims may have development implications for Pamish as it may delay and complicate land acquisition
Land speculation and illegal residential land use in the vicinity of mine infrastructure	Field investigation	Settlement in close proximity to Pamish's operation could result in: - Health and safety implication in terms of the Mine Health and Safety Act; - Downstream displacement of land users; - Potential issues from households settling in the area as result of potential negative impacts on them; and - If settlements establish itself next to the proposed mine, it could set a precedent, which could stimulate additional informal settling in the area
Large sections of the site-specific study area is administered by the TA, but also held in private ownership by the TA	Desktop review	Could result in tensions between local municipalities and traditional leaders, especially during implementation of LED plans Could complicate the mitigation of displacement impacts when these arise, as resource ownership might be disputed between land users and owners (TA).

Socio-economic attribute	Supporting data	Relevance to the project
Substantial housing shortage throughout the regional study area	The 2012/2013 MLM IDP estimates the housing backlog within the municipality at 33 000 units Both the District and Local Municipality are experiencing increasing pressure to launch new housing development Field investigation – informal expansion of current communities; land grabs	Any project-induced influx to communities within the site-specific study area may place additional pressure on limited housing
The land area which will be mined hosts subsistence agricultural fields, grazing areas, natural resources (e.g. medicinal plants and firewood)	Field investigations; household economic survey; spatial data	Agricultural activities and collection of natural resources will be directly affected by the proposed project, which will result in economic displacement of various households
The proposed project area is currently zoned for tourism uses by the Waterberg Environmental Management Framework (EMF)	Waterberg EMF	Suggests that mining activities in this area are potentially undesirable from the District's perspective, as tourism and conservations are the preferred activities in this zone
General hostility against existing mining companies in the regional study area	Desktop review	May create a context for future volatility especially if stakeholder expectations in terms of local employment, LED and CSI are not met, within reason
This regional economy is dependent on mining	Mining contributes to almost 8% of employment within the District and 32% to its GDP	The Project will likely contribute to increasing dependency on mining among local communities. LED activities should preferably be aimed at establishing economic development outside the mining sector

Socio-economic attribute	Supporting data	Relevance to the project
Severe problems with water security in the regional and local study area	MLM IDP and field investigation	The project might jeopardise water security in the area, which can instigate volatility among local communities

Predicted Impacts and Recommended Mitigation Measures

The anticipated social impacts of the proposed project, their consequence, probability and significance ratings, as well as recommended mitigation measures are summarised in the table below.

Summary of Impacts, Impact Ratings and Recommended Mitigation Measures

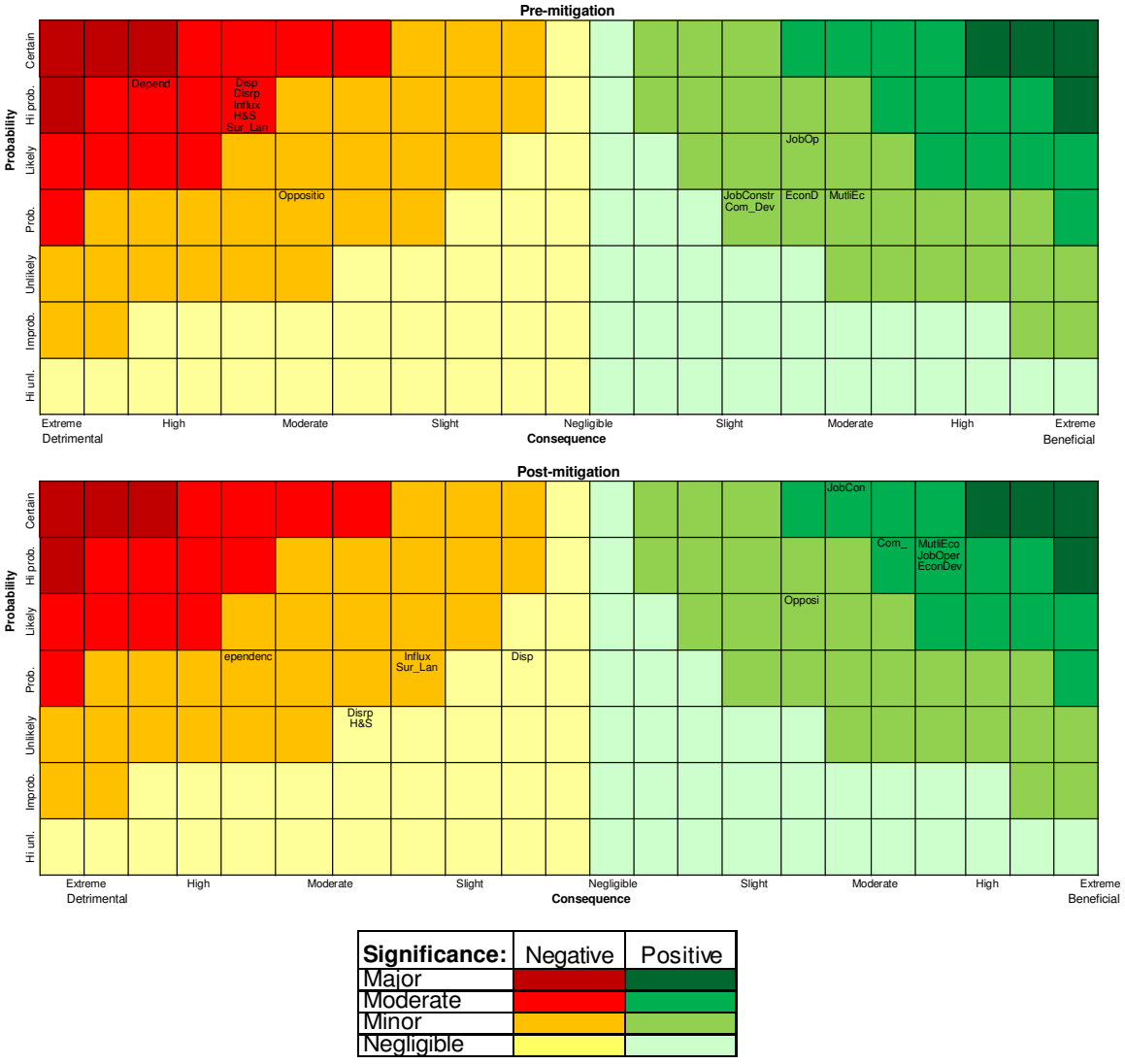
Code	Impact	Pre-mitigation						Recommended Mitigation	Post-mitigation					
		Duration	Extent	Intensity	Consequence	Probability	Significance		Duration	Extent	Intensity	Consequence	Probability	Significance
Impacts Originating during the Construction Phase														
Job_Constr	Job creation during construction	Medium term	Local	Moderate - positive	Slightly beneficial	Probable	Minor - positive	▪ Assign preferred employment status to those experiencing the bulk of the negative project impacts ▪ Promotion of local, female and youth employment ▪ Labour-intensive construction methods should be promoted ▪ Verification of local status ▪ Consult neighbouring businesses to determine if they would be willing to make their skills registers available ▪ Identify required skills and align and implement training and skills development initiatives accordingly ▪ Expand skills development to surrounding communities ▪ Recruitment via a registry of job seekers and potentially coordinated through the Department of Labour (DoL) ▪ Provide local employees with reference letters certificates of completion for in-house (on-the-job) training ▪ Monitoring subcontractors in terms of local employment targets	Medium term	Local	Very high - positive	Moderately beneficial	Certain	Moderate - positive
MutliEcon	Multiplier effects on the local economy	Project Life	Regional	Moderate - positive	Moderately beneficial	Probable	Minor - positive	▪ As for maximising employment benefits. Also: ▪ Give preference first to capable local service providers ▪ Develop local service provision capacity ▪ Monitoring of sub-contractors procurement ▪ Development of a register of local Small Medium and Macro Enterprises (SMMEs) ▪ Linkages with skills development/ SMME development institutions and other mining operations ▪ SMME skills development as part of mine SLP/LED commitments ▪ Local procurement targets should be formalised in Pamish's procurement policy	Project Life	Regional	Very high - positive	Highly beneficial	Highly probable	Moderate - positive
Com_Dev	Community development and social upliftment	Project Life	Limited	Low - positive	Slightly beneficial	Probable	Minor - positive	▪ Liaison with beneficiaries to ensure needs are met ▪ Collaboration with other developmental role players (e.g. local and district municipalities, neighbouring mines and non-governmental organisations involved with development activities in the local study area) during implementation of envisaged projects, and where possible aligning envisaged development projects with existing ones ▪ Expanding skills development and capacity building programmes for non-employees ▪ Monitoring system to regulate procurement among Historically Disadvantaged South Africans (HDSA) ▪ Where feasible, training should be National Qualifications Framework (NQF) accredited ▪ A record of training courses completed per individual should be kept	Beyond project life	Local	High - positive	Highly beneficial	Highly probable	Moderate - positive
Disp	Displacement related impacts (including displacement of grazing, agricultural and natural resource uses)	Permanent	Limited	Moderately high - negative	Moderately detrimental	Highly probable	Moderate - negative	▪ Abbreviated Resettlement Action Plan (ARAP) development to compensate economically displaced households ▪ For non-vulnerable households and individuals, negotiate favourable outcome on a case-by-case basis ▪ Consultation with Traditional healers with in regards to management and/or relocation of medicinal plants	Medium term	Limited	Very low - negative	Slightly detrimental	Probable	Negligible - negative

Code	Impact	Pre-mitigation						Recommended Mitigation	Post-mitigation					
		Duration	Extent	Intensity	Consequence	Probability	Significance		Duration	Extent	Intensity	Consequence	Probability	Significance
Impacts Originating during the Construction Phase														
Disrp Move	Disruption of daily movement patterns	Project Life	Local	High - negative	Moderately detrimental	Highly probable	Moderate - negative	▪ Measures to prevent deterioration of roads suggested in Traffic Impact Assessment (e.g. drivers to report road deterioration to the Limpopo Department of Transport) ▪ Regulation of traffic at intersections of the D4380, D3507 and access roads to the site ▪ Road upgrading measures should be investigated and implemented in conjunction with the relevant government department (e.g. repairing and rehabilitating the D4380 and sealing the roadway to increase its capacity for Heavy Moving Vehicles) ▪ Inform communities of planned construction activities that would affect vehicle/ pedestrian traffic ▪ Ensure that access to key services in areas such as Bakenberg are uninterrupted by providing alternative access routes in cases where construction activities restricts or disrupt movement ▪ Construction of cattle crossings at suitable intervals should be incorporated into project design ▪ Cattle farmers and regular road users should be consulted with regard to cattle crossing placements	Project Life	Local	Moderate - negative	Moderately detrimental	Unlikely	Negligible - negative
Influx	Influx related impacts	Long term	Local	Very high - negative	Moderately detrimental	Highly probable	Moderate - negative	▪ Discourage influx of job-seekers by prioritising employment of unemployed members of local communities. ▪ Liaise with MLM, and TA to ensure that expected population influx is taken into account in infrastructure development and spatial development planning. ▪ Create synergies with local government IDP and other companies' SLP/CSR projects to promote infrastructure development ▪ Extensive HIV/ AIDS awareness and general health campaign ▪ Identify if recorded criminal activities involved members of the mine's workforce ▪ Establishment of anti-poaching mechanism in consultation with potentially affected land owners ▪ Clear identification of workers; prevention of loitering ▪ Liaison with police, community policing forum ▪ Promote projects providing housing, especially low cost housing ▪ Measures to address potential conflict between locals and non-locals ▪ In the event of conflict between the locals and non-locals, a conflict management plan should be compiled	Long term	Limited	Moderate - negative	Slightly detrimental	Probable	Minor - negative

Code	Impact	Pre-mitigation						Recommended Mitigation	Post-mitigation					
		Duration	Extent	Intensity	Consequence	Probability	Significance		Duration	Extent	Intensity	Consequence	Probability	Significance
Impacts Originating during the Construction Phase														
H&S	Health and Safety impacts	Beyond project life	Limited	Very high - negative	Highly detrimental	Highly probable	Moderate - negative	▪ Access control to all project elements, including fencing ▪ Personal Protective Equipment (PPE) for mines workers ▪ Notification of blasting activities ▪ Blasting and storage of hazardous materials to adhere to prescribed regulation ▪ Measures suggested minimising the impact of fly-rock on surrounding roads and structure (Blast Management and Consulting, 2015) ▪ Measures suggested in the Community Health Impact Assessment (cHIA) to minimize traffic related accidents (DWE, 2015a) ▪ Traffic calming measures to prevent speeding (e.g. speed humps) ▪ Road maintenance ▪ Provide safe road crossing points and fencing of the remainder of the D4380 and the mine site ▪ Community education to sensitise community members to potential traffic and blasting safety risks	Beyond project life	Limited	Moderate - negative	Moderately detrimental	Unlikely	Negligible - negative
Sur_Landuse	Impact on surrounding land users	Project Life	Limited	Very high - negative	Moderately detrimental	Highly probable	Moderate - negative	▪ Refer to recommendations of relevant specialist studies (Air quality impact assessment; Visual and topographical impact assessment; and Blasting and vibration impact assessment); ▪ Undertake continuous information sharing and consultation with adjacent/affected farm owners, potentially through Community Liaison staff and establishing a community forum ▪ Implement measure to create an environment that can contribute positively to stakeholders affected by it (e.g. anti-poaching assistance and community forums for reporting any perceived biophysical impacts) ▪ Implement grievance mechanisms to report changes in water quality/quantity, air quality or vibrations	Project Life	Limited	Low - negative	Slightly detrimental	Probable	Minor - negative
Opposition	Opposition because of perceived negative impacts	Project Life	Local	Moderately high - negative	Moderately detrimental	Probable	Minor - negative	▪ Communicate commitments regarding LED ▪ Transparency regarding employment practices ▪ Presentation of Environmental Impact Assessment (EIA) findings in clear and understandable manner ▪ Monitor community attitudes to anticipate/prevent active opposition ▪ Appoint a Community Liaison Officer (CLO) to enhance communication. It is preferable that this person be recruited from within the local community and not from individuals currently employed at Pamish or the Bakenberg Traditional Authority ▪ Establish a community forum, comprising local community leaders, neighbouring land owners, Pamish representatives and representatives from local authorities including the local municipality and law enforcement.	Project Life	Local	Moderate - positive	Moderately beneficial	Likely	Minor - positive

Code	Impact	Pre-mitigation						Recommended Mitigation	Post-mitigation					
		Duration	Extent	Intensity	Consequence	Probability	Significance		Duration	Extent	Intensity	Consequence	Probability	Significance
Impacts Originating during the Operational Phase														
JobOpertn	Job creation during operation	Project Life	Regional	Low - positive	Moderately beneficial	Likely	Minor - positive	▪ Assign preferred employment status to those experiencing the bulk of the negative project impacts ▪ Promotion of local, female and youth employment ▪ Labour-intensive activities should be promoted ▪ Verification of local status ▪ Consult neighbouring businesses to determine if they would be willing to make their skills registers available ▪ Identify required skills and align and implement training and skills development initiatives accordingly ▪ Expand skills development to surrounding communities ▪ Recruitment via a registry of job seekers and potentially coordinated through the Department of Labour (DoL) ▪ Provide local employees with reference letters certificates of completion for in-house (on-the-job) training ▪ Monitoring subcontractors in terms of local employment targets; and ▪ Intensifying efforts in the SLP, which are aimed at developing scarce skills	Project Life	Regional	Very high - positive	Highly beneficial	Highly probable	Moderate - positive
EconDev	Stimulation and growth of the local and district economies	Project Life	Regional	Low - positive	Moderately beneficial	Probable	Minor - positive	▪ Measures recommended to maximise benefits from local employment, economic multiplier effects, as well as ▪ community, economic and skills development; and ▪ Preferably procure from local HDSA suppliers throughout the life of the mine ▪ Establish a monitoring system to ensure that the mine and its contractors comply with government regulations	Beyond project life	Regional	High - positive	Highly beneficial	Highly probable	Moderate - positive
Dependency	Dependency on mine for sustaining local economy	Beyond project life	Regional	Very high - negative	Highly detrimental	Highly probable	Moderate - negative	▪ Pamish should through its Skills Development Plan and LED projects continuously promote alternative and sustainable livelihoods, this can be achieved by ensuring LED projects are sustainable after withdrawal of support from the Mine and expanding portable skills development to communities impacted upon by the mine ▪ Collaborate with other industries to support the diversification of the local economy ▪ The Mine's SLP should provide strategies and measures that prevent job loss ▪ Alternatives to save jobs/avoid downscaling should be investigated beforehand through the Pamish's future forum ▪ Proactively assess and manage the social and economic impacts on individuals, regions and economies where retrenchment and/or closure of the mine are certain, and incorporate these aspect into the Mine Closure Plan ▪ Partner with the relevant government departments, to jointly manage Closure process	Beyond project life	Regional	Moderate - negative	Moderately detrimental	Probable	Minor - negative

The pre- and post-mitigation significance ratings assigned to identify impacts are graphically represented in the figure below. In this figure, the entries in the various coloured cells correspond to the codes given for impacts in the first column of the foregoing table.



Significance:	Negative	Positive
Major		
Moderate		
Minor		
Negligible		

Graphical Representation of Consequence, Probability and Significance Ratings

Assessment of Alternatives

It is a requirement in terms of current environmental legislation that practical project alternatives be considered during impact assessment. Two types of project alternatives were considered, including alternatives *to* the project (in terms of the "no-go" option and alternative uses of the project area in the event that the project is not implemented); and alternatives *involving* the project (in terms of alternative mining methods and infrastructure layout).

The most pertinent project alternative in the case of this project is the ***no-go alternative***. The approach adopted in the assessment of impacts in this study entailed a comparison between anticipated future socio-economic conditions, with and without the project. Hence the no-go alternative would essentially imply that none of the impacts (negative and positive) described in the aforementioned table would materialise, and that socio-economic conditions in the study area would continue to display their current characteristics and trends.

In terms of alternative land use options, if not used for mining (the no-go option), possible alternative land uses for the project site might include low cost housing, subsistence agriculture, tourism and grazing. Subsistence agriculture and grazing land use alternatives is also not necessarily precluded by the proposed project: after mine closure and rehabilitation of mined areas, the land capability may return to a state, which would allow the continuation of the aforementioned uses, albeit not equal to production, which would have been achieved pre-mining.

With regards to ***agriculture***, approximately a quarter of the project footprint is situated on land which is suitable for agriculture, however large scale maize production and the financial gain thereof was not considered during the investigation. It is assumed that the land area available for agriculture in the project footprint will not be able to produce to the same economic benefits as the proposed mine, a similar case is argued with regards to the area's tourism potential. Due to steady population growth and existing housing demand, the viability of using the proposed project site for ***low-density residential*** purposes is increasing as housing demand increases.

Mining appears to be the most viable and appropriate land use option from a social perspective, as it will result in considerably more economic growth than other land uses, by offering the following:

- Direct and indirect employment opportunities for local community members;
- Promotion of sustainable LED, enhancing the skills base among local community members and thereby allowing for income generating activities not directly related to mining;
- Increased economic contribution to the area, enabling better development of the towns and surrounding areas; and
- Enhanced socio-economic stability in the area.

The scope for mine plan and infrastructure layout alternatives is limited by the geographical characteristics of the area; that is to say, the location of ore largely determines the mine plan. This fact, together with the nature of the impacts described in throughout the SIA, implies that changes to the mine plan and layout of infrastructure will not have a significant impact on the impacts to the social environment.

Conclusions and Recommendations

The results of the study indicate that the recommended mitigation measures are expected to reduce the significance of negative impacts to lower levels, while positive impacts will on average be significantly enhanced to maximise benefits to surrounding land users and communities.

The main conclusion arising from the assessment of cumulative impacts is that the most significant cumulative impacts are expected to arise because of the combined effects of the proposed project and other, existing and planned mining operations in the area. These cumulative impacts relate to the large-scale rather than site-specific impacts associated with other industrial projects and mines – namely tendency to trigger human influx into an area, which can have significant impact on services.

The study also indicates that the establishment of linkages between Pamish and other institutions involved in local and regional economic development and social upliftment will serve to maximise the benefits of the project's contribution to the welfare of local communities. Examples of initiatives that offer opportunities for linkages and synergy include municipal LED projects, initiatives by other industrial operations in the area, and activities by civil society and non-governmental organisations. It is suggested that Pamish's community development arm should where possible liaise with CSI and socio-economic development departments of these institutions to gauge whether they can align or synergise with any of their efforts to collaborate in some of the development initiatives planned for the area.

Throughout the SIA process, the specialist identified a number of risks that warrant particular attention and close monitoring and management by the proponent when implementing the proposed project. These risks include:

- Community expectations regarding employment and socio-economic development;
- Failure to acquire a social licence to operate; and
- Land claims.

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Appendix A: Declaration of Independence

LIST OF ABBREVIATIONS AND ACRONYMS

ABET	Adult Basic Education
ALM	Aganang Local Municipality
AsgiSA	Accelerated and Shared Growth Initiative for South Africa
ARAP	Abbreviated resettlement action plan
BBBEE	Broad-based Black economic empowerment
BEE	Black Economic Empowerment
CAGR	Compounded Annual Growth Rate
CBD	Central Business District
CRDP	Comprehensive Sustainable Rural Development Programme
CSI	Corporate Social Investment
DEA	Department of Environmental Affairs
DMR	Department of Mineral Resources
DoL	Department of Labour
EAP	Environmental Assessment Practitioner
EIA	Environmental Impact Assessment
EMP	Environmental Management Programme
EMV	Earth Moving Vehicles
EPWP	Extended Public Works Programme
ESTA	Extension of Security of Tenure Act
FBS	Free Basic Municipal Services
GDP	Gross Domestic Product
GDP-R	Gross Domestic Product per Region
GGP	Gross Geographic Product
Ha	Hectare
HBC	Home Based Care
HSEC	Health, Safety, Environment and Community
HRD	Human Resource Development
HDI	Human Development Index
HDSA	Historically Disadvantaged South Africans
HIV/AIDS	Human Immunodeficiency Virus/ Acquired Immune Deficiency Syndrome

HMV	Heavy Motor Vehicles
HRD	Human Resources Development
ICD	Integrated Community Development Division
IDP	Integrated Development Plan
IFC	International Finance Corporation
IPAP	Industrial Policy Action Plan
km	Kilometre
km^2	Square Kilometre
Kv	KiloVolt
LDP	Limpopo Development Plan
LED	Local Economic Development
LHD	Load Haul Vehicles
LM	Local Municipality
LoM	Life of Mine
LSDF	Limpopo Spatial Development Framework
LUSM	Land Use Management Scheme
m	Meter
Mill	Million
MRA	Mining Right Area
Ml	Mega litre
MLM	Mogalakwena Local Municipality
MPRDA	Mineral and Petroleum Resources Development Act
MQA	Mining Qualifications Authority
MRA	Mining Right Application
Mt/a	Million tonnes per annum
MWP	Mining Works Programme
New Growth Path	New Economic Growth Path Framework
NCD	Non-communicable diseases
NDP	National Development Plan
NEMA	National Environmental Management Act
NGOs	Non-governmental Organisation
NSDP	National Spatial Development Plan

Pamish	Pamish Investments No. 39 (Pty) Ltd
PCDs	Pollution Control Dams
PGDS	Provincial Growth and Development Strategy
PPP	Public participation process
PR	Prospecting Right
PS	Performance Standards
RAP	Resettlement Action Plan
RoM	Run of Mine
SA	South Africa
SANAC	South African National AIDS Council
SDF	Spatial Development Framework
SETA	Sector Education and Training Authority
SIA	Social Impact Assessment
SIPs	Strategic Integrated Projects
SLP	Social and Labour Plan
SMMEs	Small, Medium and Micro-sized Enterprises
SPLUMA	Spatial Planning and Land Use Management Act
StatsSA	Statistics South Africa
STD	Sexually Transmitted Diseases
STIs	Sexually Transmitted Infections
TA	Traditional Authority
TB	Tuberculosis
ToR	Terms of Reference
TSF	Tailings Storage Facility
VRB	Vanadium Redox Battery
WDM	Waterberg District Municipality
WiM	Women in Mining
WRD	Waste Rock Dump
YYL	Years of Life Lost

1 Introduction

Pamish Investments No. 39 (Pty) Ltd (Pamish) is proposing the development and operation of a greenfields Magnetite Mine and associated infrastructure at a site situated 45 kilometres (km) northwest of Mokopane Town within Limpopo Province (hereafter referred to as the project).

Pamish currently holds a prospecting right (PR) for the envisaged project site. In terms of the requirements of the Minerals and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002), (MPRDA) as amended, a Mining Right Application (MRA) must be submitted to the Department of Mineral Resources (DMR), to convert this PR to a mining right. In support of the MRA, an Environmental Impact Assessment (EIA) process must be undertaken in accordance with the new EIA Regulations, December 2014 promulgated in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), (NEMA). Digby Wells Environmental (Digby Wells) has been appointed by Pamish as the independent Environmental Assessment Practitioner (EAP) to undertake the EIA.

This report is the outcome of the SociaImpact Assessment (SIA), which is one of several specialist assessments that were undertaken as part of the EIA; the other specialist assessments are as follows:

- Soils, land use and land capability assessment;
- Economic impact assessment;
- Heritage impact assessment;
- Community health impact assessment;
- Air quality impact assessment (including dust fallout monitoring);
- Noise impact assessment;
- Biodiversity impact assessment (i.e. wetland, aquatic and fauna and flora assessments);
- Hydrological impact assessment;
- Geohydrological impact assessment;
- Visual and topographical impact assessment;
- Traffic and safety impact assessment;
- Blasting and vibration impact assessment;
- Rehabilitation assessment; and
- Closure costing assessment.

2 Terms of Reference

The terms of reference (ToR) for the SIA are to:

- Describe the baseline social environment of the site and surrounding area;
- Identify, describe and determine the likely significance of potential social impacts that may arise as a result of the proposed project;
- Recommend practical and cost-effective mitigation measures to minimise or avoid negative impacts, as well as enhancement measures to optimise the potential positive impacts of the proposed project; and
- Compile a social management plan that defines practical steps for implementing the recommended mitigation measures.

3 Limitations and Assumptions

This report is subject to the following limitations:

- This report is based on available information obtained from the client, secondary sources, other specialists' assessments and stakeholders consulted during site-visits. The study was conducted within available timeframes and budget. The sources consulted are in no way exhaustive, although deemed sufficient to meet the ToR for the current assessment. No information has been deliberately excluded from this report, and it is assumed that no party withheld relevant information from the specialists; and
- Social impacts associated with the eventual decommissioning of the mine at the end of its life are briefly discussed but are not subject to detailed assessment. This omission is motivated by the fact that predictions concerning the characteristics of the receiving socio-economic environment at the time of decommissioning (30 years in the future) are subject to a large margin of error, thus significantly reducing the accuracy of impact assessment.

4 Structure of the Report

The remainder of this report is structured as follows:

- ***Section 5*** provides the policy and legal framework that has bearing to the project;
- ***Section 6*** details the methodology employed for this study and includes details on the study areas, data collection activities, completion of the baseline profile, and identification and rating of potential project related impacts;
- Details of the proposed project are presented in ***Section 7***;
- ***Section 8*** provides a baseline description of the study area, and includes the socio-economic context of the regional, local and site-specific study areas. Stakeholders' attitudes towards and concerns regarding the proposed project are also presented;

- ***Section 9*** is dedicated to the identification, assessment and rating of potential social impacts that may arise as a result of the proposed project, and includes recommended mitigation measures for negative impacts and enhancement measures for positive impacts;
- ***Section 10*** presents a Social Management Plan for the project, which indicates the parties responsible for implementing the mitigation and enhancement measures recommended for each impact;
- The impact project alternatives will have on the identified social impacts is considered in ***Section 11***;
- **Section 12** lists and discusses several risks that might negatively influence the progress and feasibility of the proposed project; and
- ***Section 13*** presents the main conclusions of the SIA and contains recommendations relevant to the implementation of the proposed project.

5 Policy and Legal Framework

This chapter describes the various pieces of national and international legislation that are relevant to a SIA for a South African mining project. It commences with a discussion of the South African legislation that has a bearing on the project, followed by a summary of policies, plans and strategies pertaining to national, provincial, regional and local development. The section concludes with an overview of relevant international standards and guidelines as well as Pamish's corporate policies and plans.

5.1 National Policies and Legislation

The following sections provide a brief overview of South African legislation that either directly or indirectly refers to the 'social' responsibility of project proponents, in this case Pamish.

5.1.1 The South African Constitution

The proposed project has to comply with South African constitutional and common law by conducting their construction, operational and closure activities with due diligence and care for the rights of others. Section 24 (a) of the South African Constitution states that everyone has the right to an environment that is not harmful to his or her health and well-being. This supersedes all other legislation.

5.1.2 National Environmental Management Act, 1998 (NEMA)

This Act provides that sustainable development requires the integration of social, economic and environmental factors in the planning, implementation and evaluation of decisions so as to ensure that development serves present and future generations. The Act further sets out the process for public participation.

5.1.3 Mineral and Petroleum Resources Development Act, 2002 (MPRDA)

Upon the acceptance of an application for a mining right, the applicant is required to prepare an Environmental Management Programme (EMP) in accordance with requirements of the MPRDA, to mitigate both bio-physical and socio-economic impacts of the proposed development.

The MPRDA requires that mining companies assess the social impacts of their activities from start to closure and beyond. Companies must develop and implement a comprehensive Social and Labour Plan (SLP) in order to promote socio-economic development in their host communities and to prevent or lessen negative social impacts. [1] It is a requirement of the MPRDA that the mine SLP shall ensure, amongst others, training and career progression of its employees, and in particular, Historically Disadvantaged South Africans (HDSAs), as well as the participation of women in mining (WiM).

The MPRDA furthermore requires that the SLP provide strategies and measures that could prevent job loss in the event of circumstances threatening guaranteed employment. These include the establishment of “Future Forums” to manage downscaling and retrenchments. Certain processes must be followed when economic conditions cause the profit-to-revenue ratio of a mine to drop below 6% on average for a continuous period of 12 months, or where the above scenarios occur.

5.1.4 South African Mining Charter

The Mining Charter focuses on sustainable transformation of the mining industry. Social management and mitigation measures to be developed as part of the SIA will be aligned to the Mining Charter. The Mining Charter seeks to achieve the following objectives:

- Promote equitable access to the nation’s mineral resources to all the people of South Africa;
- Substantially and meaningfully expand opportunities for HDSAs to enter the mining and minerals industry and to benefit from the exploitation of the nation’s mineral resources;
- Utilise and expand the existing skills base for the empowerment of HDSAs and to serve the community;
- Promote employment and advance the social and economic welfare of communities and major labour sending areas;
- Encourage beneficiation of South Africa’s mineral commodities; and
- Promote sustainable development and growth of the mining industry.

[1] It should be noted that in terms of Section 23(2A), the Minister may impose such conditions as are necessary to promote the rights and interests of the community, including conditions requiring the participation of the community

5.1.5 The Department of Mineral Resources Consultation Guidelines

The above Guidelines were compiled for use by applicants for prospecting and mining rights. It provides that Interested and Affected Parties include, amongst others, host (or receiving) communities, land owners, traditional authorities, land claimants, lawful occupiers, any other person whose socio-economic conditions may be directly affected by proposed prospecting or mining activities.

5.1.6 Mine Health and Safety Act, 1996 (Act 29 No. of 1996)

This Act is administered by the Mine Health and Safety Inspectorate of the DMR. The sections of the Act applicable to socio-economic aspects are sections 2 and 5, which provide that employers must ensure and maintain a safe and healthy environment at the mine during construction, operation, decommissioning and closure. The Act also stipulates that no infrastructure can be within 100m of an operation's blasting zone.

5.1.7 White Paper on Local Government (1998)

This White Paper sets the framework for a developmental local government system that is committed to working with citizens, groups and communities to create sustainable human settlements which provide for a decent quality of life and meet social, economic and material needs of communities in a holistic fashion.

5.1.8 Municipal Systems Act, 2000 (Act No. 32 of 2000)

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

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

5.1.9 Municipal Structures Act, 1998 (Act No. 117 of 1998)

This Act states that district, regional and local municipalities must support and co-operate with one another. The division of functions between local and district may also be adjusted according to the Act. This allows local municipalities to take on more roles and responsibilities from district municipalities, such as service provision.

5.1.10 Spatial Planning and Land Use Management Act, 2013 (Act 16 of 2013)

The Spatial Planning and Land Use Management Act (SPLUMA) aims to reform the legislative planning framework and formulate a coherent planning framework. The Act enables government to formulate policies, plans and strategies for land use and land development that addresses the spatial, economic and environmental challenges. The Act also assigns municipalities with the sole responsibility of dealing with land use application and the appeal relating thereto. Municipalities will have 5 years from the commencement of the Act to adopt and approve a single land use scheme for its municipal area.

SPLUMA was assented to by the President of the Republic of South Africa on 5 August 2013 and came into operation on 1 July 2015.

5.1.11 Extension of Security of Tenure Act (ESTA), 1997 (Act No. 62 of 1997)

This Act confers certain rights to non-landowning residents of a property, where such rights are linked to the period of time in which persons have been resident on the land. The Act applies to all rural areas in South Africa, regardless of whether the land is used for farming or mining purposes. No occupier[2] can be evicted unless the provisions of ESTA have been strictly followed and a Court Order has been obtained.

5.1.12 Restitution of Land Rights Act, 1994 (Act No. 22 of 1994)

This Act provides for the restitution of rights in land, for which people and communities were dispossessed of under any racially based discriminatory law; to establish a Commission on Restitution of Land Rights and a Land Claims Court.

5.1.13 Traditional Leadership and Governance Framework Amendment Act, 2003 (Act of 2003) and Council of Traditional Leaders Act, 1997 (Act of 1997)

These two acts provide for the recognition and establishment of traditional communities and councils, and provide a framework for traditional leadership and the roles and responsibilities of this leadership.

5.1.14 Labour Legislation

The following acts will be applicable with regard to employment policies at Pamish's proposed mining operation:

- Employment Equity Act, 1998 (Act No. 55 of 1998);
- Basic Conditions of Employment Act, 1997 (Act No. 75 of 1997);
- Labour Relations Act, 1995 (Act No. 66 of 1995); and

[2] 'Occupier' refers to a person residing on land which belongs to another person and who has or had, on 4 February 1997 or thereafter, consent to do so.

- Skills Development Act (Act No. 97 of 1998 as amended).

5.2 Development Policies

This section provides an overview of key initiatives and plans guiding national, provincial and district development, including plans pertaining to spatial and economic development.

5.2.1 National Development Plan 2030 (NDP)

Development in South Africa is guided by the NDP, which presents a shared long-term strategic framework within which more detailed development planning can take place in order to advance the long-term goals adopted in the NDP (National Planning Commission, 2011). The Plan aims to ensure that all South Africans attain a decent standard of living through the elimination of poverty and the reduction of inequality. The NDP confer that all regions are to seize advantage of the natural resources endowed to them towards achieving these aims, but in a sustainable and equitable manner.

5.2.2 Accelerated and Shared Growth Initiative for South Africa (AsgiSA)

The Initiative was launched in 2003 with the vision to halve poverty and unemployment among the country's population by 2015. The Initiative is considered one of the key vehicles driving South Africa's economic policy and subsequent development plans. The primary aims of AsgiSA are to:

- Target specific sector strategies and initiatives (including mining) to further stimulate economic growth and job creation;
- Obtain balanced growth in the country's economy;
- Invest in infrastructure as a way to stimulate economic growth and job creation, and lay the foundation for fast-tracking expansion of the national economy;
- Invest in education and skills development;
- Eliminate the second economy (informal sector) by expanding women's access to economic opportunities, promote Small, Medium and Micro-sized Enterprises (SMMEs); and
- Improve the small business regulatory environment and promote youth development.

5.2.3 The Industrial Policy Action Plan (IPAP)

The IPAP 201415-2016/17 which is the sixth iteration of the IPAP recognises the important role that the industrial sector plays in terms of job creation in South Africa. The plan provides guidelines in terms of job creation and economic development throughout South Africa. The plan further focuses on specific sectors that will be the priority sectors in terms of economic development in South Africa. It identifies the development of the metal fabrication, capital and tail transport equipment industry to be one of key priorities for the analysed period.

Importantly, it specifies that one of the key areas of opportunity for growing this industry is among others by implementing mining turnkey projects in the country.

5.2.4 Comprehensive Sustainable Rural Development Programme (CRDP)

The CRDP (2009) aims to reduce/eliminate rural poverty and food insecurity by maximising the use and management of natural resources to create vibrant, equitable and sustainable rural communities. The objectives of the Programme are to:

- Establish an institutional mechanism for managing rural development within national, provincial and local government;
- Establish a rural development role/function and funding for rural development within national, provincial and local government;
- Provide for establishment of partnerships and collaborations in implementing rural development and funding;
- Establish a special support programme for development of emerging farmers;
- Renegotiate and redesign a funding model for rural development with institutions such as the Land Bank, etc.;
- Mainstream rural development into the national, provincial and local government; and
- Align with government policy and programmes at all levels.

5.2.5 The New Economic Growth Path Framework (New Growth Path)

The New Growth Path for South Africa was launched by Government in 2010. In short, the policy is aimed at enhancing and facilitating growth, employment creation and equity. The policy's principal target is to create five million jobs over the next decade.

Central to the New Growth Path is a massive investment in infrastructure as a critical driver of jobs across the economy. The framework identifies investments in five key areas namely: energy, transport, communications, water and housing. Sustaining high levels of investment in these areas will create jobs in construction, operation and maintenance of infrastructure. The New Growth Path sees infrastructure programmes as a trigger to build a local supplier industry for the manufacture of the components for the build-programme.

The Framework identifies five priority areas as part of the infrastructure programme to create jobs through a series of partnerships between the State and the private sector; these areas are:

- Mining: Calls for increased mineral extraction and improving infrastructure and skills development. It focuses support for beneficiation on the final manufacturing of consumer and capital goods, which can create large-scale employment. It foresees the establishment of a state mining company concentrating on beneficiation and enhanced resource exploitation in competition with a strong private mining sector;

- Green economy: Expansions in construction and the production of technologies for solar, wind and biofuels are supported by the draft Energy on Integrated Resource Plan;
- Agriculture: Jobs would be created by addressing the high input costs and up scaling processing and export marketing. Support for small holders will include access to key inputs. Government will explore ways to improve working and living conditions;
- Manufacturing: Calls for re-industrialisation in the South African economy based on improving performance through innovation, skills development and reduced input costs in the economy; and
- *Tourism and other high-level services* hold employment potential and calls for South Africa to position itself as the higher educational hub of the African continent.

5.2.6 National Infrastructure Plan

The South African Government adopted a National Infrastructure Plan in 2012. The primary objective of the Plan is to transform the country's economic landscape, while simultaneously creating significant numbers of new jobs, strengthen the delivery of basic services, and promoting integration with other African economies. In achieving this objective, 18 strategic integrated Projects (SIPs) have been developed (Presidential Infrastructure Coordinating Commission, 2013). These SIPs include social and economic infrastructure development across all provinces, and comprises catalytic Projects that should fast-track development and growth. In the context of the proposed project the following SIPs bear relevance to the Limpopo Province:

- SIP 1: Unlocking of the northern mineral belt, with Waterberg as the catalyst in Limpopo entails investment in rail, water pipelines, energy generation and transmission to tap Limpopo's rich mineral reserves, and will be co-ordinated by Eskom; and
- SIP 11: Agri-logistics and rural infrastructure: Improve investment in agricultural and rural infrastructure that supports expansion of production and employment, small-scale farming and rural development, including.

5.2.7 The Extended Public Works Programme (EPWP)

The EPWP is a national programme covering all spheres of government and state-owned enterprises. The Programme's primary aim is to reduce unemployment through the provision of work opportunities in conjunction with training. Three new programmes were recently included in the Plan; these are employment incentives for municipalities that achieve employment targets, employment incentives for non-profit organisations, and Community Works Programmes. These elements enable communities and organisations to determine how they will go about their job creation initiatives. The EPWP involves creating temporary work opportunities for the unemployed, using public sector expenditure.

Mogalakwena Local Municipality (MLM) has been implementing Projects through labour intensive methods aligned Programme. The EPWP involves creating temporary work opportunities for the unemployed, using public sector expenditure.

5.2.8 Provincial Growth and Development Strategy (PGDS)

The PGDSs (of which there is one for each province of South Africa), are aligned with the NDP, NSDP, National Infrastructure plan and all provincial policies that have bearing on development. Within Limpopo provincial development is guided by the Limpopo Development Plan (LDP) (Limpopo Office of the Premier, 2014). The purpose of the LDP is to serve as a single reference point for policy-makers in government, private sector, civil society and donors with regard to developmental priorities for Limpopo, bearing in mind that development is about people. A key focus area of LDP is to create sustainable economic development, reduce unemployment and eradicate poverty. The LDP sets out an overarching strategy for Limpopo Province for the next five financial years (i.e. 2014/2015 - 2019/2020) (Limpopo Office of the Premier, 2014).

5.2.9 Economic Development

Economic development on District level is guided by the Waterberg District Municipality's 2007 LED strategy. The Strategy recognises mining as a key sector in the district municipality followed by agriculture. A mining development strategy focusing on the improvement of the mining value chain has been established in support of the local mining industry. The LED focuses on clusters which have been formed in order to facilitate the specialisation of certain resources. With the assistance of the public sector, the cluster development aims to maximise the benefits of mineral resources through upstream and downstream activity in the local area. Although the Strategy is out-dated, it sets the following objectives:

- Create a conducive environment for mining expansion and new mining developments through, among others improved infrastructure (e.g. water, roads, electricity, and rail), skills promotion, and small scale mining development;
- Promoting the capacity of Broad Based Black Economic Empowerment (BBBEE) companies with regard to supply side for local mines; and
- Enhance the capacity of local municipalities and local authorities as well as communities, to maximise the benefit from mining activity in and around their areas

On a local level LED is guided by the Mogalakwena Local Municipality (MLM) LED Plan for 2011-2016 (MLM, 2011). The Plan is aligned to, various National, Provincial and Local government policies, programmes and initiatives including the standardised framework for LEDs. The Plan identifies mining as the largest economic component of the municipality and it is acknowledged that it is the main driving force to achieve growth and development in the area (MLM, 2011).

5.2.10 National Spatial Development Plan (NSDP)

In South Africa spatial development is guided by the NSDP. SDFs for provinces and municipal areas are nested within the principles of the NSDP. In short, the principles of the NSDP state that spatial development should, if appropriate, accommodate and promote private economic ventures, such as mining, which could support sustainable economic growth, relieve poverty, increase social investment, and improve service delivery.

It should be noted that the implementation of SPLUMA in mid-2015 will likely result in several procedural reforms in existing spatial development planning policies, including SDFs and LUMS for WDM and MLM.

5.2.11 Limpopo Spatial Development Framework (LSDF)

The LSDF is used as a tool for forward planning to direct decisions within the domain of land development. The approval of the LSDF in terms of the Local Government Municipal Systems Act (Act No. 32 of 2000) implies that the LSDF has statutory status as the lone spatial planning instrument in the province, and as such should be considered the primary frame of reference to which the PGDS, IDPs, SDFs and Land Use Scheme's should be aligned with. In broad terms, the LSDF:

- Indicates the spatial implications of the core development objectives outlined in the PGDS;
- Serves as a spatial plan that facilitates LED;
- Lays down strategies, proposals and guidelines as these relate to overall sustainable development;
- Facilitates cross-boundary co-operation between municipalities and provinces; and
- Serves as a manual for integration and standardisation of the planning frameworks across all spheres of provincial government.
- Informs the Waterberg District Municipality's (WDM) Spatial Development Framework with specific regards to the location and nature of the physical development.

5.2.12 Spatial Development within MLM

Spatial development and land use within MLM are guided by the municipal Land Use Management Scheme. However, the implementation of the scheme is executed in conjunction with the Town Planning Scheme. In rural areas, the Land Use Management Scheme only provides guidelines for control and management of land use (MLM, 2012). The regulation of land use is done in terms of SPLUMA (see Section 5.1.10).

5.2.13 Integrated Development Planning

An IDP is a municipal-level planning document that aims to provide a developmental framework for district and local government, in which municipalities must provide leadership, management, budgeting, and direction in the provision of services and infrastructure. They

serve to guide developmental planning and community development. Municipal IDPs highlight local needs and priorities that could be considered by the Project. Integrated planning on District level is currently guided by the WDM IDP for 2015/2016 financial year, while the MLM IDP for 2014/2015 currently guides development planning on a local municipal level (MLM, 2014; WDM, 2015).

5.2.14 The King Report on Corporate Governance for South Africa, 2009

The King Report on "'Governance for South Africa" and the associated "Code of Governance Principles for South Africa" (King III, 2009) address aspects relating to corporate governance rules to improve the quality of leadership which boards are giving to their businesses. The King Report follows a voluntary basis for governance compliance and addresses issues such as ethical leadership, corporate citizenship and sustainability.

The King Report states that responsible corporate citizenship includes an ethical relationship of responsibility between the company and the society in which it operates. Companies have obligations - such as legal and moral obligations - regarding the economic, social and natural environments within which they operate; as well as investment and sustainability obligations to protect and enhance the well-being of these environments. Companies must consider the environmental, social and governance impacts they have on the community in which they conduct their business.

5.3 International Standards and Guidelines

5.3.1 International Finance Corporation (IFC) Performance Standards (PS)

The IFC, a member of the World Bank Group, has adopted a suite of PSs on social and environmental sustainability. The IFC applies the PSs to manage Project related social and environmental risks and impacts, and enhance development opportunities in its private sector financing. The IFC PSs are widely regarded as international best practice with regard to the management of impacts associated with large Project developments.

Although several national policies and legislation in South Africa address land use and tenures rights (e.g. the Security of Tenure Act), these do not explicitly address involuntary displacement, where land owner/users are directly or indirectly forced to forfeit the tenure and usage rights. This policy vacuum is inadequately filled by complicated land tenure, environmental and planning legislation.

Consequently, the existing legal frameworks for addressing involuntary resettlement are inadequate and do not aid communities, implementing agents or mining companies. Instead they often obscure rights and responsibilities, cause unnecessary delays to resettlement Projects and increase the total costs involved (Sonnenberg & Münster, 2001). In view of this gap in national legislation, resettlement processes in South Africa often use the guiding principles set out in IFC *Performance Standard 5: Land Acquisition and Involuntary Resettlement*, which sets out the following objectives (IFC, 2012):

- Avoid, and when avoidance is not possible, minimise displacement by exploring alternative Project designs;
- Avoid forced eviction;
- Anticipate and avoid, or where avoidance is not possible, minimise adverse social and economic impacts from land acquisition and/or restrictions on land use by (i) providing compensation for loss of assets at replacement cost and (ii) ensuring that all resettlement activities are implemented with appropriate disclosure of information, consultation, and the informed participation of those affected;
- Improve, or restore, the livelihoods and standards of living of displaced persons; and
- Improve living conditions among physically displaced persons through the provision of adequate housing with security of tenure at resettlement sites.

Another IFC Performance Standard – *Performance Standard 1: Social and Environmental Assessment and Management Systems* – sets out international best-practice standards for conducting a SIA. Amongst other things, these standards require that a SIA identify individuals and groups that may be differentially or disproportionately affected by the Project because of their disadvantaged or vulnerable status (where such status may be related to an individual's or group's ethnic affiliation, gender, socio-economic status, health or dependence on unique natural resources). Where groups are identified as disadvantaged or vulnerable, differentiated measures must be identified and implemented to ensure that adverse impacts do not fall disproportionately on them and that they are not disadvantaged in sharing development benefits and opportunities.

5.3.2 International Human Rights Guiding Principles

There are a number of guidelines which aim to assist companies in formulating their human rights objectives, and integrating these into their business processes and practises. Some of the more prominent guidelines are the following:

- The United Nation's 'Protect, Respect and Remedy Framework' and the associated 'Guiding Principles for Business and Human Rights,' which emphasises the corporate responsibility to protect human rights, prevent adverse human rights impacts, and establish appropriate remedial mechanisms to address human rights violations. The Guiding Principles of the Global Compact Initiative involves 10 fundamental human rights principles which form part of a global corporate social responsibility initiative with regard to human rights.
- The IFC's 'Guide to Human Rights Impact Assessment and Management' (2010) has been developed to assist business enterprises in assessing and managing human rights risks and impacts of their business activities.
- The International Council on Mining and Metals has produced a guidance note on 'Human Rights in the Mining and Metals Industry' (2009) which outlines the human rights aspects of its 'Sustainable Development Framework.'

- The 'Voluntary Principles on Security and Human Rights' was established in 2000 and provides guidance to the extractives industries on maintaining the safety and security of their operations whilst ensuring respect for human rights.

5.4 Corporate Policies, Programmes and Plans

Pamish is a subsidiary of Bushveld Minerals Resources (Pty) Ltd (Bushveld Minerals) and is committed to act in accordance with Bushveld Mineral's existing policies.

5.4.1 Human Immunodeficiency Virus/ Acquired Immune Deficiency Syndrome (HIV/AIDS) Policy

Pamish is committed to implement, as far as practically possible, all measures to reduce the incidence of new infections and the effect of HIV/AIDS on the lives of the employees, their families, and labour sending communities. The aim of the HIV/AIDS policy is, amongst other things, to:

- Provide prevention and education programmes in the workplace, which clearly state how HIV/AIDS can be contracted and prevented;
- Encourage employees and contractors to ascertain their HIV/AIDS status through active campaigns and the provision of counselling and testing facilities. Testing will be on a strictly voluntary basis and will include pre- and post-counselling services;
- Prospective employees will not be required to undergo HIV/AIDS testing as a pre-condition of the selection procedure;
- Ensure that employees or prospective employees with HIV/AIDS are treated justly and humanely;
- Ensure that the support and cooperation of local, provincial and national government will be garnered by way of joint projects or where reasonably possible the formation of public/private partnerships with those institutions in order to join forces in the fight against HIV/AIDS; and
- Facilitate through its corporate social investment (CSI) programme, training of peer educators and support home based care workers to ensure that every reasonable attempt is made to assist workers and the balance of the community in combating HIV/AIDS.

5.4.2 Health, Safety, Environmental and Community Policy

This Policy is aimed at ensuring that Pamish adheres to best practice Health, Safety, Environment and Community (HSEC) standards during all of exploration and development activities for the life of the project. In addition Pamish will ensure that the activities of contractors and associates will be assessed against the IFC standards. The various components of the SHEC policy are briefly listed below.

- ***Health and safety:*** Pamish is committed to operate a workplace that is free from injury - and fatality for the well-being of employees, contractors and communities through:
  - Identifying and eliminating safety, occupational, and community health and hygiene hazards;
  - Develop safety, occupational health and community health programmes; and
  - Provide training to develop positive culture and behaviour on safety and health
- ***Environment:*** Pamish will ensure that environmental management programmes for all stages of exploration, evaluation and development or mining are in place at an early stage. Pamish is committed to manage the environment that could potentially be affected by the operation by ensuring that it will be useful at post-closure through:
  - Identifying, eliminating and remediating the environmental impacts of their operational activities;
  - Continually improve the use of natural resources; and
  - Identifying post-closure land use objective and develop programmes to achieve the objective
- ***Community:*** Pamish will communicate and consult with local communities and stakeholders with a view to fostering mutual understanding and shared benefits through the promotion and maintenance of open and constructive dialogue and working relationships. Pamish has committed to contribute to the social and economic development of local communities, by:
  - Identifying all the stakeholders associated with the mine and actively engaging them on matters pertaining to their operation;
  - Engaging community leadership structures to identify and support projects that benefit the needs of the communities; and
  - Developing enterprise development programmes that will minimize the effect of mine closure on surrounding communities.

5.4.3 Social and Labour Plan

In accordance with the MPRDA the project has drafted a SLP, which unpacks the project's policies with regard to:

- Human resource and skills development;
- Actions in terms of community development and employee housing; and
- Procurement progression and employment equity planning.

The remainder of this section presents an overview of the aforementioned components.

5.4.3.1 Human Resource and Skills Development

Pamish recognises that successful human resource and skills development is the foundation for developing competent and productive employees who are able to participate in meeting the mine's business objectives. Therefore the focus of skills development through the initial phases of mine's operation will be on providing employees with opportunities for acquiring skills to promote their advancement within the mine and mining industry. In the last five years of mining, the focus will shift to providing employees with opportunities for gaining portable skills in other sectors of the economy.

Pamish has committed to implement several programmes and plans as part of their overarching drive for human resources and skills development; these are discussed in Table Table 1 below. These programmes will be implemented in 2017, and will comply with the Sector Education and Training Authority (SETA) and Mining Qualifications Authority (MQA).

5.4.3.2 Employment and Procurement Policies

Pamish's recruitment policy is be based on the South African Mining Charter, which dictates that 40% of a mining operation's employees should be recruited from historically disadvantaged communities and where necessary, receive appropriate skills training (DMR, 2004). Employees recruited from local historically disadvantaged communities should also represent vulnerable groups such as women and people with disabilities. The Mining Charter's target for female employment is set at 10%. In terms of procurement the mine intends to draft a preferential procurement policy, which will be aligned procurement targets set out by the Mining Charter. Table 2 below describes Pamish's current policies on participation of HDSAs and WiM in employment and procurement at the mine.

5.4.3.3 Employee Housing and Well-Being

Table 3 describes Pamish's policies regarding employee housing and living conditions and health care and nutrition.

Table 1: Skills Development Programmes and Plans

Programme	Undertaking	Guideline	Strategic Action Plan	Beneficiaries
Adult Basic Education Training (ABET)	The Mine is dedicated to improving the foundations for skills development by providing employees with the opportunity for increasing their literacy rates by means of ABET programmes.	The Mine will conduct a survey to identify the number of employees that still require ABET	▪ ABET to be provided to all employees who are willing to participate in the programme. ▪ Quality of training presented by facilitators will be monitored. ▪ Study leave to be granted to employees to write examinations. ▪ Financial provision to be allocated for ABET Programme	Employees who are willing to participate in the programme
Learnerships	The provision for learners within the mine is aimed at addressing current and future skills and competency needs in terms of the Career-pathing structure and manpower process. The mine will further use the learnership programme as a vehicle to fill Hard to Fill Vacancies according to the supply and demand of the company.	Each learner will be allocated a mentor, who will meet with learners on a regular basis to review progress and provide support with respect to performance issues. As a mechanism to address the objective of increasing the pool of available labour, learners will be recruited externally and placed on in-house Learnerships. This will assist in addressing skills shortages and unemployment challenges.	▪ Learnerships to be awarded to learners in accordance with shortages in specific needs ▪ Advertise learnership positions internally and externally through community newspapers and traditional council to ensure recruits from local community. ▪ The learnership needs and programmes will be assessed on an annual basis to review the needs ▪ Mentorship will be implemented for all learnerships. See mentorship action plan. ▪ Financial provision will be allocated for the programme	A total of 16 Learnerships will be provided. Learnerships will be in boiler making, electrical work, fitting and rigging.

Programme	Undertaking	Guideline	Strategic Action Plan	Beneficiaries
Career progression	The mine will offer structured opportunities to employees with regard to the direction and progression of their careers. Furthermore the integrated management of career paths, skills development initiatives and mentorship programmes. Career progression plans will support the mine's Employment Equity initiatives, such as HDSAs in management and Women in Mining (WiM).	The Career Progression plan will be linked to career path identification, succession planning and developmental positional as a centralised function.	▪ Development to take place, regardless of availability of vacant positions. ▪ Individual development and training plans to be implemented for high achievers with potential progress to more highly skilled and in particular, management level. ▪ A performance management appraisal to be implemented in order to identify employees as fast trackers.	All mine employees
Core business skills programmes	The principal objective Pamish's Skills Development Programme is to ensure that employees have the skills to support the business operation effectively. All training to be carried out at the mine will be in line with Mining Qualification Authority (MQA) standards and will therefore be carried out by accredited training providers and facilitators. Core Business Skills Training will be integrated with the career progression planning.	During the recruitment of the workforce individual-specific training will be planned based on the outcomes of the skills analysis and individual career progression plans developed.	▪ Formalise and develop skills and competency requirements for the Mine, by identifying the workforce profiles and job requirements, and using benchmarking to develop policies and procedures. ▪ Assess employees in terms of skills and competencies gaps - resulting in employee competency profile. ▪ Develop a comprehensive skills training plan with targets, budgets and timeframes. ▪ Re-assessment of employees to identify where gaps remain and continuous evaluation against career progression targets as set out in the SLP.	A total of 50 individuals will enrol in various mining and engineering training annually. Training programmes will include: operating heavy duty vehicles, mill operators, leadership training, HSEC, and computer literacy.

Programme	Undertaking	Guideline	Strategic Action Plan	Beneficiaries
Mentorship programme	Mentoring will be done in a formal manner, where a mentorship plan is put in place between mentor and mentee. The mentorship plan for employees will be aligned with the skills development plan, training and the implementation thereof, where employee's progression through a career path will be facilitated and monitored. The progression will be monitored by an assigned mentor and facilitated by Human Resources.	All learners will be assigned a coach in terms of the mine's skills development process. Mentors will be assigned to all learners on bursary programmes, internships/experiential training and learnerships as well as all employees who have been identified for development to management.	▪ 1. Identify employees with potential for career development and fast tracking programmes through the skills assessment and performance management process. ▪ A mentorship plan to be provided for employees which is aligned to the Skills Development plan and the implementation thereof.	Those benefitting from learnership, bursary, and internship programmes will be enrolled into the mentorship program. A total of 116 individuals will be mentored during the Mine's first 5 years
Bursaries	The mine is committed to up-skilling of individuals from the key labour sending communities as well as their own employees; the mine views their bursary programmes as a mechanism for facilitating such skills development.	Pamish will allocate funds for bursary scheme for students from communities pursuing studies related to mining. It will also provide assistance to employees to further their studies part-time.	▪ Liaison with communities and schools to identify high flyers for tertiary students ▪ Bursaries will be awarded to deserving students, preferentially from local communities ▪ Those given bursaries will be expected to do vocation work on the mine and also enter into service contracts as required ▪ Mentors will be appointed to mentor the students both while at their tertiary institutions as well as when they are on the mine for vocational and/or experiential training	A total of seven bursaries will be awarded, three of these will be allocated internally to employees

Programme	Undertaking	Guideline	Strategic Action Plan	Beneficiaries
Portable skills training	Pamish Magnetite Mine is committed to providing opportunities in training and development, thereby increasing their marketability in the open labour marketing the possible event of retrenchment and mine closure.	Provision of portable skills to employees during the life of the mine in accordance with the skills development plans and workforce planning particularly non-mining related skills. Ramp-up of portable skills training in the last five years of life of mine, or when downscaling becomes inevitable. Such portable skills must have an impact beyond the company and provide for sustained employability.	▪ Determine current portable skills base amongst existing workforce and new recruits during ramp-up phase. In addition, gauge interest in portable skills training programmes to inform training programme going forward. ▪ Identify skill requirements in all sectors within key labour sending areas. Hold workshop(s) with relevant Municipality(s) and community stakeholders to determine skills needs. ▪ A training programme to be identified to provide a portable skill in terms of enhancing the learner's potential and being placed in alternative employment or income generating activities outside of the mine.	A total of 53 employees will receive training in plumbing, welding, oxy-acetylene, or computer literacy.
Internships	Pamish will offer internal and external internships to provide experiential training opportunities. Internal students/employees studying a national engineering diploma will do their P1 and P2 as part an internship.	WiM and HDSAs have to be developed through the internship programme. Mentoring is linked to the internships in order for interns to gain experience, through proper supervision and support during their practical phase.	Internships to be provided to students from the surrounding communities, subject to the following constraints: ▪ Available time from line management to mentor students, ensuring quality training experience. ▪ Accommodate fields of study which are directly mine/plant/ process related ▪ Formal feedback session between mentor, mentee and facilitator.	A total of nine internships will be awarded. These internships will be in the areas of geology, mining engineering and mechanical engineering

Table 2: Employment Equity and Procurement

Plan/Policy	Undertaking	Guideline	Strategic Action Plan
Participation of HDSAs	Pamish is committed to the strategic objectives of the Employment Equity Act that include having individuals from previously disadvantaged groups (including women) represented in all positions of skills, responsibility and at all levels	Pamish will employ a strategy of: ▪ recruiting from the local community; and ▪ developing recruits via the career progression path and skills development programmes to ensure a skilled and competent workforce.	▪ Targeting the recruitment of HDSAs and WIM. Positions should be a specific focus of Pamish's recruitment plan. ▪ Recruitment targets for HDSAs will be specifically aimed at developing and promoting such employees into management positions ▪ Mining-related occupations will be specifically identified in the workforce plan and strategies and targets identified to support the inclusion of women into these occupations. ▪ Skills assessments will focus on the identification of employees with the potential to be developed into management positions and career development plans will drive the growth and advancement of these employees. ▪ Appropriate skills training in line with the career path structure will be provided for HDSAs and Women to ensure that they acquire the appropriate skills and competencies.
Women in mining	Pamish has undertaken to employ a minimum of 10% WIM, of which will be represented at all employee levels, especially on a management lever. Further the mine will give preference to local women with who meet entry level requirements for bursary and learnership programmes.	The Human Resourced Development (HRD) programme is integrated to achieve WIM mining charter objective through a variety of strategies such as targeting women in the community, bursaries, the career progression plan and learnerships.	▪ Develop gender equity policy, communicate policy to all employees. ▪ Recruit female candidates into learnerships and specific skills programmes – sign contractual agreements to enable retention of female candidates. ▪ Find best fit for female candidates for Career Progression Programmes. ▪ Provide necessary infrastructure to cater for WIM, i.e. change rooms, suitable Personal Protective Equipment (PPE)

Plan/Policy	Undertaking	Guideline	Strategic Action Plan
HDSA Procurement	Pamish is committed to ensuring the growth of HDSA suppliers and undertakes to maximize the value of cost effective and reliable procurement of capital, consumables and services from companies controlled by HDSAs of the affected communities from the area in which they operate. Pamish has undertaken to comply with HDSA targets set out by the Mining Charter, i.e. capital goods (40%), consumables (50%), and services (70%).	Pamish will develop and implement a Preferential Procurement Policy which will lead to fair, transparent and compliant environment at all levels of Procurement officials at operational level.	▪ Identify and record the level of procurement from HDSA companies on a quarterly basis as well as geographical sources of procurement ▪ Encourage all suppliers to form partnerships with HDSA companies without overlooking the necessary requirements of the tender process. ▪ Where necessary and feasible, provide mentoring and capacity building assistance to HDSA suppliers

Table 3: Employee Housing and Well-Being

Plan/Policy	Undertaking	Guideline	Strategic Action Plan
Housing and living conditions	Pamish undertakes to furnish employees with affordable and decent accommodation as well as a market related housing allowance as agreed to from time to time with employees representatives. Further the mine will introduce a joint decision making forum to assist employees in any decisions affecting housing needs.	Pamish will endeavour to improve the quality of accommodation of its employees through the subsequent policies: ▪ Employees will be free to choose the type and location of accommodation they prefer, save for possible legislative constraints. Their choice will be limited only to affordability and availability. ▪ Assistance will be given to employees based on their needs as well as financial assistance in terms of housing allowances.	▪ A company housing forum will be established, comprising of union representatives and management representatives. ▪ An appropriate and affordable housing strategy will be developed. ▪ Implementation of strategies and the housing policy will be monitored and evaluated. ▪ To implement a programme this includes time frames to address the needs of the employees. ▪ Employees to be educated on all housing related issues. ▪ Requirements for housing acquisition applications will be determined.
Health care and nutrition	Pamish will not provide any meals to employees; however, there will be a canteen on site managed by food service supplier. Pamish in partnership with the contracted catering service provider will look at implementing awareness programmes with regard to good nutrition in order to inform workers how they can benefit from good nutrition.	Pamish intend to implement regular awareness programmes to inform workers of the benefits of good nutrition, balanced diets, correct method of food preparation to maximize nutritional benefits of food, as well as, the use of nutritional diets in the management of chronic illness including HIV/AIDS	Pamish will: ▪ Establish a nutrition awareness programme. ▪ Introduce a “healthy choice meal” plan to be served at the mine canteen to control and to prevent chronic diseases

5.4.3.4 Downscaling and Retrenchment

The continual investment in HRD and facilitation of training during the lifetime of mine has the purpose to sustain skills that will support employment of the workers beyond life of mine. In this regard Pamish intends to comply with the Basic Conditions of Employment Act in respect of specific skills development directed at facilitating the further acquisition of skills that will be of value to employees at the mine at the time of downscaling and retrenchment.

The applicable authorities and employees will be notified of the planned retrenchments in accordance with legislative requirements. Negotiations with regards to retrenchment packages will be carried out in line with applicable legislation and company's Human Resource's polices for retrenchment. In addition, provisions for downscaling and retrenchment will be finalised in the Future Forum when the need arises. The Future forum will be established six months into production; the forum will comprise representatives from mine management, union representatives, non-union employees and female employees. The main functions of the Forum will be to:

- Create general awareness of SLP and the activities to employees;
- To act as a communication mechanism on organisational and SLP related issues;
- Plan ahead to identify solutions to problems and challenges and possible solutions with regard to productivity and employment;
- Identify production and employment turnaround strategies;
- Implement strategies agreed upon by both the Company and unions;
- Co-ordinate the notification process; and
- Mobilise the Department of Labour Social Plan Services (e.g. Technical assistance, Job Advice Centre, Retrenchment Response Team etc.).

The Mine's SLP outlines several mechanisms that will be put in place in order to prepare for the eventual closure of the mine, these mechanisms would also apply in case of unexpected retrenchment due to economic conditions. These mechanisms will include:

- Mechanisms to save jobs and avoid job losses, which could include the following:
  - Natural attrition would be encouraged: thus should an employee resign then his/her post will not be filled and those taking early retirement would not be replaced. This will result in a lower distribution of employees over the entire mine and could lead to retraining of employees where necessary;
  - Multi skilling of all employees and redeployment of workers to other sections within the mine;
  - Continuous consultation with organized Labour (through the Future Forum) to identify and implement initiatives to avoid job losses and a decline in employment;

- Utilizing the Future Forum to identify strategies to prolong the life of mine;
- Consulting with the Department of Labour (DoL), the DMR in terms Section 52 (1) of the MPRDA and surrounding mining companies to assess any potential opportunities to absorb the employees;
- A "job advice centre" will be established to counsel traumatised employees and aid them with locating alternative employment or income generating opportunities;
- Extensive consultation with employees and unions will take place timeously to ensure that all relevant parties are well informed; and
- Company commit to implementing Section 189 of the Labour Relations Act as well as complying with the Ministerial Directive.

- Provision of alternative solutions and procedures for creating job security where job losses cannot be avoided; and
- Mechanisms to ameliorate the social and economic impact on individuals, regions and economies where retrenchment or closure of the operation is certain.

5.4.3.5 Stakeholder and Community Engagement

Pamish intends to establish a Community Stakeholder Engagement Forum, which will address the issues of the operation, community, LED and any other issues pertaining to the operation and community. In particular these forums will also serve to inform Pamish of development needs in specific communities.

6 Methodology

The study was designed to comply with the relevant national legislative requirements, such as those stipulated in NEMA and the MPRDA (see Section 5.1.2 and 5.1.3) as well as international best-practice standards. The activities undertaken as part of the study are described in turn below.

6.1 Definition of the Study Areas

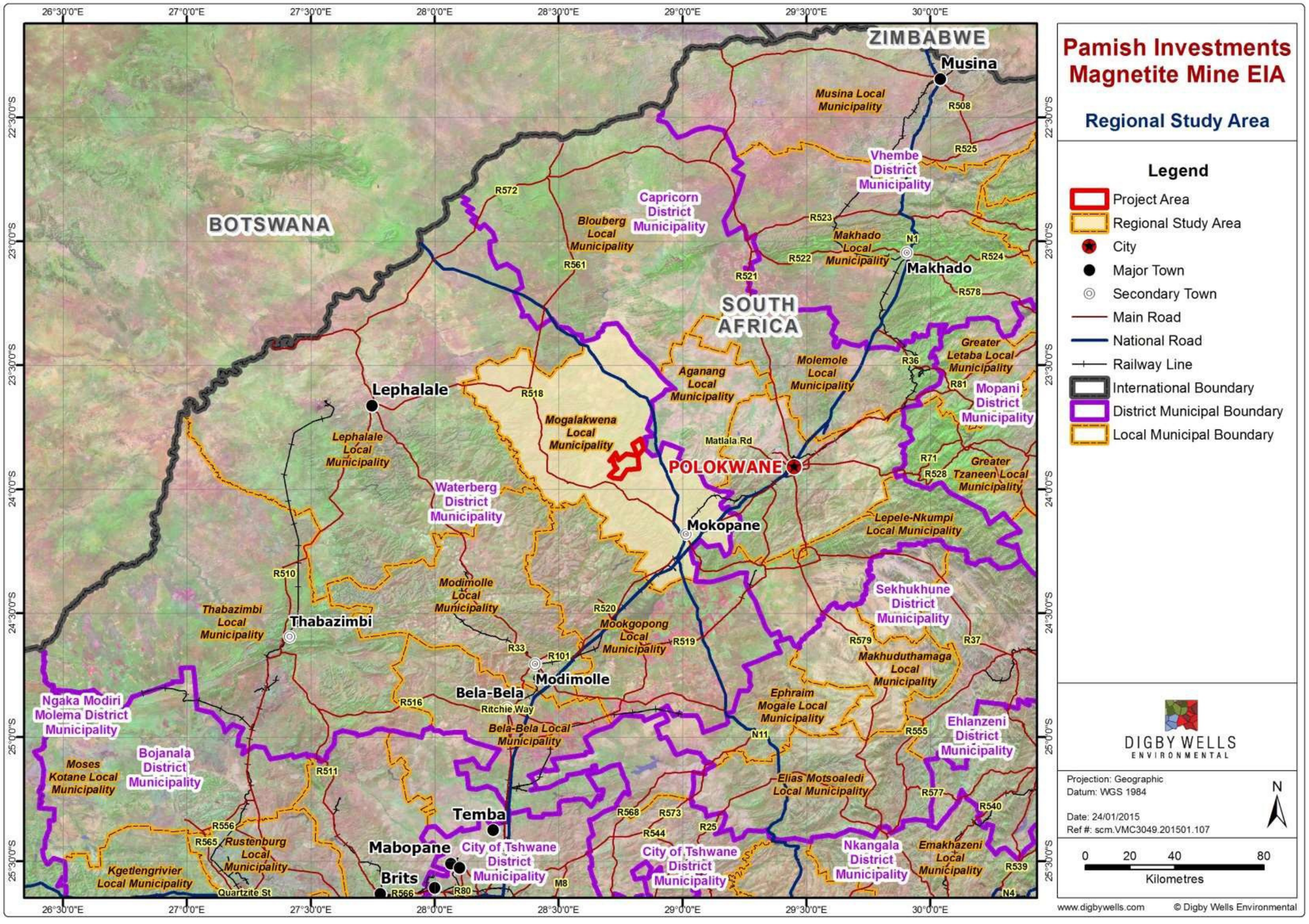
The study area for an impact assessment can be defined as the area that is likely to experience impacts arising from or exert influence on, the project or activity being assessed (IFC, 2012). In the case of a SIA, this task is complicated by the fact that different types of social impacts make themselves felt over different geographical areas. Generally such impacts of a project can be divided into three broad categories:

- Impacts related to the ***physical intrusion*** of project infrastructure and project-related activities on the surrounding environment (which may include socio-economic impacts arising from land acquisition, noise, dust, vibration, traffic and changes in the visual characteristics of the landscape);

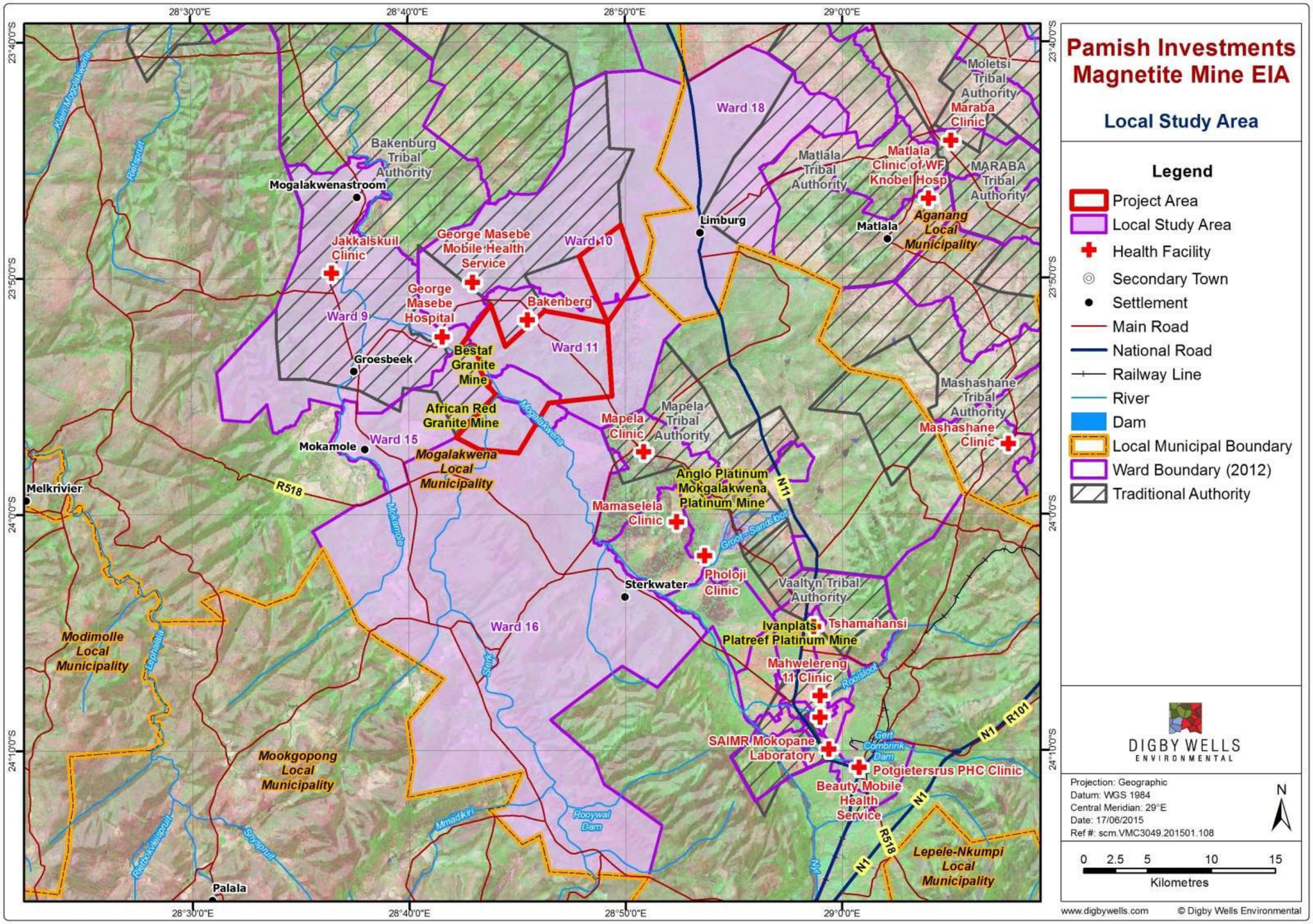
- Impacts related to the ***"economic pull"*** exerted by the project (including job creation, an influx of workers and job-seekers into the project area, as well as the concomitant risk of increased social pathologies and community conflict); and
- ***Indirect*** *or* ***induced impacts*** that are by-products or ripple-effects of the impacts in the foregoing two categories. These could include increased pressure on local services and resources (as a result of the population influx), multiplier effects in the local and regional economy (as a result of the creation of new jobs and project-related expenditure), macroeconomic benefits of the project and benefits derived from corporate social investment by the project proponent.

Accordingly, three concentric and interdependent study areas were defined for the purposes of this study, which correspond to the three categories of impacts listed above. The definition of the respective areas was also, to some extent, influenced by what socio-economic data is available – these being at metropolitan and ward level municipal data. These study areas are defined below; each one encompasses its predecessor and exceeds it in scale:

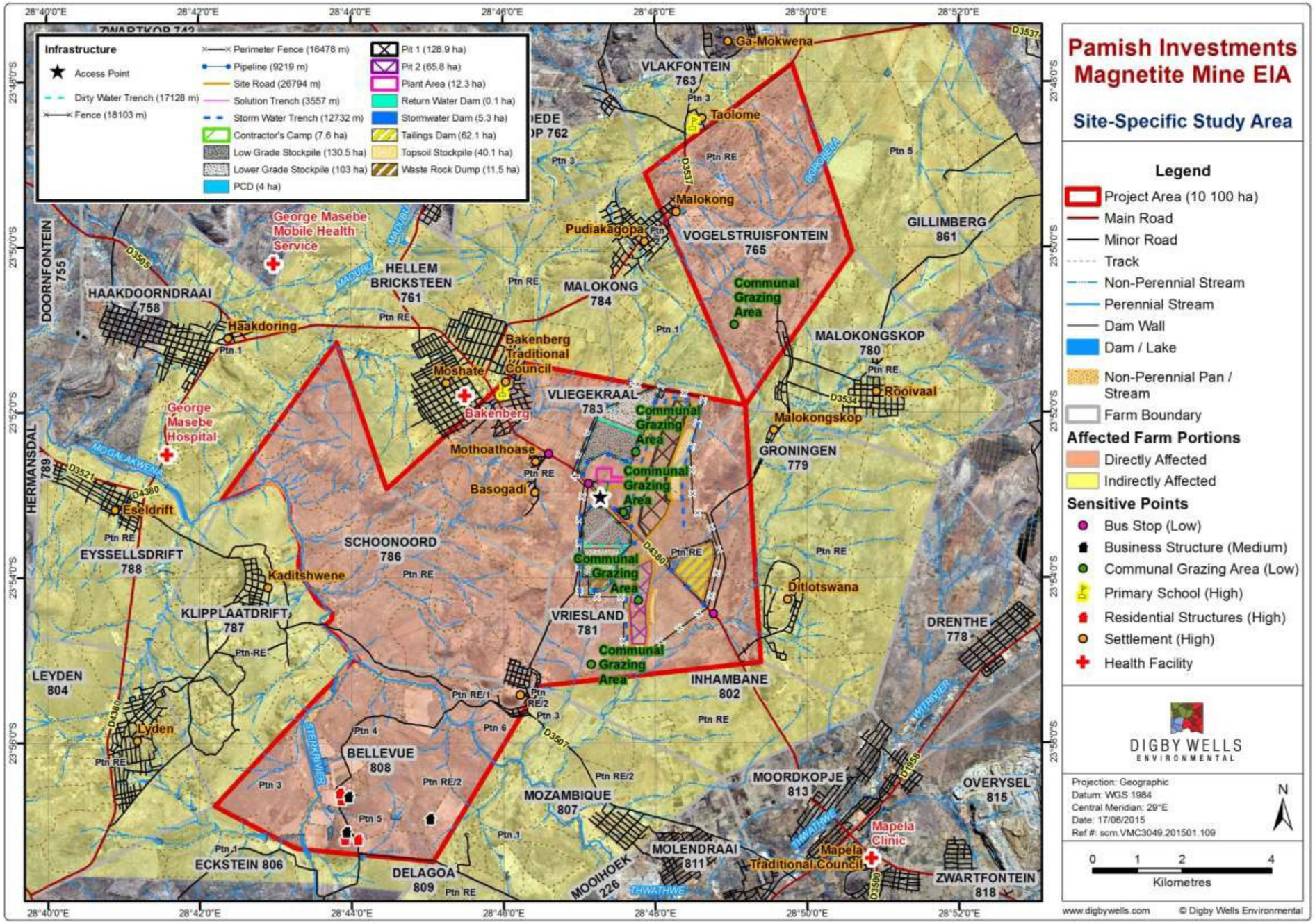
- The **site-specific study area** – the area likely to experience impacts related to the physical intrusion of Project infrastructure and Project-related activities (i.e. up to a few hundred metres from the edges of the project's footprint). This study area is defined as the extent of the farm portions comprising the footprint of Project infrastructure and a 500 meter (m) buffer surrounding it, as well as farm portions neighbouring this area (see Plan 3 and Table 4). Several farms comprising part of the mining right area are excluded by the aforementioned definition; however, these farms were also assessed to accommodate any potential changes in the proposed infrastructure footprint (see Plan 3).
- The **local study area** – the area likely to experience impacts related to the "economic pull" exerted by the Project (i.e. up to a few kilometres from the edges of the project footprint). This area was approximated as the geographical extent of the municipal wards that encompass and surround the proposed Project footprint – namely, Wards 9, 10, 11, 15 and 16 of MLM and Ward 18 of Aganang Local Municipality (ALM) comprise this study area (see Plan 2).
- The **regional study area** – the area likely to experience the indirect or induced impacts of the proposed Project. The typical reach of such impacts mentioned above (i.e. an area circumscribed by a radius of up to a fifty kilometres) includes most of MLM as well as a small part of neighbouring ALM. However, due to the fact that most of this area falls within Mogalakwena, and also because the largest nearby settlement (Mokopane) is located in this municipality, the regional study for the purposes of this baseline is defined so as to include only MLM (see Plan 1).



Plan 1: Regional Study Area



Plan 2: Local Study Area



Plan 3: Site-Specific Study Area

Table 4: Farm Portions comprising the Site-Specific Study Area (Per Land Owner)

Farm	Portion	Type of ownership	Landowner/ Representative	Location relative to project footprint
Vriesland 781 LR	RE	Government	Langa Bakenberg Tribe	Coinciding
Vliegkraal 783 LR	RE	Government	Langa Bakenberg Tribe	Coinciding
Schoonoord 786 LR	RE	Private	South African Development Trust	Coinciding
Klipplaatdrift 787 LR	RE	Private	South African Development Trust	Coinciding
Bellevue 808 LR	RE/1	Government	National Government of the Republic of South Africa	Neighbouring
	RE/2	Private	Broad Bush Inv 26 Pty Ltd	Neighbouring
	3	Private	Educated Risk Inv 40 Pty Ltd	Neighbouring
	4	Private	Kotze Abel Daniel-Trustees	Neighbouring
	5	Private	Trekdrift Boerdery cc	Neighbouring
	6	Private	National Government of the Republic of South Africa	Neighbouring
Inhambane 802 LR	RE	Government	National Government of the Republic of South Africa	Neighbouring
Groningen 779 LR	RE	Government	National Government of the Republic of South Africa	Neighbouring
Malokongskop 780 LR	RE	Government	Langa Bakenberg Tribe	Neighbouring
Vogelstruisfontein 765 LR	RE	Government	National Government of the Republic of South Africa	Neighbouring
Malokong 784 LR	1	Government	National Government of the Republic of South Africa	Neighbouring
	RE	Government	National Government of the Republic of South Africa	Neighbouring

6.2 Data Collection

The information presented in this document was obtained through the following data collection activities:

- A ***desktop review*** of available documents to obtain relevant socio-economic baseline information on the defined study areas. Documents reviewed include:
  - District and Local Municipal IDPs, LED Plans and SDFs;
  - Socio-economic and demographic statistics sourced from Statistics South Africa's (StatsSA) Census 2011 and Community Survey 2007 data;
  - National and international legislation;
  - Previous studies and reports concerning the proposed Project, specifically the SLP, Mine Works Programme (MWP) and Prospecting and Environmental Scoping report previously compiled for the proposed project; and
  - Available maps and satellite imagery.
- ***Investigative site visit and interviews*** undertaken between January and April 2015. The main purpose of these consultations were to:
  - Allow the SIA specialist to become familiar with the study area and gain an understanding of the prevalent socio-economic issues and concerns through meetings with landowners;
  - Gather spatial and photographic data of the site-specific and immediately surrounding areas to (a.) allow for sensitivity mapping of the area, and (b.) determine the probability of physical or economic displacement
  - Conduct interviews with the landowners and custodians of properties constituting the site-specific study area. Persons interviewed are listed in Table 5. The objectives of these interviews were to assess stakeholders' perceptions, concerns and expectations regarding the project, as well as to verify baseline socio-economic information collected through the desktop review.

Table 5: Interviews conducted for the purposes of the SIA

Date	Interviewee/s	Designation	Representing
14/01/2014	Mr. M. Langa	Member of Traditional Council	Bakenberg Traditional Council
	Mr. G.M. Langa	Member of Traditional Council	
	Mr. G.F. Langa	Member of Traditional Council	
	Mr. M.J. Lesiba	Community member	Community representative

Date	Interviewee/s	Designation	Representing
	Mr. M.J. Lamola	Ward committee member	Community representative
	Mr. M. Monare	Community member	Community representative
	Mr. L.P. Monare	Community member	Community representative
13/04/2015	Brighton Mamwula	Cattle herder	N/A
14/04/2015	Mrs. M.M. Mabusela	Principal	Thulane Primary School
	Mrs. R.J. Masalesa	Head of Department	
	Mrs. M.T Mamoyo	Head of Department	
	Mrs. T.J. Langa	Assistant Manager	Bakenberg Clinic
	Mr. G. Shingange	Business development officer	MLM – Planning Department
	Ms. E. Malatji	LED Officer	
	Ms. N. MpFariseni	Environmental officer	
	Mr. T. Maharala	Project coordinator	
	Mr. M. Mogale	Acting LED Department Manager	
	Mr. N. Solani	Acting Divisional Head	
15/04/2015	Mr. A.J. Kotze	Directly affected landowner	Bellevue 808 LR Ptn 3 and 4
	Mr. S. Kotze	Directly affected landowner	Bellevue 808 LR Ptn 5
	Mr. H.M Langa	Traditional council member	Bakenberg Traditional Council
	Mr. T. Langa	Traditional council member	
	Mr. G.M. Langa	Traditional council member	
	Mr. H. Masilesa	Traditional council member	
	Mr. S. Maloleke	Traditional council member	
	Mr. G.F. Langa	Traditional council member	
23/04/2015	Mrs. M.E Thubagkale	Social Worker	Bakenberg - South Africa Social Security Agency
24/04/2015	Mr. G.T. Gwangwa	Principal	Dennis Matlhaba high school
	Mrs. C. Sathekge	Head of department	
28/04/2015	Mr. M.M Ramokolo	Chairperson	Traditional healers association
	Mrs. N. Mathebula	Association member	
	Mrs. F. Ramokolo	Association member	
	Mr. P. Ria	Association member	

Date	Interviewee/s	Designation	Representing
	Mrs. M. Pave	Association member	
	Mrs. S. Longwane	Association member	
	Mr. G. Sathakge	Association member	
	Mr. S. Nkhumane	Association member	
29/04/2015	Mr. D. Langa	Ward Councillor	MLM Municipal Ward 11
25/05/2015	Mr. L. Botha	Directly affected landowner	Bellevue 808 LR Ptn 2

- ***Household socio-economic survey:*** a socio-economic sample survey of households in the vicinity of the site-specific study area was undertaken between 13 - 29 April. The primary aim of this survey was to gain an understanding of the socio-economic living conditions of the population that might be impacted upon (excluding landowners, as they were included as part of interviews with key informants) by the project. The steps taken to ensure a successful survey are explicated below.
  - *Survey planning* - included the selection of a sampling procedure, questionnaire design and timing of survey activities; these were informed by information collected during the initial site visit, review of relevant literature and the inspection of maps and aerial imagery.
  - *Questionnaire development* - Digby Wells compiled a questionnaire based on extensive previous experience with household surveys in rural South African communities. This questionnaire was tailored and refined to meet the requirements of this study as specified in the terms of reference.
  - *Sampling procedure* - Based on the inspection of aerial imagery and the orientation site visit, it was estimated that the site-specific study area consists of approximately 5 700 households. In order to draw valid and representative conclusions regarding the socio-economic characterises of the aforementioned households, 570 of these households had to be surveyed on order to achieve a 90% confidence level of the findings. To increase the generalizability of the data derived from the sample, a pre-determined number of households were selected from the largest communities in the site-specific study area. The following communities were included as sampling areas: Bakenberg, Pudiakagopa, Sepharane, Ditlotswana, Malokongskop, Rooivaal, Basogadi, Mothoathoase, and Kaditswhene (see Figure 1). The number of households sampled in each community was determined by the surface area of the particular community in relation to the total surface area of all communities targeted by the survey. That is, if a village comprised 15% of the total area of communities to be surveyed, then 15% of the 550 households would be sampled from that community.

- *Survey implementation* - a team of 10 enumerators were used; these enumerators were recruited from local communities. Prior to commencement of the survey, the enumerators received training in the questionnaire content, interviewing techniques, accurate recording of data, cross-checking for consistency of responses, etc. Initial interviews of enumerators with survey participants were conducted under close supervision of the Digby Wells team to ensure that the survey protocol is correctly followed. Moreover, stringent quality control was applied for the duration of the survey, involving checking questionnaires for completeness and internal consistency.
- *Data capturing and analysis* – completed questionnaires were captured electronically onto a Microsoft Excel database. The data were analysed to produce descriptive statistics that summarizes the results of the survey, the findings of these analyses are presented in Section 8.3.

- ***Consideration of information from other specialist studies:*** Several specialist studies undertaken for the proposed project focus on impacts that have significant, although indirect, social implications. The specialist studies conducted as part of the EIA are listed in Section 1. Relevant specialist studies (e.g. geo-hydrological assessment, hydrogeological assessment, traffic impact assessment, visual and topographical impact assessment, blasting and vibration impact assessment, noise impact assessment) were reviewed to identify the social impacts that might derive from the impacts investigated by the studies (DWE, 2015a; DWE, 2015b; DWE, 2015c; DWE, 2015d; DWE, 2015e; and DWE, 2015f).
- ***Information from the public consultation process***, including stakeholder meetings and the project Comments and Response Report (DWE, 2015g). Reviewing this information provided additional information regarding the concerns, attitudes and perceptions of stakeholder regarding the proposed project.

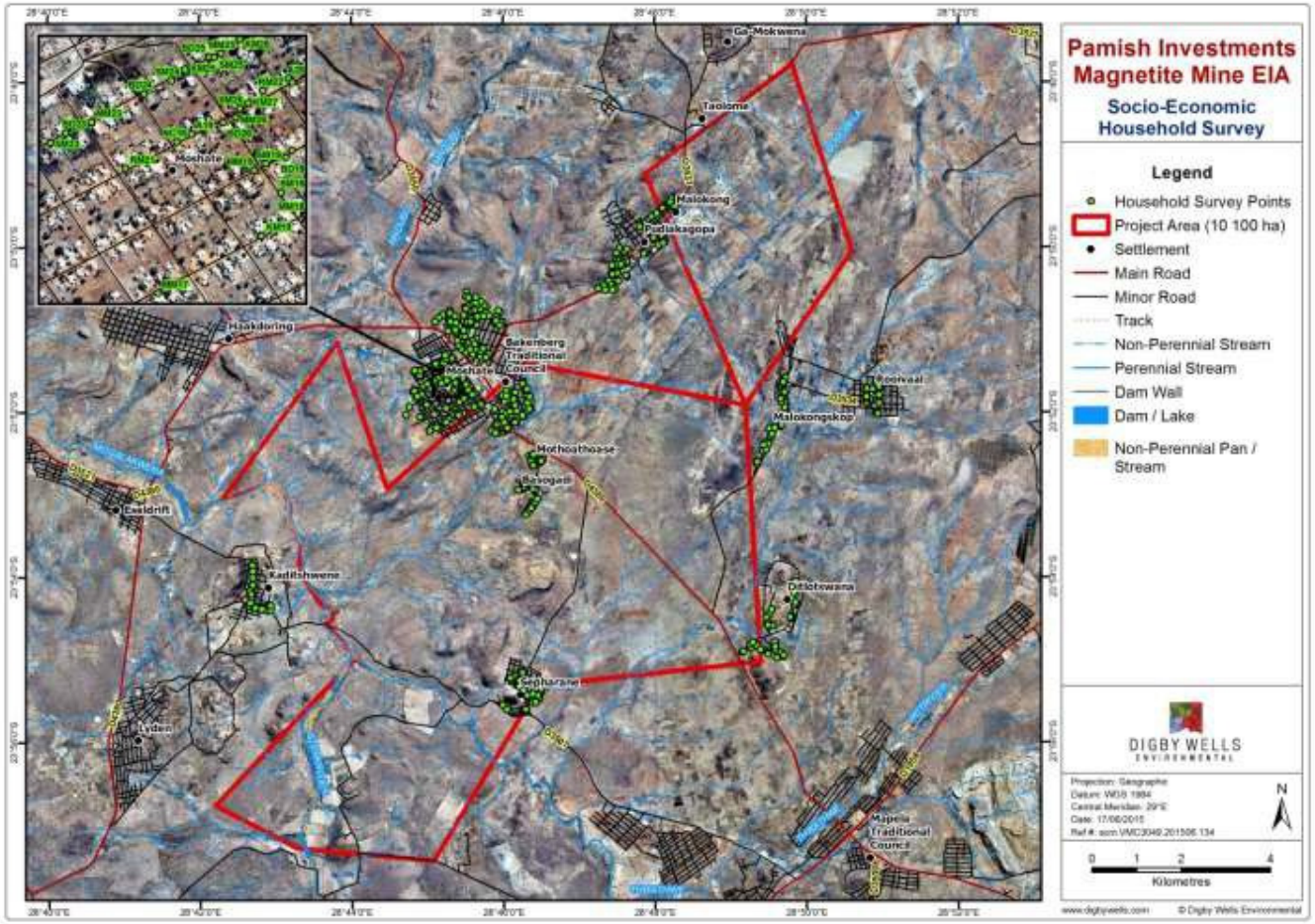


Figure 1: Spatial Distribution of Household include in the Socio-Economic Survey

6.3 Socio-Economic Sensitivity Mapping

Land uses in the vicinity of the project site (corresponding to the local study area) were classified in terms of their likely sensitivity to social impacts caused by the project. The outcomes of this sensitivity mapping exercise were integrated with the findings of similar exercised undertaken by other specialists involved in the EIA to produce a consolidated sensitivity map. This map constitutes a separate deliverable of the EIA process; consequently, the findings of the social sensitivity mapping are not repeated in this report.

6.4 Compilation of a Socio-Economic Baseline Profile

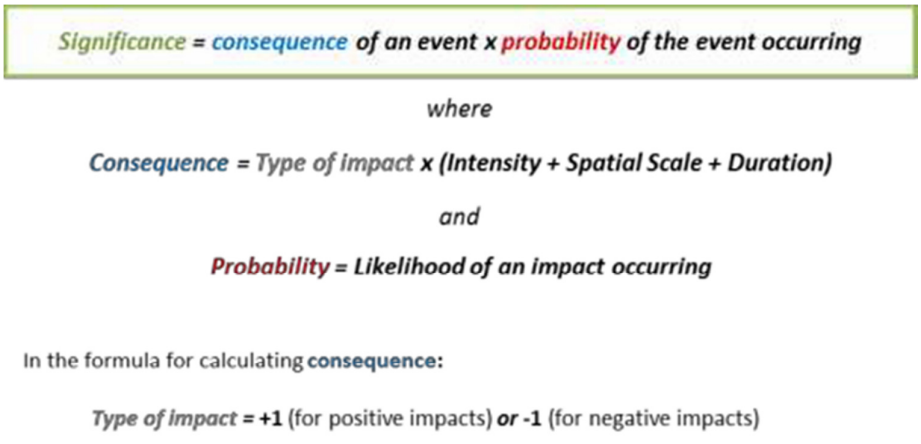
On the basis of the information collected through the desktop review, interviews with key informants and the socio-economic household survey, a socio-economic baseline profile was compiled for the respective study areas defined in Section 6.1.

6.5 Identification of Impacts

A range of issues and potential social impacts of the proposed project were identified based on specialist opinion and information obtained through consultation that took place for the purposes of the SIA. These impacts are categorised according to the project phase (construction, operation and decommissioning) in which each is likely to originate. Impacts are assessed in Section 9.

6.6 Rating of Impacts

The impact rating process is designed to provide a numerical rating of the various social impacts identified. The significance rating process follows the established impact / risk assessment formula, as shown below:



The weight assigned to the various parameters for positive and negative impacts in the formula is presented in Table 6.

Table 6: Impact Rating Options

Rating	Criteria and definitions	
	Intensity	
	Negative impacts (Type of impact = -1)	**Positive impacts (Type of impact = +1)**
7	Irreparable damage to highly valued items of great cultural significance or complete breakdown of social order	Noticeable, on-going social benefits which have improved the livelihoods and living standards of the local community in general
6	Irreparable damage to highly valued items of cultural significance or breakdown of social order	Great improvement to livelihoods and living standards of a large percentage of population
5	Very serious widespread social impacts. Irreparable damage to highly valued items	On-going and widespread positive benefits to local communities which improves livelihoods
4	On-going serious social issues. Significant damage to structures / items of cultural significance	Average to intense social benefits to some people
3	On-going social issues. Damage to items of cultural significance	Average, on-going positive benefits, not widespread but felt by some
2	Minor medium-term social impacts on local population. Mostly repairable. Cultural functions and processes not affected	Low positive impacts experience by very few of population
1	Minimal social impacts, low-level repairable damage to commonplace structures	Some low-level social benefits felt by very few of the population
Spatial scale		
7	International: The effect will occur across international borders	
6	National: Will affect the entire country	
5	Province/ Region: Will affect the entire province or region	
4	Municipal Area: Will affect the whole municipal area	
3	Local: Extending across the site and to nearby settlements	
2	Limited: Limited to the site and its immediate surroundings	
1	Very limited: Limited to specific isolated parts of the site	
Duration		
7	Permanent: The impact will remain long after the life of the project	
6	Beyond project life: The impact will remain for some time after the life of the project	
5	Project Life: The impact will cease after the operational life span of the project (32 years)	
4	Long term: 6-15 years	

Rating	Criteria and definitions	
	Intensity	
	Negative impacts (Type of impact = -1)	Positive impacts (Type of impact = +1)
3	Medium term: 1-5 years	
2	Short term: Less than 1 year	
1	Immediate: Less than 1 month	
Probability		
7	Certain/ Definite: There are sound scientific reasons to expect that the impact will definitely occur	
6	Almost certain/Highly probable: It is most likely that the impact will occur	
5	Likely: The impact may occur	
4	Probable: Has occurred here or elsewhere and could therefore occur	
3	Unlikely: Has not happened yet but could happen once in the lifetime of the project, therefore there is a possibility that the impact will occur	
2	Rare/ improbable: Conceivable, but only in extreme circumstances and/ or has not happened during lifetime of the project but has happened elsewhere. The possibility of the impact materialising is very low as a result of design, historic experience or implementation of adequate mitigation measures	
1	Highly unlikely/None: Expected never to happen.	

Impacts are rated prior to mitigation or enhancement and again after consideration of the proposed mitigation or enhancement measures. The impact is then determined and categorised into one of eight categories, as indicated in the Table 7. The relationship between consequence, probability and significance ratings is graphically depicted in the Figure 2.

Table 7: Significance Ratings

Score	Description	Rating
109 to 147	A very beneficial impact which may be sufficient by itself to justify implementation of the project. The impact may result in permanent positive change	Major (positive)
73 to 108	A beneficial impact which may help to justify the implementation of the project. These impacts would be considered by society as constituting a major and usually a long-term positive change to the (natural and / or social) environment	Moderate (positive)

Score	Description	Rating
36 to 72	An important positive impact. The impact is insufficient by itself to justify the implementation of the project. These impacts will usually result in positive medium to long-term effect on the social and/or natural environment	Minor (positive)
3 to 35	A small positive impact. The impact will result in medium to short term effects on the social and / or natural environment	Negligible (positive)
-3 to -35	An acceptable negative impact for which mitigation is desirable but not essential. The impact by itself is insufficient even in combination with other low impacts to prevent the development being approved. These impacts will result in negative medium to short term effects on the social and / or natural environment	Negligible (negative)
-36 to -72	An important negative impact which requires mitigation. The impact is insufficient by itself to prevent the implementation of the project but which in conjunction with other impacts may prevent its implementation. These impacts will usually result in negative medium to long-term effect on the social and / or natural environment	Minor (negative)
-73 to -108	A serious negative impact which may prevent the implementation of the project. These impacts would be considered by society as constituting a major and usually a long-term change to the (natural and / or social) environment and result in severe effects	Moderate (negative)
-109 to -147	A very serious negative impact which may be sufficient by itself to prevent implementation of the project. The impact may result in permanent change. Very often these impacts are immitigable and usually result in very severe effects	Major (negative)

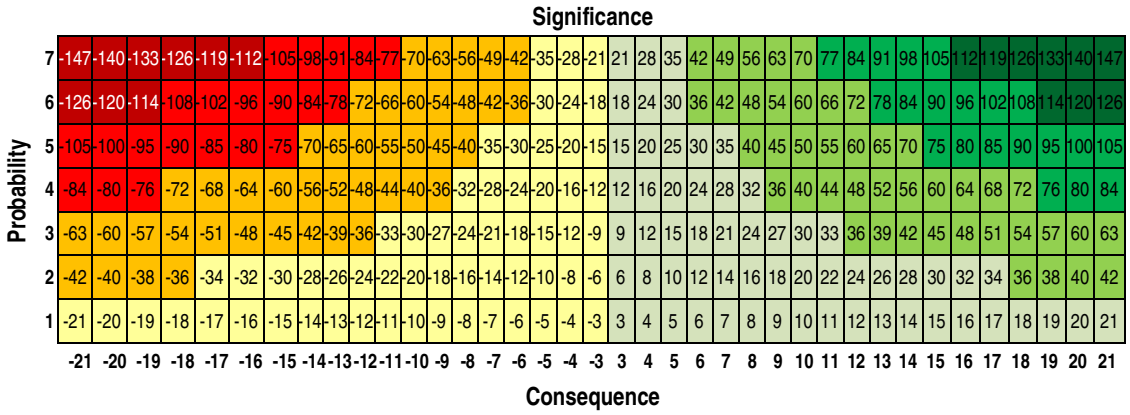


Figure 2: Relationship between Consequence, Probability and Significance Ratings

6.7 Mitigation Measures and Recommendations

Appropriate mitigation measures are recommended to avoid or ameliorate negative social impacts and to enhance positive ones. The criteria for the selection of mitigation measures included the following:

- They should be effective in ameliorating the impact without having severe negative secondary consequences; and
- They should be practically feasible and cost-effective.

After suitable mitigation measures were identified for each impact, the rating procedure described in Section 6.6 was repeated to assess the expected consequence, probability and significance of each impact after mitigation. This post-mitigation rating gives an indication of the significance of residual impacts, while the difference between an impact's pre- and post-mitigation ratings represents the degree to which the recommended mitigation measures are expected to be effective in reducing or ameliorating that impact. Mitigation and enhancement measures were incorporated into a social management plan, which outlines practical steps for implementing these measures.

6.8 Consideration of Project Alternatives

Current environmental legislation requires that practical project alternatives be considered during the impact assessment process. The pertinent project alternatives in the case of this project relevant to the current specialist study are as follows:

- The "no-go" alternative and alternative land uses on the project site;
- Mining methods; and
- Mine plan and infrastructure layout alternatives.

These alternatives are described in greater detail in Section 7.5 and assessed in Section 11. The identification of impacts was based on a comparison of future socio-economic conditions, with and without the project (the "no-go" alternative). The differential impacts of alternative land uses of the project site are also considered, as is the manner in which the mine plan and infrastructure layout alternatives may change the predicted social impacts.

7 Project Description

This chapter provides basic information pertaining to the proposed project. It commences with a general overview of the envisaged project. This is followed by details regarding employment policies and requirements, procurement strategies, expenditure estimated, project timing and possible alternatives. The information presented is extrapolated from the pre-feasibility study (PFS) that was undertaken by Pamish in 2015.

7.1 Project Location

The proposed project is to be situated 45 km north-west of Mokopane town, in the Waterberg District of Limpopo Province, South Africa. The province comprises a land area of 123 910 square kilometres (km^2) and borders Botswana, Zimbabwe and Mozambique to the north and the Mpumalanga, Gauteng and North West Provinces to the south. Limpopo comprises five District Municipalities, namely Mopani, Sekhukhune, Vhembe, Capricorn and Waterberg District Municipality (WDM) (see Section 6.1).

WDM is neighboured by the Capricorn District and is comprised of six Local Municipalities (LM); Mogalakwena, Lephalale, Bela-Bela, Modimolle, Thabazimbi and Mookgopong. The mining right area is entirely situated within MLM; which borders, Mookgophong LM to the South, Lephalale LM to the West, Blouberg LM to the North and ALM to the East. It should be noted that the MRA is directly adjacent to the ALM, which is situated within the Capricorn District. The MLM covers an area of approximately 6 166 km^2, which is demarcated into 32 municipal wards. The mining right area coincides with wards 9, 10, 11, 15 and 16 of MLM.

More specifically the mining right area comprises portions of five adjacent farms (i.e. Vogelstruisfontein 765 LR, Vriesland 781 LR, Vleigekraal 783 LR, Schoonoord 786 LR and portions Re/1, Re/2, 3, 4, 5 and 6 of the farm Bellevue 808 LR). These properties comprise an area of approximately 10 100 hectares (ha). Human settlements in the vicinity of the Mining Right include the villages of Ditlotswana, Malokong/Pudiakgopa, Moshate/Bakenberg, Basogadi, Mothoathoase, Malokongskop and Sepharane. The mineral resources initially targeted as mineable by Pamish are two vanadiferous magnetite ore bodies, situated within Vriesland 781 LR and Vleigekraal 783 LR. Consequently the bulk of the infrastructure for the proposed project will be concentrated on these properties (see Section 7.3).

7.2 Mining, Processing and Beneficiation

7.2.1 Mining Method

Open pit mining is considered the optimal mining method based on the thickness and positioning of the mineral resource. The Main Magnetite Layer is covered by 2m of soil which will be stripped to expose the outcrop; the overburden or hard rock above the mineral resource must be blasted and removed.

Mining will be undertaken outwards from the middle of the strike length advancing north and south to an initial depth of 20m below the surface then to 40m and thereafter to 60m, and 80m. A bench height of 10m will be used to allow for the separate loading of the two ore layers and the parting. The parting ore will either be stockpiled as a low grade ore or be sent to the waste rock dump, depending on its grade. As the open pit progresses and the depth increases the low grade hanging wall, which in effect becomes the overburden will be mined via the traditional truck and shovel method and stored as a lower grade ore stockpile.

There are two open pits planned, these are separated by the D4380 Provincial Road, the approximate footprint of the north and south open pits are 129hectare (ha) and 66ha respectively (see Section 7.3). It is likely that the north pit will be mined first for approximately 17 years, where after mining will also start at the southern pit. The Life of Mine (LoM) is approximately 30 years with a Run of Mine (RoM) of up to one million tonnes per annum.

7.2.2 Mineral Processing and Beneficiation

Ore will be transported from the stockpiles to the plant by trucks. A concentrator plant will be constructed for initial processing, which will commence with crushing. Based on typical industry performance, the plant is assumed to perform for 5 500 operational hours per annum (i.e. 358 operating days per annum). Material from the crushed material stockpile will then be reclaimed and processed through a conventional rodmill-ballmill combination. Following grinding, magnetite will be recovered through a three-stage low intensity magnetic separation circuit. The magnetic separation product will be dried by a filter press and stockpiled for further processing, while the non-magnetic waste will be thickened and disposed of at the proposed tailings dam.

Concentration of the ore will be through magnetic separation to produce vanadiferous titanomagnetite. The beneficiated ore will either be transported via road, then onto rail in Mokopane and if necessary onwards to the nearest port; or via road, directly to Durban/Richards Bay for export. The final product will be sold to vanadium producers (both local and international producers may purchase concentrate).

7.2.3 Resource Demand and Consumption

The magnetite concentrate will be further processed as part of a separate project to produce vanadium. Therefore the need for Pamish's magnetite concentrate is driven by the demand for vanadium. Approximately 85-90% of global vanadium resources are used in the steel industry with the remaining proportion used in titanium alloys and chemical and battery applications.

The project's magnetite deposit underlying the proposed mining right area is considered to have a higher grade/ tonnage ratio when compared to several other similar mine projects globally. Mining magnetite resources within the proposed project site is thus considered more favourable from a technical and economic viewpoint.

Potential consumers that will depend on the magnetite mined at Pamish include:

- The renewable energy industry, due to the use of the Vanadium Redox Battery (VRB) for power storage applications. Several experts expect vanadium consumption in VRB applications to grow substantially; and
- Chinese construction sector, especially considering the growth of the global, and especially Chinese, steel industry in combination with rising intensity of use of vanadium in steel.

7.3 Infrastructure Requirements

The section lists and describes the major infrastructure requirements for the proposed mining operation.

7.3.1 Concentrator Plant

The concentrator plant will comprise facilities for crushing, grinding and magnetic separation of ore. The plant area will also be furnished with a laboratory, plant office, water treatment plant, workshop, control room, internal road network, piping and a concentrate stockpile area.

7.3.2 Waste Rock Dump

The waste rock dump (WRD) will be created during the development of the open pit. Waste rock material will be transported to the WRD using Load Haul Dump vehicles.

7.3.3 Waste Management Infrastructure

Both general and hazardous waste will be generated on the project site. The following waste facilities are anticipated to be constructed as part of the project:

- Oil trap at the vehicle wash-bay and workshop areas;
- Settling ponds as part of the concentrator process;
- Pollution Control Dams (PCDs);
- Sewerage treatment plant; and
- General waste temporary storage facilities.

7.3.4 Tailings Dam

The tailings dam to be constructed will have a maximum footprint of approximately 62 ha, which may be reduced depending on the final design of the dam.

7.3.5 Sewerage Treatment Plant

It is anticipated that this plant will be used to process waste generated on the mine only.

7.3.6 Conveyors

A 600m conveyor is required for the crushing and grinding components within the plant area and a further two 100m conveyor systems are required for the concentrate product and tailings. It is envisaged that these conveyors will be enclosed.

7.3.7 Haul Roads

Haul roads will be constructed along hanging wall and footwall of both open pits. It is planned that there will be one haul road crossing over the D4380 Provincial Road to access the open pit to the south.

7.3.8 Pipelines

Clean water, assuming that it will be piped from the existing water abstraction networks, will have a pipeline/s with a combined length of 11 km. The process water pipelines will be located within the plant area.

7.3.9 Contractor Camp

All maintenance activities will be undertaken within a mining contractor area which will include offices, storage and a wash bay.

7.3.10 Security

Security will be positioned at the main entrances to the mine to control access into the mining areas. The main entrance to the project site will be via the D4380 Provincial Road.

7.3.11 Building Structures

The project will require the following building structures during construction and operations:

- Boilermaker / welding workshop;
- Cable repair workshop;
- Control and instrumentation workshop;
- Diesel fuelling station;
- Electrical workshop;
- Earth moving vehicle (EMV) workshop office and rest areas building;
- EMV hard park;
- EMV wash bay;
- EMV workshop building;
- Firefighting and water storage pump station;
- Main central change house;

- Mechanical workshop;
- Mine stores building;
- Mine stores office and rest areas building;
- Piping workshop;
- Trades workshop office and rest areas building; and
- Tyre store and workshop

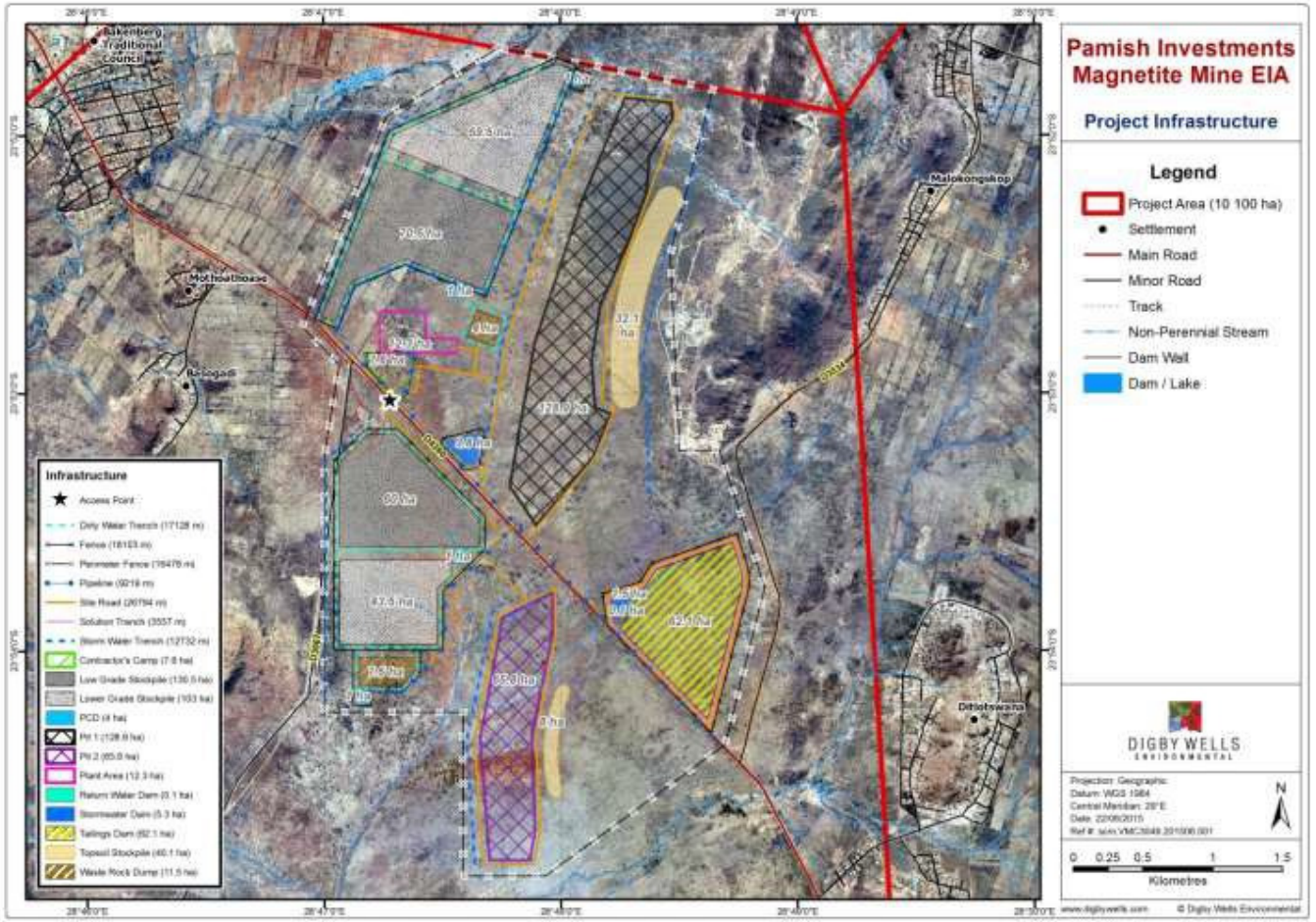


Figure 3: Mine Infrastructure Layout

7.3.12 Bulk Services and Infrastructure Requirements

7.3.12.1 Water Supply and Management

Water is required by Pamish for use in ore processing as well as for potable use. The mine will require approximately 2 Mega litres of water per day. According to current plans water will initially be abstracted from existing water abstraction networks, these include the Bakenburg Rural Water Scheme and the Hout River gneiss of ALM. On a longer term it is envisaged that the Oliphant's River Water Resources Development Project will be the mine's primary supplier of water. The water supply options are currently being investigated and will be confirmed, once further agreements have been made with relevant water service providers.

Clean storm water will be directed away from the mining operations using berms and dirty water will be captured within the dirty area and directed towards a pollution control dam for settling and evaporation. Process water will be returned to the concentrator plant for re-use. Furthermore, the required clean and dirty water separation systems will form part of the mine design as well as the required PCDs.

The required water supply infrastructure to is outside the scope of this assessment and will be considered as part of a separate EIA process.

7.3.12.2 Power Supply

It is estimated that approximately 10 Megawatts (Mw) of power would be required for the operation of the mine and associated infrastructure. The project site is located 20-30 km from a planned 400 to 132 kilovolt (kV) substation. Pamish intends to draw its power from this substation.

The required power supply infrastructure to is outside the scope of this assessment and will be considered as part of a separate EIA process.

7.3.12.3 Transport Network

The project site is divided by the D4380 Provincial Road. The northern section of the project site can be accessed via the D3534. The southern section of the project site can be accessed via the D3507. Both roads are secondary roads off the D4380 Provincial Road. These municipal roads are double-lane tarred roads.

7.4 Project Timing and Activities

Estimated time frames and planned activities are divided into the construction, operation, decommissioning and closure phases of the project, and are shown in Table 8.

Table 8: Project Phases and Estimated Timeframes

Phase	Year of commencement	Activities
Construction	2016	▪ Site clearance and vegetation removal; ▪ Change of land-use from agriculture to mining; ▪ Topsoil and softs removal and stockpiling; ▪ Development of access and haul roads; ▪ Surface infrastructure development such as storm water channels, bridges, dams, offices and workshops; ▪ Water abstraction and use; ▪ Waste generation, storage and disposal (hazardous and general); ▪ Use of heavy machinery; and ▪ Employment and capital expenditure
Operation	2018-2049	▪ Development of two open pits by drilling and blasting, truck and shovel methods; ▪ Development of one waste rock dump; ▪ Concentrator plant including crushing, grinding and screening; ▪ Conveyor belts at crushing and grinding sections and for concentrate product and tailings; ▪ Hauling of waste rock; ▪ Tailings Storage Facility (TSF); ▪ Pollution control dam, water storage dam and associated pipelines; ▪ Storm water diversion berms and channels; ▪ Storage of fuels, process concentrate, maintenance/workshop oils, and explosive storage facilities; ▪ Waste generation, storage and disposal (hazardous and general); ▪ Product storage (magnetite concentrate); ▪ Sewerage treatment plant; ▪ Use of heavy machinery; ▪ Employment and operational expenditure;

Phase	Year of commencement	Activities
Decommissioning and closure	2049	▪ Dismantling and removal of major equipment and infrastructure; ▪ Waste generation, storage and disposal; ▪ Rehabilitation of disturbed areas including stockpile dumps and pits; ▪ Backfilling of the open pits using waste rock only; and ▪ Post-closure monitoring.

7.5 Project Alternatives

For mining, the nature of the ore body or deposit determines the mining activities and processes. Furthermore, the location of the resource determines the location of the mining operation; however, associated infrastructure can be shifted based on technical, environmental and financial viability. These two factors reduce the identification of possible location and/or activity alternatives. The following alternatives were identified for the proposed project these include (a.) alternatives *involving* the project (in terms of alternative mining methods, infrastructure layout and transport routes to the project site); and (b.) alternatives *to* the project (in terms of the "no-go" option and alternative uses of the project area in the event that the project is not implemented).

The relatively shallow nature of the resource determines the preferred open pit mining method. Several alternatives were considered in terms of site and infrastructure layouts, these alternatives were subjected to a sensitivity analysis based on various biophysical and social sensitivities, including the occurrence of rocky ridges, wetlands, proximity to roads, settlements and cultural heritage sites. The sensitivity analysis informed the current mine layout.

If not used for mining (the no-go option), possible alternative land uses for the project site include low cost housing, agriculture and grazing or eco-tourism.

7.6 Workforce and Expenditure Forecasts

This section provides information pertaining to the expected size of the workforce for the proposed project, and presents some figures proving insight into capital, operational and labour expenditure.

7.6.1 Workforce

The employment requirements for the various phases of the project are depicted in Table 9 below. The table shows that construction will take approximately two years requiring a maximum of 500 employees. During operations the workforce will ramp down to 150, and up again during decommissioning to 500 employees (Pamish, 2015a).

Recruitment of the workforce will commence in 2016; a minimum of 40% of these employees will be recruited from the local labour sending area, which is defined as the villages surrounding the mining area under the Bakenberg TA (Pamish, 2015a; Pamish 2015b). It is assumed that most of the locally recruited employees will have existing housing, and would not require Pamish to provide additional housing in the form of hostels or construction camps. A proportion of the workforce will, however, not be recruited from the local area, as they will be composed of the existing construction teams of the contractors appointed by Pamish. Also several construction and operational activities will require specialised skills, which might not be available in the local labour sending area, specialised employees with scarce skills will likely be recruited from Mokopane, then Limpopo and then further afield (Pamish, 2015a; Pamish, 2015b).

Employees in the aforementioned categories will therefore not be permanent residents in the area, and would consequently require accommodation. Pamish intends to employees with wage packages, which will include a living-out allowance that will allow them to use existing accommodation options (see Section 5.4.3.3). If temporary camps for specialized workforce are needed, these will be erected at the Traditional Council's offices in Bakenberg (Pamish, 2015a; Pamish, 2015b).

Table 9: Employment Requirements

Phase	Duration	Estimated workforce
Construction	2 years	500
Operation	30 years	150
Decommissioning	5 years	500
Source: MWP, 2015		

The skills distribution of the operational workforce is indicated in Table 10 below, which shows that most employment opportunities will require semi-skilled employees; only 7% of opportunities will be available for unskilled applicants.

Table 10: Skill Distribution of Operational Workforce

Designation	Number
Skilled	24%
Semi-skilled	69%
Unskilled	7%
Source: MWP, 2015	

7.6.2 Expenditure

The expenditure forecasts presented in this section have been adapted from the financial information provided in Pamish's MWP. The estimated capital expenditure for the proposed over the first 10 years Project is R 822 337 000 million (mill). At the time of writing the report, it is unknown which geographical area will benefit from this expenditure (regional municipal areas, provincial or beyond). However, Pamish has indicated a commitment to procure as much as possible from the local study area (which is defined as MLM). If the required goods and services are not available in these areas, it will be sourced from elsewhere in the country.

Table 11: Estimated Capital Expenditure in ZAR '000

Year	Initial Capital Expenditure	Ongoing Capital Expenditure	Total
1	252 2221	-	252 2221
2	429 3032	-	429 3032
3	-	-	-
4	-	20 088	20 088
5	-	20 064	20 064
6	-	20 132	20 132
7	-	20 132	20 132
8	-	20 132	20 132
9	-	20 132	20 132
10	-	20 132	20 132
Total	**681 5253**	**140 8120**	**822 3373**
Source: MWP, 2015			

The mine's operational expenditure will range between R 99 281 000 and R 99 421 000 mill annually for first 8 years of operations; this includes expenditure on fuel, electricity, water, and stores and materials, but excludes the labour cost to operate the mine. The estimated wages for mine employees, service providers and contractors are presented in Table 13, which shows that Pamish will incur approximately R 53 500 000 mill on labour cost annually.

Table 12: Operational Expenditure (excluding labour) in ZAR '000

Cost category	Year									
	1	2	3	4	5	6	7	8	9	10
Fuel	-	-	19 490	19 476	19 463	19 463	19 463	19 463	19 463	19 463
Electricity	-	-	27 506	27 487	27 467	27 467	27 467	27 467	27 467	27 467
Water	-	-	371	370	370	370	370	370	370	2 160
Stores and materials	-	-	33 672	33 649	33 625	33 625	33 625	33 625	33 625	33 625
Other	-	-	16 221	16 210	16 198	16 198	16 198	16 198	16 198	16 198
Total	**-**	**-**	**99 421**	**99 351**	**99 281**	**99 281**	**99 281**	**99 281**	**99 281**	**99 281**
Source: MWP, 2015										

Table 13: Summary of expenditure on labour in ZAR '000

Category	Year									
	1	2	3	4	5	6	7	8	9	10
In house skills and services	-	-	22 267	22 229	22 191	22 191	22 191	22 191	22 191	22 191
Skills and services provided by subcontractors	-	-	28 652	28 652	28 652	28 652	28 652	28 652	28 652	28 652
Skills and services provided by service providers	-	-	2 616	2 616	2 616	2 616	2 616	2 616	2 616	2 616
Total	**-**	**-**	**53 535**	**53 497**	**53 459**	**53 459**	**53 459**	**53 459**	**53 459**	**53 459**
Source: MWP, 2015										

Other regulatory costs to be incurred by Pamish include annual royalty payments (R 59.9 mill annually) and rates and taxes (28% corporate tax and 15% withholding tax). Pamish's tax contribution during the first 8 years of operation will equate to approximately R 1 518 mill (Pamish, 2015b). At the time of writing this report it was unclear as to what amount will be spent annually in order to comply with mining health and safety regulations, and occupational health.

The costs associated with the execution of the SLP are presented in Table 14 below. Over a five year period, just over R 5.6 mill will be spent on HRD, R 2.53 mill on LED, R 4.5mill on CSI and a provision of R 12.5 mill will have been saved for downscaling and retrenchment purposes. A more detailed breakdown of programmes and expenditure figures are presented in Section 7.7.1 and 7.7.2 below, which discusses LED and skills development. A total of just more than R 25 million has been assigned to the execution of the SLP for the first five years of the proposed project.

Table 14: Estimated Expenditure on the SLP (first 5 years)

Year	Cost component				Total
	HRD	LED	CSI	Closure provision	
2017	-	-	R 900 000	R 2 500 000	R 3 400 000
2018	R 1 050 000	R 250 000	R 900 000	R 2 500 000	R 4 700 000
2019	R 1 620 000	R 2 000 000	R 900 000	R 2 500 000	R 7 020 000
2020	R 1 750 000	R 180 000	R 900 000	R 2 500 000	R 5 330 000
2021	R 1 193 000	R 100 000	R 900 000	R 2 500 000	R 4 693 000
Total	**R 5 613 000**	**R 2 530 000**	**R 4 500 000**	**R 12 500 000**	**R 25 143 000**
Source: MWP, 2015; SLP, 2015					

7.7 Activities included in Pamish's SLP

Pamish intends to support both local economic and skills development in its broader project area, with a specific focus on developing the communities most likely to be affected by the proposed project. A brief overview of Pamish activities in terms of LED and Corporate Social Investment is provided in the remainder of this section.

7.7.1 LED

In accordance with the MPRDA Pamish has drafted an SLP, in which outlines their envisaged commitments to the LED within the labour sending areas for the first 5 years, after the inception of their Mining Right (Pamish, 2015b). Updated versions of the SLP will subsequently be compiled for every 5 years of the proposed projects operation.

Table 15 below outlines relevant aspects of Pamish's LED project. These projects will primarily be focussed on SMME support and development, with the primary beneficiaries being those residing in Bakenberg. Pamish's LED planning is informed by district and local municipal integrative development planning.

Pamish's expenditure on these projects will amount to R 2 530 000, through which it plans to create a total of 91 employment opportunities especially among females and the youth in potentially affected communities within the Bakenberg TA.

Table 15: LED Projects (2017-2021)

Project aspects	Project Name		
	Bakenberg Sewing Project	**Crop Production and Hydroponic Garden**	**Construction of Bakenberg Community Crèche**
Description	Pamish intends to assist an existing sewing business by establishing new infrastructure and providing new sewing equipment.	Pamish intends to assist an existing crops and vegetable farming project, which is currently operated by some youths of Bakenberg. Pamish has committed to assist the project by providing financial support for infrastructure and skills development	Pamish intends to establish a community crèche. The crèche will be managed by the traditional office.
Employment	10	11	70
Beneficiaries	Bakenberg community	Bakenberg community	Bakenberg community
Duration (years)	2018-2021	2019-2021	2019
Budget (ZAR)	R 540 000	R 490 000	R 1 500 000

Project aspects	Project Name		
	Bakenberg Sewing Project	**Crop Production and Hydroponic Garden**	**Construction of Bakenberg Community Crèche**
Exit strategy	Pamish intends to continue in a monitoring and mentoring capacity to ensure the sustainability of the enterprise after exiting the programme in 2020	Pamish intends to continue in monitoring and mentoring capacity to ensure sustainability of the enterprise after exiting the programme in 2020	On completion, the Creche will be handed over to the Bakenberg TA
Source: Pamish SLP 2017-2021			

7.7.2 CSI

Pamish intends to implement several CSI projects as part of their SLP (see Table 10). The envisaged beneficiaries of these projects will be communities that might be affected by Pamish's proposed mining operation. These projects will primarily be focussed on infrastructure, skills and socio-economic development and will entail a total expenditure of R 3.9 mill. Although the timeframes for these projects only span 5 years, future versions of the SLP will allow opportunity for Pamish to build on these initiatives or include new ones.

Table 16: CSI Projects

Project aspects	Project Name		
	Entrepreneurial Skills Training/SMME Mentoring	**Bakenberg Home Based Care (HBC)**	**Development of socio-economic infrastructure**
Objectives	To equip potential entrepreneurs with necessary skills to start a SMME, this could increase the likelihood of Pamish to successfully procure from the local area. Ultimately the goal of skills development and local procurement would be to enhance independent economic sustainability among enterprises.	Assist Bakenberg HBC centre to improve supply of nutritional food to those in need, as well as assisting with maintenance of infrastructure	Financial assistance to improve or maintain current infrastructure in villages surrounding the project
Beneficiaries	Bakenberg community	Bakenberg community	Bakenberg community

Project aspects	Project Name		
	Entrepreneurial Skills Training/SMME Mentoring	Bakenberg Home Based Care (HBC)	Development of socio-economic infrastructure
Duration (years)	2018-2021	2017-2021	2017-2021
Budget (ZAR)	R 2 500 000	R 500 000	R 1 500 000
Source: Pamish SLP 2017-2021			

8 Socio-Economic Baseline

The baseline profile of the receiving socio-economic environment is presented in this section. The first two subsections focus on the socio-economic characteristics of the regional and local study areas, while the final section describes the site-specific study area. These study areas were defined in Section 6.1. Where necessary the socio-economic trends in the respective study areas are compared against trends in larger administrative areas, which provides additional context for interpretation.

8.1 Regional Study Area

As discussed in Section 6.1, the regional area has been defined as the MLM municipal area. The area comprises a land surface area of 6 166 km^2 and is administered by the Mogalakwena Municipal Council. The MLM comprise 32 municipal wards, the population within each ward is represented by a ward committee and councillors, who are responsible for representing the needs of the people within the respective wards on the Council.

In addition to municipal administration, several areas within the MLM are under the administration of Traditional Authorities (TA). Each TA is headed by a Kgoshi and his subordinate headmen. There are nine traditional authorities within MLM. The relationship between the municipality and most traditional authorities is sound (MLM, 2012).

8.1.1 Demographic Characteristics

The population within the regional study area has experienced marginal growth during the last decade. According to 2011 census data, the population grew at almost 0.3% annually since 2001 to reach just over 308 000 in 2011 (StatsSA, 2013). This rate was lower compared to national and provincial population figures during the same period, but slightly higher than that of the WDM. It could be argued that recent mining developments within the municipality have stimulated population influx into the study area.

In terms of distribution this population is scattered across three proclaimed townships and 178 villages within MLM (MLM, 2012). The townships are located within the Mokopane area, while the villages tend to be located in the rural fringes of the study area. The average household within MLM has 4 members. This figure conceals a considerable degree of inter-

household diversity, as some households may have as many as 10 or more members (MLM, 2012; StatsSA, 2008).

Population density indicates the potential pressure that human occupation might exert on natural resources and municipal services. The population density within MLM is almost 50 people per km^2, which is considerably higher than the density within the Waterberg District (15.2 people per km^2) (MLM, 2012; StatsSA, 2013). This supports the notion that a large proportion of the district population (45%) is concentrated within the urban centres and townships located within MLM (StatsSA, 2013).

The age profile of the regional population indicates that almost 70% of the population are aged between 15-64 years, followed by those aged between 0-14 years (35%). The gender distribution shows that females (53%) outnumber males; racially the population comprises mostly Africans (96%) followed by Whites (3%).The most prominent language spoken in the area is Sepedi (80%), followed by Xitsonga, and IsiNdebele (StatsSA, 2013).

The level of education among the regional population is low, with only 14% having completed Grade 12 and 40% not completing primary school (StatsSA, 2013). Both in the case of the proportion of those that have no schooling, and the percentage of those that completed Grade 12, the MLM figures are similar to the Waterberg District (StatsSA, 2013). Relatively low education levels usually have negative implications for the employment potential of the population and also for the feasibility of LED initiatives.

The lack of formal education can usually be mitigated by acquiring skills through employment. In 2007 the largest proportion of the population was engaged in elementary occupations, followed by those who are engaged in the craft related trades, shop and market sales workers (StatsSA, 2008). These types of occupations are usually associated with a relatively basic skill set, which is in turn indicative of a lack of formal education or limited employment opportunities, or a combination thereof.

8.1.2 Overview of the Economy

MLM boasts a growing, albeit undiversified economy, which is primarily driven by the mining sector (MLM, 2015). The Gross Domestic Product per Region[3] (GDP-R) of the MLM was valued at R 13 142 mill in 2013, which is equal to a per capita GDP-R of R 42 629 (Quantec, 2015). This is lower than the national economy but higher than the provincial economy GDP-R per capita of R 58 533 and R39 818, respectively. In addition to signalling a stronger economy, a high GDP-R per capita is usually associated with a higher standard of living. Another important indicator of the wellbeing of an area's economy is the rate at which it is

[3] ***Gross Domestic Product per Region:*** an aggregate measure of production equal to the sum of the gross values added of all resident, institutional units engaged in production (plus any taxes, and minus any subsidies, on products not included in the value of their outputs (OECD, 2014)

growing. Between 2003 and 2013, the Mogalakwena economy grew at a Compounded Annual Growth Rate[4] (CAGR) of 2.9% (Quantec, 2015).

In terms of economic structure the MLM economy is dominated by the mining and quarrying sector, which comprised just more than a third of MLM's economy in 2013; the sector experienced a CAGR of 1.6% over the period 2003 to 2013 (Quantec, 2015). Following the mining sector, the largest sectors in the MLM are general government followed by the trade and finance, insurance and business industries (Quantec, 2015). The agricultural sector contributed a relatively small percentage to the local economy's GDP-R. A more detailed overview of the mining sector is provided below, followed by descriptions of the tourism and agricultural sector as these are considered to be underdeveloped within MLM and has the potential to contribute to the local economy.

In MLM the majority of economic activities are centred within the Mokopane area. Mokopane's Central Business District is well developed and is spreading along the main arterials. The "second economy" makes up a significant component of economic activities in the rural areas of MLM and makes a particularly important contribution to the livelihoods of the poor. The second economy is defined as an economy that is mainly informal, marginalised, unskilled, and populated by those who are unemployed in the formal sector. These are people who are caught in a poverty trap, unable to benefit in the growth in the first economy, and limited in their ability to access opportunities provided by development assistance initiatives (MLM, 2012; WDM, 2012). For a more detailed overview of the regional economy please refer to the macro-economic assessment conducted for the proposed project (Urban-econ, 2015)

8.1.2.1 Mining

The mining sector is an important contributor to the provincial, district and municipal economy, making up 58% of the provincial GDP in 2010 (WDM, 2015). The sector is an important source of employment in the local municipality, the envisaged development within this sector will likely make a positive contribution towards job creation. The mounting importance of mining to LED is recognised on a National, Provincial, and District and Local Municipal level (MLM, 2014; WDM 2015).

The economy's dependence on mining means fluctuations in the demand for mineral output or prices have significant impact on the performance of the economy, and subsequently on the employment situation. Mining activities in the municipality have been downscaling in the past, leading to a notable loss of employment opportunities (MLM, 2014; WDM, 2015). The economy appears to be stagnating and is in need for investment and injections into sustainable economic activities (MLM, 2014; WDM 2015). Current mining operations within

[4] ***Compounded Annual Growth Rate (CAGR):*** Is a measure of growth over multiple time periods. It can be thought of as the growth rate that gets you from the initial population value to the population investment if you assume that the population number has been compounding over the time period (OECD, 2014)

MLM and their proximity to the proposed project are indicated in Table 17; the locations of several of these mines are indicated in Section 6.1.

Table 17: Mining Activities within MLM, 2014

Mine/Project name	Location	Distance to Pamish's MRA	Type of mine
Mogalakwena Platinum Mine	Mokopane	16 km	Platinum
Vanadis Project	Mapela	16 km	Vanadium and manganese
Haaspan Granite	Bakenberg	1 km	Granite mining
Platreef Project	Mokopane	20 km	Platinum
Kadikgathlo Stone Crusher	Bakenberg	1 km	Stone
Matlala Stone Crushers	Bakenberg/ Matlala	1 km	Stone
Bestaf Granite	Kaditswhene	5 km	Granite stone
African Red Granite	Leyden	1 km	Granite stone
Lonmin	Mapela area	14 km	Platinum
Babirwa Tshabang Tlala	Taueatswala	Not known	Pebble collections
Setlhatlha Sand Mining	Marulaneng	Not known	Sand Mining
Source: MLM, 2014			

8.1.2.2 Agriculture

Waterberg District accounts for almost 30% of agricultural activity in the province, and contributes to 4% of the District's Gross Geographic Product (GGP); the sector also employs around 21% of the district's labour force. Agriculture is the dominant land use within MLM comprising almost 80% of land, which is in contrast to its marginal contribution to the municipal GGP (Urban-Econ, 2015; MLM, 2014). The bulk of this contribution is commercial farming activities, with the most significant agricultural commodities being maize, wheat and cattle production (Urban-Econ, 2006). A survey undertaken by Mara Research Station indicates a significant shift from cattle farming to game farming, including exotic game farming, throughout the Province (MLM, 2012).

Subsistence agriculture is important to most rural communities within the regional study area (MLM, 2014; WDM, 2015). Agricultural practices differ according to locality with villages in the mountainous areas focused on cattle farming and villages on the plains focussed on crop farming. Agricultural involvement appears to be declining, which can be attributed to a possible stronger dependence on other resources such as social grants and remittances (see Section 8.2.10). An agricultural survey conducted in 2010 established that individuals

involved in farming activities are likely to be older female community members, with the younger generation preferring formal employment opportunities for sustainable growth of wealth. Nonetheless the MLM's LED Strategy suggests that the agricultural sector, especially livestock farming, should be considered for economic development (MLM, 2011; Urban Econ, 2006).

8.1.2.3 Tourism

Limpopo Province and the Waterberg District are known for nature and outdoor activities (game hunting and camping/hiking). Similarly MLM area offers a range of nature orientated tourism activities with large growth potential (MLM, 2012; Urban-Econ, 2006). The WDM SDF closely links tourism and conservation in the form of eco-tourism, for which the balance and co-existence with agriculture, mining and urban development is important (WDM, 2012). The Waterberg Environmental Management Framework earmarks the envisaged project area for eco-tourism. The two most well-known tourism sites in the area are the Waterberg Biosphere Reserve and the Makapan Valley World Heritage Site (WDM, 2012). There are also several nature reserves within the Mogalakwena Municipal area namely: Marekele National Park, Wonderkop, Masebe, Moepel, Witvinger and Percy Fyfe. According to the MLM's LED Strategy tourism opportunities within the municipal area should be exploited to enhance benefits for local communities (MLM, 2011).

8.1.3 Local Economic Development

The MLM has committed in their LED strategy for 2011-2016 to develop communities and promote economic growth by creating a conducive and sustainable environment for social and economic development (MLM, 2011). The municipality aims to implement the following strategies to fulfil this commitment:

- Develop and monitor implementation of SMMEs policy;
- Develop and implement a tourism strategy;
- Encourage labour intensive projects;
- Support small-scale mining development;
- Develop an incentive schemes strategy;
- Intensive skills development program for the municipal area; and
- Empowerment of special and vulnerable groups.

The LED Plan will focus on implement various programmes in four thrust areas, the programmes envisaged in each area is summarised in Table 18 below. One of the LED Plans objectives is to diversify the economy within MLM, which is currently dependant on the mining sector. The Plan suggests that the private sector can contribute with the implementation of these programmes through the:

- Establishment, management and operation of business enterprises to the benefit of the enterprise and the community of the local area;
- Sustainable employment creation, income generation and investment; and
- Capacity building of personnel.

Table 18: MLM LED Programmes, 2011-2016

LED thrust areas	Envisaged LED programmes
Sustainable rural and agricultural development	Support land claim beneficiaries
	Water scarce new product development
	Emerging and small scale black farmer support services
Mining development, support and promotion	Development and support small-scale Black owned mines
	Mining supplier development
SMME support and manufacturing diversification	Self-sufficiency and SMME development and support
	Development and management of Mokopane Industrial Precinct
	Agro-processing industrial development
	Mineral beneficiation
Tourism resource maximisation and marketing	Develop Makapan Valley as a tourism 'icon' and combine related historical/cultural assets
	Develop the Waterberg Biosphere and its environs as an adventure and eco-tourism destination
	Special interest tourism development
	Destination marketing, branding, and awareness
Source: MLM, 2011	

8.1.4 Employment and Income

Employment rates within an area are linked to the size of the economy as well as to personal income, education levels and skills. The 2011 Census estimated the economically active proportion of the population (employed, or unemployed but looking for work) in the MLM to be 45%; of the total population, 28% were employed. Thus, 38% of the economically active population (or 15% of the total population over 15 years of age) was unemployed. Unemployment was high across genders.

Employment was mostly concentrated in the formal sector (73% of employed persons) (StatsSA, 2013). In terms of sectorial distribution mining accounted for 8.3% of employment opportunities while contributing 32.8% to the province's GDP-R. Most of the people employed in MLM are working in the tertiary sector, specifically in the trade and community

and government services sectors. The secondary sector accounts for almost 15.8% of jobs in the province, whilst its primary sector creates 17% of employment opportunities.

With regards to income almost 17% of households in the regional study area have no source of income and another 64% of households in the municipality earn less than R 76 401 annually (StatsSA, 2013). With regards to individual monthly income, 45% of individuals have no source of income whilst another 34% earn less than R 800 per month. Males tend to outnumber females in higher income categories, while females outnumber males among those who earn nothing by 7%. With regards to household income an average household within the region earned R 5 138 in 2014 prices, which is lower than the within the Waterberg District R 6 947. Recent expenditure figure show that households within regional study area spend equal amounts of disposable income on services and non-durable goods.

The consequence of high unemployment and low income levels is that a considerable proportion of households cannot pay for basic services, which places severe pressure on municipal resources due to higher demands for services among poverty stricken populations (see Section 8.1.6.1).

8.1.5 Community Health

Community health data on a local municipal level was found to be insufficient and/or outdated to provide an accurate description of the community health situation within the local study area, therefore this section is supplemented with data from national, district and provincial level.

The most common communicable diseases in South Africa are Tuberculosis (TB), malaria, measles and Sexually Transmitted Infections (STIs), primarily HIV/AIDS (Urban-Econ, 2006). The South African Government's policy on HIV/AIDS is set out in a five-year strategic plan adopted in 2011.

The majority of the population in Limpopo Province is very young with 58% below the age of 25 years and 11% being children under five years. Access to medical schemes was the lowest in the country at 9% in 2010, and only Waterberg had coverage close to the national average (18%). As expected for a province with this socio-economic status and at this stage in the demographic transition, the highest proportion (43%) of Years of Life Lost (YLLs) are due to communicable, maternal, nutritional and perinatal causes. The leading causes of death in most districts were lower respiratory tract infections and diarrhoeal diseases (Day *et al*., 2012).

Tuberculosis (TB) management remains a challenge in South Africa; especially its co-morbidity with HIV/AIDS. South Africa has one of the highest incidence rates of TB in the world. In 2010, the incidence rate for all types of TB was 805 per 100 000. In 2010, there were 184.6 smear positive TB cases per 100 000 people in Limpopo, which remained the lowest incidence in South Africa. The TB cure rate in Limpopo was 70% in 2009, which was close to the national average of 71%. Waterberg District had the highest TB incidence in

Limpopo, but also has the worst outcomes, with a smear conversion rate of only 56%, a low cure rate of 62% coupled with a high defaulter rate of 13%. There were 681 cases per 100 000 of TB in Waterberg District in 2011. In the same year, new HIV positive patients who had a confirmed TB rate was 14% (Day *et al.*, 2012).

Malaria is endemic to Limpopo, and transmission is distinctly seasonal, with most cases reported during the summer rainy season between September and May. Most cases are reported in December, due to the movement of people between malaria areas outside the province and areas under control within the province. The incidence of malaria in Waterberg District between 1998 and 2005 was about 31 per 100 000 person years.

South Africa is experiencing a severe generalised HIV/AIDS epidemic, which is affecting the social and economic fabric of the country. The causes are multifactorial, but poverty, lack of education and vulnerability in certain sectors are important contributing factors. In 2009 Limpopo had the third lowest HIV/AIDS prevalence in the country at 8.8% (Shisana *et al.*, 2009). The antenatal HIV/AIDS prevalence for Waterberg District was 24% (Day *et al.,* 2012). In 2010 the HIV/AIDS prevalence rate in the Municipality was estimated to be 24.2% (MLM, 2012; WDM, 2012).

The percentage of HIV/AIDS related deaths has been steadily increasing between 1995 and 2009, with more than half of South Africa's deaths in 2009 were attributed to HIV (South African National AIDS Council (SANAC), 2011). The Limpopo percentage of HIV deaths is lower than the national percentages; however they are still high at 42% of all deaths in the Province. The Government's main strategy to combat HIV, AIDS and TB has four strategic objectives, which are (SANAC, 2011):

- Addressing social and structural barriers that increase vulnerability to HIV/AIDS, STI and TB infection;
- Preventing new HIV/AIDS, TB and STI infections;
- Sustaining health and wellness; and
- Increasing the protection of human rights and improving access to justice.

8.1.6 Service Delivery

According to the MLM latest IDP (2014/2015) and SDF (2012) there are substantial infrastructure backlogs that prevent household access to proper water, sanitation, and electricity supply. These backlogs are mostly limited to informal settlements and those residing in rural areas. As far as the outlying rural areas are concerned, these areas rely almost exclusively on piped borehole water, septic tanks/pit latrines, while electricity is provided by Eskom. The MLM IDP and SDF list several strategies to address these backlogs (MLM, 2014). The remainder of this section provides a brief overview of service delivery indicators within the regional study area.

8.1.6.1 Free Basic Services

The Constitution of the Republic of South Africa (Act 108 of 1996) provides all South African's with basic human rights, which includes the rights to access basic infrastructure and services. Free Basic Municipal Services (FBS) are provided by the municipality to households who cannot afford basic municipal services (MLM, 2011; WDM, 2012). The number of households within MLM benefiting from FBS increased from 1982 to 4 541 between 2011 and 2013 (MLM, 2014). This can indicate two scenarios; (a) there are more impoverished household in the area since 2011, and/or (b) that the municipality were able to increase their capacity to provide FBS to households which could not be provided for in the past. It is noteworthy that the MLM host almost 80 000 households, and that poverty is severe throughout; it is therefore likely that many more households are in need of FBS. This leaves municipalities with the responsibility of the provision of free basic services to a large number of households, which in turn will put a large financial burden on MLM.

8.1.6.2 Access to Water, Sanitation and Energy

Just more than two thirds of households within MLM are supplied with water by regional water schemes. The majority of households (92%) have access to potable water; however, only 20% have access to water inside their dwellings, which is substantially lower than the national average. The Mogalakwena IDP (2011/2016) notes that the water supply infrastructure has deteriorated as a result of ageing and corrosive effects. As a result water supply infrastructure is prone to bursts and leaks, resulting in water losses. Access to sanitation is poor, with only 28% of households having access to flush facilities, with the remainder relying mostly on pit latrines (StatsSA, 2013).

With regards to the energy usage most households (92%) rely on electricity for lighting, with 59% and 53% using it for cooking and heating respectively (StatsSA, 2013). Many households, however, still rely on alternate energy sources (e.g. wood, candles and paraffin) for heating and cooking purposes (StatsSA, 2013).

8.1.6.3 Housing and Tenure

Both the District and Local Municipality are experiencing increasing pressure to launch new housing developments to supply housing for its population. This pressure is attributed, in part, to the increase in mining projects and general population growth (WDM, 2012). The 2012/2013 MLM IDP estimates the housing backlog within the municipality at 32 000 units. However, those who do have access to housing mostly reside in formal dwellings. Of these as much as 84% of houses are not paid off. This indicates poor ability to pay back debt and also a high willingness to get into debt for housing purposes. This is discouraging for LED prospects, as a high debt level will likely stifle spending in the area and will have a negative effect on consumer expenditure.

Informal settlements have been established within MLM, especially around popular urban areas as more people move from rural to urban areas in order to seek livelihood opportunities. For this reason they are also likely to appear adjacent to mining operations as

this is fast becoming a large economic resource throughout the local municipality (MLM, 2012). This phenomenon increases the backlog of housing facilities to be provided by MLM. Informal settlements are also indicative of a lack of formal and affordable housing.

8.1.6.4 Health Services

Access to health services is an important aspect of socio-economic well-being. The MLM is serviced by three hospitals, one health centre, 29 clinics and 12 Mobile clinics (MLM, 2012). With regards to access just over 80% of the population is within 120 minutes' walk from health facilities, this figure is considerably higher for those residing in rural areas (Day et al., 2012). The reader is referred to the Community Health Impact Assessment report for a detailed description of health-related attributes of the local study (DWE, 2015a).

8.1.6.5 Land Use and Spatial Planning

The majority of land area within the local study area is classified as rural, and is extensively used for grazing and farming purposes as well as the gathering of natural resources such as firewood and building materials (MLM, 2012). Formal residential uses mostly comprise rural settlements, while informal settlements, though small and relatively contained, are scattered through the area. Several mining operations are also found in the study area. These include major platinum mining operations, as well as stone and granite quarries (see Section 8.1.2).

The MLM IDP notes several challenges to spatial planning within MLM; these include illegal occupation of land, mushrooming of informal settlements in both urban and rural areas, uncoordinated demarcation and allocation of sites in rural areas, and unavailability of stands which leads to illegal occupation (MLM, 2012).

8.1.7 Mine-Community Relations

Community perceptions about and attitudes towards the proposed Pamish Project can be shaped by socio-political events and/or existing attitudes towards mining activities within the Project area. Anglo American's Mogalakwena operation and Ivanplats's Platreef mine are located relatively close to the proposed operation (see Section 6.1). Field investigations have already identified deteriorated relations between several of the communities within the regional study area and mining operations.

Protest action within the surrounding communities provides evidence that mining is perceived in a negative light by some groups within the resident population (Noordnuus, 2012; Piplinks, 2012; SABC, 2012). In 2012/13 the communities in the surrounding area launched several protests. In one instance communities protested a road Project of Anglo Platinum, due to the perception that not enough people were employed from local communities. As a result eighty one protesters appeared in the Mahwelereng magistrate's court (Piplinks, 2012).

In another incident communities affected by the Anglo, Lonmin and Pamish Projects, respectively, launched a combined protest action, indicating widespread discontent against

mining houses within the study area (Mines and Communities, 2012). During the protest, communities suggested the following considerations:

- In future, community engagement should focus on the concerns of the majority of the people in the affected communities, and not only the traditional leadership of the area;
- Mining houses should go through the proper channels to get the consent of the entire community, not just the traditional leadership; and
- Stakeholders recommended that corrupt practices should be avoided, especially when canvassing support from the community for mining activities, otherwise mining houses will encounter continued community resistance.

8.2 Local Study Area

As discussed in Section 6.1, the local study area (1 389 km^2) is defined as Ward 9,10,11,15, and 16 of MLM as well as Ward 18 of ALM.

8.2.1 Population Growth and Distribution

The low population growth rate evident in the local municipal area (see Section 8.1.1 above) also applies to the wards constituting the local study area. These wards housed almost 50 000 people in 2011 (i.e. 16% of the local municipal population (see Section 8.1.1). This population comprises 13 114 households, which equates to an average household size (4) similar to that of the regional study area (StatsSA, 2013).

Human settlement within the local study area is characterised by two contrasting patterns. The vast majority of land is sparsely populated, while residential uses within the study area are concentrated within densely populated peri-urban settlements (e.g. Moshate, Bakenberg, Malokong, Malokongskop, Rooivaal, Ditlotswana, Sepharane, Rooivaal, and Kaditswene). These settlements comprise less than 30% of the surface land comprising the local study area, but account for more than 95% of the total population (StatsSA, 2013).

8.2.2 Age and Gender Distribution

Gender and age are important variables, as they indicate the labour-sending capacity of an area. Table 19 presents the gender distribution of the local study area, and indicates that females outnumber males by 10%, which is similar to the regional distribution. The gender distribution among households heads indicate that just less than 60% of all households in the local study area are headed by females (StatsSA, 2013). Both these trends point towards male outmigration.

The age distribution shows that the majority of the local study area's population falls within the 15-64 year bracket, while just more than a third is younger than 14 years. This trend is similar to the regional study area and indicates a potentially large labour force (see Table 19).

Table 19: Gender and Age Distribution within the Local Study Area

Study area	% of total population				
	Gender		Age category (in years)		
	Female	Male	0-14	15-64	65+
Local	55%	45%	37%	52%	10%
Source: StatsSA, 2013					

8.2.3 Language and Racial Distribution

Similar to the region, the population within the local study area is relatively undifferentiated from a language and race perspective, with most people speaking Sepedi (82%), followed by those speaking Xitsonga (12%). With regards to race, Black Africans constitute the overwhelming majority (99%) (StatsSA, 2013).

8.2.4 Education

A population's average level of education is commonly used as an indicator of human capital and is measured by the percentage distribution of the population older than 20 years and the highest level of schooling they completed. Education levels among the local population is presented in Table 20 below, which indicates a relatively modest level of formal education, with more than half of individuals attaining some secondary schooling, irrespective of their gender grouping. This trend is similar to the regional study area, although the latter has a slightly higher proportion of people that have attained secondary and tertiary levels of education (StatsSA, 2013).

Table 20: Highest Level of Education (20 years and older)

Education level	Study area		
	Local		
	General	Female	Male
None	6%	8%	4%
Some primary	26%	25%	27%
Completed primary	6%	5%	6%
Some secondary	36%	35%	38%
Completed secondary	19%	20%	19%
Higher	7%	7%	6%
Source: StatsSA, 2013			

8.2.5 Land ownership

Large sections of the local study area is owned by the Government of the Republic of South Africa, but are identified as the indigenous land of the Bakenberg TA. This means that the TA has jurisdiction over the land and holds the land in trust for its people. Individuals residing in households located on this land are therefore not title deed holders or owners of their plots of land but have been given Permission to Occupy by either the headman or the chief. The Bakenberg TA is headed by Khoshi L.P Langa who presides over large areas of the local study area, including the area that will likely be affected by the proposed Project. It should be noted that in addition to communal land assigned to the Bakenberg TA, the Bakenberg Langa Tribe also privately owns a large section of land within the proposed MRA. The settlements administered by the Bakenberg TA include:

Table 21: Jurisdiction of Bakenberg TA

Settlements within Bakenberg TA		
▪ Ditlotswane ▪ Rooiwal ▪ Malokonng ▪ Basogadi ▪ Ramogoshommi ▪ Bakenburg ▪ Taolome ▪ Clermont, ▪ Goodhope ▪ Pudiakgopa/Malokongkop ▪ Masipa ▪ Kaditshwene ▪ Mabula ▪ Harmansdal ▪ Marulaneng ▪ Vanwykspan/Garalenwane ▪ Skulpad ▪ Makeken	▪ Mohlakaneng ▪ Basterspad ▪ Dikgokgopeng ▪ Lusaka ▪ Nkgoru ▪ Kabeane ▪ Jakkalskui ▪ Galakwenasrom/GaMolekoa ▪ Skrikfontein/Magagamatala ▪ Buffelshoek/Madamas ▪ Kgopeng ▪ Mphello ▪ Bokwidi/Doorfontein ▪ Kromkloof ▪ Rantlakana ▪ Marken ▪ Lesodi ▪ Mamatlakala	▪ Dipichi ▪ Ramosesane ▪ Matebeleng ▪ Nkaikwetsa ▪ Masipa ▪ Malapile ▪ Mahabaneng ▪ Mushi ▪ Monare ▪ Chere/GaMongatane ▪ Sepharane ▪ Mathega ▪ Moshuka ▪ Viena ▪ Uitspan ▪ Moepel Farm
Source: MLM, 2014		

8.2.6 Spatial Development

From a spatial perspective, the Waterberg SDF (The Development Partnership, 2009) identified the area where the proposed project is to be established as the area holding potential for platinum mining. The Waterberg Environmental Management Framework (EMF) (MetroGIS, 2010), zoned the area where the proposed project is to be located as Zone 2, which refers to as “areas with a generally high, natural, visual and cultural quality that has significant potential for the development of nature and/or culture based tourism” (MetroGIS, 2010). This suggests that mining activities in this area are undesirable, as tourism and conservations are the preferred activities in this zone (MetroGIS, 2010). The Waterberg EMF

(MetroGIS, 2010), with reference to Zones 1, 2 and 9, further indicates that "developments that transform natural veld or cultivated land into any other cover should only be allowed if such development clearly present conservation, production or tourism advantages that could justify the transformation of land." (MetroGIS, 2010).

The MLM Housing and SDF (MetroPlan, 2005) that is available for public viewing is outdated and does not provide for a clear indication of the zone that the proposed project falls under. The SDF earmarks the Bakenberg area as an important development node. The SDF states that spatial development within the Bakenberg area should focus on non-residential activities along the main road through Bakenberg with a particular focus on business developments (MLM, 2012). In addition the Municipal SDF proposes that orderly growth should be promoted in the area by providing infrastructure and facilities which will allow regional facilities to be established in this node. The formalization of settlements with suitable land tenure arrangements should also be a prioritized (MLM, 2012).

The MLM Housing and SDF (MetroPlan, 2005) identifies specific farms that have been prioritised for mining development based on the knowledge of the mineral resources and the proposed projects at that time; however, no map outlining the various developmental zones was available for viewing. Therefore, it is difficult at this time to state whether the location of the proposed project is in any contravention of the proposed spatial development by the MLM. However, it is clear that the zoning undertaken by the Waterberg EMF does not foresee mining in the proposed project area.

8.2.7 Land Claims

The Restitution of Land Rights Act, 1994 (Act No. 22 of 1994) allows individuals or groups to claim land, from which they were previously dispossessed after 19 June 1913 under the apartheid regime. Claimants were given until 31 December 1998 to register a claim in terms of the Restitution of Land Rights Act. During this period approximately 80 000 claims were lodged throughout South Africa.

The Regional Land Claims Commissioner is responsible to verify the rightful claimant, validity of the claim, identify the beneficiaries and determine the extent of the land claim. This is the research stage of the claim. Once this has been completed, the claim is gazetted and therefore development on the land is at risk the claim is settled. This therefore has development implications for existing land owners and surface or mineral rights holders as further development on land, which has a land claim is a risk.

According to the Mogalakwena IDP (2014/2015) a substantial proportion of land within the municipal area is subjected to land claims, which is restricting it terms of spatial development (MLM, 2014). A land claims enquiry on the farms within the mining right area showed that there are claims on the following farms: Vogelstruisfontein 765 LR, Vriesland 781 LR, Schoonoord 786 LR and Bellevue 808 LR (see Section 8.3.2). Only the claim by the Sebueng community has been gazetted.

Table 22: Outstanding Land Claims

Affected property	Claimant	Status
Schoonoord 786 LR	Sebueng Community	Gazetted 04/092009 Notice No 1213 of 2009
Schonoord 786 LR	Bakenberg Tribe	Research
Bellevue 808 LR	Bakenberg Tribe	Research
Vogelstruisfontein 765 LR	Bakenberg Tribe	Research
Vriesland 781 LR	No information available at this stage	
Source: MLM, 2014; Department of Rural Development and Land Reform,2011		

8.2.8 Economic Profile

Economic activity within the local study area mostly derives from activities within the second economy, which is driven by informal enterprises undertaken by the self-employed, micro-entrepreneurs, street trading and other informal business activities (MLM, 2013). Activity in the informal sector is mostly located within the lower socio-economic class areas such as rural settlements, several of these settlements coincide with the Project area.

8.2.8.1 Employment

In 2011, the employment rate among the local study area's labour force was 15% of the total population and 50% among the economically active population (see Table 23). Employment was mostly provided within the formal sector (73%), which is centred on the social and personal, wholesale and retail trade, as well as manufacturing sectors. Although agriculture contributes only slightly to the local economy, the sector is considered a major source of informal employment within the area. Employment within this sector is usually seasonal and with low remuneration.

Unemployment among the economically active population (50%) is high, irrespective of gender grouping (see Table 23). Due to the high unemployment rate a considerable number of households revert to survival strategies such as subsistence farming, which is prominent in the local study area, especially maize cultivation.

Table 23: Employment Status

Employment category	% of total population
Not economically active	64%
Discouraged work seeker (DWS)	6%
Economically active	30%
Employed	15%
Unemployed	15%
Source: StatsSA, 2013	

8.2.8.2 *Income*

Table 24 shows the individual monthly income distribution for the population as a whole, as well as the proportionate breakdown across gender groups. Generally income levels within the local study area are extremely low, with almost 80% of people earning less than R 800 a month. The proportion of people earning no income is irrespective of genders. A large number of people who earn nothing (45%) and a small number (1%) of people who earn over R 12 801 per month (see Table 24), is indicative of a high Gini-coefficient[5] (measure of inequality).

Table 24: Individual Monthly Income

Income category	% of total population	Gender proportion	
		Female	Male
None	45%	46%	44%
R1-800	34%	31%	37%
R801- R12800	20%	22%	18%
R12801-204801+	1%	1%	1%
Source: StatsSA, 2013			

8.2.9 Service Delivery

This section reports on household access to public service delivery.

8.2.9.1 *Water and Sanitation*

Safe drinking water and adequate sanitation is a necessity for good health, as households without safe water and proper sanitation systems are more vulnerable to water borne diseases. Government water schemes provide most households within the local study area with piped water; however, a considerable number of households still depend on groundwater resources for domestic and agricultural use (Table 25). Rural communities are almost totally dependent on piped ground water abstracted from boreholes by pumps. Data on ground water resources indicates that there are water shortages, especially during the dry season, in the area. Water scarcity in the area prevents local water supply schemes to provide sustainable and reliable water to most rural communities.

[5] The Gini-coefficient, developed in 1912 by Italian statistician Corrado Gini, is a mathematical measure of income inequality. Its theoretical maximum value is 1 – which would imply that a single person receives 100% of the total income and the remaining people receive none – and its theoretical minimum value is 0 – in which case everyone receives exactly the same income. The Gini-coefficient of the United States of America is between 0.45 and 0.5, while that of Sweden is 0.23.

In terms of sanitation the majority of households within the local study area only have access to pit toilets, followed by a small number of households (9%) that have access to flush sanitation (see Table 26). These figures are considerably lower than those of regional study area.

Table 25: Household Water Supply

Water source	% Households
Regional/local water scheme	65%
Borehole	23%
Dam/pool/stagnant water	6%
Water vendor/tanker	4%
Other	2%
Source: StatsSA, 2013	

Table 26: Household sanitation facilities

Facility	% Households
Flush toilet (connected to sewerage system)	9%
Pit toilet with ventilation (VIP)	8%
Pit toilet without ventilation	79%
None	3%
Other	1%
Source: StatsSA, 2013	

8.2.9.2 Energy Source used for Lighting, Cooking and Heating

The majority of households within the local study area have access to electricity for lighting purposes (Table 27). With regards to cooking and heating there seems to be a greater reliance on alternative energy sources, especially wood. It is reasonable to argue that wood is sourced from areas surrounding rural communities.

Table 27: Energy Used for Lighting, Cooking and Heating

Energy source and purpose	Study area
Lighting	
Electricity	92%
Candles	7%
Other	1%

Energy source and purpose	Study area
Cooking	
Wood	51%
Electricity	46%
Other	3%
Heating	
Wood	50%
Electricity	40%
None	9%
Other	1%
Source: StatsSA, 2013	

8.2.9.3 Housing and Informal Settlements

In general, housing types vary according to settlement type. There are, for example, a higher proportion of informal houses in rural areas, while formal houses are predominantly a feature of the urban environment. The majority of households (95%) within the local study area reside in formal dwellings, only 3% of housing structures are informal (see Table 28).

Housing type is also linked to ownership. Security of tenure contributes to more permanent and conventional housing types, while a lack of security tend to bring about informal dwellings. Almost 50% of dwellings in the local study area are privately owned, of these the majority have been fully paid off, which is considerably higher compared to the regional study area (see Table 28). Just less than half of all dwellings are occupied rent free; this can be ascribed to the fact that the majority of the population reside on traditional land, with no formal land ownership rights.

The SDF for the regional and local study area identifies a major need for housing (MLM, 2012). Several public housing developments are underway to address this need. Efforts to improve access to housing within the local study area are being undertaken through the private sector as well as government (MLM, 2012). Public sector supported housing Projects occurs mainly in the economically depressed areas and informal settlements.

Table 28: Type of Tenure

Study area	Private ownership		Rented	Occupied rent-free
	Paid off	Not paid off		
Local	45%	5%	5%	45%
Source: StatsSA 2013				

8.2.9.4 Transport and Road Networks

Transport corridors formed by road networks usually play a pivotal part in facilitating and supporting development initiatives. Transport corridors also offer advantages to mining, manufacturing and other businesses developments planned for the area.

The immobility of communities within the local study area was noted to be a concern. Car ownership within the rural area is low and commuters depend on public transportation (bus and taxi operators). In addition to formal vehicle use, donkeys with trailers are also commonly seen traversing between vehicles and on the side of roads. Donkeys and trailers have been a traditional mode of transport and while the 'horse and carriage' is privately owned, it is very often leased out for business purposes (SANRAL, 2012).

The roads connecting communities within the local study area to each other and the region (e.g. D4380 and D3507) are mostly in a deteriorated state, especially sections within the local study area.

8.2.9.5 Challenges in providing Basic Services

Currently the LM's capacity to develop and maintain infrastructure and deliver household services seems to be outpaced by population growth and the resultant demand for services. The increase in the number of households, particularly in the rural areas where there are minimal services have increased backlogs in electricity provision, housing needs, roads, access to water, and sanitation needs. In particular the following issues impede service delivery in the Municipality:

- Lack of water resources and poor water quality;
- Lack of bulk infrastructure (water, electricity, and sanitation);
- Ageing of existing infrastructure;
- Inadequate budgeting for operations and maintenance;
- Overflowing of sewer plants;
- Utilisation of unlicensed landfill sites;
- Sector planning is not coordinated and aligned to the municipal planning processes;
- Inadequate capital funding for all infrastructure/service delivery;
- Inadequate institutional capacity to respond to service delivery opportunities; and
- Inadequate intergovernmental integration and support.

Table 29: Municipal and ward priority areas – directly affected villages

Rank	Priority Area Identified by Municipality	Affected Wards
1	Water and sanitation	9,10,11,15, & 16
2	Crime prevention, safety and security	9,10,11,15, & 16
3	Roads and storm water	9, 11,15, & 16
4	Housing	9,10,11,15, & 16
5	Local economic development and unemployment	9 ,11,15, & 16
6	Education	9,10,11,15, & 16
7	Sports, arts and culture	9,11,15, & 16
8	Electricity	9,10,11,15, & 16
9	Health and social development	9,10,11,15, & 16
10	Communication	9,10,11,15, & 16
11	Solid waste & environmental management	11,15, & 16
12	Transport	9,10,11, & 15
13	Land and cemeteries	11,15, & 16

8.2.10 Poverty and Vulnerable Groups

People or groups can be classified as vulnerable for a number of reasons. Often they are classified according to demographic or social profiles. As adapted from the IFC definition, vulnerable groups are people who by virtue of gender, ethnicity, age, physical or mental disability, economic disadvantage, or social status may be more adversely affected by Project impacts than others and who may be limited in their ability to claim or take advantage of Project related benefits (IFC, 2006). The most common groups identified as vulnerable are children, the elderly, child or female headed households, the poor and the disabled. Other socio-economic aspects also make certain people and groups more vulnerable such as low levels of education and high levels of unemployment. The low average monthly income combined with the high dependency ratio, high unemployment rates and a relatively low level of education implies high levels of poverty and vulnerability among households within the local study area (see Sections 8.2.8 and 8.2.9)

The Mogalakwena IDP (2012/2013) states that, "*one of the key social problems facing the Mogalakwena Municipality is poverty*". In particular the IDP notes that women, especially women living in rural areas, are the most affected by lack of job opportunities and other social issues such as access to education, role in society and economic opportunities. These factors together with the high prevalence of HIV/AIDS throughout the MLM (24%) and the number of household which are indirectly affected by the disease increases the vulnerability of a significant number of families in the local study area.

South Africa has a social grant system to assist poor and vulnerable households. Within the local study area grants are administered through the Bakenberg South African Social Security Agency (SASSA). The agency is also involved with community development and social work.

Among the local study area's population just more than 1 out of every 3 individuals receives some type of grant (StatsSA, 2011). This figure has almost doubled since 2001, which suggests a premature inclination towards welfare instead of developing sound institutions for education and subsequent employment (StatsSA, 2011). Of the people receiving grants an overwhelming majority (68%) receive grants for childcare.

In addition to the social grant system, approximately 70 000 households within MLM were provided with free basic water and electricity services (WDM, 2012). If one takes into consideration that the municipality hosted almost 80 000 households in 2010, it is clear that almost 90% of households within the regional and local study area are considered 'poor' (pronounced deprivation of well-being) (Houghton & Khandker, 2009) and qualify for free basic water and electricity respectively. This implies that a large percentage of the households within the local study area can be considered as vulnerable.

8.3 Site-Specific Study Area

This section focuses on the characteristics of the site-specific study area as defined in Section 6.1 – namely, the extent of the farm portions comprising the footprint of Project infrastructure and a 500m buffer surrounding it, as well as farm portions neighbouring this area. The following aspects of the study area are discussed:

- Land use and livelihoods;
- Land ownership and spatial development;
- Socio-economic characteristics of the population residing in the vicinity of the study area; and
- Stakeholder perceptions and attitudes.

8.3.1 Land Use and Livelihoods

This section describes the land use and livelihood activities within and surrounding the site-specific study area. The discussion distinguishes between activities on properties comprising the site-specific study area and those neighbouring it. This division is motivated by the fact that the potential socio-economic impact on these areas are likely to be different. For instance properties bought out by the mine to make way for surface infrastructure will almost exclusively experience displacement impacts, whereas neighbouring properties will remain in situ, leaving them vulnerable to the any negative project-related impacts (see Section 9.1.8).

8.3.1.1 Grazing

Grazing is the predominant land use throughout the study area. Two types of grazing are distinguished; firstly commercial game farmers graze their game on their properties, while those who own livestock within local communities depend on communal grazing areas to feed their animals (see Figure 4).

8.3.1.1.1 Grazing of Cattle

Cattle owners usually purchase cattle on an annual basis, which are then kept in livestock paddocks at their place of residence. Herd boys are appointed to graze the cattle for a period of time, after which the cattle are either sold at auction or to local butcheries. During a meeting with the Bakenberg TA it was establish that communities, depending on their location, have designated communal grazing areas.

The proposed infrastructure footprint coincides with two communal grazing areas, which are primarily used by cattle owners residing in Bakenberg, Basogadi, Mothoathoase, and Sepharane. However, due to the fact that the grazing location of cattle is not regulated, cattle from various communities can be found in this area. It should be noted that although the quality of grazing in the study area is reasonably good (DWE, 2015e), grazing resources often get exhausted during the dry season due to over grazing, which forces cattle owners to buy supplementary feed. Surface water is extremely scarce in the area coinciding with the project footprint, which detracts considerably from its desirability for grazing. For this reason most herd boys drive their cattle across the R4380 roadway towards the Mogalakwena River; movement of cattle across this and other roadways within the study area is quite frequent on a day-day basis.

Figure 4: Cattle Grazing in the Study Area

8.3.1.1.2 Game Farming

Game farming is practiced within the south-western section of the mining right area across the Mogalakwena River on the farm Bellevue 808 and other properties surrounding the mining right area. These properties do not coincide with any of the proposed mining infrastructure. Game grazes freely on these properties and is sold for hunting to local and international hunters. Common species of game found include Nyala, Eland, Impala, Sable, and Gnu.

These game farm owners have also invested considerably in their hunting operations by establishing hunting lodges for customers and purchasing game to supplement their hunting business. In addition to common game farming, landowners in this area have also invested substantial amounts in establishing exotic game breeding programmes. Investment into and profits from these programmes reportedly can run into millions of Rands. Exotic game in this area is limited to rare variants of antelope species, and is usually kept in camps due to their extremely high monetary value.

8.3.1.2 Agriculture

Agricultural activities within the study area comprise subsistence and commercial crop farming. The latter is concentrated on the farm Bellevue 808 LR which does not coincide with the projects proposed infrastructure footprint; these farming operations primarily produce lucerne for the local market and peppadew which are exported.

Subsistence maize farming is practiced on small plots of land usually located on the periphery of communities within the site-specific study area (see Figure 6). These plots of land usually range between 0.1 and 2.5ha, and are expected to render relatively low yields due the low land capability (DWE, 2015e). These fields are usually planted in October-November and harvested in June. The right to use these areas for agricultural purposes are exclusively allocated to households who reside within the jurisdiction of the Bakenberg TA.

The proposed project's infrastructure footprint coincides with approximately 40 of these agricultural plots, which are mostly used by farmers from Moshate/Bakenberg community; however, it was established that these fields have not been cultivated in recent years. Agricultural involvement among the community appears to be declining, which can be attributed to a possible stronger dependence on other resources such as social grants and remittances (see Section 8.3.4.5.2). During field investigations it was established that the majority of individuals currently involved in farming are older female community members, with the younger generation preferring formal employment opportunities for sustainable growth of wealth.

8.3.1.3 Residential Use

Residential land uses within the study area primarily comprise the footprint of following communities; Bakenberg, Sepharane, Basogadi, Mothoathoase, Malokongskop, Moshate, Basogadi, Ditlotswana and Kaditswhene (see Section 6.1). Other residential land uses include the homesteads of three commercial game farmers and their farm workers; these are

located on portions RE/2, 3, and 5, respectively, of the farm Bellevue 808 LR (see Figure 6). Infrastructure on these properties includes formal and informal dwellings, as well as buildings used for business purposes (e.g. commercial farming infrastructure and hunting lodges). A total of five farm workers reside at these properties; all of them are appointed on contract basis, and have secondary residences within nearby communities. The project infrastructure does not coincide directly with any of the aforementioned residential uses.

8.3.1.4 Public Infrastructure

The project site is divided by the D4380 Provincial Road. The northern section of the project site can be accessed via the D3534. The southern section of the project site can be accessed via the D3507. Both roads are secondary roads off the D4380 Provincial Road. These municipal roads are double-lane tarred roads. During field investigations several sections of these roads were in a deteriorated state, possibly due to a lack of maintenance.

8.3.1.5 Heritage Uses

Sensitive heritage areas, mostly graves and male initiation sites, are found within the study area; however, only Stone Age sites were identified within the project footprint area. Graves have been identified on the Vriesland 781 LR and Vliegekraal 783 LR properties, while male initiation sites are located on Vogelstruisfontein 765 LR (see Figure 6 and Plan 4). Initiation rites are usually performed in June - July for a period of three weeks. The reader is referred to the Heritage Impact Assessment report for a more in-depth description of heritage attributes of the study area (DWE, 2015f).

8.3.1.6 Medicinal Plants

During field investigation it was established that the mine infrastructure footprint, particularly the Tailings Storage Facility, will coincide with an area which is currently hosting a medicinal plant species, Mosala-suping, that is used by the Bakenberg Traditional Healers Association. The plant is harvested by traditional healers from all the communities in the vicinity of the site-specific study area. Although this plant species does grow elsewhere, the plants with the desired medicinal properties can only be found in the vicinity of the mining right area.

Figure 5: Bakenberg Traditional Healers Association

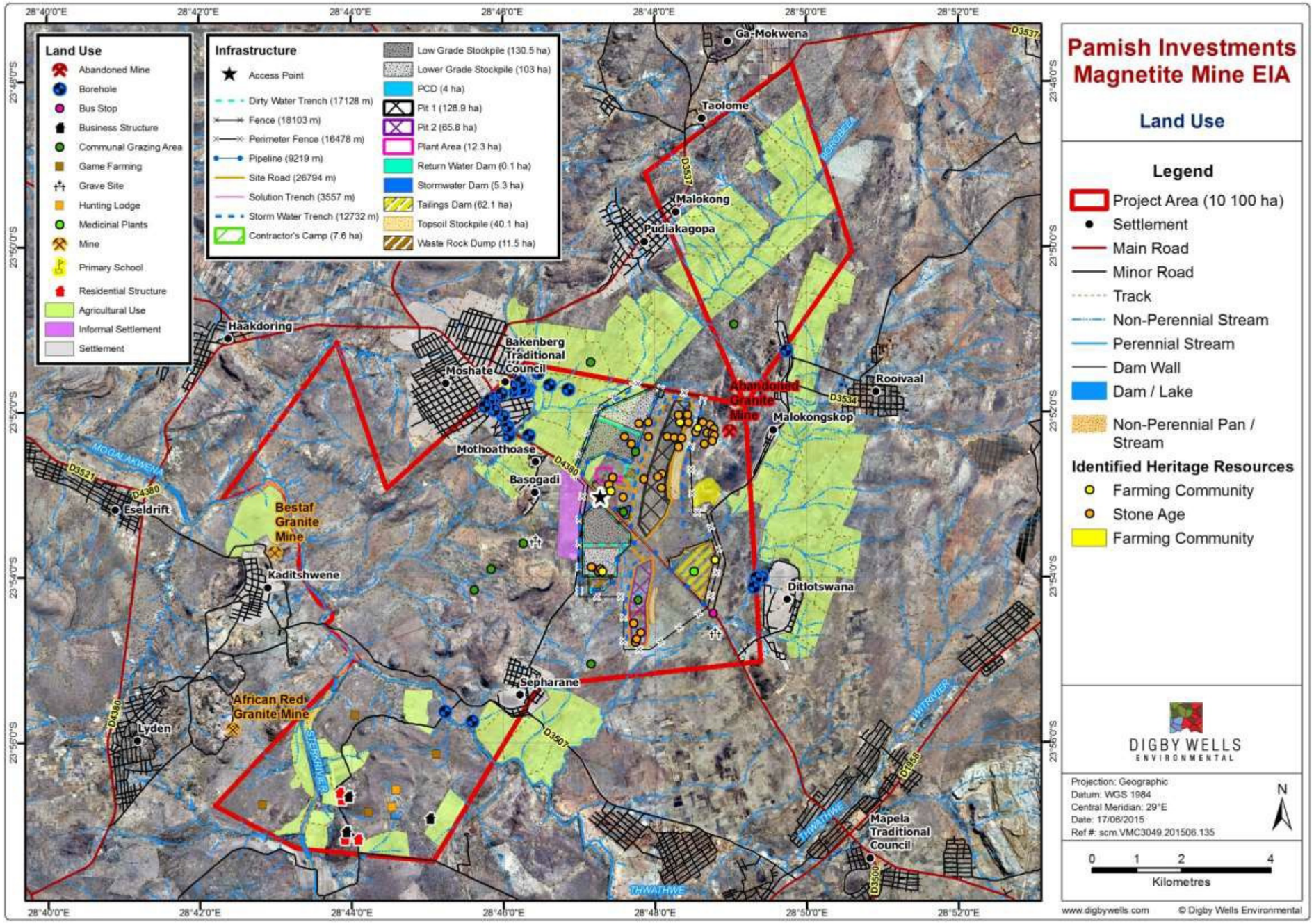
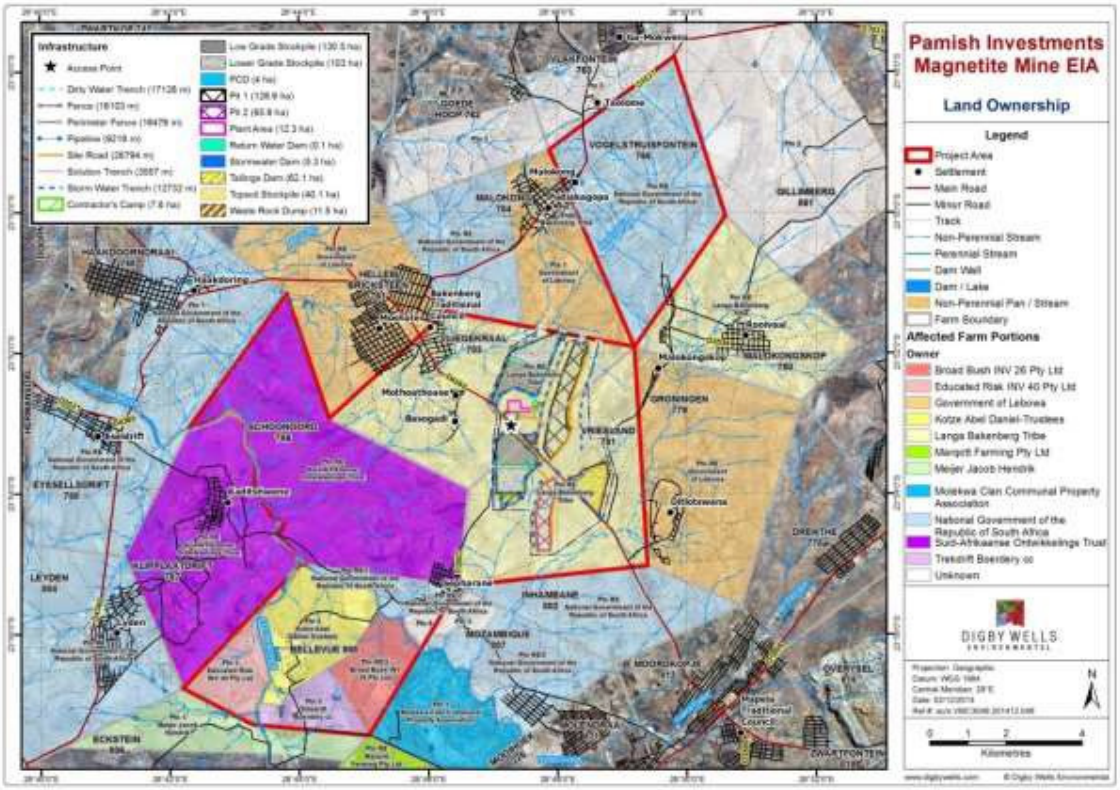


Figure 6: Land Uses within the MRA

8.3.2 Land Ownership

Plan 4 below indicates landownership within the site-specific study area and shows that the Bakenberg TA owns the two farm portions on which the proposed Project infrastructure will be located (see Plan 4). The TA is also the custodian of several farm portions that neighbour the study area, Hellem bricksteen 761 and Groningen 779 Malokong 784, these properties are owned by National Government. Land owned by private individuals is concentrated on the farm Bellevue LR 808.



Plan 4: Land Ownership within the Site-Specific Study Area

8.3.3 Socio-Political History

The site-specific study area is located within the historic Bakenberg Location, also known as the Hendrik Masibi Location, one of the three original chiefdoms described above. The area is at present under the Bakenberg Tribal Authority's jurisdiction. The scoping survey undertaken as part of the Heritage Impact Assessment (HIA), historical aerial images and previously completed assessment studies have provided evidence for several archaeological and historic stonewalled sites within the study area. This includes Hendrik Masibi's historic early 20th century capital that was indicated during the scoping survey.

Previously completed heritage studies have investigated sites associated with the history of the Langa in the study area. These sites include Malokong Hill situated on the eastern

border of the project area where a large stone walled settlement was identified. According to this study, the Mabusela clan occupied the area throughout living memory, first settling at the highest point of the hill for security expanding the settlement over five stages (DWE, 2015f). The reader is referred to the Heritage Impact Assessment report for a more in-depth description of heritage attributes of the study area (DWE, 2015f).

8.3.4 Socio-Economic Characteristics

The socio-economic household survey conducted for the project explored the socio-economic characteristic of households and individuals within the vicinity of the site-specific study area (see Section 6.2). Approximately 580 households were included in the survey; these households comprised of just over 3000 household members. The findings of the survey are presented in the remainder of this section.

8.3.4.1 Demographics

Socio-demographic attributes of the households described in this section include household characteristics and residents' age, gender and language distribution.

8.3.4.1.1 Household Characteristics

Most of the surveyed households have between three and six members. About 6% of households have only one member, and the largest has 16 members. The average household size (the total number of individuals divided by the total number of households) is just over 5 persons per household.

The relationships of household members to household heads are summarised in Figure 7, which indicates that most of the community (64%) consists of children and grandchildren of household heads. There are relatively few extended families (brothers, sisters, parents, nieces, nephews or grandparents) sharing the same household.

A noteworthy aspect of the composition of the surveyed population is the small proportion of spouses of household heads (6%). This is accounted for by the fact (mentioned earlier) that more than half of the surveyed households are headed by women – single or widowed females who do not have spouses.

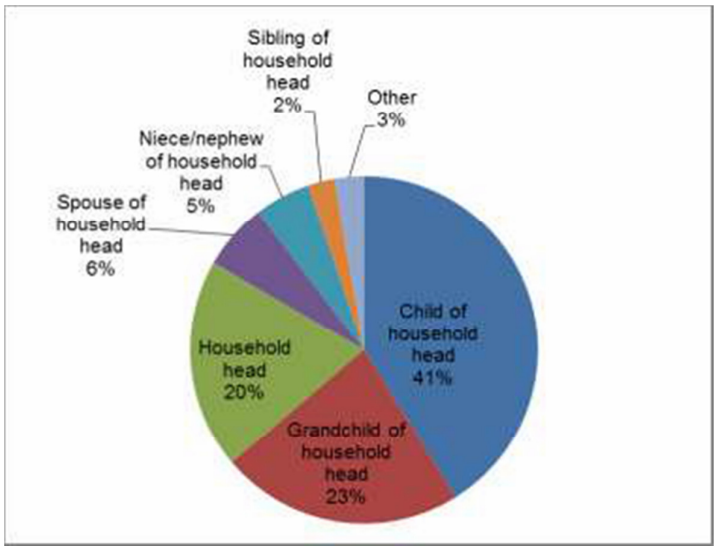


Figure 7: Relationships of Household Members to Household Heads

8.3.4.1.2 Age, Gender and Distribution

Among the surveyed population females (53%) outnumber males with 5%. It terms of age 62% of household members are of working age (between 16 and 65 years), followed by those of school going age (5 to 18 years). The age-gender distribution of the community members is shown in Figure 8. As can be seen from this figure, the distribution displays a small "spike" among both males in the young working-age interval (20-40 years), which is indicative of a community containing a number of migrant job-seekers who may have moved into the community in search of employment at nearby mines.

In terms of language distribution Sepedi is the most prominent spoken language among households (87%), followed by households speaking Xitsonga (10%). This suggests that, from a cultural perspective, the community is fairly homogenous.

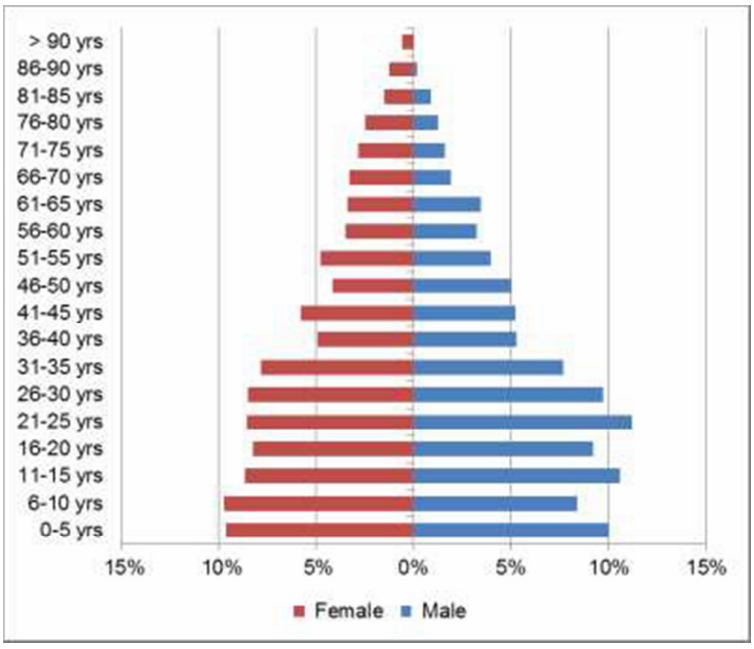


Figure 8: Age-Gender Distribution of Community Members

8.3.4.2 Population Stability

The residential status of the surveyed population is shown in Figure 9, which indicates that the majority (75%) of community members reside in the community on a full-time basis, followed by those who reside their on a part-time and irregular basis.

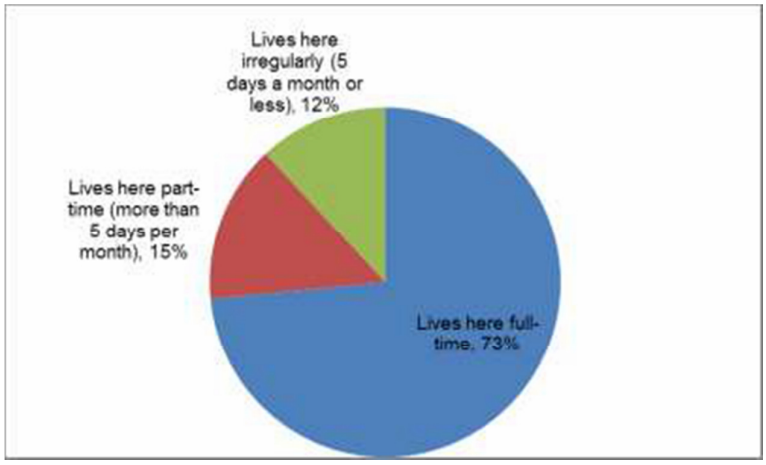


Figure 9: Residential Status of Household Members

The lengths of time that various households had been resident in the community at the time of the survey are shown in Figure 10. As can be seen from this figure, the community is a very stable one: the average household has been resident in the same community for 27 years. Only 5% of households have been resident in the community for five years or less.

Reasons cited for moving to the community mostly involve family responsibilities, although a few indicated that they had moved into the area in search of employment.

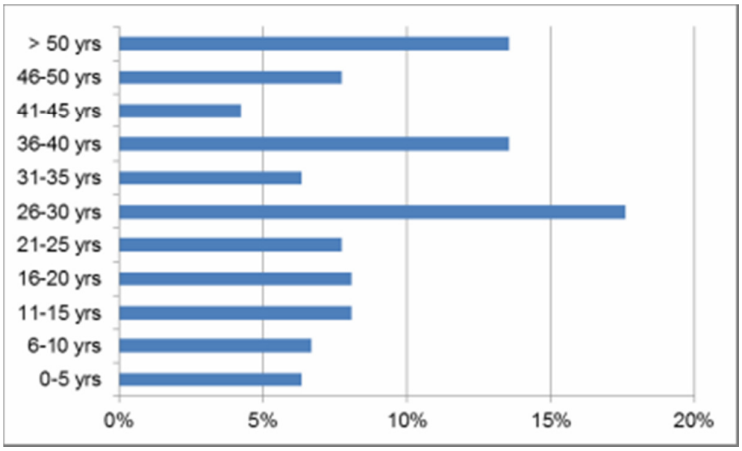


Figure 10: Lengths of Residence in the Community

8.3.4.3 Education

Of the surveyed population between the ages of 5 and 18, 98% are in school, irrespective of gender grouping. The highest education levels attained by the adult community (those over the age of 20) are shown in Figure 11. As can be seen from this figure, overall education levels are relatively low – only about one-third of adults have completed secondary school or attained any further education. Reasons for not completing school mostly involved financial or transport constraints. Literacy rates, on the other hand, are fairly high: among adults, 83% of women and 92% of men can read.

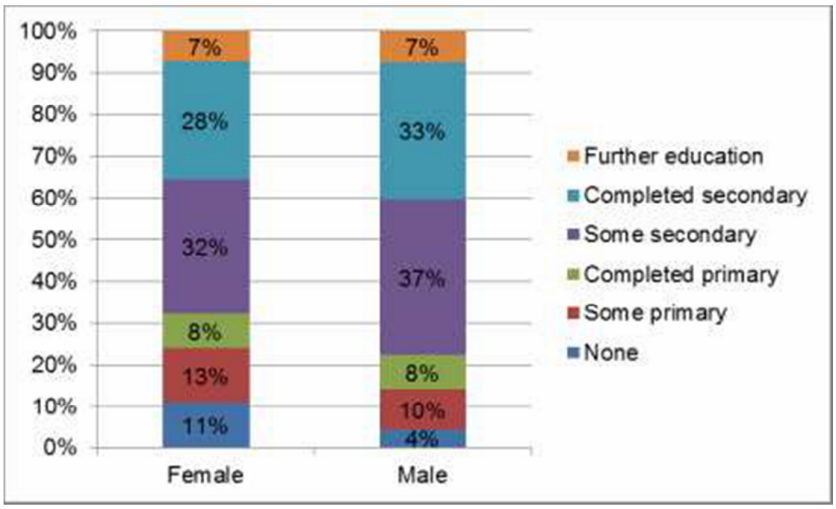


Figure 11: Education Levels of Adult Community Members

8.3.4.4 Mining-related Skills and Experience

Respondents were asked to indicate whether any members of their household possessed mining-related skills (operating equipment, administrative/ clerical skills, electrical or electronic skills, etc.), and also to indicate whether these skills were derived from training and/or previous work experience. The relevance of such information stems from the fact that employment on the Project could potentially be used as means to offset any negative socio-economic impacts that might occur. The survey results show that 22% of adult household members possess at least one mining-related skill. The types of skills possessed by these household members are shown in Table 30.

Table 30: Mining-Related Skills among Community Members

Type of skill	Acquired skill only	Worked	Total
Driver	33	57	90
Computer literacy	60	17	77
House-keeping	11	45	56
Building/bricklaying	3	46	49
Medical (nursing, first aid)	22	26	48
Electrical	18	29	47
Administrative skills	20	19	39
Mining related skills	15	18	33
Road construction	4	24	28
Warehousing/store keeping skills	5	23	28
Service industry	4	22	26
Mechanic	9	15	24
Teaching	1	23	24
Metal work	3	18	21
Carpentry	4	15	19
Plumbing	6	8	14
Agricultural	5	7	12
Machine operator	5	7	12
Masonry	1	7	8
Surveyor assistant	1		1
Total	**230**	**426**	**656**

8.3.4.5 Employment and Income

This section discusses the economic status of the community at two levels: the employment status of individual household members, and the livelihood strategies and income sources of entire households.

8.3.4.5.1 Employment Status of Individuals

The primary economic activities of working-age community members (those between 18 and 65) are shown in Figure 12. As can be seen from this figure, unemployment is high in the community in relation to the national average (34.6%), with more than two-thirds of the working-age population being unemployed. Unemployment is especially high among female members of the community, with 75% of adult women being without work. Of the 30% of adult community members who are employed, most are employed outside of the mining sector. These pursue a variety of occupations, including work in government, domestic workers, taxi and truck drivers and the like.

About half of adult men and women contribute to the household economy; this contribution most commonly takes the form of social grants. Only 6% of surveyed adults indicated that they have any secondary economic activity

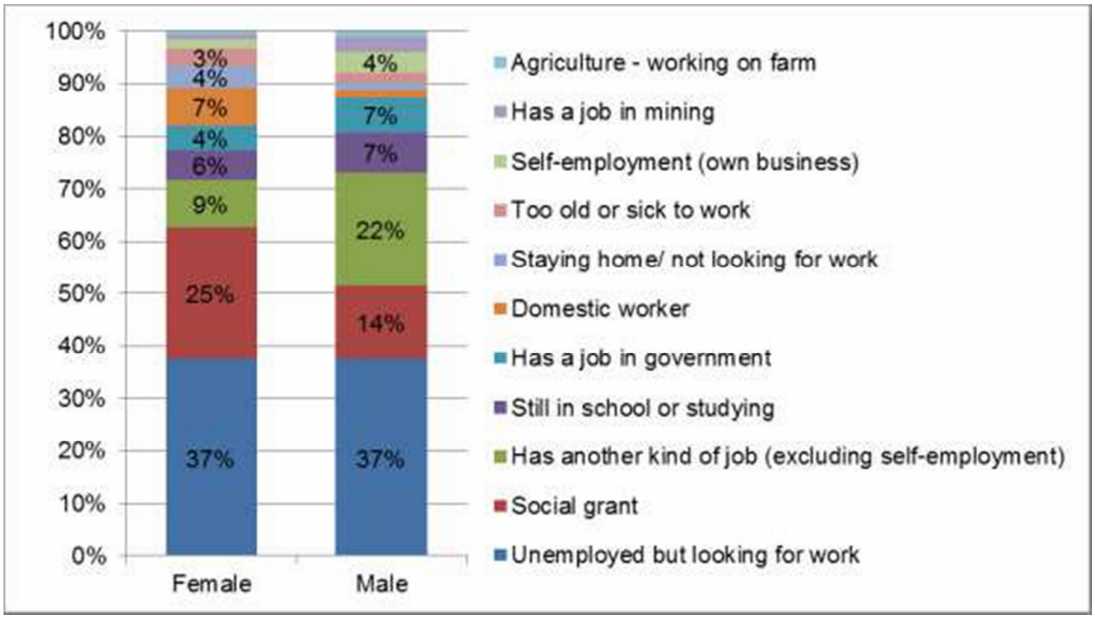


Figure 12: Economic Contributions of Adult Household Members

8.3.4.5.2 Sources of Income

Despite the high unemployment levels, all households have at least one source of income – although this income is often only of an infrequent nature. The numbers of income sources per household are shown in Figure 13 below. As can be seen from this figure, nearly half of surveyed households have two or more sources of income.

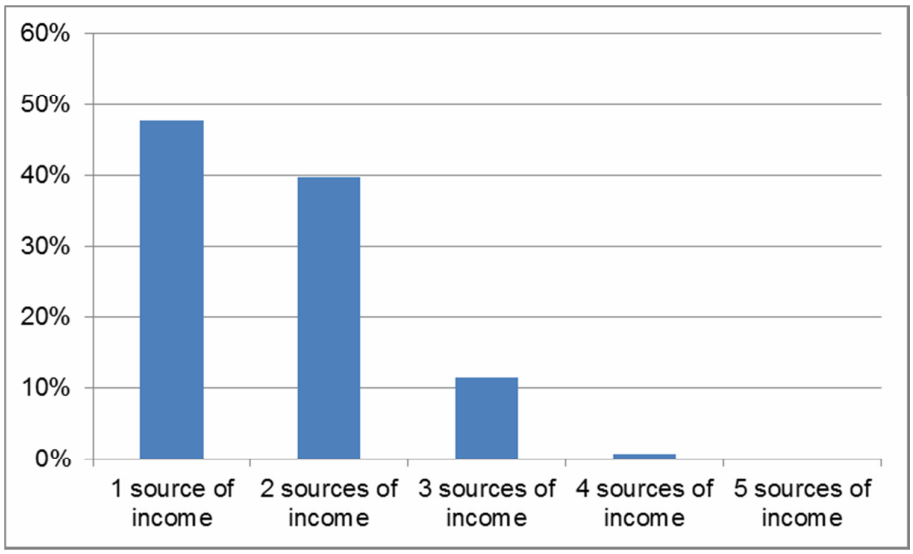


Figure 13: Number of Income Sources per Household

Consistent with the fact (reported in the previous section) that the contribution of most adults to their household economy is in the form of social grants, such grants were also identified as the main source of income of the majority of households (see Figure 14). Only about one-third of households identified salaries or wages of household members as their main source of income.

Dependence on social grants is significantly higher among female-headed households than those headed by men. As can be seen from Figure 15, nearly two-thirds of female-headed households identified social grants as their main source of livelihood. Among male-headed households, by contrast, roughly the same proportion depends on salaries and wages as on grants.

Incomes from the most common sources of livelihood (social grants and salaries or wages) tend to be regular or stable (see Figure 16). Sizes of incomes are fairly modest; however, as can be seen from Figure 17, only about 20% of persons who earn an income from salaries or wages indicated that this income exceeds R 5 000 per month; for business owners, this figure drops to 15%. Most households who rely on social grants earn between R 1 000 and R 5 000 a month from this source.

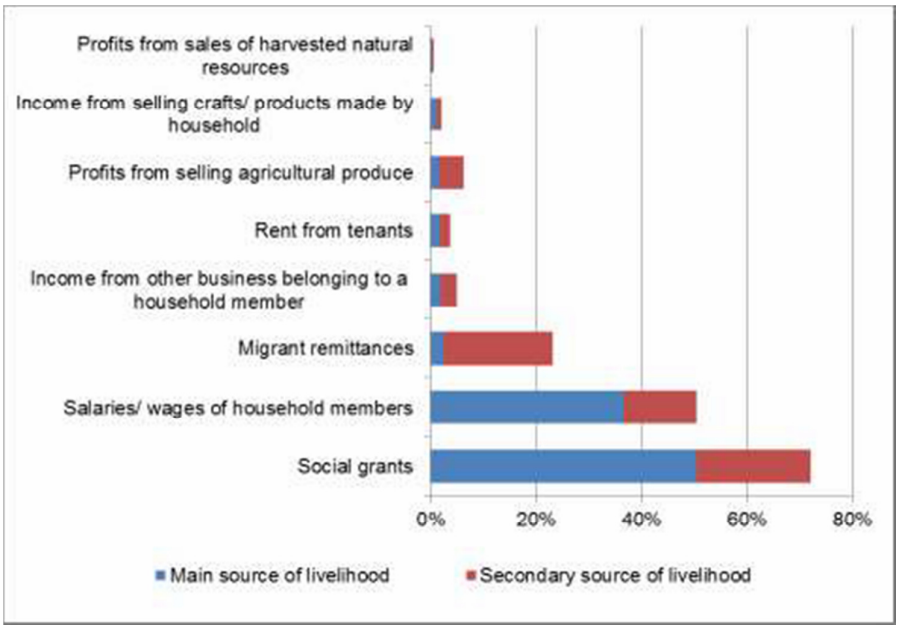


Figure 14: Types of Income Sources

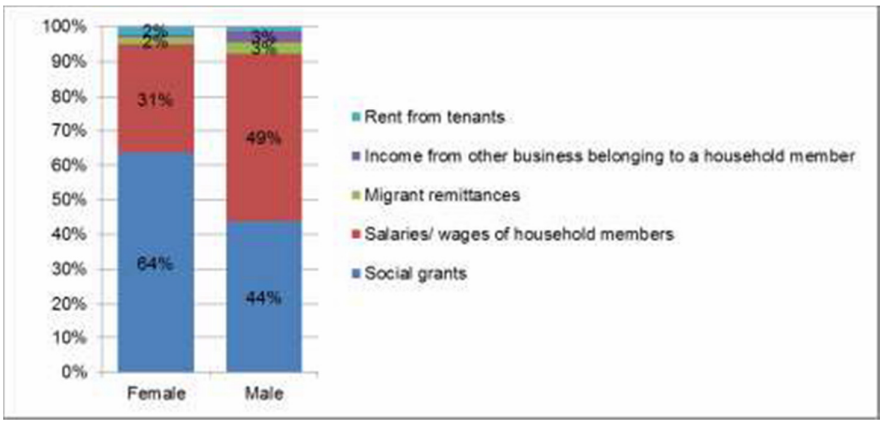


Figure 15: Main Source of Livelihood by Gender of Household Head

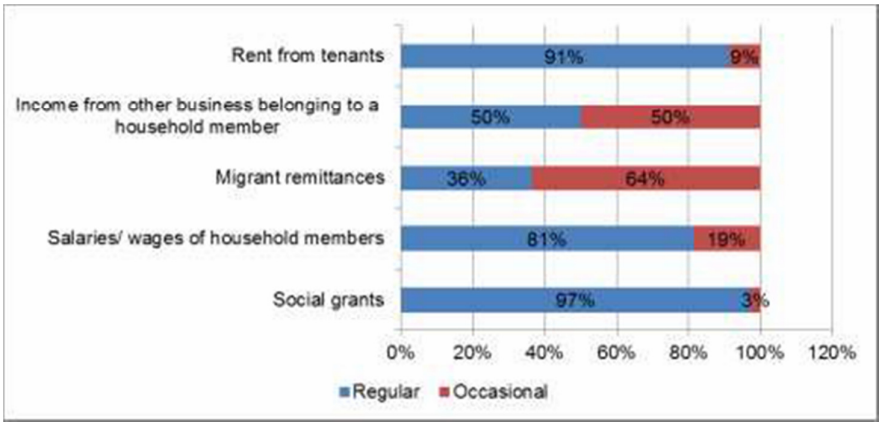


Figure 16: Regular and Occasional Income Sources

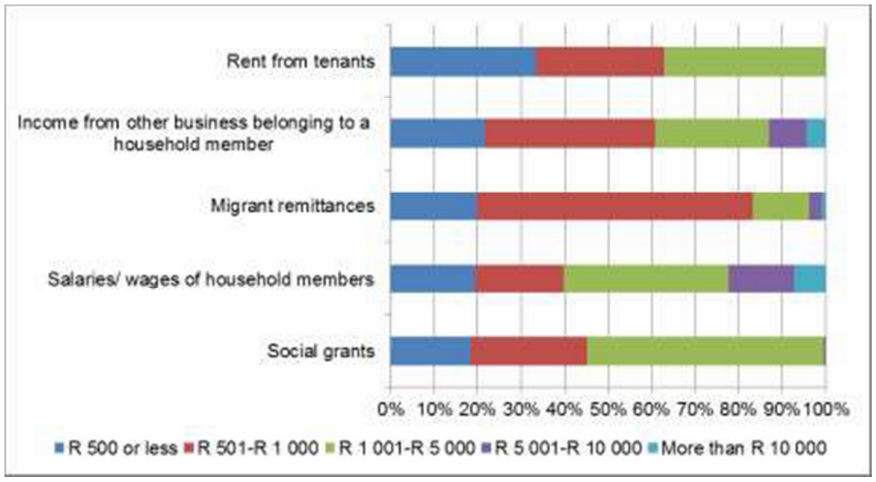


Figure 17: Sizes of Income per Source

8.3.4.6 Proxy Measures of Poverty and Vulnerability

Self-disclosed information on household income is susceptible to deliberate or unintentional distortion. For this reason, data on proxy indicators of poverty and vulnerability were also collected. Proxy indicators discussed below include household ownership of moveable assets, food security, health, membership of social networks, and perceived needs and challenges.

8.3.4.6.1 Moveable Assets

Ownership of moveable assets assessed during the survey range from fairly standard modern conveniences (such as cell phones and radio sets) to expensive commodities (motor vehicles and home computers). As can be seen from Table 31 below, low income levels do not prevent most households from owning a range of moveable assets. Cell phone ownership is nearly universal among surveyed households, with most households owning between two and three such devices. Television sets are nearly as common. Motor

vehicles, on the other hand, are significantly less common; only about 20% of households report that they own one.

Table 31: Ownership of Moveable Assets

Asset	% households who own at least one	Average owned per household	Largest no. per household
Cell phone	93%	2.6	12
TV set	82%	1.1	4
Electric stove	81%	1.0	3
DVD player	58%	1.1	4
Refrigerator / combined fridge-freezer	58%	1.1	3
Radio set	48%	1.1	4
Microwave oven	39%	1.0	2
Deep freezer	39%	1.0	2
M-Net / DStv subscription	26%	1.0	2
Washing machine	24%	1.0	2
Motor vehicle	22%	1.4	6
Hi-fi / music centre	21%	1.0	2
Home theatre system	15%	1.0	2
Gas stove	13%	1.0	1
Computer	11%	1.2	5
Vacuum cleaner / floor polisher	11%	1.0	1
Built-in kitchen sink	10%	1.0	1
Tumble dryer	8%	1.1	2
VCR	5%	1.0	2
Hot running water from geyser	4%	1.0	1
Dishwashing machine	3%	1.1	3
Home telephone	2%	1.1	2
Home security	1%	1.0	1

8.3.4.6.2 Nutrition, Health and Mortality

Two additional proxy indicators of poverty and vulnerability are discussed below:

- ***Food security.*** Almost all surveyed households reported that maize meal is their staple food. Only 16% of surveyed households reported that they had gone to bed hungry the night before the survey, and 30% reported that they had suffered any food shortage in the past year; and
- ***Health.*** Most households live within 30 minutes' walk from a health facility (mostly a community clinic). Only 9% of surveyed households reported that they have to pay for the services of a medical practitioner. Thirteen percent of households reported that they sometimes make use of a traditional healer, but reliance on a pastor for healing is far more common (reported by 72% of survey respondents). A list of common ailments, as well as the percentage of households reporting that a household member had suffered from one of these ailments, is presented in Figure 18: Distances to Health Facilities (Minutes' Walk) below. Although respondents were not required to disclose their HIV/AIDS status, one case of HIV/AIDS was reported during the survey.

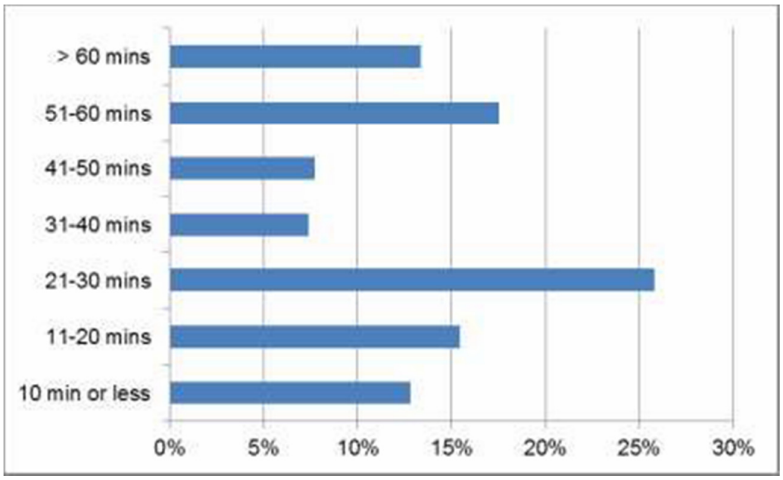


Figure 18: Distances to Health Facilities (Minutes' Walk)

Table 32: Reported Health Problems in the Past Month

Type of disease	Children under 15	Women over 15	Men over 15
Cold / flu	18%	18%	10%
Eye infection	4%	14%	5%
Diarrhoea	5%	6%	3%
Skin rash	7%	3%	2%

Type of disease	Children under 15	Women over 15	Men over 15
Hypertension	-	6%	2%
Asthma	1%	3%	2%
Tuberculosis	1%	2%	2%
Witchcraft	0%	2%	2%
Intestinal worms	2%	1%	1%
Waterborne disease	0.2%	1.7%	0.5%
Diabetes	-	0.3%	0.9%
Arthritis	-	0.9%	0.3%
Pneumonia	0.2%	0.3%	-
HIV/Aids	-	0.2%	0.2%

8.3.4.6.3 Membership of Social Networks

Of the surveyed households, 91% reported that they have relatives in the community where they live. As shown in Figure 19, it is fairly common for households to rely on one another for assistance – especially in terms of helping one another with work, sharing equipment or tools or transport, and taking care of children. Membership of social organisations – especially church groups and "stokvels" – is also fairly common (see Figure 20).

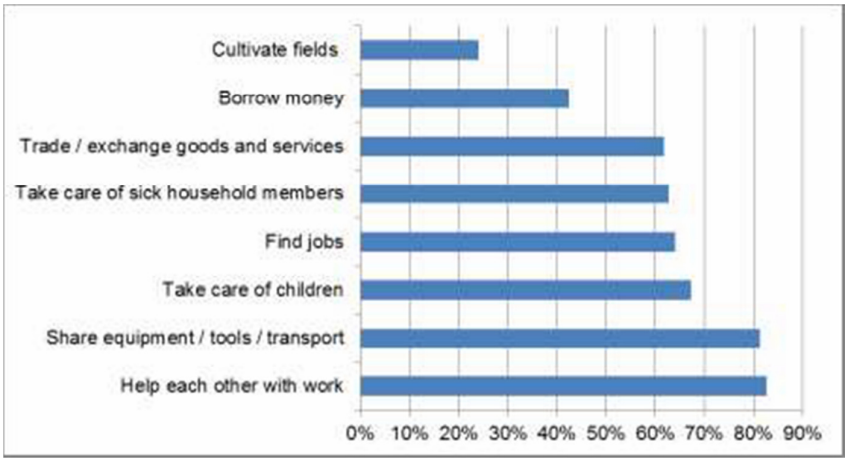


Figure 19: Reliance on Family and Friends

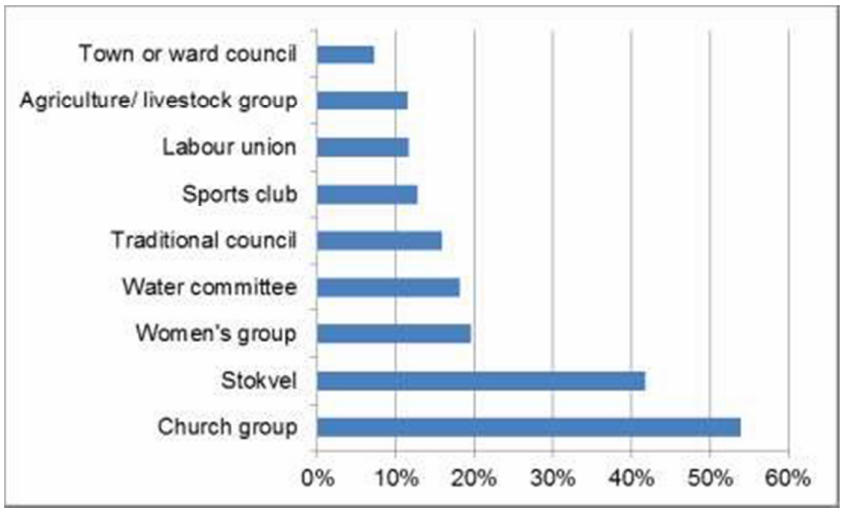


Figure 20: Membership of Social Organisations

8.3.4.7 Perceived Needs and Challenges

During the survey, respondents were asked to identify the most pressing needs and challenges experienced by their household and community. A lack of employment opportunities and poor infrastructure – roads, water and electricity – were identified as the most pressing problems by most respondents (see Figure 21 below).

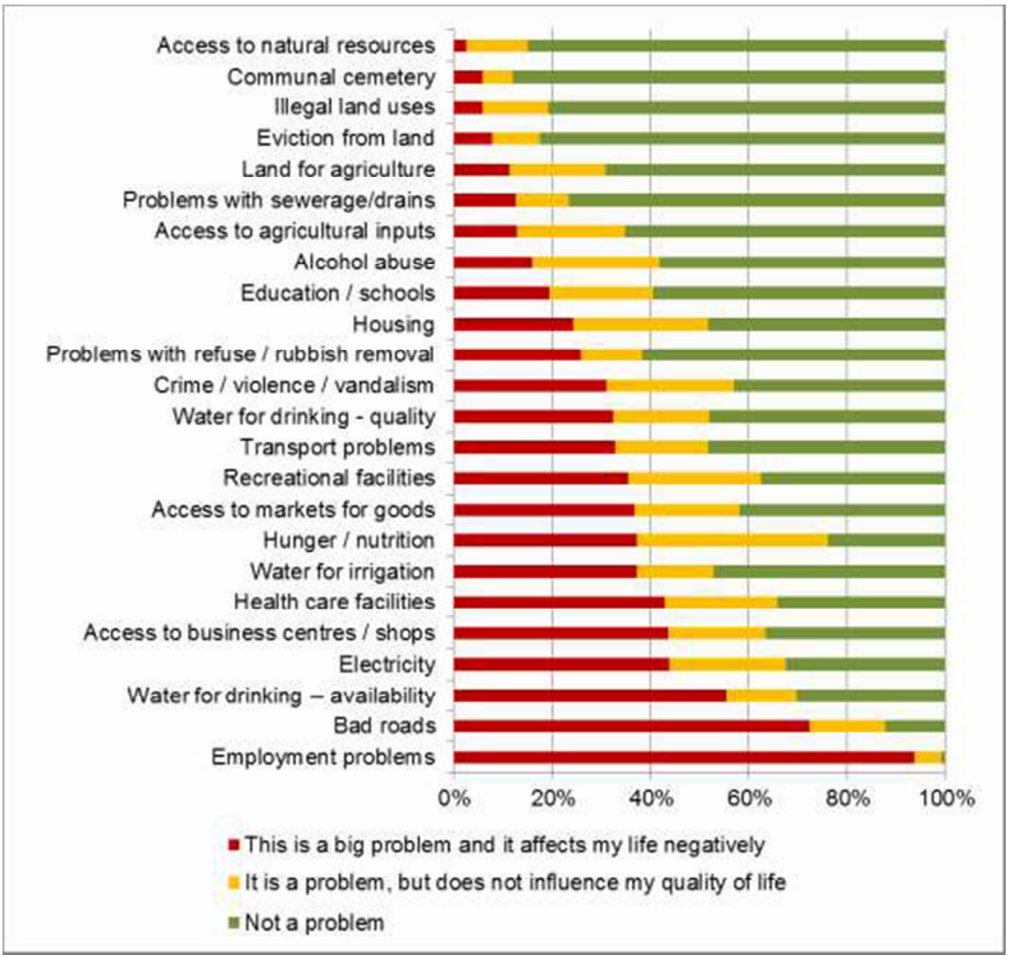


Figure 21: Needs and Challenges Reported By Community Members

8.3.4.8 *Infrastructure and Services*

This section provides information on the community in terms of housing, water and sanitation services, sources of energy and access to public services such as schools, clinics, etc.

8.3.4.8.1 *Housing*

During the survey, respondents were asked to indicate the type of ownership they have over the land on which their homes are situated. It was established that almost all households indicated that they have customary ownership of their residential plots, with this land having been allocated to them by the Bakenberg TA.

Most households own between two and four structures; a small number of households have up to eight structures. The most common structures are multifunctional residential buildings and outside latrines. The residential structures are mostly formal brick buildings, while the latrines tend to be informal structures. Only 11% of surveyed households indicated that they have a second home elsewhere.

8.3.4.8.2 Water and Sanitation

Water sources used by the households are shown in Figure 22 below. As can be seen from this table, the majority (65%) of households have access to piped water in their house or yard. Of the households who do not have access to water in their house or yard, about 75% have access to a water source (mostly a community standpipe) that is less than one kilometre from their homes.

Only 12% of households report that they purify their water; the most common methods of water purification are chlorine tablets (used by 66% of the households who report that they purify their water), boiling (26% of households) and bleach (7%).

Pit latrines represent the most common form of sanitation facility, with only 4% of households relying on alternative sanitation services. Twenty-nine percent of surveyed households report that they share their sanitation facility with another household.

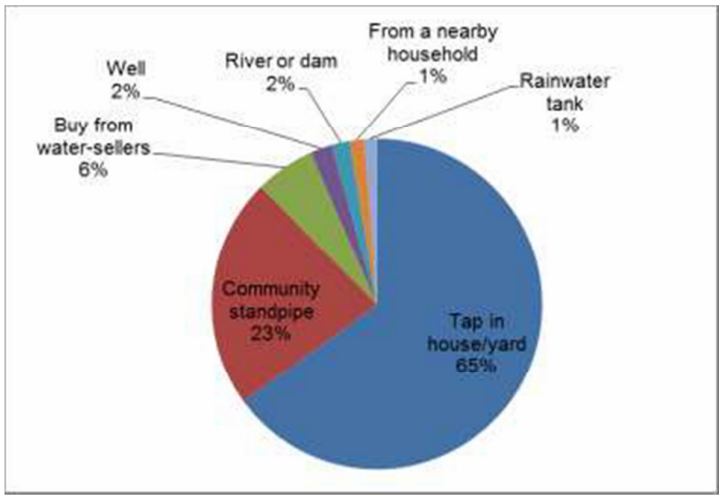


Figure 22: Water Sources

8.3.4.8.3 Energy

The survey results indicate that almost all surveyed households have access to electricity. However, because of the cost involved in purchasing electricity, the use of this energy source is mostly confined to lighting (see Figure 23). About half of the households prefer to use alternative energy sources (mostly wood) for cooking, and about two-thirds of households rely on wood fires for heating.

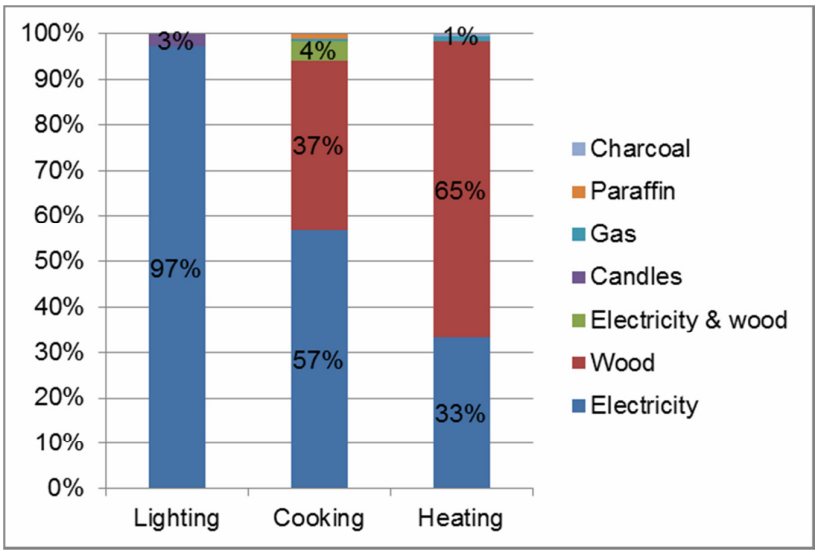


Figure 23: Sources of Energy used for Lighting, Cooking and Heating

8.3.4.8.4 Public Services

The public services used by the surveyed households, as well as their location and distance from the community, are listed in Table 33. As can be seen from this table, most services are situated in Bakenberg and are within fairly easy reach to the surveyed communities.

Table 33: Location of and Distance to Services

Row Labels	Average of Distance in km	Most common locations
Bank/ credit facility	43	Mokopane
Bus stop	3	Bakenberg
Church	5	Bakenberg, Mmotong
Clinic	8	Bakenberg, Mmotong
Hospital	14	Bakenberg, Marualeng
Market	22	Bakenberg, Mokopane
Pension pay point	10	Bakenberg
Primary school	5	Bakenberg, Mahlaba
Secondary school	2	Bakenberg
Shop	11	Bakenberg
Taxi rank	4	Bakenberg

8.3.4.9 Agriculture and Natural Resources

This section discusses the prevalence and nature of agricultural activities, livestock husbandry and the utilisation of natural resources among the surveyed households.

8.3.4.9.1 Cultivation of Crops

Of the surveyed households, 28% reported that they have access to arable land that they use, or have used in the past, for cultivating crops or grazing cattle. Most of the plots used for such purposes are less than 0.1ha in extent (see Figure 24), and have been allocated to the household by the relevant traditional authority. About half of these plots of land are used to cultivate crops; only 6% of surveyed households indicated that they have plots of land used for grazing livestock (Table 34). While some plots of land (specifically those used to cultivate vegetables) are at the homestead, most are further than 500m from the home (see Figure 26).

The most common crops planted by households are maize and sweet potatoes (see Figure 25). About one-third of plots have only one type of crop on them. In cases where two of more crops are grown on the same piece of land, the secondary crops are mostly beans or sweet potatoes. Crops are mostly grown for subsistence purposes; fewer than half of the surveyed households indicated that they sell any of the crops they grow (see Figure 26).

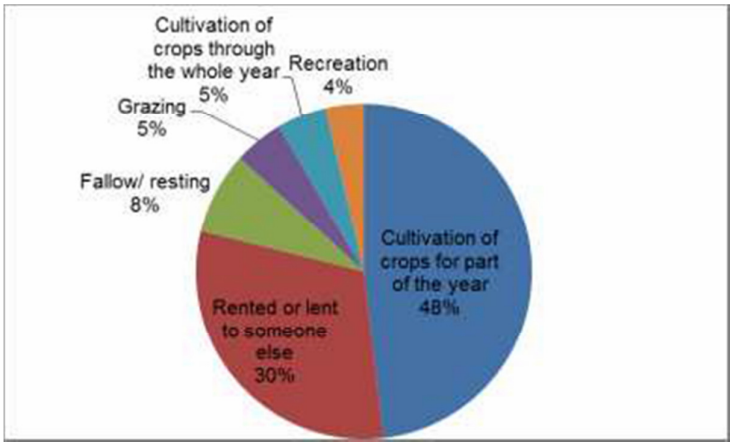


Figure 24: Uses of Arable Land

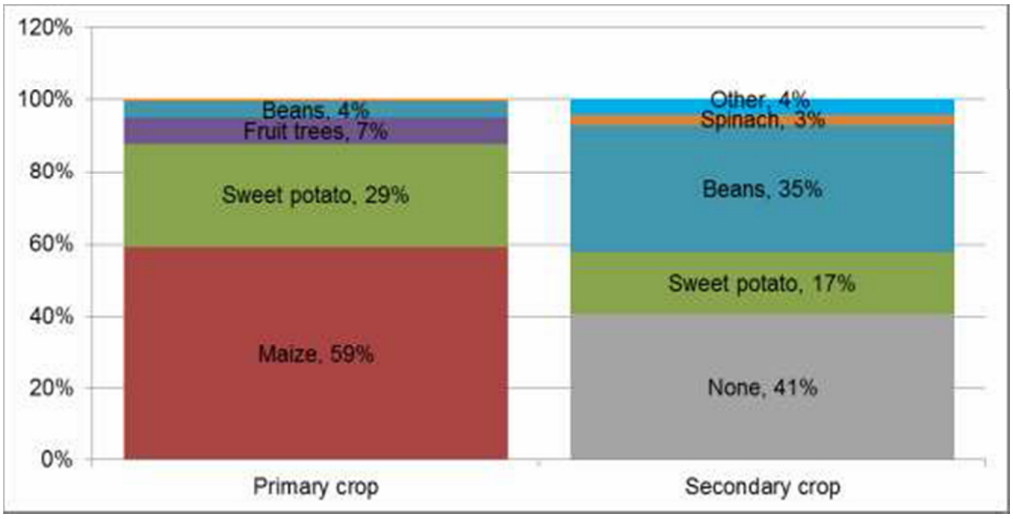


Figure 25: Crops Grown

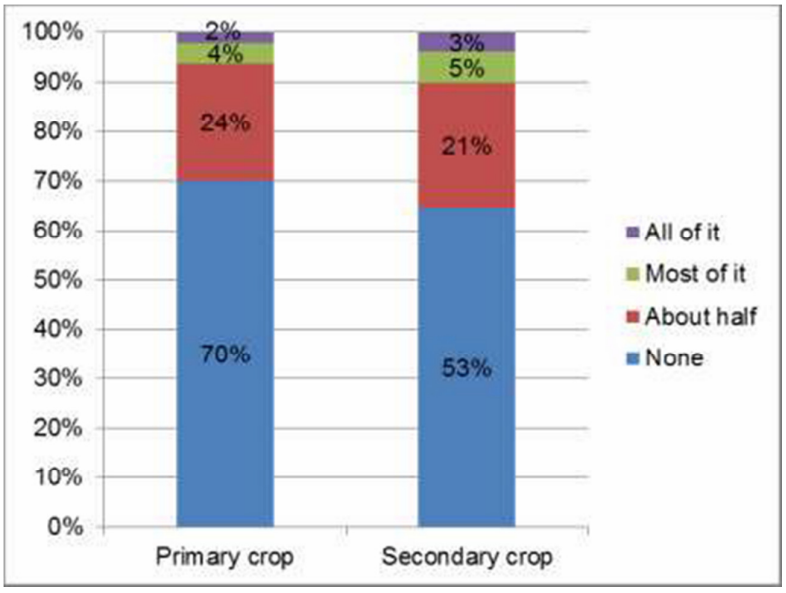


Figure 26: Percentage of Crops that is Sold

8.3.4.9.2 Livestock

Livestock husbandry is also relatively uncommon among the surveyed households. Chickens represent the most common type of livestock; about one-fifth of households indicate that they have chickens. Among households who do have chickens, the average number of chickens per household is 14. The prevalence of other types of livestock, as well as the average number per household, is shown in Table 34.

Table 34: Livestock Owned by Households

Type of livestock	% households who own at least one	Total owned by surveyed households	Average per household
Chicken	21%	1683	14
Cattle	5%	300	10
Goats	5%	224	9
Sheep	2%	62	6
Donkeys	2%	59	7
Poultry	1%	50	13
Game	1%	49	10
Pigeons	1%	41	14
Pets	1%	7	2
Pigs	0.2%	5	5

8.3.4.9.3 Utilisation of natural resources

The most common utilisation of natural resources is the gathering of firewood; this is practiced by about three-quarters of surveyed households. Other types of natural resources utilised by the community, as well as the frequency with which they are harvested, is shown in Figure 27 below.

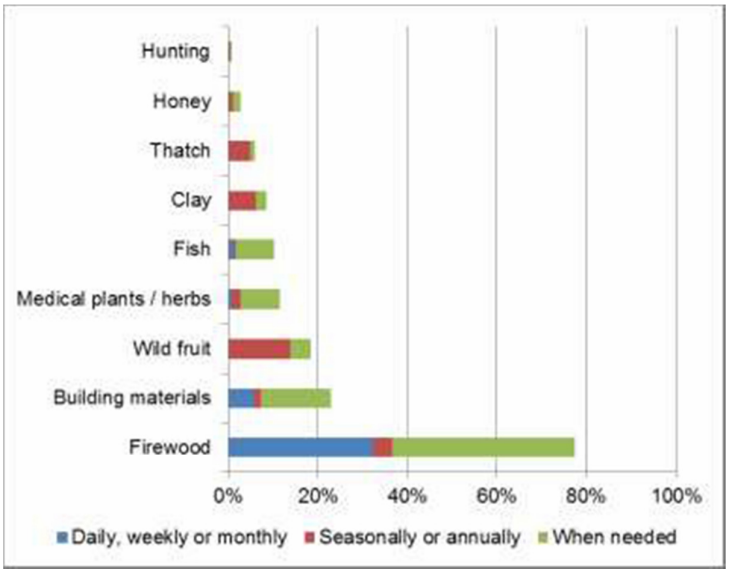


Figure 27: Utilisation of Natural Resources

8.3.4.10 *Perceptions regarding the Project among the Site*

Of the surveyed households, only 42% reported that they have any knowledge of the proposed Project. Expectations regarding the Project mostly revolve around job creation and skills development. Survey respondents were also asked to make recommendations regarding measures that could be implemented to mitigate negative Project-induced impacts and enhance positive ones. Recommendations again mostly centred on employment creation, with the insistence that local communities should be given preference when jobs on the Project become available. Other frequent comments include the need for the Project to invest in the development of schools in the area, as well as the importance of mitigating physical Project-related impacts (e.g. noise and dust, and the provision of compensation for houses damaged by blasting).

8.3.5 Stakeholder Perceptions

Stakeholder perceptions of a proposed development are critical inputs into the SIA process. While perceptions are frequently based on insufficient information, this in itself may lead to, or increase, resistance to the proposed development. Insufficient project information could also raise unrealistic expectations amongst affected parties and/or host communities. A thorough understanding of the origin of stakeholder perceptions is therefore required, not only to put impacts into perspective, but also to identify mitigation measures that will address potential social risks to the proposed project.

In addition to the stakeholders interviewed for the SIA study (see Section 6.2 above), the SIA also takes into account the stakeholder issues and concerns raised during the public participation process for the EIA study (which is on-going) (DWE, 2015g). The EIA public participation process has already consulted key stakeholders and government departments at the regional level, as well as some farm owners and other local-level stakeholders. Consultations for the SIA focused on potentially affected parties in the project area. The main ‘social’ issues and concerns raised by respondents are listed in Table 35 below.

Table 35: Summary of Stakeholder Attitudes, Perceptions and Suggestions

Interested Parties	Affected Parties[6]
▪ In general surrounding communities are welcoming to the project, as they expected employment and economic development. ▪ Private landowners are concerned that the mitigation of impacts will not occur, as is evidenced at other mines in the area; they are concerned that this could have devastating impacts on their current livelihood activities.	
▪ The land area on which the proposed site is located is currently not zoned for mining; ▪ Believe that the proposed project can (a.) assist with development projects planned for the locality and (b.) have several positive impacts including employment and infrastructure upgrades ▪ Pamish should strongly consider to invest in LED or CSI projects that will aid in diversifying the local economy ▪ Pamish should strongly consider using labour and SMMEs from the local area; ▪ Pamish should consider implementing skills and development projects, especially among the youth; ▪ Several stakeholders are concerned that the mine will result in an additional increase in traffic and deterioration of local roads; ▪ Authorities are apprehensive about the impacts on especially air and water quality. There is no public water scheme supplying water to communities, hence any	▪ Owners of properties neighbouring the mine, which will likely not be bought out by the mine, are concerned that the mine will ultimately result in a devaluation of property or impact the viability of their hunting operations. ▪ Loss of sense of place, mostly as a result of perceived air, noise and visual pollution, population influx, increased traffic and perceived increase in crime. Property owners have acquired land and developed their properties out of a love for characteristics of the area – some landowning families have been residing in this area since 1912; ▪ Depletion of ground and surface water. It is strongly believed that the proposed mine could deplete and/or pollute water sources. All the communities are exclusively reliant on underground and river water; ▪ Pressure on community services and public infrastructure, especially roads. Most respondents expressed a major concern with regards to the potential deterioration of local roads and associated health and safety risks; ▪ Population influx and the presence of a construction workforce will lead to increases in social pathologies; deteriorating safety and security conditions; ▪ Dust and noise pollution together with vibrations from blasting will have a significant negative impact on the health of both humans and animals, and could impact on exotic game farming and hunting operations;

[6] ***Affected parties*** refer to those who might experience direct effects of proposed project activities, with these effects being significantly greater than or different from the effect on the general public. ***Interested parties*** denote a broader group than 'affected persons', and includes everyone who has an interest in issues related to the proposed project. In several instances, interested parties also represent concerns of affected parties (e.g. municipal officials represent the interests of their constituencies).

Interested Parties	Affected Parties[6]
impact on the quantity and quality of ground water could have significant implications for those depending on this resources for their well-being; ▪ Concerned that mining activity in the municipal area is consuming large sections of land that could be used more sustainably through agriculture and grazing practices. The proposed project would add to this trend; ▪ Mining has resulted in substantial population influx into the municipal area, which is placing increasing pressure on service delivery as well as available human resources within the municipality. This is complicating the task of local authorities involved with public service delivery; ▪ In the past mining companies has promised to contribute to skills development among local populations; this however, has not been implemented successfully. Similarly despite mining companies promises for local procurement, only a limited number of products and services are procured from local suppliers; ▪ Authorities are concerned about the proposed project's impact on air quality – the air quality in the area has already exceeded the allowed limits, which means that any additional impacts on air quality will exacerbate the situation; ▪ Relationship between Local Authorities and mining companies is often negatively affected by limited consultation during early project phases. It was suggested that the proposed project should engage the relevant	▪ Community members are concerned that mine related blasting will damage housing and other privately owned structures, which could result in financial cost and increase the risk to personal safety; ▪ Concerns were raised that the project might impact on heritage site's and graves within the proposed mining area; ▪ Several stakeholders have noted that there is a communication breakdown between the Bakenberg TA and the community, which might lead to miscommunication between Pamish and those ultimately affected by the project; ▪ A prominent concern amongst most community members are that Pamish should prioritise local recruitment of employees, and in the case that skilled employees are not locally available locally skills development programmes should be implemented to establish these skills; ▪ A major expectation among communities includes infrastructure and skills development. It is preferred that any skills development should be focussed on the youth; ▪ Mining right area is currently used for grazing primarily by those residing in Basogadi Moshate Bakenberg. Fencing of the Mining right area will impact those depending on the area to graze their cattle; ▪ Several agricultural fields are located within the mining right area; individuals depending on these for their livelihood will be negatively impacted if accesses to the plots are prohibited; ▪ Illegal land use is a problem in the vicinity of the proposed mining right area. Concerned that population influx associated with mining could increase illegal residential land uses; ▪ Foreigners are perceived negatively due to association with criminal activities. If foreigners are employed at the mine, instead of local people it could very likely lead to conflict between locals and those employed from area outside MLM; ▪ Some schools within Bakenberg have reached their maximum capacity in terms of the number of learners it can facilitate. Educational institutions are concerned that mine-

Interested Parties	Affected Parties[6]
municipal departments early on, especially the technical and planning departments of the Local and District Municipalities. ▪ Major social problems within the community include: petty theft, alcohol and drug abuse, domestic violence, teen pregnancy, high HIV/AIDs prevalence (especially among the youth) and teen headed households as result of relatively high rate of HIV/AIDS deaths (SASSA, 2015).	induced population influx and an additional workforce in the area, will further increase the pressure on schools in the area; ▪ Alcohol and drug abuse is a major problem in the area, mine-related influx could exacerbate this situation; ▪ It is expected that mine related traffic will increase local traffic loads considerably. Community members are concerned that this will increase travelling time and increase the risk to personal safety especially for those that need to cross the road running through Bakenberg on a daily basis; ▪ Prominent welfare issues in this community are children with HIV/AIDS as well as child headed households; ▪ Experience from other mines in the area, has shown that increased noise and vibration could result in stress levels of game which will impact on breeding patterns of exotic game, which could potentially detract from the feasibility of especially exotic game farming. Also noise could disrupt hunting on the commercial farms.

8.4 Summary

The table below provides a summary of the baseline profile. It highlights features and trends across all three study areas that might have relevance for Pamish in terms of possible opportunities/ benefits and constraints/ challenges.

Table 36: Summary of the Socio-Economic Baseline Profile

Socio-economic attribute	Supporting data	Relevance to the project
Opportunities and Benefits		
From a development perspective the project is in line with National, Regional and Local Development planning	National Development Plan, Accelerated and Shared Growth Initiative for South Africa, Industrial Policy Action Plan, New Economic Growth Path, Limpopo Development Plan, Waterberg District's LED Plan, and MLM LED	Pamish will be able to garner legitimate support from National, Provincial and Local Government for the proposed project as it is in line with their development trajectory.
Provincial and Local development plans are in place; however on a district level no up to date LED Plan is available	Local and District municipal IDPs are readily available as well as LED Plans for MLM and the Province	Opportunity for Pamish to align socio-economic development programmes contained in future iterations of their SLP with existing development plans; this will increase sustainability and relevance of initiatives.
Several large mining operations are located within the local study area	District and Local Municipal SDFs; Field investigations; investigation of available spatial data	Opportunity to synergise any LED as part of the SLP with existing initiatives of other mines
Most people within the local and site-specific study area only have a relatively basic skill level	Only 14% of the MLM and 20% of the local study area have completed secondary school; those within the more rural outskirts of these study areas tend to have even lower levels of education; findings from the household survey	Opportunity for Pamish to contribute to community development through skills development programmes during construction and operational phases; however, low education levels usually have negative implications for the employment potential of the population and also for the feasibility of LED initiatives.
Mining is one of the dominant economic sectors in the MLM	Mining and quarrying sector employed a considerable number of people in the MLM; Mining is one of the primary contributors to the Municipal GDP 32%	Procurement could potentially be from suppliers located within the MLM who are currently servicing mines in the area

Socio-economic attribute	Supporting data	Relevance to the project
Opportunities and Benefits		
Large potential labour force	The youth comprises a large proportion of the population within the regional, local and site-specific study area; high unemployment, especially among rural households; findings from the household survey	Pamish can likely meet any local recruitment targets for un-and semi-skilled positions
Surrounding communities have limited access to public infrastructure	Field investigations, findings from the household survey and MLM IDP: ▪ Rural households within the local study area mostly rely on pit toilets for sanitation purposes; ▪ Clinics in the surrounding towns is often short staffed; ▪ Most rural roads are deteriorated; ▪ Housing shortages is noted for the regional study area; and ▪ Intermittent shortages of groundwater supply.	Provides opportunities to make a significant contribution to local development as part of LED and CSI (but may also hinder the productivity of the local workforce). In this regard Pamish could collaborate with existing municipal SLP and LED forums as well as the Bakenberg TA.
Gender disparity in employment rates – financial vulnerability among females	StatsSA (2013) and household survey - Unemployment amongst females is significantly higher than males across all study areas	Pamish could contribute to gender equity by implementing female employment targets – this requirement, if feasible, could be formalised by incorporating it into the construction contractor's conditions of contract.
High degree of poverty and socio-economic vulnerability among site-specific population	StatsSA (2013); Socio-economic survey	Any LED, CSI or local employment will likely contribute significantly to socio-economic development among the site-specific and local population

Socio-economic attribute	Supporting data	Relevance to the project
Constraints and Challenges		
Land claims on Schoonoord 786 LR, Bellevue 808 LR, Vriesland 781 LR and Vogelstruisfontein 765 LR	MLM and WDM IDPs; Field investigation	Land claims may have development implications for Pamish as it may delay and complicate land acquisition
Land speculation and illegal residential land use in the vicinity of mine infrastructure	Field investigation	Settlement in close proximity to Pamish's operation could result in: ▪ Health and safety implication in terms of the Mine Health and Safety Act; ▪ Downstream displacement of land users; ▪ Potential issues from households settling in the area as result of potential negative impacts on them; and ▪ If settlements establish itself next to the proposed mine, it could set a precedent, which could stimulate additional informal settling in the area
Large sections of the site-specific study area is administered by the TA, but also held in private ownership by the TA	Desktop review	Could result in tensions between local municipalities and traditional leaders, especially during implementation of LED plans Could complicate the mitigation of displacement impacts when these arise, as resource ownership might be disputed between land users and owners (TA).
Substantial housing shortage throughout the regional study area	The 2012/2013 MLM IDP estimates the housing backlog within the municipality at 33 000 units Both the District and Local Municipality are experiencing increasing pressure to launch new housing development Field investigation – informal expansion of current communities; land grabs	Any project-induced influx to communities within the site-specific study area may place additional pressure on limited housing

Socio-economic attribute	Supporting data	Relevance to the project
Constraints and Challenges		
The land area which will be mined hosts subsistence agricultural fields, grazing areas, natural resources (e.g. medicinal plants and firewood)	Field investigations; household economic survey; spatial data	Agricultural activities and collection of natural resources will be directly affected by the proposed project, which will result in economic displacement of various households
The proposed project area is currently zoned for tourism uses by the Waterberg EMF	Waterberg EMF	Suggests that mining activities in this area are potentially undesirable from the District's perspective, as tourism and conservations are the preferred activities in this zone
General hostility against existing mining companies in the regional study area	Desktop review	May create a context for future volatility especially if stakeholder expectations in terms of local employment, LED and CSI are not met, within reason
This regional economy is dependent on mining	Mining contributes to almost 8% of employment within the District and 32% to its GDP	The Project will likely contribute to increasing dependency on mining among local communities LED activities should preferably be aimed at establishing economic development outside the mining sector
Severe problems with water security in the regional and local study area	MLM IDP and field investigation	The project might jeopardise water security in the area, which can instigate volatility among local communities

9 Impact Assessment and Mitigation

The organisation and presentation of the full range of social impacts that are expected to arise because of a proposed project or activity is challenging, for a number of reasons.

First, potential impacts, and the elements that combine to determine the socio-economic status of affected populations, are multi-dimensional and interrelated. For example, insufficient access to services such as water, sanitation and health care is both a cause and an effect of poverty. On the one hand, the lack of access to such services impacts negatively on health status, the opportunity to acquire market-related skills and the amount of time available for productive activities. On the other hand, poor people are often forced to live in areas where service delivery is limited or absent. Thus, if a project increases the availability of services in an area, the ability of surrounding communities to take advantage of these services may to some extent depend on their current socio-economic status.

Second, the linkages between various potential project impacts are complex and can be mutually reinforcing. For example, in-migration and increased incomes can combine to put pressure on economies and infrastructure, as housing demand and purchase power will increase. Impacts may also have both positive and negative dimensions. For example, employment creation is an important project benefit, but it may also generate a context for negative impacts such as social conflict and/or excessive in-migration.

Finally, many social impacts cascade. For example, in-migration is in itself an impact, but in turn may engender additional impacts, for example pressure on available services such as housing and health services.

Although it is necessary to keep the complexity of social impacts in mind, it is also necessary to produce an SIA report that will be accessible to a non-specialist audience and meet the requirements of the project proponent. For this reason, predicted impacts have been categorised according to the project phase (construction, operation, and decommissioning) during which they are likely to originate, recognising that many impacts will span over more than one project phase. This categorisation of impacts is shown in Table 37 which also illustrates the structure for the remainder of this section.

Table 37: Summary of Potential Impacts

Project phase	Type	Impact name	Project activities triggering impact
Construction	Positive	Job creation during construction	Employment and capital expenditure; and Surface infrastructure development
		Multiplier effects on the local and regional economy	Employment and capital expenditure; and Surface infrastructure development
		Community development and social upliftment	Employment and capital expenditure
	Negative	Displacement related impacts	Change of land-use from agriculture to mining; and Topsoil and softs removal and stockpiling

Project phase	Type	Impact name	Project activities triggering impact
		Disruption of movement patterns	Development of access and haul roads; Surface infrastructure development ; Site clearance and vegetation removal; and Hauling of waste rock
		Influx related impacts	Employment and operational expenditure
		Health and safety impacts	Surface infrastructure development; Waste generation(hazardous and general; Use of heavy machinery; Development of two open pits; Concentrator plant; Hauling of waste rock; Storage of fuels and explosive storage facilities; and Dismantling of major equipment and infrastructure
		Impacts on surrounding land users	Change of land-use from agriculture to mining; Surface infrastructure development; Development of two open pits; and Dismantling of major equipment and infrastructure
		Opposition because of perceived negative impacts	All activities contributing to negative impacts
Operation	Positive	Job creation during operation	Employment and operational expenditure
		Regional economic development	Employment and operational expenditure
	Negative	Dependency on mine for sustaining local economy	Employment and operational expenditure; and Dismantling of major equipment and infrastructure
Decommissioning/ closure	Positive/	Impacts on the work force	Employment and operational expenditure; and Dismantling of major equipment and infrastructure
	Negative	Impacts on the local community	
		Impacts on the wider community and government	
Cumulative impacts	Positive	Job creation and multiplier effects on the local economy	Employment and capital expenditure; and Operational expenditure
	Negative	Impacts related to population influx	Employment and capital expenditure; and Operational expenditure
		Dependency on mine for sustaining local economy	Employment and capital expenditure; and Operational expenditure

9.1 Construction Phase

This section assesses the social impacts that will originate during the construction phase of the proposed project, which will span two years (see Section 7.4). Predicted construction phase impacts include three positive and six negative impacts (see Table 37). The majority of these impacts will continue into the operational phase and beyond, and should, therefore, be mitigated or enhanced continuously during the life of the project.

In the following sections (i.e. Section 9.1.1-9.1.8.1) the assessment of each impact is structured as follows:

- Narrative description of the impact on the social environment as well as the specific project activities that will trigger the impact (where relevant, the reader is referred to the relevant specialist studies, in which more comprehensive and quantitatively-orientated information is provided regarding aspects that contribute to the impact);
- Discussion on mitigation measures to avoid and/or ameliorate negative impacts and enhance positive ones; and
- A table presenting the rating of the impact, summarises the recommended mitigation/enhancement measures, and repeats the rating exercise after mitigation. The table also explains the motivation for assigning particular ratings to the impact.

9.1.1 Job Creation during Construction

9.1.1.1 Impact Description

The proposed project will require the establishment of extensive surface infrastructure (see Section 7.3) and therefore has the potential to provide direct employment to people within the local study area during the construction phase, which will span a period of two years and require a workforce of 500 employees (see Section 7.6.1). It is expected that many of these positions will only last for a relatively short period, and will largely involve unskilled and semi-skilled positions (see Section 7.6). However, the acquisition of new skills during the construction period will make individuals more employable in the future. It is estimated that in addition to direct employment, Pamish's mining activities will indirectly create an additional 1 896 full-time equivalent employment[7] (FTE) opportunities (Urban-econ, 2015).

A large number of households within the local and site-specific study area face significant socio-economic challenges such as poverty, unemployment and underdevelopment (see Sections 8.2.10 and 8.3.4.6). Any construction related employment therefore has the potential to improve the livelihoods and income stability of future employees and their dependants, especially if employees originate from socio-economically depressed households.

Whether unemployed and under-employed individuals within the local and site-specific study area will be able to take up employment opportunities depends largely on their level of education, skill and work experience; a relatively small proportion of the site-specific (30%) and local study (20%) area have graduated from secondary school (see Sections 8.2.4 and 8.3.4.3). Data collected in the site-specific study area revealed that 22% of people have mining related skills (e.g. driving, operation machines etc.). In addition mining and quarrying

[7] Full time equivalent employment: One FTE man-year is equal to one person working for 40 hours per week for about 50 weeks per year. A FTE man-year means that if one person worked only 20 hours per week for 50 weeks in a year, its FTE equivalent would be 0.5; if two people worked for 20 hours per week for 50 weeks in a year, the combined work load would be estimated as one FTE man-year or one FTE job.

is a prominent industry in the region, it is therefore expected that at least some of the unemployed will have relevant skills to qualify them for employment at the mine (see Section 8.2.8 and 8.3.4.3).

In addition Pamish's SLP outlines several skill development initiatives that can provide relevant skills training and education to employees who do not yet have the required skills to make them employable in future (see Section 5.4.3). It is therefore expected that sufficient expertise will be readily available to fulfil and possibly exceed Pamish's local recruitment target of 40% (240 employees).

In addition to creating job opportunities for construction workers, the project may also lead to indirect employment creation in the informal sector, for instance in terms of food stalls for the convenience of construction workers. Additionally, more informal employment opportunities may be created in the second economy through a multiplier effect from the project's activities (discussed in Section 9.1.2 below).

The creation of employment opportunities during the construction phase of the project can therefore be seen as a substantial positive impact on benefitting individuals and their dependants. It should be cautioned that, if not carefully mitigated, these potential positive effects may trigger significant price inflation, impacting both food and housing prices in surrounding communities. Significant food or housing price inflation can adversely impact existing vulnerable groups, with negative consequences on individual- and community-level health performance indicators (IFC, 2009).

9.1.1.2 Recommended Enhancement Measures

Given that communities in the vicinity of the mine will be most affected by the project, it is consistent with national legislation (e.g. MPRDA, 2002) and international best-practice standards (such as the Performance Standards of the IFC) that they should be given special consideration in terms of the benefits arising from the project. In addition to the above and in order to enhance the benefits of employment creation for other communities elsewhere in the local study area, it is recommended that the following measures be implemented:

- Promote the creation of employment opportunities for locals, especially women and youth, above the targets set out in the Mining Charter (see Section 5.1.4). The positions reserved for the youth and women may only be filled with persons outside of these categories if it can be demonstrated that no suitable persons are available to fill these positions. The performance indicator for the promotion of employment of women and youth could be the number of local women and persons under the age of 35 who are employed during the construction phase of the project;
- Where possible, labour-intensive construction methods should be promoted. Aspects of construction that could potentially be amenable to such methods include earthworks, construction of access roads, etc.;
- If required, the local resident status of applicants should be verified in consultation with community representatives or Traditional Authority;

- The project should consult neighbouring mines to determine if they would be willing to make their skills registers/ databases available to identify adequately qualified local labour; especially mines within the region that are nearing the completion of construction and are retrenching locally recruited employees (e.g. Platreef Project);
- Pamish should identify its required core skills (both for the construction and operational phases), investigate the prevalence of these skills in the local study area, and structure its skills development endeavours (as part of its SLP commitments) accordingly. This option should be investigated during the next update of the mine's SLP;
- Where feasible Pamish should offer training and skills development to improve the ability of local community members to take advantage of employment opportunities arising through the project;
- Recruitment should take place using a registry of job-seekers and SMMEs, as opposed to lists of potential candidates and service providers compiled by an individual – this minimises the risk of nepotism or corruption tainting the recruitment process;
- It is recommended that recruitment during the construction phase should not take place on site but should be coordinated through the appropriate institutions such as the local DoL or institutions recommended by the local authorities (if applicable). However, care must be taken that recruitment practices are fair and transparent and are not unduly influenced by pressure groups in the communities;
- A monitoring system should be established to ensure that Pamish and its subcontractors honour the local employment policy; and
- Once construction is completed, local persons employed on contract/ temporary basis during construction should be provided with reference letters that they can submit to gain employment elsewhere. Also, certificates of completion should be provided for in-house (on-the-job) training provided.

9.1.1.3 Impact Rating

Impact Description: Job Creation During Construction				
Predicted for project phase:	Pre-construction	Construction	Operation	Decommissioning
Dimension	Rating	Motivation		
Pre-Enhancement				
Duration	Medium term (3)	Construction activities will span two years	Consequence: Slightly beneficial (9)	Significance: Minor - positive (36)
Extent	Local (3)	Majority of workforce will likely originate from the local labour pool, but likely that some employees will be from areas elsewhere in MLM		

Impact Description: Job Creation During Construction				
Predicted for project phase:	Pre-construction	Construction	Operation	Decommissioning
Dimension	Rating	Motivation		
Intensity x type of impact	Moderate - positive (3)	Recruitment policies already promote local employment; however employment numbers expected to be low and for short period. It is possible that contractors will use their existing workforce, thereby sustaining current employment with these companies.		
Probability	Probable (4)	Without appropriate mitigation, local employment targets might not be achieved.		
Post-Enhancement				
▪ Assign preferred employment status to those experiencing the bulk of the negative project impacts ▪ Promotion of local, female and youth employment ▪ Labour-intensive construction methods should be promoted ▪ Verification of local status ▪ Consult neighbouring businesses to determine if they would be willing to make their skills registers available ▪ Identify required skills and align and implement training and skills development initiatives accordingly ▪ Expand skills development to surrounding communities ▪ Recruitment via a registry of job seekers and potentially coordinated through the DoL ▪ Provide local employees with reference letters certificates of completion for in-house (on-the-job) training ▪ Monitoring subcontractors in terms of local employment targets				
Extent				
Duration	Medium term (3)	As for pre-mitigation	Consequence: Moderately beneficial (12)	Significance: Moderate - positive (84)
Extent	Local (3)	As for pre-mitigation		
Intensity x type of impact	Very high - positive (6)	Measures will ensure and potentially increase employment from local labour sending area, which will intensify positive change, especially among economically depressed households.		
Probability	Certain (7)	Mitigation will maximise probability that local recruitment targets are achieved and benefits optimised.		

9.1.2 Multiplier Effects on the Local Economy

9.1.2.1 Impact Description

The proposed project will result in several economic benefits through direct and multiplier effects stimulated by capital expenditure on construction and operational activities (it is estimated that project related expenditure will accrue to approximately R 8 223 mill during the first ten years, see Section 7.6).

Firstly large scale construction activities will increase the demand for a wide variety of goods and services, and as a result will stimulate and/or sustain growth within the regional manufacturing and service sectors; both these sectors are already well established within the regional economy (see Section 8.1.2). It is anticipated that the proposed project will have

a total production impact of R1 288.1 mill, a total GDP-R impact of almost R510 mill, and will create a total 1 896 full-time equivalent employment[8] (FTE) opportunities, primarily through increased production among businesses (Urban-econ, 2015). This economic environment will likely generate more opportunities for micro and small businesses, provided they are formalised and able to meet the procurement requirements of the proposed mine

Pamish intends to focus on increasing opportunities for local HDSA suppliers of goods and services to the project, and has committed to procure 40% of capital goods, 50% of consumables and 70% of services from HDSA suppliers (see Section 5.4.3.2 and 7.7). A considerable part of the mine's needs will, however, be highly technical and unlikely to be found within the local or regional study area. For these needs Pamish may procure from businesses elsewhere in Waterberg District, which has a highly developed mining sector, or in neighbouring provinces, such as Gauteng (Urban-econ, 2015). Such procurement will expose a wider area to the mine's economic stimulus, albeit to a diluted degree.

Local and regional procurement spend, which is expected to peak during construction, will enhance the positive economic impact of the project, as the revenue accruing to enterprises will produce sustained beneficial downstream impacts on the local economy (Urban-econ, 2015). In addition the construction and operational workforce will be housed in accommodation options (e.g. guest houses or rental options) either locally (e.g. Moshate) or regionally (e.g. Mokopane or Polokwane); this too will contribute positively towards the growth of these economies. Given that a significant proportion of moneys derived from wages earned would likely be spent in the vicinity of the project area, it is expected to create substantial flows of revenue within surrounding communities, thus acting as a catalyst for growth in the economy. Pamish's estimated expenditure on wages during the first ten years will amount to almost R 428 million.

The project will likely trigger some population influx into the site-specific and local study area, which is mostly associated with negative socio-economic consequences (see Section 9.1.6); it will however, also have some positive effects on the local economy. Small businesses may experience improved markets and increased numbers of customers for consumable items they sell. Increased markets for local entrepreneurs will compound on existing economic multiplier effects.

Finally, the local economy will benefit from just over R 7 mill to be spent on LED and CSI and R 5.6 mil on HRD (see Section 7.7); these aspects, if implemented effectively and sustainably, represent progress within the municipality, thereby also creating conditions conducive to economic growth.

[8] Full time equivalent employment: One FTE man-year is equal to one person working for 40 hours per week for about 50 weeks per year. A FTE man-year means that if one person worked only 20 hours per week for 50 weeks in a year, its FTE equivalent would be 0.5; if two people worked for 20 hours per week for 50 weeks in a year, the combined work load would be estimated as one FTE man-year or one FTE job.

9.1.2.2 Recommended Enhancement Measures

The measures recommended in Section 9.1.1 to maximise local employment through the project will also serve to maximise the positive impacts of the project on the local economy. In addition, the following measures are recommended:

- Promote procurement from local enterprises above the targets set out in the Mining Charter (see Section 5.1.4);
- If any subcontractors are appointed, Pamish should give preference to suitable subcontractors/SMMEs located in the surrounding communities (e.g. Moshate etc.), then in the regional municipal area (e.g. Mokopane), and then only to contractors located elsewhere in MLM (e.g. Polokwane), or outside the province;
- Where appropriate SMMEs do not exist locally, Pamish should investigate the possibility of aligning/updating their current SLP to develop this service capacity among local, preferably HDSA, suppliers;
- Local procurement targets and procedures should be formalised in the mine's procurement policy, which is currently in a draft format, with reasonable penalties to the contractors who do not meet their targets. Such penalties (if monetary), could be used for capacity building and SMME development initiatives.
- Procurement practices of construction contractors should be monitored, and they must be reminded of the preference to procure locally. Where contracts are awarded to non-local service providers, contractors must demonstrate that reasonable action was taken to identify a local service provider;
- If such a register does not exist at the labour desk of the municipality, Pamish should (a.) consider developing a register of local SMMEs and the types of goods and services provided by them; and/or (b.) consult neighbouring mine's (e.g. Anglo American's Mogalakwena Platinum Mine) to determine if they would be willing to make their business registers/ databases available for use by the project; and
- Investigate the feasibility of establishing linkages with institutions other than the local municipality involved in SMME development, such as neighbouring mines, community-based development projects and non-governmental organisations (NGOs) active in the broader project area.

9.1.2.3 Impact Rating

Impact Description: Multiplier Effects On The Local Economy				
Predicted for project phase:	Pre-construction	Construction	Operation	Decommissioning
Dimension	Rating	Motivation		
Pre-Enhancement				
Duration	Project Life (5)	Will continue throughout the life of mine as per stipulations of MPRDA and will only taper down after closure	Consequence: Moderately beneficial (12)	Significance: Minor - positive (48)
Extent	Regional (4)	Will include mostly local and some regional impacts		
Intensity x type of impact	Moderate - positive (3)	Will derive from increased cash flow, stimulation of economic sectors, procurement, economic growth, increased local markets, and LED, CSI and HRD initiatives		
Probability	Probable (4)	Will depend on: proportion of local spending by employees; capacity of local enterprises to supply; effectiveness of LED and CSI initiatives.		
Enhancement:				
As for maximising employment benefits. Also: ▪ Give preference first to capable local service providers ▪ Develop local service provision capacity ▪ Monitoring of sub-contractors procurement ▪ Development of a register of local SMMEs ▪ Linkages with skills development/ SMME development institutions and other mining operations ▪ SMME skills development as part of mine SLP/LED commitments ▪ Local procurement targets should be formalised in Pamish's procurement policy				
Post-Enhancement				
Duration	Project Life (5)	As for pre-mitigation	Consequence: Highly beneficial (15)	Significance: Moderate - positive (90)
Extent	Regional (4)	As for pre-mitigation		
Intensity x type of impact	Very high - positive (6)	Mitigation will likely increase intensity of multiplier effects as it will concentrate impact to local area; sustainability of initiatives outlined in the SLP will also be increased if aligned with other those of other institutions		
Probability	Highly probable (6)	Increased local employment and procurement as well as skilled SMMEs will enhance likelihood of benefits to local economy		

9.1.3 Community Development and Social Upliftment

9.1.3.1 Impact Description

Pamish will likely contribute to community development and social upliftment through the implementation of their SLP as well as carrying out commitments made in their procurement policy (see Section 5.4.3). These plans and policies have the potential to facilitate and catalyse socio-economic development within the project affected communities, as most of these communities have a relatively low socio-economic base (Section 8.1.7 and 8.3). These initiatives – especially if implemented in consultation with those of other developmental role-

players (such as the MLM, other mines and development organisations) – can contribute substantially towards socio-economic development, sustainable jobs and income stability within the study area.

Pamish's SLP and procurement policy outlines several actions that will enhance socio-economic development among local communities, particularly the following:

- As part of HRD by means of a skills development plan, career progression plan, mentorship, bursaries and learnerships. The skills development plan will include the development of mining-related skills (such as driving and technical skills, and basic management skills), portable skills development, bursaries, learnerships, and ABET. HRD will mainly be focussed on mine workers; as mentioned previously, as many as 240 individuals from the Bakenberg TA could be employed by the mine in un- and semi-skilled positions, these employees will also benefit from work experience.
- As part of its LED strategy, this will focus on SMME development, job creation, and upgrading of educational infrastructure. These programmes will target communities within the Bakenberg TA as beneficiaries (see 7.7). It is recognised that, unless LED projects are designed to be sustainable beyond the life of the mine, they can also have negative long-term impacts by increasing economic dependency on the mine;
- As part of CSI projects, which will focus on entrepreneurial skills training, SMME mentoring and developing health care infrastructure (see 7.7); and
- As part of its procurement policy, which states Pamish's intention to empower and develop previously disenfranchised communities and individuals through procurement from HDSA vendors.

Successful implementation of the aforementioned programmes will contribute to maximising the benefits of the proposed project for the site-specific study area and surrounding communities, as well as towards offsetting any negative impacts that these communities may experience as a result of the proposed project.

9.1.3.2 Recommended Enhancement Measures

In order to maximise this positive impact, the following measures are recommended:

- In order to ensure that future skills development and LED initiatives addresses the needs of the beneficiary communities or individuals, the details of development projects should be finalised in consultation with the local community or employee representatives;
- Often there are already initiatives underway that are in need of financial and/or technical support that the mine could provide. It is suggested that Pamish's department responsible for CSR or community development contact the CSR and/or community development departments of other enterprises (Collaboration with other developmental role players (e.g. local and district municipalities, neighbouring mines and non-governmental organisations) in the area to gauge whether they can align or

synergise with any of their efforts to collaborate in some of the development initiatives already planned for the area;

- It is recommended that a monitoring system be established to ensure that Pamish and their contractors comply with the company's policy in terms of HDSA procurement. It also recommend that measures outlined in the SLP to build the capacity of HDSA operated SMMEs should be adhered to;
- Pamish should expand its skills development and capacity building programmes for non-employees, to include especially residents of surrounding communities. Programmes offered to non-employees and contractors must be geared towards making individuals employable in the mining industry, as well as enabling them to establish and manage SMMEs that will be able to meet the needs of the mining industry in the municipality;
- Where feasible, training should be National Qualifications Framework accredited and training providers should be registered with the appropriate authority; and
- A record of training courses completed per individual should be kept in a skills database. Where training is offered to non-employees, their details should be shared with other industries in the area with the aim of finding them employment should the project proponent be unable to offer them employment.

9.1.3.3 Impact Rating

<table>
<tr><th colspan="5">Impact Description: Community Development And Social Upliftment</th></tr>
<tr><td>Predicted for project phase:</td><td>Pre-construction</td><td>Construction</td><td>Operation</td><td>Decommissioning</td></tr>
<tr><td>Dimension</td><td>Rating</td><td colspan="3">Motivation</td></tr>
<tr><td colspan="5">Pre-Mitigation</td></tr>
<tr><td>Duration</td><td>Project Life (5)</td><td>Will continue for the life of mine (30 years)</td><td rowspan="3">Consequence: Slightly beneficial (9)</td><td rowspan="4">Significance: Minor - positive (36)</td></tr>
<tr><td>Extent</td><td>Limited (2)</td><td>Will benefit mine workers and some beneficiaries of LED and CSI projects, as well as HDSA vendors within local communities</td></tr>
<tr><td>Intensity x type of impact</td><td>Low - positive (2)</td><td>Small percentage of local population will benefit</td></tr>
<tr><td>Probability</td><td>Probable (4)</td><td colspan="2">Without adequate stakeholder involvement LED, CSI and Skills Development projects are unlikely to be sustainable.</td></tr>
<tr><td colspan="5">Mitigation</td></tr>
<tr><td colspan="5">▪ Liaison with beneficiaries to ensure needs are met
▪ Collaboration with other developmental role players (e.g. local and district municipalities, neighbouring mines and non-governmental organisations) during implementation of envisaged projects, and where possible aligning envisaged development projects with existing ones
▪ Expanding its skills development and capacity building programmes for non-employees
▪ Monitoring system to regulate HDSA procurement
▪ Where feasible, training should be NQF accredited
▪ A record of training courses completed per individual should be kept</td></tr>
</table>

Impact Description: Community Development And Social Upliftment				
Predicted for project phase:	Pre-construction	Construction	Operation	Decommissioning
Dimension	Rating	Motivation		
Post-Mitigation				
Duration	Beyond project life (6)	If well managed, benefits will extend beyond project life	Consequence: Highly beneficial (14)	Significance: Moderate - positive (84)
Extent	Local (3)	As for pre-mitigation		
Intensity x type of impact	High - positive (5)	Recommended measures will result in greater development within surrounding communities		
Probability	Highly probable (6)	Recommended measures will increase probability of socio-economic development initiatives having the desired effect		

9.1.4 Displacement-Related Impacts

9.1.4.1 Impact Description

Any project with a substantial physical footprint inevitably requires a land acquisition process. One of the most significant socio-economic impacts that may result from such land acquisition is the *displacement* of persons residing on or making use of that land. Displacement-related impacts encompass both *physical* displacement (the loss of a home and the necessity of moving elsewhere) and/or *economic* displacement (the loss of productive assets such as cultivated fields or business stands) (IFC, 2012). As discussed in Section 8.3.1, the site-specific study area is currently used for purposes other than mining; current land uses include residential areas, livestock grazing, collection of natural resources, and subsistence agriculture – these land uses could potentially be displaced by the project.

Table 38 below details the likely extent of displacement, and indicates whether productive assets (e.g. fields and grazing areas) or households will be: (a.) directly affected (i.e. coincide with infrastructure footprints) or (b.) indirectly affected (i.e. within a 500m blasting radius around the proposed open pit areas or within a 100m of major mine infrastructure components). The inclusion of indirectly affected land users is motivated by the fact that international best practice advocates clearing a safety buffer of 500m around areas where blasting will take place, whereas the South African Mine Health and Safety Act allows for a smaller buffer of 100m around project infrastructure (e.g. concentrator plant, waste rock dumps etc.).

Table 38: Land Use within the Directly Affected Area

Primary infrastructure components	Land use and displacement if land is acquired (E- economic displacement; P – Physical displacement)											
	Land use within footprint				Land Use within 100m				Land use within 500m			
	Residential	Cultivation	Grazing **(cattle)**	Use of natural resources **(firewood, medicinal plants)**	Residential	Cultivation	Grazing	Use of natural resources	Residential	Cultivation	Grazing	Use of natural resources
Plant area (incl. contractor camp)		E	E	E		E	E	E		E	E	E
Open pit 1			E	E			E	E			E	E
Open pit 2			E	E			E	E			E	E
Low and lower grade stockpiles (Pit 1)		E	E	E		E	E	E		E	E	E
Low and lower grade stockpiles (Pit 2)			E	E			E	E		E	E	E
Tailings facility				E			E	E			E	E

The proposed project will not result in any instances of physical displacement; however, several infrastructure options do coincide with land that is currently used for crop cultivation, grazing or collection of natural resources. Loss of these land/resources will result in several variations of economic displacement, as follows:

- Loss of access to grazing land - cattle owners in Moshate, Basogadi and Mothoathoase rely on vegetation in the proposed infrastructure footprint to graze their cattle, which is then either consumed by the household or sold to local consumers. Depending on whether the remaining grazing areas will be sufficient to feed cattle or whether additional grazing areas or feed can be readily secured, the loss of grazing can result in the economic displacement of those depending on the well-being of their cattle to sustain their livelihood;
- The stockpile and plant areas on the north of the D4380 roadway will directly coincide with approximately 40 agricultural plots that are used for subsistence maize farming. Current trends indicate that agricultural involvement within the site-specific study area has declined considerably, which is freeing up agricultural fields closer to the river and homesteads (this area is not situated within the mining right area). This

has resulted in very few individuals still using agricultural plots situated within the in the respective low and lower grade stockpile and concentrator plant footprints. Those that do still use these fields for farming rent the land from the Bakenberg TA on an annual basis. Economic displacement of these farmers will occur when (a.) standing crops on the land gets destroyed before harvesting, and (b.) denial of access to the rented land, will mean that individuals will not be able to execute the annual land use rights for which they paid, hence incurring a financial loss;

- Traditional healers source a particular medicinal plant from within the area where the tailings dam is to be situated (see Section 8.3.4.9.3). The plant is processed and sold to patients. Although this plant grows elsewhere, it is only the ones located in the aforementioned area that are reported to have the desired medicinal properties. The development of the site will displace these plants, which will result in a loss of income to traditional healers; and
- A number of people collect firewood from the area, which is either used for household consumption or sold; however, alternative areas for firewood collection are assumed to be available for those depending on this resource. Therefore, it is unlikely that individuals depending on this resource will be economically displaced.

9.1.4.2 Mitigation Measures

It must be noted that Pamish has expressed the intention of ensuring that project design and implementation are conducted in such a way that no physical and minimal economic displacement will be required, and has revised its project design considerably to achieve this. The mitigation measures outlined below are therefore specifically focused on addressing economic displacement.

In order to minimise the adverse impacts resulting from economic displacement, the following is recommended:

- Prior to finalising the sales or lease agreement of land (currently held in private ownership by the Langa Bakenberg Tribe – see Section 8.3.2), a decision should be taken (between Parnish and Langa Bakenberg Tribe) on who will assume responsibility for those individuals who will be economically displaced;
- If Pamish assumes responsibility for the displaced individuals, an Abbreviated Resettlement Action Plan (ARAP)[9] should be developed in consultation with the project affected people (PAP) to specify the extent to which livelihood resources will be affected by the project, and how these will be replaced or compensated for. The Plan would have to pay particular attention to factors that might complicate the replacement/ compensation process, such as:

[9] ***Abbreviated Resettlement Action Plan:*** *According to the World Bank Operating Policy 4.12 an Abbreviated Resettlement Action Plan is commissioned when project-induced displacement is minor in extent and/or requires the physical displacement of less than 200 households*

- The fact that displaced land/resources are located exclusively on land owned by the Langa Bakenberg Tribe. This raises the question of whether compensation for the loss of these resources (which include crops, medicinal plants and firewood) should be granted to the land user or owner;
- The possibility that insufficient alternative grazing areas will be available to continue grazing the current number of cattle, in which case options for supplementary feed for cattle or livelihood restoration options should be considered; and
- The fact that a large portion of affected individuals are expected to be women, who have primary responsibility for taking care of agricultural fields. These women are already vulnerable and will become more vulnerable as a result of loss of their livelihood. To mitigate this risk, women should be included in decision-making processes in order to ensure that they have the opportunity to represent their needs.

- The Bakenberg Traditional Healers Association must be consulted with in regards to the potential relocation of the affected medicinal plants.

9.1.4.3 Impact Rating

<table>
<tr><td colspan="5">Impact Description: Displacement Related Impacts</td></tr>
<tr><td>Predicted for project phase:</td><td>Pre-construction</td><td>Construction</td><td>Operation</td><td>Decommissioning</td></tr>
<tr><td>Dimension</td><td>Rating</td><td colspan="3">Motivation</td></tr>
<tr><td colspan="5">Pre-Mitigation</td></tr>
<tr><td>Duration</td><td>Permanent (7)</td><td>Affected fields and grazing areas will be permanently displaced as rehabilitation will unlikely restore its current state</td><td rowspan="3">Consequence: Moderately detrimental (-13)</td><td rowspan="4">Significance: Moderate - negative (-78)</td></tr>
<tr><td>Extent</td><td>Limited (2)</td><td>A comparatively small number of individuals in the site-specific area will be affected</td></tr>
<tr><td>Intensity x type of impact</td><td>Moderately high - negative (-4)</td><td>Without proper compensation, it could have a substantial impacts on the livelihood of especially vulnerable individuals and their dependants</td></tr>
<tr><td>Probability</td><td>Highly probable (6)</td><td colspan="2">Nature and location of project will inevitably result in displacement of grazing land, agricultural fields and medicinal plants</td></tr>
<tr><td colspan="5">Mitigation</td></tr>
<tr><td colspan="5">▪ ARAP development to compensate economically displaced households
▪ Consultation with Traditional healers with in regards to management and/or relocation of medicinal plants</td></tr>
<tr><td colspan="5">Post-Mitigation</td></tr>
<tr><td>Duration</td><td>Medium term (3)</td><td>Development of ARAP could include measures to secure alternative farm and grazing land, as well as the potential relocation of medicinal plants</td><td rowspan="2">Consequence: Slightly detrimental (-6)</td><td rowspan="2">Significance: Negligible - negative (-24)</td></tr>
<tr><td>Extent</td><td>Limited (2)</td><td>As for pre-mitigation</td></tr>
</table>

Impact Description: Displacement Related Impacts				
Predicted for project phase:	Pre-construction	Construction	Operation	Decommissioning
Dimension	Rating	Motivation		
Intensity x type of impact	Very low - negative (-1)	Measures are likely to reduce the intensity of this impact		
Probability	Probable (4)	Measures would decrease the probability of impacts occurring to the extent predicted		

9.1.5 Disruption of Movement Patterns

9.1.5.1 Impact Description

Disruption of movement will occur as a result of project-related traffic on local roads. In particular the proposed project could disrupt the daily movement patterns and lives of people by affecting traffic on the:

- D4380 roadway, which runs through the project site and connects Moshate and several other settlements to other major road networks which in turn provides access to urban centres' such as Mokopane (see Section 8.3). This road will initially provide the main access for external traffic to the proposed project site;
- D3507, which connects to the D4380 and links Sepharane to Moshate (see Section 9.1.5); and
- Gravel road that connects to the D4380 to link smaller settlements such as Basogadi and Mothoathoase to Moshate.

Additional traffic induced during the construction and operational phases may restrict or disrupt daily movement on these roads. This would disrupt access for those residing in smaller settlements such as Basogadi, Mothoathoase, Sepharane, Ditlotswana, Rooivaal, and Malokongskop to facilities and infrastructure such as primary health care facilities which are exclusively located in Bakenberg and Mokopane (see Section 8.3.4.8 and 9.1.5). Increased traffic levels could also disrupt movement of those grazing livestock in the vicinity of the proposed project area, as the cattle herds are driven across the aforementioned roads on daily basis. Traffic levels within the surrounding road network have been quantitatively assessed in a separate specialist study, which established that from traffic engineering perspective project related traffic will have negligible to minor impact on the traffic and road conditions as well as on non-motorised transport (Aurecon, 2015).

Disruption in travelling patterns may also result from deteriorated roads. Like most roads in the municipality, local roads are currently in a deteriorated condition, primarily due to lack of maintenance (see Section 8.2.9.4 and 8.3.4.8). Additional heavy traffic caused by construction vehicles might increase the safety risk for road users and could cause further deterioration of the roads, which will add to disruption. For instance, roads within the local

study area will likely not have the carrying capacity to accommodate large numbers of HMV used during construction.

The impact is expected to continue during the operational and decommissioning phase of the mine.

9.1.5.2 Recommended Mitigation Measures

In order to minimise the adverse impacts described above, the following is recommended:

- Implementation of measures suggested in the traffic impact assessment report conducted for the proposed project, especially with regards to reporting deteriorated roads to the Provincial Department of Transport, as it is this department's responsibility to repair and rehabilitate roads and not Pamish (Aurecon, 2015);
- Road upgrading measures should be investigated and implemented in conjunction with the relevant government department (e.g. repairing and rehabilitating the D4380 and sealing the roadway to increase its capacity for Heavy Moving Vehicles); in the case of road upgrades Pamish should ensure that residents are informed of when access will be blocked;
- Traffic at the intersections of the D4380 and the roadways to Sepharane, Basogadi and Mothoathoase, as well as the access road onto the construction site, must be regulated at all times, with haul trucks yielding to oncoming traffic;
- Where possible, ensure that access to key services in areas such as Bakenberg are uninterrupted by providing alternative access routes and/or temporary access points where construction activities disrupt or restrict access;
- The construction of cattle crossings at suitable intervals should be incorporated into project design to facilitate safe access for people onto and across the affected roadways, and to facilitate save animal movement. Cattle farmers and regular road users should be consulted with regard to the location of cattle crossings; and
- The measures suggested (see Section 9.1.7) to minimise traffic related problems will also serve to minimise the disruption of daily movement patterns on affected roadways.

9.1.5.3 Impact Rating

Impact Description: Disruption Of Daily Movement Patterns				
Predicted for project phase:	Pre-construction	Construction	Operation	Decommissioning
Dimension	Rating	Motivation		
Pre-Mitigation				
Duration	Project Life (5)	Will be most pronounced during construction phase, but continue into decommissioning when infrastructure will be deconstructed	Consequence: Moderately detrimental (-13)	Significance: Moderate - negative (-78)
Extent	Local (3)	Will mostly affect road users using the D4380, D3507 and affected gravel roadways; as well as cattle herders crossing these roads		
Intensity x type of impact	High - negative (-5)	Traffic impact assessment, predicted a xx impact on traffic loads in the local road network; however some impact will stem from deterioration of local roads due to HMV.		
Probability	Highly probable (6)	Construction and operational traffic will affect travelling on major roads		
Mitigation				
▪ Measures to prevent deterioration of roads suggested in Traffic Impact Assessment (e.g. drivers to report road deterioration to the Limpopo Department of Transport) ▪ Regulation of traffic at intersections of the D4380, D3507 and access roads to the site ▪ Road upgrading measures should be investigated and implemented in conjunction with the relevant government department (e.g. repairing and rehabilitating the D4380 and sealing the roadway to increase its capacity for Heavy Moving Vehicles) ▪ Inform communities of planned construction activities that would affect vehicle/ pedestrian traffic ▪ Ensure that access to key services in areas such as Bakenberg are uninterrupted by providing alternative access routes in cases where construction activities restricts or disrupt movement ▪ Construction of cattle crossings at suitable intervals should be incorporated into project design ▪ Cattle farmers and regular road users should be consulted with regard to cattle crossing placements				
Post-Mitigation				
Duration	Project Life (5)	As for pre-mitigation	Consequence: Moderately detrimental (-11)	Significance: Negligible - negative (-33)
Extent	Local (3)	As for pre-mitigation		
Intensity x type of impact	Moderate - negative (-3)	Mitigation measures should be effective in reducing severity of impacts to a limited degree		
Probability	Unlikely (3)	Mitigation will reduce the likelihood of this impact occurring to the extent predicted		

9.1.6 Influx related Impacts

9.1.6.1 Impact Description

As news regarding the proposed mine spreads or when mining-related activities increase, expectations regarding possible employment opportunities at the mine will also increase. Consequently, the area surrounding the site and neighbouring settlements (e.g. Ditlotswana, Basogadi, Mothoathoase, Moshate, Sepharane, Malokong) may experience an influx of job seekers. This trend is already evident in the site-specific study area, especially if one

considers existing pressure on service such as housing and informal expansion of existing settlements (see Section 8.3.1.3 and 8.3.4.8). The magnitude of this impact will, amongst others, be influenced by the severity of poverty and unemployment, as people will be more inclined to travel in search of better livelihoods through employment.

The regional and local socio-economic profile (see Section 8.2.10 and 8.3.4.6) indicates that poverty and unemployment are widespread throughout these study areas. It can therefore be anticipated that many job seekers (and sometimes whole families), as well as entrepreneurs and opportunists, will move to the broader project area. In the event that a portion of the workforce is recruited from outside the local area, their presence will constitute an additional influx of people. Furthermore unsuccessful job seekers from outside the project area may decide to settle in the project area. This impact may commence prior to construction, and is likely to continue after construction has been completed.

The influx of construction workers, job-seekers and others is expected to have a variety of social consequences; these are briefly discussed in turn below.

9.1.6.1.1 Increased Pressure on Local Services, Resources and Facilities

A significant population surge will increase pressure on local infrastructure and services. This pressure may increase further when the operational workforce of the mine is activated. The fact that several aspects of municipal service delivery and infrastructure is already taking strain throughout the local and site-specific study areas means that any additional service delivery requirements imposed by population influx will exacerbate the situation (see Section 8.2.9 and 8.3.4.8). Therefore there is some risk that the municipality would not be able to meet the additional demand for services, especially considering the relatively rural nature of the communities that might be impacted.

9.1.6.1.2 Establishment and Growth of Informal Settlements

The shortage of services in the local area described in Section 8.2 includes a shortage of housing. This issue deserves special mention as it underlies an increasing social problem in the local study area – the establishment and growth of informal settlements. Informal settlements, because of their lack of access to services, tend to be associated with several economic, social and health-related problems such as: increased dependency on local government, and increase in social pathologies.

It was mentioned earlier that there are a number of informal residences in both the site-specific and local study areas (see Sections 8.3.1.3); these are mostly situated within informal extensions of formalised settlements like in the case of Moshate, Mothoathoase, and Ditlotswana. Unless properly managed, an influx of job-seekers and workers from elsewhere will to contribute to the growth of such settlements, and possibly also the establishment of new ones. The latter is already evident within the site-specific study area, where land speculators are illegally selling stands for residential development. These stands are located directly across the road from one of stockpiling areas (see Section 8.3.1).

9.1.6.1.3 Increase in Social Pathologies

The presence of mining activities and resulting influx of job-seekers are usually also associated with an increase in social pathologies, such as substance abuse, prostitution, increased incidence of sexually transmitted diseases (STDs) and other communicable diseases. As noted in Section 8.1.5, HIV/AIDS is a major concern in the local study area. Several other social pathologies, especially drug and alcohol abuse, gender violence, are reportedly also already a problem in the site-specific study area (DWE, 2015a.). Incidence of social pathologies is also more prevalent in areas where there is a combination of poverty and limited community services and facilities.

This scenario makes the rural households within the site-specific study area especially susceptible to this impact. It is also conceivable that risky behaviour, such as substance abuse and sexual promiscuity, could increase as a result of irresponsible spending associated with newly available or increased disposable income in the local and site-specific study area (DWE, 2015a; Urban-econ, 2015).

An influx of non-local job-seekers might also be accompanied by an increase in crime; many job-seekers are usually left unemployed or underemployed, due to formal employment policies usually excluding them. The incidence of crime can increase if failed job-seekers stay in the area and revert to criminal strategies to survive. Even if particular instances of crime are not as a result of the newcomers, they may still be attributed to them by local communities.

Population influx combined with increased disposable income will result in a higher demand and increased markets for food, including meat. This scenario could inflate prices and result in increased poaching from game farmers within and surrounding the site-specific study area (see Section 8.3.1.1.2). Incidents of poaching have reportedly already increased on surrounding game farms, which are located towards the South-western region of the MRA.

9.1.6.1.4 Conflict/Competition between Newcomers and Incumbent Population

As was mentioned in Section 9.1.1 above, a substantial proportion of the construction and mine workforce for the project will be locals, it is expected that at least a certain percentage employees (mostly semi- and highly skilled) will likely be sourced from elsewhere in the district or outside Limpopo. It is possible that *conflict* might arise between those perceived as foreigners and local residents. One possible reason for such conflict would be the perception among locals that the outsiders are taking up jobs that could have gone to unemployed members of the local community. The likelihood of this impact will increase as a result of a high unemployment rate in the site-specific study area (see Section 8.3.4.5.1) and if migrant workers fill positions that could have been filled from within the local study area. Also if outsiders instigate sexual relationships with wives, daughters or girlfriends of locals, this would exacerbate the problem.

9.1.6.2 Recommended Mitigation Measures

The following measures are recommended to address the aforementioned impacts:

- Measures to address population influx:
  - The design of effective in-migration management strategies requires an understanding of the dynamics and potential impacts of the phenomenon, taking into account specifics of the locations and areas in which the in-migration will occur. In this regard it is suggested that Pamish should commission a detailed situation analysis and, depending on the findings of this analysis, commission and Influx management plan;
  - The recruitment of employees and contractors should be executed as discussed in Section 9.1.1 (especially in terms of preferentially employing from the local study area), thereby discouraging loitering near the proposed mine;
  - Ensure that the intention of giving preferential employment to locals is clearly communicated, so as to discourage in influx of job-seekers from other areas;
  - Involve local community structures (e.g. ward councillors and traditional leaders) to assist in communicating the intention to give preference to local labour, and also to assist in identifying the local labour pool;
  - It is strongly recommended that the mine liaise with the municipality and Bakenberg TA to ensure that expected population influx is taken into account in spatial and infrastructure development planning of the area; and
  - The project should in consultation with MLM, especially its development forums, and Bakenberg TA investigate if the mine's SLP and LED initiatives can contribute to any relevant infrastructure and delivery priorities of the impacted area (e.g. low cost housing options).
- In addition to management measures suggested in the cHIA (DWE, 2015a), the following will also serve to minimise the occurrence of social pathologies:
  - Implement HIV/AIDS and alcohol abuse prevention campaigns in the communities;
  - Pamish should make their HIV/AIDS awareness and prevention programmes a condition of contract for suppliers and sub-contractors;
  - Pamish should provide an adequate supply of free condoms to workers;
  - A voluntary counselling and testing (VCT) programme must be introduced during construction and continued during operation;
  - It is recommended that contractors undertake a HIV/AIDS and STD prevalence survey amongst its workers on a regular basis. This will involve a voluntary test which is available to 100% of the workforce. The results of the survey will help to determine a HIV/AIDS and STD strategy;

- When, and if, statistically representative, the results of the survey should be made available to both management and workers at the same time. Results should be presented in statistical terms so as to ensure confidentiality;
- Access at the construction site(s) must be controlled to prevent sex workers and petty traders from visiting and/or loitering at, or near, the construction camp/mine site; and
- Financially support the appropriate government agencies, local clinics and NGOs involved in raising community awareness and education with regard to STDs and substance abuse.

- Measures to address crime:
  - Construction workers should be clearly identifiable by wearing proper construction uniforms displaying the logo of the construction company; this will decrease the number of opportunistic people wandering the construction site, under the guise of being Pamish employees;
  - Pamish should consider the implementation of anti-poaching mechanisms to minimize poaching on surrounding game farms, these mechanism should be devised in consultation will local land owners;
  - Liaison structures are to be established with local police to monitor social changes in crime patterns during the construction phase, including poaching. Liaison should also be established with existing crime control organisations, such as local community policing forums, private security companies and other crime prevention organisations;
  - Through the abovementioned forums, identify if recorded criminal activities (e.g. rape, housebreaking and stock theft) involved members of the mine's workforce, and act accordingly; and
  - Pamish should enforce clear rules and regulations for access to the project site to control loitering. The proponent should consult with the local police service to establish standard operating procedures for the control and/or removal of loiterers.

- Measures to address potential conflict between locals and non-locals:
  - The mine's recruitment policy must be fair, transparent and readily available;
  - Establish a community liaison office and grievance mechanism at a location that is accessible to aggrieved members of the surrounding communities;
  - Mine security should be empowered in terms of resources and facilities to effectively manage security issues relating to incidents of community unrest at/near the mine site. However, great care should be taken that the human rights of all people involved are respected;

- Develop standby procedures with the local police service to assist with crowd control;
- Comply with the international 'Voluntary Principles on Security and Human Rights', for extractive industry, which emphasises the need for, and value of, effective risks assessment to address human rights issues, and establish appropriate relations with public and private security structures; and
- In the event of conflict between the locals and non-locals, a conflict management plan should be compiled.

9.1.6.3 Impact Rating

<table>
<tr><td colspan="5">Impact description: influx related impacts</td></tr>
<tr><td>Predicted for project phase:</td><td>Pre-construction</td><td>Construction</td><td>Operation</td><td>Decommissioning</td></tr>
<tr><td>Dimension</td><td>Rating</td><td colspan="3">Motivation</td></tr>
<tr><td colspan="5">Pre-mitigation</td></tr>
<tr><td>Duration</td><td>Long term (4)</td><td>Likely to extend into the operational phase</td><td rowspan="3">Consequence: Moderately detrimental (-13)</td><td rowspan="4">Significance: Moderate - negative (-78)</td></tr>
<tr><td>Extent</td><td>Local (3)</td><td>Will mostly affect settlements within the site-specific study area as well as surrounding game farm owners</td></tr>
<tr><td>Intensity x type of impact</td><td>Very high - negative (-6)</td><td>Influx will likely exacerbate existing negative social conditions in several ways: increased social pathologies, pressure on service, conflict between locals and non-locals and establishment of informal settling</td></tr>
<tr><td>Probability</td><td>Highly probable (6)</td><td colspan="2">Pressure on services and growth of informal settlements and poaching is already a problem</td></tr>
<tr><td colspan="5">Mitigation</td></tr>
<tr><td colspan="5">▪ Discourage influx of job-seekers by prioritising employment of unemployed members of local communities.
▪ Liaise with MLM, and TA to ensure that expected population influx is taken into account in infrastructure development AND spatial development planning.
▪ Create synergies with local government IDP and other companies' SLP/CSR projects to promote infrastructure development
▪ Extensive HIV/ AIDS awareness and general health campaign
▪ Identify if recorded criminal activities involved members of the mine's workforce
▪ Establishment of anti-poaching mechanism in consultation with potentially affected land owners
▪ Clear identification of workers; prevention of loitering
▪ Liaison with police, community policing forum
▪ Promote projects providing housing, especially low cost housing
▪ Community education
▪ Measures to address potential conflict between locals and non-locals
▪ In the event of conflict between the locals and non-locals, a conflict management plan should be compiled</td></tr>
<tr><td colspan="5">Post-mitigation</td></tr>
<tr><td>Duration</td><td>Long term (4)</td><td>As for pre-mitigation</td><td rowspan="3">Consequence: Slightly detrimental (-9)</td><td rowspan="4">Significance: Minor - negative (-36)</td></tr>
<tr><td>Extent</td><td>Limited (2)</td><td>As for pre-mitigation</td></tr>
<tr><td>Intensity x type of impact</td><td>Moderate - negative (-3)</td><td>Mitigation measures should be effective in reducing severity of impacts to a limited degree</td></tr>
<tr><td>Probability</td><td>Probable (4)</td><td colspan="2">Mitigation will reduce the likelihood of this impact occurring to the extent predicted</td></tr>
</table>

9.1.7 Health and Safety Impacts

9.1.7.1 Impact Description

Health and safety impacts could emanate from any of the following project activities (as discussed in Section 7.4):

- Construction sites and establishment of surface infrastructure (construction phase);
- Blasting (operational phases);
- Stockpiling (construction and operational phases);
- Storage of hazardous products (construction, operational and decommissioning phases);
- Concentrator plant (operational phase); and
- Transportation of ore via haul trucks (operational phase).

With regards to the ***construction site, stockpiles and concentrator plant***, safety impacts emanate from the risk of non-mine workers wandering onto site and being exposed to the aforementioned sites without personal protective equipment (PPE) and knowledge of the dangers of these sites. In addition, these sites also pose a risk to the mine workers themselves, while performing their routine employment duties.

The safety risks usually associated with ***blasting activities*** emanate from the improper use of explosives, fly-rock that may injure passers-by who are unaware of blasting activities, and vibrations compromising the structural integrity of occupied structures. Impacts from blasting activities were quantitatively assess in a blasting impact assessment (Blast Management and Consulting, 2015), which established that (a.) without mitigation fly-rock could pose health and safety risks to passers-by and (b.) blasting and air vibration will not result in structural damage, but rather constitute a nuisance factor to surrounding land users (Blast Management and Consulting, 2015)

The ***transportation of construction materials, machinery and processed ore on road*** sections of which is also used by private motorists, pose a risk to the motorists' and other road users (e.g. school children and cattle herders crossing these roads) safety due increased traffic volumes and the presence of HMVs on the roads. Some community members may be relatively naïve to risks from road traffic accidents and the larger volumes of traffic may increase their exposure risk. This is especially relevant for small children. Also, the gradual deterioration of roads as a result of HMV also poses a safety risk for motorists.

It should be noted that in some instances, the social impact experienced may not necessarily be the actual increase of risk to one's safety, but the perceived increase of such a risk, which has the potential to have a debilitating effect on the psychological well-being of the local populace (Claeson, 2013; Deary, Chalder, and Sharpe, 2007; Ganzel, Morris and Wethington, 2010; McEwen, 2007; Richardson and Engel, 2004).

9.1.7.2 Recommended Mitigation Measures

The following measures are recommended to mitigate the impacts described above:

- Unauthorised access to all the project elements (specifically the construction site, stockpiles, crushing plant and storage facility for hazardous products) must be prevented through appropriate fencing and security to be erected/ established at the start of construction and maintained throughout the life of the proposed project;
- All mine employees should be issued with the appropriate PPE and educated regarding the risks involved in mining activities;
- Blasting should take place at designated times, and such times should be communicated to the surrounding land owners and local population. An effective manner for doing this is by the erection of signs (similar to road signs) on at least four corners of the project site indicating when blasting will take place. The proponent could also investigate the feasibility of a mobile messaging service for surrounding land owners. Also, the size of blasts should adhere to the limits prescribed by the DMR and Mine Health and Safety Act in order to prevent fly-rock from travelling beyond the anticipated distances;
- Measures suggested in the Blast Impact Assessment completed for the project will serve to minimize the risk associated with blasting related fly-rock (Blast Management and Consulting, 2015);
- Implementation of management measures suggested in the cHIA to reduce road accidents and injuries (DWE, 2015a);
- Provision should be made to facilitate the safe crossing, through walkways, for pedestrians and livestock across the D4380 and other affected roads, in addition to safe crossing points it is suggested that the mine should fence of the road so as to isolate it from the mine site this will prevent pedestrian crossing at unregulated points; and
- Regarding HMV traffic:
  - Safe travelling speeds must be determined and measures implemented to ensure that these restrictions are enforced. Such measures may include monitoring vehicle speeds, erecting speed limit signs and installing speed humps; and
  - Headlights of HMV should be on at all times, especially in misty conditions.
- Community education should take place as part of an on-going community engagement process and include the following:
  - A community awareness campaign to be implemented in the surrounding communities to sensitise community members to traffic and blasting safety risks and to the need to prevent children (and animals) from wandering into the project sites;

- Activities undertaken as part of the awareness campaign and the education/ communication programme should be recorded and reflected in a formal progress report compiled on a quarterly basis;
- Mechanisms must be established to ensure that problems are dealt with promptly. In this regard, it is recommended that a community liaison officer (CLO) be appointed by Pamish. The CLO should be a local resident, as he/she will serve as a point of contact between the community and the proponent; and
- Feedback sessions should be arranged with community leaders and the proponent to assess the impact of this programme in terms of knowledge, attitudes and behaviour.

9.1.7.3 Impact Rating

<table>
<tr><th colspan="5">Impact Description: Health And Safety Impacts</th></tr>
<tr><td>Predicted for project phase:</td><td>Pre-construction</td><td>Construction</td><td>Operation</td><td>Decommissioning</td></tr>
<tr><td>Dimension</td><td>Rating</td><td colspan="3">Motivation</td></tr>
<tr><td colspan="5">Pre-Mitigation</td></tr>
<tr><td>Duration</td><td>Beyond project life (6)</td><td>Will continue for the duration of the project</td><td rowspan="3">Consequence: Highly detrimental (-14)</td><td rowspan="4">Significance: Moderate - negative (-84)</td></tr>
<tr><td>Extent</td><td>Limited (2)</td><td>Will affect the site-specific study area and likely affect local roads</td></tr>
<tr><td>Intensity x type of impact</td><td>Very high - negative (-6)</td><td>Could place the lives of employees and community members at risk, especially those travelling on the D3480 roadway</td></tr>
<tr><td>Probability</td><td>Highly probable (6)</td><td colspan="2">The nature of the project requires the infrastructure and activities described, which hold an inherent risk</td></tr>
<tr><td colspan="5">Mitigation</td></tr>
<tr><td colspan="5">▪ Access control to all project elements, including fencing
▪ PPE for mines workers
▪ Notification of blasting activities
▪ Blasting and storage of hazardous materials to adhere to prescribed regulation
▪ Measures suggested minimising the impact of fly-rock on surrounding roads and structure (Blast Management and Consulting, 2015)
▪ Measures suggested in the Chia to minimize traffic related accidents (DWE, 2015a)
▪ Traffic calming measures to prevent speeding (e.g. speed humps)
▪ Road maintenance
▪ Provide safe road crossing points and fencing of the remainder of the D4380 and the mine site
▪ Community education to sensitize community members to potential traffic and blasting safety risks</td></tr>
<tr><td colspan="5">Post-Mitigation</td></tr>
<tr><td>Duration</td><td>Beyond project life (6)</td><td>As for pre-mitigation</td><td rowspan="3">Consequence: Moderately detrimental (-11)</td><td rowspan="4">Significance: Negligible - negative (-33)</td></tr>
<tr><td>Extent</td><td>Limited (2)</td><td>As for pre-mitigation</td></tr>
<tr><td>Intensity x type of impact</td><td>Moderate - negative (-3)</td><td>Appropriate mitigation will reduce the risk of this impact</td></tr>
<tr><td>Probability</td><td>Unlikely (3)</td><td colspan="2">Impacts will still occur, albeit not to the degree it was initially expected</td></tr>
</table>

9.1.8 Impacts on Surrounding Land Users

9.1.8.1 Impact Description

At the time of writing this report, it was unclear whether Pamish intends to purchase all properties within the MRA. Properties that are located in the vicinity of the proposed project, but on land that will *not* be acquired by the project, will experience impacts that are qualitatively different from the impacts on the area that will be acquired by the project (see Section 9.1.4). This difference stems from the fact that property owners/occupants and land users on surrounding properties that are not acquired by Pamish will be faced with the prospect of living with the mine's potential impacts (as discussed below), or else relocating at their own expense.

The manner in which surrounding land users (of land which is not acquired by the mine) could be impacted by the mine are numerous and inter-related. First, mining activities could, if unmitigated, lead to a significant reduction in the quantity and quality of ground and surface water (DWE, 2015b; DWE, 2015c), while almost the entire population within the site-specific study area are entirely reliant on groundwater (see Section 8.3). However, it is unlikely that the mine's impact on the quantity of groundwater will affect any current ground water users (DWE, 2015b).

Second, blasting combined with operational activities, will lead to increased noise and vibration, as well as changes in air quality (Blast Management and Consulting, 2015; DWE, 2015d), which could be significant for animal populations. These impacts, could affect the viability of several surrounding game farming operations, which includes several exotic game farms.

Third, the aforementioned air quality and blasting impacts, combined with the visual impact of surface infrastructure (Blast Management and Consulting, 2015; DWE, 2015d) and the various social changes discussed earlier could alter the area's sense of place. "Sense of place" refers to the identity and character of a landscape felt by local inhabitants, and often visitors (e.g. hunters on surrounding game farms). This attribute is derived from the natural environment and a mix of natural and cultural features in the landscape, and it usually includes the people who occupy the place.

The quantitative assessment of the hydrogeological, surface water, acoustic, visual, traffic-related and blasting impacts of the project is the subject of separate specialist studies and will not be repeated here (the reader is referred to the main EIA report compiled for the proposed project). Instead, this section focuses on the social implications of these impacts.

These implications can be divided into four main categories:

- First, impacts on water sources and other bio-physical elements, especially blasting, could impact the health and breeding of especially exotic game (see Section 8.3.1), which could affect the investment made into these breeding operations as well as their profitability – thereby directly impacting on the livelihood of farm owners and any employees;

- Second, changes in the area's sense of place, combined with actual or perceived changes in safety and security, will negatively affect the quality of life of surrounding communities; and
- Third, both social (e.g. sense of place) and the majority of biophysical impacts could negatively affect potential economic activities such as tourism; the area is currently earmarked for tourism in the Waterberg District EMF (see Section 8.1.6.5)

Land users will not experience these impacts in the same way or to the same degree. With regard to impacts on the profitability of game farming operations, this will largely depend on (a.) a farm's distance from the mine, with closer farms being more severely affected and (b.) the significance of residual bio-physical impacts (i.e. after mitigation) as well as the sensitivity of specific exotic game species to these residual impacts.

With regard to sense of place, additional factors need to be considered. One of these factors is the *current state of the landscape*: The impact of a large and visible artificial structure on the sense of place will be correspondingly larger than if the landscape already bears the marks of development (DWE, 2015d). Several granite quarries are being operated in the area, while a major Platinum operation is also operating in the region. Another factor is the *meanings* and feelings that people attach to the anticipated changes. If a development promises to offer tangible benefits to surrounding communities (for example job creation and significant development – see Section 9.1.1, 9.1.2 and 9.1.3), it is unlikely that its impact on the character of the landscape will be perceived in a negative light by the affected community members – even if that impact is substantial from an aesthetic point of view. It should be noted that this will only hold true if project benefits are distributed relatively equally among potentially impact communities.

If the proposed project is evaluated against these criteria, it is evident that it is unlikely that it will produce a significant impact on the area's sense of place for the majority of the site-specific population. During the field investigation and public participation process it was established that most stakeholders are mostly welcoming of project on the condition that it provides employment and general development (see Section 8.3.5).

Any impact on sense of place will mostly felt by game farmers residing in the south-western of the MRA and the area surrounding the MRA, several of these farmers families have been operating these farms for more than a century, which has created a great sense of attachment to their current way of life. The project's impact on the area's sense of place will also negatively affect property values in especially the aforementioned area (Urban-econ, 2015).

9.1.8.2 Recommended Mitigation Measures

In order to mitigate the negative impacts on the surrounding land users, it is recommended that:

- Appropriate mitigation measures are implemented to ameliorate the hydrological, acoustic, visual, traffic-related and blasting impacts of the project, as stipulated in the specialist reports undertaken as part of the EIA for the proposed project;
- Measures to address the impact of the project on the area's sense of place include adequate rehabilitation of the landscape at the appropriate time. Furthermore, a neat appearance of the site, during construction and operational phases, will also assist in reducing the negative visual impacts;
- While both the change in the area's sense of place and visual impact caused by the project are inevitable, the project should seek to compensate for these changes by creating an environment that can contribute positively to stakeholders affected by it. Surrounding game farmers might have to fend against poachers stealing game from their farms. The project, has resources that can assist the farmers, and should reach an understanding with these stakeholders about how it could assist them in this regard;
- The project should establish efficient channels of communication with surrounding communities, public institutions and NGOs to promote the early identification of any water quality and quantity problems. These channels could include formal grievance mechanism and a community forum. Reported problems should be subject to objective monitoring, which will allow the mine to verify the validity of each claim. The result of the monitoring should be made available to the community forum. Similar mechanisms should be established for other bio-physical impacts (e.g. air quality and blasting); and
- Such a channel of communication will also serve to manage stakeholder's perceptions and concerns.

9.1.8.3 Impact Rating

Impact Description: Impact On Surrounding Land Users				
Predicted for project phase:	Pre-construction	Construction	Operation	Decommissioning
Dimension	Rating	Motivation		
Pre-Mitigation				
Duration	Project Life (5)	Residual biophysical impacts will only occur for duration of the life of the mine	Consequence: Moderately detrimental (-13)	Significance: Moderate - negative (-78)
Extent	Limited (2)	Project area and neighbouring settlements (refer to other specialist studies).		
Intensity x type of impact	Very high - negative (-6)	- Mine could impact on visual character of area and on peoples' sense of place. - Mine could impact on viability of current economic activities on neighbouring properties - Mine may impact on existing water sources.		
Probability	Highly probable (6)	Impacts are largely unavoidable as a result of mining activities		
Mitigation				
▪ Refer to recommendations of relevant specialist studies (Air quality impact assessment; Visual and topographical impact assessment; and Blasting and vibration impact assessment) ▪ Undertake continuous information sharing and consultation with adjacent/affected farm owners and communities, potentially through community liaison staff and establishing a community forum ▪ Implement measures to create an environment that can contribute positively to stakeholders affected by it (e.g. anti-poaching assistance and community forums for reporting any perceived biophysical impacts) ▪ Implement grievance mechanisms to report changes in water quality/quantity, air quality or vibrations				
Post-Mitigation				
Duration	Project Life (5)	As for pre-mitigation	Consequence: Slightly detrimental (-9)	Significance: Minor - negative (-36)
Extent	Limited (2)	As for pre-mitigation		
Intensity x type of impact	Low - negative (-2)	Mitigation will lessen physical impacts. Affected people likely to adapt over time		
Probability	Probable (4)	Impacts will still occur, albeit not to the degree it was initially expected		

9.1.9 Opposition because of Perceived Negative Impacts

9.1.9.1 Impact Description

This impact differs from the preceding ones in that it deals with potential impact of community and stakeholder attitudes and actions on the project, rather than impacts of the project on communities. The relevance of such impacts in the context of this report stems from the fact that, as with the other impacts discussed above, appropriate mitigation will be required – the difference being that, in this instance, the mitigation measures would be aimed at changing aspects of stakeholder perceptions and behaviour rather than changing aspects of the project's design and implementation.

The impact assessed here pertains to the fact that perceptions regarding potential negative project impacts (whether these be accurate or not) could intensify community opposition to the proposed project – which, in turn, could potentially increase active community resistance to project plans.

Strained stakeholder relations could have a very detrimental impact on the successful implementation of a project: if a mining company's affected parties view the operation with suspicion or disdain, they have the power not only to delay the environmental authorisation process through appeals; they can also damage the company's public image through bad publicity. Acrimonious stakeholder and community relations often give rise to active social mobilisation against a project or to costly litigation.

Despite Pamish's best intentions to fostering positive community relations, there is some risk that one or more of the negative scenarios sketched above could materialise during project implementation. This risk stems from the following:

- The surrounding communities are very sensitive about employment practices of mines in the area. As indicated earlier, these communities will likely not tolerate Pamish employing low-skilled persons from outside the MLM;
- Stakeholders have indicated that communities are becoming more aware about the obligations mines have towards the surrounding communities and the environment. It may happen that these communities are eager to put their newly acquired knowledge in action by opposing actions by the proponent, either rightly or wrongly;
- It was gathered from stakeholder meetings that surrounding communities are very concerned about the noise, dust and impacts on the quantity and quality of ground water, as these impacts could affect their way of life; and
- In addition, community members are of the opinion that blasting will result in the cracking of their residential structures, which, at this point in time, community members assume full financial responsibility for.

The sensitivity among the broader community regarding the employment of individuals outside the local municipal area, as well as the general perception that the mining in general are not contributing to the well-being of the local population (as discussed in Section 8.1.7 and 8.3.5) poses a risk for the proposed project; these concerns and attitudes should not be ignored and their potential to solidify into active community opposition to the project should not be underestimated.

9.1.9.2 Recommended Mitigation Measures

There is some potential for generating goodwill among communities and stakeholders in the study area, stemming from the fact that the project is expected to create job opportunities and other benefits which would benefit a number of households in communities (as discussed in Sections 9.1.1 and 9.2.1).

These positive expectations have the potential to persist into project implementation, engendering a sense of social goodwill towards the project and the project proponent among the affected population. Although such goodwill is not something tangible that can be measured in physical or monetary terms, its importance in terms of fostering positive external relations and reducing the risk of further litigation or negative publicity for the company should be acknowledged. Experience with other projects has shown that efforts to secure a social license to operate do, in the long run, incur significant benefits and cost savings for project proponents. As such, Pamish should seek to capitalise on any existing goodwill through appropriate mitigation, as follows:

- Pamish should honour the commitments made in the existing SLP;
- Pamish should be transparent regarding employment practices and LED initiatives, and these should be communicated to the local communities;
- The findings of the various specialist studies conducted as part of the EIA should be summarised and presented to the surrounding land owners and communities in a simple and clear manner in order to illustrate that Pamish has taken their concerns into account, to explain how these concerns will be addressed or mitigated, as well as to illustrate the significance of the resultant impacts after mitigation; and
- Pamish could also undertake regular community/stakeholder briefings through a community forum to ensure community complaints are identified and addressed.

In addition, the following mitigation measures are recommended:

- Community expectations should be managed and the project should not commit itself to something it does not have the means to deliver on. It is important for the Project to monitor community attitudes to anticipate/prevent active opposition (implying actions taken against the project, as opposed to passive opposition);
- As mentioned earlier, Pamish should employ a CLO or similar function to improve its communication with communities and to serve as a source of information for the project regarding prevalent community attitudes. It is preferable that this person be recruited from within the local community and not from individuals currently employed at Pamish or the Bakenberg Traditional Authority; and
- Pamish should also establish a community forum that meets at least quarterly, to provide the opportunity for the communities to be informed about project activities, progress and impacts. The forum should promote two-way communication with the community, thus community members should be allowed sufficient time to raise and discuss their concerns, problems and requests. The forum should comprise of local community leaders, neighbouring land owners, Pamish representatives and representatives from local authorities including the local municipality and law enforcement.

9.1.9.3 *Impact Rating*

Impact Description: Opposition Because Of Perceived Negative Impacts				
Predicted for project phase:	Pre-construction	Construction	Operation	Decommissioning
Dimension	Rating	Motivation		
Pre-Enhancement				
Duration	Project Life (5)	May continue throughout the life of the operation	Consequence: Moderately detrimental (-12)	Significance: Minor - negative (-48)
Extent	Local (3)	Will not only elicit opposition from site-specific study area, but stakeholders in the broader area		
Intensity x type of impact	Moderately high - negative (-4)	Could lead to negative publicity for the company; community mobilisation against the project		
Probability	Probable (4)	Stakeholders, especially private landowners, are sensitive towards many possible impacts that may result from development		
Enhancement				
▪ Communicate commitments regarding LED ▪ Transparency regarding employment practices ▪ Presentation of Environmental Impact Assessment (EIA) findings in clear and understandable manner ▪ Monitor community attitudes to anticipate/prevent active opposition ▪ Appoint a CLO to enhance communication. It is preferable that this person be recruited from within the local community and not from individuals currently employed at Pamish or the Bakenberg Traditional Authority ▪ Establish a community forum, comprising local community leaders, neighbouring land owners, Pamish representatives and representatives from local authorities including the local municipality and law enforcement.				
Post-Enhancement				
Duration	Project Life (5)	As for pre-mitigation	Consequence: Moderately beneficial (11)	Significance: Minor - positive (55)
Extent	Local (3)	As for pre-mitigation		
Intensity x type of impact	Moderate - positive (3)	Widespread awareness of project benefits will increase probability of generating goodwill		
Probability	Likely (5)	Mitigation will maximise probability that local recruitment targets are achieved and local benefits optimised		

9.2 Operational Phase

This section deals with the socio-economic impacts that will be triggered during the operational phase of the proposed project. The only impact identified in Section 9.1 that will not continue into the operational phase is construction-related job creation. Additional impacts expected to arise during the operational phase include: two positive impacts (job creation and economic development) and one negative impact, namely dependency on the project for sustaining the local economy. Each of the aforementioned impacts is discussed in greater detail below (see Section 9.2.1-9.2.3).

9.2.1 Job Creation during Operation

9.2.1.1 Impact Description

Employment during the operational phase has the potential of being over a long period (life of mine is 30 years), which can have a major, long term, positive impact for successful job applicants and their dependents. The operational workforce requirement for the mine is 150 employees, of which 69% and 7% will be semi-skilled and unskilled positions, respectively.

With mining and quarrying being a major industry in the region, it is expected that a sufficient number of the unemployed will have appropriate skills to qualify them for at least semi-skilled positions at the mine. Those that are less skilled may be more suited to manual labour such as earthworks and road construction. During the construction process potential candidates can also be identified to receive skills training for future opportunities.

This means that local communities can potentially take maximum advantage of employment opportunities to be created by the proposed mine, and that Pamish will likely be able to meet its local recruitment target of 40%. It should be noted that some positions will require scarce skills, which will not be readily available in the labour sending area, therefore a certain percentage of the mine's workforce will be recruited from elsewhere in the province or country.

As is the case with the construction phase, the operational phase of the proposed development could give rise to some indirect employment opportunities. These could include jobs in the informal sector (for instance, in terms of food stalls for the convenience of workers, especially considering the fact that Pamish will not provide free meals to their employees – see Section 5.4.3.3), and in the formal sector (for instance, by sourcing goods and service from enterprises elsewhere in the municipal area where possible). It is estimated that in addition to direct employment, Pamish's mining activities will create an additional 1 896 downstream FTE opportunities (Urban-econ, 2015).

9.2.1.2 Recommended Mitigation Measures

Measures to maximise the benefits derived from employment creation during the operational phase of the project are the same as those recommended for the construction phase, as follows:

- Promote the creation of employment opportunities for locals, especially women and youth, above the targets set out in the Mining Charter (see Section 5.1.4). The positions reserved for the youth and women may only be filled with persons outside of these categories if it can be demonstrated that no suitable persons are available to fill these positions. The performance indicator for the promotion of employment of women and youth could be the number of local women and persons under the age of 35 who are employed during the construction phase of the project;
- Where possible, labour-intensive construction methods should be promoted;

- If required, the local resident status of applicants should be verified in consultation with community representatives or Traditional Authority;
- The project should consult neighbouring mines to determine if they would be willing to make their skills registers/ databases available to identify adequately qualified local labour;
- Pamish should identify its required core skills (both for the construction and operational phases); investigate the prevalence of these skills in the local study area, and structure its skills development endeavours (as part of its SLP commitments) accordingly. This option should be investigated during the next update of the mine's SLP;
- Where feasible Pamish should offer training and skills development to improve the ability of local community members to take advantage of employment opportunities arising through the project;
- Recruitment should take place using a registry of job-seekers and SMMEs, as opposed to lists of potential candidates and service providers compiled by an individual – this minimises the risk of nepotism or corruption tainting the recruitment process;
- It is recommended that recruitment during the construction phase should not take place on site but should be coordinated through the appropriate institutions such as the local DoL or institutions recommended by the local authorities (if applicable). However, care must be taken that recruitment practices are fair and transparent and are not unduly influenced by pressure groups in the communities;
- A monitoring system should be established to ensure that Pamish and its subcontractors honour the local employment policy; and
- Local employment opportunities be maximised as far as possible, by intensifying efforts in the SLP, which are aimed at developing scarce skills.

9.2.1.3 Impact Rating

Impact Description: Job Creation During Operation				
Predicted for project phase:	Pre-construction	Construction	Operation	Decommissioning
Dimension	Rating	Motivation		
Pre-Enhancement				
Duration	Project Life (5)	Equal to the duration of the operational phase	Consequence: Moderately beneficial (11)	Significance: Minor - positive (55)
Extent	Regional (4)	Many positions will be filled by persons living in the municipal ward and regional municipal area; some from elsewhere in the Province		
Intensity x type of impact	Low - positive (2)	Limited employment opportunities will be available for un- and semi-skilled individuals		

<table>
<tr><th colspan="5">Impact Description: Job Creation During Operation</th></tr>
<tr><td>Predicted for project phase:</td><td>Pre-construction</td><td>Construction</td><td>Operation</td><td>Decommissioning</td></tr>
<tr><td>Dimension</td><td>Rating</td><td colspan="3">Motivation</td></tr>
<tr><td>Probability</td><td>Likely (5)</td><td colspan="2">Without appropriate mitigation, forecasts of majority local recruitment might not be achieved</td><td></td></tr>
<tr><td colspan="5">Enhancement</td></tr>
<tr><td colspan="5">▪ Assign preferred employment status to those experiencing the bulk of the negative project impacts
▪ Promotion of local, female and youth employment
▪ Labour-intensive construction methods should be promoted
▪ Verification of local status
▪ Consult neighbouring businesses to determine if they would be willing to make their skills registers available
▪ Identify required skills and align and implement training and skills development initiatives accordingly
▪ Expand skills development to surrounding communities
▪ Recruitment via a registry of job seekers and potentially coordinated through the Department of Labour (DoL)
▪ Provide local employees with reference letters certificates of completion for in-house (on-the-job) training
▪ Monitoring subcontractors in terms of local employment targets
▪ Intensifying efforts in the SLP, which are aimed at developing scarce skills</td></tr>
<tr><td colspan="5">Post-Enhancement</td></tr>
<tr><td>Duration</td><td>Project Life (5)</td><td>As for pre-mitigation</td><td rowspan="3">Consequence: Highly beneficial (15)</td><td rowspan="4">Significance: Moderate - positive (90)</td></tr>
<tr><td>Extent</td><td>Regional (4)</td><td>As for pre-mitigation</td></tr>
<tr><td>Intensity x type of impact</td><td>Very high - positive (6)</td><td>Mitigation will maximise local job creation</td></tr>
<tr><td>Probability</td><td>Highly probable (6)</td><td colspan="2">Mitigation will maximise probability that local recruitment targets are achieved and local benefits optimised</td></tr>
</table>

9.2.2 Stimulation and Growth of the Local and District Economies

9.2.2.1 Impact Description

A macro-economic impact assessment conducted for the proposed project established that it will have a positive effect in terms of stimulation of domestic production, job creation, and government revenue (Urban-econ, 2015). More specifically the project will during its operational phase have a total production impact of R 36 143 mill, a total GDP-R impact of R 25 516 million, and will create a total 32 196 FTE opportunities (Urban-econ, 2015).

The State will receive royalty and tax payments for the permanent extraction of non-renewable commodities by Pamish (MPRDA, 2002; SARS, 2011); these payments will amount to almost R 60 million annually during the first ten years of operations (see Section 7.6.2). Ideally a proportion of these funds should be used to stimulate regional economic growth by re-investing the funds into infrastructure development throughout the local study area (see Section 7.6.2).

Pamish will also pay and considerable amount to rates and taxes (28% corporate tax and 15% withholding tax). Pamish's tax contribution during the first 8 years of operation will amount to approximately R 1 518 million (see Section 7.6.2). A proportion these funds will be paid to local and district municipal structures. Such an injection into local municipal

structures could contribute to the development of the municipal area, thereby creating conditions conducive to economic growth.

It is expected that the benefits of the proposed project will extend beyond members of the mine's workforce to suppliers through the procurement of products and services. Pamish's preferential procurement strategy adheres to the stipulation of the MPRDA and aims to achieve HDSA procurement targets (see Section 5.4.3.2). The strategy will increase opportunities for HDSA suppliers which will in turn be conducive to economic growth in the local study area.

The mine will employ a sizable workforce during its operational phase, and the projected monthly operational wage and procurement bill will result in a substantial injection of cash into the economy of the local study area (see Section 7.6.2). This will stimulate the formal and informal retail and service sectors and other downstream secondary industries.

9.2.2.2 Recommended Enhancement Measures

Measures recommended to enhance the benefits from local employment and economic multiplier effects (see Section 9.1.1 and 9.1.2), as well as community development (see Section 9.1.3); will also serve to maximise the positive impacts of the proposed project on the economy. In addition the following measures are recommended:

- Implementation of measures suggested in the Economic Impact Assessment (Urban-econ, 2015);
- Incorporate SMME capacity building programmes into future iterations of the mine's SLP, which will enable HDSA suppliers to take maximum advantage of opportunities provided by the mine;
- In order to maximise the empowerment of HSDA companies (and the sharing in project benefits by the disadvantaged communities in general), the project should attempt to procure from local suppliers throughout the life of the mine (where possible); and
- A monitoring system should be established to ensure that the mine and its contractors comply with government regulations and company policies related to HDSA procurement

9.2.2.3 Impact Rating

Impact Description: Economic Development				
Predicted for project phase:	Pre-construction	Construction	Operation	Decommissioning
Dimension	Rating	Motivation		
Pre- enhancement				
Duration	Project Life (5)	Life of mine is 15 years	Consequence: Moderately beneficial (11)	Significance: Minor - positive (44)
Extent	Regional (4)	Royalties and taxes will aid regional development; contribution to regional infrastructure projects (if any) - culmination of positive economic effects will stimulate regional economic growth		
Intensity x type of impact	Low - positive (2)	Effects on regional economy will not be as pronounced		
Probability	Probable (4)	Pamish is obliged by law to pay royalties and taxes, and some economic multiplier effects will spill-over into regional economic development		
Mitigation				
▪ Measures recommended to maximise benefits from local employment, economic multiplier effects, as well as community, economic and skills development; and ▪ Preferably procure from local suppliers throughout the life of the mine ▪ Establish a monitoring system to ensure that the mine and its contractors comply with government regulations				
Post- enhancement				
Duration	Beyond project life (6)	Successful mitigation will prolong benefits of economic development beyond life of mine	Consequence: Highly beneficial (14)	Significance: Moderate - positive (84)
Extent	Regional (4)	As for pre-mitigation		
Intensity x type of impact	Moderately high - positive (4)	Successful mitigation will create an environment conducive for economic growth		
Probability	Highly probable (6)	Mitigation will increase the chance of the manifestation of this impact		

9.2.3 Dependency on Mine for Sustaining the Local Economy

9.2.3.1 Impact Description

As indicated in Section 8.2.8, the local economy is relatively dependent on mining, with just more than 32% of the municipal GDP derived from the sector. While Pamish's proposed mining operation can contribute significantly to economic development through its lifetime, this positive impact also has a negative aspect, in that mining is not a permanent activity. Inevitably, mines close, and this can have devastating consequences for an area that has not invested in economic diversification.

A considerable number of people and their families will also become increasingly dependent on the mine for their livelihood (Urban-econ, 2015). The mining operation will reach the end of its life after 30 years, if no new viable deposits are located in the interim. It is probable that employment opportunities associated with the mine will be lost at mine closure (approximately 150 workers, many of whom will have been sourced from the local area), as

will be the corresponding project benefits such as any LED and community development programmes implemented by the mine.

Retrenchments before the end of life of mine is another possibility and could be necessitated by downscaling as a result of external forces such as reduced profitability, technical innovation, the need to remain globally competitive or changes to the mine's strategic business plan. At such a time, project employees may not be able to secure alternative employment. Job losses and retrenchments would lead to loss of income and local expenditure. Unemployed staff may be unable to pay for municipal services such as water and electricity and will be unable to service their debts. Taking into consideration the likely dependency on employee income, the loss of income will have considerable negative impacts on the wellbeing of households where employees were the sole breadwinners.

Suppliers could also be affected as the opportunity to sell goods and services to the Project will be lost. This could furthermore affect those companies that supply these businesses with goods and services. This impact will mostly be felt by suppliers at regional and local municipal level.

Economic downturn and the resultant loss of employment could also result in increases in social pathologies, such as crime, prostitution, and substance abuse (IFC, 2012).

9.2.3.2 Recommended Mitigation Measures

Pamish has already made several provisions in their SLP to minimise the effect of downscaling or mine closure on employees (e.g. LED and portable skills development programmes), these measures will minimize the possible negative consequences of job losses (see Section 5.4.3.4).

In accordance with legislative requirements, a detailed mine Closure Plan (which will include distinct socio-economic measures), should be developed well in advance of planned mine closure. It is recommended that (a.) this Plan should include a socio-economic impact assessment and stakeholder consultation process and (b.) be reviewed every five years starting 15 years before mine closure. This Social Closure Plan should include the following:

- Predicting the likely socio-economic impact of closure on employee households, local communities and the region;
- Identifying critical issues which could affect the on-going sustainability of employees and communities during closure, by means of a detailed consultation process;
- Implementing the recommendations of the abovementioned assessments;
- Identification of alternative livelihood and socio-economic development opportunities for employees, as well community-based development projects which may become sustainable over the long term; and
- Providing financial and/or technical support for the establishment of sustainable community projects.

In addition, the mine should make every effort to proactively assess and mitigate/manage the social and economic impacts on individuals, regions and economies where retrenchment and/or closure of the mine are certain. If/when downscaling and/or retrenchment take place the mine should assist affected employees in finding alternative employment or livelihood opportunities. This should be done if workers cannot be integrated or redeployed to other operations, or where they are not of a retirement age.

As is required by law, the mine will in partnership with the relevant government departments, jointly manage any process of this nature. The integration of the workforce into various LED projects, if required, will be done in collaboration with municipalities, and other stakeholders serving on the LED Forum. Where workers cannot be absorbed into LED initiatives, they should be furnished with skills training opportunities, enabling them to find alternative employment after decommissioning or retrenchment. Other initiatives could focus on assessment and counselling services for affected individuals.

In particular, the mine could:

- Liaise with institutions and structures such as the National Productivity Institute[10] to assist in identifying other economic sectors and ventures that can absorb employees. This will involve the development of alternative livelihoods over several years to ensure that these livelihoods are well developed by the time the mine is decommissioned;
- Partner with LED programmes of other industries and municipalities as this will strengthen project initiatives, whereas initiatives funded by the project alone may not be as effective;
- Ensure that local (and other) employees are trained in alternative skills; and
- Provide financial management skills to employees.

9.2.3.3 Impact Rating

Impact Description: Dependency on Mine for Sustaining Local Economy				
Predicted for project phase:	Pre-construction	Construction	Operation	Decommissioning
Dimension	Rating	Motivation		
Pre-mitigation				
Duration	Beyond project life (6)	Effects of retrenchments/ decommissioning will be long-lasting	Consequence: Highly detrimental (-16)	Significance: Moderate - negative (-96)
Extent	Regional (4)	Will most severely affect employees and service providers from the local municipal area		

[10] The National Productivity Institute works towards ensuring that sustainable productivity performance in sectors and organisations is achieved in an inclusive, collaborative manner.

<table>
<tr><th colspan="5">Impact Description: Dependency on Mine for Sustaining Local Economy</th></tr>
<tr><td>Predicted for project phase:</td><td>Pre-construction</td><td>Construction</td><td>Operation</td><td>Decommissioning</td></tr>
<tr><td>Dimension</td><td>Rating</td><td colspan="3">Motivation</td></tr>
<tr><td>Intensity type of impact</td><td>Very high - negative (-6)</td><td>Local economy may become increasingly dependent on mining</td><td></td><td rowspan="2"></td></tr>
<tr><td>Probability</td><td>Highly probable (6)</td><td colspan="2">The project will come to an end, and retrenchments are likely due to long operational phase</td></tr>
<tr><td colspan="5">Mitigation</td></tr>
<tr><td colspan="5">▪ Pamish should through its Skills Development Plan and LED projects continuously promote alternative and sustainable livelihoods, this can be achieved by ensuring LED projects are sustainable after withdrawal of support from the Mine and expanding portable skills development to communities impacted upon by the mine
▪ Collaborate with other industries to support the diversification of the local economy
▪ The Mine's SLP should provide strategies and measures that prevent job loss
▪ Alternatives to save jobs/avoid downscaling should be investigated beforehand through the Pamish's future forum
▪ Proactively assess and manage the social and economic impacts on individuals, regions and economies where retrenchment and/or closure of the mine are certain, and incorporate these aspects into the Mine Closure Plan
▪ Partner with the relevant government departments, to jointly manage Closure process</td></tr>
<tr><td colspan="5">Post-mitigation</td></tr>
<tr><td>Duration</td><td>Beyond project life (6)</td><td>As for pre-mitigation</td><td rowspan="3">Consequence: Moderately detrimental (-13)</td><td rowspan="4">Significance: Minor - negative (-52)</td></tr>
<tr><td>Extent</td><td>Regional (4)</td><td>As for pre-mitigation</td></tr>
<tr><td>Intensity type of impact</td><td>Moderate - negative (-3)</td><td>Mitigation will reduce the impact of retrenchment</td></tr>
<tr><td>Probability</td><td>Probable (4)</td><td colspan="2">Mitigation will reduce severity of impact on retrenched workers</td></tr>
</table>

9.3 Decommissioning Phase

9.3.1 Potential Impacts

The eventual termination of a mine's operating life is common to most extractive operations, and socio-economic consequences are inevitable. It should be noted that any predictions concerning the characteristics of the receiving socio-economic environment at the time of decommissioning (30 years) are subject to a large margin of error, thus significantly reducing the accuracy of impact assessment.

Several socio-economic impacts could arise when the mining operation is decommissioned and should therefore form part of the scope of study when the Environmental Assessment for decommissioning of the project is planned. Socio-economic issues that could be focussed on include:

- **Impacts on the workforce** – *Psychological issues* (distraction from normal activities, with a potentially negative impact on performance and safety), and *personal and family income issues* (e.g. concerns about the effect of reduced income on family life);
- **Impacts on the local community** – *Economic dependency* (if new jobs are created, but at remuneration levels lower than those in the mining industry, this might impact

negatively on the local economy), *demographic changes* (e.g. migration of skilled workforce from the area); and *dependency on SLP initiatives* (e.g. financial support to development programmes may be withdrawn by Pamish);

- **Impacts on government** - Municipalities will no longer receive tax- and royalty payments; and
- **Impacts on land use** - The potential use of the project site for other land uses post-closure.

9.3.2 Social Closure and Mitigation

In accordance with legislative requirements a Mine Closure Plan (which will include socio-economic measures), must be developed at the start of mining operations and will include a SIA and stakeholder consultation process. The Mine Closure Plan will be reviewed annually and will include a financial guarantee for the rehabilitation of the natural environment at mine closure. The guarantee amount will be annually audited, revised and adjusted in accordance with the development and concurrent rehabilitation of the project. The above financial guarantee does not however make provision for the mitigation of socio-economic impacts associated with mine closure.

The previous sections identified job losses, and consequent effects on employees and their dependents, as one of the most significant socio-economic impacts associated with mine closure. It also recognises that the local economy in the project's area of influence could be negatively impacted if the economy becomes increasingly dependent on mining during the life of the project (see Section 9.2.3).

In accordance with the requirements of the MPRDA, the Project's SLP will, amongst other things, outline suitable strategies to be followed upon downscaling or closure to ameliorate its negative impact on employees. In addition, legislation requires that the preliminary closure plan be updated and refined periodically as the end of the project's life approaches so as to:

- Predict the likely socio-economic impact of closure on employee households, local communities and the region;
- Identify critical issues which could affect the on-going sustainability of employees and communities during closure, by means of a detailed consultation process;
- Implement the recommendations of the abovementioned assessments;
- Identify alternative livelihood and socio-economic development opportunities for employees, as well community-based development projects which may become sustainable over the long term; and
- Provide financial and/or technical support for the establishment of sustainable community projects.

The SLP should also set out procedures to be followed to involve government and other interested and affected parties in decision-making related to closure. These stakeholders will need to be involved in the closure planning process from the beginning and should be part of the mine closure solution. The affected stakeholders are incorporated into the agreed draft closure vision that has been defined in this report.

Specific consultative measures to be defined in the SLP will include:

- Establishment of a Future Forum for the purposes of:
  - Promoting on-going discussions between employers and employees representatives regarding the future of the mine;
  - Identifying solutions to problems and challenges which may arise and impact on the operation of the mine;
  - Discussing issues regarding retrenchment and downscaling, and identifying turnaround strategies;
  - Developing and implementing prevention and redeployment strategies in the management of retrenchments;
  - Coordinating the notification process during retrenchments or closure; and
  - Mobilising the DoL's Social Plan Services for technical assistance on job advice, and retrenchment during retrenchment and closure.
- Implementation, in accordance with Section 52 (1) of the MPRDA, of a consultation process in terms of Sections 189 and 189(A) of the Labour Relations Act. This consultation process will commence when the mine identifies a need to reduce its operations. Management and members of the Future Forum will administer this consultation process;
- Approaching the DoL for the utilisation of its resources and support services, such as counselling services and placement services offered by its Labour Centres; and
- Informing affected areas, such as the local municipality and labour sending areas, of imminent retrenchments. The full impact of such retrenchments will be disclosed to the municipalities and possible solutions discussed.

9.4 Cumulative Impacts

Cumulative socio-economic impacts are impacts that could act together with other impacts (including those from concurrent and/or planned future third party activities), resulting in an incremental effect on natural and social resources, social processes and/or socio-economic conditions. The importance of identifying and assessing cumulative impacts stems from the fact that, in social as well as natural systems, the whole is often more than the sum of its parts – implying that the total effect of multiple stressors or change processes acting simultaneously on a system may be greater than the sum of their effects when acting in isolation. Cumulative impacts usually relate to large-scale and more extensive rather than

primary concentrated impacts and have a tendency to increase the intensity of impacts already predicted for the proposed project.

The aim of the remainder of this section is to highlight the nature of the key cumulative socio-economic impacts that are expected to occur as result of the combined effect of the proposed project and other existing and planned operations in the area (see Section 8.1.2). Four possible cumulative impacts were identified and are discussed in turn below.

9.4.1 Job Creation and Multiplier Effects on the Local Economy

Approximately 1 150 people will be employed by the Pamish during the LoM of the proposed project. Several nearby mines such as those listed in Section 8.1.2 also employ substantial numbers of people; other mines planned for MLM area such as Lonmin Platinum as well as the expansion of Mogalakwena Platinum, will also add to the number of people employed in the mining sector. The contribution of mining to job creation will therefore be enhanced through the proposed project.

The proposed project, together with other existing and planned mining operations, will result in several economic benefits for local communities through direct and multiplier effects. These effects are usually stimulated by wage bills, local and regional procurement spend, and investment into LED and skills development. The proposed project will add to the existing positive effect of mining on local economic development by applying national principles in terms of local employment and procurement, as well as LED (see Section 5.2.9).

9.4.2 Impacts related to Population Influx

A highly significant cumulative impact relates to the fact that existing and new developments in the regional study area will accelerate population influx to the area with the associated increased pressure on land, resources and services, as well as the potential for informal settlement, encroachment/land grab and ultimately urban sprawl.

The area has already experienced some influx of people in search of work at nearby mines, such as Anglo Platinum's, Mogalakwena. It is likely that this existing impact will be exacerbated once it becomes known that the proposed project has started.

The capacity of service delivery infrastructure is exceeded in communities within the local study area. The expected influx of job-seekers into these areas, combined with the influx already caused by other projects, will place increased pressure on local infrastructure especially health care service, road networks, housing, and water and sanitation.

It is recommended that the project, together with local and district municipal authorities, relevant government departments and agencies on national provincial and regional level, as well as other developers in the area, proactively investigate joint management measures and procedures to encourage sustainable resource management, spatial planning and land use, as well as efficient land administration by local government.

It is emphasised that isolated attempts by the project to ameliorate the above impact will only have limited success. It is essential that the project collaborates with the appropriate local government structures and forums, local economic development programmes, as well as through partnerships with both government and other mining projects to development an Influx Management Plan for the region.

9.4.3 Dependency on Mining to Sustain the Regional Economy

As mentioned earlier in this report, economic activities in the area are dominated by mining and services sectors. Because mining creates a much larger number of jobs than the services sector, and because mine workers tend to earn better salaries than those employed in other sectors, it is fair to deduce that the local economy is heavily dependent on the mines. As emphasised earlier, all mines have a finite lifespan. Inevitably, mining operations in the area will at some point in the future begin to scale down and close. This scenario is already transpiring with MLM (MLM, 2014). Unless significant investment is made into economic diversification, the area is destined for a considerable economic slump once this process commences.

9.4.4 Impact on the Visual Environment

It was mentioned in the baseline that communities adjacent to proposed project site have until now maintained a predominantly rural character. The more “alien” elements that are added to a landscape, the more the character of the landscape will be altered. Thus, the effect of the proposed mine on the area’s sense of place cannot be considered in isolation from other current and planned activities. For example existing mining activities in the area have left their mark on the landscape (e.g. Mogalakwena Platinum Mine, Bestaf Granite Mine, African Red Granite and other closed down granite quarries), and future mining activities (e.g. Expansion of Mogalakwena Platinum Mine) will add to the impact on the area’s sense of place. Surface infrastructure associated with the proposed project will therefore represent a new wave in the transformation of the landscape from one dominated by rural communities and fields into one dominated by mining pits and heavy equipment.

10 Social Management Plan

Table 39 below provides a framework for an integrated plan to manage the socio-economic impacts that are expected to occur during the construction, operational and decommissioning phases of the project. It is based on the recommended mitigation and enhancement measures listed in the previous chapter. The table lists the management objectives, specific mitigation/enhancement measures and potential action plans for each project activity associated with the socio-economic impacts identified in Section 6. The table also specifies details regarding the frequency and timing of the implementation of the identified measures as well as the human resources usually responsible for managing these tasks.

Table 39: Mitigation Measures and Management Plan

Project activities *(Social impact)*	Objectives	Mitigation/Management measure	Frequency of mitigation	Legal Requirements	Recommended Action Plans	Timing of implementation	Responsible Person/s
Construction phase							
Employment and capital expenditure; and Surface infrastructure development *(Employment creation)*	Ensure that host communities share in project benefits through enhancing local employment and procurement	▪ Assign preferred employment status to those experiencing the bulk of the negative project impacts ▪ Promotion of local, female and youth employment ▪ Labour-intensive construction methods should be promoted ▪ Verification of local status ▪ Consult neighboring businesses to determine if they would be willing to make their skills registers available ▪ Identify required skills and align and implement training and skills development initiatives accordingly ▪ Expand skills development to surrounding communities ▪ Recruitment via a registry of job seekers and potentially coordinated through the DoL ▪ Provide local employees with reference letters certificates of completion for in-house (on-the-job) training ▪ Monitoring subcontractors in terms of local employment targets	On-going On-going update of labour database Quarterly monitoring of local employment targets, including contractor's targets	Mineral and Petroleum Resources Development Act (Act of 2002) Employment Equity Act, 1998 (Act No. 55 of 1998); Basic Conditions of Employment Act, 1997 (Act No. 75 of 1997); Labour Relations Act, 1995 (Act No. 66 of 1995); and Skills Development Act (Act No. 97 of 1998 as amended).	Human Resources Development Plan (see Section 5.4.3.1) Action plan for Participation of HDSAs (see Section 5.4.3.2) Action plan for Women in Mining (see Section 5.4.3.2) Social Development Plan (see Section 5.4.3)	Prior to the start of construction, thereafter on-going during period of capital expenditure	Human Resource Manager Supply Chain/ procurement manager (i.e. contractor management) CLO
Employment and capital expenditure; and Surface infrastructure development *(Multiplier effects on the local and regional economy)*	To enhance economic development induced by project expenditure	▪ Give preference first to capable local service providers; ▪ Develop local service provision capacity ▪ Monitoring of sub-contractors procurement ▪ Development of a register of local SMMEs ▪ Linkages with skills development/ SMME development institutions and other mining operations ▪ SMME skills development as part of mine SLP/LED commitments ▪ Local procurement targets should be formalised in Pamish's procurement policy	Annual review/update of procurement progression plan Quarterly monitoring of procurement targets On-going update of supplier database Bi-annual reporting on activities undertaken as part of the SLP	Mineral and Petroleum Resources Development Act (Act of 2002); and Employment Equity Act, 1998 (Act No. 55 of 1998)	HDSA Procurement Action Plan (see Section 5.4.3.2) Procurement Progression Plan Supply Chain Management Plan	Prior to the start of construction, thereafter on-going during period of capital expenditure	Supply Chain/ procurement manager (i.e. contractor management
Employment and capital expenditure (*Community development and social upliftment)*	To enhance community development	▪ Liaison with beneficiaries to ensure needs are met ▪ Collaboration with other developmental role players (e.g. local and district municipalities, neighbouring mines and non- governmental organisations) during implementation of envisaged projects, and where possible aligning envisaged development projects with existing ones ▪ Expanding its skills development and capacity building programmes for non-employees ▪ Monitoring system to regulate HDSA procurement ▪ Where feasible, training should be NQF accredited ▪ A record of training courses completed per individual should be kept	Bi-annual reporting on execution of SLP activities detailing actions undertaking in terms of HRD, LED, CSI and Skills development On-going record-keeping of skills training provided	Skills Development Act (Act No. 97 of 1998 as amended); and Mineral and Petroleum Resources Development Act (Act of 2002)	Skills development plan (see Section 5.4.3.1) SLP (see Section 5.4.3) Supply Chain Management Plan	Prior to the start of construction and ongoing through the life of Mine	HSEC manager HR manager CLO

Project activities *(Social impact)*	Objectives	Mitigation/Management measure	Frequency of mitigation	Legal Requirements	Recommended Action Plans	Timing of implementation	Responsible Person/s
Change of land-use from agriculture to mining; and Topsoil and softs removal and stockpiling; (*Displacement of land users)*	Ensure that the loss of grazing and agricultural land due to change in land use is managed Ensure that the loss natural resources due to change in land use is managed is managed	▪ ARAP development to compensate economically displaced households ▪ Consultation with Traditional healers with in regards to management and/or relocation of medicinal plants	Once of during land acquisition; only monitoring of residual impacts on affected household thereafter	IFC, PS 5 World Bank OP 4.12 NEMA (Act of 1998)	ARAP	During pre-feasibility phase of the project, before construction commences	Resettlement Manager CLO Heritage specialist
Development of access and haul roads; Surface infrastructure development ; Site clearance and vegetation removal; and Hauling of waste rock *(Disruption of movement patterns)*	Ensure that the mobility of affected parties and animals are disrupted to a minimum by aforementioned project activities and, if possible, avoided	▪ Measures to prevent deterioration of roads suggested in Traffic Impact Assessment (e.g. drivers to report road deterioration to the Limpopo Department of Transport) ▪ Regulation of traffic at intersections of the D4380, D3507 and access roads to the site ▪ Road upgrading measures should be investigated and implemented in conjunction with the relevant government department (e.g. repairing and rehabilitating the D4380 and sealing the roadway to increase its capacity for Heavy Moving Vehicles) ▪ Inform communities of planned construction activities that would affect vehicle/ pedestrian traffic ▪ Ensure that access to key services in areas such as Bakenberg are uninterrupted by providing alternative access routes in cases where construction activities restricts or disrupt movement ▪ Construction of cattle crossings at suitable intervals should be incorporated into project design ▪ Cattle farmers and regular road users should be consulted with regard to cattle crossing placements	On-going during construction phase	Mine health and safety act (Act 29 No. of 1996)	Environmental Management Plan Stakeholder Engagement Plan Grievance mechanism	Prior to the commencement of construction	SHEC Manager Construction Manager Technical Consultants CLO

Project activities *(Social impact)*	Objectives	Mitigation/Management measure	Frequency of mitigation	Legal Requirements	Recommended Action Plans	Timing of implementation	Responsible Person/s
Employment and operational expenditure *(Project induced population influx)*	Ensure that population influx, as result of perceived and actual project employment, is managed in collaboration with local and traditional authorities. Reduce project contribution to population influx to sufficiently low levels to prevent/reduce: Pressure on local service delivery; Establishment or growth of informal settlements; Influx induced social pathologies (incl. conflict among locals and incumbent population)	▪ Discourage influx of job-seekers by prioritising employment of unemployed members of local communities. ▪ Liaise with MLM, and TA to ensure that expected population influx is taken into account in infrastructure development AND spatial development planning. ▪ Create synergies with local government IDP and other companies' SLP/CSR projects to promote infrastructure development ▪ Extensive HIV/ AIDS awareness and general health campaign ▪ Identify if recorded criminal activities involved members of the mine's workforce ▪ Establishment of anti-poaching mechanism in consultation with potentially affected land owners ▪ Clear identification of workers; prevention of loitering ▪ Liaison with police, community policing forum ▪ Promote projects providing housing, especially low cost housing ▪ Community education ▪ Measures to address potential conflict between locals and non-locals ▪ In the event of conflict between the locals and non-locals, a conflict management plan should be compiled	On-going during life of operation	SPLUMA (Act 16 of 2013)	Land Use and Settlement Plan Community Health, Safety and Security Plan Environmental Awareness Plan Influx Management Plan	Prior to the commencement of construction, during pre-feasibility	SHEC Manager Social Development Manager CLO Technical consultants
Surface infrastructure development; Waste generation (hazardous and general); Use of heavy machinery; Development of two open pits; Concentrator plant; Hauling of waste rock; Storage of fuels and explosive storage facilities; and Dismantling of major equipment and infrastructure *(Impact on health and safety of employees and community)*	Protect the quality of life and wellbeing of local residents during life of mine; and Ensure that the health and safety of host communities and employees are protected during life of mine	▪ Access control to all project elements, including fencing ▪ PPE for mines workers ▪ Notification of blasting activities ▪ Blasting and storage of hazardous materials to adhere to prescribed regulation ▪ Measures suggested minimising the impact of fly-rock on surrounding roads and structure (Blast Management and Consulting, 2015) ▪ Measures suggested in the Chia to minimize traffic related accidents (DWE, 2015a) ▪ Traffic calming measures to prevent speeding (e.g. speed humps) ▪ Road maintenance ▪ Provide safe road crossing points and fencing of the remainder of the D4380 and the mine site ▪ Community education to sensitize community members to potential traffic and blasting safety risks	On-going during life of operation	Mineral and Petroleum Resources Development Act, (Act of 2002) Mine health and safety act (Act 29 No. of 1996) National Environmental Management Act (Act of 1998)	ISO 14000 System Community Health, Safety and Security Plan Air Quality Management Plan Environmental Awareness Plan Stakeholder Engagement Plan Occupational Health and Safety Plan Strategic stakeholder engagement plan	During commencement of construction	HSEC Manager ECO HR CLO

Project activities *(Social impact)*	Objectives	Mitigation/Management measure	Frequency of mitigation	Legal Requirements	Recommended Action Plans	Timing of implementation	Responsible Person/s
Change of land-use from agriculture to mining; Surface infrastructure development; Development of two open pits; and Dismantling of major equipment and infrastructure *(Impacts on surrounding land users)*	Protect the quality of life, livelihoods and wellbeing of local residents Ensure that the health and safety of host communities are protected, and if possible improved	▪ Refer to recommendations of relevant specialist studies (Air quality impact assessment; Visual and topographical impact assessment; and Blasting and vibration impact assessment); ▪ Undertake continuous information sharing and consultation with adjacent/affected farm owners and communities, potentially through community liaison staff and establishing a community forum ▪ Implement measures to create an environment that can contribute positively to stakeholders affected by it (e.g. anti-poaching assistance and community forums for reporting any perceived biophysical impacts); ▪ Implement grievance mechanisms to report changes in water quality/quantity, air quality or vibrations	On-going during life of operation	Mineral and Petroleum Resources Development Act, (Act of 2002) Mine health and safety act (Act 29 No. of 1996) National Environmental Management Act (Act of 1998)	Relevant Biophysical Management Plans	Establish baseline during pre-feasibility and thereafter on-going	SHEQ manager and ECO
All activities contributing to negative impacts *(Opposition because of perceived negative impacts)*	To build relationships of openness, mutual trust and inclusiveness with affected households and host communities		On-going	None	Develop and implement a SEP, community forum and Grievance Procedure	During commencement of construction	SHEQ manager CSI manager CLO
Operational Phase							
Employment and operational expenditure *(Job creation during operation)*	Ensure that host communities share in project benefits through enhancing local employment and procurement	▪ Assign preferred employment status to those experiencing the bulk of the negative project impacts ▪ Promotion of local, female and youth employment ▪ Labour-intensive construction methods should be promoted ▪ Verification of local status ▪ Consult neighbouring businesses to determine if they would be willing to make their skills registers available ▪ Identify required skills and align and implement training and skills development initiatives accordingly ▪ Expand skills development to surrounding communities ▪ Recruitment via a registry of job seekers and potentially coordinated through the Department of Labour (DoL) ▪ Provide local employees with reference letters certificates of completion for in-house (on-the-job) training ▪ Monitoring subcontractors in terms of local employment targets ▪ Intensifying efforts in the SLP, which are aimed at developing scarce skills	On-going	Mineral and Petroleum Resources Development Act (Act of 2002); Employment Equity Act, 1998 (Act No. 55 of 1998); Basic Conditions of Employment Act, 1997 (Act No. 75 of 1997); Labour Relations Act, 1995 (Act No. 66 of 1995); and Skills Development Act (Act No. 97 of 1998 as amended).	As for employment creation during construction phase	Towards the end of the construction phase	As for employment creation during construction phase

Project activities *(Social impact)*	Objectives	Mitigation/Management measure	Frequency of mitigation	Legal Requirements	Recommended Action Plans	Timing of implementation	Responsible Person/s
Employment and operational expenditure *(Regional economic development)*	To promote regional economic development	▪ Measures recommended to maximise benefits from local employment, economic multiplier effects, as well as community, economic and skills development; and ▪ Preferably procure from local suppliers throughout the life of the mine ▪ Establish a monitoring system to ensure that the mine and its contractors comply with government regulations	Annual review/update of procurement progression plan Quarterly monitoring of procurement targets On-going update of supplier database Bi-annual reporting on activities undertaken as part of the SLP	Mineral and Petroleum Resources Development Act (Act of 2002)	Skills development plan (see Section 5.4.3.1) SLP (see Section 5.4.3) Supply Chain Management Plan	Towards the end of the construction phase	HR manager Supply Chain and procurement Manager
Employment and operational expenditure; and Dismantling of major equipment and infrastructure *(Dependency on mine for sustaining local economy and mine closure)*	To decrease dependency of local and regional economy on fiscal stimulus of the mine	▪ Pamish should through its Skills Development Plan and LED projects continuously promote alternative and sustainable livelihoods, this can be achieved by ensuring LED projects are sustainable after withdrawal of support from the Mine and expanding portable skills development to communities impacted upon by the mine ▪ Collaborate with other industries to support the diversification of the local economy ▪ The Mine's SLP should provide strategies and measures that prevent job loss ▪ Alternatives to save jobs/avoid downscaling should be investigated beforehand through the Pamish's future forum ▪ Proactively assess and manage the social and economic impacts on individuals, regions and economies where retrenchment and/or closure of the mine are certain, and incorporate these aspects into the Mine Closure Plan ▪ Partner with the relevant government departments, to jointly manage Closure process	10 years prior to Mine closure	Mineral and Petroleum Resources Development Act (Act of 2002) Basic Conditions of Employment Act, 1997 (Act No. 75 of 1997); and Labour Relations Act, 1995 (Act No. 66 of 1995)	Mine Closure Plan	5 years before Mine Closure	HR manager Supply Chain and procurement manager HSEC manager CSI manager

11 Consideration of Alternatives

As mentioned in Section 7.5 it is a requirement in terms of current environmental legislation that practical project alternatives be considered during impact assessment. Two types of project alternatives are considered in this section:

- Alternatives to the project (in terms of the "no-go" option and alternative uses of the project area in the event that the project is not implemented); and
- Alternatives *involving* the project (in terms of alternative mining methods and infrastructure layout).

11.1 The "No-Go" Option and Land Use Alternatives

11.1.1 The No-Go Option

The most pertinent project alternative in the case of this project is the ***no-go alternative***. The approach adopted in the assessment of impacts in this study entailed a comparison between anticipated future socio-economic conditions, with and without the project. Hence the no-go alternative would essentially imply that none of the impacts described in Section 9 would materialise, and that socio-economic conditions in the study area would continue to display the characteristics and trends described in the socio-economic baseline profile (see Section 8).

11.1.2 Alternative Land Use Options

When considering the allocation of land for development and in deciding applications for planning permission affecting agricultural land, the agricultural implications must be considered together with the environmental, cultural and socio-economic aspects. In particular, prime quality land should normally be protected against permanent development or irreversible damage, such as in the case of the proposed project.

Land use decisions must be evaluated in terms of sustainability, broadly defined as balancing environmental, economic and social equity concerns. The primary land use categories that encompass basic functions are residential, commercial, industrial, recreational, institutional and agricultural uses. Optimal land use is determined by a number of factors, including climate, resources, population growth, economic activity and topography. When considering a new development for an area, it is required that other land use alternatives are considered to ensure that the development is justified and viable.

If not used for mining (the no-go option), possible alternative land uses for the project site might include low cost housing, subsistence agriculture, tourism and grazing. Subsistence agriculture and grazing land use alternatives is also not necessarily precluded by the proposed project: after mine closure and rehabilitation of mined areas, the land capability may return to a state, which would allow the continuation of the aforementioned uses, albeit not equal to production, which would have been achieved pre-mining.

With regards to ***agriculture***, approximately a quarter of the project footprint is situated on land which is suitable for agriculture, however large scale maize production and the financial gain thereof was not considered during the investigation. It is assumed that the land area available for agriculture in the project footprint will not be able to produce to the same economic benefits as the proposed mine (e.g. employment), a similar case is argued with regards to the area's tourism potential. Due to steady population growth and existing housing demand, the viability of using the proposed project site for ***low-density residential*** purposes is increasing as housing demand increases.

Mining appears to be the most viable and appropriate land use option from a social perspective, as it will result in considerably more economic growth than other land uses, by offering the following:

- Direct and indirect employment opportunities for local community members;
- Promotion of sustainable LED, enhancing the skills base among local community members and thereby allowing for income generating activities not directly related to mining;
- Increased economic contribution to the area, enabling better development of the towns and surrounding areas; and
- Enhanced socio-economic stability in the area.

11.2 Mine Plan, Infrastructure Layout and Affected Land Uses

The scope for mine plan and infrastructure layout alternatives is limited by the geographical characteristics of the area; that is to say, the location of ore largely determines the mine plan. This fact, together with the nature of the impacts described in Section 9, implies that changes to the mine plan and layout of infrastructure will not have a significant impact on the impacts to the social environment.

12 Potential Social Risks

The objective of this section is to identify any aspects of the receiving socio-economic environment that would present significant risks to Pamish's proposed mining operation. These may constitute constraints that would have to be accommodated in Project design, or issues that would require appropriate management and mitigation throughout.

Social risk is linked to the actions of a project's stakeholders and can either be a risk to a Project as a result of the impact on stakeholders, or stakeholders' impact on the Project. In most cases a risk can be financial, delay or reputational.

- **Financial**: A financial risk can result in a project being financially unfeasible due to costs associated with project delays.
- **Delay due to community protest or appeals against the Project**: could result in major timeframe implications for the Project.

- **Reputational**: Community protest, human rights violations and severe social impacts could cause damage to a company's reputation, which could result in delays, financial implications and detract from their social licence to operate.

The potential social risks to which the Project might be exposed are discussed below.

12.1 Community Expectations

Community expectations regarding the proposed Project are most frequently related to employment, but also to sharing in Project benefits through socio-economic development or royalties/ shares in the company (see Section 8.3.4.7). When such hopes are not met or addressed with appropriate communication, they may lead to potential stakeholder opposition and public mobilisation against the Project (see Section 8.1.7).

In a context of relatively high unemployment, local residents (especially people in settlements proximate to the development, these include Moshate, Bakenberg, Malokongskop, Sepharane, Ditlotswana, and Malokong) will be dissatisfied if access to the finite construction and operational phase jobs and the provision of associated services/benefits are perceived to be biased and preferential to one or another community. In other words employment of locals is a sensitive issue and social mobilisation against the Project as a result of perceived unfair practices can be a real threat to mining companies; as is evidenced by recent protest action against Anglo American Mogalakwena Operation (see Section 8.1.7).

The current operation will only be able to provide a finite number of opportunities, which will likely leave a large number of people feeling that their expectations to be employed have not been met. If sub-contractors are employed from elsewhere and these contractors fail to employ from the local area, it might increase the risk of social mobilisation against the Project.

Communities living around mines are also generally well-acquainted with the obligations that mining companies have to develop labour sending communities through corporate social investment and SLPs and often acquire legal counsel to ensure such benefits.

Expectations of communities must be managed by informing them as to exactly what to expect from Pamish in terms of CSI, local employment and SLP projects. Pamish could on a continuous basis involve community structures and the local municipality in the development of LED programmes. Pamish should also consider conducting a needs assessment to determine the types of investments it can make to local development. Oftentimes there are already initiatives underway, in need of some financial or technical support that the mine could provide.

It is essential that communication channels are open between the communities and the proposed project to allow stakeholders to lay complaints and discuss major concerns. In this regard it is recommended that a:

- CLO be appointed to allow communities a readily accessible communication mechanism; and
- Grievance mechanism established which is accessible to aggrieved members of the surrounding communities.

It is possible that regardless of Pamish's efforts to foster amicable stakeholder relations, there will still be stakeholders who are dissatisfied with the process. This potential for local instability should be taken into account (through a structured stakeholder engagement process) together with the recent local strikes, particularly in the mining sector (see Section 8.1.7). When combining these dynamics it can be argued that affected communities might become resistant or hostile towards the proposed Project, if not treated in a socially justifiable, sensitive and transparent manner.

12.2 Failure to Acquire a Social Licence to Operate

Failure to avoid any of the aforementioned risks might detract from the Project proponent's "*social licence to operate*." A social licence to operate may be defined as the on-going approval and acceptance from a host community and stakeholders for a mine or Project to operate. A social licence to operate is intangible and dynamic. It is granted by the communities in which a mine operates and is rooted in stakeholder perceptions and opinions about the Project, which could in turn be influenced by NGOs and other community based organisations within an area. A social licence to operate is earned through on-going, transparent communications and mutual trust. It is therefore earned and needs to be maintained as opinions and perceptions can change. A social license to operate is gained through (a.) investment in host communities and (b.) consultation/ stakeholder engagement. Gaining a social licence to operate for a mine can therefore be a critical factor a Project's success and an important component to human rights.

12.3 Land Claims

There are land claims on several farms that comprise the MRA, including the farms on which the mine infrastructure will be located. Three of these claims are still in the 'research' stage and only one has been gazetted (see Section 8.2.7). As the outcome of a land claim could be that the property is expropriated for the claimants or community claiming the land, any development on this property prior to completion of the land claim enquiry could be at risk. This potential risk needs further investigation.

12.4 Comments and Response

In terms of our income the project may influence our business to the extent that we will need to adapt to changing circumstances.	Abel Kotzé & Stephanus Kotzé	Trekdrift Boerdery BK (Bellevue Pt. 5)	26 March 2015	Registration & Comment Form	The impact on surrounding land users, quality of life, sense of place and livelihood activities was assessed as part of SIA (see Section 9.1.8 of the SIA Report). It was established that the project could have a moderately negative impact on some land users, the significance of these impacts will depend on (a.) proximity to project activities and (b.) the significance of bio-physical impacts (e.g. noise, air and water quality etc.). The SIA notes that with sufficient mitigation the project activities could only result in negligible to minor negative impacts. The SIA recommends the following mitigation measures to minimise this impact, as follows: ▪ Successful implementation of recommendations of relevant specialist studies (Air quality impact assessment; Visual and topographical impact assessment; and Blasting and vibration impact assessment); ▪ Pamish should undertake continuous information sharing and consultation with adjacent/affected farm owners, potentially through Community Liaison staff and establishing a community forum; ▪ Pamish should implement measures to create an environment that can contribute positively to stakeholders affected by it (e.g. anti-poaching assistance and community forums for reporting any perceived biophysical impacts); and ▪ Implement grievance mechanisms to report changes in water quality/quantity, air quality or vibrations. Section 9.1.8.2 and 9.1.8.3 of the SIA Report provides a more detailed description of these measures.

In terms of our business the project may influence our labour force due to influx of strangers and foreigners.	Abel Kotzé & Stephanus Kotzé	Trekdrift Boerdery BK (Bellevue Pt. 5)	26 March 2015	Registration & Comment Form	The SIA established that although the proposed project might contribute to population influx into the area, influx should also be considered as cumulative impact triggered by all the mining projects in MLM (see Section 9.1.6 and 9.4 of the SIA Report). The SIA recommends that the proposed mine collaborate with government and other mines in the area to address this impact (see Section 9.4.2 of the SIA Report). The SIA also suggest several other measures to minimize influx-related impacts. in particular it is recommended that: ▪ Pamish should commission a detailed situation analysis and, depending on the findings, commission and Influx management plan; and ▪ Discourage influx of job-seekers by prioritising employment of unemployed members of local communities. Section 9.1.6.2 and 9.1.7.2 of the SIA Report provides a more comprehensive discussion these mitigation measures.
These potential impacts can be managed through consultation, cooperation and sustainable negotiations.	Abel Kotzé & Stephanus Kotzé	Trekdrift Boerdery BK (Bellevue Pt. 5)	26 March 2015	Registration & Comment Form	Thank you for the comment, the comment is noted.
How will the mine affect Basogadi residents? Will they be affected by noise, dust and relocation?	Filemon Tala	Basogadi	25 March 2015	Village Meeting	The SIA undertaken for the proposed Project indicates that Villages within the municipal wards that encompass and surround the proposed Project footprint – namely, Wards 9, 10, 11, 15 and 16 of Mogalawkena Local Municipality (MLM), will likely be affected by indirect socio-economic impacts, which includes Basogadi. Indirect socio-economic impacts that will likely affect Basogadi include: ▪ Job creation during construction and operation (see Section 9.1.1 and 9.2.1 of the SIA Report); ▪ Multiplier effects on the local economy (see Section 9.1.2 and 9.2.2 of the SIA Report); ▪ Disruption of daily movement patterns (see Section 9.1.5 of the SIA Report); ▪ Influx related impacts patterns (see Section 9.1.6 of the SIA

					Report); and ▪ Dependency on mine for sustaining local economy patterns (see Section 9.2.3 of the SIA Report). In addition to the indirect impacts mentioned above, the SIA established that Basogadi will likely experience direct impacts as a result of the proposed project activities, these impacts include: ▪ Community development and social upliftment patterns (see Section 9.1.3 of the SIA Report); ▪ Displacement related impacts (including displacement of grazing, agricultural and natural resource uses) – This impact will likely be limited to some residents of Basogadi. Mothoathoase, and Moshate, but could extend to other villages within the site-specific study area (see Section 9.1.4 of the SIA Report);; ▪ Health and Safety impacts (see Section 9.1.7 of the SIA Report); and ▪ Negative impacts on surrounding land users (see Section 9.1.8 of the SIA Report). Significant socio-economic impacts and the areas likely to be affected are described in more detail in Section 6.1, and 9.1-9.3 of the SIA Report. An Air Quality study was undertaken as part of the Environmental Impact Assessment (EIA). In the air quality assessment considered PM_{10}, $PM_{2.5}$ and dust deposition. The maximum PM_{10} concentration observed at the four compass mine boundary were within the standard of 75 µg/m^3, except the northern boundary with 138 µg/m^3 prior to mitigation. With Moshate impacted most. Levels predicted at the surrounding residential receptors were all within Standard. The maximum annual PM_{10} concentrations predicted at any point on the mine boundary were below 10 µg/m^3. Hence, levels at the surrounding residential receptors were within the current standard (40 µg/m^3).

					$PM_{2.5}$ concentrations at the four compass points around the MRA were all below 5 µg/m^3 for both daily and annul respectively. Hence, the surrounding residential receptors are all within the daily and annual standard of 65 µg/m^3 and 25 µg/m^3 respectively. Predicted dust deposition rates at Moshate and Sepharane were slightly above the residential standard 600 mg/m2/day prior to mitigation. After mitigation, the predicted dust deposition rates at the four compass points around the proposed mine were all below 600 mg/m^2/day. Hence, deposition rates at the surrounding residential receptors are within the recommended standard (600 mg/m^2/day). Detailed assessment of findings is presented in the EIA Report. Air quality model predictions have shown the impact zones across the landscape with the greatest impacts limited to the Mining Right Area. Ground level concentrations outside the mine boundaries are within limit. According to this environmental noise impact assessment the surrounding communities, including Basogadi, will not be impacted on by the noise from the project as all of the surrounding communities fall outside of the impact zone according to the national noise control regulations. During the operational the overburden dumps and pit walls will assist with noise attenuation.

13 Conclusions and Recommendations

The pre- and post-mitigation ratings assigned to the various impacts discussed in Section 5 are summarised in Table 40 and graphically represented in Figure 28 below. In the figure, the entries in the various coloured cells correspond to the codes given for impacts in the first column of Table 40.

Table 40: Summary of Impact Ratings

Code	Impact	Pre-mitigation						Post-mitigation					
		Duration	Extent	Intensity	Consequence	Probability	Significance	Duration	Extent	Intensity	Consequence	Probability	Significance
JobConstr	Job creation during construction	Medium term	Local	Moderate - positive	Slightly beneficial	Probable	Minor - positive	Medium term	Local	Very high - positive	Moderately beneficial	Certain	Moderate - positive
MutliEcon	Multiplier effects on the local economy	Project Life	Regional	Moderate - positive	Moderately beneficial	Probable	Minor - positive	Project Life	Regional	Very high - positive	Highly beneficial	Highly probable	Moderate - positive
Com_Dev	Community development and social upliftment	Project Life	Limited	Low - positive	Slightly beneficial	Probable	Minor - positive	Beyond project life	Local	High - positive	Highly beneficial	Highly probable	Moderate - positive
Disp	Displacement related impacts	Permanent	Limited	Moderately high - negative	Moderately detrimental	Highly probable	Moderate - negative	Medium term	Limited	Very low - negative	Slightly detrimental	Probable	Negligible - negative
Disrp Move	Disruption of daily movement patterns	Project Life	Local	High - negative	Moderately detrimental	Highly probable	Moderate - negative	Project Life	Local	Moderate - negative	Moderately detrimental	Unlikely	Negligible - negative
Influx	Influx related impacts	Long term	Local	Very high - negative	Moderately detrimental	Highly probable	Moderate - negative	Long term	Limited	Moderate - negative	Slightly detrimental	Probable	Minor - negative
H&S	Health and Safety impacts	Beyond project life	Limited	Very high - negative	Highly detrimental	Highly probable	Moderate - negative	Beyond project life	Limited	Moderate - negative	Moderately detrimental	Unlikely	Negligible - negative
Sur_Landuse	Impact on surrounding land users	Project Life	Limited	Very high - negative	Moderately detrimental	Highly probable	Moderate - negative	Project Life	Limited	Low - negative	Slightly detrimental	Probable	Minor - negative
Opposition	Opposition because of perceived negative impacts	Project Life	Local	Moderately high - negative	Moderately detrimental	Probable	Minor - negative	Project Life	Local	Moderate - positive	Moderately beneficial	Likely	Minor - positive
JobOpertn	Job creation during operation	Project Life	Regional	Low - positive	Moderately beneficial	Likely	Minor - positive	Project Life	Regional	Very high - positive	Highly beneficial	Highly probable	Moderate - positive
EconDev	Stimulation and growth of the local and district economies	Project Life	Regional	Low - positive	Moderately beneficial	Probable	Minor - positive	Beyond project life	Regional	High - positive	Highly beneficial	Highly probable	Moderate - positive
Dependency	Dependency on mine for sustaining local economy	Beyond project life	Regional	Very high - negative	Highly detrimental	Highly probable	Moderate - negative	Beyond project life	Regional	Moderate - negative	Moderately detrimental	Probable	Minor - negative

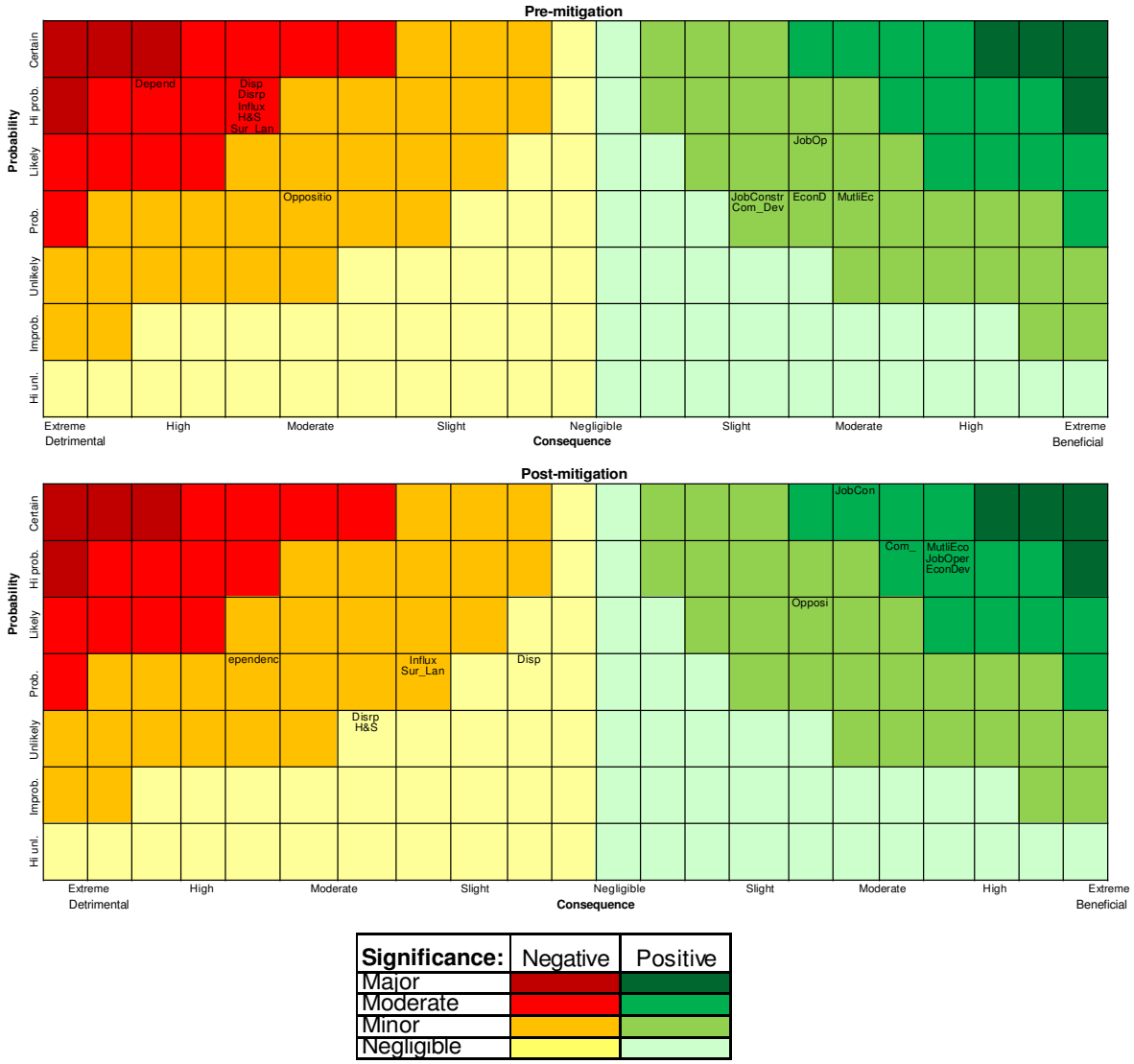


Figure 28: Graphical Representation of Consequence, Probability and Significance Ratings

The foregoing table and figure show that a total of 12 social impacts were identified for the proposed project. Of these, five are positive, and seven negative. The significance ratings for ***negative impacts without any mitigation*** range from minor to moderate:

- One impact was rated minor; and
- Six impacts were rated moderate

Significance ratings of ***positive impacts without any enhancement,*** on the other hand were all rated as minor.

If all mitigation measures are implemented according the recommendations given in Section 9, it is anticipated that the consequence and/or probability of most negative impacts will be reduced. This is reflected in the ***residual or post-mitigation significance ratings*** assigned to ***negative impacts***, which range from minor to moderate:

- Three impacts has been rated negligible;
- Three impacts have been rated as minor; and

The post-mitigation significance rating of one potential adverse impact is that of minor ***positive***, indicating that appropriate mitigation measures could not only avoid the occurrence of the negative impact, but turn it into a minor positive community benefit.

The ***post-enhancement significance ratings of positive impacts*** are sometimes higher than their pre-mitigation ratings. All positive impacts are expected to be moderately significant after mitigation.

This summary confirms that adequate mitigation measures are expected to reduce the significance of almost all negative impacts albeit not always to acceptable levels, while positive impacts will on average be significantly enhanced to maximise benefits to surrounding communities.

It Is recommended that the mitigation measures outlined in this report be given effect through the social management plan outlined in Section 10 and that impacts pertaining to other specialist disciplines that could have indirect socio-economic repercussions (e.g. impacts on groundwater, air quality, health etc.) be addressed as per the mitigation measures recommended in those specialist reports. Measures must also be put in place to monitor and assess implementation of these mitigation measures and to take corrective action where necessary.

Throughout the SIA process, the specialist identified a number of issues that warrant consideration by the proponent when implementing the proposed project. Firstly the risks identified in Section 12 above require particular attention and close monitoring and management.

Secondly it is recommended that Pamish establish linkages with other institutions (e.g. government, NGOs and other existing or planned mines) involved in local and regional economic development and social upliftment so as to maximise the benefits of its contribution to the welfare of local communities.

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Appendix A: Declaration of Independence

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I, Jurie Erwee, as duly authorised representative of Digby Wells and Associates (Pty) Ltd., hereby confirm my independence (as well as that of Digby Wells and Associates (Pty) Ltd.) and declare that neither I nor Digby Wells and Associates (Pty) Ltd. have any interest, be it business, financial, personal or other, in any proposed activity, application or appeal in respect of VM Investment Company or Pamish Investment No. 39 (Pty) Ltd, other than fair remuneration for work performed, specifically in connection with the Social Impact Assessment process for the proposed Magnetite Project, Limpopo Province.

Full name: Jurie Johannes Jacobus Erwee

Title/ Position: Social Consultant

Qualification(s): MA Research Psychology

Experience (years): 6 years