SOCIAL IMPACT ASSESSMENT FOR

THE PROPOSED PLATREEF UNDERGROUND MINE

Platreef Resources (Pty) Ltd

December 2013

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EXECUTIVE SUMMARY

Introduction

This document presents the results of the Social Impact Assessment (SIA) for the proposed Platreef Underground Mine near the town of Mokopane in Limpopo Province, South Africa. The terms of reference for this study are as follows:

- To describe the baseline social environment in the vicinity of the project area, including the conditions on and immediately surrounding the proposed site;
- To identify and assess the prevalent attitudes and perceptions about mining in general and the proposed project in particular;
- To identify, describe and rate the significance of social impacts that may result from the proposed project; and
- To develop feasible, practical and cost-effective mitigation and enhancement measures to ameliorate the significance of negative impacts and enhance the benefits of positive social impacts.

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) (NEMA) and Mineral and Petroleum Resources Development Act, 2002 (MPRDA) (Act No. 28 of 2002), as well as with the relevant international best-practice standards, such as the Equator Principles, World Bank Standards and International Finance Corporation (IFC) Principles and Performance Standards. The activities undertaken as part of the study comprised the following:

- Defining the site-specific, local and regional study areas;
- Data collection, including a desktop review, investigative site visit, interviews with key informants, and a review of information from other specialist studies and the public participation process;
- The compilation of a baseline profile, including information on demographics, education, skills levels, employment, local and regional economic conditions, infrastructure and service delivery, health and gender-related issues, community needs and challenges, spatial development and land claims. Information pertaining to other projects operating in the local municipal area is also presented, as are the prevalent concerns regarding and attitudes towards the proposed project;
- Assessment of impacts on the basis of issues identified through specialist opinion, interviews with key informants and the public participation process. 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 combined with probability ratings to give a measure of an impact's overall significance;

- Identification of appropriate mitigation measures to avoid or ameliorate negative social impacts and to enhance positive ones. The rating procedure described above 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; 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 proposed project is located within the Waterberg District, in the Mogalakwena Local Municipality (LM). More specifically the project area coincides with 13 (Ward 13, 18-31) of the 32 local municipal wards. Villages within these wards are listed in the table below.

Village (Municipal ward/s)	
Ga-Kgobudi (19 and 22)	Sekgagapeng (29 and 30)
Ga-Madiba (24)	Mahwelereng (24 and 26 – 28)
Tshamahansi (21 and 20)	Phola Park (29)
Ga-Magongoa (20)	Mosate (25 and 30)
Masodi (22 and 23)	Machikiri (18)
Mzumbani (20)	Ga-Mokaba (18)
Masehlaneng (23 and 25)	Sekgoboko (19)
Maroteng (22 and 25)	

Land Claims and Ownership

A land claims enquiry on the farms within the Platreef prospecting area showed that there are claims on Turfspruit 241 KR and Rietfontein 2 KS; another land claim exists on Bultongfontein 239 KR, which is one of the properties considered for the placement of ancillary operational infrastructure. Claims for these properties are still pending on behalf of

the Mokopane Trust and Mamahsela community. These are still in the process of being validated by the land commissioner. At the time of the enquiry the land claims had not been gazetted and the status of the claim was '*research'* therefore the claim is still under investigation.

The majority of the prospecting area is under the custody of the Government of the Republic of South Africa, but is identified as indigenous/traditional land. This means that the Traditional Authority (TA) has jurisdiction over the land and holds the land in trust for its people. It needs to be noted that several factions within the community do not recognise the TA and/or the local chiefs.

Population and Demographics

In 2011 the provincial population exceeded 5.5 million, of which almost 680 000 were located in Waterberg District and 308 000 in Mogalakwena LM. The site-specific study area houses more than a third (126 000) of the municipal population. This population resides in just less than 31 000 households, with an average household size (4), which is similar to the provincial and municipal average. Recent mining developments within the municipality might result in population influx, while Human Immunodeficiency Virus/Acquired Immune Deficiency Syndrome (HIV/AIDS) might have a negative effect on the municipal population.

With regards to gender, females slightly outnumber males in the Limpopo, Mogalakwena and the site-specific study area. The majority of the population within site-specific study area falls into the 15-64 age bracket. The dominant language spoken in 2011 within the Limpopo, Waterberg, Mogalakwena and the site-specific study area is Sepedi followed by Xitsonga. When considering the racial distribution in the different study areas, it is clear that Black Africans constitute the majority of the population. Only a small percentage of the population have completed Grade 12, 14% and 21% in Mogalakwena and the site-specific study area respectively.

Economic Overview

The sector contribution to Mogalakwena's Gross Domestic Product (GDP) indicates that the municipality's economy relies on three dominant sectors, which include the finance, mining and services sector. The majority of economic activities is centred within the Mokopane/Mahwelereng area, which is currently also expanding.

The "second economy" makes up a significant component of economic activities in the site-specific study area 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.

Employment and Income

The employment rates within Limpopo, Waterberg, Mogalakwena and the site-specific area (34%) are very low. Almost half of the population within the study area is not economically

active, which indicates a very high dependency ratio, with almost three quarters of the population supported by less than a third who are employed.

The largest proportion of the employed population was engaged in elementary occupations, followed by those who are engaged in the craft related trades, shop and market sales workers. Major employment industries within the site-specific study area include: the community, social and personal services, followed by the wholesale and retail trade sector. The wholesale and retail sectors are large, which indicates that most of the economic activity occurs in urban areas.

Approximately half of the population in the site-specific study area have no income; there is a slight gender discrepancy in the site specific study area, with females exceeding the number of males that have no income.

Poverty and Vulnerable Groups

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. The most common groups identified as vulnerable are children, the elderly, child or female headed households, the poor and the disabled. South Africa has a grant system to assist poor and vulnerable households. In 2011, 36% of the Municipal population were receiving social grants and therefore were considered to be poor. In addition to the social grant system in South Africa, the South African government provides free basic services to poor households. According to the 2009 statistics approximately 70 000 households within the Mogalakwena Municipal area were provided with free basic water and electricity. More information on vulnerable groups within the directly affected communities will be gathered during stakeholder meetings as part of the scoping and Environmental and Social Impact Assessment Impact Assessment (ESIA) phases of the study.

Access to Social Infrastructure and Services

The Mogalakwena Municipality is responsible for the majority of service delivery, such as electricity, water, sanitation, local amenities and public transport, with only the district municipality responsible for municipal health services. The Constitution of the Republic of South Africa, 1996 (Act No. 108 of 1996) provides all South African's with basic human rights which includes the rights to access basic infrastructure and services, such as water, sanitation and electricity. Free basic municipal services are provided by the government to those South African households who cannot afford these services.

According to the Mogalakwena Integrated Development Plan (IDP) the provision of water and sanitation was the municipality's main priority area followed by roads and storm water, then economic development and employment.

- *Energy*: The supply of electricity to households throughout the country is central to the governments' aim of improving quality of life. The main source of energy for lighting used by households in Limpopo, Waterberg, Mogalakwena and the study area in 2011 was electricity, followed by gas in all areas except the study area. The electricity backlog for the Mogalakwena Municipal area, in 2008, was just more than 6 500 households.

According to Chief Kekana the formal villages within the study area have access to electricity, whereas informal settlements like Mzumbani does not have access to electricity.

- *Water and sanitation: W*ater supply infrastructure within the Mogalakwena Municipal area has deteriorated as a result of ageing and corrosive effects. As a result water supply infrastructure is prone to bursts and leaks and resulting water losses. Mogalakwena Municipality is experiencing a backlog of water supply to households mostly due to the supply of water to household's not keeping pace with the population increase. According to Chief Kekana, access to water within the study area is in the form of communal standpipes; and many communal boreholes with hand pumps were seen in the villages. There are however plans to develop yard connections. The most common sanitation system within Waterberg District, Mogalakwena and the study area were pit latrines followed by flush toilets.
- *Housing:* The Waterberg District and Mogalakwena Municipality are experiencing increasing pressure on housing developments. The Waterberg attributed this pressure, in part, to the increase in mining projects within the district. The housing backlog within the Mogalakwena Municipal area is extremely high. Informal settlements are common adjacent to urban areas especially where mining activities exist (e.g. Mzumbani). The type of housing structures within the study area varies between brick structures and informal shacks.

Mine-community Relations

Community perceptions about-and attitudes towards the proposed Platreef Project can been shaped by social political events and/or existing attitudes towards mining activities within the project area. Anglo American's Mogalakwena operation and Lonmin's prospecting activities are located relatively close to the Platreef operation, and are also focussed on Platinum extraction.

Communities affected by the Anglo, Lonmin and Platreef projects respectively, have in the past launched protest actions against these cooperation's. This might indicate widespread discontent against Platinum mining houses within the study area. Public discontent t mining houses was also evidenced in recent public meetings held within the site-specific study area.

Predicted Impacts and Recommended Mitigation Measures

The anticipated socio-economic 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	Conse-quence	Probability	Signifi-cance		Duration	Extent	Intensity	Consequence	Probability	Significance
Job creation Constr	Job creation during construction	Medium term	Local	Moderate - positive	Slightly beneficial	Probable	Minor - positive	- Recruitment to be coordinated through the DoL - Update and optimal use of the skills database - Promotion of female and youth employment - Effective implementation of training and skills development initiatives - Monitoring subcontractors in terms of local employment targets - Labour-intensive construction methods should be promoted	Medium term	Local	Very high - positive	Moderately beneficial	Certain	Moderate - positive
Multiplier effects	Multiplier effects on the local economy	Long term	Province / Region	Moderate - positive	Moderately beneficial	Probable	Minor - positive	- Give preference first to capable subcontractors located in the local municipal area - Establish linkages with other mining proponents in the area involved in skills and SMME development - Align skills development to build capacity of SMMEs - Utilise electronic business database to identify local SMME's -Utilise the accommodation database to identify local accommodation options	Long term	District	Very high - positive	Highly beneficial	Highly probable	Moderate - positive
Econ emp HSDA's	Economic empowerment of previously	Long term	Local	Low - positive	Slightly beneficial	Unlikely	Negligible - positive	- Develop capacity of local HDSA SMMEs - Monitor compliance with procurement policy	Beyond project life	Local	Very high - positive	Highly beneficial	Likely	Moderate - positive

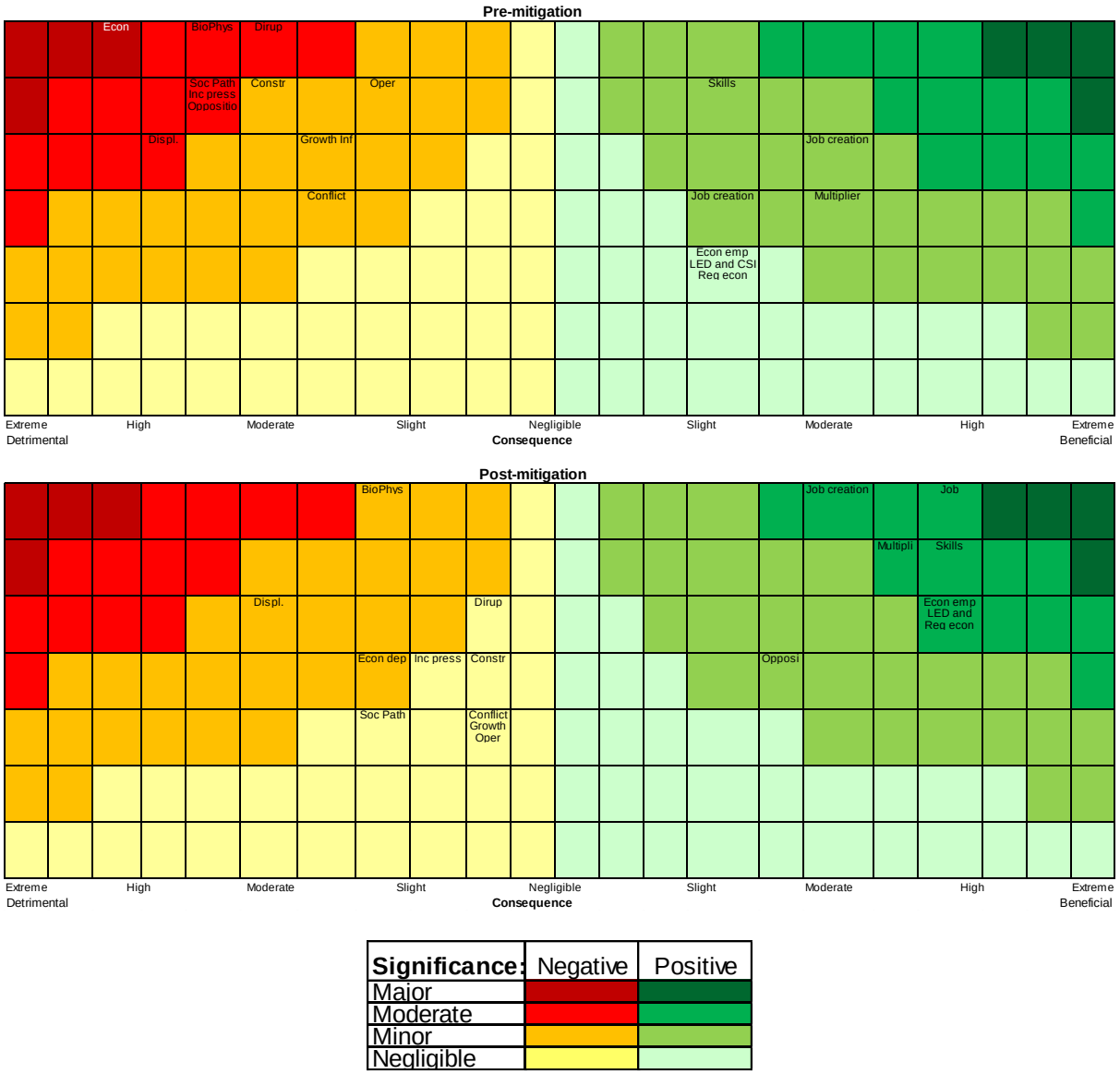
Code	Impact	Pre-mitigation:						Recommended mitigation	Post-mitigation:					
		Duration	Extent	Intensity	Conse-quence	Probability	Signifi-cance		Duration	Extent	Intensity	Consequence	Probability	Significance
	disenfranchised communities													
Skills transfer & dev	Skills transfer and development	Long term	Local	Low - positive	Slightly beneficial	Highly probable	Minor - positive	-Early involvement of project beneficiaries - Collaboration with other existing/planned skills development programmes - Skills development programmes should where possible focus on scarce skills -Guidelines encapsulated in Platreef's HRD and LED policies will optimise skills development	Beyond project life	Local	Very high - positive	Highly beneficial	Highly probable	Moderate - positive
LED and CSI	Community development induced by LED and CSI	Long term	Local	Low - positive	Slightly beneficial	Unlikely	Negligible - positive	- Assuring stakeholder buy-in and participation - Aligning LED and CSI initiatives with those of other development role-players	Beyond project life	Local	Very high - positive	Highly beneficial	Likely	Moderate - positive
Displ.	Physical and economic displacement	Permanent	Limited	Very high - negative	Highly detrimental	Likely	Moderate - negative	-Determine party responsible for relocation - RAP development - Surface lease agreements - For non-vulnerable households and individuals, negotiate favourable outcome on a case-by-case basis	Permanent	Limited	Moderate - negative	Moderately detrimental	Likely	Minor - negative
Dirup Move	Disruption of movement patterns	Medium term	Local	Very high - negative	Moderately detrimental	Certain	Moderate - negative	-Measures to alleviate traffic problems will also serve to maintain and promote access (see Section 6.3.2.1 and Impofu Engineering Services,.2013). -Inform communities of planned construction	Medium term	Local	Very low - negative	Slightly detrimental	Likely	Negligible - negative

Code	Impact	Pre-mitigation:						Recommended mitigation	Post-mitigation:					
		Duration	Extent	Intensity	Conse-quence	Probability	Signifi-cance		Duration	Extent	Intensity	Consequence	Probability	Significance
								activities that would affect vehicle/ pedestrian traffic						
Constr H&S	Construction-related health and safety impacts	Medium term	Local	Very high - negative	Moderately detrimental	Highly probable	Minor - negative	-Traffic control - Road maintenance - Regulation of traffic at intersection of haul road at N11 - Fencing of mine site - Prevention of fires - Community education	Medium term	Local	Very low - negative	Slightly detrimental	Probable	Negligible - negative
BioPhys	Visual/ acoustic/ vibration and air quality impacts	Project Life	Limited	Very high - negative	Moderately detrimental	Certain	Moderate - negative	- Visual, noise, vibration, and air quality impacts are discussed in separate specialist studies - For sense of place: rehabilitation after closure & measure to enhance positive impacts	Project Life	Limited	Moderate - negative	Moderately detrimental	Certain	Minor - negative
Soc Path	Increase in spread of communicable diseases and social pathologies	Long term	Local	Very high - negative	Moderately detrimental	Highly probable	Moderate - negative	- Extensive HIV/ AIDS awareness and general health campaign - Cease construction activities before nightfall - Clear identification of workers; prevention of loitering - Liaison with police, community policing forum - Influx management	Long term	Local	Moderate - negative	Moderately detrimental	Unlikely	Negligible - negative
Conflict	Conflict/ competition between newcomers and incumbent population	Medium term	Limited	Very high - negative	Moderately detrimental	Probable	Minor - negative	- Clearly communicated local recruitment policy - Use of community structures to identify local labour pool - Ensure thorough community consultation -Influx management	Medium term	Limited	Low - negative	Slightly detrimental	Unlikely	Negligible - negative
Inc		Long term	District	High -	Moderately	Highly	Moderate	- Liaison with	Long	Local	Very low	Slightly	Probable	Negligible -

Code	Impact	Pre-mitigation:						Recommended mitigation	Post-mitigation:					
		Duration	Extent	Intensity	Conse-quence	Probability	Signifi-cance		Duration	Extent	Intensity	Consequence	Probability	Significance
press services	Increased pressure on local services/ resources			negative	detrimental	probable	- negative	municipalities well in advance to ensure needs are met - Implement CSR initiatives -Ensure that municipalities take into account expected population influx -Influx management	term		- negative	detrimental		negative
Growth Inf settl	Establishment and growth of informal settlements	Medium term	Limited	Very high - negative	Moderately detrimental	Likely	Minor - negative	- Mitigation measures recommended in Section 6.2.10 to discourage influx	Medium term	Limited	Very low - negative	Slightly detrimental	Unlikely	Negligible - negative
Opposition	Opposition because of perceived negative impacts	Project Life	Local	Very high - negative	Highly detrimental	Highly probable	Moderate - negative	- Communicate commitments regarding LED - Transparency regarding employment practices - Presentation of EIA findings in clear and understandable manner	Project Life	District	Low - positive	Moderately beneficial	Probable	Minor - positive
Job creation Oper	Job creation during operation	Project Life	District	Moderate - positive	Moderately beneficial	Likely	Minor - positive	-As for construction phase - Section 6.3.1.1 - Intensifying efforts in the SLP to develop scarce skills	Project Life	District	Very high - positive	Highly beneficial	Certain	Moderate - positive
Reg econ dev	Regional economic development	Long term	Province / Region	Very low - positive	Moderately beneficial	Unlikely	Negligible - positive	- Measures recommended to maximise benefits from local employment, skills and economic development	Long term	Province/ Region	Very high - positive	Highly beneficial	Likely	Moderate - positive
Econ dep	Dependency on mine for sustaining local economy	Beyond project life	Local	Extremely high - negative	Highly detrimental	Certain	Major - negative	- Develop turnaround or redeployment strategies - Publicise to mines in the industry that excess skills are available - Implement actions, suggested by the Department	Long term	Local	Low - negative	Slightly detrimental	Probable	Minor - negative

Code	Impact	Pre-mitigation:						Recommended mitigation	Post-mitigation:					
		Duration	Extent	Intensity	Conse-quence	Probability	Signifi-cance		Duration	Extent	Intensity	Consequence	Probability	Significance
								of Labour - Equip the employees and communities with portable skills - Support economic diversification through development of alternative markets						
Oper H&S	Operation-related health and safety impacts	Long term	Very limited	Moderately high - negative	Slightly detrimental	Highly probable	Minor - negative	- As for construction phase - Plant maintenance - Rigorous health and safety programme	Long term	Limited	Very low - negative	Slightly detrimental	Unlikely	Negligible - 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

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; and
- Mine plan and infrastructure layout alternatives.

Conclusions and Recommendations

The results of the study indicate that the recommended mitigation measures are expected to reduce the significance of negative impacts to acceptable levels, while positive impacts will on average be significantly enhanced to maximise benefits to surrounding 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 a concentration of mining projects – namely, their tendency to dominate the local economy, thereby causing the local economy to become increasingly dependent on mines that inevitably have a finite lifespan, and their tendency to dominate the landscape and irrevocably alter an area's sense of place.

The study also indicates that the establishment of linkages between Platreef 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 Local Economic Development (LED) projects, initiatives by other mining houses in the area, and activities by civil society and non-governmental organisations. . At the time of writing this report comprehensive information regarding the initiatives of these institutions in the vicinity of the local study area were not available. It is suggested that Platreef's Corporate Social Investment (CSI) arm should contact the CSI and socio-economic development departments of these institutions to gauge whether they can align or synergize 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 CSI projects;
- Social unrest and community opposition;
- Risks related to political tension;
- Failure to acquire a social licence to operate;
- Risks associate with physical and economic displacement; and
- Land claims.

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Abbreviations

ABET	Adult Basic Education Training
AMEC	AMEC E&C Services, Inc.
BBBEE	Broad Based Black Economic Empowerment
CBD	Central Business District
CSI	Corporate Social Investment
DM	District Municipality
DMR	Department of Mineral Resources
DWE	Digby Wells Environmental
EE	Employment Equity
EHS	Environment, Health and Safety
EMP	Environmental Management Plan
EP	Equator Principals
EPFI	Equator Principles Funding Institutions
FBS	Free Basic Services
GDP	Gross Domestic Project
GGP	Gross Geographic Product
ha	Hectare
HDSAs	Historically Disadvantaged South Africans
HIV/AIDS	Human Immunodeficiency Virus/ Acquired Immune Deficiency Syndrome
HRD	Human Resource Development
IDP	Integrated Development Plans
IFC	International Finance Cooperation
ILO	International Labour Organisation
kg	Kilogramme
km^2	Square kilometre
LASCELLI	Limpopo Accelerated Strategic Capital Expenditure and Localisation Initiative
LED	Local Economic Development

LEGDP	Limpopo Economic Growth Development Plan
LM	Local Municipality
MLM	Mogalakwena Local Municipality
MPRDA	Mineral and Petroleum Resources Development Act No. 28 of 2002
MQA	Mining Qualifications Authority
MRA	Mining Right Application
NEMA	National Environmental Management Act No. 107 of 1998
NQF	National Qualifications Framework
NSDP	National Spatial Development Perspective
PGE	Platinum Group Element
Platreef	Platreef Resources (Pty) Ltd.
PS	Performance Standards
RAL	Roads Agency Limpopo
SANAC	South African National AIDS Council
SASSA	South African Social Security Agency
SDF	Spatial Development Framework
SETA	Sector Education and Training Authority
SIA	Social Impact Assessment
SLP	Social and Labour Plan
SMME	Small, Medium and Micro-sized Enterprises
StatsSA	Statistics South Africa
STI	Sexually Transmitted Infections
TB	Tuberculosis
UNESCO	United Nations Educational, Scientific and Cultural Organisation
WDM	Waterberg District Municipality
WiM	Women in Mining
WSP	Workplace Skills Plan
YLL	Years of Life Lost

1 INTRODUCTION

Platreef Resources (Pty) Ltd. (Platreef) is a subsidiary of Ivanplats. Platreef was granted a mineral prospecting license, valid until 2014, on the two farms Turfspruit and Macalacaskop, located in the Limpopo Province near the town of Mokopane. This prospecting license initiated Platreef's prospecting activities, which established considerable mineral deposit within the conceded prospecting area. Subsequently a Mining Right Application (MRA) was submitted for these properties in June 2013.

In addition to the MRA an application will also be submitted for environmental authorisation for the envisaged project activities. An Environmental and Social Impact Assessment (ESIA) will be submitted in support of this application. This report is the outcome of the Social Impact Assessment (SIA), which is one of several specialist assessments that were undertaken as part of the ESIA. The SIA was compiled in two phases; the first phase, being the scoping study, which culminated in a Social Scoping Report (compiled by Digby Wells). The current document presents the results of the impact assessment phase.

1.1 Terms of Reference

The Terms of Reference assumed for this SIA is as follows:

- To describe the baseline social environment in the vicinity of the project area, including the conditions on and immediately surrounding the proposed site;
- To identify and assess the prevalent attitudes and perceptions about mining in general and the proposed project in particular;
- To identify, describe and rate the significance of social impacts that may result from the proposed project; and
- To develop feasible, practical and cost-effective mitigation and enhancement measures to ameliorate the significance of negative impacts and enhance the benefits of positive social impacts.

1.2 Report Structure

In order to present a useful and accessible description of the socio-economic environment that might be affected by the proposed project, this report is divided into the following chapters.

- ***Section 2*** details the methodology employed for this SIA and includes details on the study areas, the various data collection activities, information on the completion of the baseline profile, the identification and rating of impacts, the design of mitigation and enhancement measures, as well as consideration given to project alternatives;
- Details of the proposed project are presented in ***Section 3***, which includes motivation for the proposed project, a project description, consideration of project alternatives, and workforce and expenditure forecasts;
- ***Section 4*** provides a summary of international standards and principles, as well a national legislation that might have bearing on the project;

- ***Section 5*** provides a baseline description of the study area, and includes the socio-economic context of both the regional and local study areas. Site-specific conditions are also presented, as is a list of other mining projects in the local municipal area. Finally, stakeholders' attitudes towards and concerns regarding the proposed project are explored;
- ***Section 6*** 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;
- The impact project alternatives will have on the identified social impacts is considered in ***Section 7***;
- **Section 8** lists and discusses several risks that might negatively influence the progress and feasibility of the project; and
- Finally, ***Section 9*** presents the main conclusions of the SIA and contains recommendations relevant to the implementation of the proposed project.

2 METHODOLOGY

The study was designed so as to comply with relevant South African legislative requirements, as well as with the relevant international best-practice standards, such as the Equator Principles, World Bank Standards and the International Finance Corporation's (IFC) Performance Standards. The activities undertaken as part of the study are outlined below.

2.1 Definition of Study Area

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, 2003). In the case of social impact assessment, this task is complicated by the fact that different types of socio-economic impacts make themselves felt over different geographical areas. Generally such impacts of a project can be divided into three broad categories:

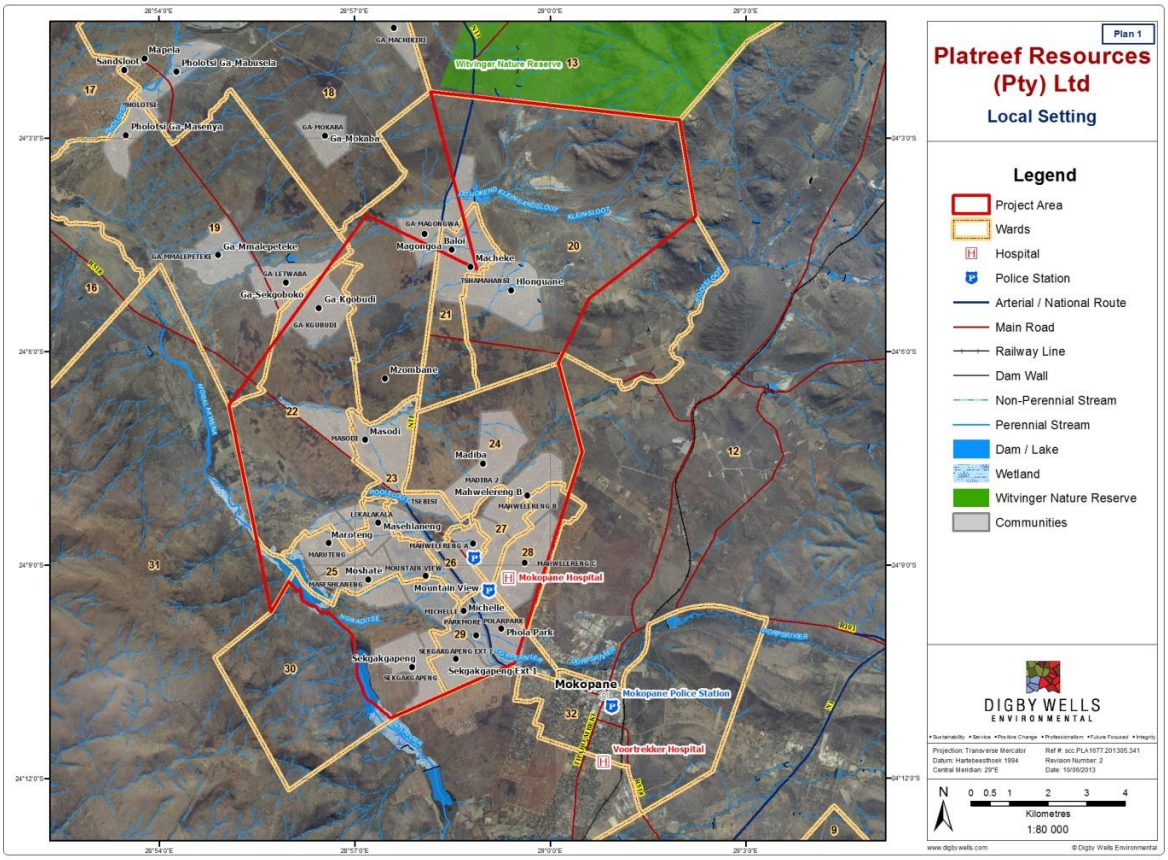
- Impacts related to the ***physical intrusion*** of project infrastructure and ***project-related activities*** on the surrounding environment (which may include socio-economic impacts arising from land acquisition, noise, dust, vibration and changes in the visual characteristics of the landscape);
- 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 identified for the purposes of this study, corresponding to the three categories of impacts listed above. 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. In the context of this project, this study area is defined as the settlements within relative proximity to the proposed project infrastructure; these settlements are listed in Table 1 below.
- The ***local study area*** – the area likely to experience impacts related to the ***"economic pull"*** exerted by the project. This area encompasses the municipal wards upon which the proposed project site is located (namely, Ward 9-32 of Moglakwena Local Municipality, in terms of the 2011 ward delineations).
- The ***regional study area*** – the area likely to experience ***indirect or induced impacts*** of the project. This area encompasses the whole of Mogalakwena Local Municipality, as well as the Waterberg district municipality in which it is located.

Table 1: Villages and wards coinciding with Platreef's area of interest

Settlement	Ward/s	Farm portions comprising the area of interest
Ga-Kgobudi	19 and 22	Turfspruit 241 KR and Rietfontein 240 KR
Ga-Madiba	24	Macalacaskop 243 KR
Tshamahansi	21 and 20	Turfspruit 241 KR and Rietfontein 2 KS
Ga-Magongoa	20	Turfspruit 241 KR and Rietfontein 2 KS
Masodi	22 and 23	Turfspruit 241 KR and Macalacaskop 243 KR
Mzumbani	20	Turfspruit 241 KR
Masehlaneng	23 and 25	Macalacaskop 243 KR
Maroteng	22 and 25	Turfspruit 241 KR and Macalacaskop 243 KR
Sekgagapeng	29 and 30	Macalacaskop 243 KR
Mahwelereng	24 and 26 – 28	Macalacaskop 243 KR
Phola Park	29	Macalacaskop 243 KR
Mosate	25 and 30	Macalacaskop 243 KR
Machikiri	18	Bultongfontein 239 KR and Rietfontein 240 KR
Sekgoboko	19	Rietfontein 240 KR
Ga-Mokaba	18	Rietfontein 240 KR



Plan 1: Plan of Local Setting

2.2 Data Collection

The information presented in this document is based on several data collection activities, each of which is described below.

2.2.1 Site Visits

Digby Wells undertook an initial orientation site visit in 2011 to gain a better understanding of the socio-economic context of the area. This was used to identify the settlements and communities potentially affected by the Platreef Project and determine which key stakeholders should be prioritised for the scoping phase. Another round of specialist site visits were undertaken in September 2013 to collect data on especially land uses in areas designated for infrastructure development.

2.2.2 Desktop Review

A review of available documents was undertaken to obtain information regarding the baseline socio-economic conditions in the potentially affected areas. Documents reviewed include the following:

- Integrated Development Plans (IDPs) and Spatial Development Frameworks (SDF) of the affected local and district municipalities;

- Socio-economic and demographic statistics (sourced from Statistics South Africa's 2001 and 2011 Census data, and the 2007 Community Survey);
- Previous studies and reports concerning the proposed project, which include: Agricultural survey, Skills and business survey, Burial ground and graves survey, Social and Labour Plan (SLP), and the Section 102 prospecting EMP amendment;
- Relevant international and international legislation;
- Other relevant literature that enhanced the specialists' understanding of the social factors that come into play during a project such as the one under consideration; and
- Available maps and satellite imagery.

2.2.3 Stakeholder Consultation

In 2011 Digby Wells had one-on-one and focus group meetings with key stakeholders at a local and municipal level (see Table 2). These were used to introduce Digby Wells as an independent consultant to the relevant stakeholders, to provide an overview of the Platreef Project and environmental studies and to gain a better understanding of local socio-economic dynamics.

Platreef also established exploration committees in the villages initially identified as directly affected during the prospecting phase, namely Tshamahansi, Madiba, Ga-Magongoa and Ga-Kgobudi. These committees have since been disbanded as a result of their inability to successfully execute their mandate in the affected communities. It needs to be noted that monthly meetings were held with these committees by Platreef when they were still functional. Information derived from these minutes was used to develop a better understanding of communities concerns, issues and expectations.

Table 2: Stakeholder meetings

Date	Stakeholders	Description
12 May 2011	■ Municipal Manager: Mr. S.W Kekana ■ Municipal Advisor: Dr Abbas Shaker ■ Digby Wells Environmental: Libby Redding, Nic Boersema and Kabelo Mphake. ■ Platreef: Elias Kekana	**Meeting with Municipal Manager** Introduction of Digby Wells and the environmental and social aspects of the project to the Municipal Manager.
12 May 2011	■ Chief Kekana: Kgoshi L.F Kekana ■ Chiefs Advisor/Council: Mr Jeff Kekana ■ Digby Wells: Libby Redding, Nic Boersema and Kabelo Mphake ■ Platreef: Elias Kekana	**Traditional Chief** Introduction of Digby Wells and the environmental and social aspects of the project to the headmen.
13 May 2011	■ Ga-Kgobudi: Mr M.P. Thamaga, M.P. Thamaga ■ Ga-Masenya Village: Ms N. Masenya, Mr A. Maila ■ Ga-Moshira Village: Ms E. Mametsa and Mr Lekalakala ■ Ga-Sekgoba Village: Mr F. Ledwaba, Mr E. Ledwaba ■ Ga-Madiba Village: Mr M.J. Tsoai and Mr F Modiba ■ Mokopane Maroteng Village: Mr M.S Leso ■ Masehlaneng Village: Mr J. Lekalakala ■ Ga-Mashikiri Village: Mr W. Manganyi, Mr J Mashikiri ■ Digby Wells: Libby Redding, Nic Boersema and Kabelo Mphake ■ Platreef: Ellias Kekana	**Headmen and Headwomen Meeting** The aim of this meeting was to introduce Digby Wells and the environmental and social aspects of the project to the headmen.

Date	Stakeholders	Description
26 May 2011	■ Tshamahansi and Magongoa headmen	**Mining Committee Meeting** for all Platreef mining committees ■ The aim of the meeting was to: ■ Introduce Digby Wells Environmental to the stakeholders; ■ Update on the exploration activities; ■ Allow opportunity for comment and gather issues and concerns; and ■ Initiate communication with stakeholders
18 August 2011	■ Tshamahansi Mining Committee ■ Digby Wells: Johan Hayes, Kabelo Mphake ■ Platreef: John Dombo and Elias Kekana	**Tshamahansi Mining Committee Meeting** The aim of the meeting was to: ■ Introduce Digby Wells Environmental to the stakeholders; ■ Update on the exploration activities; ■ Allow opportunity for comment and gather issues and concerns; and ■ Initiate communication with stakeholders.
19 October 2011	■ Mining Committee Chairpersons from Madiba, Tshamahansi, Mogongoa and Ga-Kgabudi ■ Digby Wells: Jimmy Mnisi, Kabelo Mphake ■ Platreef: John Dombo and Elias Kekana	**Mining Committee Chairmen** The aim of the meeting was to discuss the proposed public participation process and agree on dates and venues and a review of the presentation.

Date	Stakeholders	Description
25 October 2011	■ Tshamahansi Mining Committee ■ Digby Wells: Jimmy Mnisi, Kabelo Mphake ■ Platreef: John Dombo and Elias Kekana	**Tshamahansi Mining Committee** The aim of the meeting was to discuss the proposed public participation process and agree on dates and venues and a review of the presentation.

2.2.4 Information from other Specialist Studies

The specialist studies conducted as part of the ESIA were reviewed, as many of these studies focus on impacts that have significant, although indirect, social implications. For example, the noise impact assessment focuses more on the level of noise that will be generated as a result of mining operations and how this will change the ambient noise levels in the area, as opposed to investigating the effect this noise will have on the quality of life for the surrounding land owners and communities. Similarly, the air quality impact assessment assesses the level of air pollution that may result from the proposed project and not the implications this will have on the health and well-being of people in the vicinity of the project area. These indirect social implications are assessed in this report.

2.2.5 Information from Public Consultation Process

Information from the public consultation process, including minutes of meetings and the Comments and Response report was reviewed. This provided the social specialist with important information regarding the prevalent concerns, attitudes and perceptions relating to the proposed project.

2.3 Compilation of Baseline Socio-Economic Profile

On the basis of the information collected through the desktop review, site visits, and interviews with key informants, a socio-economic baseline profile was compiled of the study area. The profile includes information on households, communities and land uses in the vicinity of the proposed project site. This profile is compared against the backdrop of the regional and local socio-economic profile of relevant District and Local Municipalities. The baseline profile is presented in Section 5 of this report.

2.4 Identification of Impacts

A range of issues and potential social impacts of the proposed project were identified based on information obtained through the Public Participation Process (PPP), consultation that took place for the purposes of the SIA and specialist opinion. These impacts are categorised according to the project phase (construction, operation and decommissioning) in which each impact is likely to occur. Impacts are discussed in Section 6 below.

2.5 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:

Significance = Consequence x Probability of an impact occurring

where

***Consequence = Type of impact* x (*Intensity + Spatial Scale + Duration*)**

In the formula for calculating consequence:

***Type of impact* = +1** (for positive impacts) ***or* -1** (for negative impacts).

The rating options for each variable in the formula, as well as the criteria for selecting a particular option, are given in Table 3 below.

Table 3: Impact rating options

Rating	Definition	
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	
4	Long term: 6-15 years	
3	Medium term: 1-5 years	
2	Short term: Less than 1 year	
1	Immediate: Less than 1 month	

Rating	Definition
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.

After an impact had been rated on each variable in this table, its significance is calculated using the formula given above. Each impact is then categorised into one of eight categories in terms of its significance, as indicated in Table 4 below. The assessment of impacts is presented in Chapter 6.

Table 4: 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)
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)

The relationship between consequence, probability and significance ratings is graphically depicted in the figure below.

Probability \ Significance	-21	-20	-19	-18	-17	-16	-15	-14	-13	-12	-11	-10	-9	-8	-7	-6	-5	-4	-3	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
7	-147	-140	-133	-126	-119	-112	-105	-98	-91	-84	-77	-70	-63	-56	-49	-42	-35	-28	-21	21	28	35	42	49	56	63	70	77	84	91	98	105	112	119	126	133	140	147
6	-126	-120	-114	-108	-102	-96	-90	-84	-78	-72	-66	-60	-54	-48	-42	-36	-30	-24	-18	18	24	30	36	42	48	54	60	66	72	78	84	90	96	102	108	114	120	126
5	-105	-100	-95	-90	-85	-80	-75	-70	-65	-60	-55	-50	-45	-40	-35	-30	-25	-20	-15	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100	105
4	-84	-80	-76	-72	-68	-64	-60	-56	-52	-48	-44	-40	-36	-32	-28	-24	-20	-16	-12	12	16	20	24	28	32	36	40	44	48	52	56	60	64	68	72	76	80	84
3	-63	-60	-57	-54	-51	-48	-45	-42	-39	-36	-33	-30	-27	-24	-21	-18	-15	-12	-9	9	12	15	18	21	24	27	30	33	36	39	42	45	48	51	54	57	60	63
2	-42	-40	-38	-36	-34	-32	-30	-28	-26	-24	-22	-20	-18	-16	-14	-12	-10	-8	-6	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40	42
1	-21	-20	-19	-18	-17	-16	-15	-14	-13	-12	-11	-10	-9	-8	-7	-6	-5	-4	-3	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21

Consequence

Table 5: Relationship between consequence, probability and significance ratings

2.6 Assessment of Cumulative Impacts

Cumulative impacts are defined as impacts arising from the combined effects of two or more projects or actions. 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 (e.g. doubling the population influx into an area, for instance, might not just double the pressure on local infrastructure and services – it might cause them to collapse completely). Cumulative impacts to which the proposed project might contribute to are briefly discussed in Section 6.5.

2.7 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; and
- Mine plan and infrastructure layout alternatives.

These alternatives are described in greater detail in Section 3.5. 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. The results of the comparison between alternatives are presented in Section 7.

2.8 Mitigation Measures and Recommendations

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

- 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 are identified for each identified impact, the rating procedure described in Section 2.4 above 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 suggested mitigation measures are expected to be effective in reducing or ameliorating that impact.

In addition to recommending mitigation and enhancement measures, the study makes general recommendations that could aid the successful implementation of the proposed project; these are provided in Chapter 9.

2.9 Assumptions and Limitations

Although all reasonable efforts were made to provide an updated and representative picture of socio-economic impacts relevant to the study areas, this report is still subject to some assumptions and limitations:

- Due to the relatively late inclusion of the farms, Bultongfontein 239 KR and Rietfontein 240 KR, into Platreef's area of interest, socio-economic data describing these areas were excluded from the initial analysis of census data describing the site-specific study area. However, the proximity and similarity of these areas to the communities already included into the study area means that the socio-economic trends rendered from the initial analysis will likely be representative of the general socio-economic trends within the additional communities. Furthermore census data analysed for the local study area (Mogalakwena Local Municipality), includes data from the added areas.
- At the time of writing this report, certain aspects of the mine planning (e.g. detailed planning of final infrastructure layouts) had not yet been completed, and several alternatives were still being considered. This is the result of an inevitable trade-off in environmental and social assessment. On the one hand, it is advisable to conduct environmental and social assessment early in the project planning cycle so that significant negative impacts and potential fatal flaws can be identified and plans modified to avoid or reduce them. On the other hand, the very fluidity of designs at this early stage of planning that makes it possible to modify them in the light of stakeholder inputs and the outcomes of impact assessment often imposes limitations on the degree of certainty that can be attached to predictions of impacts. Such uncertainty is, however, considered to be preferable to a situation, in which substantial impacts or sensitivities in

the social or biophysical environment are only identified after the mine plans are in an advanced stage of development and can only be changed with considerable difficulty.

- Socio-economic 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.
- The social baseline component of the current report is to a large degree based on a desktop review. Fortunately a number of specialist studies have been undertaken since 2011 that have yielded social data that can be used to provide a comprehensive social baseline (see Section 2.2.2). Together with 2011 census results, these data sources compensate for the lack of data that could have been gathered from fieldwork.

3 PROJECT DESCRIPTION

This chapter provides basic information pertaining to the proposed project. It commences with a description of the project's location, activities and possible infrastructure options. This is followed by details regarding Platreef's employment requirements and policies, procurement strategies as well as a discussion of the project's plans for socio-economic development.

3.1 Project Location

The proposed project is to be situated within the Northern Limb of the Bushveld Igneous Complex, which is host to the '*Plat-reef*', a mineralised sequence rich in PGE-nickel-copper mineralization. The Platreef project hosts the southern sector of the Platreef within their prospecting right area.

The prospecting area covers approximately 107 km^2, of which much is covered by existing human settlements (see Figure 2). The extent of the prospecting area is outlined by the combined boundary of two contiguous properties: Turfspruit 241 KR and Macalacaskop 243 KR. Rietfontein 2 KS forms part of the study area. These are owned by the Republic of South Africa and held in trust by the Mokopane Traditional Authority for the people. Platreef recently showed interest in another two properties Bultongfontein 239 KR and Rietfontein 240 KR, on which they plan to construct additional operational mine infrastructure. Although there will be no application for mining rights on these properties, an application for environmental authorisation will still be triggered due to planned surface infrastructure development.

The proposed project is to be situated approximately eight kilometres north of Mokopane town (previously known as Potgietersrus) located within the Waterberg District of Limpopo Province. The Province is 123 910 km^2 in size and borders Botswana, Zimbabwe and Mozambique to the north and the Mpumalanga, Gauteng and North West Provinces to the south. The Waterberg District Municipality (DM) is comprised of six Local Municipalities (LM); Mogalakwena, Lephalale, Bela-Bela, Modimolle, Thabazimbi and Mookgopong. The project is situated in the Mogalakwena Local Municipality (MLM), which borders Aganang LM to the East, Mookgophong

LM to the South, Lephalale LM to the West and Blouberg LM to the North. The MLM covers an area of approximately 6 166 km^2.

There are three proclaimed townships and 178 villages within the MLM. The majority of the townships are located within the Mokopane/ Mahwelereng area. Villages directly surrounding the Platreef Project infrastructure include Tshamahansi, Ga-Magongoa, Ga-Kgobudi, Madiba, Masodi, Masehlaneng, Maroteng, Ga-Molekana, Sekgoboko, and Mzumbani. These villages all fall within the jurisdiction of Chief Kekana and the Mokopane Tribal Authority.

Figure 2: Houses within the study area

3.2 Project Timing

Platreef acquired a prospecting licence for both Turfspruit and Macalacaskop farms in February 1998 and subsequently entered into a joint venture with Atlatsa (formerly Anooraq Resources Corporation) over the Rietfontein farm in 2001; this joint venture agreement was updated in 2009.

Platreef was granted a five-year Prospecting Right for their properties in 2006, which allowed them to prospect until 2011; this prospecting right was extended for another 3 year period until mid-2014. As a prospecting right can only be renewed for one three-year period under the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002), and this renewal has occurred, for Platreef and Atlatsa to maintain tenure continuity over their respective licence areas, a mining right application was submitted in June 2013.

3.3 Project Activities

In 2000 Platreef commenced with exploration and stakeholder engagement activities, during this time Platreef employed the services of AMEC to assist with several aspects of project development. In 2007, Platreef commenced a deep drilling program to investigate the continuity and grade in an area targeted as having underground mining potential. Exploration drilling

confirmed good platinum group element (PGE) mineralisation; it is envisaged that drilling will continue until mid-2014 when the mineral prospecting licence expires.

Drilling activities occurred on various agricultural plots that are privately owned by community members. Due to the nature of drilling activities, access to these plots were restricted and crops were damaged in some case, to compensate for these consequences Platreef entered into compensation agreements with affected owners. Most agreements comprised of a once of payment for loss of crops, the amount being determined by the yield of each field. The Department of Rural Development in Limpopo was engaged to assist with the compensation process.

Sinking of an exploration shaft is planned to provide underground access to the reef deposit to obtain a bulk sample. The Platreef Bulk Sample Application was lodged with the DMR in September 2012, and was approved in early September 2013.

Construction and operational activities are planned after the sampling process. It is envisaged that the construction of the mine will be completed within 5 years and that it will operate 30 years. It is anticipated that construction activities will ramp up at the start of this period and slope down again towards the end. The period of peak activity will last about 1-2 years, during which the employment and procurement requirements will also peak.

Figure 3: Exploration drilling

3.4 Project Infrastructure and Alternatives

The proposed project will be a highly mechanised underground mine primarily focussed on the mining of the PGE group minerals. At steady state production, the mine will be able to produce 3 - 4 million tonnes of ore annually, which will be processed at an on-site concentrator plant, with the concentrated product being moved for final refinement into platinum group metals at refineries located either in Polokwane, Rustenburg or the Witwatersrand. Preliminary mine plans show that the following ancillary infrastructure will be constructed on site:

- In plant roads and fences;

- Decline shaft;
- Conveyor;
- Concentrator plant;
- Construction substation and ancillary power lines;
- Impoundment dam;
- Waste water conservancy tank;
- Water treatment works;
- Tailings storage facility (TSF);
- Pipelines connecting TSF with the plant site
- Potable water tank;
- Waste rock stockpile;
- Top soil storage area;
- Administrative buildings, change houses, ablution, workshops and storage;
- Diesel and lubrication storage facility;
- Equipment wash-bay and sump with oil skimmer;
- Compressor house;
- Explosive storage; and
- Crusher/s.

Figure 4: Preferred plant site

3.5 Land Uses and Project Infrastructure Options

The proposed mine layout depicts several alternatives for the location of different components of mining infrastructure. At this stage Platreef is considering two plant areas, the preferred plant site is situated within 250 m (Figure 4) of the Ga-Magongwa, Ga-Kgobudi, and Sekgoboko communities. This site also coincides with agricultural plots and grazing areas. The figure below shows that this option is connected with two possible tailings storage facility (TSF 2 and 3) options, via two possible pipelines. The first pipeline option connects to the TSF 2 and transects several agricultural plots, and runs past several residential structures and graves. The other pipeline that will connect the preferred plant to the TSF 3 option, runs past several residential structures and graves, and also transects several agricultural fields.

The second option for the mine site is located approximately 1km to the east of the N11 roadway, the area is relatively remote, with the closest village being Ga-Madiba, which is 500 m north of the site. The area demarcated for the alternative plant site does overlap with a large number of agricultural plots and as well a communal grazing area. Current mine planning does not show any pipeline connecting this plant site to any of the TSF options.

Figure 5: Alternative plant site

The mine plan illustrates three areas, which are considered for the construction of TSF. The area earmarked for TSF 1 coincides entirely with agricultural plots, and is situated within 170 m of Masodi village. At the time of writing this report the route of the pipeline connecting this TSF to either of proposed plant sites was not available.

The second TSF option is situated next to the Witvinger Nature Reserve; land uses on the proposed site are limited to a communal grazing. The third TSF alternative is located on Bultongfontein farm, and is relatively remote from any major settlements. During the investigative site visit it was established that several people lease a large part of this area to provide grazing for herds of cattle and goats. These individuals have constructed extensive cattle pens as well as housing structures on this area (Figure 6). The TSF area also coincides with dam, which provides water to herds of livestock throughout the year. Five landfill sites is currently under consideration, options 1-4 al coincide with agricultural or grazing land uses, while option 1-3 are all within 500 m of human settlements.

Figure 6: Livestock pens and residential structure located on the TSF 3 option

At the time writing this report the final layout of mine infrastructure had not yet been finalised as alternative locations were still being considered for various infrastructure components: two options for the plant site, three TSF alternatives, five landfill-site options, and pipeline routes from two of TSFs to the one plant site (see Figure 7). Socio-economic impacts might vary depending on the final location of infrastructure; this issue is addressed in Section 7.

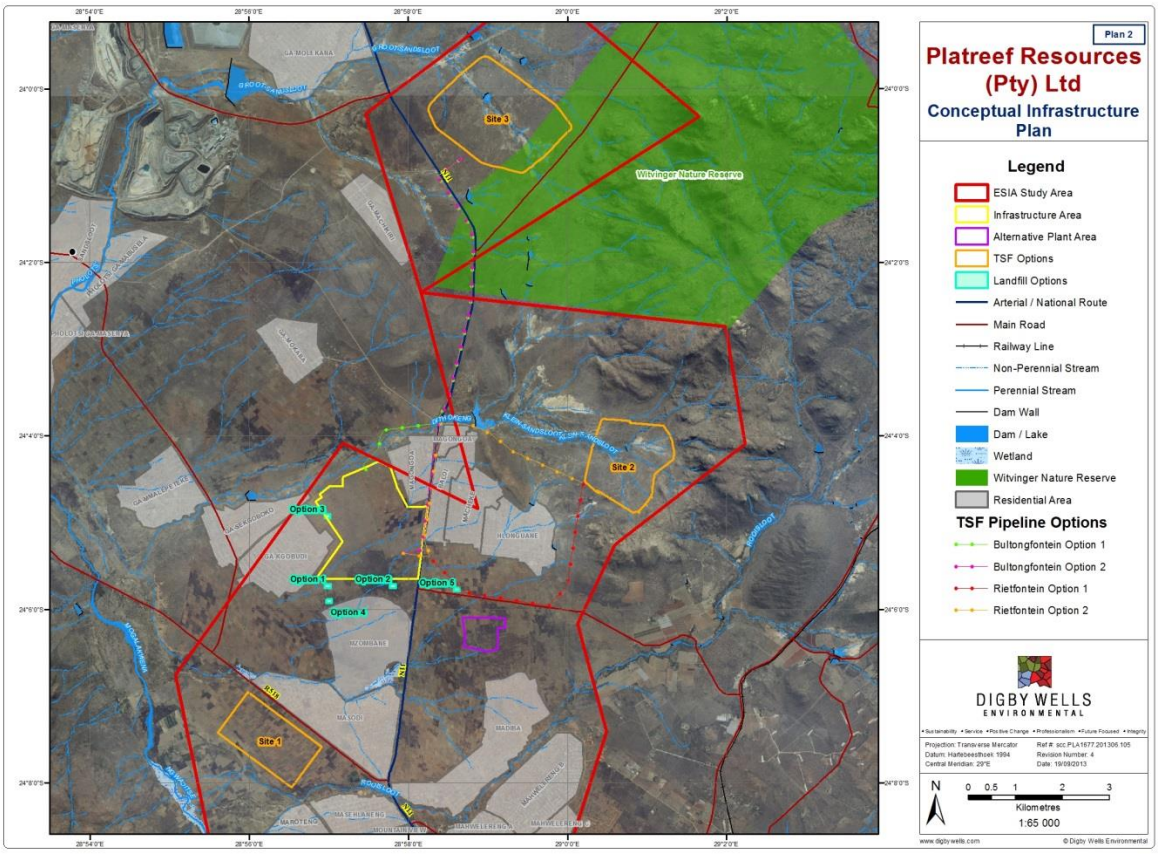


Figure 7: Plan illustrating Alternatives of plant, landfill and TSF sites

3.6 Local Employment and Procurement

This section elaborates on the employment requirements projected by the mine, as well as Platreef's recruitment and procurement policies and the implications thereof. The inclusion of this information in the project description is motivated by the fact that local job creation will likely constitute one of the most significant positive socio-economic impacts of the proposed project (see Section 6.2.1 and 6.3.1).

3.7 Recruitment and Employment Policies

Platreef's recruitment policy is based on the South African Mining Charter, which dictates that a considerable proportion (40%) of a mining operation's employees should be recruited from historically disadvantage communities and where necessary, receive appropriate skills training (DMR), 2004). It is stipulated in the mine's SLP that 100% of all un-skilled labour to be used by

contractors should be locally sourced, while at least 30% of all semi-skilled labour should be sourced from local communities, while highly skilled jobs will require that employees be recruited from areas outside the MLM; these should, however, be limited as far as possible.

Employees recruited from local historically disadvantaged communities should also represent vulnerable groups such as women and people with disabilities. It is Platreef's intention to achieve the Mining Charter's target of at least 10% women in mining (DMR, 2004). Platreef intend to take several actions towards promoting women in mining, as follows:

- Women identified as having potential will be fast tracked in their careers;
- Employees will be informed and educated to reduce negative stereotyping and preconceptions toward women;
- A policy for the employment and advancement of women in mining will be included in the Employment Equity Policies;
- The career progression plan for the mine will include a women-specific element to ensure that females with potential for progress are considered fully alongside their male counterparts and that they are not inadvertently passed over in the promotion process; and
- The mine will outline the number of positions and job descriptions that could be made available to women.

3.7.1 Employment Requirements

The employment requirements during the construction and operational phases are illustrated in Table 6 below. The table shows that construction will take approximately five years requiring a maximum of 2 400 employees. It needs to be noted that these are preliminary figures, and are subject to change as the mine works plan evolves. Table 7 details the workforce requirements for the construction phase as per the mine works program, and indicates the number and type of occupations Platreef will require during each year during construction. The size of the construction workforce will vary between 1 000 and 2 400 employees, depending on the labour intensity of construction activities (Refer to Table 7).

Table 6: Employment requirements during construction and operation

Phase	Duration	Estimated workforce
Construction	5 years	991 – 2 381
Operation	30 years	630 – 2 116

Table 7: Type and number of employees that will be required during construction

Description of contractor personnel	Pre-Production Year				
	1	2	3	4	5
Lateral Development	0	144	144	288	288
Shaft Development	810	810	810	1296	1296
Construction	144	144	144	432	720
Raise Development	0	0	24	24	24
Dry Man	3	3	3	3	3
Supervision	13	13	14	14	14
Mechanics	6	9	9	12	12
Electricians	3	6	6	6	6
Support Personnel	12	12	12	18	18
Total	**991**	**1 141**	**1 166**	**2 093**	**2 381**

Due to Platreef's policy of encouraging recruitment from historically disadvantaged communities, it is anticipated that a substantial portion of the workforce will be sourced from local labour sending areas (see Section 3.7). It is assumed that most of the locally recruited employees will have existing housing, and would not require Platreef to provide additional housing in the form of hostels or construction camps.

A proportion of the construction 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 Platreef. These employees will therefore not be permanent residents in the area, and would consequently require accommodation. Construction camps can have several negative socio-economic effects on local communities, which is why an accommodation survey was conducted to assess the possibility of alternative accommodation. The findings of the survey showed that a large proportion of external labour could be housed in various types of accommodation options in the Mokopane area, implying that construction camps can be avoided. The mine will also investigate and implement all-inclusive wage packages for some employees; these packages will include a Living-out Allowance. This will allow employees to invest in their own homes and live in permanent sustainable housing with their families.

During the operational phase of the proposed project it is expected that the mine's workforce will increase from just over 600 in 2018 to just more than 2 100 employees in 2020, when the mine will also reach its peak in production. The main labour sending area is limited to communities within a radius of 50 km of the mine entrance. Similar to the construction phase, specialised employees with scarce skills will likely be recruited from further afield. During the operational phase no construction camp will be required as the employees will be expected to stay in existing accommodation in the vicinity of Mokopane.

3.7.2 Procurement Policy

The mine has recognised that to effectively participate in the transformation of the South African economy, it has to institute preferential procurement practices across its supplier base. The mine has drafted a preferential procurement policy to maximise opportunities for Historically Disadvantaged South Africans (HDSAs) to supply goods and services to the mine. The mine recognises the fact that a number of HDSA providers would like to supply consumable goods, services and capital goods to the mine. The mine has identified the capacitating of Small Medium and Micro Enterprises (SMMEs) in the area as one of its Local Economic Development (LED) projects. With this LED project the mine aims to:

- Ensure that SMMEs obtain the necessary resources to be able to provide services, goods and capital goods to the mine by delivering training programmes for these SMMEs, through the mine's capacitating programmes;
- Encourage existing suppliers to form partnerships, joint ventures, or consortia with HDSA supplier companies where there is no HDSA company tendering to supply the required goods or services;
- Communicate with the Department of Trade and Industry to identify HDSA companies with the necessary capability wishing to operate in the minerals industry;
- Ensure that tender requirements are comprehensively communicated to HDSA companies;
- Assist aspiring HDSAs in the formulation of appropriate business plans;
- Assist HDSAs in identifying external markets, outside of the company, with a view to becoming more self-sufficient and less dependent on mining for income opportunities;

- Negotiate favourable terms of payment with HDSA and SMMEs;
- Setting and measuring targets for all procurement management on a regular basis;
- Communicate the procurement needs of the mine to the SMMEs via the Corporate Social Investment (CSI) offices within the communities;
- Provide a complete list of capital goods, consumable goods and services, which are required by the mine and that could be supplied by HDSA suppliers; and
- Establish structures to partner with other entities or with government to develop HDSA procurement capacity.

Platreef intends to allocate at least 25% of its annual expenditure in services and consumables after the first 5 years to suppliers of this status. The commitment to purchasing will also extend to create long term partnerships with suppliers so as to mentor and support the local HDSA-owned businesses. Where local HDSA suppliers are not available, an effort will first be made to create associations between local service providers and businesses to meet the mine's requirements. Where this effort is not successful, suppliers will be sought from outside the area.

3.8 LED and Skills Development Initiatives

Platreef intends to support both local economic and skills development throughout the municipality, with a specific focus on developing the communities most likely to be affected by the proposed project. A brief overview of Platreef's LED and skills development planning is provided in the remainder of this section.

3.8.1 Local Economic Development

In accordance with the MPRDA Platreef has drafted and SLP, in which its envisaged commitment to the LED of the labour sending areas are outlined. Platreef's LED planning is informed by district and local municipal IDP documentation, as well as consultation with these municipalities. In ensuring that the mine's LED plan contributes to economic development the mine intends to:

- Contribute meaningfully to the socio-economic development of their operational and labour sending areas;
- Liaise with relevant government departments, agencies and communities regarding their development programs;
- Allocate financial and human resources to facilitate the implementation of LED projects effectively;
- Keep records of schedules and funds, which will be spent on communities; and
- Ensure on-going consultation and engagement with communities.

The following table present information on the nature, progress and status of each LED project. The provincial Departments of Agriculture and Education, respectively, will still be approached with a view to establishing memorandums of understanding relating to the LED projects focussed on the agriculture and education.

Table 8: LED programmes implemented as part of Platreef's SLP

SLP LED programme title's and budget (ZAR)	Project name	Project description	Status
Special projects for 8 schools in the labour sending area (R 24 million)	Motshitshi Primary School Vegetable garden and Computer Lab in Masehlaneng Village	Vegetable Garden	In progress
		Computer Lab	Awaiting approval from Dept. of Education
	Thobela Special School Vegetable garden and Capacity building in Madiba Village	Nutrition Programme (monthly groceries)	In progress
		Yield and water quality test	Complete
		Borehole pump Installation	In progress
		Vegetable Garden	In progress
		Capacity building of educators	In progress
	Ben Hlongwane High School project in Tshamahansi	Maths and Science programme and Science Lab development	In progress
	Lesedi Community Care Centre	Infrastructure Development, Educator Capacity Building and Nutrition programme	In progress
	Gobela High School	School development program	In progress
	Alfred B Makapane High School	School development program	In progress
	Masodi High School	School development program	In progress
	Legae Lanana Day Care Centre – Early learning centre	Capacity building, furniture and infrastructure development	In progress
Farming Enterprise Project (R 25 million)	Uitloop Farm project	Establishment of a commercially viable farm project	Complete

SLP LED programme title's and budget (ZAR)	Project name	Project description	Status
Establish a business hub/procurement centre with SMME capacity building programmes (R15million)	Skills and business survey	Update on initial proposal submitted by Digby Wells	In progress
		Roll out approved plan to All CLO offices and other central venues	In progress
Erecting of Community Centres with Platreef recruitment office, training centres and business hub/procurement office (R16million)	Building of 4 community centres	Building of 4 community centres to serve as a "one stop shop" for all Government key essential services i.e. Pay points for grants (SASSA), Post office, SAPS satellite office and Platreef CLO's	To be announced
Projects to be identified by Local communities (R10million)	Ad-hoc Donations / Sponsorship Request	Donations / Sponsorship for deserving organisations and strategic alignment to Platreef's Licence to operate	In progress
Projects identified by Local Municipality and capacity building programmes for officials (R10million)	Implementation of any project identified by the municipality though their IDP for the benefit of the community	The projects to implemented are those that are priority on the Municipality's IDP i.e. infrastructure etc.	To be announced
Non SLP projects	Mzumbane Community	Fencing and grading of Sports ground	In progress
		Vegetable garden project	

3.8.2 Community and Employee Skills Development

Establishing a pool of skilled persons in the local community will offer several benefits as it will a.) facilitate recruitment to fill vacancies that arise due to the natural attrition of the mine employees; b.) help to ease local recruitment efforts by surrounding mines; and c.) assist in building goodwill and positive community relations. Platreef's SLP outlines several skills development programmes for employees and communities (see Table 9), the objectives of these programmes are to:

- Create a talent pool for the mine within the first five years of the SLP;

- Equip people with portable skills to become self-employed or employed in sectors other than mining; and
- Equip people with the specific skills required for the highly mechanised mining methodology the mine will use.

The skills development programmes planned for communities and employees are listed in Table 9. Platreef will invest heavily into the skills development of their employees, with the primary focus being to reskill and retrain these individuals**.** The Skills Development Programmes for Platreef employees and communities will be designed in January 2014 and will be based on the results of a Skills Survey (conducted by Digby Wells in 2012) and on Individual Development Plans of employees (which are currently being developed). Skills development plans will be implemented in 2014, and will continue until 2018 for communities and up to 2019 for employees. The mine will comply with the statutory contributions to the Sector Education and Training Authority (SETA).

Table 9: Skills development programmes for communities and employees

Employees		**Communities**	
Program	**Budget**	**Program**	**Budget**
ABET Training	R 150 000	ABET training	R 3 600 000
Core skills training – 'hard-to-fill' vacancies	Not available	Learnerships – 'hard-to-fill' vacancies	R 3 402 000
Core Non-Technical Skills (portable skills)	R 1 530 000	Portable skills (other than mining skills)	R 4 830 000
Core Technical Skills training programmes	R 2 022 000	Core Technical Skills training Programmes	R 3 275 000
Bursary programmes	R 2 500 000	Bursary/internship programmes	R 3 500 000
Mentorship programmes	R 150 000	Scholarships	R 3 900 000
		School support programmes	R 1 250 000
Total	**R 6 352 000**	**Total**	**R 23 757 000**

Platreef will launch Adult Basic Education Training (ABET) training programmes, which will focus on those community members who have no schooling and those whose highest qualification is grade 7 (ABET Level 3). ABET training for the community will be undertaken by an SETA accredited training provider in order for the learners to qualify with a recognised, portable qualification. The training will be conducted in the training facilities to be provided by the mine within the four community centres.

Platreef will also make available several learnership opportunities; however, the process of learnerships is heavily dependent on cooperation between the Mining Qualifications Authority (MQA), the mine and an institution of further education and training. The mine will become recognised by the MQA within the first year of this SLP and will utilise the grant system of recovering monies for learnership costs. Learners will be required to meet the needs of the mine with regards to specific disciplines. Learnerships which are not directly dictated by the mine skills requirements will be derived from the skills requirements of developing small business, the mine's local economic development projects and local industry in the Mokopane area. Learnerships, which are identified through these means, present an opportunity for the mine to sponsor local training centres, which are already engaged in the learnership education and administration with SETA.

Platreef also intends to offer several *bursaries* for preferably students from the local area. Platreef will follow a policy of scanning universities and colleges of Higher Education and training for learners/students who are willing to enter a period of employment. Students receiving bursaries and studying at college or university (Higher Education and Training) will be expected to spend the same period of time the bursary was paid; as an employee with full benefits at the mine. Students who receive bursaries will receive their experiential training through the internship program described below.

Concurrently with its bursary program, the mine will provide *scholarships*[1] at High School level. The mine will compile a list of the high schools and the established colleges in the community and together with the Department of Education prioritise those who have gained consistently good results in the production and level of Grade 12 or N3 pass rates. Platreef will also provide support for children in the 10 to 12 year old age group. Support for scholars at this level could be a sound investment in long term labour market skills

Portable skills training will also be made available through the mine training centre or, where facilities are unavailable at the mine, will be sponsored at accredited local training colleges. Skills training of this nature will be implemented as part of the mine's commitment to the transfer of skills and capacity building of the mine communities throughout the life of the mine but especially when employees may be facing the possibility of losing their employment due to downscaling and closure.

Apart from the aforementioned skills development programs, Platreef intends to improve educational infrastructure. Schools in the community will be identified and graded according to their needs. This grading will include informal schooling in the remote areas from the mine; such instances of informal schooling will be reported to the mine management by the community forum, which is being set up at the time of writing of this SLP. It is proposed that, prior to any expenditure to support such schools, careful on-the-ground scanning is undertaken by mine staff and consultation undertaken with the Limpopo Department of Education, the community forum and the local municipality. Where possible, agreements will be made such that, for every

[1] The mine considers a scholarship as a payment to a student without an indentured commitment. This payment will be designed to encourage students at a relatively junior level to enter into fields, which will increase the competencies found in the labour market. Future recruitment or entry into further education and training could occur, which could be supported by a bursary provided by the mine.

Rand the mine spends on a school, the Department of Education makes an equal contribution. Collaborative efforts will be made with other mines in the area to combine funding for school support; in order to gain impact on school development.

3.9 Stakeholder and Community Engagement

Platreef has taken several steps to establish and foster positive relations with local communities affected by and residing in the vicinity of the Project. It has done so through the following actions:

- In 2000 Platreef commenced stakeholder engagement activities. As part of the engagement strategy Platreef set up exploration mining committees in the villages closest to, and therefore directly affected by, the exploration activities these committees have since been disbanded.
- Extensive consultations have been undertaken with communities within the broader Mokopane area.
- Directly affected communities were also consulted on various issues relating to the prospecting activities i.e. drilling activities, agricultural survey of the fields within the prospecting area, bulk sampling, and the skills and business survey.
- The project has also established a presence in several communities in the vicinity of the Project through its Community Liaison Offices (CLOs), which is responsible for sharing company plans and communicate community initiatives. Currently there are CLOs located in Maselaneng, Madiba, Mzumbani, and Magongoa communities; CLOs are also planned for some of other affected villages.

4 INSTITUTIONAL AND LEGISLATIVE FRAMEWORK

This chapter is dedicated to the institutional and legislative framework relevant to the assessment and management of socio-economic impacts related to the proposed project. It commences with a discussion of international best practice regarding social sustainability, including the equator principles, IFC performance standards and basic human rights. This is followed by an overview of national legislation and policies that has bearing on the assessment and management of socio-economic impacts that are usually associated with mining projects. The chapter concludes by providing a summary of the district and local development plans, as well as Platreef's planned economic and skills development initiatives.

4.1 International Best Practice

The most widely recognised and frequently applied set best practice standards pertaining to the assessment and management of social and environmental impacts are the Performance Standards (PS) on Social and Environmental Sustainability, developed by the IFC in 2006. The IFC's Performance Standards form part of the Equator Principles. These standards will be valuable guidelines if the project moves past the feasibility phase onto the impact assessment phase. The principles and performance standards relevant to the proposed project are discussed throughout this section (IFC, 2006).

4.1.1 Equator Principles

The Equator Principles (EP) are a voluntary set of standards, developed by private banks, for determining, assessing and managing social and environmental risk in project financing. The Equator Principles are considered the recognised standards for banks and investors on how to assess the environmental and social risk of major development projects around the world and to ensure projects are developed in a manner that is socially responsible and reflect sound environmental management practices. The aim is to avoid negative social and environmental impacts where possible, and if these impacts are unavoidable, they should be reduced, mitigated and/or compensated for appropriately.

The EPs apply to all new project financings globally with total project capital costs of US$10 million or more, and across all industry sectors. In addition, while the Principles are not intended to be applied retroactively, any project considering financing from Equator Principle Financial Institutions will need to comply with these principles. Table 10 lists the Equator Principles that were considered for the SIA.

Table 10: Equator Principles that have bearing on the current project

Principle	Key Components	Consideration in Social Scoping
Principle 1: Review and Categorisation	The Equator Principles Funding Institutions (EPFI) will categorise a project baseline on the magnitude of its potential impacts and risks in accordance with the environmental and social screening criteria of IFC.	Digby Wells has categorised the Platreef Project in accordance with IFC, refer to Section 4.1.3.
Principle 2: Social and Environmental Assessment	For Category A and B projects the proponent must conduct a Social and Environmental Assessment to address relevant social and environmental impacts and risk. The Assessment will include relevant mitigation and management measures.	An ESIA (including a SIA) will be undertaken for the Platreef Project. This will include as assessment of risks and impacts and outline proposed mitigation and management measures. This Social Scoping Study is the first step to development of a full SIA.
Principle 3: Applicable Social and Environmental Standards	For projects located in non-OECD (Organisation for Economic Co-operation and Development countries), the Assessment will refer to the applicable IFC Performance Standards and the applicable Industry Specific Environment, health and safety (EHS) Guidelines. The assessment will establish the project's overall compliance with, or justified deviation from, the respective IFC Performance Standards and EHS Guidelines. The assessment process should address compliance with relevant host country laws, regulations and permits that pertain to social and environmental matters.	The ESIA, and SIA, will comply with IFC Performance Standards and South African Laws and Acts.
Principle 4: Action Plan and Management System	For all Category A and Category B projects located in non-OECD countries, the borrower will prepare an Action Plan, which addresses the relevant findings, and draws on the conclusions of the Assessment. The proponent will build on, maintain or establish a Social and Environmental Management System that addresses the management of these impacts, risks, and corrective actions required to comply with applicable host country social and environmental laws and regulations, and requirements of the applicable IFC Performance Standards and EHS Guidelines, as defined in the AP.	An Action Plan or Management Plan will be developed for the Platreef ESIA.

Principle	Key Components	Consideration in Social Scoping
Principle 5: Consultation and Disclosure	For all Category A and, as appropriate, Category B projects located in non-OECD countries, proponent or third party expert has consulted with project affected communities in a structured and culturally appropriate manner. For projects with significant adverse impacts on affected communities, the process will ensure their free, prior and informed consultation and facilitate their informed participation as a means to establish, to the satisfaction of the EPFI, whether a project has adequately incorporated affected communities' concerns. In order to accomplish this, the Assessment documentation and AP, or non-technical summaries thereof, will be made available to the public by the proponent for a reasonable minimum period in the relevant local language and in a culturally appropriate manner. The proponent will take account of and document the process and results of the consultation, including any actions agreed resulting from the consultation. For projects with adverse social or environmental impacts, disclosure should occur early in the Assessment process and in any event before the project construction commences, and on an on-going basis.	A full public participation process has been initiated during the prospecting phase of the Platreef Project. This will include structured consultation with project affected communities; it will document any issues or grievances, and incorporate these into the ESIA report. The ESIA will be made publically available to the public. Local translations will be available for the public participation and information distributed to the public.
Principle 6: Grievance Mechanism	For all Category A and, as appropriate, Category B projects located in non-OECD countries, to ensure that consultation, disclosure and community engagement continues throughout construction and operation of the project, the borrower will, establish a grievance mechanism as part of the management system. The proponent will inform the affected communities about the mechanism in the course of its community engagement process and ensure that the mechanism addresses concerns promptly and transparently, in a culturally appropriate manner, and is readily accessible to all segments of the affected communities.	A grievance mechanism will be put in place for the Platreef Project as early as possible. The public will be made aware of this mechanism through consultation. The grievance mechanism will be readily available, appropriate and transparent.
Principle 7: Independent Review	For all Category A projects and, as appropriate, for Category B projects, an independent social or environmental expert not directly associated with the borrower will review the Assessment, AP and consultation process documentation in order to assist EPFI's due diligence, and assess Equator Principles compliance.	An independent review will be undertaken on the ESIA and Assessment process.

Principle	Key Components	Consideration in Social Scoping
Principle 8: Covenants	The following covenants apply: a) comply with all relevant host country social and environmental laws, regulations and permits in all material respects.	The ESIA will: Comply with relevant South African laws, regulations, permits and acts.
Source: The Equator Principles, 2006 (http://www.equator-principles.com)		

4.1.2 IFC Performance Standards

The IFC's Performance Standards form part of the Equator Principles and aim to manage social and environmental risks (and impacts) in order to enhance development opportunities in private sector financing in member countries eligible for financing (IFC, 2006 as amended in 2010). The emphasis is on the early identification of potential impacts associated with the project activities during the life cycle of the project, namely construction, operation, decommissioning and closure activities.

IFC Performance Standards define project proponents' roles and responsibilities for managing project activities and associated infrastructure and the requirements for receiving and retaining IFC support. The performance standards listed in the table below are applicable to the SIA while the performance standards that have been excluded pertain to the EIA and are discussed in more detail in the EIA report. Table 11 lists the IFC Performance Standards that were considered for the Interim Social Scoping Study.

Table 11: Summary of IFC Performance Standards considered for the Interim Social Scoping Report

Standard	Key Components	Consideration in Impact Assessment
PS 1: Social and Environmental Assessment and Management Systems	Pertains to projects with social and environmental risks and impacts that ought to be assessed and managed in the early stages of project development and be on-going throughout the life of the project. This standard also necessitates the participation of Stakeholders in the assessment process.	A Social Impact Assessment (SIA) and Social Management Plan (SMP) will form part of the Social and Environmental Management System.
PS 2: Labour and Working Conditions	Recognises that economic growth through employment creation and income generation should be balanced with protection for basic rights of workers. A constructive worker-management relationship, fair treatment, within a safe and healthy working environment has the potential to enhance efficiency and productivity.	In accordance with the requirements of the MPRDA, a Social and Labour Plan was developed for the Platreef Project and submitted to the Department of Mineral Resources as part of the Platreef Project Mineral Rights Application.
PS 4: Community Health, Safety & Security	Recognises that project activities, equipment and infrastructure bring benefits to communities including employment, services and opportunities for economic development. However, the project can also increase the potential for community exposure to risks from development. Where project activities pose risks of adverse impacts on the health and safety of affected communities the developer is required to make available relevant information (including the details of an Action Plan), in an appropriate form, to affected parties and government authorities so that they can fully understand the nature and extent of the risks.	A Health Impact Assessment was undertaken as a specialist study for the ESIA.

Standard	Key Components	Consideration in Impact Assessment
PS 5: **Land Acquisition and Involuntary Resettlement**	Performance Standard 5 recognises that involuntary resettlement occurs as a result of projects and refers to both physical and economic displacement as a result of project related land use. Resettlement is considered involuntary when affected individuals or communities do not have the right to refuse land acquisition that result in their displacement. Should resettlement be required a resettlement action plan (RAP) will be undertaken that includes undertaking a census of the affected community, developing a grievance mechanism and providing compensation to affected parties at the full replacement value etc.	It is likely that some economic displacement may occur as a result of the Platreef Project. This possible impact is addressed in Sections 6.2.6 and 8.5.
PS 7: **Indigenous Peoples**	The standard defines indigenous people as "social groups with identities that are distinct from dominant groups in national societies, are often among the most marginalised and vulnerable segments of the population. Their economic, social and legal status often limits their capacity to defend their interests in, and rights to, lands and natural and cultural resources, and may restrict their ability to participate in and benefit from development."	Not applicable: no indigenous people were identified within the study area during the SIA.
PS 8: **Cultural Heritage**	Recognises the importance of cultural heritage for current and future generations and is consistent with the convention concerning the protection of the world's cultural and natural heritage. Where sites of cultural heritage are potentially impacted by the project the developer will consult with local communities as well as relevant national authorities responsible for the maintenance of such sites.	An Archaeological baseline study forms part of the environmental scoping report. A full Archaeological Impact Assessment (AIA) will be undertaken as part of the EIA.

4.1.3 Project Classification

The IFC classifies projects into one of four categories, depending on the type, location, sensitivity, and scale of the project; as well as the nature and magnitude of its potential impacts (IFC, 2006):

- **Category A**: A proposed project will fall into this category if it is likely to have significant adverse environmental impacts that are sensitive, diverse, or unprecedented. These impacts may affect an area broader than the sites or facilities subject to physical works. Projects involving resettlement usually fall in this category.
- **Category B**: A proposed project is classified is this if it's potential adverse environmental impacts on human populations or environmentally important areas—including wetlands, forests, grasslands, and other natural habitats—are less adverse than those of Category A projects. These impacts are site-specific; few if any of them are irreversible; and in most cases mitigation measures can be designed more readily than for Category A projects. The Pollution Prevention and Abatement Handbook (PPAH; World Bank 1998) treat the expansion of existing operations as a category B project.
- **Category C**: These projects are likely to have minimal or no adverse environmental impacts.
- **Category FI**: A proposed project is classified as Category FI if it involves investment of IFC funds through a financial intermediary, in sub-projects that may result in adverse environmental impacts.

At this stage of the Platreef Project, with the current information available, Digby Wells has determined that there is likely to be a range of positive and negative social impacts (including potential economic and physical resettlement). The Platreef Project is therefore classified in **Category A** according to the IFC. The significance of these impacts will be determined during the feasibility stage of the project during the SIA.

4.1.4 Basic Human Rights

The protection of basic human rights is first and foremost the responsibility of the state. However, in terms of international best practice, private sector companies are increasingly required to uphold and promote these basic rights. Box 1 outlines the UNICEF definition of human rights.

Box 1: Human Rights

"Human rights are those rights, which are essential to live as human beings – basic standards without which people cannot survive and develop in dignity. They are inherent to the human person, inalienable and universal."

Source: UNICEF, 2011

The UN's '*Protect, Respect and Remedy Framework for Business and Human Rights'* (2010) underlines the corporate responsibility to protect human rights, address adverse impacts and provide greater access to remedies. The following key aspects of the UN Framework for Business and Human Rights apply to projects:

- *Respecting rights*: it is the responsibility a company to respect human rights. This is often defined by social expectations and in part is a company's 'social licence to operate'. A company cannot compensate for human rights harm by performing good deeds elsewhere and "doing no harm" may require positive steps such as policies, training and managing impacts.
- *Due diligence*: This concept describes the steps a company must take to become aware of, prevent and address adverse human rights impacts. At a minimum a company should look at international bill of human rights and core conventions of the International Labour Organisation (ILO). Companies should consider three sets of factors, namely:
  - The country contexts, to highlight any specific human rights challenges they may pose.
  - What human rights impacts the project activities may have within that context.
  - Whether they might contribute to abuse through the relationships connected to their activities, such as with business partners, suppliers, State agencies, and other non-State actors. How far or how deep this process must go will depend on circumstances.
- *Policies*: Companies need to adopt a human rights policy.
- *Impact assessments*: Companies must take proactive steps to understand how existing and proposed activities may affect human rights.
- *Integration*: The integration of human rights policies throughout a company is essential as is leadership from the top to embed respect for human rights throughout a company, as is training to ensure consistency, as well as capacity to respond appropriately when unforeseen situations arise.
- *Tracking performance*: Monitoring and auditing processes permit a company to track on-going developments.
- *Sphere of influence*: The sphere of influence conflates two very different meanings of influence: one is impact, where the company's activities or relationships are causing human rights harm; the other is whatever leverage a company may have over actors that are causing harm. The first falls squarely within the responsibility to respect; the second may only do so in particular circumstances.
- *Complicity*: The corporate responsibility to respect human rights includes avoiding complicity, which refers to indirect involvement by companies in human rights abuses - where the actual harm is committed by another party, including governments and non-State actors. Due diligence can help a company avoid complicity.

4.2 South African Legislative Requirements

The two central South African acts for mining development projects are the National Environmental Management Act (NEMA), 1998 (Act No. 107 of 1998) and the Mineral and Petroleum Resources Development Act (MPRDA), 2002 (Act No. 28 of 2002). An overview of these, together with other relevant policies and pieces of legislation, is given in Table 12. These acts do not stipulate how or to what extent a social study should be undertaken; however, the legislation does identify the need for a holistic assessment of projects incorporating both the environmental and social aspects. In addition to the NEMA and MPRDA there are a number of South Africa acts and regulations, which are important when considering the Platreef Project. These are identified and discussed in Table 12.

Table 12: South African legislation and policies

Act	Aim of Act	Relevance to Platreef Project
The Constitution of South Africa	The Constitution outlines the objectives and development duties of municipalities. As well as the legal rights of all South Africans. The two provisions in the Constitution that are of particular relevance are Sections 25 and 26. Section 25 provides – "(1) No one may be deprived of property except in terms of law of general application, and no law may permit arbitrary deprivation of property. (2) Property may be expropriated only in terms of general application – (a) for a public purpose or in the public interest; and (b) subject to compensation, the amount of which and the time and manner of payment of which have either been agreed by those affected or decided or approved by a court (6) a person or community whose tenure of land is legally insecure as a result of past racially discriminatory laws or practices is entitled, to the extent provided by an act of Parliament, either to tenure which is legally secure or to comparable redress" Section 26 provides – (1) Everyone has the right to have access to adequate housing. (3) No one may be evicted from their home, or have their home demolished, without an order of court made after considering all the circumstances. No legislation may permit arbitrary evictions."	It is important to understand the rights of South Africans.

Act	Aim of Act	Relevance to Platreef Project
Municipal Structures Act, 1998 (Act No. 117 of 1998).	To provide for the establishment of municipalities in accordance with the requirements relating to categories and types of municipality; ■ to establish criteria for determining the category of municipality to be established in an area; ■ to define the types of municipality that may be established within each category; ■ to provide for an appropriate division of functions and powers between categories of municipality; ■ to regulate the internal systems, structures and office-bearers of municipalities; ■ to provide for appropriate electoral systems; and to provide for matters in connection therewith.	Understanding the political and social context, in which the Platreef Project will operate
White Paper on Local Government (1998)	The White Paper establishes the basis for a new developmental local government system, which is committed to working with citizens, groups and communities to create sustainable human settlements, which provide for a decent quality of life and meet the social, economic and material needs of communities in a holistic fashion.	
Traditional Leadership and Governance Framework Amendment, 2003 (Act No. 41 of 2003)	This act provides for the recognition and establishment of traditional communities and councils; as well as to provide a framework for leadership and the roles and responsibilities of traditional leadership.	The Platreef Project is located on land owned by the Republic of South Africa within the Jurisdiction of Chief Kekana's traditional leadership structures. It is therefore important to understand and work within the existing traditional leadership structures.

Act	Aim of Act	Relevance to Platreef Project
Council of Traditional Leaders Act, 1997	To provide for the establishment of a Council of Traditional Leaders and functions of the Council.	
Mineral and Petroleum Development Act 2002 (MPRDA) (Act No. 28 of 2002)	'To make provision for equitable access to and sustainable development of nation's mineral and petroleum resources; and to provide for matters connected therewith."	The MPRDA states that "any mining operation must be conducted in accordance with generally accepted principles of sustainable development by integrating social, economic and environmental factors into planning and implementation". The MPRDA also identifies the timeframes and manner, in which the public should be consulted (refer to the PPP report, 2009). The MPRDA states that mining or prospecting must be conducted in accordance with general accepted principles of sustainable development by integrating social, economic and environmental factors into the planning and implementation of prospecting and mining projects. The MPRDA also identifies the need for the development of a social and labour plan to be submitted with the mineral rights application.

Act	Aim of Act	Relevance to Platreef Project
National Environmental Management Act, 1998 (NEMA) (Act No. 107 of 1998)	To provide for co-operative environmental governance by establishing principles for decision-making on matters affecting the environment, institutions that will promote co-operative governance and procedures for co-ordinating environmental functions exercised by organs of state; to provide for certain aspects of the administration and enforcement of other environmental management laws; and to provide for matters connected therewith.	NEMA states that sustainable development requires the integration of social, economic and environmental factors in the planning, implementation and evaluation of decisions to ensure that development serves present and future generations. NEMA also sets out the process for public participation.
South African Mining Charter	Focus on sustainable transformation of the mining industry. Mining Charter seeks to achieve the following objectives: (a) To promote equitable access to the nation's mineral resources to all the people of South Africa; (b) To substantially and meaningfully expand opportunities for HDSA to enter the mining and minerals industry and to benefit from the exploitation of the nation's mineral resources; (c) To utilise and expand the existing skills base for the empowerment of HDSA and to serve the community; (d) To promote employment and advance the social and economic welfare of mine communities and major labour sending areas; (e) To promote beneficiation of South Africa's mineral commodities; and (f) Promote sustainable development and growth of the mining industry.	Social management and mitigation measures, to be developed as part of the SIA, will be aligned to the Mining Charter.
Restitution of Land Rights Act, 1994 (Act No. 22 of 1994)	To provide 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.	Understand the context in which land restitution occurs in South Africa. As there are land claims on the Turfspruit, Rietfontein and Bultongfontein farms, this process may have an impact on the project, refer to Section 8.6.

Act	Aim of Act	Relevance to Platreef Project
National Spatial Development Perspective (NSDP)	In South Africa spatial development is guided by the National Spatial Development Perspective (NSDP). The Waterberg DM and Mogalakwena LM spatial development frameworks are nested within the NSDP's principles. The NSDP proposes that several principles should be used as a guide by government when making decisions on infrastructure investment and development spending. In short these principles state that spatial development should, where appropriate, accommodate and promote private economic ventures, which can aid sustainable economic growth, relieve poverty, increase social investment, and improve service delivery.	Project should take municipal-level spatial planning into account where possible

There is no legislation in South Africa specific to social impact assessments. There is however legislation, in the form of the National Management Act, 1998 (NEMA) (Act No. 107 of 1998) detailing the type, extent and timeframes for public participation or stakeholder engagement during the EIA phase of a project. Similarly NEMA states that social aspects of projects must be considered at the EIA phase (outlined below). There is also a number of other important South African legislation which informs the social content in which SIA's are compiled and which are outlined below.

- ***National Environmental Management Act, 1998 (Act. No. 107 of 1998):*** states that sustainable development requires the integration of social, economic and environmental factors in the planning, implementation and evaluation of decisions to ensure that development serves present and future generations. NEMA also sets out the process for public participation.
- ***The Constitution:*** outlines the objectives and development duties of municipalities (S152 and S153). Section 155 further outlines categories of municipalities.
- ***White Paper on Local Government (1998):*** establishes the basis for a new developmental local government system, which is committed to working with citizens, groups and communities to create sustainable human settlements, which provide for a decent quality of life and meet the social, economic and material needs of communities in a holistic fashion.
- ***Municipal Systems Act, 2000 (Act No. 32 of 2000):*** amongst other things, provides for the core principles, mechanisms and processes that are necessary to enable municipalities to move progressively towards the social and economic upliftment of local communities, and ensure universal access to essential services that are affordable to all.
- The ***Extension of Security of Tenure Act, 1997 (ESTA)*** **(Act. No. 62 of 1997):** 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 Department of Mineral Resources (DMR) Consultation Guidelines:*** compiled for use by applicants for prospecting and mining rights. Gives a broad and general definition of what constitutes consultation. Defines consultation as "a two way communication process between the applicant and the community or interested and affected party wherein the former is seeking, listening to, and considering the latter's response, which allows openness in the decision making process". Provides that "interested and affected parties" include, but are not limited to: host communities, landowners, traditional authority, land claimants; lawful occupiers, the Department of Land Affairs, any other person (including on adjacent and non-adjacent properties) whose socio-economic conditions may be directly affected by proposed prospecting or mining operations; the Local Municipality; and the relevant Government Departments, agencies and institutions responsible for the various aspects of the environment and for infrastructure which may be affected by the proposed project (Sibisi & Tucker, 2012).

5 SOCIAL BASELINE

The social baseline discussed below has been developed from secondary information at a provincial, district, municipal and ward level. Where possible this information has been supplemented by information gathered during stakeholder consultations. The baseline information provides an overview of the relevant socio-economic indicators of the study area.

5.1 Administrative Context

The South African administrative and authoritative branches are comprised of different organisational levels and various government and traditional structures.

The Republic of South Africa has a democratically elected government and is divided into nine provinces namely, Gauteng, Limpopo, Mpumalanga, North West, Western Cape, Kwa-Zulu Natal, Eastern Cape, Northern Cape and Free State. These provinces are divided into municipalities, of which there are three categories namely metropolitan, district and local municipalities. Metropolitan municipalities are for the six largest South African metropolitan centres whilst the remaining areas of South Africa are divided into district municipalities (DM), then LM, which are again subdivided into municipal wards.

Section 88, of the Municipal Structures Act, 1998 (Act No. 117 of 1998), states that district 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. Waterberg DM is responsible for coordinating development and service delivery within the district (Municipal Structures Act. (Act No. 117 of 1998) Section 83). The local municipality is responsible for the delivery of basic municipal services and facilities. In this they receive assistance from, amongst others, provincial and national departments (MLM, 2012; WDM, 2012).

As discussed in Section 3.1, the proposed project is located within the Waterberg District, in the Mogalakwena LM. More specifically the project area coincides with 13 (Ward 13 and 18-31) of the 32 local municipal wards. Mogalakwena has an executive mayor, proportionally elected councillors and ward councillors who are responsible for representing the needs of the people in the respective wards. Each ward also has a ward committee, which are voluntary community based structures responsible for representing the interest of the communities to the local municipal council. The communities, farms portions and municipal wards, which coincide with Platreef's prospecting area, were listed earlier in Section 2.1.

5.2 Land Claims and Ownership

This section briefly discusses the aspects related to land ownership, and land claims that have bearing on the proposed project.

5.2.1 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 (2011/2012) 41% of land within the municipal area is subjected to land claims, which is restricting it terms of spatial development (MLM, 2011). A land claims enquiry on the farms within the Platreef prospecting area and area of interest noted that there were claims on Turfspruit, Rietfontein and Bultongfontein as listed in Table 13 below. Claims for these properties are still pending on behalf of the Mokopane Trust and Mamahsela community (Matthews, 2012; MLM, 2012). These are still in the process of being validated by the land commissioner (Matthews, 2012; MLM, 2012). At the time of the enquiry the land claims had not been gazetted and the status of the claim was '*research'* therefore the claim is still under investigation.

Table 13: Existing Land Claims

Farm	Claimant	KRP's	Status
Turfspruit 241 KR	Mokopane Trust	11524	Research
Rietfontein 02 KS	Mamahsela community	10046998	Research
Bultongfontein 239 KS	Mamahsela community	10046998	
Source: Office of the Regional Land Claims Commissioner: Limpopo, 14/04/2011; Matthews, 2012; MLM, 2012			

5.2.2 Land Ownership

According to the IDP (2012/2013) the Mogalakwena LM owns a substantial amount of land within the municipal area. The majority of the study area is owned by the Government of the Republic of South Africa, but is identified as Indigenous/traditional land. This means that the Traditional Authority 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 PTO by either the headman or the chief. It needs to be noted that several factions within the community do not recognise the TA and/or the local chiefs. The implication of this is that any land agreement between the project proponent and the traditional land custodian regarding land use, might be disputed.

An informal settlement located on land between Masodi and Tshamahansi was observed during a previous site visit; this settlement was referred to as Mzumbani. Chief Kekana and

many of the headmen interviewed noted that these occupiers are 'illegal' as the people occupying the land had not been given permission by either the headmen or by Chief Kekana and as such do not have Permission to Occupy (PTO) the land. The Mokopane TA is currently in legal proceedings to stop people moving onto this land.

The south-western section of the prospecting area overlaps with Mahwereleng (formalised township), which is a peri-urban area. Property and land ownership within this town, is not dictated under the Mokopane TA, but is personal ownership. Details regarding tenure status within Mahwereleng and the rest of the site-specific study area are provided in Section 5.8.5.

Land uses within the site-specific study area include residential, agricultural and grazing uses, while land that coincides with the project footprint is mostly used for agricultural and grazing and very limited residential use. Land uses within the project footprint are further unpacked in Sections 5.4.3 and 7.2.

5.3 Population and Demographics

This section describes the general demographic and socio-economic characteristics of the population residing within the study area.

5.3.1 Population

In 2011 the provincial population exceeded 5.5 million, of which almost 680 000 were located in Waterberg District and 308 000 in Mogalakwena LM. The site-specific study area more than a third of the municipal population (see Table 14) (Statistics South Africa, 2013). These figures are not static, and will in future change depending on the natural population growth as well as migration into or out of the province.

The annual population growth rate for the Municipality area was 1.1% in 2001, this rate is similar to the average provincial population growth rate for the same period. More recent estimates show that the average population growth rate has dropped to 0.61% by the 2007 and to 0.31% according to estimates based on 2011 data (Statistics South Africa/StatsSA, 2001; StatsSA, 2008; StatsSA, 2013). Recent mining developments within the municipality might result in additional population influx, while HIV/AIDS might have a negative effect on the municipal population.

Population density indicates the potential pressure that human occupation might exert on natural resources and municipal service delivery. The national average population density is 42.5 people per square kilometre (km^2); the provincial density is consistent with this trend, while the Waterberg District has a significantly lower density (15.2). The population density within MLM is almost 50 people per km^2 (see Table 14) this confirms that a large proportion of district population is concentrated within the urban centres and townships of the municipality (Statistics South Africa, 2011). It is expected that the population density in the site-specific study area will exceed the municipal average, seeing as this area includes several townships, informal settlements and low-cost housing areas (these areas are usually associated with a relatively high population density) (MLM, 2012).

Estimates derived from 2008 community survey show that the average household within Mogalakwena has 4.4 members. This average figure conceals a considerable degree of inter-household diversity, however; some households may have as many as 10 or more members (MLM, 2012; StatsSA, 2008). The 2011 Census data shows that, since 2007 the average household size in both the Province and LM has dropped below 4 (StatsSA, 2013). This trend is attributed to the negative population growth rate, construction of more houses, and the effect of HIV/AIDS pandemic (MLM, 2012).

Table 14: Population statistics for 2001, 2007 and 2011

Study area's	Pop/HH	Census 2001	HH Size	CS 2007	HH Size	Census 2011	HH Size
Limpopo	Pop	5 273 642	4.42	5 238 286	4.31	5 576 545	3.93
	HH	1 193 170		1 215 935		141 8103	
Waterberg	Pop	614 156	3.6	596 094	3.71	680 819	3.81
	HH	168 073		160 720		178 821	
Mogalakwena	Pop	298 440	4.26	330 644	4.39	307 683	3.89
	HH	70 077		75 313		79 080	
Site-specific	Pop	N/A	N/A	N/A	N/A	125 196	4.07
	HH	N/A		N/A		30 747	
Source: StatsSA, 2001; StatsSA, 2008; & StatsSA, 2013							

Mogalakwena LM has a very well defined and established development footprint. It consists of 3 proclaimed townships and 178 villages. There are no exact figures available for the directly affected villages; however, ward statistics derived from 2011 census data provides an indication of the number of people residing in the different wards coinciding with villages throughout the prospection area. Table 15 shows an approximate population estimate for the study area (wards 20 to 30) to be just more than 125 000. This population resides in almost 31 000 households, with an average household size (4), which is similar to the provincial and municipal average (StatsSA, 2013).

Table 15: Ward populations, 2011

Ward	Village(s)	Population
18	Machikiri and Ga-Mokaba	11 668
19	Ga-Kgobudi and Sekgoboko	8 555
20	Masodi, Tshamahansi, Magongwa, and Mzumbani	10 237
21	Tshamahansi, and Mzumbani	6 144
22	Masodi, and Ga-Kgobudi	9 421
23	Masodi	8 163
24	Madiba	12 156
25	Mosate, Maroteng, and Masehlaneng	10 981
26	Mahwelereng	5 956
27	Mahwelereng	9 456
28	Mahwelereng	12 595
29	Sekgakgapeng and Phola Park	11 441
30	Sekgakgapeng and Mosate	8 423
Site specific study area		**125 196**
Source: StatsSA, 2013		

According to the headmen consulted during data collection, most of the aforementioned villages are growing in population size. This growth was mostly attributed to natural population growth. It was also stated that in some cases villages were becoming densely populated and the headmen were planning to expand the residential areas into existing agricultural areas. Madiba Village was said to be expanding towards the north and Ga-Kgobudi was experiencing encroachment from newcomers (from outside the village). In general the headmen didn't attribute this growth to prospecting activities as some of the villages further away from the exploration were similarly growing. However it was noted that some villages were experiencing people moving in who had heard of the exploration activities and were hopeful of benefitting from this.

5.3.2 Age and Gender Distribution

Age and gender are important variables, as they provide an indication of the labour-sending capacity of an area. Table 16 presents the gender distribution of the different study areas; it shows that females slightly outnumber males in the Limpopo, Mogalakwena and the site-specific study area (StatsSA, 2013). Figure 8 shows the age distribution of area under

consideration and reveals that the majority of the population within the 15-64 age bracket, indicative of a large potential work force (StatsSA, 2013). This age distribution pattern indicates a normal population distribution and highlights the need to extend life expectancy throughout the province as a youthful population is suggestive of a high mortality rate. This could be as a result of illness especially with the risk of HIV infection being high (Miller & Spoolman, 2007).

Table 16: Gender distribution, 2011

Study area	Male	Female
Limpopo	45%	55%
Waterberg	50%	50%
Mogalakwena	47%	53%
Site specific	48%	52%
Source: StatsSA, 2013		

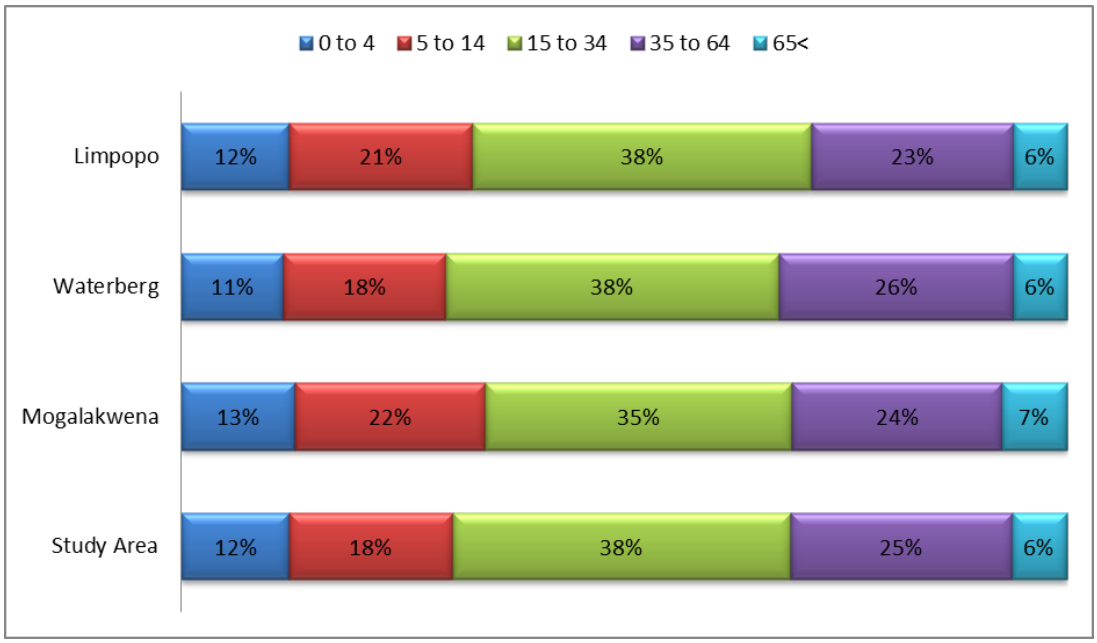


Figure 8: Age distribution

Source: StatsSA, 2008

5.3.3 Ethnicity and language

South Africa's population is made up of four broad ethnic groups (South Africa info, 2011), these include:

- The Nguni: comprising the Zulu, Xhosa, Ndebele and Swazi people;

- The Sotho-Tswana: including the Southern, Northern and Western Sotho (Tswana people);
- The Tsonga; and
- The Venda.

South Africa also has a diverse range of languages spoken with 11 official languages recognised for the country. The language group's people ascribe to is to a certain degree indicative of their ethnical grouping. The most commonly spoken home language within South Africa in 2001 was isiZulu (30%) followed by isiXhosa (17.6%), Afrikaans (13.3%), Sepedi (9.4%), and English and Setswana (8.2% each) (StatsSA, 2001). The dominant language spoken in 2011 within Limpopo, Waterberg, Mogalakwena areas and the site-specific study area is Sepedi followed by Xitsonga, as shown in Table 17 (StatsSA, 2013). This also shows that the dominant ethnic group within these areas is the Pedi and secondly Tsonga. This trend was confirmed during discussions held with stakeholders, which indicated that the Mokopane Traditional Authority is from the Pedi ethnic group and therefore the majority of people living within the study area are also Pedi, while people living in Tshamahansi Village mostly consider themselves as Tsonga.

Table 17: Language distribution, 2011

Language	Limpopo	Waterberg	Mogalakwena	Site-specific Study Area
Sepedi	54%	58%	75%	61%
Xitsonga	17%	8%	9%	11%
Tshivenda	17%	1%	1%	1%
Afrikaans	3%	8%	3%	6%
Setswana	2%	12%	1%	1%
IsiNdebele	2%	4%	7%	13%
Sesotho	2%	3%	2%	4%
Other	3%	5%	2%	3%
Source: StatsSA, 2013				

When considering the racial distribution in the different study areas, it is clear that Black Africans constitute the majority of the population residing throughout the province, with only a small representation of whites (StatsSA, 2013). Although racial integration is gradually being achieved through some blacks moving from the traditional black towns and rural areas to settle in Mokopane, there is a widening gap between the rich and the poor. With the rich migrating to Mokopane's urban centre where the white minority is also residing, the poor mostly remains in the rural areas. In this case racial segregation is to a certain degree

replaced by socio-economic segregation (MLM, 2012). There is therefore a need to speed up integrated human settlement in order to proactively address resultant social ills (such as crime, and skewed unsustainable development) (MLM, 2012).

Table 18: Racial distribution, 2011

Study Area	Black African	Caucasian	Other
Limpopo	97%	3%	0%
Waterberg	91%	8%	1%
Mogalakwena	96%	3%	1%
Site-specific	93%	6%	1%
Source: StatsSA, 2013			

5.3.4 Education and Skills Levels

Level of education attained is used as an indicator of human capital and is measured by the percentage distribution of the adult population and the highest level of schooling they completed. South Africa's National Qualification Framework (NQF) recognises three bands of education namely; general education and training, further education and training and higher education and training.

As shown in Table 19, Limpopo, Waterberg, Mogalakwena and the site-specific study area all show similar patterns of education levels. Although schooling is compulsory in South Africa for children between 7 and 13 years (or attendance from Grade 1-9) the percentage of the population without any schooling is high and therefore illiteracy levels are likely to be high within these areas. Only a small percentage of the population have completed Grade 12, 14% and 21% in Mogalakwena and the site specific study area respectively. Similarly the percentage of people with a tertiary level education is low, the lowest percentage being that in the study area at 5%. This is problematic and places the economy in a difficult position.

Table 19: Education Levels, 2011

Study Area	Education Level					
	No schooling	Some primary	Primary	Some secondary	Grade 12	Higher
Limpopo	14%	28%	5%	33%	14%	6%
Waterberg	10%	27%	6%	34%	17%	6%
Mogalakwena	11%	29%	6%	35%	14%	5%
Site-specific	9%	25%	5%	35%	21%	5%
Source: StatsSA, 2013						

The lack of formal education can usually be mitigated by acquiring skills. Table 20 shows the occupation categories in which the population older than 20 years were likely to be skilled in 2007 (StatsSA, 2008). 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. These types of occupation 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 within the areas.

Table 20: Occupation (15-65 years), 2007

Occupation	Limpopo	Waterberg	Mogalakwena
Elementary occupations	25%	24%	22%
Professionals	15%	12%	15%
Craft and related trades workers	14%	16%	15%
Service workers; shop and market sales workers	12%	9%	11%
Plant and machine operators and assemblers	9%	11%	9%
Legislators; senior officials and managers	8%	9%	8%
Clerks	7%	7%	7%
Skilled agricultural and fishery workers	5%	7%	7%
Technicians and associate professionals	5%	4%	6%
Source: StatsSA, 2013			

The skills development strategy of Waterberg District shows that a number of scarce skills will aid local economic development (see Table 21). Any skills development initiaves should consider these shortages.

Table 21: Scarce skills required within the Waterberg District, 2012

Sector	Scarce skill	Number of persons required
Mining	Artisan (mining and electrical)	120
	Mining technician	90
	Machine operators	54
	Excavator	100
	Engineering manager	10
Tourism	Tourism Marketing	200
	Tour guides	1200
	Tourism information presenters	300
	Travelling and gallery	120
Agriculture	Agriculture Engineering	12
	Veterinary Medicines	45
	Meat processors	240
	Horticulturists	180
Source: WDM, 2012		

5.3.5 Workforce Characteristics

A sample survey of both skilled individuals and business enterprises was undertaken by Digby Wells in 2012 (DWE, 2012b). The primary purpose of this survey was to establish database and knowledge repository of formal and informal businesses as well as skilled individuals within the proposed project's primary labour sending area. This section provides a brief overview of the findings of this survey. It is important to note that the statistics provided below do not necessarily agree with those provided above for the district, municipal and site-specific populations, as these reflect a biased sample of mostly unemployed persons who were able to participate in the survey. Nevertheless, these statistics are important, as they provide insight into that sub-set of the population that is most likely to constitute the local workforce for the proposed project.

5.3.5.1 Demographics

The age distribution of the registered individuals indicates that individuals who registered are relatively young, with 89% younger than 40 years. With regards to gender females respondents (52%) slightly outnumber males (48%). The respondents are able to speak both English and Sepedi. A similar trend was found for the languages, in which respondents were able to read and write, with slightly more respondents endorsing English.

The survey asked respondents to indicate whether their residence is located within the 17 villages located near the project area. It is crucial to note that in response almost half (46%) of the respondents indicated that they were not from the villages surrounding the study area, but from areas elsewhere in Mokopane, another 24% stated that they resided elsewhere in Limpopo Province.

5.3.5.2 Education and Physical Health

The survey findings showed that a small number of individuals (592) only enrolled in primary school, the majority of these respondents completed Grade 7; an even smaller number of people who registered had no schooling. Approximately 8 000 individuals who registered did enrol in secondary school, of these 55% passed matric and almost 20% also passed Mathematics. A quarter of the individuals registered on the database have attained some kind of tertiary education, 92% of these respondents completed a level 5 qualification according to the NQF. Approximately 5% of all respondents indicated that they underwent some kind of mining related training courses such as welding, and operating mining equipment and heavy vehicles.

During the survey three quarters of the respondents indicated that they have a high physical fitness level, which implies that they are able to undertake physically demanding activities on a regular basis for prolonged periods. Only 3% or 227 respondents indicated that they had some kind of disability, which significantly impeded their daily functioning; most disabilities were related to back or neck injuries.

5.3.5.3 Experience Related to Current and Past Employment

The results of the survey showed that the majority (87%) of individuals who registered on the database are unemployed. It needs to be noted that some of the discrepancy between this figure and the unemployment rate (20%) derived from census statistics can be ascribed to the fact that most of the employed would have had less motivation than the unemployed to register on the database. This scenario inflated the unemployment rate found by the skills survey.

Although a large proportion of the registered individuals are unemployed most of them were previously employed and have some workplace experience. It was established that the majority of individuals were employed in the retail (12%), administration (10%) and service sectors (10%). Another 7% of individuals were previously employed in the mining sector. Almost 60% of registered individuals indicated that they have more than one year experience in their previous employment sector.

It needs to be noted that only 13% of registered individuals were either engaged in permanent or part-time employment. Current employment was mostly concentrated in the service (12%), retail (12%), government (8%), administration (8%) and mining sectors (8%). With regards to work-related experience just less than 70% of employed individuals indicated that they have more than one year of experience in their current employment sector (see Table 16).

In general work related experience for both the employed and unemployed is primarily restricted to the service and retail industry. Only a small proportion of individuals was or still is employed in the mining sector.

5.3.5.4 Employment Positions

The survey collected detailed information on the types of positions that respondents occupied at the time of the survey or the positions that they had occupied during their previous employment. Due to the relatively small number of respondents employed in each position, most of the following figures provide the actual number rather than the percentage of individuals employed in a particular position.

5.3.5.4.1 Mining-related Employment

This section presents the number of respondents that are or were employed in mining operations. A total of 225 respondents have been involved in some kind of mining operations. Most of these respondents (57) are or were employed in surface infrastructure positions, while a relatively large number of respondents were also employed in positions related to engineering (26), underground production (29), opencast mining and metallurgical plants (39). It was found that the majority of these individuals were employed at an operator (36%) and assistant level (27%), while smaller groupings were employed as team members or supervisors.

5.3.5.4.2 Other Employment

The majority of respondents indicated that they were or have previously been employed in non-natural resource sectors;

Table 22 presents a summary of employment within these sectors, the table shows that a considerable proportion of respondents were employed within the administrative and construction sectors.

Table 22: Positions outside the mineral sector

Employment position	Number
Administration or secretarial	370
Building and construction	298
Teaching	104
Accounting and Finance	92
Healthcare	79
Government related employment	65
Community development	57
Mechanical	45
Human resources	13

5.3.5.6 Business Sector

A total of 537 respondents registered their businesses on the business database. Unlike the residency of respondents registered on the skills database, the results derived from the business survey, showed that a larger number of businesses are located near the immediate study area. Most businesses specialise in building and construction (20%), providing services (12%), and catering (10%). About 25% of these businesses are located in Mahwelereng Village, and have been trading for more than three years. Nearly 80% of businesses are registered as Close Corporations, while only 5% or informal or unregistered businesses.

With regards to the total workforce of registered businesses, most companies indicated that they employ less than 5 employees, while 35% indicated that they employ 5 to 19 employees. Only 12% of companies indicated that their total workforce ranges between 20 and 99. In most instances the demographical composition of staff proved to be representative of both youth and females; however the opposite was found for disabled employees.

Business owners were requested to indicate whether they are involved in contract work, and just less than one third indicated that they were. These businesses mostly specialise in the construction, service provision, and supply sectors. Of the businesses regularly involved in contract work only 49% or 13% have experience in mining related work; types of mining contracts include catering, maintenance, construction, service provision, and supply. Just less than a third of all business enterprises indicated that they provide some kind of engineering services. Of these, the majority (59%) provide civil engineering services, while 24% offer electrical engineering services. With regards to civil engineering most companies are involved in building and construction and earthworks.

5.4 Economic Overview

Limpopo Province contributed 6.5% of Gross Domestic Project (GDP) to South Africa's economy in 2006 and is the sixth largest provincial contributor, Gauteng being the largest contributor (33%), followed by KwaZulu-Natal (16.5%) and Western Cape (14.5%) (Urban-Econ, 2006).The sector contribution to the district and municipal GDP in 2006 is shown in Figure 9. Mining was the dominant contributor to the Waterberg economy (53%), followed by the finance sector (13%). This shows that the Waterberg economy has a relatively low level of diversity with a strong reliance on mining. In contrast, Mogalakwena's economy is more diverse with three dominant sectors, finance (21.8%), mining (21.7%) and services sector (18.2%). An overview of the mining sector is provided in Sections 5.4.1. The tourism and agricultural sector are considered to be underdeveloped and has the potential to contribute to the local economy. An overview of these sectors is provided in Section 5.4.2 and 5.4.3.

In Mogalakwena the majority of economic activities is centred within the Mokopane/Mahwelereng area, which is currently also expanding. Mokopane CBD is well developed and is spreading along the main arterials. The extent to which it is growing along the N11 towards Mahwelereng is a response to the needs and demand of the lower income areas. The envisaged expansion of the platinum mining sector will exponentially accelerate this trend. The IDP notes that there is sufficient land available for the foreseen business development. However, in the light of Mokopane's role as regional centre and its economic profile, the CBD should be allowed to respond to increased demand from regional business facilities.

The "second economy" makes up a significant component of economic activities in the site-specific study area 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 (DWE, 2012b; MLM, 2012; WDM, 2012).

The second economy is mostly driven 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 in the rural areas and townships, several of these areas coincide with the prospecting area.

There are a number of roadside and off-road businesses clearly visible from the N11, which runs through the middle of the site-specific study area. Many businesses are found within formal establishments, while other informal businesses (street vendors) are found at the busiest intersections.

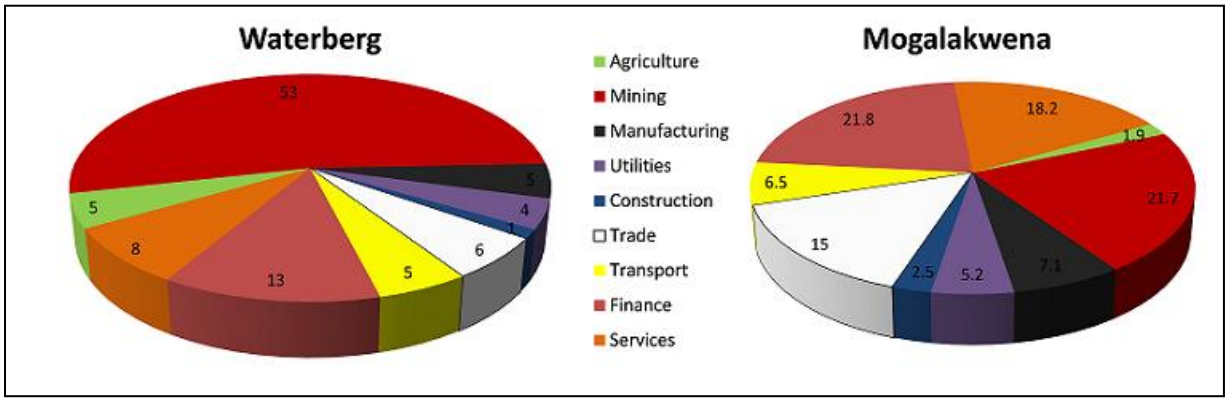


Figure 9: Sector contribution to Waterberg and Mogalakwena economy, 2004

Source: Urban-Econ, 2006 (taken from Quantec Research, 2006 and Urban-Econ, 2006)

5.4.1 Mining

The mining sector contributed R 87.1 billion (7.1% of GDP) to the national economy in 2004 (Urban-Econ, 2006). The mining sector is similarly an important contributor to the provincial, district and municipal economy, making up 57.5% of the provincial GDP in 2010 (Waterberg, 2010; WDM, 2012). Waterberg DM acknowledges the mounting importance of mining to local economic development within areas of intense mining such as Mokopane, Lephalale and Northam -Thabazimbi (Waterberg SDF, 2009).

Major mining activities in the District include the extraction of coal and platinum. The coal resource in the Waterberg field is estimated at 76 billion tons, which is more than 40% of the national coal reserve; coal operations are mostly concentrated in Lephalale. The Waterberg area is also host 70% platinum reserves in Limpopo Province followed by the Sekhukhune District. Within the Waterberg the platinum mining activity is mostly found in Mogalakwena LM and Thabazimbi LM.

.Mogalakwena Municipality is located within the Bushveld Mineral Complex, which contains one of the world's richest ore deposits with reserves of chromium, platinum, palladium, osmium, iridium, rhodium, ruthenium, iron, tin, titanium and vanadium. The Bushveld Mineral Complex is over 67000 km^2 in size and extends from Rustenburg (in the west) through Mokopane, (in the north) to Lydenburg (in the east). As a result the Mogalakwena is rich in reserves and has a number of mines, as shown in Table 23; the municipality is also the largest producer of platinum in the Province.

The mining industry in the municipal area contributes to the economic development of the District and Province. Mining is also a major source of employment in the municipality, the envisaged development within this sector will likely make positive contribution towards job creation. Although mining offers vast contribution to socio-economic development to the site-specific area, it also poses constraints to urban development and growth (Waterberg SDF, 2009). The SDF for the district notes that apart from one or two protected areas (as discussed in Section 5.4.2), there is no direct conflict between mining, major tourism and conservation areas.

Table 23: Mining Activities within Mogalakwena Local Municipality, 2010

Mine/Project name	Type of mine
Mogalakwena Platinum Mine	Platinum
Vanadis Project	Vanadium bearing magnetite deposits
Haaspan Granite (Feasibility)	Granite mining
Platreef Project	Re-evaluating and mining of platinum resources
Kadikgathlo Stone Crusher	Stone aggregates from dolerite boulders
Matlala Stone Crushers	Stone aggregates from dolerite boulders
Bestaf Granite	Granite stone
African Red Granite	Granite stone
Lonmin (Feasibility)	Platinum
Babirwa Tshabang Tlala cooperatives	Pebble collections
Setlhatlha Sand Mining	Sand Mining

5.4.2 Tourism

Tourism is an important contributor to South Africa's economy and job creation. Tourism forms part of other sectors contributing to the GDP such as trade, transport and finance (Urban-Econ, 2006). The World Travel and Tourism Council estimates that the South African Travel and Tourism economy accounted for 7.1% of South Africa's GDP in 2002 (R72.5 billion) employing 1.5 million people (Urban-Econ, 2006).

Limpopo Province and the Waterberg District are known for nature and outdoor activities (such as game and nature reserves, game hunting and camping/hiking). Similarly Mogalakwena Municipal area offers a range of nature orientated tourism activities with large growth potential (Urban-Econ, 2006). Tourism is therefore an important contributor to the GDP and economy of these areas. The Waterberg 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 very important. The two most well-known tourism sites in the area are the Waterberg Biosphere Reserve and the Makapan Valley World Heritage Site (WDM, 2012).

The Waterberg Biosphere Reserve forms part of the World Network of biosphere reserves, registered with United Nations Educational, Scientific and Cultural Organization (UNESCO). The Biosphere Reserve is also the first "savannah" biosphere reserve registered in Southern Africa. The Makapan Caves (Valley) is a historic area in the Mogalakwena LM and its World Heritage Status has been approved by UNESCO. This was the area where the early Boer

settlers and the indigenous Ndebeles struggled through various conflicts. The settlers, who by the 1850s were already well established as far as Schoemansdal near Soutpansberg, used the area as a travelling and trading rout and this often led to clashes with the indigenous population (MLM, 2012).

There are also several nature reserves within the Mogalakwena Municipal area namely: Marekele National Park, Wonderkop (16 100 ha), Masebe (4 540 ha), Moepel (27 500 ha), Witvinger (4 450 ha) and Percy Fyfe (2 990ha). According to the Mogalakwena LED Strategy (Urban-Econ, 2006) tourism opportunities within the municipal area have not been fully exploited and can be enhanced to provide benefits for local communities (MLM, 2012). One of the sites, which Platreef is considering as a TSF option does overlap partially with Wit Vinger Reserve, apart from this project footprint does not coincide any current tourism activities.

5.4.3 Agriculture

This section provides an overview of the viability, functionality and importance of the agricultural sector in the study area. It also presents a summary of the findings of the agricultural survey conducted by Digby Wells in 2011 (AgriAfrica, 2011).

5.4.3.1 Agriculture in the Regional and Local Study Areas

The WDM SDF notes that the district has relatively low agricultural potential. Despite this agriculture remains an important economic activity among vulnerable households within the Waterberg District (Waterberg SDF, 2009). Maintaining a prosperous and healthy agricultural community is therefore still important for the district economy.

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. Although named the 'Waterberg' the district is actually classified as a semi-arid area with poor water resources. For crop farmers there have been dramatic changes in many commodity prices leading to changes in cropping patterns. Crops such as cotton, tobacco, maize and sorghum have been badly affected by low international prices and over production and plantings have been reduced significantly, often with negative financial and employment implications (WDM, 2012).

Agriculture is the dominant land use within the municipal area using over 80% of land, which is in contrast to the low sector contribution to GGP (Urban-Econ, 2006). The bulk of this contribution is commercial farming activities, with the most significant agricultural commodities being maize, wheat and cattle production (Urban-Econ, 2006). Additional agricultural crops include: peanuts, sorghum, sunflower, cotton; and tobacco. Fruit products include oranges and grapes and vegetables include potatoes, onions, tomatoes, melons, pumpkin, beet, carrots, cabbage, spinach and butternut. There is also livestock, poultry and piggery farming with potential for game and goat farming. A survey undertaken by Mara Research Station indicates a significant shift from cattle farming to game farming throughout the Limpopo Province (MLM, 2012).

According to the Mogalakwena IDP (2012/2013) agriculture is important to rural villages within the municipal area. Their practices differ according to region with villages in the mountainous areas focused on cattle farming and villages on the plains focussed on crop farming, the latter situation describes the situation of the villages in the site-specific study area. The IDP (2012/2013) notes that agricultural involvement appears to be declining, which can be attributed to a possible stronger dependence on other resources such as social grants and remittances. During an agricultural survey it was also established that a vast majority of individuals involved in farming are older community members, with the younger generation preferring formal employment opportunities for sustainable growth of wealth. Nonetheless the municipal LED Strategy (Urban-Econ, 2006) suggests that agriculture should be prioritised as an important economic sector (MLM, 2012).

5.4.3.2 Agriculture in the Site-Specific Study Area

With regards to the site-specific study area, the dominant land capability is arable supplemented by grazing. The agricultural potential is high on the deep soil due to the combination of average to medium regional rainfall and deep soil present. A considerable proportion of the land within the site-specific study area is used for subsistence crop production and subsistence animal farming.

Figure 10: Agricultural Activities within the Study Area

In 2011 an agricultural survey conducted was conducted by Digby Wells within several sections of the site-specific study area. The findings of this survey are briefly discussed in the following sub-sections.

5.4.3.2.1 Agricultural plots, harvesting patterns and yields

The survey showed that it is not uncommon for individuals to own more than one plot. The majority of respondents included in the survey (72.5%) still cultivated their plot during the 2010/2011 season. Most farmers indicated maize as their primary crop; maize was intercropped with watermelon, groundnuts, beans sweet potato and pumpkin.

The survey found the average maize yield to be around 1 200 kg per plot, which would equate to a yield of 1600 kg per ha. Research carried out by Panaar Seeds around Africa indicates that a subsistence culture environment (rain fed, no fertiliser, and no pesticide

situation) would yield on average a 1 000 kg – 1 500 kg maize per ha (Mpangane *et al.,* 2004).

The yields for secondary and tertiary crops grown are considered to be in line with the planting of very small amounts of crop. For example the average yield of watermelon indicated by the respondents is consistent with the growing of around 5 to 10 plants utilising a probable land area of around 10 m² maximum.

5.4.3.2.2 Grazing capacity

Designated communal grazing areas in the site-specific study area bear evidence of a history of massive overgrazing and consequent bush encroachment. This observation is borne out by the livestock numbers supplied by the community and the areas of grazing which were assessed as part of the agricultural survey of the area.

In general the grazing in the study area would not be able to compete with the South African average for bush. Based on available information, including bush encroachment and overgrazing mentioned above, the carrying capacity of grazing areas in the study area is estimated to be between 0.16 and 0.2 LSU per ha.

In properly managed bush grazing, utilising the accepted norm of around 0.33LSU per ha the declared livestock numbers would require approximately 3 332 ha. The survey was unable to determine whether livestock had been sold in the last few years as the grazing area was unable to support the numbers owned by the village.

5.4.3.2.3 Economic trees and plants

There are a number of *marula* trees scattered throughout grazing areas in the site-specific study area. Some of these are male trees; while these do not have economic value in their own right, they are necessary for the pollination of the female trees. Fruit from the marula trees are mainly used for making beer, while the bark is sometimes used to make a *muthi* apparently efficacious against a range of stomach ailments. There are other trees types of trees on the agricultural plots as well; while these are of no economic value, they are utilised as shade trees for the people working the plots.

There are virtually no medicinal plants in the agricultural plots. A single exception identified during the agricultural survey was a respondent who had a large number of aloes on the edge of her plot. These aloes are used for medicinal purposes.

5.5 Employment and Income

Employment rates within an area are linked to the size of the economy as well as the personal income, education levels and skills. This section provides a brief overview of the employment rates and income levels in the Province and the various study areas.

5.5.1 Employment

Job creation and the high rate of unemployment are some of South Africa's hallmark challenges, with many development strategies aimed at job creation. As shown in Table 24 the employment rates within Limpopo, Waterberg, Mogalakwena and the site-specific area

(34%) are very low. The high proportion of the population that is not economically active indicates a very high dependency ratio, with almost three quarters of the population supported by less than a third who are employed. This has serious consequences for the economy of these areas.

The low employment rate reflected in census data for the site-specific study area was confirmed by local community members consulted during this study, and was identified as a major concern. Survival strategies in the face of such high unemployment rates include widespread dependence on social grants, as well as regular commuting of women to residential areas in Mokopane and elsewhere, where they work as domestic workers (Sanral, 2012). The community also reiterated their expectations regarding employment generation and procurement opportunities that will result from the proposed Project.

Table 25 shows the major employment industries within the areas. Community, social and personal services provides a considerable proportion of employment, and is followed by the wholesale and retail trade sector. The wholesale and retail sectors are large, which indicates that most of the economic activity occurs in urban areas but are probably supplemented by rural customers who need to buy products in bulk. The mining and quarrying is another important employment sector, as it supports 19% of the jobs throughout the district.

Table 24: Employment Status, 2007 (15-65 years), 2007

Study area	Employed	Unemployed	Not Economically active
Limpopo	28%	19%	53%
Waterberg	29%	19%	51%
Mogalakwena	28%	17%	55%
Site-specific	34%	20%	47%
Source: StatsSA, 2008			

Table 25: Industry of employment (15-65 years), 2007

Industry	Limpopo	Waterberg	Mogalakwena
Community; social and personal services	27%	19%	27%
Wholesale and retail trade	19%	16%	19%
Manufacturing	13%	11%	17%
Agriculture; and hunting	12%	14%	8%
Financial and business services	9%	8%	9%
Construction	7%	8%	7%
Mining and quarrying	7%	19%	7%
Transport; storage and communication	4%	4%	5%
Water and energy services	1%	1%	2%
Source: StatsSA, 2008			

5.5.2 Income

In order to determine the people's living standards as well as their ability to pay for basic services such as water, sanitation, and health care the income levels of the population are analysed and compared to the provincial average. Figure 11 shows the income categories by gender in each demarcation area. It is notable that women tend to earn less than men in all of these areas. The largest gender discrepancy exists in the Waterberg region with 57% of women having no income and 41% of males having no income. Also in the Waterberg 28% of males earn between R 801 and R 3 200, the same category for females only adds up to 17%.

There is also a slight gender discrepancy in the site specific study area, where 55% of female population do not have any income and 46% of males are without a monthly income. The chart shows two kinds of inequality, there is gender inequality and financial inequality. A large number of people who earn nothing and a small number of people who earn over R 12 801 per month, this scenario is indicative of a high Gini-coefficient (measure of inequality). South Africa is one of the most unequal countries in the world and thus one would expect a high Gini-coefficient in its municipal areas (StatsSA, 2011).

The figure also corroborates the generally low education levels, as income earned by low-skilled labourers is lower than income earned by highly skilled workers (see Section 5.3.4). Since education levels are low, income earned is concentrated in the lower brackets, which suggests that the general population is poor. The figure illustrates that there is a considerable amount of people who have no income and hence, that poverty is a major problem in the municipal area (see also section 5.6).

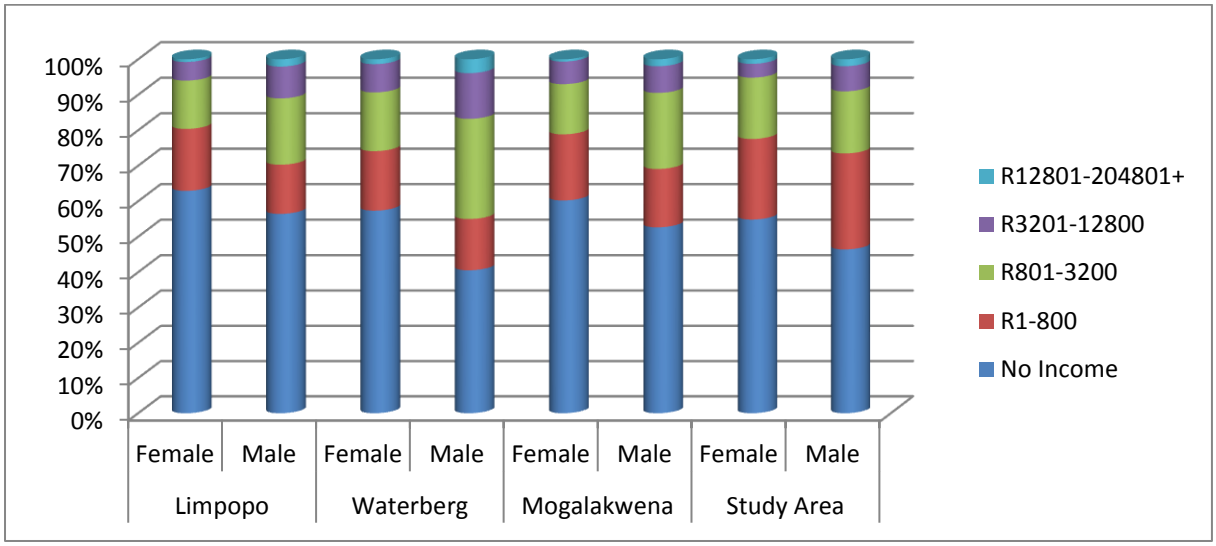


Figure 11: Monthly income by gender, 2007

Source: StatsSA, 2008

5.6 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 and high unemployment rates is likely to mean high levels of poverty.

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 and the number of household which are indirectly affected by the disease increases the vulnerability of a significant number of families in the site-specific study area.

South Africa has a social grant system to assist poor and vulnerable households. Grants are administered through the South African Social Security Agency (SASSA). The highest proportion of people receiving grants is amongst the municipal population where 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).

Table 26 provides a breakdown of the type of grants provided by the government (StatsSA, 2013). Of the people receiving grants an overwhelming majority (68% in WDM & 67% in MLM) receive grants for childcare, which to a certain degree compensates for the difference between females and males with respect to monthly income illustrated earlier (see Section 5.5.2).

Table 26: Social Grants per person, 2011

Type of grant	Study area		
	Limpopo	Waterberg	Mogalakwena
Child support grant	69%	68%	67%
Old age pension	22%	22%	23%
Disability grant	6%	8%	7%
Other grants	2%	2%	2%
Source: StatsSA, 2011			

In addition to the social grant system, the South African government provides free basic services to impoverished households, as discussed later in Section 5.8. According to the 2009 estimates 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 88% and 86% of households within the municipal 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 municipal area can likely be considered as vulnerable. The households within the site-specific study area are likely to show similar trends.

5.7 Community Health

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 Human immunodeficiency virus (HIV) and Acquired Immune Deficiency Syndrome (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 58.1% below the age of 25 years and 10.5% being children under five years. Access to medical schemes was the lowest in the country at 8.6% in 2010, and only Waterberg had coverage close to the national average (17.6%). As expected for a province with this socio-economic status and at

this stage in the demographic transition, the highest proportion (42.6%) 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).

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 70.3% in 2009, which was close to the national average of 71.1%. Waterberg District had the highest TB incidence in Limpopo, but also has the worst outcomes, with a smear conversion rate of only 55.6%, a low cure rate of 62.4% coupled with a high defaulter rate of 13.2%. 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 14.4% (Day *et al*., 2012).

Malaria is endemic to Limpopo Province, 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. There were 253 reported cases of malaria in the province between October and December 2012. This was a decrease from 504 during the same period in 2011 and 1,744 in 2010. The mean case fatality rate from malaria in South African has been reported to be about 1.1% per season. The incidence of malaria in Waterberg District between 1998 and 2005 was about 30.9 per 100 000 person years. The mean number of cases reported per season is about 190 while the mean number of reported deaths per season is 1.1 (Gerritsen *et al*., 2008).

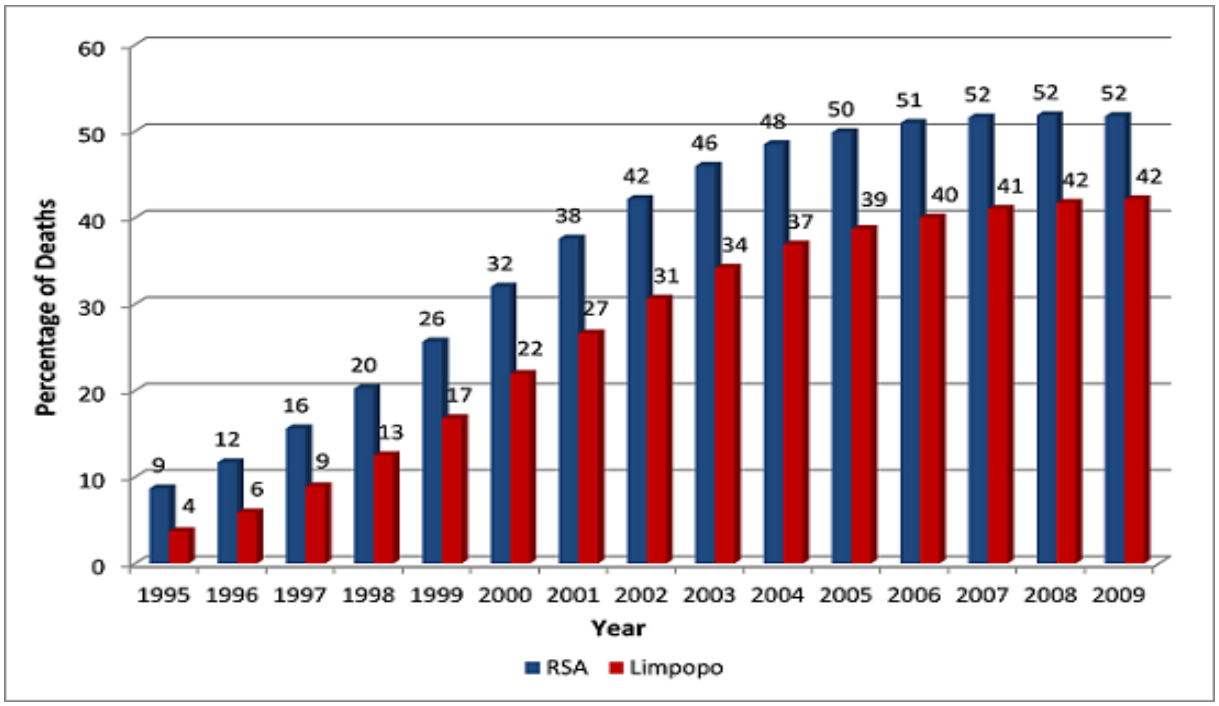
South Africa is experiencing a severe generalised HIV epidemic, which is affecting the social and economic fabric of the country. The causes are multifactorial, but poverty, lack of education and vulnerability in certain sectors are important contributing factors. According to the National HIV and Syphilis Prevalence Survey 2009, it is estimated that the prevalence of HIV in South Africa (in all age groups) is 10.6%, which is about 5.2 million people of the total population. Limpopo had the third lowest HIV prevalence in the country at 8.8% (Shisana *et al*., 2009). The antenatal HIV prevalence for Waterberg District was 24% (Day *et al.,* 2012). In 2010 the HIV prevalence rate in the Municipality was estimated to be 24.2% (MLM, 2012; WDM, 2012).

The percentage of HIV 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. It is possible that the decrease since 1995 was a result of awareness generation and a drive for people to 'know your status'. It is however a major cause of death in both the country and the province. This will have an impact of the economy as the labour force's

general health is in decline as well as an increase in medical attention, treatment and government assistance.

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, STI and TB infection;
- Preventing new HIV, TB and STI infections;
- Sustaining health and wellness; and
- Increasing the protection of human rights and improving access to justice.



Source: Day *et al*., 2012

Figure 12: Percentage of HIV Related Deaths, South Africa and Limpopo

In 2007, 83.6% of the population had access to piped water, the third lowest in the country. This lack of access to piped water could be part of the reason for the province having the highest incidence of diarrhoea for children under-five years, with 178.1 new cases for every 1,000 children under five years in 2010/11. In 2010/2011, the incidence of diarrhoea in children under the age of 5 in the Waterberg District Municipality was 120.6 per 100 000 (Day *et al*., 2012). The incidence of severe malnutrition in children under 5 years was estimated to be 8.2 per 1 000 in 2010 (Day *et al*., 2012).

Non-communicable Diseases (NCD) play an important role in the overall burden of disease in the Limpopo Province. Strokes, chronic lung disease, heart disease, hypertension and diabetes are all mentioned in the top 20 disease burdens in the province (Bradshaw *et al.,* 2004). There is very little information in the public domain related to NCD at the district

level. The diabetes mellitus and hypertension detection rate in Waterberg District in 2010 was estimated to be between 0.1 and 0.2% (Day *et al.,* 2012).

Substance abuse, in the form of alcohol and drugs, was noted by the headmen as one of the main issues in the area. The headmen noted that more entertainment options for the youth would assist in reducing alcohol and drug abuse. The health of the labour force will have an impact on their ability to play an active role in the economy through employment. High rates of disease will therefore have an impact on the income earning potential of those people, on businesses and the economy as a whole.

5.8 Service Delivery and Civil Infrastructure

This section reports on household access to public service delivery and the status of civil infrastructure, which facilitates these services, within Mogalakwena Municipal area and the site-specific study area. This data is compared with provincial and district level data where relevant. Mogalakwena LM is responsible for the majority of service delivery; with the district municipality only responsible for municipal health services.

5.8.1 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 government to those South African households who cannot afford these services. These services are assumed to be sufficient to cater for the basic needs of a poor household (MLM, 2011; WDM, 2012).

The number of households within MLM benefiting from FBS increased from 1982 to 2538 between 2011 and 2012; implying that more impoverished units have been provided with free services since 2011. 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 needs to be note that the MLM host almost 80 000 households, and that poverty is severe throughout, it is therefore likely that a lot more HH are in need of FBS. This leaves municipalities with the responsibility of the provision of free basic services to a large number of HH, which in turn will put a large financial burden on MLM.

5.8.2 Electricity

The supply of electricity to households throughout the country is central to the governments' aim of improving quality of life (SA Handbook, 2011). The cost of energy in South Africa is amongst the lowest in the world (as a result of a heavy reliance on coal power); however, the demand is growing due to increase in macro-economic activities and industrialisation (SA Handbook, 2011). The demand for electricity is expected to double over the next 20 years, which requires infrastructure upgrade and development. Eskom has also recently announced that they will also increase the cost of electricity considerably over the next couple of years. The expected increase in the cost of electricity will likely make it

unaffordable for a number of impoverished households, which will in turn increase the dependence on FBS, as well as dependence on alternative energy sources.

The majority of households within the Province have access to electricity for lighting purposes (see Table 27). Candles were the second most common source of energy used in the study area. This could be attributed to either the cost or availability of alternative energy sources in the study area. With regards to cooking and heating there seems to be a greater reliance on alternative energy sources, especially wood (see and Figure 13). It is reasonable to argue that wood is sourced from areas surrounding rural communities.

Table 27: Main source of energy for lighting, 2011

Study Area	Electricity	Candles	Other
Limpopo	87%	11%	2%
Waterberg	87%	12%	1%
Mogalakwena	92%	7%	0%
Site-specific	94%	6%	0%
Source: StatsSA, 2013			

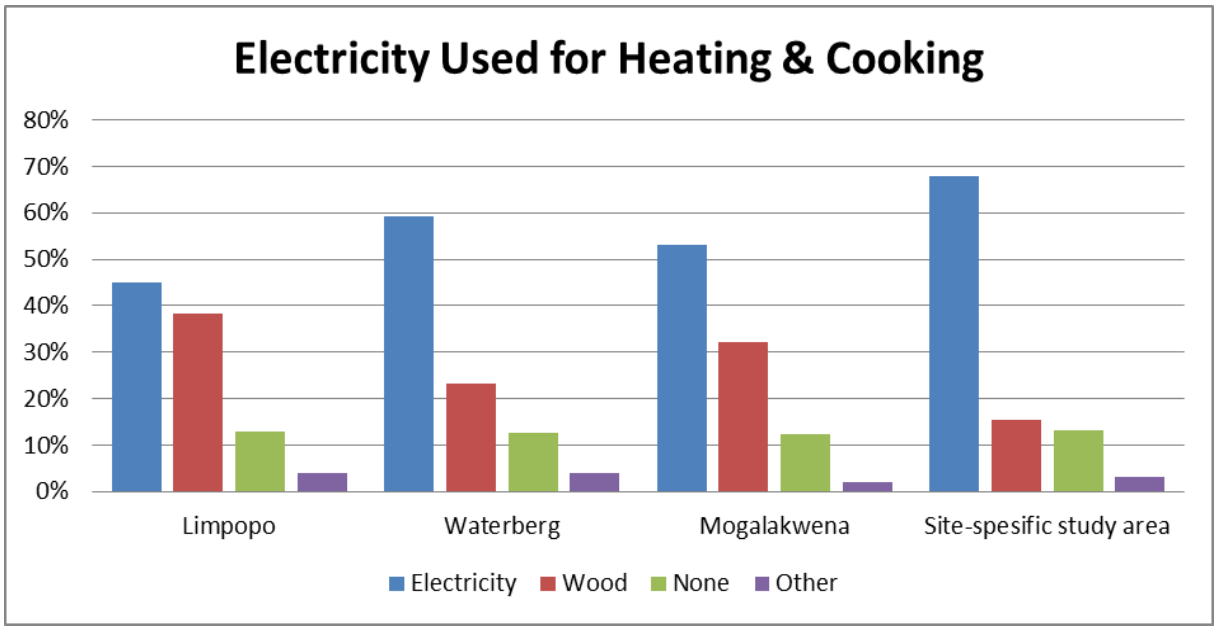


Figure 13: HH energy sources for Heating and Cooking, 2011

Source: StatsSA, 2013

The electricity backlog of Waterberg District municipality is minimal in comparison to those of other District Municipalities. In 2008 the electricity backlog for the Mogalakwena Municipal area was estimated be just more than 6 500 households (MLM, 2012). This could explain, in part, to the percentage of households not using electricity.

Provision of electricity is bestowed with Eskom as provider in rural areas of the municipality. In towns, Bela-Bela, Mokgophong, Mogalakwena, Roedtan, Lephalale electrification process is the power and function of the local municipalities. In areas where municipality has the function of providing electricity the sub-stations have reached their maximum capacity, and are unable to provide electricity to new townships. The energy crisis faced by the municipalities is detrimental to provision of basic services and local economic development, however, the development of the coal, energy and petrochemical cluster in Lephalale will likely decrease electricity backlogs in the district and province.

According to Chief Kekana the formal villages within the study area have access to electricity. Mzumbani settlement however does not have access to electricity as it is not viewed as a permanent village by the local municipality.

5.8.3 Water

The Limpopo Province is considered a water-poor area. A number of water sources are being investigated as potential water supplies. These include pipeline extensions, such as the Olifants River Water Resource Development Project from the Flag Boshielo dam, which delivers water from Pruissen to communities and mining projects on the Northern Limb of the Bushveld Complex; the de Hoop dam currently under construction; assessments as to underground sources in the immediate vicinity of the Project; and local sources from farmers downstream of the Doorndraai dam (WDM, 2012). In Mogalakwena ground water resources are available for use and can supplement the local water supply schemes. The municipality achieved a relatively low blue drop grading at 78%, a municipalities Blue drop status refers to the safety of water, which is made available for human consumption.

Safe drinking water is a basic necessity for good health, as unsafe drinking water can be a significant carrier of diseases such as trachoma, cholera, typhoid, and schistosomiasis. Drinking water can also be tainted with chemical, physical and radiological contaminants with harmful effects on human health. Results derived from 2011 census indicates that most households throughout the province have access to piped water inside or outside the yard, in all study areas this combined figure exceeded 85%. It is concerning that 13% of households within the site-specific area has no access to piped water, and likely rely on municipal water tankers or water sourced from boreholes (StatsSA, 2013).

Mogalakwena Municipality is experiencing a backlog of water supply to households; this could be expected as 6% of households do not have access to piped water (see Figure 14). Despite this backlog, the LM is able to supply more households with piped water each year; however, this provision is unable to catch-up with the pace at which the number of households and their resultant demand for water is increasing (MLM, 2012).

The Mogalakwena IDP (2012/2013) 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. There is currently a process of addressing these issues through the refurbishment of boreholes, pipelines and water storage reservoirs (MLM, 2012). The Mogalakwena Municipal Manager noted that

communal standpipes are common within the municipal area; however, the municipality needs to investigate the provision of back yard and household water connections.

According to Chief Kekana, access to water within the study area is in the form of communal standpipes; however there are plans to develop yard connections. In some cases households buy water from water vendors at a higher price putting an additional burden on poor households.

Mzumbanzi Village does not have access to water according to municipal representatives. Mzumbanzi is not viewed as a formal township and therefore permanent water supply has not been provided to this community. The village representatives have been in contact with the Department of Water Affairs requesting access to water services

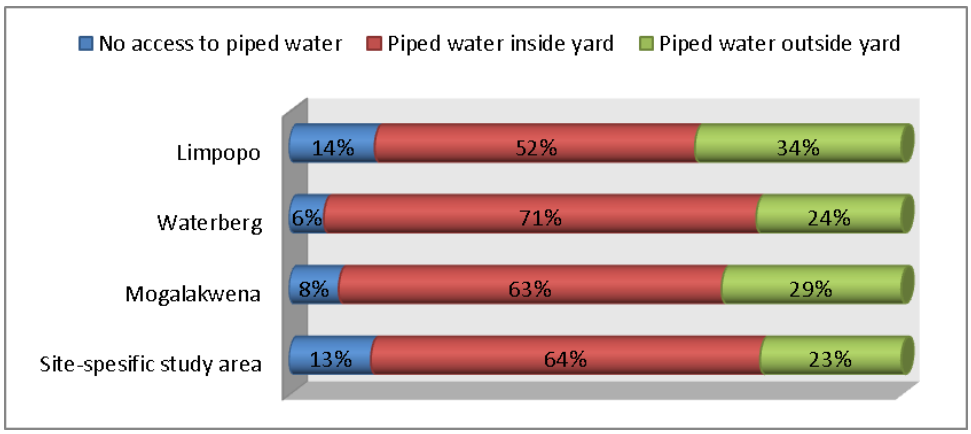


Figure 14: Access to piped water, 2011

Source: StatsSA, 2013

5.8.4 Sanitation

The availability of sanitation facilities not only improves the dignity of people, but also promotes their health. Areas without proper sanitation systems give rise to water borne diseases like cholera, diarrhoea, and typhoid. It is therefore important that as a municipality, prioritisation should be given to this service, particularly taking into account any backlogs.

According to the MLM IDP there is only one treatment facility (in need of upgrading) situated in Mokopane and there is a delivery backlog of just less than 38 000 households that still need to be equipped with piped water and a flushing toilets (MLM, 2012). Mogalakwena Municipality has determined that it will not be able to meet the targets set by the national government for the provision of sanitation.

The following chart shows the sanitation facilities that are available in the Limpopo, Waterberg, Mogalakwena and the site-specific area. The Limpopo Province as a whole mostly relies on pit latrines for sanitation purposes, only 7% of the population have no access to sanitation. It is important to note that the average for Southern Africa is substantially lower at 67% of people having no access to sanitation. The Waterberg district has a relatively large proportion of households (50%) who have access to flush toilet facilities (StatsSA, 2011). The site specific area seems to be considerably better off with

regards access to flush sanitation (44%) when compared to the local municipality, with only 28% households in the LM having access to flush toilet facilities.

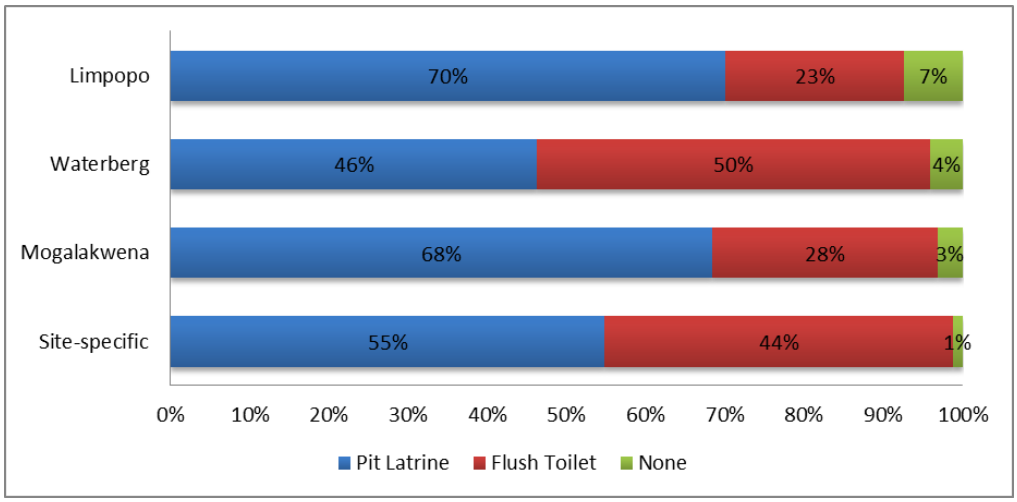


Figure 15: Sanitation facilities, 2011

Source: StatsSA, 2013

5.8.5 Refuse Removal

South Africa generates 19 million tons of waste per year and this is often harmful to the environment and people's health. According to Section 24 of the national constitution, all South Africans have the right to an environment that is not harmful to a person's health and wellbeing. The pollution and waste management act gives the local municipalities the responsibility on waste removal.

The Mogalakwena Municipality only services the main centres namely Mokopane, Mahwelereng and Rebone; however, the municipality does not provide the service in rural areas. This explains the large number of households utilising their own rubbish dump (See Table 28). In mining areas, the latter provide the service.

There are two official waste dump sites within the local municipal area (MLM, 2012). The Mogalakwena IDP (2012/2013) state that land fill sites are operating at full capacity and are unable to cope with refuse produced by additional population.

Table 28: Refuse removal, 2011

Study Area	Own dump	Local authority/ private company	No rubbish disposal
Limpopo	67%	22%	10%
Waterberg	46%	46%	7%
Mogalakwena	64%	28%	8%
Site Specific	52%	42%	6%
Source: StatsSA, 2013			

5.8.6 Health Facilities

The co-ordination of health facilities is planned at a district level and therefore not directly the responsibility of MLM. The number of health facilities located in the Waterberg District Municipality is shown in Table 29 below (Day *et al*., 2010). A large majority (86.6%) of children under the age of one had been immunised. Moreover, just under three-quarters (72.3%) of women in the district delivered their last child in a health facility (Day *et al*., 2012). This is indicative of the accessibility of health facilities within the district. The closest hospitals to the study area are the Mokopane and Voortrekker hospitals. Mokopane Hospital is located within Mahwelereng located adjacent to the study area, while the Voortrekker Hospital is situated in Polokwane. More than 80% of the population is within 120 minutes from health facilities (MLM. 2012).

Table 29: Health facility infrastructure in WDM

Type of infrastructure	Number of facilities
Clinics	57
Community Health Centres	1
Mobile Health Services	33
District Hospitals	7
Regional Hospital	1
Specialised Hospitals	1
Private Hospitals	5
Beds (public sector)	949
Beds (private sector)	204
Source: WDM, 2012	

5.8.6.1 Education Facilities

In 2007 there were 285 schools within the Mogalakwena Municipal area; including 167 primary, 104 secondary, and 13 combined schools. These schools had a total of almost 110 000 learners and almost 3 400 educators, equating to a learner-teacher ratio of 32.2 per class (Mogalakwena IDP, 2011/2012). Almost 95% of the municipal population is within 30 minutes (2.5 km) from a school. Table 30 shows the percentage of primary and secondary schools within the municipal area, which had access to basic facilities in 2007. Just more than half (56%) of schools had access to water, whilst the access to electricity (72%) and sanitation (82%) was much higher.

Table 30: Service provision at schools within MLM, 2007

Services	Access	
	Number	Percentage
Electricity	205	72%
Water	159	56%
Sanitation	234	82%
Source: MLM, 2011		

5.8.7 Housing

According to data derived from 2011 census there is not an extreme need for housing in throughout the province as 88.7% of people in Limpopo reside in formal housing. This being said both the District and Local Municipality are experiencing increasing pressure to launch new housing developments to supply housing for its population. The DM attributed this pressure, in part, to the increase in mining projects. The housing backlog within the MLM was just more than 33 000 units in 2007. The highest percentage (11.4%) of households living in informal structures is within the WDM. In the study area as much as 95% of the population has some kind of formal residence.

Table 31: Type of housing

Study area	Type of housing			
	Formal	Informal	Traditional	Other
Limpopo	89%	5%	4%	2%
Waterberg	86%	12%	1%	1%
Mogalakwena	94%	5%	1%	0%
Site-specific	95%	4%	1%	0%

Table 32 shows the tenure status of residences located in the four demarcated areas. The study area has the highest percentage of paid off land or residences. Next highest is those who occupy rent free, this trend might be attributed to households who resides on indigenous land. Within MLM 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.

Table 32: Tenure status, 2011

Study Area	Tenure status			
	Private ownership		Rented	Occupied rent-free
	Paid off	Not paid off		
Limpopo	54%	28%	13%	5%
Waterberg	44%	28%	22%	6%
Mogalakwena	5%	3%	7%	84%
Site-specific	61%	23%	13%	3%
Source: StatsSA, 2013				

Informal settlements have been established within the Mogalakwena, 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 district and local municipality. This phenomenon increases the backlog of housing facilities to be provided by MLM. Three informal settlements have been recorded within the Local Municipality; these are Mzumbani, Sterkwater and Mohlohlo. This is indicative of a lack of formal and affordable housing as well as poverty.

Most informal settlements within the district have approximately 500 stands, but this number tends to increase as the proximity to the urban areas decreases. Ownership and tenure are very difficult to assess in these settlements, because most dwellings in rural areas are situated on Indigenous land where they supposedly have free occupation. The indigenous land allocation is a relatively new law and therefore there is a lack of clarity regarding who has the right to specific patches of indigenous land.

The type of housing structures within the study area varies between brick structures and informal shacks. Figure 16 shows informal housing within the study area. The Mzumbani informal settlement is located within the study area and Digby Wells has been told that this settlement is increasing in size with newcomers to the village weekly. The housing at this site is a combination of formal brick structures and square iron informal structures (shacks). The municipal manager noted that the representatives from this community have requested housing from the municipality. However as the settlement is considered to be illegal and occupied against the wishes of Chief Kekana as well as within the Platreef Project exploration area they have not provided houses to this settlement.

Figure 16: Informal houses within the site-specific study area

5.8.8 Crime and Safety

There are four police precincts and four stations within the Mogalakwena Municipal area namely Gilead, Mahwelereng, Mokopane and Tinmyne. The closest police station to the site-specific study area is the Mahwelereng Station located in Mahwelereng Township south of the Platreef prospecting area and north of Mokopane.

According to official South African Police crime statistics (2011), there was a reduction in the number of reported crimes between 2003 and 2011; with almost 8 000 crimes reported during the 2003-2005 period, and only 5 000 crimes being reported between 2009-2011. Figure 17 illustrates the crime incidence for the different offence categories between 2003 and 2005. During this period the most common crimes were assault, commercial crime, residential burglary, robbery and malicious damage to property. The number of these crimes all reduced between 2005 and 2011. There was however an increase in crimes involving illegal possession[2]. There has also been a small increase in theft of and from motor vehicles as well as an increase in shoplifting.

Crime in general was identified by the headmen as a problem within their villages and crime prevention and safety were noted by most communities in the study area as a priority. One of the challenges mentioned by the headmen was the high rate of alcohol abuse within the communities. This was linked to issues of vandalism of communal property.

[2] Illegal Possession includes: Illegal possession of firearms and ammunition; drug related crime; driving under the influence of alcohol or drugs

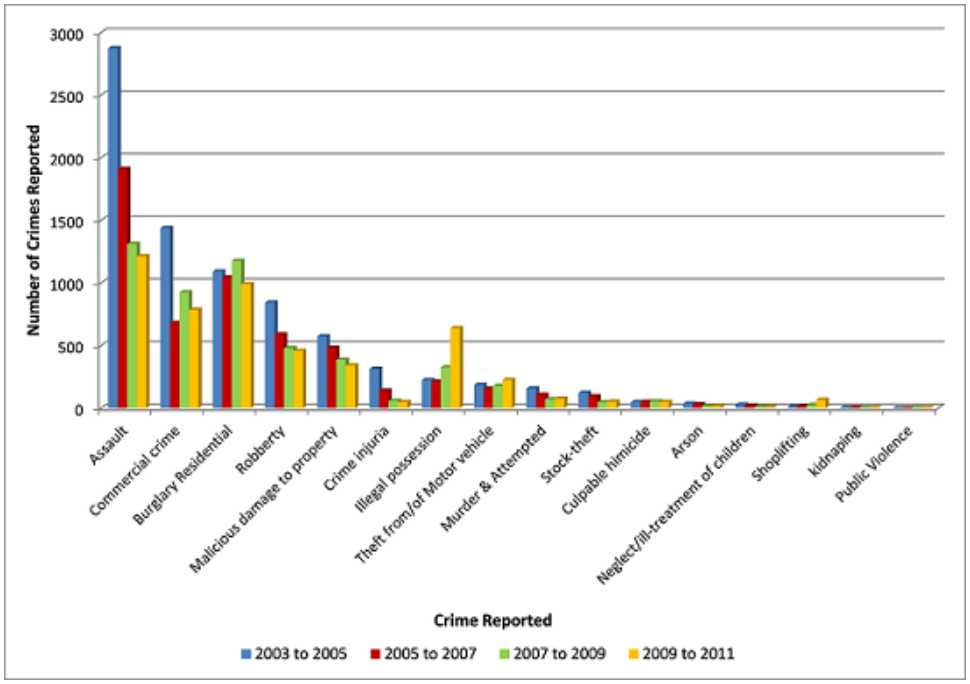


Figure 17: Crimes reported to the Mahwelereng police station (2003 to 2011)

Source: South Africa Police, 2011

5.8.9 Transport and Roads

The District's road network consists of almost 22 000 km, of which only 16% is surfaced. Roads within the WDM are adequately connected with National, Provincial, and neighbouring District roads. The primary route network includes the N1, N11, R518, R572, R33, R510, R516, and the R101. Despite the District's high degree of interconnectedness, there is no direct route connecting the District and the Province to the North West Province. There is concern about the rapid degrading of many roads due to the increase of economic activities throughout the District (increase in heavy vehicles with mining materials), the situation is exacerbated by a lack of maintenance and rehabilitation. It should be noted that there are a number of road building and surfacing projects in progress, which will improve accessibility via roads and mobility of people in general (WDM, 2012). The local municipality has a total road distance just exceeding 6 000 km, of which only 12% is surfaced. Like the District, the municipality's road network is in a poor state (MLM, 2012).

Transport corridors formed by road networks usually plays a pivotal part in facilitating and supporting regional development initiatives. Transport corridors also offer advantages to mining, manufacturing and other businesses developments planned for the area. Within the WDM, there are a number of corridors found in Lephalale and Mogalakwena.

Main corridors of freight near the proposed project site include:

- N11 Tshamahansi to Mokopane (25 km);
- Mahwelereng to Mokopane (14 km); and
- R518 Mmalapetleke to Mokopane (25 km).

The immobility of communities within the local municipality area was noted to be a concern. Car ownership within the municipal area is low and commuters depend on public transportation. The majority of the population mostly uses public transport services (bus and taxi operations). 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). There is a train/railway station in Mokopane and a railway network, however these routes only allow for long distance passengers (MLM, 2012).

Figure 18: Donkey cart as mode of transport

Major intersections within the site-specific study area (found at all points where the N11 branch off towards communities), have a very high volume of visible traffic, particularly at peak times. There are a number of both light and heavy vehicles that travel the road. Large trucks belonging to local mining companies regularly use the road. A significant proportion of roads within the study area are in a poor condition this situation is worsened by the continued heavy traffic on most of these roads.

There are also internal village streets and these are generally in a bad state. Once the major roads have undergone general upgrading, attention can be given to the upgrading the minor roads. It was found that within the study area both the paved and unpaved portions of the road are considered to be 'poor' with less than half of roads in this area is paved. The improvement of road quality in the study area is therefore necessary and will be an important aspect of any development project requirements.

A traffic impact assessment was undertaken by Impofu Engineering Services in 2013, this assessment established that the proposed Platreef project is expected to result in an increase in traffic, but that the road network has capacity to accommodate this (Impofu Engineering Services, 2013). The increase in traffic will likely result in several safety risks to the public. Road upgrades are proposed to ensure the sustainability of the development traffic on the network, as well as to reduce the safety risk to the public (Impofu Engineering Services, 2013).

5.8.10 Challenges in Providing Basic Service Delivery

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);
- Aging 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.

According to the Mogalakwena IDP (2012/2013) the following are priority areas for the municipality, identified in order of urgency, as shown in Table 33. According to this ranking the provision of water and sanitation is the municipality's main priority area followed by roads and storm water, then economic development and employment. In contrast however, the priority areas that all wards noted as important were roads and storm water, electricity, crime prevention, safety and security.

Community needs can be converted into development opportunities for private sector investment, especially as part of corporate social responsibility and local economic development plans.

Table 33: Municipal and ward priority areas – directly affected villages

Rank	Priority area identified by municipality	Identified as important by community	
		Relevant Wards	Relevant Villages
1	Water & sanitation	20, 21, 22, 23	Tshamahansi, Ga-Kgobudi, Mzumbani
2	Roads & storm water	20, 21, 22, 23, 24	Tshamahansi, Ga-Kgobudi, Madiba, Mzumbani

Rank	Priority area identified by municipality	Identified as important by community	
		Relevant Wards	Relevant Villages
3	Local economic development & unemployment	22	Ga-Kgobudi
4	Institutional arrangements	None	None
5	Electricity	20, 21, 22, 23, 24	Tshamahansi, Ga-Kgobudi, Madiba, Mzumbani
6	Solid waste & environmental management	20, 22, 23, 24	Tshamahansi, Ga-Kgobudi, Madiba, Mzumbani
7	Land & cemeteries	20, 22	Tshamahansi, Ga-Kgobudi, Mzumbani
8	Housing	20, 22, 23	Tshamahansi, Ga-Kgobudi, Mzumbani
9	Crime prevention, safety & security	20, 21, 22, 23, 24	Tshamahansi, Ga-Kgobudi, Madiba, Mzumbani
10	Education	20, 21, 22, 24	Tshamahansi, Ga-Kgobudi, Madiba, Mzumbani
11	Health & social development	20, 22, 23, 24	Tshamahansi, Ga-Kgobudi, Madiba, Mzumbani
12	Sports, arts & culture	20, 21, 22, 24	Tshamahansi, Ga-Kgobudi, Madiba, Mzumbani
13	Transport	20, 21	Tshamahansi, Mzumbani

5.9 Mine-community Relations

Community perceptions about-and attitudes towards the proposed Platreef Project can been shaped by social political events and/or existing attitudes towards mining activities within the project area. Anglo American's Mogalakwena operation and Lonmin's prospecting activities are located relatively close to the Platreef operation, and are also focussed on Platinum extraction.

Factions within communities surrounding Lonmin's prospecting area are resisting Lonmin's activities project as a result of the killings at Lonmin's Marikana operation (Mines and Communities, 2012). Protest action within the surrounding communities provides evidence that Platinum mining is perceived in a negatively light by some groups within the resident population (Noordnuus, 2012; Piplinks, 2012; SABC, 2012).

In 2012 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 Mahwelerengmagistrate's court (Piplinks, 2012).

In recent public meetings public discontent against mining houses were again reiterated, people perceived mines to be untrustworthy, disrespectful, unfair and sowing division among community members and traditional leadership. During these meetings it became clear that there exist massive expectations for employment throughout communities, if these expectations are not dealt with it might result in even more civil unrest.

In another incident communities affected by the Anglo, Lonmin and Platreef projects respectively, launched a combined protest action, indicating widespread discontent against Platinum 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.

6 IMPACT ASSESSMENT AND RECOMMENDED MITIGATION MEASURES

The organisation and presentation of the full range of socio-economic 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, 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. 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 or excessive in-migration.

Finally, many socio-economic impacts cascade. For example, in-migration is itself an impact, but in turn may engender additional impacts, such as pressures on available services and natural resources.

6.1 Overview of Impacts

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 proponent, as well as international best practice. For this reason, predicted impacts have been categorised within the project phase (construction, operation and decommissioning) it is likely to originate, recognising that many impacts will span over more than one project phase.

This categorisation of impacts is shown in Table 34; this table also provides the structure for the remainder of this section. Impacts are discussed in greater detail below, and appropriate mitigation measures are recommended to ameliorate negative impacts and enhance positive ones. Where relevant, the reader is referred to applicable specialist studies, in which more comprehensive and quantitatively-orientated information is provided regarding aspects that contribute to the identified social impacts.

Table 34: Summary of potential impacts

Project phase and impact type		Impact name
Construction phase	Positive	Job creation during construction
		Multiplier effects on the local economy
		Economic empowerment of previously disenfranchised communities
		Skills transfer and development
		Community development induced by LED and CSI
	Negative	Physical and economic displacement
		Disruption of movement patterns
		Construction-related health and safety impacts
		Visual/acoustic/vibration and air quality impacts
		Increase in spread of communicable diseases and social pathologies
		Conflict/competition between newcomers and incumbent population
		Increased pressure on local services/ resources
		Establishment and growth of informal settlements
		Opposition because of perceived negative impacts
Operational phase	Positive	Job creation during operation
		Regional economic development
	Negative	Dependency on mine for sustaining local economy
		Operation-related health and safety impacts
Decommissioning	Positive & Negative	Impacts on the work force
		Impacts on the local community
		Impacts on the wider community
Cumulative impacts	Positive	Job creation
	Negative	Population influx
		Dependency on mine for sustaining local economy
		Impact on the visual environment

6.2 Construction Phase

This section deals with the social impacts that will originate during the construction phase of the proposed project, most of the identified impacts will continue beyond this phase. Predicted construction phase impacts include:

- Five positive impacts, namely job creation due to construction activities, multiplier effects on the local economy, economic empowerment of previously disenfranchised communities, skills transfer and development, community development induced by LED and CSI; and
- Nine negative impacts, namely physical and economic displacement, disruption of movement patterns, visual/ acoustic/ vibration/ and air quality impacts, conflict or competition between newcomers and the incumbent population, increased pressure on local services and resources, increased social pathologies, establishment and

growth of informal settlements, construction-related health and safety impacts, and opposition because of perceived negative impacts.

These impacts are discussed in greater detail below, and appropriate mitigation measures are recommended to ameliorate negative impacts and enhance positive ones. Where relevant, the reader is referred to the appropriate specialist studies, in which more comprehensive and quantitatively-orientated information is provided regarding aspects that contribute to the identified social impacts.

6.2.1 Job Creation During Construction

6.2.1.1 ***Impact description***

The Platreef Project has the potential to provide considerable employment to people within the local and site-specific study area during the construction phase. Most communities within these study areas are characterised by poverty and underdevelopment (see Section 5.5 and 5.6). Notable socio-economic statistics include a *high unemployment rate* in the local (20%) and site-specific (17%) study area; also almost half of the population within these areas have no formal monthly income.

It is clear that households within these study areas face significant socio-economic challenges. Project related employment therefore has the potential to considerably improve the livelihoods and income stability of future employees and their dependants. As indicated in Section 3.2, the construction activities will create approximately 2400 jobs over a period of 5 years. There exist widespread expectations throughout the area that the mine should provide a large proportion of these employment opportunities to members of affected communities (see Section 5.9). These expectations will be met to a large degree as Platreef's recruitment policy encourages local recruitment, it is expected that between 40 and 50% of the workforce (1000 - 1200) will be recruited from local labour sending areas.

Whether the unemployed and under-employed will be able to take up employment opportunities at the mine depends largely on their level of education and skill, as well as work experience; a relatively small proportion of the site-specific (21%) and local study (14%) area have graduated from secondary school. Data collected in the study area revealed that several people have skills to execute elementary occupations and operate industrial machines. In addition mining and quarrying 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 5.3.5 and 5.4.2). In addition the SLP submitted as part of Platreef's MRA outlines several skill development initiatives that can provide relevant skills training and education to those who do not yet have the required skill and education level. During the construction process potential candidates can also be identified to receive skills training for future opportunities.

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 6.2.2 below). The creation of employment opportunities (direct and indirect) during the construction phase of the project can therefore be seen as a significant positive impact on the surrounding communities.

6.2.1.2 *Recommended mitigation measures*

Given that communities in the vicinity of the mine will be most affected by the project, it is consistent with 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 order to enhance the benefits of employment creation for these communities, it is recommended that the following measures be implemented:

- In order to ensure that employment practices comply with Platreef's local recruitment policy, it is recommended that recruitment be coordinated through the local Department of Labour (DoL) rather than on-site;
- Recruitment should take place using the existing skills database[3], as opposed to lists of potential candidates compiled by an individual. This minimises the probability of nepotism or corruption to taint the recruitment process;
- In order to promote the creation of employment opportunities for women and youth, Platreef has made a commitment to reserve at least 10% of local employment opportunities for women and younger persons, respectively. 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 recorded in the skills registry to fill these positions. The performance indicator for the promotion of employment of women and youth would be the number of local women and persons under the age of 35 who are employed in the construction phase of the project;
- A monitoring system should be established to ensure that the subcontractors honour the specified local employment policy;
- If required, the local resident status of applicants should be verified in consultation with community representatives; and
- 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.

[3] It should be noted that the current skills and business database is not exhaustive of all possible candidates and might be outdated, hence sufficient opportunity should be provided to community members to register and/or update their skills profiles.

Table 35: Impact rating - Job creation during construction

IMPACT DESCRIPTION: Job creation during construction				
Predicted for project phase:	Pre-construction	Construction	Operation	Decommissioning
Dimension	**Rating**	**Motivation**		
PRE-MITIGATION				
Duration	Medium term (3)	Equal to the duration of the construction phase of the project	Consequence: Slightly beneficial (9)	Significance: Minor - positive (36)
Extent	Local (3)	Platreef's employment and recruitment policies already promotes local employment		
Intensity x type of impact	Moderate - positive (3)	Platreef intends to employ at least 40% local labour		
Probability	Probable (4)	Without appropriate mitigation, local employment targets might not be achieved.		
MITIGATION: - Recruitment to be coordinated through the Department of Labour - Update and optimal use of the skills database - Promotion of female and youth employment - Effective implementation of training and skills development initiatives - Monitoring subcontractors in terms of local employment targets - Labour-intensive construction methods should be promoted where possible				
POST-MITIGATION				
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)	Employment opportunities will make considerable contribution to surrounding communities		
Probability	Certain (7)	Mitigation will maximise probability that local recruitment targets are achieved and local benefits optimised.		

6.2.2 Multiplier Effects on the Local Economy

6.2.2.1 *Impact description*

The proposed project will result in several economic benefits for local communities through direct and multiplier effects stimulated by capital expenditure and construction activities. Firstly large scale construction activities will increase the demand for wide variety of goods and services, and as a result stimulate local manufacturing and service sectors opportunities. 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 (see Section 3.6). In this regard Platreef intends to focus on increasing opportunities for local HDSA suppliers of goods and services to the operation (see Section 3.7.2). A considerable part of the mine's needs will, however, be highly technical and unlikely to be found in the site-specific or local study area. For these needs Platreef may procure from businesses elsewhere in the Local or District Municipality, this will expose a wider area to the mine's economic stimulus, albeit to a lesser degree.

Local and regional procurement spend 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. In addition a considerable proportion of the construction workforce will be housed in accommodation options (e.g. guest houses or rental options) within the local municipality; this too will contribute positively towards the growth of the local economy. 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 formal and second economy.

The project will likely result in considerable population influx (see Section 6.2.10), which is mostly associated with negative socio-economic consequences, 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. This will particularly be the case if workers recruited from elsewhere represent higher-level occupations and have relatively high disposable incomes; the proposed project will initially recruit skilled employment from other areas (see Section 3.7). Increased markets for local entrepreneurs will compound on existing economic multiplier effects.

Finally the local economy will benefit from the estimated R 160 million to be spent on LED. Both LED and HRD represent progress within the local municipality, thereby also creating conditions conducive to economic growth.

6.2.2.2 ***Recommended mitigation measures***

The measures recommended in Section 6.2.1 to maximise local employment through the project will also serve to maximise the positive impacts of the proposed project on the local economy. In addition, the following measures are recommended to enhance the positive consequences of this impact:

- When appointing subcontractors, the proponent should give preference to appropriate subcontractors/SMMEs located in the surrounding communities, then in the municipal area, and then only to contractors located elsewhere or outside the province;
- The proponent should utilise the electronic business database to identify local SMMEs and businesses;
- Where appropriate SMMEs do not exist, the proponent should investigate the possibility of aligning the training/ skills development. In this regard the effective

implementation of SMMEs development programmes outline in the SLP, as well as the monitoring thereof is recommended;

- The proponent should establish linkages with other mining proponents in the area involved in skills and SMME development, in order to enhance the effort to create suitable service providers within the local area; and
- Using the accommodation database to identify suitable housing options for the workforce within the local study area.

Table 36: Impact rating - Multiplier effects on the local economy

IMPACT DESCRIPTION: Multiplier effects on the local economy				
Predicted for project phase:	Pre-construction	Construction	Operation	Decommissioning
Dimension	**Rating**	**Motivation**		
PRE-MITIGATION				
Duration	Long term (4)	Will be most pronounced during the construction phase, some aspects (LED) will continue through the life of mine	Consequence: Moderately beneficial (12)	Significance: Minor - positive (48)
Extent	Province/ Region (5)	Will include mostly local and some regional impacts		
Intensity x type of impact	Moderate - positive (3)	Will derive from increased cash flow from wages, local procurement, economic growth, LED and HRD initiatives		
Probability	Probable (4)	Will depend on proportion of local spending by employees as well as capacity of local enterprises to supply		
MITIGATION: - Give preference first to capable subcontractors located in the local municipal area - Establish linkages with other mining proponents in the area involved in skills and SMME development - Align skills development to build capacity of SMMEs - Utilise electronic business database to identify local SMMEs - Utilise the accommodation database to identify local accommodation options				
POST-MITIGATION				
Duration	Long term (4)	As for pre-mitigation	Consequence: Highly beneficial (14)	Significance: Moderate - positive (84)
Extent	District (4)	SMME capacity building will limited procurement from outside		
Intensity x type of impact	Very high - positive (6)	Mitigation will likely increase intensity of multiplier effects		
Probability	Highly probable (6)	Increased local employment and procurement will		

		enhance likelihood of benefits to local economy	

6.2.3 Economic Empowerment of Previously Disenfranchised Communities

6.2.3.1 *Impact description*

As stated in the mine's SLP, which has been developed in compliance with the requirements of the MPRDA, Platreef is committed to the transformation of the South African economy. An important contribution of the proposed project will be the empowerment of previously disenfranchised communities. Platreef intends to transfer a 26% stake in the mine to affected communities (most of which has HDSA status), women and children, and employees.

In addition, Platreef's preferential employment and procurement policy (see Section 3.6) clearly states the mining house's commitment to procure from HDSA vendors as well as its intention to promote new opportunities for meaningful participation with HDSA operated enterprises. In particular Platreef's procurement strategy aims to ensure that the procurement HDSA targets of the DMR in respect of services (70%), goods (50%) and capital goods (40%), are reached within 5 years. Platreef will also seek to allocate at least 25% of its annual expenditure in services and consumables after the first 5 years to suppliers with a HDSA status.

6.2.3.2 *Recommended mitigation measures*

The mine has drafted a preferential procurement policy to maximise opportunities for HDSA's to supply goods and services to the mine, this will facilitate procurement and enhance the effect of this impact. Platreef has also identified the empowerment of HDSA operated SMMEs in the area as one of the LED projects. It is recommended that a monitoring system be established to ensure that Platreef 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.

Table 37: Impact rating - Economic empowerment of previously disenfranchised communities

IMPACT DESCRIPTION: Economic empowerment of previously disenfranchised communities				
Predicted for project phase:	Pre-construction	Construction	Operation	Decommissioning
Dimension	**Rating**	**Motivation**		
PRE-MITIGATION				
Duration	Long term (4)	Will continue through the life of mine	Consequence: Slightly beneficial (9)	Significance: Negligible - positive (27)
Extent	Local (3)	Will be beneficial to local business and local communities		
Intensity x type of impact	Low - positive (2)	Will involve local procurement and local shareholding		
Probability	Unlikely (3)	HDSA service providers might not be available, and those that are available might not have the capacity or skills to provide goods and services		
MITIGATION: - Develop capacity of local HDSA SMMEs - Monitor compliance with procurement policy				
POST-MITIGATION				
Duration	Beyond project life (6)	Successful empowerment of HDSA will continue after mine closure	Consequence: Highly beneficial (15)	Significance: Moderate - positive (75)
Extent	Local (3)	As for pre-mitigation		
Intensity x type of impact	Very high - positive (6)	Mitigation will likely increase the capacity of HDSA operated SMMEs		
Probability	Likely (5)	As for pre-mitigation		

6.2.4 Skills Transfer and Development

6.2.4.1 *Impact description*

Platreef will employ a considerable number of people from the site-specific and local study areas during the lifetime of the project; the skill level of these employees will vary from unskilled to highly skilled (see Section 3.6). A significant proportion of the construction and operational workforce will benefit from work experience as well a formal training programmes stipulated in the mine's SLP, especially those individuals who start with a low level skill set.

Platreef's SLP outlines extensive human resource and skills development programmes. The focus of the SLP within the first five years will be on the implementation of these initiatives among communities and current employees. Platreef has budgeted just over R 6 million for the skills development of their labour force, and another R 24 million is set out to develop

skills within surrounding communities; details on the type of skills training is set out in Section 3.8.2.

The selection of the candidates for the skills development will take into consideration the HDSA targets of the mine as well as targets for women in mining. The SLP stipulates that the primary beneficiary of community skills development initiatives should be those communities that are likely to be the most affected by proposed project activities (see Section 3.8.2).

Training programmes will be rolled out during the construction phase of the project and will continue into the decommissioning phase, at which time the focus of skills training will shift to furnish employees and community members with skills to sustain their livelihoods after mine closure. Platreef also intends to launch mentoring and capacity building programmes focussed on empowering especially HDSA operated SMMEs, this initiative will likely increase the intensity of this impact.

6.2.4.2 ***Recommended mitigation measures***

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

- Guidelines encapsulated in Platreef's HRD and LED policies will optimise skills development among employees and communities;
- In order to ensure that skills development initiatives addresses the needs of communities or individuals, the details of the development projects should be finalised in consultation with community or employee representatives;
- Skills development programmes should where possible focus on scarce skills training, an indication of skills shortages are identified in the findings of Skills and Business survey (DWE, 2012b) as well as in Section 5.3.4 of the baseline;
- Where possible, initiatives should be implemented in collaboration with other existing initiatives implemented by NGOs, the municipality and other mining houses in the area; and
- Skills transfer should be encouraged during the construction phase by identifying people with the potential and the capacity to learn the skills required to qualify for opportunities during the operational phase of the plant.

Table 38: Impact rating - Skills transfer and development

IMPACT DESCRIPTION: Skills transfer and development				
Predicted for project phase:	Pre-construction	Construction	Operation	Decommissioning
Dimension	**Rating**	**Motivation**		
PRE-MITIGATION				
Duration	Long term (4)	Benefits will likely occur during construction and operational phase	Consequence: Slightly beneficial (9)	Significance: Minor - positive (54)
Extent	Local (3)	Households and individuals in affected villages will be the primary beneficiary's		
Intensity x type of impact	Low - positive (2)	Skills development will benefit some community members, employees and businesses		
Probability	Highly probable (6)	The mine is obliged by the SLP to carry out skills development		
MITIGATION: '-Early involvement of project beneficiaries - Collaboration with other existing/planned skills development programmes - Skills development programmes should where possible focus on scarce skills -Guidelines encapsulated in Platreef's HRD and LED policies will optimise skills development				
POST-MITIGATION				
Duration	Beyond project life (6)	Successful implementation will see benefits continuing beyond life of mine	Consequence: Highly beneficial (15)	Significance: Moderate - positive (90)
Extent	Local (3)	As for pre-mitigation		
Intensity x type of impact	Very high - positive (6)	Recommended measures will enhance stakeholder involvement and positive impact on beneficiaries		
Probability	Highly probable (6)	Recommended measures will improve likelihood of skills development programmes being implemented effectively		

6.2.5 Community development induced by LED and CSI

6.2.5.1 ***Impact description***

Platreef's SLP includes plans for local economic development as well as CSI projects, with local communities being the major benefactors. LED and CSI programmes 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 5.6). 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. Platreef allocated a total of R 110 million to their LED and CSI projects, which include the following:

- Establishment of an agricultural centre with warehousing and packaging facilities;
- School support and development programme;
- Construction of four community centres at high density economical hubs;
- The establishment of a business hub and capacity building programmes for SMMEs;
- Projects to be identified by the local communities;
- Projects to be identified by the MLM; and
- Capacity building programmes for municipality and project management teams.

Successful implementation will contribute to maximising the benefits of the proposed project for Mokopane and surrounding communities, as well as towards offsetting any negative impacts that these communities may experience as a result of the proposed project. 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.

6.2.5.2 ***Recommended mitigation measures***

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

- Platreef 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 also suggested that Platreef CSI arm should contact the CSI and socio-economic development departments of other mines or NGOs in the area 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;
- The details of Platreef's LED and CSI programmes should (where still possible) be designed in consultation with community representatives in order to ensure that the actual needs of communities are met; and
- In addition to the development initiatives described in the SLP, it is recommended that the proponent investigates the feasibility of implementing additional development projects, benefitting a wider audience than those described above, under the auspices of Corporate Social Responsibility (CSR). The identification of such initiatives should occur in consultation with both the local municipality and the affected communities, and care should be taken to ensure adequate involvement of women and the youth in this consultation process. The implementation of CSR initiatives will not only serve to further develop the local area, but will enhance the

proponent's a social license to operate in the area and minimise potential mobilisation against the project (also see Section 8.4).

Table 39: ***Impact rating - Community development induced by LED and CSI***

IMPACT DESCRIPTION: Community development induced by LED and CSI				
Predicted for project phase:	Pre-construction	Construction	Operation	Decommissioning
Dimension	**Rating**	**Motivation**		
PRE-MITIGATION				
Duration	Long term (4)	LED and CSI activities are planned for the life of mine	Consequence: Slightly beneficial (9)	Significance: Negligible - positive (27)
Extent	Local (3)	Will be beneficial to communities in the site-specific and local study area		
Intensity x type of impact	Low - positive (2)	Community currently experiences high unemployment and poverty levels, and low literacy levels		
Probability	Unlikely (3)	Without adequate stakeholder involvement, LED projects is unlikely to be sustainable		
MITIGATION: - Assuring stakeholder buy-in and participation - Aligning LED and CSI initiatives with those of other development role-players				
POST-MITIGATION				
Duration	Beyond project life (6)	If sustainably managed and effectively marketed, could extend beyond the life of the mine	Consequence: Highly beneficial (15)	Significance: Moderate - positive (75)
Extent	Local (3)	As for pre-mitigation		
Intensity x type of impact	Very high - positive (6)	Recommended measures will enhance stakeholder involvement and positive impact on beneficiaries		
Probability	Likely (5)	Recommended measures will improve likelihood of project sustainability		

6.2.6 Physical and economic displacement

6.2.6.1 ***Impact description***

Economic displacement refers to a loss of access to cultivated land or other livelihood resources, while ***physical displacement*** refers to a situation where people or households have to be moved to a different location to make way for project infrastructure or due to considerable risk to personal safety. A large proportion of the site-specific study area is currently used for purposes other than mining (see Section 3.5 and 5.2.2). The nature and location of most project surface infrastructure options (see Section 7.2), will result in some economic displacement; the possibility of physical displacement is also discussed below.

Table 40 below details the extent of displacement associated with each infrastructure option; the table also shows the proximity of infrastructure to nearby settlements. International best practice advocates clearing a buffer of 500m around major surface infrastructure. South African legislation allows for a smaller buffer of 100m. In addition to these guidelines, a recent High Court decision stipulated that Platreef's mining operations must not encroach to within 200m of surrounding communities (DWE, 2013b).

It is evident from the table presented below that most infrastructure options do coincide with land that is currently used for agricultural or grazing purposes; loss of this land will result in economic displacement of several households (also see Section 7.2). Platreef intends enter into a surface lease agreements with all community members who have grazing or ploughing land, these agreements will see that affected individuals are compensated.

The table also shows that the degree of physical replacement will vary considerably, depending on which buffer area Platreef decides on imposing around different infrastructure options. Current indications are that minimal physical displacement will occur.

Table 40: Displacement associated with various infrastructure alternatives

Infrastructure options	Physical Displacement				Economic displacement (agricultural and grazing land use uses)	Affected communities
	Residential structures within footprint	Residential structures within 100m	Residential structures within 200m	Residential structures within 500m		
Plant Option 1	N	Y	Y	Y	Y	Ga-Magongwa (240m), Ga-Kgobudi (90m), and Sekgoboko (290m)
Alt. pant Option 2	N	N	N	Y	Y	Ga-madiba (500m)
TSF 1	N	N	Y	Y	Y	Masodi, Masehlaneng and Maroteng (170m)
TSF 2	N	N	N	N	Y	N/A
TSF 3	Y	N	N	N	Y	N/A
Pipeline (TSF2)	N	N/A	N/A	N/A	Y	N/A
Pipeline (TSF3)	N	N/A	N/A	N/A	Y	N/A
Landfill site 1	N	N	Y	Y	Y	Ga-Kgobudi (150m)
Landfill site 2	N	Y	Y	Y	N	Mzumbani (0m)
Landfill site 3	N	N	Y	Y	Y	Ga-Kgobudi (150m)
Landfill site 4	N	N	N	Y	Y	Mzumbani (300m), Ga-Kgobudi (250m)
Landfill site 5	N	N	N	N	Y	N/A

Figure 19: Residential structure on the TSF 3 site

Recommended mitigation measures

It must be noted that Platreef has expressed the intention of ensuring that project design and implementation are conducted in such a way that ***no physical displacement will be required***. The mitigation measures outlined below are therefore specifically focused on ***economic displacement.***

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

- A Resettlement Action Plan (RAP) should be developed in consultation with the affected households to specify which assets or livelihood resources will be affected by the project, and how these will be compensated for or replaced. The RAP would have to pay particular attention to factors that might complicate the replacement/ compensation process, such as:
    - The fact that property and land boundaries are not clearly demarcated. This can become a problem during RAP implementation when people have to declare which piece of land they own. This might have several implications for the ownership of land to which people are moved. For instance, the question needs to be addressed of whether land ownership would be granted to people

or traditional leaders. With the limited available land in the area and the population pressure it is unlikely that households will be able to secure more agricultural land and therefore the loss of livelihood may be permanent.

- The fact that a large portion of affected individuals are expected to be women – who are already vulnerable and will become more vulnerable as a result of resettlement. 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.

- Prior to the development of the RAP, the proponent should finalise the mine layout plan and determine its policy and approach to minimise displacement. This will inform the extent of displacement; in particular, it will determine if all dwellings and settlements within 500m (international best practice standard) of the project footprint will be resettled, or if a smaller buffer zone (e.g. 100m or 200m) will be adopted.
- The displacement of non-vulnerable households and individuals should be considered on a case-by-case basis. The proponent should negotiate a favourable solution with each affected household, and the extent of economic displacement should be investigated by a suitably qualified professional. The proponent should seriously consider the recommendations made by such a professional and reach a favourable solution with each economically displaced individual.
- Platreef's current strategy of entering into surface lease agreements with all community members who have grazing or ploughing land will minimise the impact of economic displacement.

Table 41: Impact rating - Physical and Economic displacement

IMPACT DESCRIPTION: Physical and Economic displacement				
Predicted for project phase:	Pre-construction	Construction	Operation	Decommissioning
Dimension	**Rating**	**Motivation**		
PRE-MITIGATION				
Duration	Permanent (7)	Affected households and individuals will be permanently relocated and land uses could permanently be discontinued	Consequence: Highly detrimental (-15)	Significance: Moderate - negative (-75)
Extent	Limited (2)	Although physical displacement will be minimal, economic displacement will occur in the project footprint		
Intensity x type of impact	Very high - negative (-6)	Without proper compensation, it could have a devastating effect		
Probability	Likely (5)	Nature and location of project will most likely result in economic displacement		
MITIGATION: -Determine party responsible for relocation - RAP development - Surface lease agreements - For non-vulnerable households and individuals, negotiate favourable outcome on a case-by-case basis				
POST-MITIGATION				
Duration	Permanent (7)	As for pre-mitigation	Consequence: Moderately detrimental (-12)	Significance: Minor - negative (-60)
Extent	Limited (2)	As for pre-mitigation		
Intensity x type of impact	Moderate - negative (-3)	Adequate mitigation will significantly reduce adverse effects of displacement		
Probability	Likely (5)	As for pre-mitigation		

6.2.7 Disruption of Movement Patterns

6.2.7.1 ***Impact description***

Several sites designated for the mine infrastructure is situated on unpopulated, but arable land, often used for agriculture and grazing purposes. During previous field investigations, evidence was found of agricultural and grazing activities for formal or informal livelihood purposes, as well as evidence of footpaths and rural roads that transverse areas reserved for project infrastructure (see Section 5.8.9). However these movement patterns have

already been restricted during prospecting phase, which might alleviate the impact of the construction and operational phases on this aspect of daily living.

Disruption in travelling patterns may also result from the fencing-off of the construction sites, especially if foot paths and rural roads used by locals to travel to agricultural plots and grazing areas as wells as in between villages; these traveling patterns do occur within the site-specific study area (see Section 7.2 and 3.5). When a fence is erected, road users could be forced to find more time consuming routes, thus adding several hundred metres to the distance they have to travel. In some extreme cases, individual's movement patterns might be permanently blocked due to the permanent location of infrastructure.

Project infrastructure (including alternative options) might be located near the following villages Ga-Kgobudi, Ga-Magongoa, Tshamahansi, Madiba, Masodi, Sekgoboko, Mzumbani, Ga-Molekana, Masehlaneng, and Maroteng (see Section 7.2). It is therefore likely that safety precautions (e.g. road closures and detours) associated with construction might disrupt and restrict or block access between these villages.

The proposed project may also disrupt the daily movement patterns and lives of people due to increased traffic on local roads, especially on the N11 road, which forms a transport corridor between these communities and Mokopane (see Section 5.8.9). Increase in traffic levels has been quantitatively assessed in a separate specialist study, the study found that the project will contribute to a considerable increase in traffic, and notes that unless sufficient mitigation is undertaken the increase in traffic will likely result in increased risk for road users (Impofu Engineering Services, 2013). Like most roads in the municipality this road is currently in deteriorated condition. Additional heavy traffic caused by construction vehicles might increase the number of road accidents and will cause further deterioration of the roads, which will add to disruption. The R518, another major in the area, runs along the western edge of the Platreef's prospecting area. Increased traffic on this road may compound on the disruption and movement delays described above.

6.2.7.2 ***Recommended mitigation measures***

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

- The measures suggested (see Section 6.2.8) to minimise traffic related problems will also serve to minimise the disruption of daily movement patterns on the N11 and R518 roadways;
- Where possible ensure that access to fields and grazing areas are uninterrupted by providing alternative access routes and/or temporary access points during construction activities;
- Measures suggested in the traffic impact assessment report conducted for the proposed project (Impofu Engineering Services, 2013); and
- Platreef's CLOs should ensure that residents are kept informed on a day-to-day basis of construction progress and of when access will be blocked. It is also recommended that the CLOs assist in circulating a printed timetable of the construction schedule.

Table 42: Impact rating - Disruption of movement patterns

IMPACT DESCRIPTION: Disruption of movement patterns				
Predicted for project phase:	Pre-construction	Construction	Operation	Decommissioning
Dimension	**Rating**	**Motivation**		
PRE-MITIGATION				
Duration	Medium term (3)	Will be most pronounced during construction phase	Consequence: Moderately detrimental (-12)	Significance: Moderate - negative (-84)
Extent	Local (3)	Will affect communities using foot paths as well as those using the N11 and R 518		
Intensity x type of impact	Very high - negative (-6)	Could affect a large number of people travelling on the N11 and R518 from villages to work in Mokopane		
Probability	Certain (7)	Construction traffic will affect travelling on major roads, and the location of infrastructure will overlap with several walkways that allows access to agricultural and grazing areas		
MITIGATION: -Measures to alleviate traffic problems will also serve to maintain and promote access (see Section 6.3.2.1 and Impofu Engineering Services, 2013). -Inform communities of planned construction activities that would affect vehicle/ pedestrian traffic				
POST-MITIGATION				
Duration	Medium term (3)	As for pre-mitigation	Consequence: Slightly detrimental (-7)	Significance: Negligible - negative (-35)
Extent	Local (3)	As for pre-mitigation		
Intensity x type of impact	Very low - negative (-1)	Measures are likely to reduce the intensity of this impact		
Probability	Likely (5)	Measures would decrease the probability of impacts occurring to the extent predicted		

6.2.8 Construction-related Health and Safety Impacts

6.2.8.1 ***Impact description***

Construction activities are likely to result in an increase in traffic volumes on roads in the vicinity of the local study area. A detailed assessment of traffic-related impacts is given in a separate specialist study (Impofu Engineering Services, 2013). Nevertheless, it is important that traffic impacts are mentioned in the context of this study, as increased traffic volumes could pose a safety risk to surrounding communities. Insofar as traffic impacts affect the lives and well-being of people, it therefore also qualifies as a social impact.

The transportation of machinery and construction materials on road sections, which is also used by private motorists (N11 and R518), pose an additional risk to the safety off all road users due increased traffic volumes and the presence of Heavy Motor Vehicles (HMVs) on the roads. Animals such as goats and cattle wandering onto the road would also be at risk. Increased traffic could also lead to damage of roads and increased speeding through residential areas, thereby impacting on the safety of communities situated along the affected roads.

Larger traffic volumes will likely force people to use alternative routes, usually via deteriorated rural roads, increased traffic volumes combined with their lack of traffic carrying capacity can further increase the risk to road users.

Other health - and safety-related risks associated with the construction phase of the proposed project include the following:

- With regards to the construction site and other infrastructure, safety impacts emanate from the risk of non-mine workers (especially children) 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 route employment duties;
- The incorrect storage of hazardous products could have potentially fatal consequences as these could explode or seep into the ground, polluting groundwater used for domestic purposes. Also, access to such hazardous products by non-mine employees could be devastating to such individuals;
- An increased risk of veld fires as a result of construction workers making fires. Such fires may pose a risk to the safety of surrounding community members and the construction workers; and
- Safety risks associated with blasting activities will be minimal due to the underground nature of mining4.

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. It is likely that these impacts will be most pronounced for the directly affected villages, given their close proximity to the sites earmarked for project infrastructure (see 7.2).

6,2,8,2 ***Recommended mitigation measures***

- The following measures are recommended to mitigate the potential impacts described above:
    - Measures to decrease traffic-related impacts;

[4] At the time of writing this report insufficient quantitative blasting data was available to objectively justify the impact of blasting; however concerns raised during community meetings showed that there was serious concern regarding the effects of blasting on especially residential structures.

- Traffic at the intersections of the N11 and the access roads from the construction site must be regulated at all times, with haul trucks yielding to oncoming traffic;
- Measures suggested in the traffic impact assessment report conducted for the proposed project (Impofu Engineering Services, 2013);
- Roads must be adequately maintained to prevent deterioration of roads surfaces due to heavy vehicle traffic. Road maintenance should not be the sole responsibility of the MLM or the Department of Public Works;
- 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;
- HMV traffic should be restricted to daylight hours and the workweek if at all possible. Thus, it is recommended that trucks should not be operated after sunset (when driving conditions are dangerous) or over weekends (when the volume of private motorist traffic heavier); and
- Headlights of HMV should be on at all times, especially in misty conditions.

- The storage of hazardous products should adhere to the prescribed guidelines in order to minimise the probability of environmental damage and the accidental ignition of explosives;
- Any blasting activities that are expected to entail nuisance and safety impacts on the community 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 SMS service for surrounding land owners. Finally, no blasting should take place before the required relocation of households (if any) out of the blasting buffer zone;
- A mechanism should be put in place to lodge complaints regarding damage to structures with the mine or contractor's Environmental Safety Officer;
- All mine employees should be issued with the appropriate PPE and educated regarding the risks involved in mining activities;
- Unauthorised access to all the project elements (specifically the construction site, stockpiles, crushing plant, and storage facilities 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; and
- 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 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; and
- Mechanisms must be established to ensure that any health and safety concerns or incident should be dealt with promptly by Platreef's CLOs.

Table 43: Impact rating - Construction-related health and safety impacts

IMPACT DESCRIPTION: Construction-related health and safety impacts				
Predicted for project phase:	Pre-construction	Construction	Operation	Decommissioning
Dimension	**Rating**	**Motivation**		
PRE-MITIGATION				
Duration	Medium term (3)	Will be limited to construction related activities	Consequence: Moderately detrimental (-12)	Significance: Minor - negative (-72)
Extent	Local (3)	Will affect neighbouring communities, as well as road users from wider communities		
Intensity x type of impact	Very high - negative (-6)	Could place the lives of neighbouring community members at risk		
Probability	Highly probable (6)	Increase in traffic levels has been quantitatively assessed in a separate specialist study		
MITIGATION: -Traffic control - Road maintenance - Regulation of traffic at intersection of haul road at N11 - Fencing of mine site - Prevention of fires - Community education				
POST-MITIGATION				
Duration	Long term (4)	As for pre-mitigation	Consequence: Slightly detrimental (-7)	Significance: Negligible - negative (-28)
Extent	Local (3)	As for pre-mitigation		
Intensity x type of impact	Very low - negative (-1)	Appropriate mitigation will reduce the risk of this impact		
Probability	Probable (4)	Mitigation measures will reduce the probability of accidents by reducing risk		

6.2.9 Visual/ acoustic/ vibration/ air quality impacts

6.2.9.1 ***Impact description***

The construction of the proposed project will represent a significant intrusion into the surrounding physical environment, which could impact on surrounding communities in various ways, this impact will likely continue into the operational phase of the project, but will be most prominent during the construction phase. For instance:

- ***Acoustic impacts:*** Increased traffic, construction activities and blasting will increase noise in the area;
- ***Visual impacts:*** Surface infrastructure and lights and night will affect the quality of the visual environment; and
- ***Air quality:*** Dust generated by construction activities, and by vehicles moving on access roads during construction could affect air quality in the area. In addition, air
- ***Vibration:*** Blasting – at the time of writing this report insufficient quantitative blasting data was available to objectively justify the impact of blasting; however concerns raised during community meetings showed that there was serious concern regarding the effects of blasting on especially residential structures.

The quantitative assessment of these impacts is the subject of separate specialist studies and will not be repeated here except to stress that all these impacts will affect the quality of life of people in surrounding communities, and should therefore be viewed as constituting indirect social impacts. Such secondary social impacts may come about in the following ways: By affecting the area's sense of place. "Sense of place" is a social phenomenon that refers to the identity and character of a landscape felt by local inhabitants, and often visitors. 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. Several factors have to be borne in mind when assessing the potential magnitude of such an impact. One of these factors is the current state of the landscape: if it is currently relatively unspoilt, the impact of a large and conspicuous artificial structure on its sense of place will be correspondingly larger than if the landscape already bears the marks of development. Another factor is the meanings that people attach to the anticipated changes: if a development promises to offer tangible benefits to surrounding communities (in terms of job creation, etc.), it is unlikely that its impact on the character of the landscape will be perceived in a negative light – even if that impact is substantial from an aesthetic point of view.

Although mining already constitutes an important activity in the area, some communities directly adjacent to the project site have until now retained a predominantly rural character. The project is likely to impact negatively on the sense of place of these areas, especially in terms of the visual intrusion of the plant, which might be located within 200m of the Ga-Mangongwa and Tshamahansi communities. As far as the people who stand to benefit from the project (in terms of job creations, etc.) are concerned, however, it is likely that such impacts will be regarded as irrelevant.

6.2.9.2 *Recommended mitigation measures*

Measures to mitigate impacts related to the visual environment, noise, air quality and groundwater are discussed in separate specialist study reports, and will not be repeated here. Relevant mitigation measures to address the impact of the project on the area's sense of place include adequate rehabilitation of the landscape when the mine and plant are decommissioned. Successful implementation of measures recommended to enhance positive impacts, will reduce the extent to which local communities will experience the impact of the proposed project on their sense of place

Table 44: Impact rating - Visual/ acoustic/ vibration/ air quality impacts

<table>
<tr><th colspan="5">IMPACT DESCRIPTION: Visual/ acoustic/ vibration/ air quality 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>Project Life (5)</td><td>Will peak during construction, but continue through the life of the mine</td><td rowspan="3">Consequence: Moderately detrimental (-13)</td><td rowspan="4">Significance: Moderate - negative (-91)</td></tr>
<tr><td>Extent</td><td>Limited (2)</td><td>Will affect adjoining communities</td></tr>
<tr><td>Intensity x type of impact</td><td>Very high - negative (-6)</td><td>Will affect the quality of life of neighbouring communities</td></tr>
<tr><td>Probability</td><td>Certain (7)</td><td colspan="2">Impacts on the visual environment, noise, vibration, air quality and groundwater have been quantitatively assessed in separate specialist studies</td></tr>
<tr><td colspan="5">MITIGATION:
- Visual, noise, vibration, and air quality impacts are discussed in separate specialist studies
- For sense of place: rehabilitation after closure & measure to enhance positive impacts</td></tr>
<tr><td colspan="5">POST-MITIGATION</td></tr>
<tr><td>Duration</td><td>Project Life (5)</td><td>As for pre-mitigation</td><td rowspan="3">Consequence: Slightly detrimental (-10)</td><td rowspan="4">Significance: Minor - negative (-63)</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 will reduce impacts to some extent</td></tr>
<tr><td>Probability</td><td>Certain (7)</td><td colspan="2">As for pre-mitigation</td></tr>
</table>

6.2.10 Increase in Spread of Communicable Diseases and Social Pathologies

6.2.10.1 ***Impact description***

Large development projects offer people the opportunity to be employed; as news regarding the proposed project spreads, expectations regarding possible employment opportunities will take root. Consequently, the areas surrounding the proposed project might experience an influx of opportunistic job seekers, who are likely to travel from neighbouring towns in pursuit of securing employment. The pull factor for job-seekers to the area will be intensified by the high unemployment and poverty rate in the regional, local and the site-specific study area (see Section 5.5). Furthermore, since part of the construction workforce will probably originate from outside the local area (due to the short supply of appropriately skilled workers locally and construction contractors preferring to use their own staff), the area will experience an *additional* influx of people (see Section 3.7).

The presence of mining activities and resulting influx of job seekers is usually 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 5.6 and 5.7, HIV/AIDS is already a cause of a high percentage of deaths throughout the Province, District and LM. Incidence of social pathologies is usually increased in areas where there is a combination of poverty, lack of education and vulnerability; this scenario makes the site-specific study area especially susceptible to this impact. It is also conceivable that risky behaviour, such as substance abuse and sexual promiscuity can increase as a result of irresponsible spending associated with an increase of disposable income.

Adding to this impact, is the likeliness of most employees to be male who are suggested to be more prone to engaging in promiscuous sexual activities as well as an inclination not to use protection, which can result in increases in STDs and in particular HIV. Often those infected with AIDS succumb to TB as this disease is more likely to be fatal when one has a substantially weekend immune system. An increase in the prevalence of HIV/AIDS will likely increase the incidence rate by exposing more people to the disease. The extent and severity of this impact, as well as other influx related impacts, will be partially reduced by Platreef housing their employees in existing accommodation options, rather than in construction camps or hostels.

An influx of foreign job seekers might also be accompanied by an increase in crime. Even if particular instances of crime are not as a result of the newcomers, they may still be attributed to them by local communities. The incidence of crime can even increase if failed migrant job-seekers, stay in the area and revert to criminal strategies to survive.

Apart from the impact described above, the influx of job-seekers and construction workers can impact on the local population in several other ways:

- Firstly it is possible that conflict might arise between the newcomers and local residents (see Section 6.2.11);

- Substantial population influx might place significant pressure on local infrastructure and services, especially if these are already taking strain (see Section 6.2.12); and
- Population influx might also accelerate the growth of the informal settlements or the development of new informal settlements (see Section 6.2.13).

6.2.10.2 ***Recommended mitigation measures***

The following measures are recommended to address the aforementioned impacts:

- Measures to address population influx
  - The proportion of job opportunities allocated to locals be maximised – thus reducing the required need for outsiders. In this regard, emphasis should be placed on residents within the settlements surrounding the project area;
  - 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/or Ward Committees) to assist in communicating the intention of to give preference to local labour, and also to assist in identifying the local labour pool; and
  - Unsuccessful job-seekers should be encouraged to return to their place of origin and not remain in the site-specific study area. This exercise should be undertaken in collaboration with the ward councillors and municipality.
- Measures to combat the spread of STDs, particularly HIV/AIDS, as follows:
  - Implement HIV/AIDS and alcohol abuse campaigns in the communities;
  - Platreef should make HIV/AIDS and STD awareness and prevention programmes a condition of contract for all suppliers and sub-contractors;
  - Align awareness campaigns with those of other organisations active in the area (NGOs, Local Municipality, Anglo Platinum, etc.);
  - Contractors should provide an adequate supply of free condoms to all workers. Condoms should be located in the bathrooms and other communal areas on the construction site;
  - A Voluntary Counselling and Testing (VCT) programme should be introduced during the construction phase and continued during operations. This should preferably be undertaken in conjunction with the existing governmental VCT programmes;
  - Platreef and their subcontractors should undertake a HIV/AIDS and STD prevalence surveys amongst all workers on a regular basis. It will involve a voluntary test available to 100% of the workforce. The results of the survey will help to determine the HIV/AIDS and STD strategy. When and if statistically representative results are obtained the results of the survey should be made available to management and workers at the same time.

Results should be presented in statistical terms so as to ensure confidentiality;

- Access at the construction site should be controlled to prevent sex workers from either visiting and/or loitering at or near the construction villages; and
- Initiate a program that encourages health benefits such as appropriate diets and exercise.

- Measures to address crime:
  - Construction workers should be clearly identifiable by wearing proper construction uniforms displaying the logo of the construction company. Construction workers could also be issued with identification tags;
  - Liaison structures are to be established with local police to monitor social changes in crime patterns during the construction phase. Liaison should also be established with existing crime control organisations, such as local Community Policing Forums and other crime prevention organisations;
  - The proponent should establish 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; and
  - Platreef should minimise or cease construction activities before nightfall.

Table 45: Impact rating - Increase in spread of communicable diseases and social pathologies

IMPACT DESCRIPTION: Increase in spread of communicable diseases and social pathologies				
Predicted for project phase:	Pre-construction	Construction	Operation	Decommissioning
Dimension	**Rating**	**Motivation**		
PRE-MITIGATION				
Duration	Long term (4)	Would be most pronounced during construction but could continue into operational phase	Consequence: Moderately detrimental (-13)	Significance: Moderate - negative (-78)
Extent	Local (3)	Will affect surrounding communities due to multiple sexual partners, but might extend further		
Intensity x type of impact	Very high - negative (-6)	Could severely affect well-being of communities, especially as cumulative impact combining with existing effects of other mining operations in the area		
Probability	Highly probable (6)	Communities are already experiencing extensive social pathologies		
MITIGATION: - Extensive HIV/ AIDS awareness and general health campaign - Cease construction activities before nightfall - Clear identification of workers; prevention of loitering - Liaison with police, community policing forum - Influx management				
POST-MITIGATION				
Duration	Long term (4)	As for pre-mitigation	Consequence: Moderately detrimental (-10)	Significance: Negligible - negative (-30)
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		
Probability	Unlikely (3)	Mitigation measures should be effective in reducing severity of impacts		

6.2.11 Conflict/ Competition between Newcomers and Incumbent Population

6.2.11.1 ***Impact description***

As was mentioned in Section 6.2.11 above, a proportion of the construction workforce for the project will be locals, while at least a certain percentage of semi and highly skilled

employees will be sourced from elsewhere in South Africa. It is possible that *conflict* might arise between these '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. During recent public meetings stakeholders indicated that the local populace will likely react negatively (and even violently) towards migrant workers, especially if those workers fill positions that could have been filled from within the local municipality (see Section 5.9). The likelihood of this impact will increase as a result of the high unemployment rate in the site-specific and local study area (see Section 5.5). If any outsiders instigate sexual relationships with wives, daughters or girlfriends of locals, this would certainly exacerbate the problem.

Conflict such as this can also be partially attributed to the legacy that mining has left the area (see Section 5.9). Insufficient consultation has created the feeling in these provinces that mines leave communities worse off and unable to sustain themselves. Thus there is a large amount of perpetual anger that can be triggered by migrant workers.

6.2.11.2 ***Recommended mitigation measures***

Measures described in Section 6.2.10 above to mitigate population influx, will serve to reduce the consequences of this impact to negligible level.

Table 46: Impact rating - Conflict/ competition between newcomers and incumbent population

IMPACT DESCRIPTION: Conflict/ competition between newcomers and incumbent population				
Predicted for project phase:	Pre-construction	Construction	Operation	Decommissioning
Dimension	**Rating**	**Motivation**		
PRE-MITIGATION				
Duration	Medium term (3)	Could continue after construction is complete	Consequence: Moderately detrimental (-11)	Significance: Minor - negative (-44)
Extent	Limited (2)	Will affect surrounding communities		
Intensity x type of impact	Very high - negative (-6)	High unemployment in the area is likely to engender intense competition for jobs		
Probability	Probable (4)	Highly probable that some workers would have to be recruited from elsewhere and that locals will feel overseen		
MITIGATION: - Measures to mitigate population influx (See Section 6.2.10)				
POST-MITIGATION				
Duration	Medium term (3)	As for pre-mitigation	Consequence: Slightly detrimental (-7)	Significance: Negligible - negative (-21)
Extent	Limited (2)	As for pre-mitigation		
Intensity x type of impact	Low - negative (-2)	Stringent enforcement of preferential local employment policy may reduce influx of jobseekers		
Probability	Unlikely (3)	Verification of workers as locals will reduce probability of outsiders fraudulently gaining positions		

6.2.12 Increased Pressure on Local Services/ Resources

6.2.12.1 ***Impact description***

An influx of job-seekers into the area, combined with the presence of an additional workforce, will place considerable pressure on local infrastructure and services. The fact that most aspects of municipal service delivery is already taking strain throughout the local and site-specific study, as was shown throughout Section 5.8, means that any additional service delivery requirements imposed by population influx will exasperate the situation. Therefore there is a real risk that the local municipality would not be able to supply additional services. This risk derives from the fact (evident from the information provided in Section 5.8) that the municipality is already experiencing backlogs in the provision of services, especially housing.

It is important to note that during times of stress or scarcity of services, there will be a need to access resources that extend further than the LM and this is likely to increase the extent of this impact to possibly the DM.

6.2.12.2 ***Recommended mitigation measures***

In order to address this impact, it is recommended that:

- That the proportion of job opportunities allocated to locals be maximised by means of the measures recommended in Section 6.2.1 above – thus reducing the need for outsiders;
- It is also strongly recommended that Platreef liaise with the local municipality to ensure that expected population influx is taken into account in infrastructure development planning; and
- Measures specified in Section 6.2.10 to discourage an influx of job-seekers will help mitigate the consequences of this impact.

Table 47: Impact rating - Increased pressure on local services/ resources

IMPACT DESCRIPTION: Increased pressure on local services/ resources				
Predicted for project phase:	Pre-construction	Construction	Operation	Decommissioning
Dimension	**Rating**	**Motivation**		
PRE-MITIGATION				
Duration	Long term (4)	May continue throughout the construction phase	Consequence: Moderately detrimental (-13)	Significance: Moderate - negative (-78)
Extent	District (4)	May affect resource management at district level		
Intensity x type of impact	High - negative (-5)	Intensify existing service delivery and resource problems and backlogs		
Probability	Highly probable (6)	Population influx will affect the performance of both the district and local municipalities		
MITIGATION: - Liaison with district and local municipalities well in advance to ensure needs are met -Ensure that municipalities take into account expected population influx -Influx management				
POST-MITIGATION				
Duration	Long term (4)	As for pre-mitigation	Consequence: Slightly detrimental (-8)	Significance: Negligible - negative (-32)
Extent	Local (3)	Effective planning can reduce impacts to local municipal level		
Intensity x type of impact	Very low - negative (-1)	Mitigation measures can assist in reducing backlogs		
Probability	Probable (4)	Mitigation will reduce likelihood of impact to the extent predicted		

6.2.13 Establishment and Growth of Informal Settlements

6.2.13.1 *Impact description*

The shortage of services in the site-specific and local areas described in Section 6.2.12 includes a severe shortage of housing (see Section 5.8.7). This issue deserves special mention, as it underlies an increasing social problem in these areas – the establishment and growth of informal settlements. Informal settlements, because of their lack of access to services such as water, sanitation and electricity, tend to be associated with a number of economic, social and health-related problems such as: increased dependency, increased demand for goods and services 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 5.8.7); these settlements are either stand-alone settlements like Mzumbani, or informal extensions of formalised settlements like in the case of Tshamahansi and Ga-Kgobudi. 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.

6.2.13.2 *Recommended mitigation measures*

Mitigation measures recommended in Section 6.2.10 to discourage influx into the municipal area are deemed sufficient to prevent growth of informal settlements.

Table 48: Impact rating - Establishment and growth of informal settlements

IMPACT DESCRIPTION: Establishment and growth of informal settlements				
Predicted for project phase:	Pre-construction	Construction	Operation	Decommissioning
Dimension	**Rating**	**Motivation**		
PRE-MITIGATION				
Duration	Medium term (3)	Likely to extend into the operational phase	Consequence: Moderately detrimental (-11)	Significance: Minor - negative (-55)
Extent	Limited (2)	Will affect the site specific area and other nearby communities		
Intensity x type of impact	Very high - negative (-6)	Will exacerbate existing negative social conditions		
Probability	Likely (5)	Informal settlements is already a problem (e.g. Mzumbani)		
MITIGATION: - Mitigation measures recommended in Section 6.2.10 to discourage influx				
POST-MITIGATION				
Duration	Medium term (3)	As for pre-mitigation	Consequence: Slightly detrimental (-6)	Significance: Negligible - negative (-18)
Extent	Limited (2)	As for pre-mitigation		
Intensity x type of impact	Very low - negative (-1)	Mitigation is likely to reduce the number of new squatting residences established		
Probability	Unlikely (3)	Mitigation will reduce the likelihood of this impact occurring to the extent predicted		

6.2.14 Opposition Because of Perceived Negative Impacts

6.2.14.1 ***Impact description***

This impact differs from the preceding ones in that it deals with potential impact of community 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 community 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 engender community opposition to the proposed project – which, in turn, could potentially give rise to active community resistance to project plans. This has already been evidenced through past socio-political

tension between Platreef and several communities within the site-specific study area (see Section 5.9).

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

Despite Platreef's best intentions to fostering positive community relations, there is considerable 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 not tolerate mines employing low-skilled persons from outside the MLM;
- Stakeholders 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. Several court cases has already been fought between Platreef and multiple community factions during the exploration phase of the project (see Section 5.9);
- 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 will affect their quality 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, they 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 mines are not contributing to the well-being of the local population (as discussed in Section 5.9) poses somewhat of 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.

6.2.14.2 ***Recommended mitigation measures***

There is some potential for generating goodwill among communities in the local study area, stemming from primarily the following:

- The fact that the project is expected to create a large number of job opportunities, which would benefit a considerable number of households in communities (as discussed in Sections 6.2.1 and 6.3.1); and

- Local communities are hoping to reach agreeable solutions to their problems relating to the impacts of mining in the area of their communal well-being.

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, Platreef should seek to capitalise on the existing goodwill through appropriate mitigation, as follows:

- The proponent should honour the commitments made in the existing SLP;
- The proponent 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 ESIA should be summarised and presented to the surrounding land owners and communities in a simple and clear manner in order to illustrate that Platreef 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
- Platreef could also undertake regular community briefings to ensure community complaints are identified and addressed.

Table 49: Impact rating - Opposition because of perceived negative impacts

IMPACT DESCRIPTION: Opposition because of perceived negative impacts				
Predicted for project phase:	Pre-construction	Construction	Operation	Decommissioning
Dimension	**Rating**	**Motivation**		
PRE-MITIGATION				
Duration	Project Life (5)	May continue throughout the life of the operation	Consequence: Highly detrimental (-14)	Significance: Moderate - negative (-84)
Extent	Local (3)	Will be most prominent in surrounding villages, but might spread through the entire local municipal area		
Intensity x type of impact	Very high - negative (-6)	Could lead to negative publicity for the company; community mobilisation against the project		
Probability	Highly probable (6)	Stakeholders are sensitive towards many possible impacts that may result from development; also litigation has already occurred		
MITIGATION: - Communicate commitments regarding LED - Transparency regarding employment practices - Presentation of EIA findings in clear and understandable manner				
POST-MITIGATION				
Duration	Project Life (5)	As for pre-mitigation	Consequence: Moderately beneficial (11)	Significance: Minor - positive (44)
Extent	District (4)	As for pre-mitigation		
Intensity x type of impact	Low - positive (2)	Mitigation will enable proponent to capitalise on existing goodwill		
Probability	Probable (4)	Widespread awareness of project benefits will increase probability of generating goodwill		

6.3 Operational Phase

This section deals with the social impacts that will be most pronounced or triggered during the operational phase of the proposed project. Only two of the impacts identified, described and rated in Section 6.2 will not continue during the operational phase of the prosed project, they are: job creation during construction and construction-related health and safety impacts. Additional impacts expected to arise during the operational phase are as follows:

- Two positive impacts, namely job creation and regional economic development; and
- Two negative impacts, namely economic dependency on the project, and operational-related health and safety impacts.

As with the construction phase impacts, each of the abovementioned impacts is discussed in greater detail below, and appropriate mitigation measures are recommended. Where relevant, the reader is referred to the appropriate specialist studies, in which more comprehensive and quantitatively-orientated information is provided regarding aspects that contribute to the identified social impacts.

6.3.1 Job Creation during Operation

6.3.1.1 *Impact description*

Employment during the operation phase has the potential of being over a long period (life of mine is estimated at 30 years), which can have a major, long term, positive impact for successful job applicants and their dependents. A large proportion of the mine's permanent operational workforce is to be sourced from the local labour sending area, which is defined as communities within a radius of 50km around the mine.

As indicated in Section 3.7.1, it is anticipated that production will start in 2018 and will reach maximum output in 2020; the number of people to be employed by the project will increase from around 600 to just more than 2 100 during this period. A considerable proportion of these workers can be unskilled or semi-skilled. Available information indicates that, although surrounding communities have high unemployment rates and high percentages of people with low education levels, a sufficient number of appropriately skilled local recruits would be available to fill most of these low level vacancies. This conclusion is based on the fact that:

- During the skills and business survey, a number of respondents indicated that they are physically able and have mining-related skills or work experience; and
- The skills development programmes implemented during the construction phase will increase the skill level and employability of a considerable number of people in the local labour pool.

This means that local communities can potentially take maximum advantage of employment opportunities to be created by the proposed mine. 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 of indirect employment opportunities. These could include jobs in the informal sector (for instance, in terms of food stalls for the convenience of workers), and in the formal sector (for instance, by sourcing goods and service from enterprises in the local municipal area where possible).

6.3.1.2 *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 (see Section 6.2.1). In addition, it is recommended that local employment opportunities be

maximised as far as possible, by intensifying efforts in the SLP, which are aimed at developing scarce skills.

Table 50: Impact rating - Job creation during operation

IMPACT DESCRIPTION: Job creation during operation				
Predicted for project phase:	Pre-construction	Construction	Operation	Decommissioning
Dimension	**Rating**	**Motivation**		
PRE-MITIGATION				
Duration	Project Life (5)	Life of mine will be 30 years	Consequence: Moderately beneficial (12)	Significance: Minor - positive (60)
Extent	District (4)	A considerable number of positions will be filled by persons living in the local municipal area; and some from elsewhere in the province		
Intensity x type of impact	Moderate - positive (3)	Approximately 2 100 jobs will be created		
Probability	Likely (5)	Without appropriate mitigation, forecasts of majority local recruitment might not be achieved		
MITIGATION: -As for construction phase - Section 6.2.1 - Intensifying efforts in the SLP to develop scarce skills				
POST-MITIGATION				
Duration	Project Life (5)	As for pre-mitigation	Consequence: Highly beneficial (15)	Significance: Moderate - positive (105)
Extent	District (4)	As for pre-mitigation		
Intensity x type of impact	Very high - positive (6)	Mitigation will maximise local job creation		
Probability	Certain (7)	Mitigation will maximise probability that local recruitment targets are achieved and local benefits optimised		

6.3.2 Regional Economic Development

6.3.2.1 ***Impact description***

The state will receive royalty and tax payments for the permanent extraction of non-renewable commodities by Platreef (DMR, 2004). A proportion of these funds will likely be used to stimulate regional economic growth, by re-investing the funds into infrastructure development. Platreef will also contribute over R300 million, together with other mining operations, towards the cost of the Olifants River Water Resource Development Project.

Improved water supply infrastructure will have positive implications for regional and provincial economic growth, as economic sectors such as the mining and agricultural industries are heavily reliant on water for optimal production and growth.

Platreef plans to invest R160 million into their SLP over the first five years. The majority of these funds will be used for the implementation of LED projects, which are intended to fast track sustainable economic development in the site-specific and local study area. Platreef's procurement transformation strategy will increase opportunities for HDSA suppliers, while SMME capacity building programmes will enable these suppliers to take maximum advantage of aforementioned opportunities.

The mine will employ a large workforce during the operational phase, and the projected monthly operational wage bill will result in a substantial injection of cash into the economies of the local and regional study areas. This will stimulate the formal and informal retail and service sectors and downstream secondary industries.

6.3.2.2 ***Recommended mitigation measures***

Measures recommended to maximise benefits from local employment (see Section 6.2.1 and 6.3.1), as well as skills and economic development (see 6.2.4 and Section 6.2.5), will also serve to maximise the positive impacts of the project on the regional economy.

Table 51: Impact rating - Regional economic development

IMPACT DESCRIPTION: Regional economic development				
Predicted for project phase:	Pre-construction	Construction	Operation	Decommissioning
Dimension	**Rating**	**Motivation**		
PRE-MITIGATION				
Duration	Long term (4)	Life of mine is 30 years	Consequence: Moderately beneficial (10)	Significance: Negligible - positive (30)
Extent	Province/ Region (5)	Royalties and taxes will aid regional development; contribution to regional infrastructure projects; culmination of positive economic effects will stimulate regional economic growth		
Intensity x type of impact	Very low - positive (1)	Effects on regional economy will not be as pronounced		
Probability	Unlikely (3)	Platreef 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, skills and economic development				
POST-MITIGATION				
Duration	Long term (4)	As for pre-mitigation	Consequence: Highly beneficial (15)	Significance: Moderate - positive (75)
Extent	Province/ Region (5)	As for pre-mitigation		
Intensity x type of impact	Very high - positive (6)	Successful mitigation will create an environment conducive for economic growth		
Probability	Likely (5)	Mitigation will increase the chance of the manifestation of this impact		

6.3.3 Dependency on Mine for Sustaining Local Economy

6.3.3.1 ***Impact description***

As indicated in Section 5.4, the local economy is relatively dependent on mining, with just more than 20% of the municipal GDP derived from the sector. While this 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.

The mining operation will reach the end of its life after 30 years, if no new viable deposits are located in the interim. Upon closure, the employment opportunities associated with the project (approximately 2 100 workers, most of whom will have been sourced from the local area) will be lost, as well as the corresponding benefits (see Section 6.2.2, 6.2.3, and 6.3.1).

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.

Economic downturn and the resultant loss of employment could result in increases in social pathologies, such as crime, prostitution, substance abuse, and social unrest - as was evidenced by recent strikes due to layoffs in the platinum sector. Taking into consideration the high dependency ration in the site-specific and local study areas, the loss of income will have considerable negative impacts on the wellbeing of households where employees were the sole breadwinners.

6.3.3.2 ***Recommended mitigation measures***

Platreef has already made several provisions in their SLP to minimise the effect of downscaling or mine closure on employees, these measures are considered adequate for minimizing the possible negative consequences of job losses. Platreef lists the following strategies in their SLP:

- The mine will develop turnaround or redeployment strategies to attempt to provide alternative solutions for creating job security should job losses become unavoidable;
- In the event of possible downscaling and closure, the mine will publicise to mines in the industry that excess skills are available and seek to place these employees on transfer;
- In the event of closure the mine will consider the several actions, suggested by the Department of Labour, these include:
    - Provide business support services to workers while they are still at work and able to explore alternative options;

- Provision of assistance and mentoring in business feasibility studies and plans;
- Include business and technical training for self-employment;
- Provide time off so that workers can undergo such training before they leave their workplace;
- Facilitate links with Local Business Service Centres and other appropriate support institutions;
- Engage with banks and other lending institutions to explore and facilitate arrangements for workers who want to use all or part of their retrenchment packages as collateral security for business loans; and
- Mine management will also approach the Department of Labour for the utilisation of its resources and support services, such as counselling services, and placement services offered by its Labour Centres.

- The mine will also offer:
  - Skills assessments and written recognition of their prior learning, experience and qualifications;
  - Assessment of potential and actual career planning;
  - Referrals to accredited training providers;
  - Step-by-step guidelines on starting their own business;
  - Job-hunting tips; and
  - Assistance in identifying labour market opportunities, local economic development initiatives and any other employment opportunities.
- As part of its SLP commitments the mine intends to equip the affected employees as well as members of the community – with portable skills that will benefit the individuals concerned;
- Platreef also intends to establish a Future Forum, a site-specific labour-management body, which will consult on general issues relating to the SLP as well as issues related to the job security of employees; and
- Support economic diversification through development of alternative markets.

Table 52: Impact rating - Dependency on mine for sustaining local economy

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/ mine closure will be long-lasting	Consequence: Highly detrimental (-16)	Significance: Major - negative (-112)
Extent	Local (3)	Will mainly affect surrounding communities as a large proportion of the workforce is to be recruited locally		
Intensity x type of impact	Extremely high - negative (-7)	A large number of HHs will be heavily dependent on the mine		
Probability	Certain (7)	Mining is not a permanent activity		
MITIGATION: - Develop turnaround or redeployment strategies - Publicise to mines in the industry that excess skills are available - Implement actions, suggested by the Department of Labour - Equip the affected employees as well as members of the community with portable skills - Support economic diversification through development of alternative markets				
POST-MITIGATION				
Duration	Long term (4)	Mitigation may decrease period of unemployment	Consequence: Slightly detrimental (-9)	Significance: Minor - negative (-36)
Extent	Local (3)	As for pre-mitigation		
Intensity x type of impact	Low - negative (-2)	Mitigation will reduce retrenchment related impacts		
Probability	Probable (4)	Mitigation will somewhat reduce dependency of local economy of mining		

6.3.4 Operation-related Health and Safety Impacts

6.3.4.1 *Impact description*

Although the operation of the mine will result in benefits to the population residing in local communities, it is also expected to give rise to a number of negative health and safety impacts. These impacts may result from changes in air quality and noise, as well as traffic volumes.

As mentioned earlier, detailed assessments of these impacts have been undertaken in other specialist studies forming part of this ESIA, such as the air quality, noise, visual and traffic

impact assessments. As is the case with construction-related impacts, these studies indicate that the health and safety risk of the project during its operational phase are expected to be minimal, and will be confined almost exclusively to plant personnel. Increases in the traffic loads on the N11 highway in the vicinity of the project will be mostly due to organic growth, with a very limited contribution from the mine itself. The greatest source of traffic-related risk derives from hauling concentrated material to processing plants possibly located at Rustenburg, Polokwane or Witwatersrand.

6.3.4.2 *Recommended mitigation measures*

Measures to decrease risk to personal health and safety during the operational phase of the project are the same as those recommended for the construction phase. In addition the following measures can also be implemented:

- The plant should be maintained during its lifetime so as to minimise the risk of plant personnel being injured as result of failed machinery etc.; and
- Rigorous operational health and safety programmes should be implemented.

Table 53: Impact rating - Operation-related health and safety impacts

<table>
<tr><th colspan="5">IMPACT DESCRIPTION: Operation-related 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>Motivation</td><td></td><td></td></tr>
<tr><td colspan="5">PRE-MITIGATION</td></tr>
<tr><td>Duration</td><td>Long term (4)</td><td>Impacts will continue for the life of the mine</td><td rowspan="3">Consequence: Moderately detrimental (-10)</td><td rowspan="3">Significance: Minor - negative (-54)</td></tr>
<tr><td>Extent</td><td>Limited (2)</td><td>May affect plant employees</td></tr>
<tr><td>Intensity x type of impact</td><td>Moderately high - negative (-4)</td><td>Accidents/ injuries could have severe negative consequences</td></tr>
<tr><td>Probability</td><td>Highly probable (6)</td><td colspan="2">The large scale of proposed operations will ultimately result in several situation where accidents can occur</td></tr>
<tr><td colspan="5">MITIGATION:
- As for construction phase
- Plant maintenance
- Rigorous health and safety programmes</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 (-7)</td><td rowspan="3">Significance: Negligible - negative (-21)</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>Very low - negative (-1)</td><td>Mitigation will reduce incidence of accidents/injuries</td></tr>
<tr><td>Probability</td><td>Unlikely (3)</td><td colspan="2">Mitigation will reduce likelihood of negative consequences</td></tr>
</table>

6.4 Decommissioning Phase

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

- **Impacts on the work force** – *psychological issues* (e.g. 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* (e.g. if new jobs are created, but at remuneration levels are lower than those in the mining industry might impact negatively on the local economy), *demographic changes* (e.g. migration of skilled workforce from the area); and *dependency on CSI initiatives* (e.g. financial support to local amenities may be withdrawn by the power plant); and
- **Impacts on the wider community** - *the national and regional economy* (e.g. impact on the viability of other indigenous industries due to the loss of locally produced outputs), financing of decommissioning (e.g. adequate funds may not have been provided for decommissioning and site rehabilitation); and infrastructure (e.g. mining assistance with road and infrastructure maintenance).

6.5 Cumulative Impacts

Cumulative impacts are defined as impacts arising from the combined effects of two or more projects or actions. 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 rather than site-specific impacts and have a tendency to increase the intensity of impacts already predicted for the proposed project.

The aim of this section is to highlight the nature of the cumulative socio-economic impacts that are expected to occur as result of the combined effect of the proposed project and other current or planned operations in the area (see Section 5.4.1). Three possible cumulative impacts were identified: impacts related to population influx, dependency on mining to sustain the local economy, and impacts on the visual environment and sense of place.

6.5.1 Job Creation and Multiplier Effects on the Local Economy

Approximately 2 100 people will be employed by the mine and its contractors during the

operational phase of the project. Several nearby mines such as those listed in Section 5.4.1 also employ substantial numbers of people; other mines planned for the area such as Lonmin 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.

Secondly 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. The proposed project will add to the existing positive effect of mining on local economic development by applying best practice in terms of local employment and procurement, as well as LED.

6.5.2 Impacts Related to Population Influx

The area has already experienced a significant influx of people in search of work at nearby mining operations such as Anglo Platinum's, Mogalakwena operation. It is likely that this existing impact will be exacerbated once it becomes known that recruitment for the Platreef project has started. Population influx is also likely to exacerbate the social pathologies, pressure on existing infrastructure and services, and the growth or establishment of informal settlements.

6.5.3 Dependency on Mining to Sustain the Local 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. Unless significant investment is made into economic diversification, the area is destined for a considerable economic slump once this process commences.

6.5.4 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, which is visible from the thirds TSF option), and future mining activities (e.g. Lonmin is prospecting on properties adjacent to Platreefs prospecting area) 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 mine shafts and heavy equipment.

The incremental change in the visual character of the area that will be brought about by the project can thus be interpreted as a cumulative impact on the sense of place stemming from the combined effect of the project and mining operations.

7 ASSESSMENT OF ALTERNATIVES

As mentioned in Section 3.5 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).

7.1 The "no-go" option and land use alternatives

7.1.1 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 6 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 5).

7.1.2 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.

Consideration of land use alternatives is one of the cornerstones of community planning. 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, agriculture and grazing. These 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.

With regards to ***agriculture***, an agricultural survey established that a large part 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 however 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. Due to the increasing prevalence of mining in the surrounding area, the viability of using the proposed project site for ***low-density residential*** purposes is increasing as housing demand increases. It should be noted that the current mine will be an underground operation, which means that surface land uses will only be partially affected.

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.

7.2 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, as does the location of wetlands and floodplains. The alternative plant option is located within the 50 year floodplain, which would rule out this area as an alternative plant site, leaving only the preferred option, which will likely result in the impacts described in Section 6. During the assessment the location of all alternative infrastructure options were taken into consideration; this implies that changes to the mine plan and layout of infrastructure will not significantly change the impacts predicted for the social environment.

8 POTENTIAL SOCIAL RISKS

The objective of this section is to identify any aspects of the receiving socio-economic environment that would represent significant risks to the proposed development. These may constitute constraints that would have to be accommodated in project design, or issues that would require appropriate management and mitigation. Social risk is linked to 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.
- *Delay:* could result in a delay to a project at any stage.
- *Reputational:* could cause damage to a company's reputation, which could result in delays or have financial implications.

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

8.1 Community Expectations

Community expectations regarding the proposed project are most frequently related to employment and CSI projects. When such hopes are not met with interventions or addressed with appropriated communication it may lead to potential stakeholder opposition and public mobilisation against the project. These are discussed in turn below.

8.1.1 Employment

In a context of widespread unemployment, local residents (and especially people in the proximate area to the development) will be dissatisfied if access to the finite construction phase jobs and the provision of associated services is perceived to be biased and preferential. 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 in the area; as is evidenced by recent protest action against Anglo American Mogalakwena Operation.

Platreef intends to source a significant proportion of its labour force from local labour sending areas (see Section 3.6). This will represent a considerable positive spin-off of the proposed project because employment will provide opportunities for local people to be trained and gain experience. Achieving local employment targets could, however, be difficult considered the low literacy levels and the small proportion of the population who are skilled to work in the mining sector (see Section 5.3.4 and 5.3.5); this will especially be this case if Platreef's skills development initiatives are not successful. Communicating this number to communities and not delivering on this promise might damage community relations even further and exacerbate any existing issues between the project proponent and communities (see Section 5.9).

Most of the surrounding communities will be expecting to benefit from the potential employment opportunities created by the proposed project, although they all are not equally affected. For instance there are 17 villages under the jurisdiction of the Mokopane TA, although only half of these might be directly affected. This situation must be resolved during future stakeholder consultation and public participation processes. This also applies to the procurement of services and goods from local businesses.

8.1.2 CSI Projects

As was evidenced in recent public meetings held in the area, communities living around the mine are generally well-acquainted with the obligations that mining companies have to develop labour sending communities through CSI and SLP. This might be attributed to experience with other mining houses active in the area (e.g. Anglo Platinum). Expectations of communities must be managed by informing them as to exactly what to expect from Platreef in terms of CSI.

8.2 Social Unrest and Community Opposition

The communities in the study area have in the past mobilised into protest action against Platreef and other mining houses exploring and operating in the area. This indicates that volatile elements exist in the site-specific study area. For instance there has been an incident of unrest where a group of community members protested on the Platreef Project exploration area and stopped the exploration drilling; several communities also boycotted the Platreef Skills and Business Survey.

It is possible that if expectations of the surrounding communities are not carefully managed that social discontent will continue and intensify. It is essential that communication channels are open between the communities and the Platreef Project so that stakeholders can lay complaints and discuss concerns with the Project. Although the existing CLO offices will go a long way in aiding such communication; it is still recommended that stakeholder engagement and public participation is on-going in order to manage expectations, allow for stakeholder input into the Project, inform and educate stakeholders about the project, and allow for open discussions. This will assist in anticipating any potential social issues, which may be a risk to the Platreef Project and to implement measures to avoid those risks.

It is possible that regardless of the Platreef Project's efforts for free, prior and informed consent that there will still be stakeholders who are dissatisfied with the process or use publicity of demonstrations as leverage either against the Project or for ulterior reasons

This potential for local instability should be taken into account together with the recent nationwide mining strikes, particularly in the platinum mining sector, which has also spilled over to mines near the study area (see Section 5.9). Community members may have a negative attitude towards the platinum mining sector as they may have spouses, friends or relatives that have been retrenched or treated unjustly by other platinum mining operations in areas such as Marikana and Anglo Platinum. 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 manner.

8.3 Political Tensions

It has been noted during consultations with stakeholders that there are existing tensions within some of the villages and between traditional authority structures such as the illegal occupation of land at Mzumbani Village and the legal process initiated by the Tshamahansi headmen to become chiefs. Tensions also exist between the elders of the villages and the youth, as well as between the political and traditional governance structures.

In order to reduce the risk of being caught up in local political conflicts, Platreef should at all times avoid creating the impression of being biased towards any particular faction. The company should also keep abreast of all political developments that have a potential to spill over into local conflict, where project-related consultation could be used as a platform for furthering ulterior agendas. One way of keeping abreast of relevant political developments is by implementing a press-tracking system, which would send and automated alert to relevant parties whenever press releases appear that contain keywords related to the area, the company and/or the project.

8.4 Failure to Acquire a Social License to Operate

Failure to avoid any of the aforementioned risks might detract from the Project proponent's "*social licence to operate*." A social license to operate may be defined as the on-going approval and acceptance from a local community and stakeholders for a mine or project to operate. A social license 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. A social license 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 free, prior informed consent from local communities and stakeholders. 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 as discussed in Section 4.1.3.

Several incidents in the past have deteriorated the relationship between Platreef and several factions within the community (See Section 5.9). Attention should be given to resolve and rectify these issues, to improve Platreef's standing in the local community. Without a social license to operate a project may face a reputational risk through publicity, financial risk if the social management system is not in line with lender requirements and a delay risk if community dissatisfaction and protests that can result in a stop to prospecting or mining.

8.5 Risks Associated with Physical and Economic Displacement

Communal land between the villages is allocated to specific villages and overseen by the relevant village headmen in association with the Chief. Land located between the directly affected areas is used by communities for agriculture and grazing. It is possible that the land is also used for the collection of natural resources such as firewood and medicinal plants (See Section 5.2.2 and 5.4.3). The proposed project will need to use land currently used for communal purposes. This is likely to restrict or stop access to these communal resources

(see Section 6.2.6). In some cases loss of access to agriculture and grazing land could have a significant impact on the livelihoods of affected households.

Relocation, whether physical or economic, may result in delays or additional financial costs to the project. If not carefully managed in an open, transparent and appropriate manner relocation can result in a stop to the project if affected people are not satisfied with the process. It may also result in a reputational risk if it is perceived that a project is not following best practice or resettlement compensation is not fair.

8.6 Land Claims

There are land claims on the farms Turfspruit 241 KR, Rietfontein 2 KS, and Bultongfontein 239 KR. These claims are still in the 'research' stage and therefore they have not been gazetted (see Section 5.2.1). 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.

9 CONCLUSION AND RECOMMENDATIONS

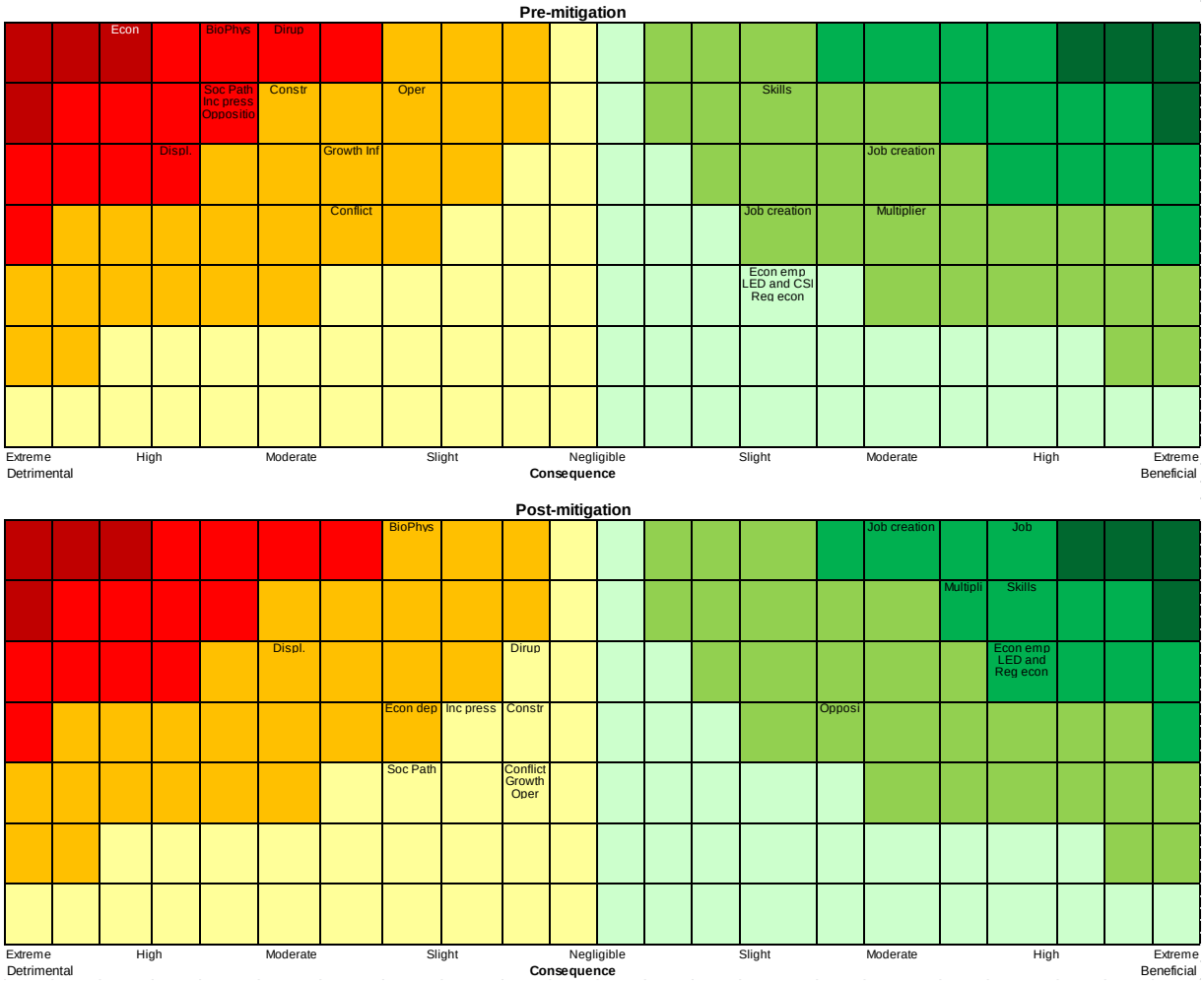
The pre- and post-mitigation ratings assigned to the various impacts discussed in Section 6 are summarised in Table 54 and graphically represented in Figure 20 below. In the figure, the entries in the various coloured cells correspond to the codes given for impacts in the first column of Table 54.

Table 54: Summary of impact ratings

Code	Impact	Pre-mitigation:						Post-mitigation:					
		Duration	Extent	Intensity	Conse-quence	Probability	Significance	Duration	Extent	Intensity	Conse-quence	Probability	Significance
Job creation Constr	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
Multiplier effects	Multiplier effects on the local economy	Long term	Province/ Region	Moderate - positive	Moderately beneficial	Probable	Minor - positive	Long term	District	Very high - positive	Highly beneficial	Highly probable	Moderate - positive
Econ emp ' HDSA	Economic empowerment of previously disenfranchised communities	Long term	Local	Low - positive	Slightly beneficial	Unlikely	Negligible - positive	Beyond project life	Local	Very high - positive	Highly beneficial	Likely	Moderate - positive
Skills transfer & dev	Skills transfer and development	Long term	Local	Low - positive	Slightly beneficial	Highly probable	Minor - positive	Beyond project life	Local	Very high - positive	Highly beneficial	Highly probable	Moderate - positive
LED and CSI	Community development induced by LED and CSI	Long term	Local	Low - positive	Slightly beneficial	Unlikely	Negligible - positive	Beyond project life	Local	Very high - positive	Highly beneficial	Likely	Moderate - positive
Displ.	Physical and economic displacement	Permanent	Limited	Very high - negative	Highly detrimental	Likely	Moderate - negative	Permanent	Limited	Moderate - negative	Moderately detrimental	Likely	Minor - negative
Dirup Move	Disruption of movement patterns	Medium term	Local	Very high - negative	Moderately detrimental	Certain	Moderate - negative	Medium term	Local	Very low - negative	Slightly detrimental	Likely	Negligible - negative
Constr H&S	Construction-related health and safety impacts	Medium term	Local	Very high - negative	Moderately detrimental	Highly probable	Minor - negative	Medium term	Local	Very low - negative	Slightly detrimental	Probable	Negligible - negative

Code	Impact	Pre-mitigation:						Post-mitigation:					
		Duration	Extent	Intensity	Conse-quence	Probability	Significance	Duration	Extent	Intensity	Conse-quence	Probability	Significance
BioPhys	Visual/ acoustic/ vibration and air quality impacts	Project Life	Limited	Very high - negative	Moderately detrimental	Certain	Moderate - negative	Project Life	Limited	Moderate - negative	Moderately detrimental	Certain	Minor - negative
Soc Path	Increase in spread of communicable diseases and social pathologies	Long term	Local	Very high - negative	Moderately detrimental	Highly probable	Moderate - negative	Long term	Local	Moderate - negative	Moderately detrimental	Unlikely	Negligible - negative
Conflict	Conflict/ competition between newcomers and incumbent population	Medium term	Limited	Very high - negative	Moderately detrimental	Probable	Minor - negative	Medium term	Limited	Low - negative	Slightly detrimental	Unlikely	Negligible - negative
Inc press services	Increased pressure on local services/ resources	Long term	District	High - negative	Moderately detrimental	Highly probable	Moderate - negative	Long term	Local	Very low - negative	Slightly detrimental	Probable	Negligible - negative
Growth Inf settl	Establishment and growth of informal settlements	Medium term	Limited	Very high - negative	Moderately detrimental	Likely	Minor - negative	Medium term	Limited	Very low - negative	Slightly detrimental	Unlikely	Negligible - negative
Opposition	Opposition because of perceived negative impacts	Project Life	Local	Very high - negative	Highly detrimental	Highly probable	Moderate - negative	Project Life	District	Low - positive	Moderately beneficial	Probable	Minor - positive
Job	Job creation	Project	District	Moderate	Moderate	Likely	Minor -	Project	District	Very	Highly	Certain	Moderate -

Code	Impact	Pre-mitigation:						Post-mitigation:					
		Duration	Extent	Intensity	Conse-quence	Probabili ty	Significan ce	Duration	Extent	Intensit y	Conse-quence	Probabili ty	Significan ce
creation Oper	during operation	Life		- positive	ly beneficial		positive	Life		high - positive	beneficial		positive
Reg econ dev	Regional economic development	Long term	Provinc e/ Region	Very low - positive	Moderate ly beneficial	Unlikely	Negligible - positive	Long term	Provinc e/ Region	Very high - positive	Highly beneficial	Likely	Moderate - positive
Econ dep	Dependency on mine for sustaining local economy	Beyond project life	Local	Extremel y high - negative	Highly detriment al	Certain	Major - negative	Long term	Local	Low - negativ e	Slightly detriment al	Probable	Minor - negative
Oper H&S	Operation-related health and safety impacts	Long term	Very limited	Moderate ly high - negative	Slightly detriment al	Highly probable	Minor - negative	Long term	Limited	Very low - negativ e	Slightly detriment al	Unlikely	Negligible - negative



Significance:	Negative	Positive
Major		
Moderate		
Minor		
Negligible		

Figure 20: Graphical representation of consequence, probability and significance ratings

9.1 Main Conclusions Regarding Potential Socio-economic Impacts

The foregoing table and figure show that a total of 18 social impacts were identified for the proposed project. Of these, seven are positive, ten are negative and one is an adverse impact that can, through appropriate mitigation, become a social benefit. The significance ratings for ***negative impacts without any mitigation*** range from major to minor:

- Four impacts have been given a significance rating of minor;
- Six impacts have been rated as moderate; and
- One impact has been rated as major.

Significance ratings of ***positive impacts without any mitigation***, on the other hand range from negligible to minor:

- Three impacts have been given a significance rating of negligible; and
- Four impacts have been rated minor.

If all mitigation measures are implemented according the recommendations given in Section 6, 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 negligible:

- Three impacts have been given a significance rating of minor; and
- Seven impacts have been rated as negligible.

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-mitigation significance ratings of positive impacts*** are sometimes higher than their pre-mitigation ratings, ranging from minor to moderate:

- One impact have been rated as minor; and
- Seven impacts have been given a significance rating of moderate.

This summary confirms that adequate mitigation measures are expected to reduce the significance of negative impacts to acceptable levels, while positive impacts will on average be significantly enhanced to maximise benefits to surrounding communities.

9.2 Recommendations

This section provides recommendations with regard to the implementation of mitigation measures and other more general recommendations to aid the successful implementation of the proposed project.

9.2.1 Mitigation Measures

In view of the above, it is strongly recommended that the mitigation measures described in Section 6 be incorporated into the Environmental Management Plan for the proposed project

and, where relevant, into the contract conditions to be issued to the subcontractors. Measures must also be put in place to monitor and assess implementation of these mitigation measures and to take corrective action where necessary.

9.2.2 General Recommendations

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 8 above require particular attention and close monitoring and management.

Secondly it is recommended that Platreef 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. Opportunities for linkages and synergies include:

- LED projects listed in future IDPs of MLM or WDM;
- LED initiatives by existing and planned mines in the area; and
- LED related activities of civil society and non-governmental organisations.

At the time of writing this report comprehensive information regarding the initiatives of these institutions in the vicinity of the local study area were not available. It is suggested that Platreef's CSI arm should contact the CSI and socio-economic development departments of these institutions to gauge whether they can align or synergize with any of their efforts to collaborate in some of the development initiatives planned for the area.

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