SOCIAL IMPACT REPORT

HARMONY MOAB KHOTSONG SOLAR PV FACILITY

BASIC ASSESSMENT

JULY 2022

SOCIAL IMPACT REPORT

Harmony Moab Khotsong Solar PV Facility, Free State

Submitted to:

Savannah Environmental (Pty) Ltd

PO Box 148
Sunninghill
2157

Tel: 011 656 3237

Prepared by:

Eco-Thunder Consulting (Pty) Ltd

PO Box 2055
Fourways
2191
Tel: 064 655 2752

Report Revision No: 1
Date Issued: 13th July 2022
Prepared By: Brogan Geldenhuys
Reference: Eco Thunder Consulting (2022) Social Impact Assessment for Harmony Moab Khotsong Solar PV Facility

ACRONYMS, ABBREVIATIONS AND GLOSSARY

Acronyms & Abbreviations	
DESTEA	Free State Department of Economic, Small Enterprise, Tourism and Environmental Affairs
DoE	Department of Energy
DM	District Municipality
EA	Environmental Authorisation
EIA	Environmental Impact Assessment
EMPr	Environmental Management Programme
GDP	Gross Domestic Product
GNR	Government Notice
I&AP	Interested and Affected Party
IDP	Integrated Development Plan
IEP	Integrated Energy Plan
IRP	Integrated Resource Plan
km	Kilometre
LM	Local Municipality
NEMA	National Environmental Management Act (No. 107 of 1998)
NDP	National Development Plan
O&M	Operation and Maintenance
PGDS	Provincial Growth and Development Strategy
PICC	Presidential Infrastructure Coordinating Committee
PSDF	Provincial Spatial Development Framework
SDF	Spatial Development Framework
SIA	Social Impact Assessment
SIP	Strategic Infrastructure Project
DESTEA	Free State Department of Economic, Small Enterprise, Tourism and Environmental Affairs
DoE	Department of Energy
DM	District Municipality
EA	Environmental Authorisation
EIA	Environmental Impact Assessment
EMPr	Environmental Management Programme
GDP	Gross Domestic Product
GNR	Government Notice
I&AP	Interested and Affected Party

EXECUTIVE SUMMARY

DESCRIPTION OF PROPOSED PHOTOVOLTAIC FACILITY

Harmony Moab Khotsong Operations (Pty) Ltd is looking to supplement its energy supply by implementing Photovoltaic (PV) generation, aiding their transition to a more sustainable and environmentally friendly energy mix.

The development of a solar photovoltaic (PV) facility with a generating capacity of up to 100MW is proposed north of the Harmony Gold Moab operations, approximately ~10km north of the town of Vierfontein within the Moqhaka Local Municipality, Fezile Dabi District Municipality, Free State Province. The solar PV development will be known as Harmony Moab Khotsong Solar PV Facility.

The PV development area includes twelve (12) farm portions, all owned by the Mine. These include:

- Farm Anglo 593;
- Farm Hoekplaats 598;
- Farm Mispah 274;
- Remaining Extent of Farm Pretorius Kraal 53;
- Remaining Extent of Farm Doornkom Wes 446;
- Farm Chrystalkop 69; and
- Portions 1, 2, 3, 4, 5, and the Remaining Extent of the Farm Zuiping 394.

The generation is intended for own use by the Mine, reducing the Mine's reliance on Eskom. The preferred site for the project is on properties which are owned by the Mine and are available for the proposed project and is therefore deemed technically feasible for such development to take place.

A project site considered to be technically suitable for the development of the solar PV facility, with an extent of approximately 1400ha, was identified. A development area of ~900ha was demarcated within this project site and allows an adequate footprint for the installation of a solar PV facility with a contracted capacity of up to 100MW, while allowing for the avoidance of environmental site sensitivities.

The full extent of the project site is to be evaluated in the Basic Assessment process to identify environmental sensitivities. Site-specific studies and assessments will be undertaken through the BA process in order to delineate areas of potential sensitivity within the identified study area and grid connection corridor/s. Once constraining factors have been determined, the layout of the solar PV facilities and the grid connection solution can be planned to minimise social and environmental impacts.

The infrastructure associated with the 100MW solar PV facility will include:

- PV modules and mounting structures
- Access roads, internal roads and fencing around the development area
- Temporary and permanent laydown areas
- Administrative building, control room, workshop, storage building, guard house, auxiliary buildings and structures, water supply infrastructure, weather station
- Peripheral boundary wall & fencing
- Inverters, transformers and up to 5 on-site facility substations and switching substations
- Cabling between the project components, to be laid underground where practical
- Grid connection infrastructure to be connected to the existing:
  - Vaalreefs Eleven Substation via a ~2km power line (located south-east of the facility);
  - Southvaal Plant Substation via a ~0.5km power line (located north-west of the facility); and
  - Southvaal Substation via a ~4km power line (located north of the facility).

The site is accessible via the R76 south of the project site.

As of 2019, the Industrial sector was the leading electricity consumer in South Africa, with up to 56% of the total consumption (Ratshomo 2019). Mining and quarrying accounted for 10% of the industrial consumption (Chamber of Mines of South Africa, 2017). The successful development of the renewable energy project will enable Harmony Gold

to make a valuable and meaningful contribution towards growing the green economy within the Free State Province and South Africa. This will assist the Free State in creating green jobs and reducing Green House Gas emissions, while reducing the energy demand on the Eskom national grid.

APPROACH TO THE STUDY

The development of renewable energy is strongly supported at a national, provincial, and local level. The development of and investment in renewable energy is supported by the National Development Plan (NDP), New Growth Path Framework and National Infrastructure Plan, which all refer to and support renewable energy. The Free State Province Renewable Energy Strategy also supports the development of renewable energy. The development of the proposed PV SEF is therefore supported by key policy and planning documents

The approach to the SIA study is based on the Western Cape Department of Environmental Affairs and Development Planning Guidelines for Social Impact Assessment (February 2007). These guidelines are based on international best practice. The key activities in the SIA process embodied in the guidelines include:

- Describing and obtaining an understanding of the proposed intervention (type, scale, location), the settlements and communities likely to be affected by the proposed project
- Collecting baseline data on the current social and economic environment;
- Identifying the key potential social issues associated with the proposed project.
- Assessing and documenting the significance of social impacts associated with the proposed intervention
- Identifying alternatives and mitigation measures
- The study therefore involved:
- Review of demographic data from Census Survey and other available sources;
- Review of relevant planning and policy framework for the area;
- Review of information from similar studies;
- Review of documented government experience and expectations associated with solar energy projects.
- Community survey involving 94 local community members as respondents.

KEY FINDINGS

On aggregate, the project will have a positive social impact. Based on an assessment of needs as expressed through policies, plans and community survey, it is clear that the local economy requires a catalyst for growth and development. Similarly, the national economy requires new power generation facilities that can increase electricity supply for economic growth without damaging the environment. A solar power plant addresses all these needs. More specifically, this power plant will contribute to the following positive outcomes:

- Job creation
- Enterprise growth
- Socio-economic development
- Local economic growth through enterprise development

FIT WITH POLICY AND PLANNING

The following policy and planning documents were referred to in determining the validity of the proposed facility and its potential impact at all levels: local, provincial and national.

- National Energy Act (No. 34 of 2008)
- National White Paper on Renewable Energy (2003)
- National Integrated Resource Plan for Electricity (2010, 2013 draft)
- Renewable Energy Independent Power Producer Programme RFP (2015)
- National Development Plan (2013)
- Free State Provincial Growth And Development Strategy (NCPSDF) (Aug 2012)
- Regional Sector Skills Plan, Free State and Free State Region (Sep 2013)
- Provincial Renewable Energy Strategy (2015)
- Fezile Dabi District Municipality Integrated Development Plan 2022
- Matjabeng Local Municipality Integrated Development Plan 2022/2021

TABLE OF CONTENTS

TABLE OF FIGURES

TABLE OF TABLES

1. INTRODUCTION

Eco-Thunder Consulting was commissioned by Savannah Environmental (Pty) Ltd as the lead consultant to manage the Social Impact Assessment (SIA) process for the establishment of the proposed Moab Khotsong Solar PV Facility near Virginia in the Free State Province.

This report contains the findings of the SIA undertaken as part of the broader Environmental Impact Assessment (EIA) process.

1.1. Terms of Reference

Objective of the Basic Assessment Process

This SIA Report has been prepared as part of the Basic Assessment (BA) process being undertaken for Harmony Moab Khotsong Solar PV Facility and associated infrastructure. The purpose of this SIA Report is to provide details on the nature and extent of development of Harmony Moab Khotsong Solar PV Facility and associated infrastructure, and the potential social impacts associated with the construction, operation, and decommissioning of the project. The inputs contained within this SIA Report are intended to provide a high-level overview of the social environment within which the project is proposed and identify potential social issues which will be addressed in detail as part of the BA process specialist investigations.

The objective of this SIA Report is therefore to:

- Identified and review policies and legislation which may have relevance to the activity from a social perspective.
- Provide comment on the need and desirability of the proposed activity from a social perspective.
- Identify potential impacts and risks associated with the preferred activity and technology alternatives.
- Identify key social issues to be addressed in the BA phase.
- Agree on the level of assessment to be undertaken, including the methodology to be applied to determine the impacts and risks the activity will impose on the preferred site through the life of the activity, including the nature, significance, consequence, extent, duration, and probability of the impacts to inform the location of the development footprint within the preferred site.
- Identify suitable measures to avoid, manage or mitigate identified social impacts and determine the extent of residual risks that need to be managed and monitored.

1.2. Specialist Details

Eco–Thunder Consulting (ETC) is a 100% woman-owned, private company that specializes in a range of specialist studies, such as socio-economic research, economic development planning, development program design and implementation as well as community trust management. Based in Johannesburg, South Africa, Eco-Thunder has established itself as an expert on the conditions, needs and assets of communities that are linked to independent power generation facilities.

ETC has conducted research on behalf of and advised IPPs since 2017. Its client base is thus comprised of IPPs that have been successful across all the REIPPPP bidding rounds. ETC also implements development programs in energy communities, which ensures a comprehensive understanding of the how to drive positive social impact.

1.3. Report Structure

The report is organised into six sections:

- Section 1: Introduction.
- Section 2: Methodology & Approach.
- Section 3: Policy and Planning Review.
- Section 3: Overview of the Study Area.
- Section 5: Assessment of Key Social Issues and Impact.
- Section 6: Conclusions and Impact Statement.

1.4. Project Description

Harmony Moab Khotsong Operations (Pty) Ltd is looking to supplement its energy supply by implementing Photovoltaic (PV) generation, aiding their transition to a more sustainable and environmentally friendly energy mix.

The development of a solar photovoltaic (PV) facility with a generating capacity of up to 100MW is proposed north of the Harmony Gold Moab operations, approximately ~10km north of the town of Vierfontein within the Moqhaka Local Municipality, Fezile Dabi District Municipality, Free State Province. The solar PV development will be known as Harmony Moab Khotsong Solar PV Facility.

The PV development area includes twelve (12) farm portions, all owned by the Mine. These include:

- Farm Anglo 593;
- Farm Hoekplaats 598;
- Farm Mispah 274;
- Remaining Extent of Farm Pretorius Kraal 53;
- Remaining Extent of Farm Doornkom Wes 446;
- Farm Chrystalkop 69; and
- Portions 1, 2, 3, 4, 5, and the Remaining Extent of the Farm Zuiping 394.

The generation is intended for own use by the Mine, reducing the Mine's reliance on Eskom. The preferred site for the project is on properties which are owned by the Mine and are available for the proposed project and is therefore deemed technically feasible for such development to take place.

A project site considered to be technically suitable for the development of the solar PV facility, with an extent of approximately 1400ha, was identified. A development area of ~900ha was demarcated within this project site and allows an adequate footprint for the installation of a solar PV facility with a contracted capacity of up to 100MW, while allowing for the avoidance of environmental site sensitivities.

The full extent of the project site is to be evaluated in the Basic Assessment process to identify environmental sensitivities. Site-specific studies and assessments will be undertaken through the BA process to delineate areas of potential sensitivity within the identified study area and grid connection corridor/s. Once constraining factors have been determined, the layout of the solar PV facilities and the grid connection solution can be planned to minimise social and environmental impacts.

The infrastructure associated with the 100MW solar PV facility will include:

- PV modules and mounting structures
- Access roads, internal roads and fencing around the development area
- Temporary and permanent laydown areas
- Administrative building, control room, workshop, storage building, guard house, auxiliary buildings and structures, water supply infrastructure, weather station
- Peripheral boundary wall & fencing
- Inverters, transformers and up to 5 on-site facility substations and switching substations
- Cabling between the project components, to be laid underground where practical
- Grid connection infrastructure to be connected to the existing:
    - Vaalreefs Eleven Substation via a ~2km power line (located south-east of the facility);
    - Southvaal Plant Substation via a ~0.5km power line (located north-west of the facility); and
    - Southvaal Substation via a ~4km power line (located north of the facility).

The site is accessible via the R76 south of the project site.

As of 2019, the Industrial sector was the leading electricity consumer in South Africa, with up to 56% of the total consumption (Ratshomo 2019). Mining and quarrying accounted for 10% of the industrial consumption (Chamber of Mines of South Africa, 2017). The successful development of the renewable energy project will enable Harmony Gold to make a valuable and meaningful contribution towards growing the green economy within the Free State Province and South Africa. This will assist the Free State in creating green jobs and reducing Green House Gas emissions, while reducing the energy demand on the Eskom national grid.

1.5. Project Location

The proposed 100MW Moab Khotsong Solar Energy Facility (SEF) is located on Farm Anglo 593, portion 593; Farm Hoekplaats 598, portion 598; Mispah 274, portion 274; Zaaiplaats 1/190, portion 1/190; Doornkom Wes 446, RE of portion 446; Chrystalkop 69, portion 69; and Zuiping 394, remaining extent of portion 394, portion 1/394, 3/394, 4/394 and 5/394. The development is located near Harmony Moab mining operations approximately ~10km north of the town of Vierfontein within the Moqhaka Local Municipality, and within the Fezile Dabi District Municipality, Free State Province.

The proposed development is located in the Free State Province in the central interior of South-Africa. The town of Viljoenskroon is located approximately 32km southeast and Orkney is located approximately 6.5km northwest of the proposed development (it must be noted that Viljoenskroon is a small mining town). The project entails the generation of up to 100MW electrical power through the operation of photovoltaic (PV) panels. The total development footprint of the project will approximately be 450 hectares (including supporting infrastructure on site).

The farms are located in a grain farming agricultural region, but on soils of limited depth that are unsuitable for crop production. There is almost no cultivation on the land type on which the site is located. Maize production occurs on different, suitable soils of a different land type to the south of the site. The development site is used only for grazing of cattle. Mining occurs in the surrounding area.

The climate is strongly seasonal and semi below. arid, with an average rainfall volume of 565 mm/annum, falling between October and May. The summers are hot and wet, with summer temperatures ranging typically between 1430°C. The winters are cold and dry, wintertime temperatures ranging typically between with 1 to 19°C. An average of 34 frost days occurs each winter. The soils are perpetually moisture stressed, with mean annual evaporation of 2,407 mm, resulting in 78% of days where the soils lose more moisture than they receive from precipitation.

The proposed development is located in close proximity to the Vaal River. Most of the site is located within the Vaal River Mining Area, a degraded grassland transformed by mining. The preferred site is located at an above mean sea level (amsl) of approximately 1308m at the highest elevation and at an amsl of 1296m at the lowest elevation.
The observers in a 5km radius include:

- Eskom power line infrastructure.
- Vaal Reefs Eleven Substation.
- Harmony Moab Mine.
- Tailings dams.
- Water Processing Plant.
- Other mining operations.
- Various homesteads on farms and smallholdings
- R502 road
- Vermaasdrift road
- Stokkiesdraai road
- Vaal River.
- Wawielpark Holiday Resort.

The main visual receptors in the area are industrial developments, the mining sector and to agricultural developments. preferred route. The nearest towns in relation to the proposed development site are Orkney, Klerksdorp, Stilfontein, Viljoenskroon and Potchefstroom. It is envisaged that most materials, water, plant, services, and people will be procured within a 50 km radius of the proposed facility.

The Moqhaka Local Municipality incorporates Kroonstad, Renovaal, Steynsrus, Vierfontein and Viljoenskroon with a combined population of 160 532 people. The general tendency of migration from rural to urban areas is also occurring in the area, as is the case in the rest of the Free State Province. In comparison to the other municipalities within the Fezile Dabi District, it appears as if Moqhaka is significantly less urbanised. The main economic sectors in the municipality are agriculture, commercial transport, business services and mining.

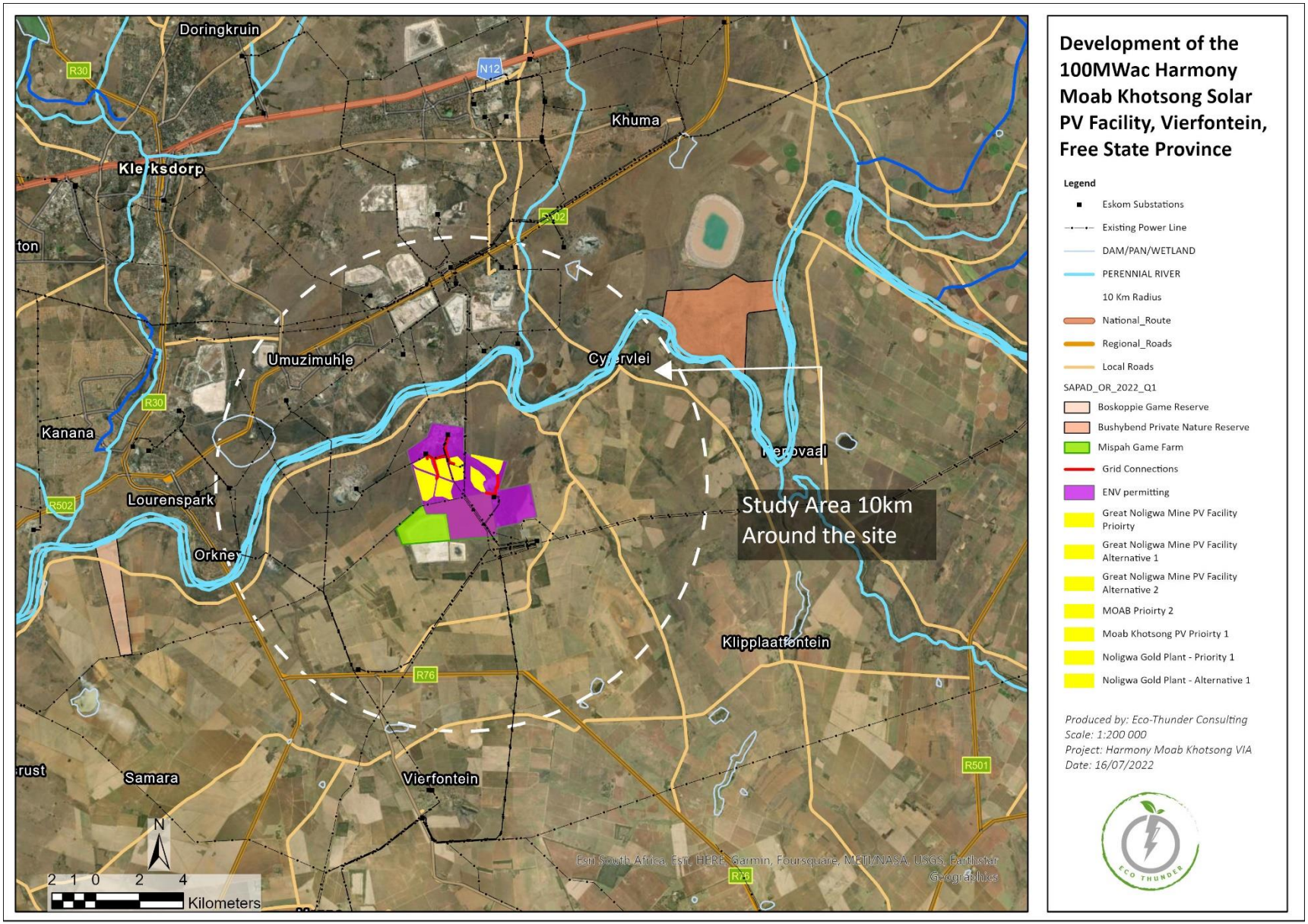


Figure 1: The proposed site and 10km radius of the Harmony Moab Khotsong PV Facility

2. METHOLODGY AND APPROACH

2.1. Purpose of the Study

The International Principles for Social Impact Assessment define SIA as:

"The processes of analysing, monitoring, and managing the intended and unintended social consequences, both positive and negative, of planned interventions (policies, programs, plans, projects) and any social change processes invoked by those interventions".

The International Principles for Social Impact Assessment define social impacts as changes to one or more of the following:

- People's way of life – that is, how they live, work, play and interact with one another on a day-to-day basis.
- Their culture – that is, their shared beliefs, customs, values and language or dialect.
- Their community – its cohesion, stability, character, services, and facilities.
- Their political systems – the extent to which people are able to participate in decisions that affect their lives, the level of democratisation that is taking place, and the resources provided for this purpose.
- Their environment – the quality of the air and water people use, the availability and quality of the food they eat, the level of hazard or risk, dust, and noise they are exposed to, the adequacy of sanitation, their physical safety, and their access to and control over resources.
- Their health and wellbeing – health is a state of complete physical, mental, social, and spiritual wellbeing and not merely the absence of disease or infirmity.
- Their personal and property rights – particularly whether people are economically affected, or experience personal disadvantage which may include a violation of their civil liberties.
- Their fears and aspirations – their perceptions about their safety, their fears about the future of their community, and their aspirations for their future and the future of their children.

The purpose of this SIA Process is therefore to:

- Provide baseline information describing the social environment within which the project is proposed, and which may be impacted (both positively and negatively) as a result of the proposed development.
- Identify, describe, and assess possible social risks/fatal flaws and social impacts that may arise as a result of the proposed development (in terms of the detailed design and construction, operation, and decommissioning phases of the project).
- Recommend ways in which negative impacts can be avoided, minimised, or their significance reduced, and positive impacts maximised or enhanced.

2.2. Approach to Study

The approach to the Basic Assessment Level SIA study is based on the Western Cape Department of Environmental Affairs and Development Planning Guidelines for Social Impact Assessment (*February 2007*). These guidelines are based on international best practice. The key activities in the SIA process embodied in the guidelines include:

- Describing and obtaining an understanding of the proposed intervention (type, scale, and location), the settlements, and communities likely to be affected by the proposed project.
- Collecting baseline data on the current social and economic environment.
- Identifying the key potential social issues associated with the proposed project. This requires a site visit to the area and consultation with affected individuals and communities. As part of the process a basic information document was prepared and made available to key interested and affected parties. The aim of the document was to inform the affected parties of the nature and activities associated with the construction and operation of the proposed development to enable them to better understand and comment on the potential social issues and impacts.
- Assessing and documenting the significance of social impacts associated with the proposed intervention.
- Identifying alternatives and mitigation measures.
- A site visit will be undertaken during the Assessment Phase of the SIA. The site visit will include interviews with interested and affected parties. Annexure A contains a list of the secondary information reviewed. Annexure B summarizes the assessment methodology used to assign significance ratings to the assessment

process.
- Preparation of a SIA Report for inclusion in the Basic Assessment Report to be prepared for the project.

Collection and Review of Existing Information

Existing desktop information that has relevance to the proposed project, project area and/or surroundings was collected and reviewed. The following information was examined as part of this process:

- Project maps and layouts.
- Google Earth imagery.
- A description of the project (as provided by the project proponent).
- Responses to questions posed to the project proponent regarding employment and social upliftment and local economic development opportunities (as provided by the project proponent).
- Census Data (2011), and the Local Government Handbook (2019).
- Planning documentation such as Provincial Growth and Development Strategies (PGDSs), Local and District Municipality Integrated Development Plans (IDPs), Spatial Development Frameworks (SDFs), and development goals and objectives.
- Relevant legislation, guidelines, policies, plans, and frameworks.
- Available literature pertaining to social issues associated with the development and operation of solar PV power plant and associated infrastructure.

The identification of potential social issues associated with the proposed Solar Energy Facility is based on primary and secondary information about the area and visits to the relevant communities and town by field workers/members of the SIA study team. Annexure A contains a list of the secondary information reviewed and interviews conducted. Annexure B summarises the assessment methodology used to assign significance ratings to the assessment process.

2.2.1. Definition of Social Impacts

"The consequences to human populations of any public or private actions (including policies, programs, plans, and/or projects) that alter the ways in which people live, work, play, relate to one another, organize to meet their needs, and generally live and cope as members of society." These effects are felt at various levels, including the individual, family or household, community, organization, or society. Some social impacts are physically felt by the body, whereas others are perceptual or emotional" (Vanclay, 2002).

When considering social impacts, keep in mind that social change is a natural and ongoing process (Burdge, 1995). However, it is also critical to recognize and comprehend the fact that policies, plans, programs, and/or projects implemented by government agencies and/or private institutions have the potential to influence and alter both the rate and direction of social change. Many social impacts are not "impacts" in and of themselves, but rather change processes that may result in social impacts (Vanclay, 2002). The influx of temporary construction workers, for example, has no social impact in and of itself. However, their presence can have a variety of social consequences, such as an increase in antisocial behaviour. Vanclay's approach emphasizes the importance of understanding the processes that can have social consequences. As a result, social assessment specialists must think through the complex causal mechanisms that produce social impacts. The full range of impacts can be identified by following impact pathways, or causal chains, and specifically by considering interactions that are likely to occur (Vanclay, 2002).

An SIA should thus enable authorities, project proponents, individuals, communities, and organizations to understand and anticipate the potential social consequences of implementing a proposed policy, program, plan, or project. The SIA process should inform communities and individuals about the proposed project and its potential social consequences, while also allowing them to assess the implications and identify potential alternatives. The assessment process should also alert proponents and planners to the likelihood and nature of social impacts, allowing them to anticipate and predict these impacts ahead of time, so that the assessment's findings and recommendations are incorporated into and inform the planning and decision-making process.

However, the issue of social impacts is complicated by the way in which different people from different cultural, ethic, religious, gender, and educational backgrounds, etc. view the world. This is referred to as the “social construct of reality”. The social construct of reality informs people’s worldview and the way in which they react to changes.

2.2.2. Timing of Social Impact

Social impacts vary in both time and space. In terms of timing, all projects and policies go through a series of phases, usually starting with initial planning, followed by implementation (construction), operation, and finally closure (decommissioning). The activities, and hence the type and duration of the social impacts associated with each of these phases are likely to differ.

2.3. Assumptions and Limitations

2.3.1. Assumptions

- The identification of the proposed site was informed by technical information relating to local climatic conditions in the area, specifically annual rates of solar radiation, local topography, and land availability. It is therefore assumed that the project site identified fulfils the requirements for a suitable site to install a photovoltaic project with the outlined specifications.
- Legislation and policies reflect societal norms and values. The legislative and policy context therefore plays an important role in identifying and assessing the potential social impacts associated with a proposed development. In this regard a key component of the SIA process is to assess the proposed development in terms of its fit with key planning and policy documents. As such, if the findings of the study indicate that the proposed development in its current format does not conform to the spatial principles and guidelines contained in the relevant legislation and planning documents, and there are no significant or unique opportunities created by the development, the development cannot be supported.
- It is assumed that the motivation for as well as the planning and feasibility study of the project was undertaken with integrity, and that information provided by the project proponent was accurate and true at the time of preparing this SIA Report.

2.3.2. Limitations

- This SIA Report was prepared based on information that was available to the specialist at the time of preparing the report. The sources consulted are not exhaustive, and the possibility exists that additional information which might strengthen arguments, contradict information in this report, and/or identify additional information might exist. Additional information available from the public participation undertaken during the BA process will be included and considered within the final report, where relevant.
- The socio-economic data presented in this study is largely based on Census information and data and research conducted or contracted by other levels of government. The quality of this data is compromised by the limitations associated with the Census data collection process.
- The census data is supported through additional data. The study draws primary data collected from towns/villages located in close proximity to the proposed project site. This additional information was collected through a survey of the communities within a 50km radius of the site. Limitation associated with this data include:
    - A small sample size.
    - Lack of qualitative data to support quantitative findings.

2.4. Assessment Criteria

Direct, indirect, and cumulative impacts associated with the projects must be assessed in terms of the following criteria:

- The nature, which shall include a description of what causes the effect, what will be affected and how it will be affected.
- The extent, wherein it will be indicated whether the impact will be local (limited to the immediate area or site of development) or regional, and a value between 1 and 5 will be assigned as appropriate (with 1 being low and 5 being high):
- The duration, wherein it will be indicated whether:
    - the lifetime of the impact will be of a very short duration (0 – 1 years) – assigned a score of 1;
    - the lifetime of the impact will be of a short duration (2 – 5 years) – assigned a score of 2;
    - medium-term (5 – 15 years) – assigned a score of 3;
    - long term (> 15 years) – assigned a score of 4; or
    - permanent – assigned a score of 5;
- The magnitude, quantified on a scale from 0 – 10, where 0 is small and will have no effect on the

environment, 2 is minor and will not result in an impact on processes, 4 is low and will cause a slight impact on processes, 6 is moderate and will result in processes continuing but in a modified way, 8 is high (processes are altered to the extent that they temporarily cease), and 10 is very high and results in complete destruction of patterns and permanent cessation of processes.

- The probability of occurrence, which shall describe the likelihood of the impact actually occurring. Probability will be estimated on a scale of 1 – 5, where 1 is very improbable (probably will not happen), 2 is improbable (some possibility, but low likelihood), 3 is probable (distinct possibility), 4 is highly probable (most likely) and 5 is definite (impact will occur regardless of any prevention measures).
- The significance, which shall be determined through a synthesis of the characteristics described above and can be assessed as low, medium, or high; and
- The status, which will be described as either positive, negative, or neutral.
- The degree to which the impact can be reversed.
- The degree to which the impact may cause irreplaceable loss of resources.
- The degree to which the impact can be mitigated.

The **significance** is calculated by combining the criteria in the following formula: S=(E+D+M)P

S = Significance weighting
E = Extent
D = Duration
M=Magnitude
P=Probability

The **significance weightings** for each potential impact are as follows:

- < 30 points: Low (i.e., where this impact would not have a direct influence on the decision to develop in the area),
- 30 – 60 points: Medium (i.e., where the impact could influence the decision to develop in the area unless it is effectively mitigated),
- > 60 points: High (i.e., where the impact must have an influence on the decision process to develop in the area).

The summarizing of assessment impacts in a prescribed table format including the rating values as per above criteria. Measures for inclusion in the Environmental Management Programme.

3. POLICY AND PLANNING

This section introduces the relevant policies on various levels of government and their content. Relevant policy content is contained in the National White Paper on Renewable Energy, National Energy Act, Integrated Resources Plan for Electricity and the National Development Plan (NDP).

The National Energy Regulator of South Africa (NERSA) and the Department of Energy (DOE) govern the energy sector's regulatory framework. Critical stakeholders further include the national utility Eskom, National Treasury, Department of Trade and Industry, and the Department of Economic Development

The legislative and policy context applicable to a project plays an important role in identifying and assessing the potential social impacts associated with the development. In this regard a key component of the SIA process is to assess a proposed development in terms of its suitability with regards to key planning and policy documents.

The following key pieces of documentation were reviewed as part of this legislation and policy review process:

National Policy and Planning Context:

- Constitution of the Republic of South Africa, 1996
- National Environmental Management Act (No. 107 of 1998) (NEMA)
- White Paper on the Energy Policy of the Republic of South Africa (1998)
- National Energy Act (No. 34 of 2008)
- Integrated Energy Plan (IEP) (2015)
- National Development Plan (NDP) 2030 (2012)
- Strategic Infrastructu0s (SIPs)

Provincial Policy and Planning Context:

- Free State Provincial Growth and Development Strategy (FSGDS) (2005 – 2014)
- Free State Provincial Growth and Development Strategy (FSGDS), Revised October 2007
- Free State Provincial Spatial Development Framework (PSDF) - Executive Summary (Inception Report)
- Free State Green Economy Strategy (2014)
- Free State Investment Prospectus (2019)

Local Policy and Planning Context:

- Fezile Dabi District Municipality Integrated Development Plan (IDP) 2020/2021
- Moqhaka Local Municipality Integrated Development Plan IDP (2020 – 2021)

3.1. National Planning and Policies

3.1.1. Constitution of South Africa

Section 24 of the Constitution pertains specifically to the environment. It states that everyone has the right to an environment that is not harmful to their health or well-being, and to have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that prevent pollution and ecological degradation, promote conservation and secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development.

The Constitution outlines the need to promote social and economic development. Section 24 of the Constitution therefore requires that development be conducted in such a manner that it does not infringe on an individual's environmental rights, health, or well-being. This is especially significant for previously disadvantaged individuals who are most at risk to environmental impacts.

3.1.2. The National White Paper on Renewable Energy

In 1998, the White Paper on Energy Policy for South Africa (December 1998) identifies renewable energy as a future commercial opportunity for the country. "Government policy is based on an understanding that renewables are energy sources in their own right, are not limited to small-scale and remote applications, and have significant medium and

long-term commercial potential".

The document argues that the abundant renewable energy resources have an important role to play in promoting sustainable energy security going forward. "Renewable resources generally operate from an unlimited resource base and, as such, can increasingly contribute towards a long-term sustainable energy future".

3.1.3. National Energy Act

Government promulgated the National Energy Act in 2008 (Act No 34 of 2008). Next to other objectives, the Act sets out to promote diversity of supply of energy and energy sources. The preamble makes direct reference to this objective, emphasizing the importance of renewable resources, including solar:

"To ensure that diverse energy resources are available, in sustainable quantities, and at affordable prices, to the South African economy, in support of economic growth and poverty alleviation, taking into account environmental management requirements to provide for increased generation and consumption of renewable energies...".

3.1.4. Integrated Resource Plan for Electricity

The latest, promulgated Integrated Resource Plan was written in 2010. An updated version was released in 2013 for public comment. Both versions support the procurement of renewable energy. The 2010 version allocates 17.8 GW to renewables by 2030. The 2013 version stipulates that 2.2 GW shall be integrated into the grid, on an annual basis.

3.1.5. National Development Plan

The National Development Plan, which was adopted by government, makes various suggestions for the enhancement of energy and electricity infrastructure. The NDP, published in 2013, specifically supports the procurement of renewable energy. It stipulates a goal of a minimum of 20 GW to be procured by 2030.

3.2. Provincial Planning and Policy

The study site is located in the Free State Province. Relevant policy and planning documents on provincial level include:

3.2.1. Free State Provincial Growth and Development Strategy (FSGDS) (2005 – 2014)

The overarching goal of the Free State Growth and Development Strategy (FSGDS) is to align the provincial and national policies and Programmes and to guide development in terms of effective and efficient management and governance to achieve growth and development. The strategy is a living document that uses the latest business planning and evaluation tools in order to maximize the effect of all spending.

Based on the social and economic development challenges of the province, the Strategy identifies a few primary objectives, including stimulating economic development, developing and enhancing the infrastructure for economic growth and social development, poverty alleviation through human and social development, ensuring a safe and secure environment for all, and the promotion of effective and efficient governance and administration.

The development of the agricultural and infrastructure development supports the overall objective of stimulating economic development and infrastructure investment towards growth and social development, by contributing to the energy mix, supply, and infrastructure of the province. The development of the facility will also contribute (albeit limited) to the alleviation of poverty through the creation of direct and indirect employment opportunities and skills development.

3.2.2. Free State Provincial Growth and Development Strategy (FSGDS), Revised October 2007

The revised FSGDS refers to specific imperatives which sets the tone and pace for shared growth and development in the province. These include:

- The need to effectively use scarce resources within the province, whilst addressing the real causes of development challenges.
- The need to accelerate service delivery based on a common provincial development agenda as the basis for

provincial strategic direction.

- The need to identify investment opportunities and provide an environment of certainty, critical for private-sector investment.
- The need to promote intergovernmental coordination between the three spheres of government.
- The need to facilitate the implementation of the People's Contract within the Province.
- The need to provide a common vision as the basis for common action amongst all stakeholders, both inside and outside government.
- The need to provide a framework for budgets, implementation, performance management and spatial development.

The development of the agricultural and infrastructure development will assist with the need to effectively use scare resources and the need to identify investment opportunities, including private sector-investment. The development of a solar facility reduces the need to make use of non-renewable resources for the generation of electricity and opens up the province to further future solar energy development.

3.2.3. Free State Provincial Spatial Development Framework (PSDF) - Executive Summary

The Free State PSDF is a provincial spatial and strategic planning policy that responds to and complies with the National Development Plan Vision 2030 and the National Spatial Development Perspective (NSDP). The latter encourages all spheres of government to prepare spatial development plans and frameworks (such as the PSDF) that promote a developmental state in accordance with the principles of global sustainability as is advocated by, among others, the South African Constitution, and the enabling legislation.

The Free State Provincial Growth and Development Strategy states that sustainable economic development is the only effective means by which the most significant challenge of the Free State, namely poverty, can be addressed. The PSDF gives practical effect to sustainable development, which is defined as development that meets the needs of the present generation without compromising the ability of future generations to meet their own needs.

The PSDF is prepared in accordance with bioregional planning principles that were adapted to suit the site-specific requirements of the Free State. It incorporates and complies with the relevant protocols, conventions, agreements, legislation and policy at all applicable levels of planning, ranging from the international to the local.

The agricultural and infrastructure development will contribute to sustainable and economic development goals of the Free State PSDF, once completed and formally adopted.

3.2.4. Free State Investment Prospectus (2019)

The Premier of the Free State provides individual investors' access to accurate and pertinent information which makes it easier for investors to glean investor ready opportunities that are currently available in the Free State.

Opportunity for the development of renewable energy is considered in the key sectors overview. The prospectus states that opportunities are opening up in the province for the energy sector, including renewable energy. Rezoning for the development of multiple solar energy facilities has already been undertaken in the province. The development of a Solar Park in the Xhariep region is seen as a driver of growth along the banks of the Orange River.

Considering the future opportunities available for the development of renewable energy facilities (including solar PV facilities) the development of the agricultural and infrastructure development is considered to be in-line with the Investment Prospectus of the Province.

3.3. District Level Planning and Policies

3.3.1. Fezile Dabi District Municipality Integrated Development Plan (IDP) 2020/2021

The municipality will consider and structure its Performance Management System and Performance Management Plans at both organisational and departmental levels around the following 5 Key Performance Areas for local government as determined by the Municipal Performance Regulations for Municipal Managers and Manager Directly Accountable to the Municipal Manager, 2006:

- KPA1: Municipal Transformation and Institutional Development;
- KPA2: Financial Viability and Financial Management;
- KPA3: Basic Service Delivery and Infrastructure Investment;
- KPA4: Local Economic Development and
- KPA5: Good Governance and Community Participation

To this effect, this IDP is compatible with the IDPs of local municipalities within the district, the provincial and national development plans and planning requirements binding on the municipality in terms of legislation, and to this effect, and it takes que from the National Development Plan (NDP) and the Free State Growth and Development Strategy (FSGDS), and to the extent possible, aims to achieve the goals set out therein through an application of the following priorities:

- Uniting all the people of Fezile Dabi District Municipality around a common programme to achieve prosperity and equity.
- Promoting active citizenry to strengthen development, democracy, and accountability within the municipality.
- Creating an enabling environment to bringing about faster local economic growth, higher investment, and greater labour absorption.
- Focusing on key capabilities of local people and the municipality.
- Building a capable and developmental institution/municipality.
- Encouraging strong leadership throughout our community to work together to solve problems.

Through the provincial IDP assessments, we continue to grow in our understanding and that an Integrated Development Plan must simultaneously comply with relevant legislations and convey the following:

- Compliance and adherence to constitutional and policy mandate for developmental local government;
- Awareness by municipality of its role and place in the regional, provincial, and national context and economy;
- Awareness by municipality of its own intrinsic characteristics and criteria for success;
- Comprehensive description of the area – the environment and its spatial characteristics including backlogs;
- A clear strategy, based on local developmental needs and that the IDP must not be a 'wish-list' but subjected to the realities of what can be delivered by the budget over the three-to-five-year horizons;
- Insights into the trade-offs and commitments that are being made such as economic choices, integrated service delivery, etc.;
- The key deliverables for the next 5 years;
- Clear measurable budget and implementation plans aligned to the SDBIP;
- Performance Management Systems and mechanisms required for performance planning, monitoring, and evaluation;
- Continuously measuring the capacity of municipality to deliver;
- Communication, participatory and decision-making mechanisms;
- The degree of intergovernmental action and alignment to government wide priorities;
- Reporting timeframes and the regulatory periods for reporting;
- Alignment with, and indication of, an aligned organogram; and
- Alignment between the SDBIP and the performance contracts of section 57 managers.

3.3.2. Moqhaka Local Municipality Integrated Development Plan IDP (2020 – 2021)

The Municipality's vision and mission are translated into the following five municipal key performance areas:

- KPA1: Basic Service Delivery
- KPA 2: Good Governance and Public Participation
- KPA 3: Local Economic Development
- KPA 4: Municipal Transformation and Institutional Development
- KPA 5: Social and Community Development

The Moqhaka Local Municipality recognises the need to meet the energy requirements of its residents in a dynamic changing sector. The LM understands the benefits of renewable energy development as playing the following factors

to the region:

- Savings on the current and already substantial Eskom Bill as the Project's tariff is lower than the Eskom tariff and the escalation rate is fixed per year at its applicable CPI rates during the life cycle of the Project;
- Potential to attract foreign investments and subsequently achieve economic growth;
- Additional revenue stream due to the innovational technology, which has the potential to enable the selling of excess power to Eskom or another off-taker;
- Refinancing the current Eskom debt for immediate relief;
- Financial investment into the municipality jurisdiction that will boost the economic cycle of the community;
- New upcoming industrialization activity attraction;
- Job creation, skills development, and Small Medium Micro Enterprises (SMME) development; and
- Transforming the energy sector in SA and Africa as per its current timeline.

For the mining sector the major challenges include the over-dependence of the local economies on mining. Linked to these key sectors is the need to consider youth development. The key issues pertaining to both the province and the MLM include:

- African youths are the majority in the Free State, and they are also the most disadvantaged. Consequently, all attempts at intervening on behalf of youths should mainly target the African youth.
- There is an inherent lack of skills particularly amongst the African and Coloured youths, which leads to high unemployment amongst these groups.
- Youths are both perpetrators and victims of wrong social behaviours. They are at risk of being exposed to risky sexual behaviour, HIV & AIDS, and being head of a household.

3.4. Conclusion

The review of relevant legislation, policies and documentation pertaining to the proposed development indicates that the establishment of the solar development and associated infrastructure is supported at a national, provincial, and local level, and that the proposed project will contribute positively towards a number of targets and policy aims.

4. OVERVIEW OF THE STUDY AREA

4.1. Overview of Study Area

This section outlines the relevant administrative context as well as the provincial socio-economic and municipal contexts. It closes with a description of the local context of the immediate surroundings of the proposed PV Facility site.

The Harmony Moab Khotsong Solar PV Facility will be located on Farm Anglo 593, portion 593; Farm Hoekplaats 598, portion 598; Mispah 274, portion 274; Zaaiplaats 1/190, portion 1/190; Doornkom Wes 446, RE of portion 446; Chrystalkop 69, portion 69; and Zuiping 394, remaining extent of portion 394, portion 1/394, 3/394, 4/394 and 5/394. The development is located near Harmony Moab mining operations approximately ~10km north of the town of Vierfontein within the Moqhaka Local Municipality, and within the Fezile Dabi District Municipality, Free State Province.

This chapter provides an overview of the socio-economic environment of the province, DM, and LM within which the Harmony Moab Khotsong Solar PV Facility is proposed and provides the socio-economic basis against which potential issues can be identified.

Free State Province is the landlocked core of the country. It is centrally placed, with good transport corridors to the north and the coast. It is the third biggest of South Africa's nine provinces in terms of size, and primary agriculture is a key economic sector. Mining is also important but has been declining steadily since 2008. Although the Free State is the third largest province in South Africa, it has the second smallest population and the second lowest of 129 825km² and has a population of 2 834 714 t population density. It covers an area 5.1% of the national population. Languages spoken include Sesotho (64.4%), Afrikaans (11.9%) and Zulu (9.1%). The Free State Province contributes 5.4% to South Africa 's total gross domestic product (2006).

Agriculture is a key economic sector 8% of the country's produce comes from Free State. In 2010, agriculture provided 19.2% of all formal employment opportunities in the region. The economy is dominated by agriculture, mining, and manufacturing. Known as the 'breadbasket' of South Africa, about 90% of the province is under cultivation for crop production. It produces approximately 34% of the total maize production of South Africa, 37% of wheat, 53% of sorghum, 33% of potatoes, 18% of red meat, 30% of groundnuts and 15% of wool. The province is the world's fifth largest gold producer, with mining the major employer.

The Fezile Dabi District Municipality is a Category C municipality, formerly known as the Northern Free State District Municipality, situated in the north of the Free State. It is bordered by the North West, Gauteng and Mpumalanga Provinces to the north, Thabo Mofutsanyana District to the south, and Lejweleputswa District to the west. In 2011 the Municipality had a population of 488 036 with an unemployment rate of 33.9% and a youth unemployment rate of 44.4%. By 2016 only 48.3% of dwellings had piped water inside their dwellings and 7.7% of household still did not have electricity in their dwellings.

The Moqhaka Local Municipality is a Category B municipality situated within the southern part of the Fezile Dabi District in the Free State Province. It is the largest of four municipalities in the district, making up over a third of its geographical area and covering an area of 7 925m. The former Kroonstad, Steynsrus and Viljoenskroon Transitional Local Councils and sections of the Riemland, Kroonkop and Koepel Transitional Rural Councils are included in the municipality. The general tendency of migration from rural to urban areas is also occurring in the area, as is the case in the rest of the Free State Province. In comparison to the other municipalities within the Fezile Dabi District, it appears as if Moqhaka is significantly less urbanised.

The population dwindled from 2011 at 160 532 to 154 732 in 2016. In 2011 the unemployment rate stood at 35.2% and the youth unemployment rate at 47.2%. In 2016 89.7% of households had flush toilets connected to sewerage and 96.3% of households had electricity for lighting in their dwellings. The main economic sectors in the municipality are agriculture, commercial transport, business services and mining. In the Moqhaka LM there are 55 594 economically active (employed or unemployed but looking for work) people, and of these 35,2% are unemployed. Of the 27 349 economically active youth (1534 years) in the area, 47,2% are unemployed. The creation of employment opportunities

within the formal sector as a result of the development of therefore contribute to Thakadu SPP could wards growing employment within the formal sector in both the LM and DM, which could lead to greater levels of job security than may typically be associated with employment in the informal sector

As part of the identification of the Key social issues the Harmony Moab Khotsong and the Harmony Great Noligwa Social Labour Plans were evaluated and, where applicable incorporated into the findings of this report.

The Moab Khotsong Operations consist of the Greater Noligwa Mine, Moab Khotsong Mine, Noligwa Gold Plant, South Uranium Plant and Mispah 1 and 2 and Kopanang paydam tailings storage facilities (TSFs). The operations are located at the boundary between the North-West and the Free State provinces. The northern portion of the mine lease area falls within the City of Matlosana Local Municipality and the jurisdiction of Southern District Municipality in the North West province. The southern portion of the operations falls within the Moqhaka Local Municipality, and under the Jurisdiction of District Municipality of Fezile Dabi in the Free State Province.

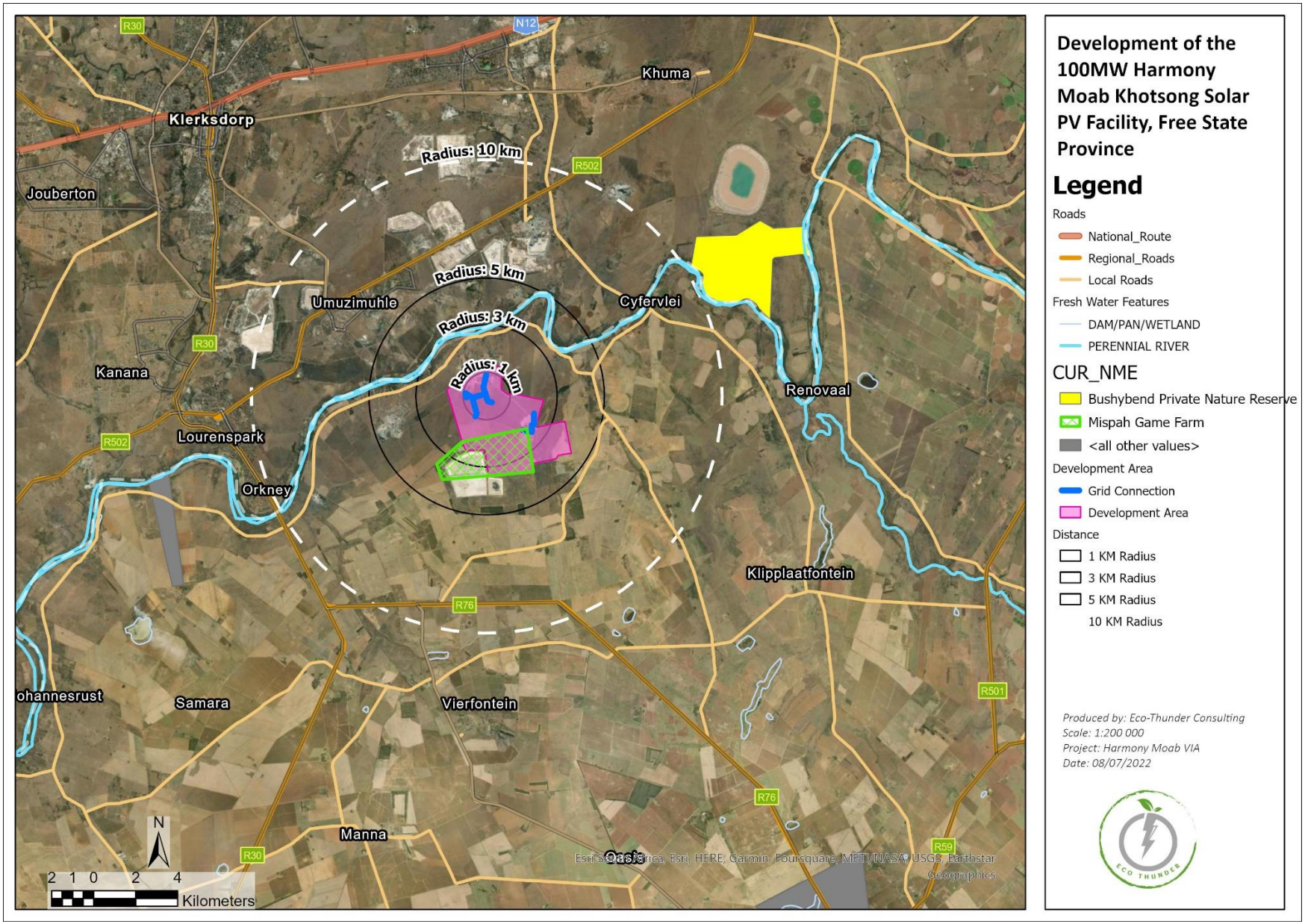


Figure 2A: Location of the site within the main study area, within the Free State Province

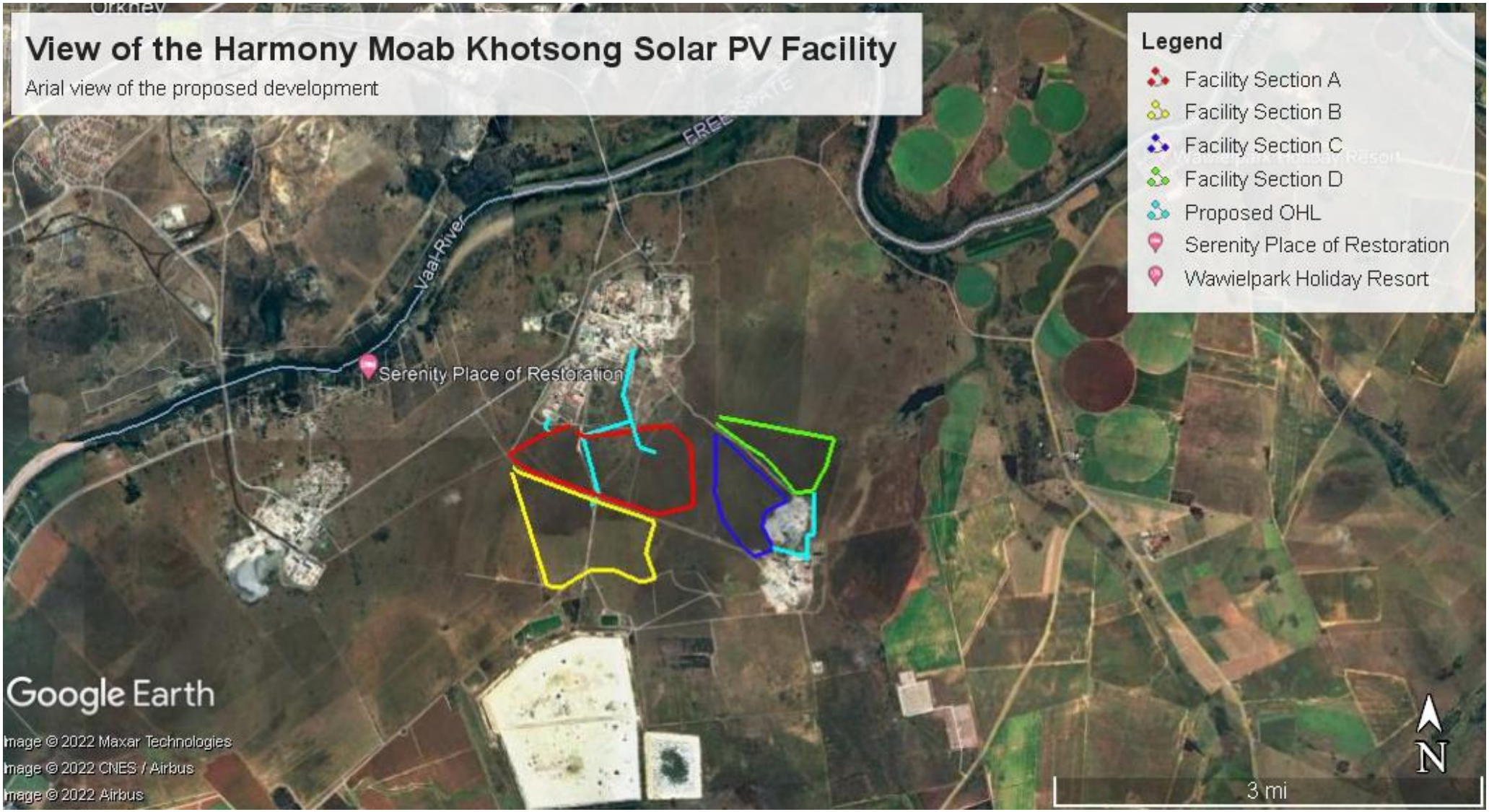


Figure 2B: Location of the site within the main study area, within the Free State Province

4.2. Administrative Context of Study Area

The Harmony Moab Khotsong Solar Energy Facility (SEF) is located within the Moqhaka Local Municipality (MLM), which is one of four local municipalities that make up the Fezile Dabi District Municipality (FDDM) in the Free State Province. The town of Sasolburg is the administrative seat for the FDDM, and Kroonstad is the administrative seat for MLM.

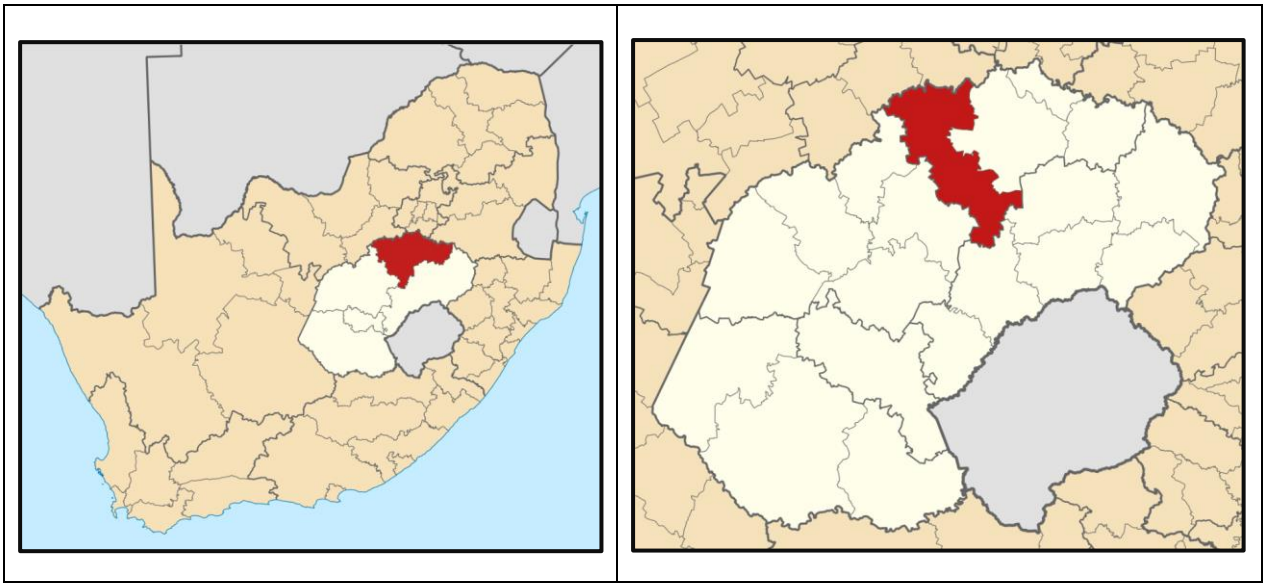


Figure 3: Location of Fezile Dabi District Municipality (left) and Moqhaka Local Municipality (right) within the Free State Province

Table 1: Spatial Context of the study area for the development of the Harmony Moab Khotsong Solar PV

Province	Free State Province
District Municipality	Fezile Dabi District Municipality
Local Municipality	Moqhaka Local Municipality
Ward number(s)	8
Nearest town(s)	~10km north of the town of Vierfontein
Current Zoning	Agriculture
Current land use	The properties both currently lie fallow, having been used historically for agriculture
Access	The site can be readily accessed via an existing gravel access road (Unnamed Rd Vierfontein, Free State)

4.3. Provincial Socio-Economic Context

The proposed Solar Energy Facility is in the Free State Province which covers an area of 129 464 km², or 10.6% of the total land area of the country. The western part of the Free State is characterised by flat plains, pans, and undulating land. The south is primarily lowlands with hills. To the east the escarpment extends from Lesotho into low mountains and irregular undulating land with hills. The northern and central portions are marked by undulating land and hills. The climatic conditions range from moist and warm in the east to dry and warm in the west.

The province is the granary of South Africa, with agriculture central to its economy, while mining in the goldfield reefs is its largest employer.

Economic towns include Bloemfontein, Welkom, Kroonstad, Parys, QwaQwa, and Bethlehem. The Free State is the third- largest Province in South Africa, but it has the second-smallest population and the second-lowest population density. The culture is centred on traditional cultures but built on the influences of the early European settlers.

Close to 2.8 million people live in the Free State, with two-thirds speaking Sesotho, followed by Afrikaans, Zulu, Tswana, Xhosa, and English.

The Free State is strategically placed to take advantage of the national transport infrastructure. Two corridors are of particular importance: the Harrismith node on the N3 corridor between Gauteng and KwaZulu-Natal, and the N8. The N1 connects Gauteng to the Western Cape. Bram Fischer International Airport in Bloemfontein handles about 250 000 passengers and 221 000 tons of cargo a year. Manufacturing also features in the provincial economic profile. This sector makes up 14% of the provincial output, with petrochemicals (via Sasol) accounting for more than 85% of the output.

The Free State Province comprises of four (4) Districts, namely Fezile Dabi, Lejweleputwa, Thabo Mofutsanyana and Xhariep (refer to Figure 5).

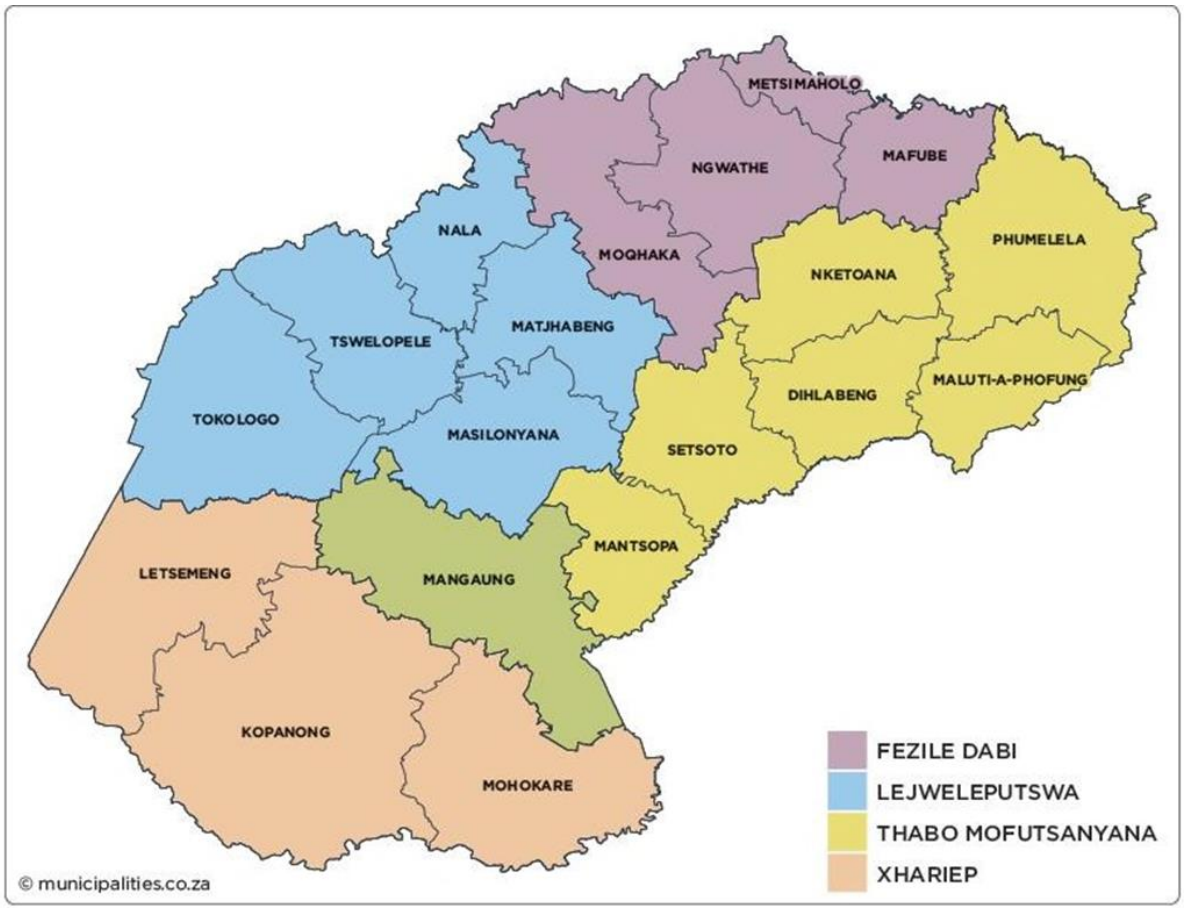


Figure 4: Map showing the districts of the Free State Province (Source: www.municipalities.co.za).

4.3.1. Population

The population of the Free State increased by an estimated 116 010 people, from 2.7 million in 2011 to 2.8 million in 2016, making it the second smallest increase after the Northern Cape (45 839). The proportion of the Free State's population to national total population decreased by 0.2 percentage points; from 5.3% in 2011 to 5.1% in 2016, which is the highest decline nationally. The negative change in the Free State's population in particular has severe consequences on the province's share of nationally raised revenue via the equitable share formulae. Because the formula is largely population-driven (over 60% of the formula uses population data), the allocations capture shifts in population across provinces. As a result, provinces with increased populations, like Gauteng, receive additional resources, while those with decreasing populations, like the Free State, receive reduced allocations.

Table 2: Population Structure of the District municipality

Province/district/local municipality	Census 2011	Community Survey 2016	Growth rate
DC16: Xhariep	**121 945**	**125 884**	**0,7**
FS161: Letsemeng	38 628	40 044	0,8
FS162: Kopanong	49 171	49 999	0,4
FS163: Mohokare	34 146	35 840	1,1
DC18: Lejweleputswa	**624 746**	**646 920**	**0,8**
FS181: Masilonyana	59 895	62 770	1,1
FS182: Tokologo	28 986	29 149	0,1
FS183: Tswelopele	47 625	47 373	-0,1
FS184: Matjhabeng	407 020	429 113	1,2
FS185: Nala	81 220	78 515	-0,8
DC19: Thabo Mofutsanyana	**735 679**	**779 330**	**1,3**
FS191: Setsoto	112 038	117 362	1,1
FS192: Dihlabeng	128 704	140 044	1,9
FS193: Nketoana	60 324	64 893	1,7
FS194: Maluti-A-Phofung	335 784	353 452	1,2
FS195: Phumelela	47 772	50 054	1,1
FS196: Mantsopa	51 056	53 525	1,1
DC20: Fezile Dabi	**488 036**	**494 777**	**0,3**
FS204: Metsimaholo	149 108	163 564	2,1
FS205: Mafube	57 876	57 574	-0,1
FS201: Moqhaka	160 532	154 732	-0,8
FS203: Ngwathe	120 520	118 907	-0,3
MAN: Mangaung	**775 184**	**787 803**	**0,4**
Free State	**2 745 590**	**2 834 714**	**0,7**

The figure below shows the population structure of the Free State in 2016 by means of a population pyramid. Population pyramids are graphical representations of the age and sex of a population. The age-sex structure of any population affects the labour force, demand for education facilities, retirement, and medical systems amongst others. Therefore, the population pyramid provides crucial data that can be used by the government when planning. The Free State has what is called an expansive population pyramid. Expansive population pyramids depict populations that have a larger percentage of people in younger age groups. Populations with this shape usually have high fertility rates with lower life expectancies. The implications of such a structure is excessive strain on the economically active population. The pyramid narrows toward the top because the death rate is higher among older people than among younger people. Free State's population pyramid depicts the characteristics of a developing nation which are: (i) low growth rates, (ii) high birth rate, and (iii) short life expectancy

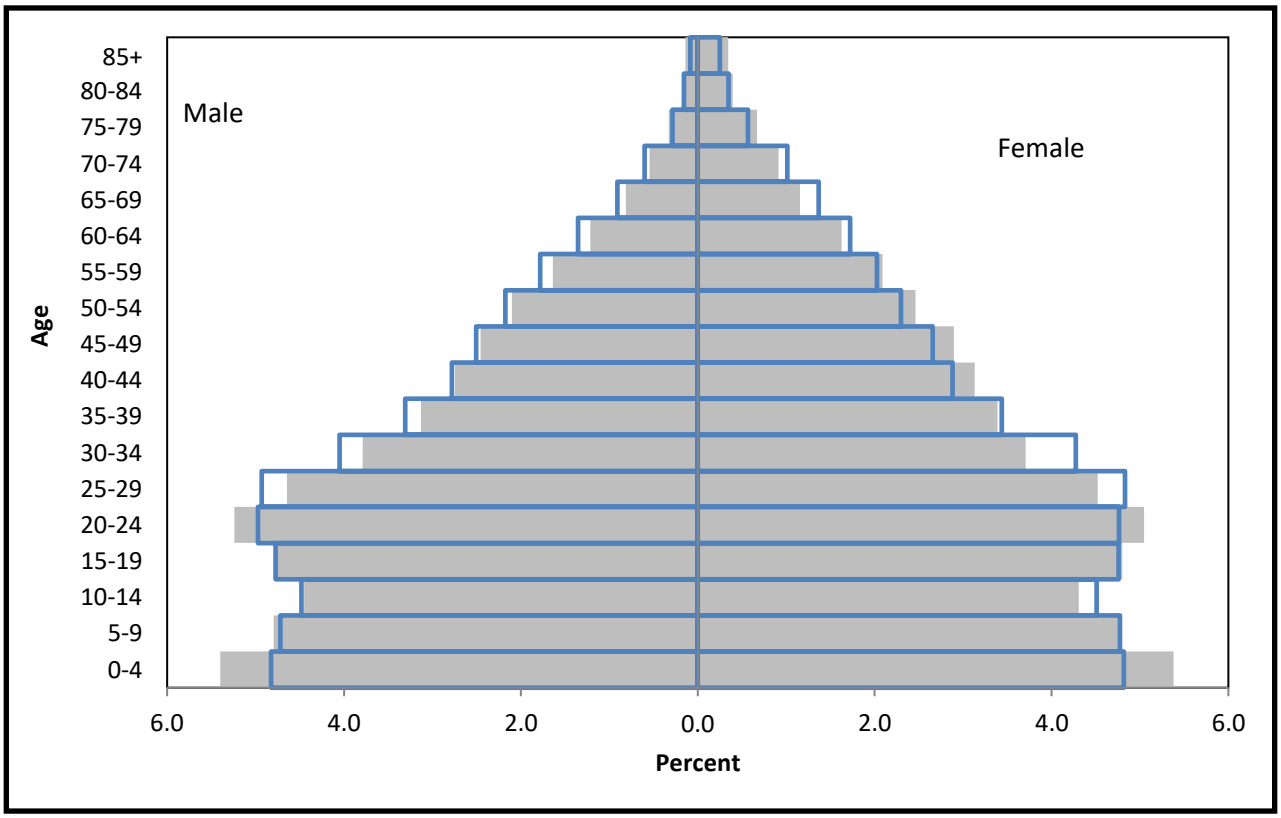


Figure 5: Population pyramid of the study area

4.3.2. Economy

The economy of the Free State faced several headwinds in 2016, in line with some the challenges faced by the global, regional, and national economies. The El Nino episode, which resulted in the drought experienced by Southern Africa (including the South Africa and the Free State), infiltrated into the beginning of 2016. This drought resulted in less grain being planted throughout the country, which resulted in the need to import grain during 2015 and 2016. Coupled with a weaker domestic currency, the drought fuelled food inflation to double digit territory, and negatively impacted consumer and business confidence in 2016.

As the second biggest producer of maize and wheat in the country, Free State agriculture will benefit from more rainfalls in 2017. The downside risk faced by the industry includes the presence of army worms, which can destroy harvest and disrupt food security for the province. However, the agricultural industry is projected to recover and grow by 1.7 percent in 2020. The other half of the primary industries, mining industry, is also projected to recover from a decline of 4.5 percent in 2016 to a growth of 2.6 percent in 2017.

As an energy-intensive industry, mining will benefit from the continuous and reliable supply of electricity. Also, gold and coal prices showed signs of recovery in 2016, which is a positive for the province. In the medium term, the growth rate of the mining industry in the Free State is projected to decline from 0.9 percent in 2017 to 0 percent in 2020. In the secondary industries, the output of the electricity industry is projected to decline by 0.1 percent in 2017, and thereafter recover and reach 2.9 percent in 2020. In South Africa, hydroelectricity was reduced in 2016 following the drought and even in the mist of rainfalls, the water sub-industry might recover gradually in 2017.

The construction industry continues to be disadvantaged by fiscal consolidation as well as weak private investment and over the medium term, the industry is projected to reduce by an average of 0.2 percent per annum. In the tertiary industry, increased global protectionism and uncertain trade policies are anticipated to have a negative bearing on the trade industry, which is projected to decline by 0.3 percent in 2017. However, favourable trade policies from the EU and anticipated from the UK may favour the tertiary industry of the province, which is projected to recover and grow by 1.6 percent in 2020.

The transport industry, which is projected to grow by a minute 0.1 percent in 2017, is projected to grow more robustly over the medium term by 3.1 percent in 2020. The national and provincial government continues to support the

development and maintenance of transport infrastructure in the province e.g., public sector investment in mixed-use Airport Development Node as well as the 2nd phase of the Integrated Public Transport Network in the Mangaung region.

The Table below shows that the Free State economic output is anticipated to expand from R159.9 billion in 2016 to R160.3 billion in 2017 and grow further to R167.3 billion in 2020. Following a similar trend, all industries in the provincial economy are projected to grow by 0.3 percent in 2017 and accelerate further to grow by 1.7 percent in 2020. The agricultural industry of the province is projected to recover from reducing by 7.2 percent in 2016 to expand by 0.5 percent in 2017.

Table 3: GDP per sector from 2014 -2020 for the Free State Province

R'1000	2014	2015	2016	2017	2018	2019	2020
Gross Domestic Product	160 328 010	161 027 129	159 866 989	160 291 315	162 062 529	164 400 919	167 312 446
Total Industries	1.9%	0.4%	-0.6%	0.3%	1.0%	1.4%	1.7%
GDPR by Industry (real change)							
Agriculture	6.7%	-7.1%	-7.2%	0.5%	0.5%	0.9%	1.7%
Mining	2.2%	1.6%	-4.5%	2.6%	0.9%	0.9%	0.0%
Manufacturing	2.6%	-0.2%	1.5%	-0.1%	1.1%	1.1%	1.3%
Electricity	-0.6%	-1.3%	-1.8%	-0.1%	1.2%	2.2%	2.9%
Construction	2.2%	0.5%	-0.9%	0.1%	-0.2%	-0.4%	0.0%
Trade	1.1%	0.8%	-0.6%	-0.3%	0.9%	1.1%	1.6%
Transport	2.7%	0.6%	-0.7%	0.1%	1.8%	2.0%	3.1%
Finance	1.5%	1.7%	0.6%	0.3%	2.0%	2.1%	2.5%
Community services	1.5%	0.5%	1.4%	-0.3%	0.4%	1.6%	2.1%

4.3.3. Employment

The International Labour Organization (ILO) (2017) highlighted that the global economy grew by 3.1 percent in 2016, which is the lowest economic growth rate in the past six years. Although the global economy is projected to recover and grow by 3.4 percent in 2017, global uncertainties such as increased trade protectionism pose downside risks to the global economic outlook. In the context of a subdued global economy, the ILO raises concerns in the labour market, such as will a sufficient number of jobs be created; will the quality of the jobs in existence be improved; and lastly will the gains from growth be inclusively distributed? The ILO expects unemployment to remain high in the medium term, which will be worsened if labour force growth outstrips job creation.

According to Statistics South Africa the province has the highest unemployment rate in the country (34.7 percent in Q4:2016) and approximately 68 000 jobs were lost in 2016. An estimated economic growth rate of 0.3 percent in 2017 will make it very difficult for the province to create sufficient jobs to reduce the high unemployment rate of the province. According to Statistics South Africa (2017) the labour force of the Free State has declined by 16 000 (or 1.4 percent) between Q4:2015 and Q4:2016. Over the review period, employment drastically declined by 68 000 (or 8.2 percent), whilst the number of unemployed individuals increased by 52 000 (or 14.7 percent). As indicated in table 3 above, the official unemployment rate of the province increased from 29.8 percent in Q4:2015 to 34.7 percent in Q4:2016, which represents a 4.9 percentage point increase.

As indicated in the economy section above, the provincial economy faced several headwinds in 2016 which included drought in the agricultural and water industries, low commodity prices in mining, subdued global and national economies, fiscal consolidation, as well as reduced consumer and business confidence. These are among several factors which may have plummeted the provincial economy into negative growth territory in 2016 and subsequently increased the provincial unemployment rate.

Employment in South Africa increased by 51 000 (or 0.3 percent) between Q4:2015 and Q4:2016. However, employment in the country increased by 235 000 between Q3: 2016 and Q4: 2016, boosted mainly by community services (73 000), transport (46 000) and manufacturing (44 000) industries. In terms of provinces, the biggest gains in employment, year-on-year, occurred in Limpopo (103 000), Eastern Cape (36 000) and Gauteng (22 000). The biggest

losses in employment over the same period occurred in Free State (68 000), Mpumalanga (36 000) and Northern Cape (14 000). Quarter to quarter changes reveal that the largest gains in employment occurred in Western Cape (70 000), Limpopo (64 000) and North West (60 000). Over the same period, the largest losses in employment occurred in Free State (24 000), Mpumalanga (19 000) and Northern Cape (10 000).

4.3.4. Human Development

HDI for both the Free State and South Africa has been steadily increasing for the period of 2005 to 2015. Historically, the HDI for the province has always been lower than that of the country. Despite this, HDI has been on an increasing trend moving from 0.51 in 2005 to 0.63 in 2015. This increase in the HDI might be due to the increasing trend in life expectancy and education in the same period despite the low prosperity of the economy. This increase shows that the social and economic development in the province is moderate. Overall, the different variables indicate that the province is still on the right track to deliver improved services to its residents.

4.3.5. Education

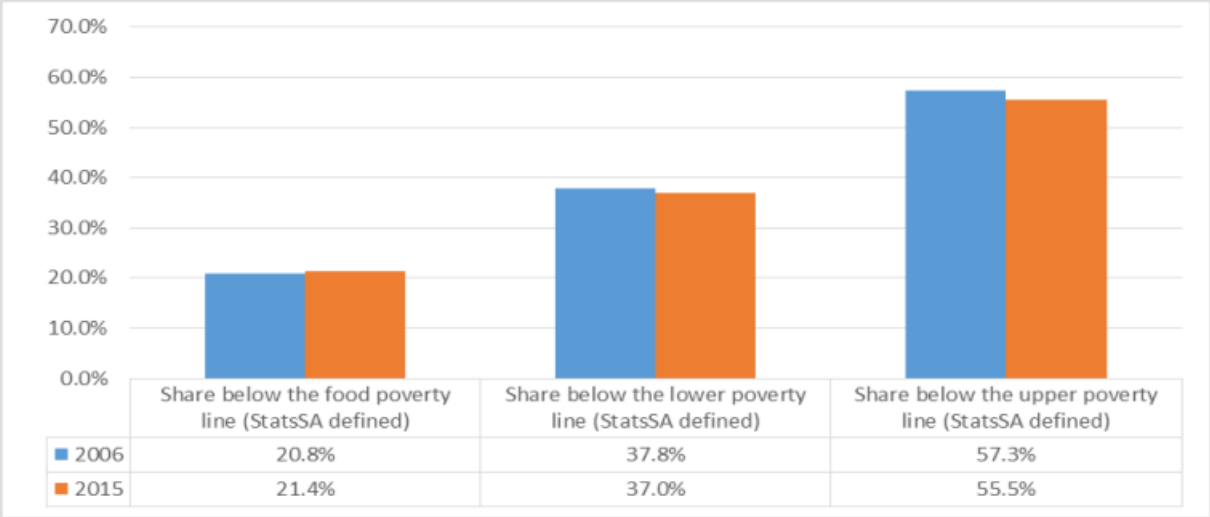
During the period 2011 to 2016, the number of learners at ordinary schools increased for both the country and the province. Provincially, the number of learners increased by 30 339 leaners, from 658 010 in 2011 to 688 349 in 2016, whilst for the country it increased by 644 571 learners, from 12 287 994 in 2011 to 12 932 565 in 2016. The number of learners has increased at a faster annual average rate of 1.03 percent nationally compared to 0.91 percent provincially. Free State's share of learners decreased from 5.4 percent in 2011 to 5.3 percent in 2016; a decline of 0.1 percentage point.

Table 4: Education per Free State District

District and local municipality	Census 2011		CS 2016	
	Number	%	Number	%
Xhariep	**31 103**	**69,8**	**33 192**	**69,4**
1FS161: Letsemeng	9 084	65,6	9 574	62,3
FS162: Kopanong	12 374	71,2	12 753	70,7
FS163: Mohokare	9 646	72,4	10 865	75,4
Lejweleputswa	**158 066**	**70,7**	**170 825**	**73,6**
FS181: Masilonyana	14 768	70,1	16 286	71,5
FS182: Tokologo	7 001	66,5	7 392	69,6
FS183: Tswelopele	13 031	69,7	14 104	75,1
FS184: Matjhabeng	101 830	71,5	110 623	73,5
FS185: Nala	21 435	69,4	22 419	76,6
Thabo Mofutsanyana	**218 696**	**75,0**	**244 043**	**76,7**
FS191: Setsoto	32 339	73,8	36 814	78,0
FS192: Dihlabeng	33 843	73,5	39 992	75,7
FS193: Nketoana	17 259	73,2	19 450	74,0
FS194: Maluti-A-Phofung	108 045	77,3	117 193	77,9
FS195: Phumelela	13 325	71,2	14 890	72,1
FS196: Mantsopa	13 885	71,0	15 704	75,4
Fezile Dabi	**121 309**	**72,3**	**123 960**	**71,8**
FS204: Metsimaholo	35 503	71,8	40 014	72,1
FS205: Mafube	16 580	74,0	16 243	73,3
FS201: Moqhaka	37 396	71,1	38 284	72,3
FS203: Ngwathe	31 829	73,6	29 418	70,0
Mangaung	**206 827**	**74,0**	**231 996**	**77,5**
Free State	**736 002**	**73,1**	**804 016**	**75,2**

4.3.6. Income and poverty

A study by the Free State Provincial Treasury on poverty and inequality (G.G Mashibini and O.S Omoshoro-Jones, 2016) found that poverty rates in the province have declined (using all three poverty lines), but the level remains high, as also seen in figure 6 below. The improvement is mostly attributable to a redistributive fiscal policy and average income growth. The study further states that poverty severity is substantially higher in rural areas than urban, which could be triggered by rural-urban migration.



	Share below the food poverty line (StatsSA defined)	Share below the lower poverty line (StatsSA defined)	Share below the upper poverty line (StatsSA defined)
2006	20.8%	37.8%	57.3%
2015	21.4%	37.0%	55.5%

Figure 6: Poverty Within the District Municipality

4.4. Fezile Dabi District Municipality

Fezile Dabi District Municipality (FDDM) is situated at the northern part of the Free State Province and borders both Thabo Mofutsanyane and Lejweleputswa District Municipalities. FDDM also shares borders with 3 national provinces; Gauteng, Mpumalanga, and the North West. The Vaal River and the Vaal dam form the northern boundary of FDDM and also serve as the boundary between the Free State and Gauteng Provinces. FDDM is the second smallest of the four District Municipalities, covering 16.4% of the provincial area and is made up of four Local Municipalities namely; Moqhaka, Metsimaholo, Ngwathe and Mafube (Figure 7). The district municipality has a total of 38 settlements, encompassing 4 farming settlements, 15 formal towns, 17 former urban townships and 2 urban informal settlements.

The main economic sectors in the area are trade, community services, manufacturing, households, and agriculture. The main attraction in the district is the Vredefort Dome, which is the third largest meteorite site in the world. The district consists of four local municipalities, namely Mafube, Metsimaholo, Moqhaka and Ngwathe

The community service sector mostly prevalent in Moqhaka Local Municipality, is the second highest GDP contributor in the district as well as in Ngwathe Local Municipality and is the second most prevalent sector in FDDM. Another active economic sector in district municipality includes, agriculture, both livestock farming and horticulture.

Mining is also an economic contributor in FDDM as extensive areas have rich underground coal deposits and there are other smaller deposits for various other minerals. Most of the national headquarters of industries are based in FDDM. The district is serviced by a strategically important road network, both national and Provincial roads which include the N1, R59, N3 and N17. The road network is supported by a rail system. This makes the district accessible to all major urban centres in South Africa.

Figure 7: Local Municipalities of Fezile Dabi District Municipality Source: (Local Government Handbook, 2015)

4.4.1. Population

The Fezile Dabi District Municipality has a population of 527 788 in 2019 and accounts for a total population of (18.3%) of the total population in the Free State Province. When looking at the average annual growth rate, it is noted that Fezile Dabi ranked second (relative to its peers in terms of growth) with an average annual growth rate of 0.8% between 2009 and 2019. Based on the present age-gender structure and the present fertility, mortality and migration rates, Fezile Dabi's population is projected to grow at an average annual rate of 0.6% from 527 788 in 2019 to 545 000 in 2024.

The population projection of Fezile Dabi District Municipality shows an estimated average annual growth rate of 0.6% between 2019 and 2024. The average annual growth rate in the population over the forecasted period for Free State Province and South Africa is 0.5% and 1.3% respectively. The Free State Province is estimated to have average growth rate of 0.5% which is lower than the Fezile Dabi District Municipality. South Africa as a whole is estimated to have an average annual growth rate of 1.3% which is higher than that of Fezile Dabi's growth rate

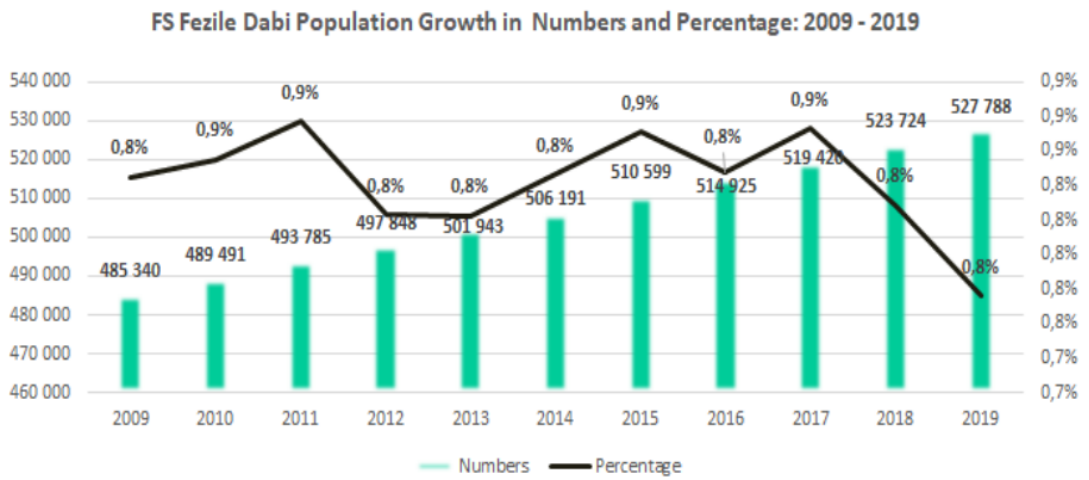


Figure 8: Predicted population growth 2009 -2019

4.4.2. Economy

In 2019, the manufacturing sector is the largest within Fezile Dabi District Municipality accounting for R 14 billion or 27.0% of the total GVA in the district municipality's economy. The sector that contributes the second most to the GVA of the Fezile Dabi District Municipality is the mining sector at 18.2%, followed by the community services sector with 13.1%. The sector that contributes the least to the economy of Fezile Dabi District Municipality is the construction sector with a contribution of R 1.14 billion or 2.20% of the total GVA.

The community sector, which includes the government services, is generally a large contributor towards GVA in smaller and more rural local municipalities. When looking at the regions within the district municipality, the Metsimaholo Local Municipality made the largest contribution to the community services sector at 40.09% of the district municipality. The Metsimaholo Local Municipality contributed R 34.6 billion or 66.47% to the GVA of the Fezile Dabi District Municipality, making it the largest contributor to the overall GVA of the Fezile Dabi District Municipality. This is due to the large petrochemical hub in Sasolburg and the related economic activities.

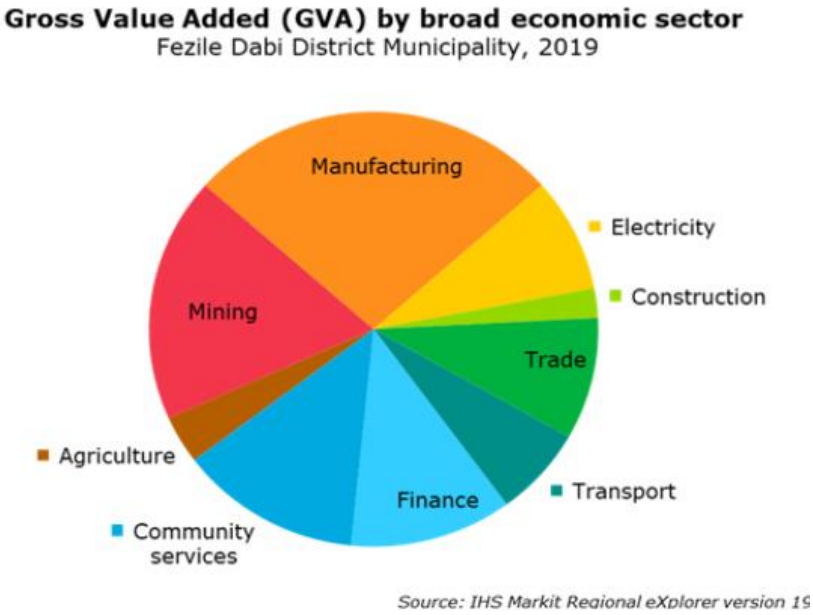


Figure 9: District municipality Economic Sector

Primary Sector

The primary sector consists of two broad economic sectors namely the mining and the agricultural sector. Both the agriculture and mining sectors are generally characterised by volatility in growth over the period. The Primary sector is expected to grow at an average annual rate of -5.04% between 2019 and 2024, with the Secondary sector growing at -0.80% on average annually. The Tertiary sector is expected to grow at an average annual rate of -0.33% for the same period.

Agriculture

Fezile Dabi district municipality has a strong agriculture base and is known as the grain/maize basket for South Africa. The district has a total of 327 592ha (15, 4% of all agricultural land in the province) of high potential agricultural land and 59% of agricultural land has low potential. The Integrated Development Plan (IDP, 2017/18) notes that land needs to be optimally used for agriculture and food production. Cattle and sheep farming provide opportunities for the processing of meat, wool, and dairy products. Maize, sunflower seed, sorghum and wheat are cultivated in the district. There is a need for more agro-processing initiatives to boost agriculture in the district. A lack of funding for agricultural projects (Koppies Green House Vegetable production Project) has been identified (IDP, 2017/18). National Department of Agriculture has conceptualised Agri- Parks, & Ngwathe LM has been identified as one of the areas where Agri- Parks will be established (IDP, 2017/18).

Mining

Fezile Dabi district has location advantages in sectors such as agriculture, mining, manufacturing, and electricity provision. In terms of mining, there are extensive areas with rich underground coal deposits. Large quantities are mined

in the Sasolburg district by means of conventional and strip-mining methods. The rare clay, Bentonite, is mined in the vicinity of Koppies. The re-exploitation of the Lacemyn diamond mine in the vicinity of Kroonstad is currently taking place and gold is mined at the Vaal Reefs Mine, part of the Witwatersrand gold reef, in the Viljoenskroon area (IDP, 2017/18).

4.4.3. Employment

In terms of the percentage of people living in poverty for each of the regions within the Fezile Dabi District Municipality, Mafube Local Municipality has the highest percentage of people living in poverty, using the upper poverty line definition, with a total of 67.5%. The lowest percentage of people living in poverty can be observed in the Metsimaholo Local Municipality with a total of 49.8% living in poverty, using the upper poverty line definition.

In 2019, the Gini coefficient in Fezile Dabi District Municipality was at 0.618, which reflects an increase in the number over the ten-year period from 2009 to 2019. The average annual income is R30 000 which is the same as the South Africa and Free State average. 62% of the households earn less than R40 000 per annum and 8% have no income.

The working age population in Fezile Dabi in 2019 was 343 000, increasing at an average annual rate of 0.69% since 2009. For the same period the working age population for Free State Province increased at 0.39% annually, while that of South Africa increased at 1.62% annually. The graph below combines all the facets of the labour force in the Fezile Dabi District Municipality into one compact view. The chart is divided into "place of residence" on the left, which is measured from the population side, and "place of work" on the right, which is measured from the business side.

Out of the economically active population, there are 72 600 (33%) unemployed people. Most of the formal employment lies in the Tertiary industry, with 54 600 jobs. Formal jobs make up 62.7% of all jobs in the Fezile Dabi District Municipality. The difference between the employment measured at the place of work, and the people employed living in the area can be explained by the net commuters that work outside of the district municipality.

4.4.4. Education

In 2019, the school pass rate in the Fezile Dabi District was 90.3%, the highest pass rate in the Free State province. According to the Community Survey, 2016, 94.8% or 109 806 of school-aged children between 5 and 17 years are in schools in the district which is about the same rate as in the Free State Province (95.96%) and in South Africa (94.9%). At a district wide level, 20.6% of the population have secondary education, whilst persons with tertiary education makes up only 1.3% of the district population.

4.5. Moqhaka Local Municipality

Moqhaka Local Municipality derives its name from the Afrikaans name ‘kroon’ which means crown a commonality in the names of the amalgamated municipalities in the area. Moqhaka is Sesotho for crown. It is not only kings who wear crowns, but winners are rewarded with them. Traditionally, the royal homestead is centrally situated. The new municipality is centrally situated in the province and the country as a whole

The municipality is situated within the southern part of the Fezile Dabi District in the Free State Province. At 7 925 km² it is the largest of four municipalities in the district, making up over a third of its geographical area. The former Kroonstad, Steynsrus and Viljoenskroon Transitional Local Councils and sections of the Riemland, Kroonkop and Koepel Transitional Rural Councils are included in the municipality. The seat of local government is Kroonstad.

The general tendency of migration from rural to urban areas is also occurring in the area, as is the case in the rest of the Free State Province. In comparison to the other municipalities within the Fezile Dabi District, it appears as if Moqhaka is significantly less urbanised. The Greater Kroonstad area is the centre of a large agricultural community that plays an important role in the economy of the district. Subsequently, industrial activities contribute significantly to the district’s economy. The Department of Correctional Services and the School of Engineers military bases are situated in the town. Kroonstad has recently become a distinguished holiday destination due to the ultra-modern and popular holiday resort of Kroonpark, adjacent to the Vaal River.

The urban area is situated adjacent to the N1 National Road and located adjacent to one of the largest and most important four-way railway junctions in South Africa. The Viljoenskroon/Rammulotsi urban area is located within an area of extreme agricultural significance. The urban area plays a significant role in providing residential opportunities to the adjacent goldfields and mining activities in the North West province. The Provincial Roads P15/1 and P15/2 from Kroonstad to Klerksdorp in the North West province extend through the area from north to south. The Steynsrus/Matlwangtlwang urban area is situated approximately 45km east of Kroonstad and 92km west of Bethlehem. The major link road between Bethlehem and Kroonstad stretches adjacent to the urban area. Cities/Towns include Kroonstad, Renovaal, Steynsrus, Vierfontein, and Viljoenskroon, the mail economic activities are agriculture, commercial transport, business services and mining.

Viljoenskroon is located in an area of agricultural significance and mainly provides services in this regard to the surrounding rural areas. Viljoenskroon functions as a satellite town for residential purposes due to its strategic location in the proximity of the Vaal Reefs mines as well as the Orkney/Stilfontein mining areas in the North West Province. These towns have the opportunity for future growth based on industrial development, mining, and tourism.

4.5.1. Population

The population of the municipality has decreased by 4.4% from 167 892 in 2001 to 160 532 persons in 2011. The community survey conducted during 2016 indicated that the population once again decreased with 3.61% to 154 732. Contrary to the aforementioned, the number of households increased by 10.0% from 41 514 in 2001 to 45 661 in 2011 and increased again with 17.39% to 53 601 according to the Community Survey results of 2016.

The population pyramid below shows a bulge from ages 15-19, 20-24 and 25-29 which is a reflection that Moqhaka Local Municipality consists of a young population that still needs to go to school and a pool of new entrants into the labour market. The pyramid also shows that males in those age groups are more than females, whereas from age 70 females are more than males which means that females outlive males. Households with access to piped (tap) water inside the dwelling and yard showed a positive movement and increased from 76.6% in 1996 to 94.2% in 2011, whilst piped water outside the yard decreased 6.8% over the same period.

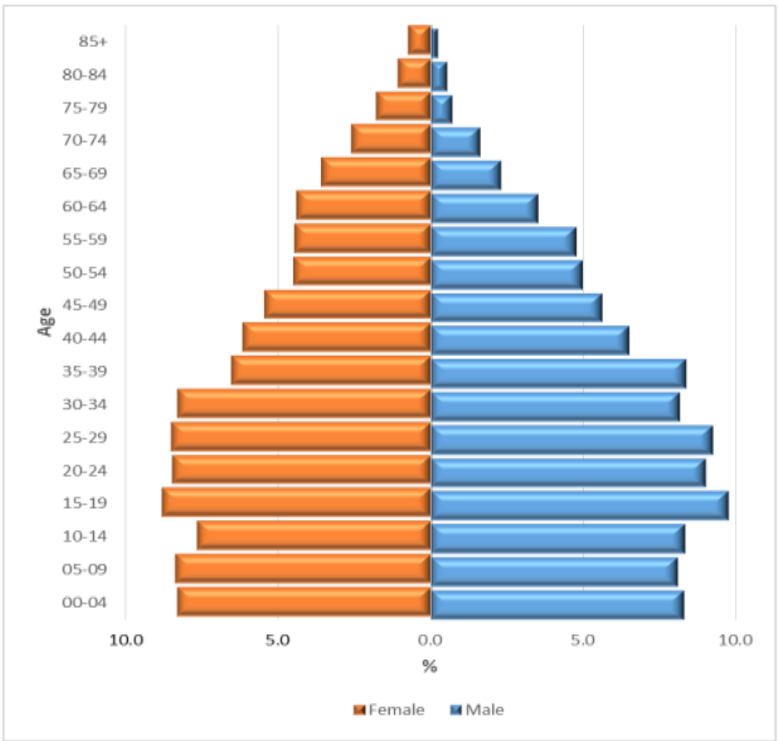


Figure 10: Population pyramid of Moqhaka Local Municipality

4.5.2. Economy

The Greater Kroonstad is the centre of a large agriculture community that plays an important role in the economy of the district. Industrial activities subsequently contribute significantly to the district's economy. The Department of

Correctional Services and the School of Engineer's Military bases are situated in the town. Kroonstad has of late become a distinguished holiday destination due to the ultra-modern and popular holiday resort of Kroonpark, adjacent to the Vaal River. The urban area is situated adjacent the N1 National Road and located adjacent one of the largest and most important four-way railway junctions in South Africa.

The municipality has a number of competitive advantages and key positives on which the economy can built. It has a solid economic infrastructure, the N1 road run just few minutes from the CBD. It has a solid railway line which plays a significant role in transporting agricultural products and other industrial good. The railway line linking the North West Province particularly Lichtenburg and Kwa Zulu Natal Province particularly the Durban Harbour passes through all the three towns of Moqhaka Local Municipality. It has airport that is designed for large aircraft such as Boeing 737s that can attract both international and national investors.

Main Economic Sectors include agriculture, manufacturing, trade, construction, electricity, transport, and finance. The 2016 forecast of economic activity for each sector was as follows:

- Agriculture -2.0%
- Mining -1.4%
- Manufacturing -2.0%
- Electricity -0.6%

4.5.3. Employment

Moqhaka Local Municipality had an estimated population of 160 532 in 2011, with an estimated 45 661 household units and -0.45% growth rate. The population declined in 2016 community survey to 154 732 with unemployment rate of 35.2%. The youths are the hardest hit with 47.2 %. This decline exacerbates the range of challenges facing Moqhaka, including, but not limited to, unemployment and migration to name but a few. It has the necessary basic economic infrastructure like industrial areas of Kroonstad and Viljoenskroon, which plays an important role in agricultural industries.

The closure of two diamonds mine in the area, has negatively affected the economic standing of the municipality which is progressively shifting towards agriculture, tourism, and transport. The largest areas of focus being black emerging farmers and the development businesses. There are prospects of coal and methane gas in the area.

4.5.4. Education

The level of education of 5-year-olds and higher within the study area is illustrated below. Table 7 compares the education levels of the residents from Grade 0 all the way to PHD level.

No schooling – 5092

Table 5: Overview of Education in the study area

Level of education	Gender		Total
	Male	Female	
No schooling	2323	2769	5092
Grade 0	1968	2038	4006
Grade 1/Sub A/Class 1	1755	1996	3751
Grade 2/Sub B/Class 2	1284	2057	3342
Grade 3/Standard 1/ABET 1	2642	2304	4947
Grade 4/Standard 2	3203	2663	5865
Grade 5/Standard 3/ABET 2	2665	2813	5478
Grade 6/Standard 4	3807	4123	7930
Grade 7/Standard 5/ABET 3	3269	3333	6602
Grade 8/Standard 6/Form 1	5743	5681	11424
Grade 9/Standard 7/Form 2/ABET 4/Occupational certificate NQF Level 1	5280	5422	10702
Grade 10/Standard 8/Form 3/Occupational certificate NQF Level 2	6902	7614	14515
Grade 11/Standard 9/Form 4/NCV Level 3/ Occupational certificate NQF Level 3	6428	7665	14093
Grade 12/Standard 10/Form 5/Matric/NCV Level 4/ Occupational certificate NQF Level 3	17398	15798	33197
NTC I/N1	20	-	20
NTCII/N2	71	86	157
NTCIII/N3	104	83	187
N4/NTC 4/Occupational certificate NQF Level 5	242	181	423
N5/NTC 5/Occupational certificate NQF Level 5	113	157	270
N6/NTC 6/Occupational certificate NQF Level 5	295	539	834
Certificate with less than Grade 12/Std 10	17	11	29
Diploma with less than Grade 12/Std 10	189	251	440
Higher/National/Advanced Certificate with Grade 12/Occupational certificate NQF	188	458	646
Diploma with Grade 12/Std 10/Occupational certificate NQF Level 6	972	1097	2070
Higher Diploma/Occupational certificate NQF Level 7	327	457	784
Post-Higher Diploma (Master's	202	135	338
Bachelor's degree/Occupational certificate NQF Level 7	303	368	670
Honours degree/Post-graduate diploma/Occupational certificate NQF Level 8	240	214	454
Master's/Professional Master's at NQF Level 9 degree	72	49	121
PHD (Doctoral degree/Professional doctoral degree at NQF Level 10)	140	106	246
Other	194	391	585

4.5.5. Income and poverty

The 2016 Community Survey have released a poverty headcount. The poverty measures used below are based on the South African Multidimensional Poverty Index (SAMPI). The SAMPI is an index that is constructed using eleven indicators across four dimensions, namely health, education, living standards and economic activity. There are two measures mentioned in the table, namely the "poverty headcount" and the "intensity of poverty". The poverty headcount shows the proportion of households that are considered “multidimensional poor" in the defined area. The intensity of poverty is the average proportion of indicators in which multidimensional poor households are deprived. This information will be utilised to gauge the demand for and extent of LED necessary in the region.

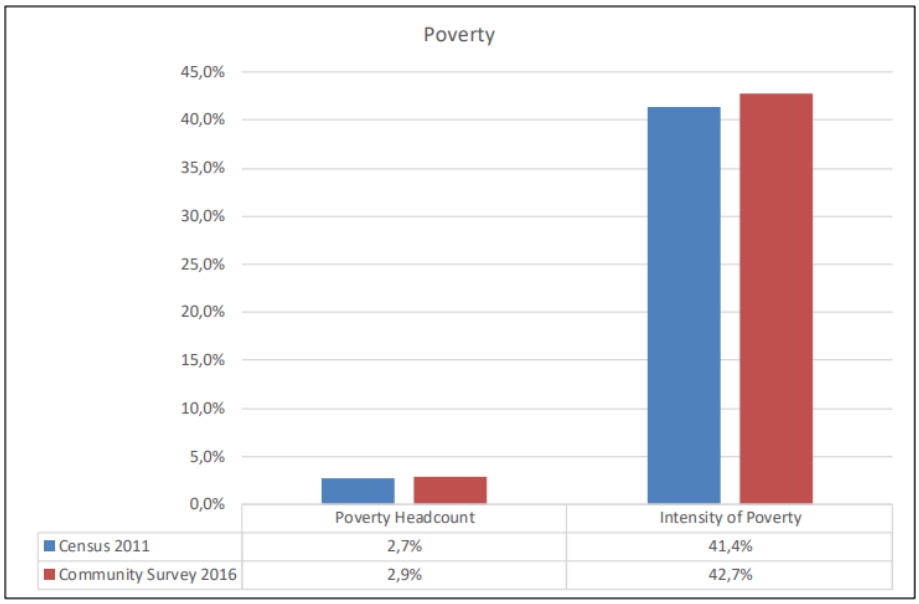


Figure 11: Poverty Index in Moqhaka municipality

5. ASSESSMENT OF KEY SOCIAL ISSUES AND IMPACT

5.1. Introduction

Section 5 highlights the key social issues identified during the SIA study. The identification of social issues was based on:

- Review of project related information, including other specialist studies;
- Application of relevant legislation from a local to national level;
- Experience of the authors of the area and the local conditions; and
- Experience with similar projects.

In identifying the key issues, the following assumption is made:

- The area identified for the proposed SEF meets the technical criteria required for such facilities.

This Chapter provides a thorough description and evaluation of the potential social impacts that have been identified for the detailed design and construction, operation, and decommissioning phases, of the proposed Harmony Moab Khotsong Solar PV.

This assessment considered the following points:

- The nature, extent, and significance of the features within the social landscape being considered.
- The existing disturbance already present within the social landscape (i.e., mining activities and other industrial developments/infrastructure).

Social impacts are expected to occur during both the construction, operational and decommissioning phases of the Harmony Moab Khotsong Solar PV. The status of the impacts will either be positive or negative and either mitigation or enhancement measures are recommended for the management of the impacts, depending on the status of the impacts.

5.2. Identification of Key Social Issues

The identified key social issues are discussed below. They are divided into policy and planning related, as well as local and site-specific issues. Local and site-specific issues are further divided into construction and operational related issues.

A Social Impact Assessment (SIA) has been prepared to provide a description of the environment that may be impacted by the activity as well as the manner in which the environment may be impacted. This section also includes a description and assessment of the potential social issues associated with the proposed facility, as well as the identification of enhancement and mitigation measures aimed at maximizing opportunities and avoiding or mitigating negative impacts.

The Harmony Moab Khotsong and Harmony Great Noligwa Social Labour Plans were evaluated and, where applicable, incorporated into the findings of this report as part of the identification of the key social issues.

A Social and Labour Plan (SLP) is a document that outlines a mining company's commitments to its employees and impacted communities, as well as how and when these goals will be met. As a pre-requisite for the granting of a mining right, every company is required by law - in this case, Regulation 42 of the Minerals and Petroleum Resources Development Act (MPRDA) - to design and submit an SLP to the Department of Mineral Resources and Energy (DMRE). During the life of a mining right, SLPs are typically required to be revised and resubmitted every five years.

The main question which needs to be addressed is:

“How will the proposed development impact on the socio-economic environment?”

The development of the Moab Solar Facility and its associated infrastructure may have an impact on some vulnerable communities within the project area. Traditionally, the majority of social impacts are associated with the construction phase of a PV solar development. Many of the social consequences are unavoidable and will occur to some extent, but

they can be managed through careful planning and implementation of appropriate mitigation measures. Several potential positive and negative social impacts for the project have been identified; however, an assessment of the potential social impacts revealed that there are no perceived negative impacts that are significant enough to be classified as "fatal flaws." Based on the social impact assessment, the following general conclusions and findings can be made:

- The potential negative social impacts associated with the construction phase are typical of construction-related projects and are not limited to the construction of solar PV projects (these relate to an influx of non-local workforce and jobseekers, intrusion, and disturbance impacts (i.e., noise and dust, road wear and tear), and safety and security risks), and could be mitigated by implementing the mitigation measures proposed. As a result, the significance of such impacts on local communities can be reduced
- The site is within the existing mining development area and thus within the mine's social and economic processes and structures; things like socio-economic development and local economic development plans will take the development of the PV facilities into account
- The development will introduce employment opportunities during the construction phase (temporary employment) and a limited number of permanent employment opportunities during operation phase
- The proposed project could help the local economy by fostering entrepreneurial growth and opportunities, particularly if local businesses are involved in the provision of general materials, goods, and services during the construction and operational phases. This positive impact is likely to be exacerbated by the cumulative impact associated with the development of several other solar facilities in the surrounding area, as well as by the project's location within an area characterized by high levels of solar irradiation and thus well suited to the development of commercial solar energy facilities
- The proposed development also represents an investment in infrastructure for the generation of non-polluting, renewable energy, which represents a positive social benefit for society when compared to energy generated by the combustion of polluting fossil fuels
- It is also important to consider the cumulative social impacts of other proposed solar PV projects in the area when considering Moab Solar
- It should be noted that the project's perceived benefits, which include RE generation and local economic and social development, outweigh the project's perceived negative impacts

The proposed mitigation measures should be implemented to limit the negative impacts and enhance the positive impacts associated with the project.

The proposed project and associated infrastructure are unlikely to have long-term negative social consequences. From a social standpoint, it is concluded that the project could be developed subject to the implementation of recommended mitigation measures and project management actions.

5.3. Social Impacts Associated with the Construction Phase

The majority of the social impacts associated with the project are expected to occur during the development's construction phase and are typical of the types of social impacts typically associated with construction activities. These effects will be temporary and short-term (12 months), but they may have long-term consequences on the surrounding social environment if not properly planned and managed. As a result, the detailed design phase must be carried out in such a way that it does not result in long-term social impacts due to improper placement of project components or associated infrastructure, or mismanagement of construction phase activities.

The positive and negative social impacts identified and assessed for the construction phase includes:

Potential positive impacts

- Creation of employment and business opportunities
- Skills Development
- Growth of the local communities

Potential negative impacts

- Impacts associated with the presence of construction workers on site
- Threat to safety and security of farmers associated with the presence of construction workers on site
- Impact of heavy vehicles, including damage to roads, safety, noise, and dust

Construction Phase

Nature:
Employment opportunities and skills development

Impact description: Harmony Gold currently have social labour plans in place which meet the requirements of employment in terms of local employment and skills development act. As per their current SLP the Moab Khotsong mining operations will provide employment for 6 636 employees in mining, construction, management, or other related activities.

According to the SLP, the Moab Khotsong Human Resources Development (HRD) Strategy supports the company's business strategy and objectives, as well as the South African legislative and regulatory framework that seeks to address the country's general skills shortage while also ensuring equitable workplace representation.

Part of these strategies include:

- Adult Basic Education Training
- Portable Skills Training Plans
- Trainee Programmes and Learnerships for Employees
- Management Development Programmes
- Talent Pool Development
- Community Human Resource Development Programme
- Learnerships for the Community

The mine intends to develop the Moab Khotsong Solar PV facility using the same principles outlined in the SLP, albeit on a smaller scale than the development of a 100MW solar PV facility.

	Rating	Motivation	Significance
Prior to Enhancement			
Duration	Short-term (1)	The construction period will last less than one year	**Low Positive (30)**
Extent	Local – Regional (5)	The impact will occur at a local, regional, and national level	
Magnitude	Low (4)	The creation of employment opportunities will assist to an extent in alleviating unemployment levels within the area	
Probability	Probable (3)	Construction of the project will result in the creation of a number of direct and indirect employment opportunities, which will assist in addressing unemployment levels within the area and aid in skills development of communities in the area	

Enhancement measures:
To enhance the local employment, skills development and business opportunities associated with the construction phase, the following measures should be implemented:

- It is recommended that the development be incorporated into the mine's SLP, and that the current skills development processes and policies at the mine or associated infrastructure be incorporated into the development and operation of the Solar energy facility
- The SLP strategies (Adult Basic Education Training, Management Development Programs, Community Human Resource Development Programs, and so on) are specifically targeted at the mining and renewable energy development sectors

- Be committed to involving and benefiting the communities' surrounding mines, contributing to their development and growth; thus, it is recommended that special attention be paid to the needs of people living near mines in the Free State Province
- It is recommended to conduct structured and proactive engagement sessions within the municipal district, to expose local small, micro, and medium enterprises which will benefit from the proposed development
- According to MPRDA REGULATION 46 (b) (v), "the contents of a Social and Labour Plan must include a human resources development programme that must include employment equity statistics that must be completed in the form of "Form S" contained in Annexure II and the mines plan to achieve 10% women participation in mining and 40% historically disadvantaged South Africans (HDSA) participation in management within 5 years from the granite's grant."
- Training and skills development programmes should be initiated prior to the commencement of the construction phase

Post Enhancement

Duration	Short-term (1)	The construction period will last for less than one year	**Medium Positive (55)**
Extent	Regional (4)	The impact will occur at a local, regional, and national level	
Magnitude	Moderate (6)	The creation of employment opportunities will assist to an extent in alleviating unemployment levels within the area	
Probability	Definite (5)	Construction of the project will result in the creation of a number of direct and indirect employment opportunities, which will assist in addressing unemployment levels within the area and aid in the skills development of communities in the area	

Residual Risks:

- Initiatives to eliminate unfair discrimination in employment
- Recruit and select suitably qualified individuals from the designated groups
- Employees from designated groups who have been identified in the talent pool should be advanced and accelerated through targeted training and development programs
- Assist individuals in obtaining an initial vocational education and pre-qualification, as well as additional education and training that refreshes knowledge, skills, work, and life competencies that are critical for overall development
- Provide portable skills training to employees who express an interest in obtaining such training, with a special emphasis on employees who have been incapacitated or retrenched, in order for them to remain economically active, employable, or self-sustaining in their communities
- Growth of talent is facilitated, thereby providing opportunities for all employees to contribute to their full potential

Nature:

Contributions to the local economy

Impact description: According to Harmony Gold Mine Moab Khotsong Operations, they are committed to the long-term socioeconomic development and well-being of the communities in which they operate by contributing to community development that will last long after mining operations have ended.

Harmony's corporate social responsibility (CSR) policy for their South African operations acknowledges the country's need for socio-economic development. This policy includes initiatives for local economic development (LED) that are

carried out in accordance with the Mining Charter, MPRDA regulations, and codes of good practice for the minerals and mining industry.

	Rating	Motivation	Significance
Prior to Enhancement			
Duration	Long-term (4)	Will continue for the duration of the project due to legal obligation to pay taxes	**Medium Positive (36)**
Extent	Local – Regional (4)	Will include mostly local and some regional impacts	
Magnitude	Low (4)	Will derive from increased cash flow from wages, local procurement, economic growth, taxes, and LED and HRD initiatives	
Probability	Probable (3)	Will depend on; proportion of local spending by employees, capacity of local enterprises to supply; effectiveness of LED and HRD initiatives, contributions to local government	

Enhancement measures:

It has to be noted that there currently are measures in place that speaks to economic development in terms of the mining operations:

- The Harmony tender policy was amended to give preference to BEE entity suppliers
- BEE entities can win tenders even when their price is higher than that of non-BEE entity suppliers
- Certain commodities are set aside and may only be purchased from BEE-entity suppliers and certain commodities may only be acquired from 100% black owned suppliers through the Harmony business development centres
- BEE-entities get a second chance to revise their tender price, should they not win a tender
- Preference is given to suppliers that are local to the operation where the service will be consumed

The following measures must also be considered when constructing the solar PV facility

- Establishing liaison and communication structures with the district and local government structures
- Liaises with the local governmental structures and municipal authorities in the labour- sending communities to ensure that group development initiatives are integrated into the economic and development plans of those areas
- The continuous review of the economic development of the project during the implementation process will ensure that the project does not become static but is revised in terms of changing needs and also to ensure sustainability
- It is recommended that a local procurement policy be adopted by the developer to maximise the benefit to the local economy, where feasible
- Create job opportunities, boost local economies by supporting business activities, and contribute to government tax revenues through the development of the Solar Facility
- Prior to the start of the construction contractor procurement, the Developer of the Solar Facility should create a database of local companies, specifically Historically Disadvantaged (HD) companies, that qualify as potential service providers (e.g., construction companies, catering companies, waste collection companies, security companies, etc.). These businesses should be informed about the tender process and invited to bid on project-related work, if applicable
- Engage with local authorities and business organisations to investigate the feasibility of obtaining construction materials, goods, and products from local suppliers, where possible

Post Enhancement			
Duration	Long-term (4)	As for pre-enhancement	**Medium Positive (60)**

Extent	Local – Regional (4)	SMME capacity building will limit procurement from outside the local municipality	
Magnitude	Low (4)	Mitigation will likely increase intensity of multiplier effects as it will concentrate impact to local area, sustainability of initiatives will also be increased if aligned with other those of other institutions	
Probability	Definite (5)	Increased local employment and procurement as well as skilled SMME's skill enhance likelihood of benefits to local economy	

Residual Risks:

- Improved local service sector, growth in local business
- Community development and stimulation of the local economy
- Growth in the local markets

Nature:
Safety and security

Impact description: Temporary increase in safety and security concerns associated with the influx of people during the construction phase.

The Solar PV Development will be in accordance with Moab Khotsong's occupational safety and health policies and related management frameworks, which are in accordance with South Africa's Mine Health and Safety Act. A collaborative approach is taken, involving all stakeholders, and ensuring that the necessary infrastructure and systems, including relevant planning, communication, and training, are in place.

	Rating	Motivation	Significance
Prior to Mitigation			
Duration	Short-term (2)	Will be limited to the construction phase which is less than one year	**Low Negative (27)**
Extent	Local – Regional (3)	Safety concerns will affect nearby communities	
Magnitude	Low (4)	Could place the lives of neighbouring community members at risk	
Probability	Probable (3)	Traffic would need to be considered in the area	

Mitigation:

- Stopping significant unwanted events by focusing on critical control management
- Safety awareness and training as well as positive behaviour reinforcement
- Improving system monitoring and analysis to improve risk management
- Encourage employees to stop working when a workplace is considered unsafe and/or to prevent unsafe actions
- Focus on critical control management (as per International Council on Mining and Metals guidelines)
- Education, Training and Development Services must be implemented
- Access in and out of the construction area should be strictly controlled by a security company
- The contractor must provide adequate firefighting equipment on site and provide firefighting training to selected construction staff
- Have clear rules and regulations for access to the proposed site to control loitering

- A comprehensive employee induction programme would cover land access protocols, fire management and road safety must be prepared
- A Community Liaison Officer should be appointed
- A method of communication should be implemented whereby procedures to lodge complaints are set out in order for the local community to express any complaints or grievances with the construction process

Post Mitigation

Duration	Short-term (2)	As for pre-mitigation	**Low Negative (16)**
Extent	Local (2)	Safety measures will likely restrict impacts on nearby communities	
Magnitude	Low (4)	Appropriate mitigation will reduce the risk of this project	
Probability	Improbable (2)	As for pre-mitigation	

Residual Risks:

- None anticipated

Nature:

Disruption of daily living and movement patterns

Impact description: Temporary increase in traffic disruptions and movement patterns during the construction phase, Transport of equipment, material and staff to site will lead to congestion.

	Rating	**Motivation**	**Significance**
Prior to Mitigation			
Duration	Short-term (2)	Will be limited to the construction phase which is less than one year	**Medium Negative (40)**
Extent	Local (2)	Will affect road users from nearby communities	
Magnitude	Moderate (6)	Will affect the quality of life of neighbouring communities	
Probability	Highly probable (4)	Traffic would need to be considered in the area	

Mitigation:

- Implement standard dust control measures on gravel roads, including periodic spraying (frequency will depend on many factors including weather conditions, soil composition and traffic intensity and must thus be adapted on an on-going basis) of construction areas and access roads, and ensure that these are continuously monitored to ensure effective implementation
- Stagger component delivery to site
- Reduce the construction period
- Make use of mobile batch plants and quarries in close proximity to the site
- All vehicles must be road worthy, and drivers must be qualified, obey traffic rules, follow speed limits, and be made aware of the potential road safety issues
- Heavy vehicles should be inspected regularly to ensure their road worthiness
- Provision of adequate and strategically placed traffic warning signs, which must be maintained throughout the construction phase, as well as control measures along the R30 and Stokkiesdraai roads to warn road users of construction activities taking place throughout the construction phase. Warning signs must be always visible, especially at night.
- Implement penalties for reckless driving to enforce compliance to traffic rules
- Avoid heavy vehicle activity during “peak” hours (when children are taken to school, or people are driving to work)

- Ensure that all fencing along access roads is maintained in the present condition or repaired if disturbed due to construction activities
- The Contractor must ensure that damage/wear and tear caused by construction related traffic to the access roads is repaired before the completion of the construction phase
- Method of communication must be implemented whereby procedures to lodge complaints are set out for the local community to express any complaints or grievances with the construction process

Post Mitigation

Duration	Short-term (2)	As for pre-mitigation	**Low Negative (16)**
Extent	Local (2)	Safety measures will likely restrict impacts on road users	
Magnitude	Low (4)	Appropriate mitigation will reduce the risk of this project	
Probability	Improbable (2)	As for pre-mitigation	

Residual Risks:

- None anticipated

Nature:

Increased pressure on local services/resources

Impact description: Added pressure on economic and social infrastructure during construction as a result of in-migration of people.

	Rating	**Motivation**	**Significance**
Prior to Mitigation			
Duration	Short-term (2)	Influx related pressure on services will start during construction and continue during the operational phase	**Medium Negative (30)**
Extent	Local (2)	May affect resource management on local district municipal level	
Magnitude	Moderate (6)	Intensify existing service delivery and resource problems and backlogs, especially sewerage and road networks	
Probability	Probable (3)	Population influx will affect the ability of the local municipality to meet increased demand	

Mitigation:

- It is necessary to appoint a Community Liaison Officer. A method of communication should be implemented, with procedures for filing complaints outlined, so that the local community can express any complaints or grievances about the construction process
- Current procurement channels set up by the mine should be utilized to reduce any complications which may arise from the development

Post Mitigation

Duration	Short-term (2)	As for pre-mitigation	**Low Negative (16)**
Extent	Local (2)	Safety measures will likely restrict impacts on road users	

Magnitude	Low (4)	Appropriate mitigation will reduce the risk of this project	
Probability	Improbable (2)	As for pre-mitigation	

Residual Risks:

- Possibility of outside workers remaining in the area after construction is completed and subsequent pressures on local infrastructure

Nature:

Nuisance impacts (noise& dust)

Impact description: Construction activities will result in the generation of noise and dust over a period of months. However, the development is located directly adjacent to mining sites. The noise and dust impact are therefore insignificant in comparison to the noise and dust generated by the mine and will only be temporary in nature.

	Rating	**Motivation**	**Significance**
Prior to Mitigation			
Duration	Short-term (2)	Nuisance impacts will only be limited to the construction phase	**Medium Negative (44)**
Extent	Local (1)	This will remain within the project extent from construction activities	
Magnitude	High (8)	Dust impacts and noise nuisance from construction activities	
Probability	Highly Probable (4)	Movement of heavy construction vehicles during the construction phase has a potential to create noise, damage to roads and dust	

Mitigation:

- The development of the Solar PV facility will be on owned and operated by the Moab Khotsong mine, the employees of the mine are subjected to:
  - Annual audiometric testing at occupational health hubs during medical examinations
  - Awareness drives to ensure employees are aware of the benefits of wearing personalized hearing protection
  - Monitoring programs to measure actual compliance in the workplace
  - Compliance monitoring is undertaken during routine occupational hygiene inspections and ad hoc audits are also conducted
- It is furthermore predicted that the current dust levels generated by the mining activities in the area far exceed that which will be generated by the construction of the PV facility. The Moab Khotsong mine currently has standardized dust control measures in place which will allow the monitoring of the dust generation by the PV facility, these include:
  - leading practices as advocated by the Mining Industry Occupational Safety and Health (MOSH)
  - Multi-stage dust filtration systems
  - Training and awareness programmes address dust control in stopes and all development ends are equipped with water blasts to settle dust directly after a blast

The following ''Generic'' Noise and Dust suppression must be implemented where not covered by current mining processes:

- During construction, care should be taken to ensure that noise from construction vehicles and plant equipment does not intrude on the residential areas nearby. Plant equipment such as generators, compressors, concrete mixers, and vehicles should be kept in good working order and, where possible, equipped with effective exhaust mufflers
- The movement of construction vehicles on the site should be confined to agreed access road/s

- Heavy vehicle movement during the construction phase should be timed (where possible) to avoid times of the week, such as weekends, when the volume of traffic on the access roads may be higher
- Dust suppression measures should be implemented, such as wetting on a regular basis and ensuring that vehicles used to transport sand and building materials are fitted with tarpaulins or covers

Post Mitigation

Duration	Short-term (2)	As per pre-mitigation	**Low Negative (18)**
Extent	Local (1)	Mitigation measures will assist with increasing the impact	
Magnitude	Moderate (6)	Appropriate mitigation will reduce the risk of this project	
Probability	Improbable (2)	As per pre-mitigation	

Residual Risks:

- Noise and Dust generation will remain an issue irrespective of the Solar PV development

5.4. Social Issues Associated with the Operation Phase

The operational phase is associated with the following key potential positive and negative social issues.

Potential positive impacts:

- Creation of employment and business opportunities
- Benefits associated with the additional funding available for socio-economic and/or enterprise development measures
- Benefits of establishing a legal entity (such as a community trust) to represent the allocated beneficiary community
- Impact on tourism
- The establishment of renewable energy infrastructure

Potential negative impacts:

- The visual impacts and associated impact on sense of place
- Potential impact on tourism
- Influx of job seekers to the area

Nature:

Job creation during operation

Impact description: Harmony Gold currently have social labour plans in place which meet the requirements of employment in terms of local employment and skills development, act. As per their current SLP the Moab Khotsong mining operations will provide employment for 6 636 employees in mining, construction, management, or other related activities.

According to the SLP, the Moab Khotsong Human Resources Development (HRD) Strategy supports the company's business strategy and objectives, as well as the South African legislative and regulatory framework that seeks to address the country's general skills shortage while also ensuring equitable workplace representation.

Part of these strategies include:

- Adult Basic Education Training
- Portable Skills Training plans
- Trainee Programmes and Learnerships for Employees
- Management Development Programmes
- Talent Pool Development
- Community Human Resource Development Programme
- Learnerships for the Community

The mine intends to incorporate the development of the Moab Khotsong Solar PV facility under the same principles as outlined in the SLP, albeit on a smaller scale in comparison to the development of a 100MW solar PV facility.

	Rating	Motivation	Significance
Prior to Enhancement			
Duration	Long term (4)	Project will be operational up to 30 years	**Medium Positive (33)**
Extent	Regional (3)	Any new positions are likely to be filled by persons living in the local municipal area	
Magnitude	Low (4)	It is anticipated that ~10 jobs will be generated during the operation phase. A number of highly skilled personnel may need to be recruited from outside the local municipal area	
Probability	Probable (3)	Employment opportunities will be created during the operation phase	

Enhancement measures:

To enhance the local employment, skills development and business opportunities associated with the construction phase, the following measures should be implemented:

- It is recommended that the development be incorporated into the mine's SLP, and that the current skills development processes and policies at the mine or associated infrastructure be incorporated into the development and operation of the Solar energy facility
- The SLP strategies (Adult Basic Education Training, Management Development Programs, Community Human Resource Development Programs, and so on) are specifically targeted at the mining and renewable energy development sectors
- Be commitment to involving and benefiting the communities neighbouring the mines, contributing to their development and growth, therefore it is recommended that particular attention be given to the needs of the people living near the mine in the Free State Province
- It is recommended to conduct structured and proactive engagement sessions within the municipal district, to expose local small, micro, and medium enterprises which will benefit from the proposed development
- According to REGULATION 46 (b) (v) of the MPRDA, "the contents of a Social and Labour Plan must include a human resources development programme which must include employment equity statistics which must be completed in the form of "Form S" contained in Annexure II and the mines plan to achieve the 10% women participation in mining and 40% historically disadvantaged South Africans (HDSA) participation in management within 5 years from the granite's grant." It is recommended that the development of a solar facility be undertaken with the same equity goals in mind, with women and previously disadvantaged individuals given special consideration during the requirement process
- Training and skills development programmes should be initiated prior to the commencement of the construction phase

Post Enhancement			
Duration	Long-term (4)	As per pre-enhancement	**Medium Positive (44)**
Extent	Local - regional (3)	As per pre-enhancement	
Magnitude	Low (4)	Mitigation will maximise local job creation	
Probability	High Probable (4)	Mitigation will maximise probability that any local recruitment targets are achieved, and local benefits optimised	

Residual Risks:

- Improved pool of skills and experience in the local area
- Recruit and select suitably qualified individuals from the designated groups
- Advance employees from designated groups who have been identified in the talent pool and to fast track them through focused training and development programmes

- Assist individual to acquire an initial vocational education and pre-qualification, in addition to further education and training, and which refreshes knowledge, skills, work and life competencies that are crucial for overall development
- Provide portable skills training to employees who show an interest in obtaining such training and with a special emphasis on employees who are incapacitated or retrenched to remain economically active, employable, or self-sustaining within their communities

Nature:
Development of clean, renewable energy infrastructure

Impact description: Development of clean, renewable energy infrastructure

The primary goal of the proposed project is to improve energy security in South Africa by generating additional energy. The proposed Solar PV Facility also reduces the carbon footprint associated with energy generation. The project should therefore be viewed within the context of the South Africa's current reliance on coal powered energy to meet the majority of its energy needs

	Rating	Motivation	Significance
Prior to Enhancement			
Duration	Long term (4)	Adding a renewable energy sector to the Fezile Dabi District economy may contribute to the diversification of the local economy and provide greater economic stability	**Medium Positive (48)**
Extent	Local – Regional - National (4)	The generation of renewable energy will contribute to South Africa's electricity market. The mine will be the private off-taker of the power generated by the facility the proposed development will indirectly relieve the national grid	
Magnitude	Low (4)	The proposed facility will only generate up to 100MW	
Probability	Highly Probable (4)	Facility will help contribute to the total carbon emissions associated with non-renewable energy generation	
Enhancement measures: **None anticipated**			
Post Enhancement			
Duration	Long term (4)	As per pre-enhancement	**Medium Positive (48)**
Extent	National (4)	As per pre-enhancement	
Magnitude	Low (4)	As per pre-enhancement	
Probability	Highly Probable (4)	As per pre-enhancement	

Residual Risks:

- Reduce carbon emissions through the use of renewable energy and contribute to reducing global warming
- The renewable energy infrastructure places this project at the heart of the national strategy to increase power supply as well as reduce power generation impacts on climate.
- The power plant's location also uniquely connects the local community to skills for this sector, thus improving their employability

Nature:

Visual impacts and impacts on sense of place			
Impact description: Visual impacts and sense of place impacts associated with the operation phase of the project Due to the number of mines in the area, the scenic quality of the region is low, further construction and operation of the Solar PV Facility in the area is likely to have a negative impact.			
	Rating	**Motivation**	**Significance**
Prior to Mitigation			
Duration	Long term (4)	Impact on sense of place relates to the change in the landscape character and visual impact of the proposed solar energy facility	**Low Negative (18)**
Extent	Local (1)	Dependent on the demographics of the population that resides in the area and their perceptions	
Magnitude	Low (4)	There are industrial/mining operations and formal residential areas located in proximity to the site	
Probability	Improbable (2)	There are no tourist attractions located adjacent to the property and therefore the anticipated impact on the area's visual quality and sense of place is low	
Mitigation: • None anticipated			
Post Mitigation			
Duration	N.A. – Mitigation not possible		**N.A. – Mitigation not possible.**
Extent	N.A. – Mitigation not possible		
Magnitude	N.A. – Mitigation not possible		
Probability	N.A. – Mitigation not possible		
Residual Risks: • None anticipated if the visual impact will be removed after decommissioning, provided the solar energy facility infrastructure is removed and the site is rehabilitated to its original (current) status			

5.5. Social Issues Associated with the Decommissioning Phase

The social impact of decommissioning the Moab Khotsong PV project is likely to be significant. While the relatively small number of people employed during the operational phase (20), the associated funding available for community projects and benefits are significant and expected to end with decommissioning of the plant. With mitigation however, the impacts are assessed to be low.

The proponent should inform and discuss the stakeholder and wider community involved and affected in the governance, management, and implementation of community funds about the decommissioning of the energy project. This communication needs to be timed well in advance of the decommissioning, allowing all relevant parties to prepare. Further consideration is required to develop strategies for rehabilitation of the land.

5.6. Social Issues Associated with the No-Development Option

The "no-go" alternative is the option of not constructing the Harmony Moab Khotsong Solar PV. The implementation of the proposed project is expected to result in several positive and negative social impacts. Most negative impacts identified for the project are associated with the construction phase of the project, while the positive impacts are associated with both the construction and operation phases of the project.

Potential negative social impacts associated with the construction and operation of the project include the following:

- Potential influx of job seekers and an associated change in population and increase in pressure on basic services
- Potential safety and security impacts
- Potential impacts on daily living and movement patterns
- Potential nuisance impacts (noise and dust)
- Potential visual impact and impact on the sense of place

Potential positive social impacts associated with the construction and operation of the project include the following:

- Potential direct and indirect employment opportunities
- Skills development and training
- Development of Renewable energy facilities
- Potential economic multiplier effect

The impacts of pursuing the "no-go" alternative can therefore be summarised as follows:

- The benefits would be that there is no disruption from nuisance impacts (noise and dust during construction), visual impacts and safety and security impacts. The impact is therefore neutral
- There would also be an opportunity loss in terms of limited job creation, skills development, community upliftment and associated economic business opportunities for the local economy. This impact is considered to be negative
- The opportunity to strengthen the grid connection within the municipal area would be lost which will have a negative impact on economic growth and development and therefore result in negative social impacts

The No-Development option would mean that the electricity generated through renewable sources, in this case solar energy, is not generated and fed into the national electricity grid. In the given and described policy context, this would represent a negative social and environmental cost.

In addition, the employment opportunities associated with the construction and operational phase, as well as the benefits associated with the additional funding for socio-economic and enterprise development measures and the established local ownership entity representing beneficiary communities would be forgone.

5.7. Social Issues Associated with the Cumulative Impact on Sense of Place

The potential cumulative impacts on the areas sense of place will be largely linked to potential visual impacts. In this regard the Scottish Natural Heritage (2005) describes a range of potential cumulative landscape impacts associated with wind farms on landscapes. These issues are also likely to be relevant to solar facilities and associated infrastructure. The relevant issues identified by Scottish Natural Heritage study include:

- Combined visibility (whether two or more wind farms will be visible from one location)
- Sequential visibility (e.g., the effect of seeing two or more wind farms along a single journey, e.g., road or walking trail)
- The visual compatibility of different wind farms in the same vicinity
- Perceived or actual change in land use across a character type or region
- Loss of a characteristic element (e.g., viewing type or feature) across a character type caused by developments across that character type

The rules require both dynamic and static consideration of cumulative impacts. Driving along a tourist road must be perceived as a dynamic sequence of sights and visual impacts, not as the cumulative impact of multiple developments on one area. If each subsequent length of road is dominated by views of renewable energy installations, there may be a cumulative visual impact (National Wind Farm Development Guidelines, DRAFT - July 2010).

As indicated above, the potential impact of the proposed REF and associated infrastructure on the areas sense of place is likely to be negligible. The cumulative impacts are also likely to be very low. This will be confirmed during the assessment phase.

The establishment of the facility will be a game-changing event for the community and local municipality. It'll result in the following impacts, in varying degrees:

- People
    - Skills development
    - Employment
    - Renewed sense of hope
    - Improved social outcomes owing to SED investments:
        - Health
        - Education
        - Economic participation
    - Social cohesion for the community beneficiaries
    - Increased sense of prestige for the community and town
- Planet
    - Increased power supply for the country, with less damage to the planet as a consequence.
- Profit
    - Increased revenue for local municipality
    - Increased economic activity in local community and broader municipality
    - Investment in social and commercial infrastructure to increase economic activity

This energy plant has cumulative impacts; especially, the installation of several Solar energy facilities in the Local Municipality will offer socio-economic prospects for the area, resulting in a positive social benefit. Job creation, skill development, and downstream business opportunities are good cumulative effects. Local, regional, and national economies could profit from job creation and service procurement if many renewable energy installations are established. This value will be considerably increased if a critical mass is reached that allows local enterprises to develop the capabilities to support building and maintenance activities and to manufacture renewable energy facility components in South Africa. The cumulative impact at the municipal level could be good, encouraging O&M companies to focus on education and training.

Nature: An increase in employment opportunities, skills development, and business opportunities with the establishment of a solar energy facility.		
	Overall impact of the proposed project considered in isolation	**Cumulative impact of the project and other projects in the area**
Extent	Local -regional (3)	Local-regional (3)
Duration	Long-term (4)	Long-term (4)
Magnitude	Low (4)	Moderate (6)
Probability	Probable (3)	Probable (3)
Significance	**Medium (33)**	**Medium (52)**
Status (positive or negative)	Positive	Positive
Reversibility	N/A	N/A
Irreplaceable loss of resources?	N/A	N/A
Can impacts be mitigated?	Yes	Yes
Confidence in findings: High.		
Mitigation:		

The establishment of a number of solar energy facilities in the area does have the potential to have a positive cumulative impact on the area in the form of employment opportunities, skills development, and business opportunities. The positive benefits will be enhanced if local employment policies are adopted, and local services providers are utilised by the developers to maximise the project opportunities available to the local community.

Nature:
Negative impacts and change to the local economy with an in-migration of labourers, businesses, and jobseekers to the area.

	Overall impact of the proposed project considered in isolation	**Cumulative impact of the project and other projects in the area**
Extent	Local (1)	Local-regional (3)
Duration	Long-term (4)	Long-term (4)
Magnitude	Minor (2)	Low (4)
Probability	Very improbable (1)	Improbable (2)
Significance	**Low (7)**	**Low (22)**
Status (positive or negative)	Negative	Negative
Reversibility	Yes	
Irreplaceable loss of resources?	No	
Can impacts be mitigated?	Yes	

Confidence in findings: High.

Mitigation:

- Develop a recruitment policy/process (to be implemented by contractors), which will ensure the sourcing of labour locally, where available
- Work together with government agencies to ensure that service provision is in line with the development needs of the local area
- Form joint ventures with community organisations, through Trusts, which can provide local communities with benefits, such as employment opportunities and services
- Develop and implement a recruitment protocol in consultation with the municipality and local community leaders. Ensure that the procedures for applications for employment are clearly communicated

6. CONCLUSIONS AND IMPACT STATEMENT

6.1. Conclusions and Recommendations

The project represents an important development opportunity for the communities surrounding Harmony Moab Khotsong PV. Should it be approved, it will not only supply the mine with much needed clean power, but will also achieve the following for social upliftment:

- Increase educational attainment of local youth through a bursary programme funded through SED.
- Improved renewable energy presence in the country
- Elevation of the national energy crisis
- Increase the number of job-creating enterprises funded through ED.
- Improve key infrastructure identified by the community such as housing and roads
- Increase the skills levels of local community
- Lead to lasting economic development gains for the local community and province

The development of the Solar PV Facility will ensure that (if in line with the Moab Khotsong Mining Operation) skills development and employment equity strategies are aimed at achieving a demographically representative workforce. It is recommended that the Moab Khotsong Solar PV Facility is guided by the provisions of the Skills Development and Employment Equity Acts in terms of both planning and reporting, including with respect to "Core and Critical skills" whilst intensive attempts are made to improve all core and critical skills occupations which is still lagging due to the skills challenges faced by the industry in this respect.

As per the mines Social labour plan, the Human Resources Development interventions aims to address the abovementioned challenges through a variety of initiatives such as:

(i) Management Trainee Programmes
(ii) Bursary Schemes
(iii) Trainee Programmes
(iv) Learnerships

The Developer should be committed to the sustainable socio-economic development and well-being of the communities in which they operate and from which they draw their employees. Both Solar PV Facilities and mining operations have a limited lifespan, therefore strategic objective should focus on contributing to community development that is sustainable long after such operations have ceased.

The No Development option does not have any impact. However, given the developmental agenda of both the country and the local area, failure to develop is to deny improvements in the wellbeing of households and the growth of the economy. The No Development option is particularly undesirable because the project's potentially negative impacts are largely small and are all manageable. Therefore, because the project's positive impacts heavily outweigh the negative impacts, it is recommended that it be permitted.

This SIA has focused on the collection of primary data to identify and assess social issues and potential social impacts. Secondary data was collected and presented in a literature review and primary data was collected through the public participation process and telephonic consultation with key stakeholders. The environmental assessment framework for assessment of impacts and the relevant criteria were applied to evaluate the significance of the potential impacts.

A summary of the potential positive and negative impacts identified for the detailed design, construction and operation phases are presented in Table 6 and 7 for the potential impacts identified.

Table 6: Summary of potential social impacts identified for the detailed design and construction phase

Impact	Significance without mitigation/enhancement	Significance with mitigation/enhancement
Positive Impacts		
Direct employment and skills development	Low	Medium
Economic multiplier effects	Low	Medium
Negative Impacts		
Safety and security risks	Low	Low
Impacts on daily living and movement patterns	Medium	Low
Nuisance impact (noise and dust)	Negative	Low

Table 7: Summary of potential social impacts identified for the operation phase

Impact	Significance without mitigation/enhancement	Significance with mitigation/enhancement
Positive Impacts		
Direct employment and skills development	Low	Medium
Development of clean, renewable energy infrastructure	Medium	Medium
Negative Impacts		
Visual and sense of place impacts	Low	Low
Impacts associated with the loss of agricultural land.	Medium	Medium

6.2. Key findings

Key Findings

From a social perspective it is concluded that the project is supported, but that mitigation measures should be implemented and adhered to. Positive and negative social impacts have been identified. The assessment of the key issues indicated that there are no negative impacts that can be classified as fatal flaws, and which are of such significance that it cannot be successfully mitigated. Positive impacts could be enhanced by implementing appropriate enhancement measures and through careful planning. Based on the social assessment, the following general conclusions and findings can be made:

- The potential negative social impacts associated with the construction phase are typical of construction related projects and not just focused on the construction of PV facilities (these relate to influx of non-local workforce and jobseekers, intrusion and disturbance impacts, safety, and security) and could be reduced with the implementation of the mitigation measures proposed
- Employment opportunities will be created in the construction and operation phase and the impact is rated as positive even if only a small number of individuals benefit in this regard
- The proposed project could assist the local economy in creating entrepreneurial development, especially if local business could be involved in the provision of general material and services during the construction and operational phases
- Capacity building and skills training among employees are critical and would be highly beneficial to those involved, especially if they receive portable skills to enable them to also find work elsewhere and in other sectors
- The proposed development also represents an investment in infrastructure for the generation of clean, renewable energy, which, given the challenges created by climate change, represents a positive social benefit for society

Recommendations

The following recommendations are made based on the Social Impact Assessment and a thorough review of the concerns and suggestions raised by stakeholders and interested and affected parties during the stakeholder engagement process. The proposed mitigation measures should be implemented to limit the negative impacts and enhance the positive impacts. Based on the social assessment, the following recommendations are made:

- In terms of employment related impacts, it is important to consider that job opportunities for the unskilled and semi-skilled are scarce commodities in the study area and could create competition among the local unemployed. Introducing an outside workforce will therefore most likely worsen local endeavours to obtain jobs and provoke discontent as well as put pressure on the local services available. Local labour should be utilised to enhance the positive impact of employment creation in the area. Local businesses should be involved with the construction activities where possible. It is imperative that local labour be sourced to ensure that benefits accrue to the local communities. Preference should thus be given to the use of local labour during the construction and operational phases of the project as far as possible
- Locals should also be allowed an opportunity to be included in a list of possible local suppliers and service providers, enhancing the multiplier effect. This aspect would serve to mitigate other subsequent negative impacts such as those associated with the inflow of outsiders to the area, the increased pressure on the infrastructure and services in the area, as well as the safety and security concerns
- Impacts associated with the construction period should be carefully mitigated to minimise any dust and noise pollution
- Safety and security concerns should be considered during the planning and construction phases of the proposed project

6.3. Conclusion

A site visit was undertaken during the Assessment Phase of the SIA. The site visit includes primary interviews with key stakeholders and interested and affected parties, interviews are semi-structed. Essentially the approach is to provide information on the proposed development to the stakeholders (including maps and diagrams showing location and what is planned etc) and discuss the key activities that will take place, during the construction and operational phases.

The proposed Moab Khotsong Solar PV Facility and associated infrastructure is unlikely to result in permanent damaging social impacts. From a social perspective it is concluded that the project could be developed subject to the implementation of the recommended mitigation measures and management actions contained in the report.

REFERENCES AND SOURCES

National Energy Act (No. 34 of 2008)

National White Paper on Renewable Energy (2003)

National Integrated Resource Plan for Electricity (2010, 2013 draft)

National Development Plan (2013)

Republic of South Africa, Department Government Communication and Information System. South Africa Yearbook 2014/15
Department of Energy, State of Renewable Energy in South Africa, 2015

Free State Provincial Spatial Development Framework , Phase 3/3rd Draft Report (2013)

Housing Development Agency, Free State: Informal settlements Status (2013)

Free State Overview of Provincial Revenue and Expenditure 2012/13 (2013) Relevant policy and planning documents on district level include:

Xhariep Integrated Development Plan 2012-2017

Ka Seme District Municipality Integrated Development Plan 2015/16

Renosterberg Local Municipality Integrated Development Plan 2014/15 (draft)

Letsemeng Local Municipality Integrated Development Plan 2014/15

Kopanong Local Municiaplity Integrated Development Plan 2014/15

WEBSITES

http://northerncapepsdf.co.za/

http://greencape.co.za/

http://www.fdc.co.za/about-the-free-state/energy

FURTHER SOURCES

http://greencape.co.za/assets/Uploads/GreenCape-MIR-Renewable-Energy.pdf

http://www.infrastructurene.ws/2014/08/07/new-renewable-energy-centre-of- excellence-launched/

Construction Phase:

Direct employment and skills development

OBJECTIVE: Maximise local employment and skills opportunities associated with the construction phase			
Project component/s	Construction of the proposed Becrux II solar energy facility and associated infrastructure		
Potential Impact	The opportunities and benefits associated with the creation of local employment and skills development to be maximised.		
Activity/risksource	» Construction procurement practice employed by the Ccontractor » Developers' investment plan		
Mitigation Target/Objective	The developer should aim to employ as many low-skilled and semi-skilled workers from the local area as possible. This should also be made a requirement for all contractors.		
Enhancement: Action/control		**Responsibility**	**Timeframe**
Employ local contractors that are compliant with Broad Based Black Economic Empowerment (BBBEE) criteria		The Proponent & EPC Contractors	Pre-construction & construction phase
Adopt a local employment policy to maximise the opportunities made available to the local labour force as far as possible (preference to Local Municipality)		The Proponent & EPC Contractors	Pre-construction & construction phase
In the recruitment selection process; consideration must be given to women during recruitment process		EPC Contractors	Pre-construction & construction phase
Set realistic local recruitment targets for the construction phase (preference to Local Municipality)		The Proponent & EPC Contractors	Pre-construction & construction phase
Training and skills development programmes to be initiated prior to the commencement of the construction phase		The Proponent	Pre-construction & construction phase
Performance Indicator	» Employment and business policy document that sets out local employment and targets completed before construction phase commences; » Employ as many semi and unskilled labour from the local areaor local municipality as possible » Training and skills development programme undertaken prior to the commencement of construction phase.		
Monitoring	» The developer and EPC contractor must keep a record of local recruitments and information on local labour to be shared withthe ECO for reporting purposes.		

Economic multiplier effects

OBJECTIVE: Maximise local economic multiplier effect during construction phase			
Project component/s	Construction of the proposed Becrux II solar energy facility and associated infrastructure		
Potential Impact	Potential local economic benefits		
Activity/risksource	Developers' procurement plan		
Mitigation Target/Objective	Increase the procurement of goods and services especially within the local economy		
Enhancement: Action/control		**Responsibility**	**Timeframe**

A local procurement policy to be adopted to maximise the benefit to the local economy where feasible (Local Municipality)	The Proponent & EPC Contractors	Pre-construction & construction phase
Develop a database of local companies, specifically Historically Disadvantaged (HD) which qualify as potential service providers (e.g., construction companies, security companies, catering companies, waste collection companies, transportation companies etc.) prior to the tender process and invite them to bid for project-related work where applicable	The Proponent & EPC Contractors	Pre-construction & construction phase
Source as many goods and services as possible from the local area (Local Municipality). Engage with local authorities and business organisation to investigate the possibility	The Proponent	Pre-construction & construction phase
Performance Indicator	» Local procurement policy is adopted » Local goods and services are purchased from local suppliers where feasible (Local Municipality)	
Monitoring	» The developer must monitor indicators listed above to ensure that they have been met for the construction phase.	

Safety and security impacts

OBJECTIVE: To avoid or reduce the possibility of the increase in crime and safety and security issues during the construction phase		
Project component/s	Construction of the proposed Moab Khotsong Solar energy facility and associated infrastructure	
Potential Impact	Increase in crime due to influx of non-local workforce and job seekers into the area	
Activity/risksource	Safety and security risks associated with construction activities	
Mitigation Target/Objective	To avoid or minimise the potential impact on local communities and their livelihoods	
Enhancement: Action/control	**Responsibility**	**Timeframe**
Access in and out of the construction camp should be strictly controlled by a securitycompany	EPC Contractor	Construction phase
The appointed EPC contractor must appoint a security company and appropriate securityprocedures are to be implemented	EPC Contractor	Construction phase
Open fires on the site for heating, smoking, orcooking are not allowed, except in designated areas.	EPC Contractor	Construction phase
Contractor must provide adequate firefighting equipment on site and provide firefighting training to selected construction staff.	EPC Contractor	Pre-construction & construction phase
A comprehensive employee induction programme to be developed and utilised to cover land access protocols, fire managementand road safety	EPC Contractor	Pre-construction & construction phase
Method of communication should be implemented whereby local landowners can express any complaints or grievances with construction process	EPC Contractor	Pre-construction & construction phase

Performance Indicator	» Employee induction programme, covering land access protocols, fire management and road safety » The construction site is appropriately secured with a controlledaccess system » Security company appointed and security procedures implemented
Monitoring	» The developer and EPC contractor must monitor the indicators listed above to ensure that they have been met for theconstruction phase

Impacts on daily living and movement patterns

OBJECTIVE: To avoid or reduce traffic disruptions and movement patterns of local community during the construction phase		
Project component/s	Construction of the proposed Moab Khotsong Solar energy facility and associated infrastructure	
Potential Impact	Increase in traffic disruptions, safety hazards, and impacts onmovement patterns of local community as well as impact on private property due to the upgrade of the existing road and heavy vehicle traffic in the local area	
Activity/risksource	Construction activities affecting daily living and movement patterns	
Mitigation Target/Objective	To avoid or minimise the potential impact on local communities and their livelihoods	
Enhancement: Action/control	**Responsibility**	**Timeframe**
All vehicles must be road worthy, and drivers must be qualified, obey traffic rules, followspeed limits, and made aware of the potential road safety issues	EPC Contractor	Construction phase
Heavy vehicles should be inspected regularly to ensure their road safety worthiness.	EPC Contractor	Construction phase
Implement penalties for reckless driving for the drivers of heavy vehicles as a way toenforce compliance to traffic rules.	EPC Contractor	Construction phase
Any damage/wear and tear caused by construction related traffic to the roads is repaired	The Proponent & EPC contractor	Construction phase
Provide adequate and strategically placed traffic warning signs and control measures along the R38 and secondary roads to warn road users of the construction activities taking place, displaying road safety messages and speed limits for the duration of the construction phase. Traffic warning signs must also be well illuminated at night.	EPC Contractor	Pre-construction & construction phase
A comprehensive employee induction programme to cover land access protocols and road safety. This must be addressed in the	EPC Contractor	Construction phase
Appoint a Community Liaison Officer and create method of communication whereby local community member can express any complaints or grievances	EPC Contractor	Pre-construction & construction phase
Performance Indicator	» Vehicles are roadworthy, inspected regularly and speed limits are adhered to » Traffic warning signs along R38 and secondary roads, also illuminated at night appointed and security procedures implemented	

Monitoring	» The developer and EPC contractor must monitor the indicators listed above to ensure that they have been met for theconstruction phase

Pressure on economic and social infrastructure impacts from an in migration of people

OBJECTIVE: Reduce the pressure on economic and social infrastructure and social conflicts from an influx of a non-local workforce and jobseekers during the construction phase		
Project component/s	Construction of the proposed Moab Khotsong Solar energy facility and associated infrastructure	
Potential Impact	Increase in traffic disruptions, safety hazards, and impacts onmovement patterns of local community as well as impact on private property due to the upgrade of the existing road and heavy vehicle traffic in the local area	
Activity/risksource	Construction activities affecting daily living and movement patterns	
Mitigation Target/Objective	To avoid or minimise the potential impact on local communities and their livelihoods	
Enhancement: Action/control	**Responsibility**	**Timeframe**
Where possible, make it a requirement for contractors to implement a 'locals first' policy. Should be advertised for construction employment opportunities, especially for semi and low-skilled job categories (preference to the local Municipality). Enhance employment opportunities for the immediate local area, if this is not possible, then the broader focus areas should be considered for sourcing workers such as the Local Municipality	The proponent & EPC Contractor	Pre- construction phase & construction phase
Prior to construction commencing representatives from the local community e.g., ward councillor, surrounding landowners should be informed of details of the construction schedule and exact size of the workforce.	EPC Contractor	Construction phase
Recruitment of temporary workers at the gates of the development should not be allowed. A recruitment office located in town with a Community Liaison officer should be established to deal with jobseekers.	EPC Contractor	Construction phase
Have clear rules and regulations for access to the proposed site to control loitering.	The Proponent & EPC contractor	Construction phase
A Community Liaison Officer should be appointed. A method of communication should be implemented whereby procedures to lodge complaints are set out in order for the local community to express any complaints or grievances with the construction process	EPC Contractor	Pre-construction & construction phase
Performance Indicator	» Percentage of the workers employed in construction that come from local communities	
Monitoring	» The developer must keep a record of local recruitments and information on local labour to be shared with the ECO for reporting purposes	

Nuisance impacts (Noise &Dust)

OBJECTIVE: To avoid or minimise the potential impacts of noise and dust from construction activities during the construction phase

Project component/s	Construction of the proposed Becrux II Solar energy facility and associated infrastructure
Potential Impact	Heavy vehicles and construction activities can generate noise and dust impacts.
Activity/risksource	Construction activities
Mitigation Target/Objective	To avoid and or minimise the potential noise and dust impacts associated with construction activities

Enhancement: Action/control	**Responsibility**	**Timeframe**
Implement dust suppression measures for heavy vehicles such as wetting the roads on a regular basis and ensuring that vehicles used to transport sand and building materials are fitted with tarpaulins or covers	EPC Contractor	Construction phase
Ensure all vehicles are road worthy, driversare qualified and are made aware of the potential noise and dust issues	EPC Contractor	Construction phase
Ensure that drivers adhere to speed limits	EPC Contractor	Construction phase
A Community Liaison Officer should be appointed. A method of communication should be implemented whereby procedures to lodge complaints are set out in order for the local community to express any complaints or grievances with the construction process	The Proponent & EPC contractor	Pre-construction & construction phase

Performance Indicator	» Dust suppression measures implemented for all heavy vehicles that require such measures during the construction phase » Enforcement of strict speeding limits » Road worthy certificates in place for all vehicles » Community liaison officer available for community grievances and communication channel
Monitoring	» The EPC contractor must monitor the indicators to ensure that they have been met for the construction phase

Operational Phase:

Direct employment and skills development during operation phase

OBJECTIVE: Maximise local employment and skills opportunities associated with the construction phase	
Project component/s	Operation and maintenance of the proposed Becrux II Solar energy facility and associated infrastructure
Potential Impact	Loss of opportunities to stimulate production and employment of the local economy
Activity/risksource	Labour practices employed during operations
Enhancement: Target/Objective	Maximise local community employment benefits in the local economy

Enhancement: Action/control	**Responsibility**	**Timeframe**
Adopt a local employment policy to maximise the opportunities made available to the local labour force. (Preference to Local Municipality)	The Proponent & EPC Contractors	Operation phase
The recruitment selection process should seek to promote gender equality and the employment of women wherever possible	The Proponent & EPC Contractors	Operation phase

Establish vocational training programs for the local labour force to promote the development of skills	The Proponent & EPC Contractors	Operation phase
Performance Indicator	» Percentage of workers that were employed from local communities (Local Municipality) » Number of people attending vocational training throughout the operation phase	
Monitoring	» The developer must keep a record of local recruitments and information on local labour to be shared with the ECO for reporting purposes	

Visual and 'sense of place' impacts

OBJECTIVE: Reduce the visual and sense of place impacts associated with the operation phase of the project		
Project component/s	Operation and maintenance of the Proposed Becrux II solar energy facility and associated infrastructure	
Potential Impact	Change in the sense of place that also leads to the negative impact on the area and visual intrusions	
Activity/risksource	The PV facility and associated infrastructure	
Enhancement: Target/Objective	Reduce the visual disturbances to minimise the losses of the sense of place	
Enhancement: Action/control	**Responsibility**	**Timeframe**
» Vegetation screening to be placed between the site and adjacent properties if required.	The Proponent	Operation phase
Performance Indicator	» Vegetation screening if required/necessary	
Monitoring	» The developer must monitor the indicators if vegetation screening is required by adjacent landowners	

Appendix B: KEY STAKEHOLDERS CONTACTED AND MEETING SCHEDULED

A site visit was undertaken 04 July 2022 and observations were made outside the facility as site access was not arranged accordingly and permission was not yet granted.

A questionnaire will be administrated when the Basic Assessment is made available to the public, and when the public participation process kicks off.

Plan of Study (for consultation):

The Interested and Affected Database will be utilized and taken from the Public Participation Process (PPP) to reach key stakeholders and arrange a discussion. Key stakeholders that are not reachable through the PPP process will be emailed and/or if no email is available a voice message will be left on their phone, even more a message on WhatsApp or SMS.