

Appendix E7

Social Impact Assessment



August 2023



Social Impact Assessment

The Development of the Bonsmara Solar Power Plant near Carletonville, Gauteng

PROJECT DETAILS

Project title:	Social Impact Assessment - The Development of the Bonsmara Solar Power Plant, near Carletonville, Gauteng Province
Prepared by:	Johan Botha & Michael Cloete Donaway Environmental 30 Fouche Street Steynsrus 9515 Tel: +2782 316 7749 Email: johan@donaway.co.za
Prepared for:	Bonsmara Solar Power Plant (RF) (Pty) Ltd 2 nd Floor, West Tower Nelson Mandela Square Maude Street Sandton 2196 Tel: 083 608 0005 Email: venter@subsolar.co.za
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EXECUTIVE SUMMARY

PROJECT BACKGROUND

Bonsmara Solar Power Plant (RF) (Pty) Ltd is proposing the development of the Bonsmara Solar Power Plant, a commercial solar power plant (SPP) and associated infrastructure located on the farm Leeuwpan No. 697, Merafong Local Municipality, Gauteng Province. The proposed project is intended to form part of the Department of Mineral Resources and Energy (DMRE) Renewable Energy Independent Power Producer Procurement (REIPPP) Programme, but the option also exists for other tenders, wheeling or to supply privately, without a generation license from NERSA, for up to 150MW. The REIPPP Programme aims to secure 14 725 Megawatts (MW) of new generation capacity from renewable energy sources, while simultaneously diversifying South Africa's electricity mix. According to the 2021 State of the Nation Address, Government will soon be initiating the procurement of an additional 11 800 MW of power from renewable energy, natural gas, battery storage and coal in line with the Integrated Resource Plan 2019 and fulfilling their commitments under the United Nations Framework Convention on Climate Change and its Paris Agreement which include the reduction of greenhouse gas emissions. Eskom, our largest greenhouse gas emitter, has committed in principle to net zero emissions by 2050 and to increase its renewable capacity.

The proposed development of the Bonsmara Solar Power Plant requires Environmental Authorisation (EA) from the National Department of Forestry, Fisheries and the Environment (DFFE) in accordance with the National Environmental Management Act (No. 107 of 1998) (NEMA), and the 2019 Environmental Impact Assessment (EIA) Regulations (GNR 324, 325 and 327).

The Social Impact Assessment (SIA) Report has been prepared by Donaway Environmental on behalf of Environamics and is intended to provide input into the EIA report to be submitted to DFFE.

PROJECT DESCRIPTION

The purpose of the proposed Bonsmara SPP will be to evacuate the generated power into the Eskom Holdings SOC Ltd (Eskom) electricity grid. If successful, Bonsmara Solar Power Plant (RF) (Pty) Ltd will be remunerated on a per kilowatt hour generated basis by Eskom in terms of a 20-year Power Purchase Agreement, or supply privately without a generation licence. Bonsmara Solar Power Plant (RF) (Pty) Ltd will be required to apply for a generation license from the National Energy Regulator of South Africa (NERSA). Depending on the economic conditions following the lapse of this period, the facility can either be decommissioned or the power purchase agreement may be renegotiated and extended.

The scope of the assessment includes an up to 250MW SPP covering a development footprint of approximately 521 hectares within a 4272 hectares EIA footprint, 33kv / 132kv substation on-site, 132kV collector substation, 132/275/400kV MTS, internal site roads, a Battery Energy Storage Facility (BESS) and associated operational, safety and control infrastructure.

The construction phase for an entire PV facility, similar to the proposed Bonsmara SPP, extends over a period of 18-24 months. The anticipated capital expenditure value of the proposed Bonsmara SPP on completion will be approximately R1.5 billion. The construction phase employment opportunities will be approximately 600-800 workers, in particular approximately 60% of opportunities will be low

skilled workers, 25% semiskilled workers, and 15% skilled workers. It is anticipated that the operation of the project is likely to create between 35-50 employment opportunities, comprising of low-skilled, semi-skilled, and skilled opportunities. Employment opportunities include safety and security staff, operation and monitoring, and maintenance crew.

APPROACH TO THE STUDY

The research approach followed for the development of an SIA study is based on the Guidelines for Involving Social Impact Assessment Specialists in the EIA process that was prepared for the Department of Environmental Affairs and Development Planning for the Western Cape Province of South Africa in February 2007. These guidelines for development and planning of Social Impact Assessments (SIA) are based on international best practice guidelines. The key components of the SIA process, which are embodied in these guidelines include:

- Describe and obtain a basic understanding of the proposed development (type, scale and location). Also obtain an understanding of the individuals and/or communities which are likely to be affected by the intervention and determine the need and the scope of conducting an SIA.
- Collecting the baseline data for the proposed intervention based on the current social environment and historical social trends.
- Assess and document the significance of the social impacts, which are associated with the proposed intervention; and
- Based on the baseline data and the identification and assessment of the social impacts likely to be associated with the proposed intervention, identify alternatives and mitigation measures for the social impacts of the proposed intervention (Barbour, 2007).

This study followed the research approach similar to the components identified above. This study followed a qualitative research approach. The steps involved in the research approach for this study involved:

- Collection and review of existing information, including national, provincial, district, and local plans, policies, programmes, Census data, and available literature from previous studies conducted within the area. Project specific information was obtained from the project proponent (Bonsmara Solar Power Plant (RF) (Pty) Ltd) and the Environmental Consultant (Environamics).
- Collection of primary data during a site visit. Telephone Interviews were conducted with directly affected landowners and key stakeholders e.g., business owners located in towns where similar projects must gain their inputs on the project and its perceived social impacts and benefits on the affected community.
- Identification of potential direct, indirect, and cumulative impacts likely to be associated with the construction, operation, and decommissioning of the proposed project.
- Where applicable mitigation measures with which to minimise impacts and enhance benefits associated with the project were identified.
- Preparation of an SIA Report and inputs into the Environmental Management Programme (EMPr) to be prepared for the project.

SUMMARY OF KEY FINDINGS

This SIA focused on the collection of data to identify and assess social issues and potential social impacts associated with the development of the Bonsmara SPP. Secondary data was collected and presented in a literature review and primary data was collected through consultations with affected and adjacent landowners and 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 and construction, and operation phase are presented in **Table A** and **Table B**. A summary of the potential positive and negative cumulative social impacts identified for the project is provided in **Table C**.

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

Impact	Significance Without Mitigation / Enhancement	Significance With Mitigation / Enhancement
Positive Impact		
Creation of direct and indirect employment and skills development opportunities.	Positive Low (22)	Positive Medium (36)
Economic multiplier effects	Positive Low (18)	Positive Medium (33)
Negative Impacts		
Potential loss of productive farmland	Negative Medium (36)	Negative Low (20)
In-migration of people (non-local workforce and jobseekers).	Negative Medium (36)	Negative Low (16)
Safety and security impacts	Negative Medium (30)	Negative Low (18)
Impacts on daily living and movement patterns	Negative Low (27)	Negative Low (16)
Nuisance impact (noise and dust)	Negative Medium (33)	Negative Low (18)
Potential impacts of increased risk of potential veld fires	Negative Medium (36)	Negative Low (18)
Visual and sense of place impacts	Negative Medium (36)	Negative Low (22)

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

Impact	Significance Without Mitigation / Enhancement	Significance With Mitigation / Enhancement
Positive Impact		
Direct and indirect employment and skills development opportunities	Positive Low (15)	Positive Medium (36)

Development of non-polluting, renewable energy infrastructure	Positive Medium (36)	Positive Medium (36)
Contribution to LED and social upliftment	Positive Medium (48)	Positive High (72)
Potential impacts on tourism	Positive Low (24)	Positive Low (24)
Negative Impacts		
Potential impacts on tourism	Negative Low (24)	Negative Low (24)
Impacts associated with the loss of agricultural land.	Negative Medium (30)	Negative Low (22)
Visual and sense of place impacts	Negative Medium (45)	Negative Low (24)

Table C: Summary of potential cumulative social impacts identified for the project

Cumulative Impact	Significance Without Mitigation / Enhancement	Significance With Mitigation / Enhancement
Positive Cumulative Impact		
Cumulative impact from employment, skills and business opportunities and skills development	Positive Medium (39)	Positive High (56)
Negative Cumulative Impacts		
Cumulative impact with large-scale in-migration of people	Negative Low (20)	Negative Medium (39)

There are some vulnerable communities within the project area that may be affected by the development of the Bonsmara SPP and its associated infrastructure. Traditionally, the construction phase of a PV energy facility is associated with most social impacts. Many of the social impacts are unavoidable and will take place to some extent but can be managed through the careful planning and implementation of appropriate mitigation measures. Several potential positive and negative social impacts have been identified for the project, however an assessment of the potential social impacts indicated that there are no perceived negative impacts that are so significant to allow them to be classified as “fatal flaws”.

Based on the social impact assessment, the following general conclusions and findings can be made:

- The construction phase of the Bonsmara SPP, like any other construction project, may bring about negative social impacts, such as the influx of non-local workers and job seekers, disturbance due to noise and dust pollution, increase in road usage which could lead to road damage, and safety concerns in the region. The impacts are not limited to PV projects but rather common in most construction projects. These impacts can be reduced by implementing proposed mitigation measures. Therefore, taking proactive measures to minimize the

significance of these impacts on Carletonville and especially the surrounding rural communities.

- The development of the Bonsmara SPP will generate employment opportunities for individuals from the Carletonville and surrounding communities. During the construction phase, approximately 600-800 job opportunities will be created, providing a temporary source of employment. Specifically, this would benefit the Merafong City LM as a large proportion of the population is not economically active or is unemployed. Following the construction phase, a limited number of job opportunities will be available during the operational phase. By reducing the region's dependency and boosting overall quality of life, the Bonsmara SPP will contribute significantly to the community's economic growth.
- The implementation of the Bonsmara SPP is expected to enhance the skill development in the community and lead to better employment opportunities. This, in turn, will equip the workers with valuable knowledge and skills that can be beneficial for their future professional endeavours. Consequently, the overall educational level of the people residing in the Merafong City LM is expected to improve.
- The Merafong City LM's economy has the potential to benefit from the proposed project by fostering entrepreneurial growth and opportunities, particularly for local businesses in Carletonville. These businesses, involved in the provision of general materials, goods, and services during both the construction and operational phases, are likely to experience positive impacts. Furthermore, the cumulative effects of developing additional solar facilities to the currently proposed facilities could amplify these benefits.
- The proposed development of the Bonsmara SPP represents an investment in non-polluting and renewable energy infrastructure. In comparison to energy generated through the combustion of fossil fuels, this presents a favourable social benefit for society.
- It should be noted that the perceived benefits associated with the Bonsmara SPP, which include renewable energy generation and local economic and social development, outweigh the perceived negative impacts associated with the project.
- The proposed development of the Bonsmara SPP could reduce current loadshedding associated with the country, specifically reducing the current strain on Eskom power generation facilities. Not only would it increase our green energy generation, but reduce strain imposed on companies as a result of loadshedding. In return this could lead current future work opportunities to be of a more stable nature and not impose additional strain on companies.

RECOMMENDATIONS

The following recommendations are made based on the SIA. The proposed mitigation measures should be implemented to limit the negative impacts and enhance the positive impacts associated with the project. Based on the social assessment, the following recommendations are made:

- The appointment of a Community Liaison Officer (CLO) to assist with the management of social impacts and to deal with community issues, if feasible.
- It is imperative that local labour be sourced, wherever possible, to ensure that benefits accrue to the local communities. Efforts should be made to involve local businesses during the construction activities, where possible. Local procurement of labour and services / products

would greatly benefit the community during the construction and operational phases of the project.

- Local procurement of services and equipment is required where possible to enhance the multiplier effect.
- Involve the community in the process as far as possible (encourage co-operative decision making and partnerships with local entrepreneurs).
- Employ mitigation measures to minimise the dust and noise pollution and damage to existing roads.
- Safety and security risks should be considered during the planning / construction phase of the proposed project. Access control, security and management should be implemented to limit the risk of crime increasing in the area.

CONCLUSION

The proposed project and associated infrastructure are 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 recommended mitigation measures and management actions identified for the project.

The proposed Bonsmara SPP has the potential to generate additional income and employment opportunities for Carletonville and the surrounding communities. This benefit could be particularly significant to reduce the dependency on job opportunities in the mining sector. Additional positive impacts can be associated with the Bonsmara SPP with regard to additional renewable energy facilities.

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LIST OF ACRONYMS

AC	Alternating Current
BAR	Basic Assessment Report
B-BBEE	Broad-Based Black Economic Empowerment
BEE	Black Economic Empowerment
BESS	Battery Energy Storage System
CLO	Community Liaison Officer
CPA	Communal Property Association
CSP	Concentrated Solar Power
DC	Direct Current
DEA	Department of Environmental Affairs (National)
DEAT	Department of Environmental Affairs and Tourism
DFFE	Department of Environment Forestry and Fisheries
DMRE	Department of Mineral Resources and Energy
DM	District Municipality
EA	Environmental Authorisation
EAP	Economically Active Population
ECA	Environment Conservation Act (No. 73 of 1989)
ECO	Environmental Control Officer
EHS	Environmental, Health and Safety
EIA	Environmental Impact Assessment
EMPr	Environmental Management Programme
EP	Equator Principles
EPC	Engineering, Procurement and Construction
FGM	Focus Group Meeting
FMP	Fire Management Plan
GDP	Gross Domestic Product

I&APs	Interested and Affected Parties
IDP	Integrated Development Plan
IEP	Integrated Energy Plan
IFC	International Finance Corporation
IPP	Independent Power Producer
IRP	Integrated Resource Plan
IUCN	International Union for Conservation of Nature
GIS	Geographic Information System
km	Kilometre
kV	Kilovolt
LED	Local Economic Development
LM	Local Municipality
MW	Megawatt
NDP	National Development Plan
NEPCO	National Electrical Power Company
NEMA	National Environmental Management Act (No. 107 of 1998)
O&M	Operations and Maintenance
OHS	Occupational Health and Safety
PSDF	Provincial Spatial Development Framework
PV	Photovoltaic
RE	Renewable Energy
REDZ	Renewable Energy Development Zone
REIPPP	Renewable Energy Independent Power Producer Procurement Programme
SDF	Spatial Development Framework
SIA	Social Impact Assessment
SPP	Solar Power Plant
ToR	Terms of Reference
UNESCO	United Nations Educational, Scientific and Cultural Organisation

1. INTRODUCTION

1.1. Project Background

Bonsmara Solar Power Plant (RF) (Pty) Ltd is proposing the development of the Bonsmara Solar Power Plant, a commercial solar power plant (SPP) and associated infrastructure located on the farm Leeuwpans No. 697, Merafong City Local Municipality, Gauteng Province. The proposed project is intended to form part of the Department of Mineral Resources and Energy (DMRE) Renewable Energy Independent Power Producer Procurement (REIPPP) Programme, but the option also exists for other tenders, wheeling or to supply privately, without a generation license from NERSA, for up to 150MW. The REIPPP Programme aims to secure 14 725 Megawatts (MW) of new generation capacity from renewable energy sources, while simultaneously diversifying South Africa's electricity mix. According to the 2021 State of the Nation Address, Government will soon be initiating the procurement of an additional 11 800 MW of power from renewable energy, natural gas, battery storage and coal in line with the Integrated Resource Plan 2019 and fulfilling their commitments under the United Nations Framework Convention on Climate Change and its Paris Agreement which include the reduction of greenhouse gas emissions. Eskom, our largest greenhouse gas emitter, has committed in principle to net zero emissions by 2050 and to increase its renewable capacity.

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The Social Impact Assessment (SIA) Report has been prepared by Donaway Environmental on behalf of Environamics and is intended to provide input into the EIA report to be submitted to DFFE.

1.2. Project Location

The proposed Bonsmara SPP is located approximately 17km north from the town of Carletonville, approximately 1km from the N14 national route on its southern boundary and 2.3km west of the R500 regional route. The D262 secondary road is adjacent to the northern boundary of the site. The development footprint will consist of approximately 521 hectares within a 4272 hectares EIA footprint.

Please refer to **Figure 1.1** below, Locality Map.

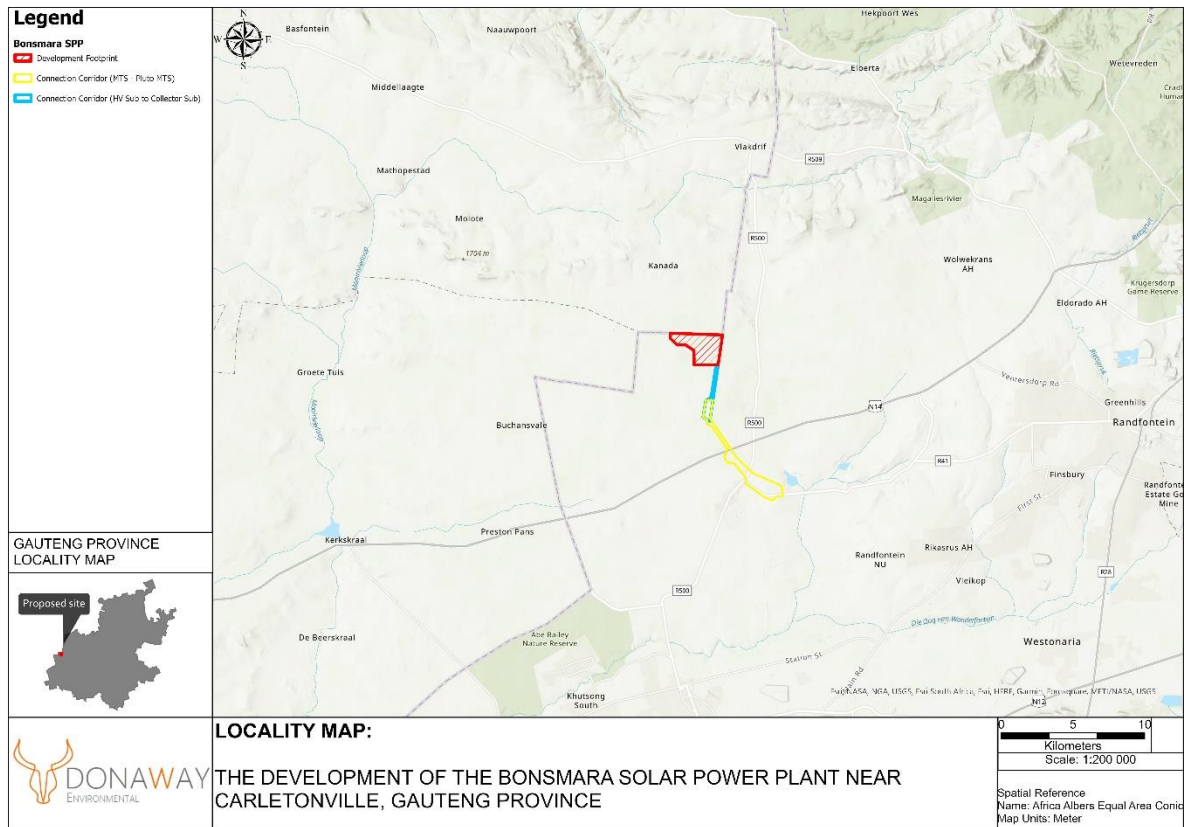


Figure 1.1: Locality map for the proposed Bonsmara SPP, near Carletonville, Gauteng Province

1.3. Project Description & Technical Detail

The term photovoltaic describes a solid-state electronic cell that produces direct current electrical energy from the radiant energy of the sun through a process known as the Photovoltaic Effect. This refers to light energy placing electrons into a higher state of energy to create electricity. Each PV cell is made of silicon (i.e., semiconductors), which is positively and negatively charged on either side, with electrical conductors attached to both sides to form a circuit. This circuit captures the released electrons in the form of an electric current (direct current). The key components of the proposed project are described in **Table 1.2** and general site information below in **Table 1.1**:

Table 1.1: General site information

Description of affected farm portion	<p><u>Solar Power Plant:</u> Farm Leeuwpan No. 697</p> <p><u>Grid Connection Corridor:</u> Farm Leeuwpan No. 697 Portion 88 of the Farm De Pan 51. The Remaining Extent of the Farm De Pan 51. Portion 5 of the Farm De Pan 5. Portion 90 of the Farm De Pan 51. Portion 1 of the Farm De Pan 51.</p>
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	<p>Portion 7 of the Farm Wildfontein No. 52</p> <p>Portion 34 of the Farm Holfontein No. 49.</p> <p>Remaining Extent of Portion 5 of the Farm Holfontein No. 49</p>
Province	Gauteng Province
District Municipality	West Rand District Municipality
Local Municipality	Merafong City Local Municipality
Ward numbers	1
Closest towns	Carletonville is located approximately 17km south of the proposed development.
21 Digit Surveyor General codes	<p><u>Solar Power Plant:</u></p> <p>Farm Leeuwpan No. 697 T0IQ0000000069700000</p> <p><u>Grid Connection Corridor:</u></p> <p>Farm Leeuwpan No. 697 T0IQ0000000069700000</p> <p>Portion 88 of the Farm De Pan 51 T0IQ0000000005100088</p> <p>The Remaining Extent of the Farm De Pan 51 T0IQ0000000005100000</p> <p>Portion 5 of the Farm De Pan 5 T0IQ0000000005100005</p> <p>Portion 90 of the Farm De Pan 51 T0IQ0000000005100090</p> <p>Portion 1 of the Farm De Pan 51 T0IQ0000000005100001</p> <p>Portion 7 of the Farm Wildfontein No. 52 T0IQ0000000005200007</p> <p>Portion 34 of the Farm Holfontein No. 49 T0IQ0000000004900034</p> <p>Portion 5 of the Farm Holfontein No. 49 T0IQ0000000004900005</p>
Type of technology	Photovoltaic solar facility

Structure Height	Panels ~ 6m. Buildings ~ 6m. Power line ~ 32m; and Battery storage facility ~ 8m.
Battery storage	Within a 4-hectare area of the infrastructure and ancillary complex
Surface area to be covered (Development footprint)	Approximately 521 ha
EIA Footprint	Assessed 4272 ha
Structure orientation	The panels will either be fixed to a single-axis horizontal tracking structure where the orientation of the panel varies according to the time of the day, as the sun moves from east to west or tilted at a fixed angle equivalent to the latitude at which the site is in order to capture the most sun.
Generation capacity	Up to 250MW

Based on a review of previous similar projects and the basic project information received for the purpose of this SIA, the scope of work and basic infrastructure that are inclusive of any ancillary activities and that can be associated with the proposed development of the Bonsmara SPP would include:

- PV Panel Array - To produce up to 250MW, the proposed facility will require numerous linked cells placed behind a protective glass sheet to form a panel. Multiple panels will be required to form the solar PV arrays which will comprise the PV facility. The PV panels will be tilted at a northern angle in order to capture the most sun or using one-axis tracker structures to follow the sun to increase the yield.
- Wiring to Inverters - Sections of the PV array will be wired to inverters. The inverter is a pulse width mode inverter that converts direct current (DC) electricity to alternating current (AC) electricity at grid frequency.
- Connection to the grid – Connecting the array to the electrical grid requires transformation of the voltage from 480V to 33kV to 132kV and higher. The normal components and dimensions of a distribution rated electrical substation will be required. Output voltage from the inverter is 480V and this is fed into the step-up transformers to 132kV. An onsite substation will be required to step the voltage up to 132kV, after which the power will be evacuated into a new proposed collector substation to step the voltage up from 132KV to 275/400KV in order to evacuate the power into the national grid at the same voltage level as the MTS via the proposed 132/275/400KV power line. Whilst Bonsmara Solar Power Plant (RF) (Pty) Ltd has not yet received a cost estimate letter from Eskom, it is expected that generation from the

facility will tie in with a newly proposed collector substation. Generation from the facility will tie in with the on-site step up and switching substation that will be connected to a newly proposed collector substation, the collector substation will be connected to a newly proposed MTS to be connected to the existing Pluto 400/275/22kV MTS. The connection power line will be constructed within the limits of the grid connection corridor. The project will generate up to 250MW of electricity. Refer to the Figure below.

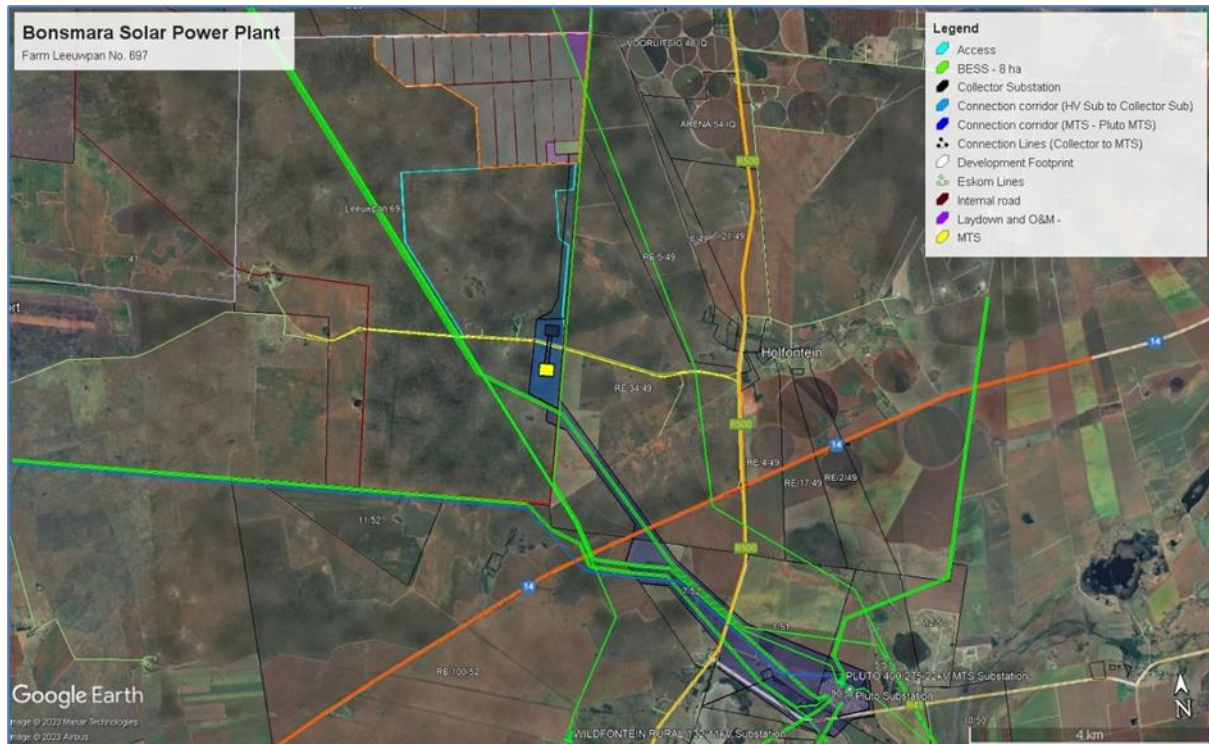


Figure 1.2: Bonsmara SPP powerline corridor and substations

- Electrical reticulation network – An internal electrical reticulation network will be required and will be laid ~2-4m underground as far as practically possible.
- Supporting Infrastructure – All associated infrastructure will be constructed within the limits of the infrastructure and ancillary complex which will include an on-site substation, Battery Energy Storage System, Operations and Maintenance buildings etc.
- Battery storage – A Battery Storage Facility with a maximum height of 8m and a maximum volume of 1,740 m³ of batteries and associated operational, safety and control infrastructure.
- Roads – Access will be obtained via a public gravel road off of the R500 regional road to the east of the site. An internal site road network will also be required to provide access to the solar field and associated infrastructure.
- Fencing - For health, safety and security reasons, the facility will be required to be fenced off from the surrounding farm. Fencing with a height of 2.5 meters will be used.

Table 1.2: Technical details for the proposed Bonsmara SPP

Component	Description / dimensions
Height of PV panels	6 meters
Area of PV Array	521 Hectares (Development footprint)
Number of inverters required	Minimum 50
Area occupied by inverter / transformer stations / substations / BESS	All associated infrastructure will be constructed within the limits of the infrastructure and ancillary complex. On site Substation: 2.4 ha Collector Substation: 4 ha BESS: 8 ha Central inverters + LV/MV trafo: 750 m ²
Capacity of on-site substation	On-site substation: 33/132 kV Collector substation: 132KV MTS: 132/275/400KV
Capacity of the power line	132/275/400 KV
Area occupied by both permanent and construction laydown areas	Permanent project area: 521 Hectares Construction Laydown Area: ~20 ha
Area occupied by buildings	Infrastructure & Ancillary Complex: 19.3 ha
Battery storage facility	Maximum height: 8m Maximum volume: 1740 m ³ Capacity ~up to 500MWh
Length of access roads	3 km
Width of access roads	8 m – 10 m
Length of internal roads	17.21 km
Width of internal roads	4 m – 6 m
Length of perimeter roads	10.6
Width of perimeter roads	6 m – 8 m
Grid connection corridor width	200 m up to 1.2 km
Grid connection corridor length	~8.9 km
Power line servitude width	132KV line – 31 m 275KV line – 47 m 400KV line – 55 m
Height of power line	132KV line – 32 m 275KV line – 32 m 400KV line – 40 m
Height of fencing	Approximately 2.5 m

1.4. Consideration of Alternatives

The DEAT 2006 guidelines on ‘assessment of alternatives and impacts’ proposes the consideration of four types of alternatives namely, the no-go, location, activity, and design alternatives. It is, however, important to note that the regulation and guidelines specifically state that only ‘feasible’ and ‘reasonable’ alternatives should be explored. It also recognizes that the consideration of alternatives is an iterative process of feedback between the developer and EAP, which in some instances

culminates in a single preferred project proposal. An initial site assessment was conducted by the developer the affected properties and the farm portions were found favorable due to its proximity to grid connections, solar radiation, ecology, and relative flat terrain. These factors were then taken into consideration and avoided as far as possible.

The following alternatives were considered in relation to the proposed activity and all specialists should also make mention of these:

No-go alternative

This alternative considers the option of 'do nothing' and maintaining the status quo. The site is currently zoned for agricultural and mining land uses. Should the proposed activity not proceed, the site will remain unchanged and will continue to be used for agricultural purposes. The potential opportunity costs in terms of alternative land use income through rental for energy facility and the supporting social and economic development in the area would be lost if the status quo persist.

Location alternatives

No other possible sites were identified on the Farm Leeuwpan No. 697. This site is referred to as the preferred site. Some limited sensitive features occur on the site. The size of the site makes provision for the exclusion of any sensitive environmental features that may arise through the EIA proses.

Technical alternatives: Powerlines

It is expected that generation from the facility will tie in with the on-site step up and switching substation that will be connected to a newly proposed collector substation, the collector substation will be connected to a newly proposed MTS to be connected to the existing Pluto 400/275/22kV MTS.

The connection power line will be constructed within the limits of the grid connection corridor.

Battery storage facility

It is proposed that a nominal up to 500 MWh Battery Storage Facility for grid storage would be housed in stacked containers, or multi-storey building, with a maximum height of 8m and a maximum volume of 1,740m³ of batteries and associated operational, safety and control infrastructure. Three types of battery technologies are being considered for the proposed project: Lithium-ion, Sodium-sulphur or Vanadium Redox flow battery. The preferred battery technology is Lithium-ion.

Battery storage offers a wide range of advantages to South Africa including renewable energy time shift, renewable capacity firming, electricity supply reliability and quality improvement, voltage regulation, electricity reserve capacity improvement, transmission congestion relief, load following and time of use energy cost management. In essence, this technology allows renewable energy to enter the base load and peak power generation market and therefore can compete directly with fossil fuel sources of power generation and offer a truly sustainable electricity supply option.

Design and layout alternatives

Design alternatives will be considered throughout the planning and design phase and specialist studies are expected to inform the final layout of the proposed development.

Technology alternatives

There are several types of semiconductor technologies currently available and in use for PV solar panels. Two, however, have become the most widely adopted, namely crystalline silicon (Mono-facial and Bi-facial) and thin film. The technology that (at this stage) proves more feasible and reasonable with respect to the proposed solar facility is crystalline silicon panels, due to it being non-reflective, more efficient, and with a higher durability. However, due to the rapid technological advances being made in the field of solar technology the exact type of technology to be used, such as bifacial panels, will only be confirmed at the onset of the project.

1.5. EIA Regulations

The National Environmental Management Act identifies listed activities (in terms of Section 24) which are likely to have an impact on the environment. These activities cannot commence without obtaining an EA from the relevant competent authority. Sufficient information is required by the competent authority to make an informed decision and the project is therefore subject to an environmental assessment process which can be either a Basic Assessment Process or a full Scoping and Environmental Impact Assessment process.

The EIA Regulations No. 324, 325, and 327 outline the activities that may be triggered and therefore require EA. The activities triggered under Listing Notice 1 and 2 (Regulation 327 and 325) for the project implies that the development is considered as potentially having an impact on the environment and therefore require the implementation of appropriate mitigation measures.

1.6. Terms of Reference

The terms of reference (TOR) in an SIA according to Barbour (2007:28) should indicate how and to what extent the SIA specialist should be involved for the purpose and scale of the proposed intervention. The TOR as provided and agreed upon with Environamics include the following:

Specialists in their field of expertise will consider baseline data and identify and assess impacts according to predefined rating scales. Specialists will also suggest optional or essential ways in which to mitigate negative impacts and enhance positive impacts. Further, specialists will, where possible, take into consideration the cumulative effects associated with this and other projects, which are either developed or in the process of being developed in the local area. The results of these specialist studies will be integrated into the EIA for comments and final submissions to all Interested and Affected Parties (I&APs) and DFFE. The Terms of Reference (ToR) or general requirements proposed for the inputs are listed below:

General Requirements:

Specialists' reports must comply with Appendix 6 of GNR982 published under sections 24(5), and 44 of the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended and whereby the following are to be included:

- The details of the specialist who prepared the report and the expertise of that specialist to compile a specialist report including a curriculum vitae.
- A declaration that the specialist is independent in a form as may be specified by the competent authority.

- An indication of the scope of, and the purpose for which, the report was prepared.
- The date and season of the site investigation and the relevance of the season to the outcome of the assessment.
- A description of the methodology adopted in preparing the report or carrying out the specialised process; the specific identified sensitivity of the site related to the activity and its associated structures and infrastructure.
- An identification of any areas to be avoided, including buffers.
- A map superimposing the activity including the associated structures and infrastructure on the environmental sensitivities of the site including areas to be avoided, including buffers.
- A description of any assumptions made and any uncertainties or gaps in knowledge.
- A description of the findings and potential implications of such findings on the impact of the proposed activity, including identified alternatives on the environment.
- Any mitigation measures for inclusion in the EMPr;
- Any conditions for inclusion in the environmental authorisation.
- Any monitoring requirements for inclusion in the EMPr or environmental authorisation.
- A reasoned opinion as to whether the proposed activity or portions thereof should be authorised, and if the opinion is that the proposed activity or portions thereof should be authorised, any avoidance, management and mitigation measures that should be included in the EMPr, and where applicable, the closure plan.
- A description of any consultation process that was undertaken during the course of preparing the specialist report.
- A summary and copies of any comments received during any consultation process and where applicable all responses thereto; and
- Any other information requested by the competent authority.

In addition to the above, specialists are expected to:

- Review the Scoping Report/Environmental Impact Report (EIR), with specific reference to the Comments and Response Report to familiarize with all relevant issues or concerns relevant to their field of expertise.
- In addition to the impacts listed in the EIR, identify any issue or aspect that needs to be assessed and provide expert opinion on any issue in their field of expertise that they deem necessary in order to avoid potential detrimental impacts.
- Assess the degree and extent of all identified impacts (including cumulative impacts) that the preferred project activity and its proposed alternatives, including that of the no-go alternative, may have.
- Identify and list all legislation and permit requirements that are relevant to the development proposal in context of the study.

- Reference all sources of information and literature consulted; and
- Include an executive summary to the report.

The terms of reference for this SIA requires to provide the following:

- Provide a description of the environment that may be affected by the activity and the way the environment may be affected by the proposed facility.
- Provide a description and assessment of the potential social issues associated with the proposed facility; and
- Identify enhancement and mitigation aimed at maximizing opportunities and avoiding and or reducing negative impacts.

The key activities in the SIA process as embodied in the Western Cape Department of Environmental Affairs and Development Planning Guidelines for Social Impact Assessment (February 2007) will include:

- Describing and obtaining an understanding of the proposed intervention (type, scale, location), the communities likely to be affected and determining the need and scope of the SIA.
- Collecting baseline data on the current social environment and historical social trends.
- Identifying and collecting data on the Social Impact Assessment variables and social change processes related to the proposed intervention. This requires consultation with affected individuals and communities.
- Assessing and documenting the significance of social impacts associated with the proposed intervention; and
- Identifying alternatives and mitigation measures.

In this regard the study should involve:

- Review of demographic data from the Census Survey.
- Review of relevant planning and policy frameworks for the area.
- Site specific information collected during the site visits to the area and interviews with key stakeholders.
- Review of information from similar projects; and
- Identification of social issues associated with the proposed project.

1.7. Project Team and Experience

The project team will consist of Johan Botha and Michael Cloete.

Johan Botha graduated with an Honours degree in 2011 from the North West University in the field of Environmental Sciences specialising in Geography and Environmental Management and has since

been involved in the environmental management of substations, powerlines and solar PV plants together with over 100+ Visual Impact Assessments (VIA) and 50+ Social Impact Assessments (SIA), mostly in the field of Renewable Energy. All the above-mentioned experience accumulated the necessary skills to conduct visual and social impact assessments.

Michael Cloete graduated with a Master's degree in 2020 from the North West University in Geography and Environmental Management with a focus on Geographic Information Systems (GIS) and Visual Impact Assessments (VIA). Accumulating two years of environmental specialist knowledge and reporting in the Hydrogeology field. The accumulated experience provides the necessary skills to conduct visual and social impact assessments.

2. METHODOLOGY

2.1. Purpose of the Study

Social Impact Assessments are defined by International Principles 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 can 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 Report 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) because 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 the Study

The research approach followed for the development of an SIA study is based on the Guidelines for Involving Social Impact Assessment Specialists in the EIA process that was prepared for the Department of Environmental Affairs and Development Planning for the Western Cape Province of South Africa in February 2007. These guidelines for development and planning of Social Impact

Assessments (SIA) are based on international best practice guidelines. The key components of the SIA process which are embodied in these guidelines include:

- Describe and obtain a basic understanding of the proposed development (type, scale and location). Also obtain an understanding of the individuals and/or communities which are likely to be affected by the intervention, and determine the need and the scope of conducting and SIA;
- Collecting the baseline data for the proposed intervention based on the current social environment and historical social trends;
- Assess and document the significance of the social impacts which are associated with the proposed intervention; and
- Based on the baseline data and the identification and assessment of the social impacts likely to be associated with the proposed intervention, identify alternatives and mitigation measures for the social impacts of the proposed intervention (Barbour, 2007).

The research approach to this study is similar to scientific social research methods. A literature review was conducted to define and gain a basic understanding of the key concepts.

Vanclay (2003) described social change processes as a very discreet, describable, and observable process, which changes the characteristics of a society. These processes are set in motion by different project interventions and or development policies. If these changes are managed effectively, it may not create impacts, but depending on the context, these social change processes might lead the social impact on a community. Examples of such social processes include the increase of population, the influx of temporary workers, relocation of communities etc. According to Vanclay (2002) the term “social impacts” can be defined as “the consequences to human populations of any public or private actions (these include policies, programmes, plans and/or projects) that alter the ways in which people live, work, play, relate to one another, organise to meet their needs and generally live and cope as members of society. These impacts are felt at various levels, including individual level, family or household level, community, organisation or society level. Some social impacts are felt by the body as a physical reality, while other social impacts are perceptual or emotional”. It is important to note that social impacts can vary in both space and time. Social impacts can also differ in the way people differ from gender, culture, religion, ethnicity and in general how they view the world. This is better known as the social construct of reality and refers to people’s worldview and the way they react to impacts and changes.

The term “Social Impact Assessment” refers to the efforts to analyse, monitor and manage, in advance, the unintended and intended social consequences, positive or negative, which are likely to follow from proposed interventions, policies and/or programmes (IAIA, 2003; Vanclay 2006). The objective of an SIA is to identify the intended as well as the unintended effects of planned interventions to achieve sustainable development (Hildebrandt, 2014). Esteves and Vanclay (2009:140) and Hildebrandt (2014) go further by stating that SIA should be seen as an umbrella assessment, which incorporates the evaluation of all impacts on people and on all the ways in which people interact with their socio-cultural, biophysical, and economic surroundings.

This research study made use of a qualitative research approach. A qualitative research approach answers questions about the complex nature of a phenomenon. The aim of this approach is to describe and understand the phenomena from a participants’ point of view (De Vos et al., 2011). This

research approach mainly relies on converting information from observations, reports, and recordings into data and then into the written word.

This study followed the research approach similar to the components identified above. The steps involved in the research approach for this study involved:

- Collection and review of existing information, including national, provincial, district, and local plans, policies, programmes, Census data, and available literature from previous studies conducted within the area. Project specific information was obtained from the project proponent (Bonsmara Solar Power Plant (RF) (Pty) Ltd) and the Environmental Consultant (Environamics).
- Collection of primary data during a site visit. Telephone Interviews were conducted with directly affected landowners and key stakeholders e.g., business owners located in towns where similar projects must gain their inputs on the project and its perceived social impacts and benefits on the affected community.
- Identification of potential direct, indirect, and cumulative impacts likely to be associated with the construction, operation, and decommissioning of the proposed project.
- Where applicable mitigation measures with which to minimise impacts and enhance benefits associated with the project were identified.
- Preparation of an SIA Report and inputs into the Environmental Management Programme (EMPr) to be prepared for the project.

The identification of the potential social issues associated with the proposed intervention is based on the review of relevant documentation, experience from previous projects and the observations during the project site visits. **Table 2.1** includes the list of the farmers with which interviews were held. The methodology used to assign the significance ratings to the assessment process will be discussed below.

2.2.1. Stakeholder Identification and Analysis

Stakeholders are defined as: “Any group or organisation which may affect or be affected by the issue under consideration” (UN, 2001:26).

These groups may be directly or indirectly impacted and can include organisations, institutions, communities, or individuals. Any position in society can be impacted, from international, national, regional, household level etc. (Franke and Guidero, 2021).

Stakeholder analysis involves the identification of affected or impacted people and their key grouping and sub-groupings (IFC, 2007). Identifying stakeholders that are directly and indirectly affected by the project is important to determine who might be impacted by the development and in what way. The key stakeholders in the proposed project have been identified, grouped / sub-grouped and described as per Ilse Aucamp’s SIA methodology (Aucamp et al, 2011). There are immediate, direct, and indirect areas of influence to the proposed development. Affected stakeholders comprise sensitive social receptors that may potentially be affected by the proposed development based on their location.

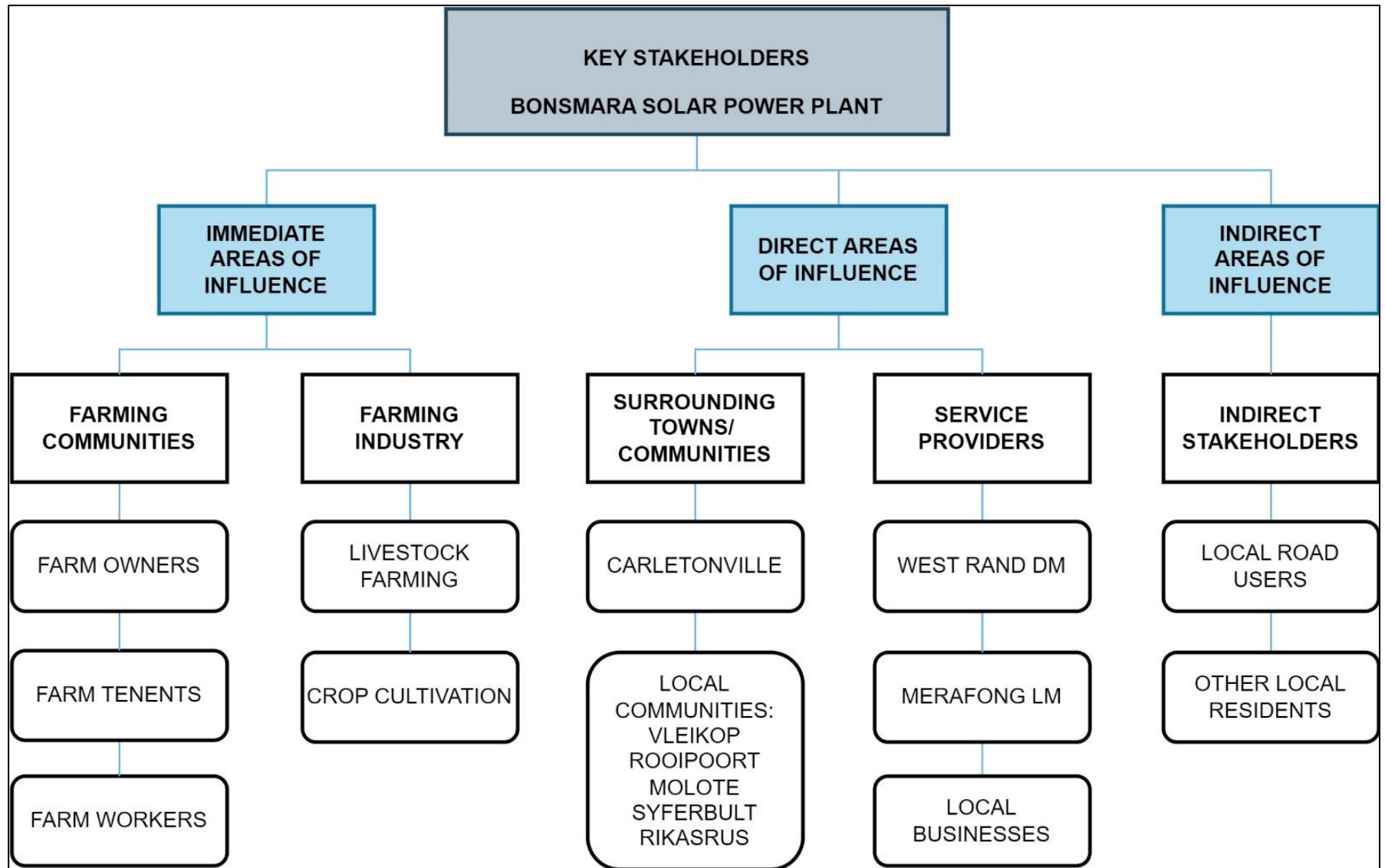


Figure 2.1: Key Stakeholders of the proposed Bonsmara SPP

A description of each of the stakeholder's groups in relation to Bonsmara SPP is discussed below:

- **Farming Community:** The farming community can be grouped into three categories, namely farm owners, farm tenants, and farm workers. Farm owners comprise individuals who own the property and, in most cases, make a living off their properties. Farm tenants are people who rent land and work on the land to earn an income. Farm workers are people who work, and often reside on the farm with their families and are seen as a vulnerable community. Impacts that may arise for the farming community include impacts on (and the potential loss of) agricultural land and infrastructure, potential nuisance impacts (as a result of dust and noise specifically during construction), safety and security impacts (as a result of an in-migration of people in search of employment opportunities), impacts on the area's sense of place (as a result of a change in land use), visual impacts (as a result of construction equipment and activities and the presence of the PV infrastructure), cultural and social changes (also as a result of an in-migration of people in search of employment opportunities and a change in land use), and additional traffic and road safety impacts (as a result of the movement of construction equipment and personnel).
- **Farming industry:** The primary agricultural activity in the study area is livestock farming and crop cultivation. Impacts that may arise as a result of the project include stock theft and poaching from an increase of people in the area (especially during the construction phase), impacts on current farming practices such as dust impacts which could affect grazing areas (especially during the construction phase), and potential loss of agricultural land as a result of the direct occupation of the land by the proposed facility and its associated infrastructure, which would remove the development footprint from agricultural production and threaten food security. Noise and movement of people may also negatively impact on farming operations.
- **Surrounding towns / affected communities:** The closest town to the proposed project is Carletonville, located approximately 17km south from the proposed development. Residents within Carletonville, local communities and surrounds may be positively and /or negatively impacted by the proposed development. Employment opportunities will become available as a result of the construction and operation of the proposed development, and it is probable that a portion of the labour force required for the project will be sourced from (and accommodated within) Carletonville and surrounding towns which will present a positive impact for the local community. In addition, contributions to Social Development of the local communities in terms of the DoE's requirements under the REIPPP Programme will result in local upliftment and positive impacts.
- **Service providers:** Major service providers that will be affected by the project include the West Rand DM, Merafong City LM, and local businesses in the area. The West Rand DM, and the Merafong City LM are likely to be impacted by the proposed development. The Merafong City LM is a Category B municipality, meaning that it shares municipal executive and legislative authority in the area with the West Rand DM. The Merafong City LM will absorb a number of positive and negative social impacts in the form of employment creation, increased local expenditure, and increased revenue etc., as well as potential negative impacts in the form of

an in-migration of people and increased pressure being placed on local services. Local businesses within the area could benefit from the proposed project in terms of an increase in demand for goods and services associated with the project.

- **Stakeholders outside the direct area of influence:** There are a number of stakeholders that reside outside the direct area of influence but who may also be impacted by the project. These include road users that utilise the N14 national road, R500 regional road, and local gravel roads adjacent to the site, on a frequent basis, as part of their daily or weekly movement patterns. Construction vehicles and trucks will utilise these roads during construction, which will result in increased traffic, which may create traffic disruptions, and which may increase the wear and tear on these roads.

2.2.2. Collection and Review of Existing Information

Existing desktop information which has relevance to the proposed project, project site, and surrounds was collected and reviewed. The following sources of information were examined as part of this process:

- Project maps and layouts.
- Google Earth and Google Maps imagery.
- A description of the project (as provided by the project proponent).
- Information regarding employment, social upliftment, and local economic development opportunities (as provided by the project applicant).
- Census data (2011), Community Survey (2016) and the Local Government Handbook (2018).
- Planning documentation such as Provincial Growth and Development Strategies (PGDSs), LM and DM
- 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 PVs and associated infrastructure.

2.2.3. Collection of Primary Data

Telephone interviews were conducted with affected landowners and key stakeholders identified within the area. Details of individuals interviewed are provided in **Table 2.1** below:

Table 2.1: Overview of individuals interviewed

Representative	Interest
Theodon Boerdery (Pty) Ltd	Proposed development property owner
Leriana Boerdery (Pty) Ltd	Adjacent property owner (West)
Pahtiki Boerdery (Pty) Ltd	Adjacent property owner (West)
Hulda Heila van der Merwe	Adjacent property owner (North)
Hulda Heila van der Merwe	Adjacent property owner (North-West)
Republic of South Africa National Government	Adjacent property owner (North)
Milennium Direct (Pty) Ltd	Adjacent property owner (North-East)
Willem Petrus Lubbe	Adjacent property owner (East)
Anna Magdalene Van Wyk (Trustees)	Adjacent property owner (South)

Bospan Boerdery (Pty) Ltd	Adjacent property owner (South)
Alet Fourie Trust	Adjacent property owner (North-East)
Rita Fuel Services	Fuel Supplies
Cashbuild Randfontein	Hardware Suppliers
Leon's Service Centre	Vehicle Repairs
Triple D Truck Service Centre	Vehicle Repairs
Uncle Harry's Roadhouse	Restaurant
Selati Guesthouse	Accommodation
Red Cap Ranch Lodge	Accommodation

During the interviews, interviewees were provided with background on the proposed project, the EIA and public participation process being undertaken in support of the application for EA. Interviewees were then interviewed utilising a questionnaire to determine their perceptions, interests, and concerns regarding the project.

The Merafong City LM and West Rand DM is being engaged by the Environmental Assessment Practitioner and their comments obtained as part of the EIA process being undertaken and will be considered in this SIA where relevant.

2.3. Baseline Assessment – Significance Rating

Impact assessment must take account of the nature, scale and duration of impacts on the social environment and whether such impacts are positive or negative. Each impact is also assessed according to the social receptors and the following project phases:

- Planning;
- Construction;
- Operation; and
- Decommissioning.

Where necessary, the proposal for mitigation or optimisation of an impact should be detailed. A brief discussion of the impact and the rationale behind the assessment of its significance should also be included. The rating system is applied to the potential impacts on the receiving social receptors and includes an objective evaluation of the mitigation of the impact. In assessing the significance of each impact, **Table 2.2** below, will be utilised as the baseline impact assessment for each social receptor and phases of the project.

Table 2.2: Impact Significance Rating

NATURE		
Include a brief description of the impact of environmental parameter being assessed in the context of the project. This criterion includes a brief written statement of the environmental aspect being impacted upon by a particular action or activity.		
GEOGRAPHICAL EXTENT		
This is defined as the area over which the impact will be experienced.		
1	Site	The impact will only affect the site.
2	Local/district	Will affect the local area or district.

3	Province/region	Will affect the entire province or region.
4	International and National	Will affect the entire country.
PROBABILITY		
This describes the chance of occurrence of an impact.		
1	Unlikely	The chance of the impact occurring is extremely low (Less than a 25% chance of occurrence).
2	Possible	The impact may occur (Between a 25% to 50% chance of occurrence).
3	Probable	The impact will likely occur (Between a 50% to 75% chance of occurrence).
4	Definite	Impact will certainly occur (Greater than a 75% chance of occurrence).
DURATION		
This describes the duration of the impacts. Duration indicates the lifetime of the impact as a result of the proposed activity.		
1	Short term	The impact will either disappear with mitigation or will be mitigated through natural processes in a span shorter than the construction phase (0 – 1 years), or the impact will last for the period of a relatively short construction period and a limited recovery time after construction, thereafter it will be entirely negated (0 – 2 years).
2	Medium term	The impact will continue or last for some time after the construction phase but will be mitigated by direct human action or by natural processes thereafter (2 – 10 years).
3	Long term	The impact and its effects will continue or last for the entire operational life of the development but will be mitigated by direct human action or by natural processes thereafter (10 – 30 years).
4	Permanent	The only class of impact that will be non-transitory. Mitigation either by man or natural process will not occur in such a way or such a time span that the impact can be considered indefinite.
INTENSITY/ MAGNITUDE		
Describes the severity of an impact.		
1	Low	Impact affects the quality, use and integrity of the system/component in a way that is barely perceptible.

2	Medium	Impact alters the quality, use and integrity of the system/component but system/component still continues to function in a moderately modified way and maintains general integrity (some impact on integrity).
3	High	Impact affects the continued viability of the system/component and the quality, use, integrity and functionality of the system or component is severely impaired and may temporarily cease. High costs of rehabilitation and remediation.
4	Very high	Impact affects the continued viability of the system/component, and the quality, use, integrity and functionality of the system or component permanently ceases and is irreversibly impaired. Rehabilitation and remediation often impossible. If possible, rehabilitation and remediation often unfeasible due to extremely high costs of rehabilitation and remediation.
REVERSIBILITY		
This describes the degree to which an impact can be successfully reversed upon completion of the proposed activity.		
1	Completely reversible	The impact is reversible with implementation of minor mitigation measures.
2	Partly reversible	The impact is partly reversible but more intense mitigation measures are required.
3	Barely reversible	The impact is unlikely to be reversed even with intense mitigation measures.
4	Irreversible	The impact is irreversible, and no mitigation measures exist.
IRREPLACEABLE LOSS OF RESOURCES		
This describes the degree to which resources will be irreplaceably lost as a result of a proposed activity.		
1	No loss of resource	The impact will not result in the loss of any resources.
2	Marginal loss of resource	The impact will result in marginal loss of resources.
3	Significant loss of resources	The impact will result in significant loss of resources.
4	Complete loss of resources	The impact is result in a complete loss of all resources.
CUMULATIVE EFFECT		

This describes the cumulative effect of the impacts. A cumulative impact is an effect which in itself may not be significant but may become significant if added to other existing or potential impacts emanating from other similar or diverse activities as a result of the project activity in question.		
1	Negligible cumulative impact	The impact would result in negligible to no cumulative effects.
2	Low cumulative impact	The impact would result in insignificant cumulative effects.
3	Medium cumulative impact	The impact would result in minor cumulative effects.
4	High cumulative impact	The impact would result in significant cumulative effects
SIGNIFICANCE		
Significance is determined through a synthesis of impact characteristics. Significance is an indication of the importance of the impact in terms of both physical extent and time scale, and therefore indicates the level of mitigation required. The calculation of the significance of an impact uses the following formula: (Extent + probability + reversibility + irreplaceability + duration + cumulative effect) x magnitude/intensity.		
The summation of the different criteria will produce a non-weighted value. By multiplying this value with the magnitude/intensity, the resultant value acquires a weighted characteristic which can be measured and assigned a significance rating.		
Points	Impact significance rating	Description
6 to 28	Negative low impact	The anticipated impact will have negligible negative effects and will require little to no mitigation.
6 to 28	Positive low impact	The anticipated impact will have minor positive effects.
29 to 50	Negative medium impact	The anticipated impact will have moderate negative effects and will require moderate mitigation measures.
29 to 50	Positive medium impact	The anticipated impact will have moderate positive effects.
51 to 73	Negative high impact	The anticipated impact will have significant effects and will require significant mitigation measures to achieve an acceptable level of impact.
51 to 73	Positive high impact	The anticipated impact will have significant positive effects.
74 to 96	Negative very high impact	The anticipated impact will have highly significant effects and are unlikely to be able to be mitigated adequately. These impacts could be considered "fatal flaws".
74 to 96	Positive very high impact	The anticipated impact will have highly significant positive effects.

2.4. Assumptions and Limitations

This section of the report briefly describes the assumptions and limitations for this SIA study.

2.4.1. Limitations

- Data available within the 2011 Census, Community Survey 2016, Gauteng Spatial Development Framework 2030 (2015), West Rand DM Integrated Development Plan 2016/17 to 2020/21 (2020/2021), West Rand DM Spatial Development Framework 2014 & 2017 Revision (2017), Merafong City LM Integrated Development Plan 2020 – 2021 (2021) was used to generate most information provided in the baseline profile of the study area. The possibility therefore exists that the data utilised may be out of date and may not provide an accurate reflection of the current status quo.
- This SIA Report was prepared based on information which 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 Scoping Phase will be included within the final EIA report, where relevant.
- Some of the project projections reflected in this SIA Report (i.e., with regards to job creation and local content) are based on information currently available and may be subject to change, and therefore may be higher or lower than those estimated by the project proponent.

2.4.2. Assumptions

The first assumption identified is the strategic importance of promoting renewable energy like solar energy. This however is supported by the national and provincial policies discussed in Section 3 of this report. In addition to this the fit with key planning and policy documents is a key component of the SIA process, in order to identify and assess the potential social impacts of the development. In the case where the findings of this review reflect that the proposed development does not conform to the related policy documents, then the proposed development can't be supported. However, as indicated above this proposed study does recognise the strategic importance of promoting solar energy. Secondly, it is assumed that the proposed development site for the Angus SPP is technically suitable for the establishment thereof.

Lastly, it is also assumed that the motivation for, and planning and feasibility study of the project were undertaken with integrity, and that information provided by the project proponent was accurate and true at the time of preparing this SIA Report.

3. LEGISLATION AND POLICY REVIEW

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 of (1998)
- White Paper on Renewable Energy of (2003)
- The National Energy Act no 34 of (2008)
- Integrated Energy Plan (IEP) (2016)
- Integrated Resource Planning for Electricity for South Africa of 2010-2030 (2019)
- National Development Plan (NDP) of 2030 (2012)
- National Infrastructure Plan of South Africa (2012)
- National Climate Change Response Policy Paper (2011)
- Strategic Infrastructure Projects (SIPs)
- New Growth Path Framework (2010)
- 2021 State of the Nation Address

Provincial Policy and Planning Context:

- Gauteng Spatial Development Framework 2030 (2015)

District Level Policy and Planning Context:

- West Rand District Municipality Integrated Development Plan 2016/17 to 2020/21 (2020/2021)
- West Rand District Municipality Spatial Development Framework 2014 & 2017 Revision (2017)

Local Level Policy and Planning Context:

- Merafong City Local Municipality Integrated Development Plan 2020 – 2021 (Review 2016 – 2021)

3.1. National Policy and Planning Context

Any project which contributes positively towards the objectives mentioned within national policies could be considered strategically important for the country. A review of the national policy environment suggests that the increased utilisation of Renewable Energy (RE) sources is considered integral to reducing South Africa's carbon footprint, diversifying the national economy, and contributing towards social upliftment and economic development. As the project comprises a RE

project and would contribute RE supply to provincial and national targets set out and supported within these national policies, it is considered that the project fits within the national policy framework.

A brief review of the most relevant national legislation and policies is provided below.

3.1.1. Constitution of the Republic of South Africa (1996)

The Constitution of the Republic of South Africa (1996) is the supreme law of South Africa and forms the foundations for a democratic society in which fundamental human rights are protected. The Bill of Rights contained in Chapter 2 of the Constitution enshrines the rights of all people in South Africa and affirms the democratic values of human dignity, equality, and freedom. Section 24 of the Constitution pertains specifically to the environment. It states that:

24. Everyone has the right –

- (a) To an environment that is not harmful to their health or well-being, and*
- (b) To have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that:
 - (i) Prevent pollution and ecological degradation.*
 - (ii) Promote conservation.*
 - (iii) 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. National Environmental Management Act (No. 107 of 1998) (NEMA)

The National Environmental Management Act (No. 107 of 1998) (NEMA) is South Africa's key piece of environmental legislation and sets the framework for environmental management in South Africa. It provides for co-operative environmental governance by establishing principles for decision-making on matters affecting the environment. NEMA is founded on the principle that everyone has the right to an environment that is not harmful to their health or well-being as contained within the Bill of Rights. In accordance with this it states that:

- The State must respect, protect, promote, and fulfil the social, economic and environmental rights of everyone and strive to meet the basic needs of previously disadvantaged communities.
- Sustainable development requires the integration of social, economic, and environmental factors in the planning, implementation, and evaluation of decisions to ensure that development serves present and future generations.
- Everyone has the right 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.

In addition, the national environmental management principles contained within NEMA state that:

- Environmental management must place people and their needs at the forefront of its concern, and serve their physical, psychological, developmental, cultural, and social interests equitably.
- Development must be socially, environmentally and economically sustainable.
- The social, economic and environmental impacts of activities, including disadvantages and benefits, must be considered, assessed and evaluated, and decisions must be appropriate in the light of such consideration and assessment.

The need for responsible and informed decision-making by government on the acceptability of environmental impacts is therefore enshrined within NEMA.

3.1.3. White Paper on the Energy Policy of the Republic of South Africa (1998)

The White Paper on Energy Policy places emphasis on the expansion of energy supply options to enhance South Africa's energy security. This can be achieved through increased use of RE and encouraging new entries into the generation market. South Africa has an attractive range of cost-effective renewable resources, taking into consideration social and environmental costs. Government policy on RE is thus concerned with meeting the following challenges:

- Ensuring that economically feasible technologies and applications are implemented.
- Ensuring that an equitable level of national resources is invested in renewable technologies, given their potential and compared to investments in other energy supply options.
- Addressing constraints on the development of the renewable industry.

The policy states that the advantages of RE include, minimal environmental impacts during operation in comparison with traditional supply technologies, generally lower running costs, and high labour intensities. Disadvantages include higher capital costs in some cases, lower energy densities, and lower levels of availability, depending on specific conditions, especially with sun and wind-based systems. Nonetheless, renewable resources generally operate from an unlimited resource base and, as such, can increasingly contribute towards a long-term sustainable energy future. The White Paper on Energy Policy therefore supports the advancement of RE sources and ensuring energy security through the diversification of supply.

3.1.4. White Paper on the Energy Policy of the Republic of South Africa (2003)

The White Paper on Renewable Energy Policy Supplements Government's predominant policy on energy as set out in the White Paper on the Energy Policy of the Republic of South Africa (DME, 1998). The policy recognises the potential of RE and aims to create the necessary conditions for the development and commercial implementation of RE technologies. The position of the White Paper on RE is based on the integrated resource planning criterion of:

"Ensuring that an equitable level of national resources is invested in renewable technologies, given their potential and compared to investments in other energy supply options."

The White Paper on RE sets out Government's vision, policy principles, strategic goals and objectives for promoting and implementing RE in South Africa. The country relies heavily on coal to meet its energy needs due to its abundant, and accessible and affordable coal resources. However, massive RE resources that can be sustainable alternatives to fossil fuels, have so far remained largely untapped. The White Paper on Renewable Energy Policy fosters the uptake of RE in the economy and has a number of objectives that include: ensuring equitable resources are invested in renewable technologies, directing public resources for implementation of RE technologies, introducing suitable fiscal incentives for RE and, creating an investment climate for the development of the RE sector.

The White Paper on Renewable Energy of 2003 set a target of 10 000GWh to be generated from RE by 2013 to be produced mainly from biomass, wind, solar and small-scale hydro. The target was subsequently reviewed in 2009 during the RE summit of 2009. The objectives of the White Paper on Renewable Energy Policy are considered in six focal areas, namely, financial instruments, legal instruments, technology development, awareness raising, capacity building and education, and market based and regulatory instruments. The policy supports the investment in RE facilities as they contribute towards ensuring energy security through the diversification of energy supply, reducing GHG emissions and the promotion of RE sources.

3.1.5. National Energy Act (No. 34 of 2008)

The purpose of the National Energy Act (No. 34 of 2008) is 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, while taking environmental management requirements into account. In addition, the Act also provides for energy planning, and increased generation and consumption of Renewable Energies (REs).

The objectives of the Act, are amongst other things, to:

- Ensure uninterrupted supply of energy to the Republic.
- Promote diversity of supply of energy and its sources.
- Facilitate energy access for improvement of the quality of life of the people of the Republic.
- Contribute to the sustainable development of South Africa's economy.

The National Energy Act therefore recognises the significant role which electricity plays growing the economy while improving citizens' quality of life. The Act provides the legal framework which supports the development of RE facilities for the greater environmental and social good and provides the backdrop against which South Africa's strategic planning regarding future electricity provision and supply takes place. It also provides the legal framework which supports the development of RE facilities for the greater environmental and social good.

3.1.6. Integrated Energy Plan (IEP) (2016)

The Integrated Energy Plan (IEP) (which was developed under the National Energy Act (No. 34 of 2008)), recognises that energy is essential to many human activities, and is critical to the social and economic development of a country. The purpose of the IEP is essentially to ensure the availability of energy resources, and access to energy services in an affordable and sustainable manner, while minimising associated adverse environmental impacts. Energy planning therefore needs to balance

the need for continued economic growth with social needs, and the need to protect the natural environment.

The IEP is a multi-faceted, long-term energy framework which has multiple aims, some of which include:

- To guide the development of energy policies and, where relevant, set the framework for regulations in the energy sector.
- To guide the selection of appropriate technologies to meet energy demand (i.e., the types and sizes of new power plants and refineries to be built and the prices that should be charged for fuels).
- To guide investment in and the development of energy infrastructure in South Africa.
- To propose alternative energy strategies which are informed by testing the potential impacts of various factors such as proposed policies, introduction of new technologies, and effects of exogenous macroeconomic factors.

A draft version of the Integrated Energy Plan (IEP) was released for comment on 25 November 2016. The purpose of the IEP is to provide a roadmap of the future energy landscape for South Africa which guides future energy infrastructure investments and policy development. The development of the IEP is an ongoing continuous process. It is reviewed periodically to take into account changes in the macroeconomic environment, developments in new technologies and changes in national priorities and imperatives, amongst others.

The 8 key objectives of the integrated energy planning process, are as follows:

- Objective 1: Ensure security of supply.
- Objective 2: Minimise the cost of energy.
- Objective 3: Promote the creation of jobs and localisation.
- Objective 4: Minimise negative environmental impacts from the energy sector.
- Objective 5: Promote the conservation of water.
- Objective 6: Diversify supply sources and primary sources of energy.
- Objective 7: Promote energy efficiency in the economy.
- Objective 8: Increase access to modern energy.

3.1.7. Integrated Resources Plan (IRP) (2019)

The Integrated Resource Plan (IRP) for electricity 2010 – 2030 is a subset of the IEP and constitutes South Africa's National electricity plan. The primary objective of the IRP is to determine the long-term electricity demand and detail how this demand should be met in terms of generating capacity, type, timing and cost. The IRP also serves as input to other planning functions, including amongst others, economic development and funding, and environmental and social policy formulation.

The current iteration of the IRP led to the Revised Balanced Scenario (RBS) that was published in October 2010. Following a round of public participation which was conducted in November / December 2010, several changes were made to the IRP model assumptions. The document outlines the proposed generation new-build fleet for South Africa for the period 2010 to 2030. This scenario

was derived based on a cost-optimal solution for new-build options (considering the direct costs of new build power plants), which was then “balanced” in accordance with qualitative measures such as local job creation.

The Policy-Adjusted IRP reflected recent developments with respect to prices for renewables. In addition to all existing and committed power plants, the plan includes 9.6GW of nuclear, 6.25GW of coal, 17.8GW of renewables, and approximately 8.9GW of other generation sources such as hydro, and gas.

Besides capacity additions, several assumptions have changed since the promulgation of IRP 2010–2030. Key assumptions that changed include the electricity demand projection, Eskom’s existing plant performance, as well as new technology costs. These changes necessitated the review and update of the IRP which resulted in the draft IRP 2018 as per **Table 3.1** below:

Table 3.1: Published Draft IRP 2018 (Approved by Cabinet for Consultation)

	Coal	Nuclear	Hydro	Storage (Pumped Storage)	PV	Wind	CSP	Gas / Diesel	Other (CoGen, Biomass, Landfill)	Embedded Generation
2018	39 126	1 860	2 196	2 912	1 474	1 980	300	3 830	499	Unknown
2019	2 155					244	300			200
2020	1 433				114	300				200
2021	1 433				300	818				200
2022	711				400					200
2023	500									200
2024	500									200
2025					670	200				200
2026					1 000	1 500		2 250		200
2027					1 000	1 600		1 200		200
2028					1 000	1 600		1 800		200
2029					1 000	1 600		2 850		200
2030			2 500		1 000	1 600				200
TOTAL INSTALLED	33 847	1 860	4 696	2 912	7 958	11 442	600	11 930	499	2 600
Installed Capacity Mix (%)	44.6	2.5	6.2	3.8	10.5	15.1	0.9	15.7	0.7	
<p> Installed Capacity Committed / Already Contracted Capacity New Additional Capacity (IRP Update) </p>										

According to the South African Energy Sector Overview (2021), there is currently 1 723MW of installed PV capacity, while an additional 2 600MW and 860MW from wind and solar has been rewarded as part of Bid window 5 and 6, respectively.

3.1.8. National Development Plan 2030 (2012)

The National Development Plan (NDP) 2030 is a plan prepared by the National Planning Commission in consultation with the South African public which is aimed at eliminating poverty and reducing inequality by 2030. The NDP aims to achieve this by drawing on the energies of its people, growing and inclusive economy, building capabilities, enhancing the capacity of the state and promoting

leaderships and partnerships throughout society. While the achievement of the objectives of the NDP requires progress on a broad front, three priorities stand out, namely:

- Raising employment through faster economic growth.
- Improving the quality of education, skills development and innovation.
- Building the capability of the state to play a developmental, transformative role.

In terms of the Energy Sectors role in empowering South Africa, the NDP envisages that, by 2030, South Africa will have an energy sector that promotes:

- Economic growth and development through adequate investment in energy infrastructure. The sector should provide reliable and efficient energy service at competitive rates, while supporting economic growth through job creation.
- Social equity through expanded access to energy at affordable tariffs and through targeted, sustainable subsidies for needy households.
- Environmental sustainability through efforts to reduce pollution and mitigate the effects of climate change.

The NDP aims to provide a supportive environment for growth and development, while promoting a more labour-absorbing economy. The proposed project will assist in reducing carbon emissions targets and creating jobs in the local area as well as assist in creating a competitive infrastructure based on terms of energy contribution to the national grid.

3.1.9. National Climate Change Response White Paper (2011)

South Africa will build the climate resilience of the country, its economy and its people and manage the transition to a climate-resilient, equitable and internationally competitive lower-carbon economy and society in a manner that simultaneously addresses South Africa's over-riding national priorities for sustainable development, job creation, improved public and environmental health, poverty eradication, and social equality. In this regard, South Africa will:

- Effectively manage inevitable climate change impacts through interventions that build and sustain South Africa's social, economic and environmental resilience and emergency response capacity.
- Make a fair contribution to the global effort to stabilise GHG concentrations in the atmosphere at a level that avoids dangerous anthropogenic interference with the climate system within a timeframe that enables economic, social and environmental development to proceed in a sustainable manner.

The achievement of South Africa's climate change response objective is guided by the principles set out in the Constitution, the Bill of Rights, the National Environmental Management Act (NEMA), the MDGs and the UNFCCC. The principles include, amongst others:

- **Common but differentiated responsibilities and respective capabilities** – aligning our domestic measures to reduce the country's GHG emissions and adapt to the adverse

effects of climate change with our unique national circumstances, stage of development and capacity to act.

- **Equity** – ensuring a fair allocation of effort, cost and benefits in the context of the need to address disproportionate vulnerabilities, responsibilities, capabilities, disparities and inequalities.
- **Special needs and circumstances** – considering the special needs and circumstances of localities and people that are particularly vulnerable to the adverse effects of climate change, including vulnerable groups such as women, and especially poor and/or rural women; children, especially infants and child headed families; the aged; the sick; and the physically challenged.
- **Uplifting the poor and vulnerable** – climate change policies and measures should address the needs of the poor and vulnerable and ensure human dignity, whilst endeavouring to attain environmental, social and economic sustainability.
- **Intra- and Inter-generational sustainability** – managing our ecological, social and economic resources and capital responsibly for current and future generations.
- **The Precautionary Principle** – applying a risk-averse and cautious approach, which takes into account the limits of current knowledge about the consequences of decisions and actions.
- **The Polluter Pays Principle** – those responsible for harming the environment paying the costs of remedying pollution and environmental degradation and supporting any consequent adaptive response that may be required.
- **Informed participation** – enhancing public awareness and understanding of climate change causes and impacts to promote participation and action at all levels.
- **Economic, social and ecological pillars of sustainable development** – recognising that a robust and sustainable economy and a healthy society depends on the services that well-functioning ecosystems provide, and that enhancing the sustainability of the economic, social and ecological services is an integral component of an effective and efficient climate change response.

3.1.10. Strategic Infrastructure Projects (SIPs)

The Presidential Infrastructure Coordinating Committee (PICC) are integrating and phasing investment plans across 18 Strategic Infrastructure Projects (SIPs) which have the following 5 core functions:

- To unlock opportunity.
- Transform the economic landscape.
- Create new jobs.
- Strengthen the delivery of basic services.
- Support the integration of African economies.

A balanced approach is being fostered through greening of the economy, boosting energy security, promoting integrated municipal infrastructure investment, facilitating integrated urban development, accelerating skills development, investing in rural development and enabling regional integration.

SIP 8 of the energy SIPs supports the development of RE projects as follow:

- SIP 8: Green energy in support of the South African economy:

Support sustainable green energy initiatives on a national scale through a diverse range of clean energy options as envisaged in the Integrated Resource Plan (IRP 2010) and supports bio-fuel production facilities.

The development of the proposed project is therefore also aligned with SIP 8 as it constitutes a green energy initiative which would contribute clean energy in accordance with the IRP 2010 – 2030.

3.2. Provincial Policies

This section provides an overview of the most relevant provincial policies. Angus SPP is considered to align with the aims of these policies, even if contributions to achieving the goals therein are only minor.

3.2.1. Gauteng Spatial Development Framework 2030 (2015)

The Gauteng of 2030 is an integrated, connected space that provides for the needs of all who are born in or drawn to the province. Economic growth is spread widely, beyond the core areas, to nodes and multi-modal activity corridors. These nodes and corridors provide safe, high-intensity and high-density mixed land-use settlements, where the young and old are able to walk, cycle and relax in public spaces. A range of public transport modes ensures affordable, province-wide interconnectedness and access to the full spectrum of economic, cultural and educational opportunities, placing the province on a far more sustainable growth trajectory. Places that were once seen as marginal, rural and peripheral are now desirable urban villages with dynamic economies. Differences in income are far less severe, and even those who earn the lowest incomes are living a life of dignity and have access to the benefits of living in the economic heartland of the country. The more compact urban form enables household services to be provided with less expense and reduces maintenance and upgrading costs. Unbuilt areas are protected and used for agriculture, agricultural processing, relaxation and tourism, and the province is an energy-efficient, and less wasteful and polluting, urban conurbation.

To realise the spatial development vision, all developments in the province need to adhere to six spatial development principles:

- liveability
- concentration
- connectivity
- conservation
- diversity
- viability

The GSDF 2030 aspires to establish a balanced, polycentric spatial network, with strong and resilient nodes enabling mutually beneficial exchanges of goods and services, and movement of people. Establishing this desired spatial form in the province will not be accomplished overnight but will take years, even decades. It will entail facilitating the movement of the economic heartland into the erstwhile periphery of the Apartheid city, and bringing the erstwhile margins into the economic heart

of the province to the extent that this is practical. This transition will not be an easy task and will require the collaboration of all three spheres of government, government entities and the private sector.

To support the establishment of this polycentric form, four spatial development strategies are to be followed:

- Capitalising on proximity, by directing higher densities closer to economic nodes and public transport networks, and improving conditions in areas closer to economic opportunities, to ensure even greater benefits for the people and economy of these areas.
- Managing new settlement development, to prioritise infill development and densification, rather than expanding residential development outwards, so new settlements are functional and integrated units of the polycentric provincial network and based not only on the availability of land.
- Building an economic network, through a system of high-order nodes and activity corridors, developing economic clusters that benefit from synergies and unlock the advantages of agglomeration.
- Creating a viable and productive hinterland, by protecting valuable resources and high potential agricultural land from harmful development and managing water resources fugally and effectively.
- The key, cross-cutting components of the four strategies are: proximity to economic opportunities, accessibility and connectivity, agglomeration benefits and nodal development, and environmental management.

Ten high-priority provincial spatial development proposals are outlined:

- Intensify nodes, public transport routes and stations, to optimise the benefits of nodes and public transport routes in polycentric networks.
- Strengthen, maintain and enhance nodes, as identified by each municipality, to ensure that development takes place within the nodes.
- Promote spatial integration and township regeneration, through the use of land banking and government land assets, and support for urban hubs.
- Manage municipal urban growth, by enforcing urban growth boundaries, in order to reduce sprawl, manage infrastructure expenditure and ensure better socio-economic integration.
- Expand and integrate municipal bus rapid transit (BRT) networks, to achieve greater connectivity between major nodes and nodes and settlements with low levels of economic activity.
- Enhance major road and rail networks, to ensure greater connectivity and a balanced provincial spatial network.
- Provide multi-pronged sustained support to outlying residential areas developed during colonial and Apartheid areas, including human capital development, mobility support and local economic development programmes.
- Strengthen and enhance agricultural production and agricultural processing, to optimise the use of high-value agricultural land in the province, create jobs, grow the economy and improve food security.

- Actively manage and protect the environment and eco-systems, including rehabilitating degraded areas and exploring legislating a provincial green belt.
- Improve and optimise provincial tourism opportunities, through directing tourism-related activities to identified tourism areas, and creating strong links between tourism towns and surrounding eco-tourism opportunities

3.3. District and Local Municipality Policies

The strategic policies at DM and LM level have similar objectives for the respective areas, namely, to accelerate economic growth, create jobs, and uplift communities. Angus SPP is considered to also align with the aims of these policies, even if contributions to achieving the goals therein are only minor.

3.3.1. West Rand District Municipality Integrated Development Plan 2016/17 to 2020/21 (2020/2021)

The West Rand District Municipality Vision, Mission and Values were reviewed for relevance, against this, it was agreed to add Transparency and Accountability to the core values, in order to capture the sceptre of the whole Good Governance, since only one principles of Good Governance were captured then, which was Responsibility.

VISION:

Integrating District Governance to achieve a better life for all

MISSION:

To provide an integrated and excellent developmental district governance system in the West Rand

SLOGAN:

Green is the new Gold

CORE VALUES

- Service excellence
- Pride
- Integrity
- Responsibility
- Transparency
- Accountability
- Innovation
- Teamwork

3.3.2. West Rand District Municipality Spatial Development Framework 2014 & 2017 Revision (2017)

The vision of the West Rand District Municipality (WRDM) Regional Growth and Development Strategy is to *“develop and sustain an integrated, socio-economically and economically thriving and green environment with a unified society.”*

In order to achieve the above Vision, the Regional Growth and Development Strategy identified the following critical requirements:

- *Ensure the WRDM is connected* – with more people enjoying the benefits of flourishing activity centres where shops, jobs, services and recreation are within walking and travelling distance of their homes, with fast and reliable travel to and from local centres and regional opportunities, with a comprehensive, efficient and networked public transport system and pedestrian routes and access to rural and tourism areas.
- *Ensure the WRDM is attractive* – with quality urban and rural areas that are well-maintained, new developments which comply with high design standards, clean and safe environments and well-preserved heritage and natural areas.
- *Ensure the WRDM is sustainable* – with resources well managed and planned for, viable and cost-effective service provision; and where the environment is valued as a vital resource and meaningful open space is provided for all.
- *Ensure the WRDM is well managed* – where development decisions are predictable, fair and cost-effective, partnerships are developed, planning takes place on a continuous basis, formal systems for data collections are in place, and data is used to support and improve planning.

Subsequently, the study then identified the following six strategic priorities/key focus areas for the West Rand District Area and these form the basis of the West Rand Regional Growth and Development Strategy:

- Spatial Integration
- Physical Infrastructure
- Economic Development
- Environmental Management
- Social Development
- Governance

3.3.3. Merafong City Local Municipality Integrated Development Plan 2020 – 2021 (Review 2016 – 2021)

Vision

The municipality's vision states as "A prosperous, Sustainable and Community-oriented City"

Mission

The mission of the municipality states as "To provide quality services to our community through accountable governance".

Values

Values reflect the core guidelines of the organisation and following them ensures we remain on the right path. A customer-centric approach shapes the values of Merafong City Local Municipality. This defines the character of the municipality and the foundation on which leadership and employees behave and conduct themselves and guide the way in which decisions are made. Furthermore, our change in approach requires for us to prioritise values that create a new behaviour within the municipality. Merafong City Local Municipality's values are as follows:

- Integrity
- Accountable

- Committed
- Teamwork
- Proactive
- Service excellence

3.4. Conclusion

The review of relevant legislation, policies and documentation pertaining to the energy sector indicate that renewable or green energy (i.e., energy generated by naturally occurring renewable resources) and therefore, the establishment of Angus SPP is supported at a national, provincial, and metro level, and that the proposed project will contribute positively towards several targets and policy aims. Specifically, those relating to social and economic development and upliftment, and employment creation.

4. SOCIO-ECONOMIC PROFILE

This Chapter provides an overview of the socio-economic environment within which Angus SPP is proposed for development and provides the socio-economic basis against which potential issues can be identified.

4.1. Gauteng Province

Gauteng, South Africa's smallest but most densely populated province, is located in the north-eastern interior part of the country. It shares borders with four other South African provinces, with the Free State Province to the south, Limpopo to the north, Mpumalanga to the east, and North West Province to the west. The province is the only landlocked province in South Africa sharing no international borders.

The name "*Gauteng*" means "*place of gold*" in Sesotho, which reflects the historical importance of gold mining in the province. While it was once the mining and industrial centre of South Africa, it is now the financial capital and the most important economic node on the continent. The province's urbanization rate is over 97%, with Johannesburg (South Africa's financial capital) and Pretoria (the country's administrative capital) as its largest cities. Other important business, industrial, and mining centres include Kempton Park, Germiston, Springs, Alberton, Boksburg, Benoni, Vereeniging, Vanderbijlpark, Krugersdorp, Randfontein, and Westonaria.

Although the province is predominantly urbanized, some farming activities, such as corn (maize), sorghum, peanuts (groundnuts), and dairy farming, are practiced. Gauteng has vast concentrations of gold, mainly located in the south's ridge of gold-bearing rock known as the Witwatersrand, where Johannesburg is situated. The Bushveld Basin to the north has large reserves of platinum, chromite, iron ore, and uranium. The varied mining, industrial, commercial, and financial activities arising from this vast mineral wealth have made Gauteng the economic hub of South Africa.

Geographically, Gauteng Province comprises the Highveld, a high-altitude grassland with low parallel ridges and undulating hills, some parts of the Magaliesberg Mountains, and the Witwatersrand. The province's northern area is more subtropical and mostly dry savanna habitat due to its lower altitude.

Gauteng has the highest density of national roads passing through it, making it the best-connected province in the country. The four national roads serving the eastern parts of the province (N4, N12, N17, and N3) are linked to three major harbours in Southern Africa: Maputo, Richards Bay, and Durban. Additionally, OR Tambo International Airport and Lanseria are situated within the province.

Gauteng is divided into three metropolitan municipalities, the City of Ekurhuleni, City of Johannesburg and City of Tshwane Metropolitan Municipalities, as well as two district municipalities, which are further subdivided into six local municipalities.

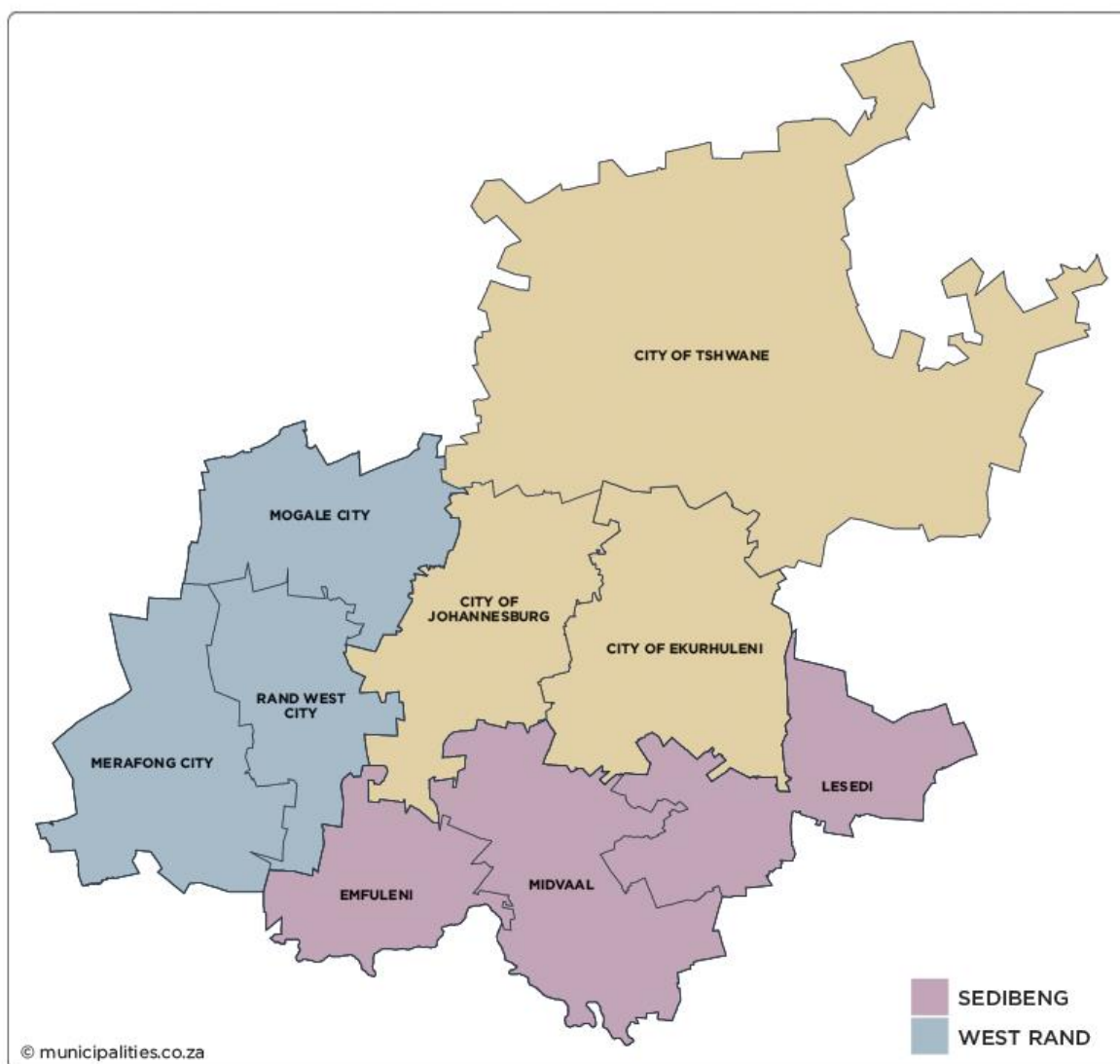


Figure 4.1: Map showing the DMs of the Gauteng Province (Source: www.municipalities.co.za)

4.2. West Rand District Municipality

The West Rand District Municipality (DM) is a Category C municipality located in the western region of Gauteng Province. The municipality shares borders with City of Tshwane to the north east, City of Johannesburg to the east, Emfuleni DM to the south east, and the remaining border with the North West Province. The district encompasses major towns such as Carletonville, Fochville, Krugersdorp, Magaliesberg, Muldersdrift, Randfontein, and Westonaria. It is named after the West Rand, a region renowned for its mining activities.

The West Rand DM is strategically situated close to the economic hub of Gauteng and is intersected by major national roads, specifically the N12 and N14. Although mining activities primarily drive the district's economy, areas such as Krugersdorp play a residential role for many individuals who work in Johannesburg. Despite this, the West Rand remains the poorest region contributing to Gauteng's GDP. The West Rand DM's economy also includes other sectors such as manufacturing, community service, agriculture, and finance.

The Cradle of Humankind, a World Heritage Site, falls under the jurisdiction of Mogale City and Merafong City. The West Rand DM encompasses several other tourist attractions, including parks and nature reserves, the Walter Sisulu National Botanical Garden, and the Rhino and Lion Nature Reserve.

The West Rand DM is subdivided into three local municipalities: Merafong City LM, Rand West City LM, and Mogale City LM.



Figure 4.2: Map showing the LMs of the West Rand DM (Source: www.municipalities.co.za)

4.3. Merafong City Local Municipality

Merafong City Local Municipality is a Category B municipality situated in the western region of Gauteng Province, part of the West Rand District Municipality. The municipality shares its western border with the JB Marks Local Municipality in North West Province, while to the north lies Mogale City, to the east lies Rand West City, and to the south-east lies Emfuleni. The major towns in the municipal region are Carletonville, Fochville, and Wedela.

Fochville, the oldest town in the region, was declared a town in 1951. Carletonville, named after Guy Carleton Jones an engineer who played a prominent role in the discovery of the West Wits gold fields, was established in 1948 and attained Town Council Status in 1959. Wedela, established as a mining

village in 1978 situated between Western Deep Levels and Elandsrand by Harry Oppenheimer, was granted municipal status in 1990.

The municipality was transferred from Gauteng to North West Province in 2005 due to the abolition of cross-border municipalities in the South African Constitution. It was reincorporated into Gauteng Province in 2009 following a violent protest in the township of Khutsong.

The region is serviced by major roads, including the N12 from Johannesburg to Cape Town and the N12 from Gauteng to Mahikeng. It is also home to some of the richest gold mines in the world, which have played a significant role in the municipality's historical development. The town of Carletonville is the economic hub of the municipality and serves as the centre for mining-related activities. The economy of the municipality is largely driven by the mining industry, with manufacturing and agriculture also playing important roles.

4.4. Project Site

The proposed Bonsmara SPP development will be located on the farm Leeuwpan No. 697, situated mostly in the Merafong City LM a subdivision of the West Rand DM Gauteng Province. The proposed development footprint area will consist of approximately 521ha with a 4272ha EIA area. The town Carletonville is located approximately 17km to the south of the proposed development. The N14 national route is situated approximately 1km south of the proposed development, while the R500 regional route is situated approximately 2.3km east of the proposed development. Refer to **Figure 4.3** illustrating the locality of the project site.

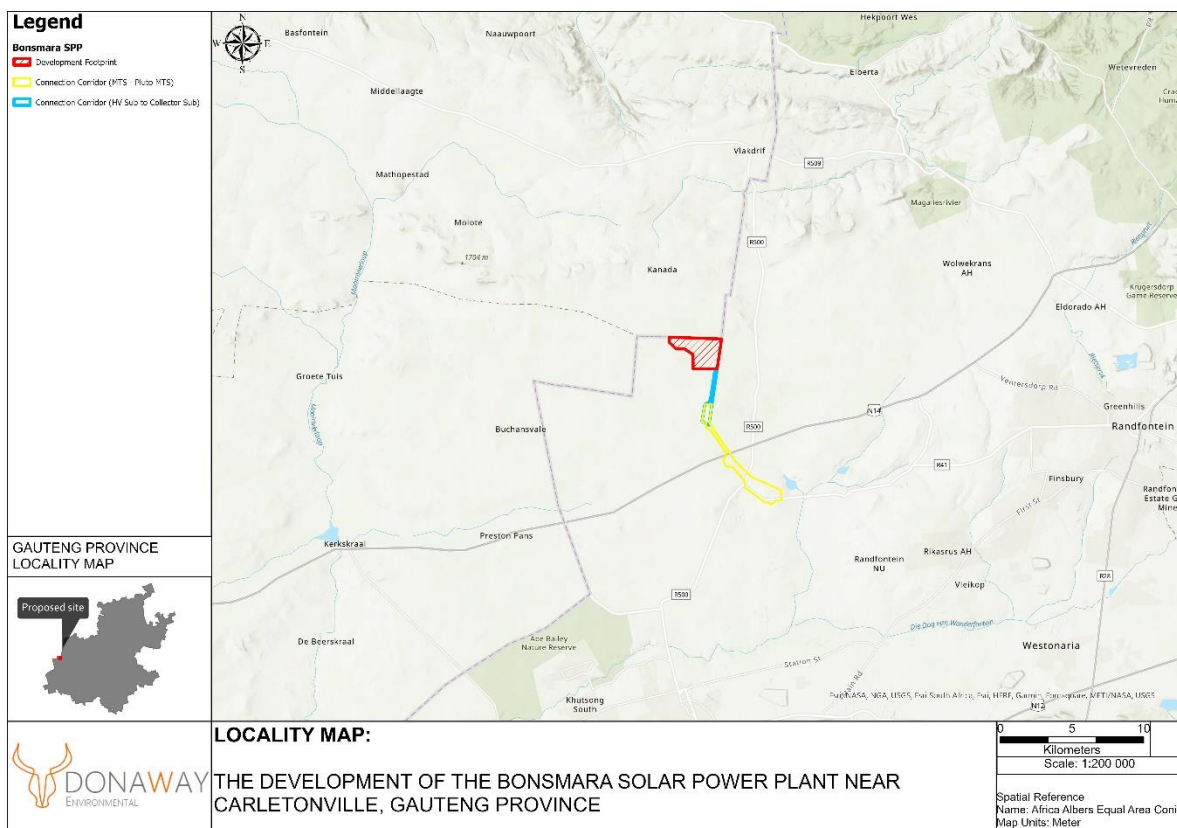


Figure 4.3: Locality map for the proposed Bonsmara SPP, near Carletonville, Gauteng Province

A site visit was conducted on the 28th of February 2023 on the farm Leeuwpan No. 697, Gauteng Province. Please refer to the photos below for a better understanding of the proposed site.



Figure 4.4: Approximate centre of the site, taken towards the north



Figure 4.5: Approximate centre of the site, taken towards the north-east



Figure 4.6: Approximate centre of the site, taken towards the east



Figure 4.7: Approximate centre of the site, taken towards the south-east



Figure 4.8: Approximate centre of the site, taken towards the south



Figure 4.9: Approximate centre of the site, taken towards the south-west



Figure 4.10: Approximate centre of site taken towards the west

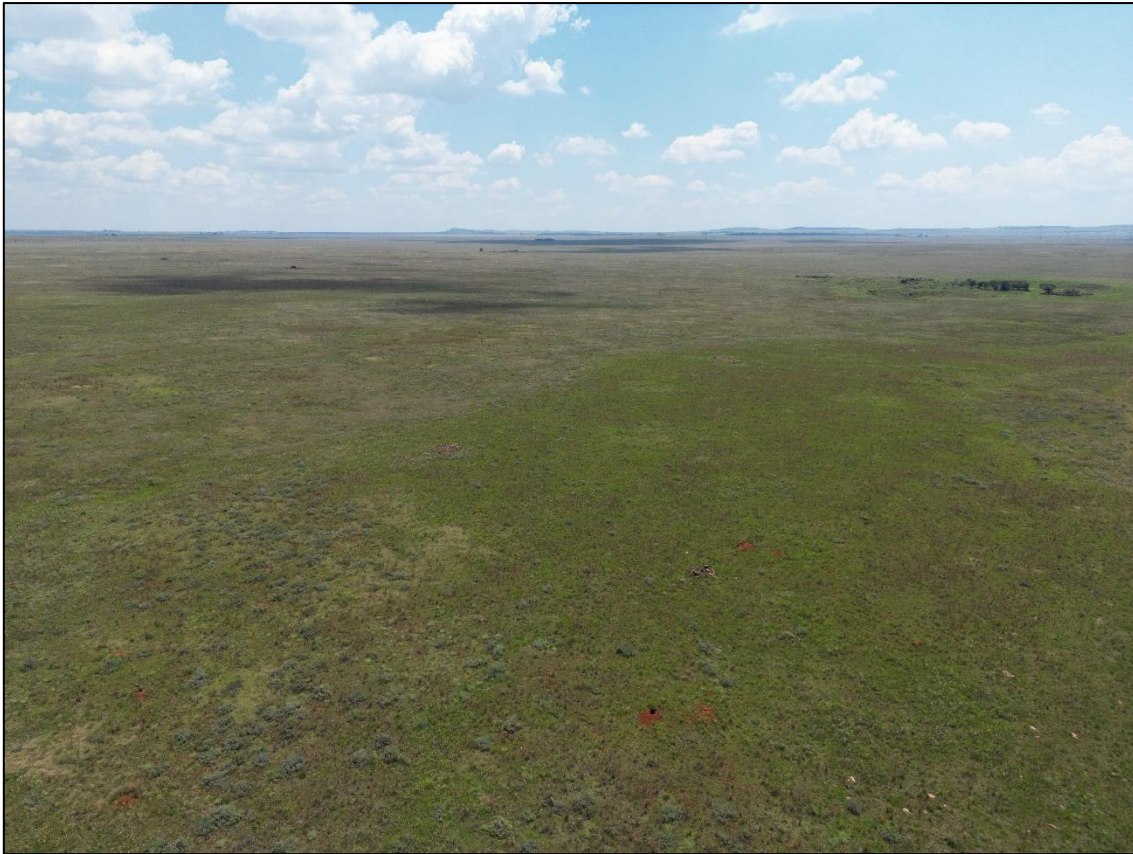


Figure 4.11: Approximate centre of site taken towards the north-west



Figure 4.12: N14 national road close to site, taken towards the east



Figure 4.13: Gravel road providing access to site, taken towards the east

4.5. Adjacent Properties

Most of the surrounding area has a low number of farmsteads/ buildings that are sparsely populated. The area is located in the agricultural region of the area with livestock and crop cultivation the most prominent activities, additionally some mining activities occur in the region. The table and figures below provide a summary of the current land uses and characteristics of the adjacent properties.

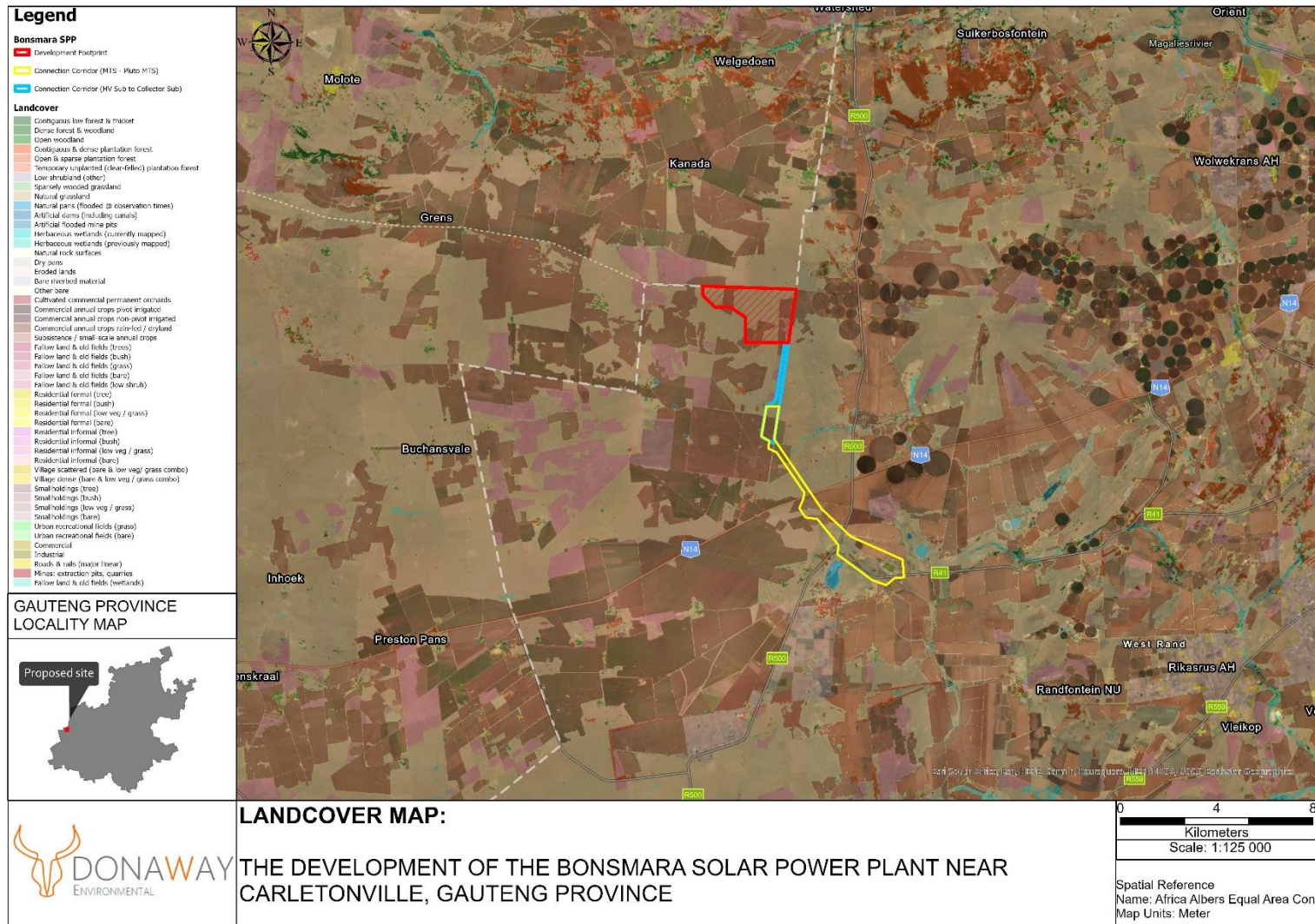


Figure 4.14: Landcover map of the proposed Bonsmara SPP near Carletonville, Gauteng Province

Table 4.1: Adjacent landowners Bonsmara SPP

Farm Name & Portion	Location	Landowner names	Any residents living on the farm (i. e. farm workers, tenants, landowners)	Homesteads/ Buildings on farm	Current activities taking place on the farm (cattle farming etc.)	Comments noted
Farm Leeuwpan No. 697	Proposed development property owner	Theodon Boerdery (Pty) Ltd	One worker	One old farmstead	Little or no activities	Spoke to Mr. Stephan Fourie. He is happy with the contractual agreement. There are very little farming activities taking place on the property.
Farm Leriana No. 41	Adjacent property owner (West)	Leriana Boerdery (Pty) Ltd	18 Worker families	One homestead, ten worker houses, one church, six barns	Combination of livestock and sowing	Spoke to Gert Watson (farm manager). The owners and occupants know about the proposed development. They have no objections in terms of the proposed development and hopes that it could bring relief to the community.
Farm Ireton No. 696	Adjacent property owner (West)	Pahtiki Boerdery (Pty) Ltd	None	One old farmstead	Cattle farming	Mr. Stephan Fourie knows about the proposed development and has no objections towards the development.
Portion 10 of the farm Moadowns No. 39	Adjacent property owner (North)	Hulda Heila van der Merwe	No information available	No information available	No information available	Spoke to Mrs. Van der Merwe. She could not provide any information regarding the proposed development or current facilities or activities on the property.
Remaining extent of portion 6 of the farm Moadowns No. 39	Adjacent property owner (North)	Hulda Heila van der Merwe	No information available	No information available	No information available	Spoke to Mrs. Van der Merwe. She could not provide any information regarding the proposed development or current facilities or activities on the property.
Portion 13 of the farm Moadowns No. 39	Adjacent property owner (North)	Hulda Heila van der Merwe	No information available	No information available	No information available	Spoke to Mrs. Van der Merwe. She could not provide any information regarding the proposed development or current facilities or activities on the property.
Portion 8 of the farm Moadowns No. 39	Adjacent property owner (North-West)	Hulda Heila van der Merwe	No information available	No information available	No information available	Spoke to Mrs. Van der Merwe. She could not provide any information regarding the proposed development or current facilities or activities on the property.
Remaining extent of portion 12 of the farm Moadowns No. 39	Adjacent property owner (North)	Republic of South Africa National Government	No information available	No information available	No information available	No contact information was supplied.

Remaining extent of the farm Vooruitsig No. 48	Adjacent property owner (North-East)	Millennium Direct (Pty) Ltd	Two landowner families, four worker families	Three Farmsteads, three barns, one dairy portal	Combination of livestock and sowing	Spoke to Mr. Hudson. He has no objections to the proposed development. He is positive regarding the possible benefits of the development.
Portion 5 of the farm Holfontein No. 49	Adjacent property owner (East)	Willem Petrus Lubbe	None	None	Cattle farming	Spoke to Mr. Lubbe. He is not happy about the proposed development as he feels that the proposed development would have a negative impact on the area's meat production.
Portion 34 of the farm Holfontein No. 49	Adjacent property owner (East)	Willem Petrus Lubbe	Two worker families	Two worker houses	Cattle farming	Spoke to Mr. Lubbe. He is not happy about the proposed development as he feels that the proposed development would have a negative impact on the area's meat production.
Portion 11 of the farm Wildfontein No. 52	Adjacent property owner (South)	Anna Magdalene Van Wyk (Trustees)	No information available	No information available	No information available	No contact information was supplied.
Remaining extent of portion 100 of the farm Wildfontein No. 52	Adjacent property owner (South)	Bospan Boerdery (Pty) Ltd	30 Woker families	One homestead. 30 worker houses	Crop cultivation	Spoke to Mrs. Fourie. She is aware of the proposed development and has no objections.
Portion 7 of the farm Moadowns No. 39	Adjacent property owner (North-East)	Alet Fourie Trust	None	None	Crop cultivation	Spoke to Mrs. Fourie. She is aware of the proposed development and has no objections.

Table 4.2: Comments from businesses nearby the Bonsmara SPP

Businesses name	Location	Owner	Service	Initial reaction	Comments noted
Rita Fuel Services	32 Greenhill Ave, Randfontein	Mrs. J. Smith	Fuel Supplies	Positive regarding all the benefits for the community.	Spoke to Mrs. Smith. She is positive regarding the benefits of the proposed development and feels that her business can benefit from the development.
Cashbuild Randfontein	Cnr Main Reef Rd and 2n St, Randfontein	Corporate	Hardware Suppliers	Positive regarding all the benefits for the community.	Spoke to David Bellars (manager). He is confident that the business could benefit from the proposed development. In particular the business could benefit during the construction phase.
Leon's Service Centre	Fedler St, Randfontein	Leon Bakker	Vehicle Repairs	Positive regarding all the benefits for the community.	Spoke to the owner. He is confident that the business could benefit from the proposed development. In particular the business could benefit during the construction phase.

Triple D Truck Service Centre	15 Merwe Rd, Randfontein	Andre Bailey	Vehicle Repairs	Looking forward to the development.	Spoke to the owner. He is confident that the business could benefit from the proposed development. In particular the business could benefit during the construction phase.
Uncle Harry's Roadhouse	Main Reef Rd, Randfontein	Jimmy Pappas	Restaurant	Not sure if the project would bring any benefits.	Spoke to the manager. She feels reservedly confident that the proposed development would benefit the business during the construction phase, due to an influx of people working on site.

For a map of the adjacent land owners, refer to **Figure 4.15** below:

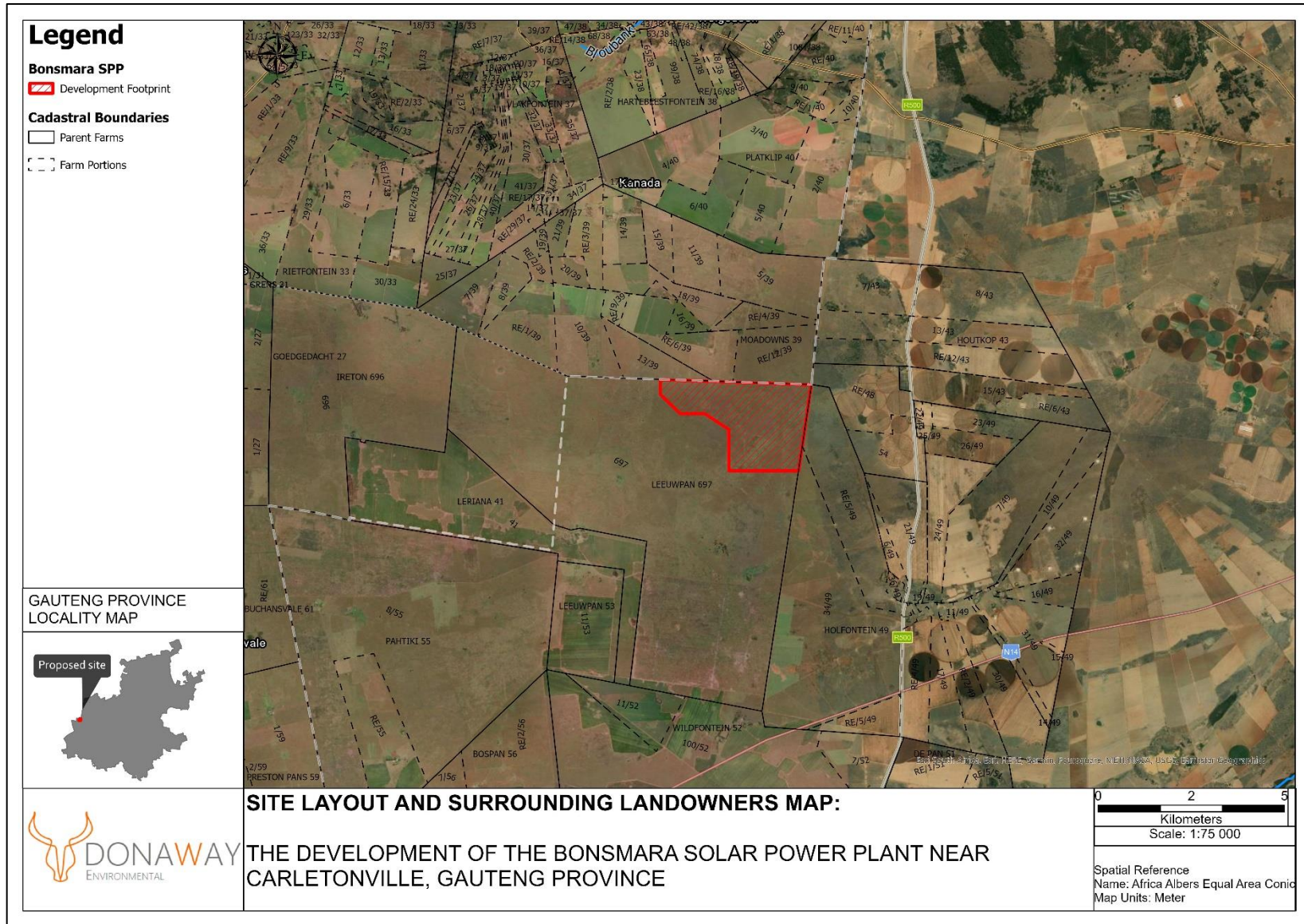


Figure 4.15: Map of the surrounding landowners of the farm Leeuwpan No.697

4.6. Baseline Description of the Social Environment

The following subsections provide an overview of the socio-economic profile of the Merafong City LM. In order to provide context against which the ward's socio-economic profile can be compared, the socio-economic profiles (where available) of the West Rand DM, Gauteng Province and South Africa as a whole been provided where applicable. The data presented in this section have been derived from the 2011 Census (which may be outdated but is deemed sufficient for the purpose of this study), Statistics South Africa: South Africa Community Survey 2016, the Local Government Handbook South Africa 2021, the West Rand DM Integrated Development Plan 2016/17 to 2020/21 (2020/2021), the West Rand DM Spatial Development Framework 2014 & 2017 Revision (2017), and the Merafong City LM Integrated Development Plan 2020 – 2021 (2021).

4.6.1. Population Size

Understanding the population dynamics of an area is important as it provides an overview of the human capital present within an area. It therefore provides an insight into the potential labour pool, from which workers may be sourced, as well as the local communities which may either be impacted on, or benefit from, a particular project. Population trends within an area also affect economic growth, and the demand for goods and services.

Table 4.3: Overview of general statistics of South Africa, Gauteng Province, West Rand DM, Merafong City LM (Source: Census 2011 and Community Survey 2016)

Census 2011 & CS 2016	Area (km ²)	Population total		Population changes from 2011 to 2016	Population density/km ²	
		2011	2016		2011	2016
South Africa	1 220 813	51 770 560	55 653 654	3 883 094	42.4	45.6
Gauteng Province	18 182.5	12 272 263	13 399 724	1 127 461	674.9	737.0
West Rand DM	4 121.0	820 944	838 594	17 650	199.2	203.5
Merafong City LM	1 633.5	197 521	188 843	-8 678	120.9	115.6

The population growth rate from 2001-2011 was not included as the Census data is too outdated for the purpose of this report. A Census was conducted during 2021 which will shed a more accurate light on the population growth and decline of certain areas. The 'mop-up' phase is process.

According to the Community Survey conducted in 2016, revealed that the population of South Africa, Gauteng Province, West Rand DM had all increased. On the other hand, the population decreased in Merafong City LM, specifically from 197 521 to 188 843 people, a decrease of 8 678 people. As a result, the population density of Merafong City LM decreased from 120.9 people/km² in 2011 to 115.6 people/km² in 2016.

4.6.2. Population Group Dynamics

Information on population group dynamics provides a better understanding of the cultural dynamics which may be prevalent within the area. This is important in terms of determining the potential for community support, the likely community structure and appropriate / most-suited consultation

practises to utilise when engaging with the local communities (and whether different communication strategies should be adopted for different community groups).

The 2016 Community Survey data showed that the population of the Merafong City LM was predominantly composed of black Africans (83.3%), followed by whites at 15.1%. Similarly, the West Rand DM’s population was mostly black Africans, accounting for 78.7% of the population, while whites made up 17.1% of the population. These group dynamics are comparable to those of the Gauteng Province, although the province’s proportion of black Africans was lower at 80.4%.

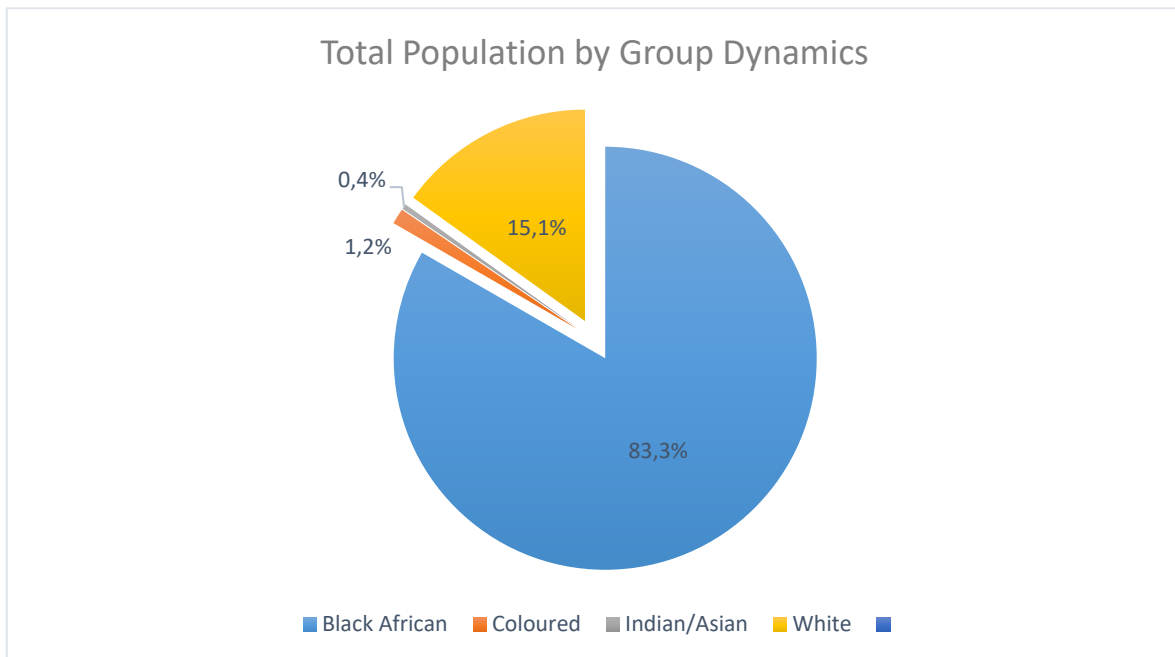


Figure 4.16: Total Population of the Merafong City LM by population group (Community Survey 2016)

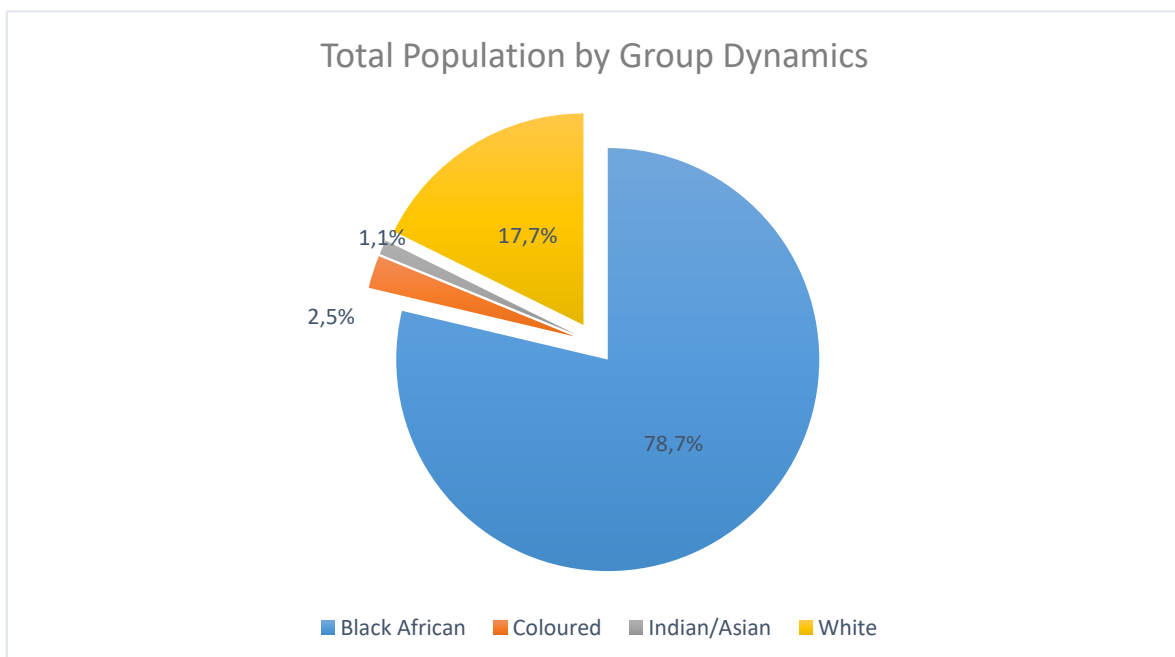


Figure 4.17: Total Population of the West Rand DM by population group (Community Survey 2016)

4.6.3. Gender Profile

The gender profile of a population has significance in terms of gender distribution and understanding the gender roles prevalent within the area. In the case of Merafong City LM, West Rand DM, and Gauteng Province was mostly male. Specifically, the population of the Merafong City LM was 53.6% male and 46.4% female, while the population of the West Rand DM had a distribution of 51.8% male and 48.2% female. Additionally, the Gauteng Province had a more even distribution with 50.4% male and 49.6% female. Refer to **Figure 4.18** illustrating the gender distribution of the geographical areas.

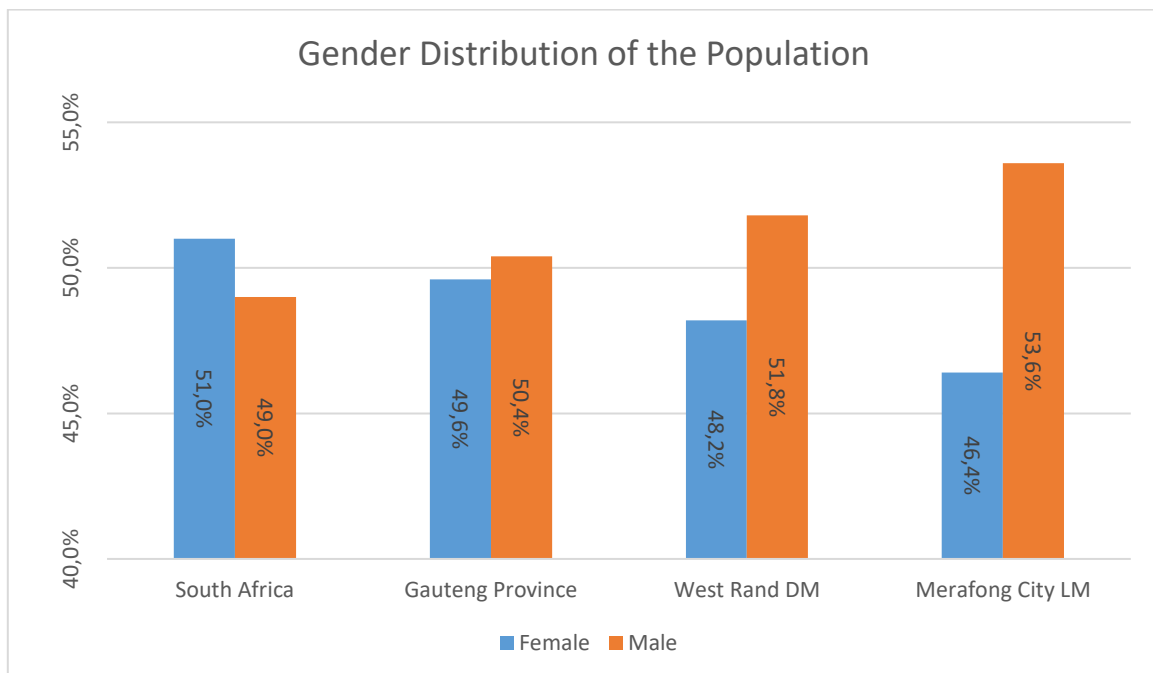


Figure 4.18: Population Distribution by Gender of South Africa, Gauteng Province, West Rand DM and Merafong City LM (Community Survey 2016)

4.6.4. Age Profile

The age structure of a population is important for planning purposes, as it provided insight into what services may be required, and the level to which such services are required. Age structure closely relates to birth rate, death rate and migration of the population. For example, higher birth rates in a region tend correlated with higher fertility rate and population growth, while a higher elderly ratio indicates a longer life expectancy in the region.

Based on the information from the Community Survey conducted in 2016, it illustrates that both the Merafong City LM and West Rand DM have a population pyramid with a smaller base than mid structure, which is characteristics of a decreasing population structure. This suggests that both regions are slowly decreasing although some increase occurs in the youngest age group. This could have implications on future demographic trends, such as changes in workforce demographics, demands on social services, and overall economic development.

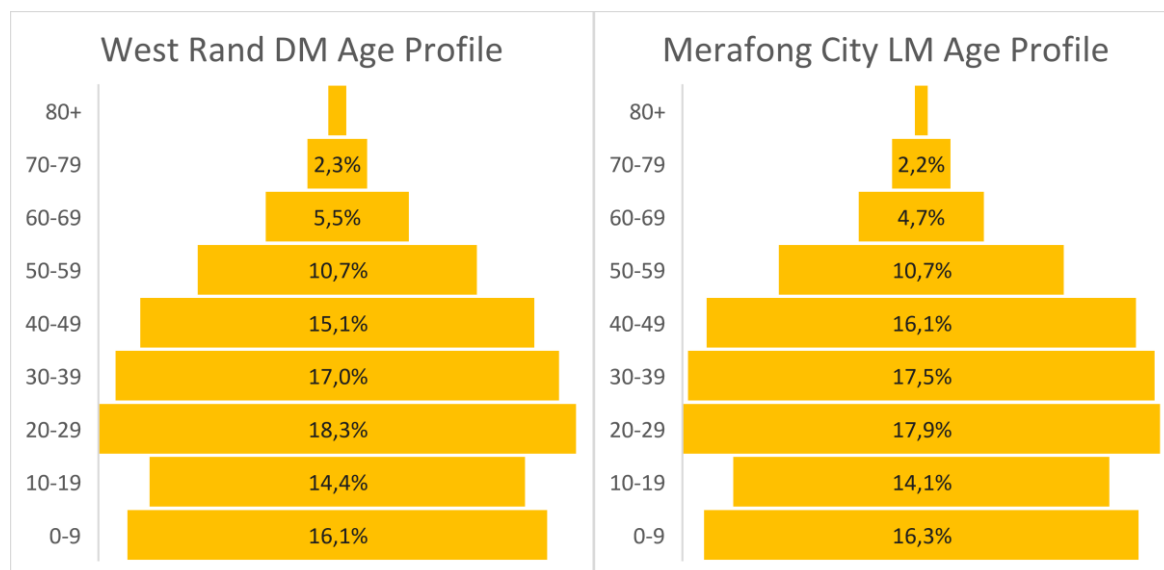


Figure 4.19: West Rand DM and Merafong City LM Age Profile (Community Survey 2016)

4.6.5. Dependency Ratio

An area's dependency ratio provides an indication of that portion of the population which is dependent on the economically active portion of the population based on functional age groups. The dependent portion of the population typically comprises youth below 15 years of age which are yet to enter the workforce, and individuals 65 years and older which would typically already have retired from the workforce. In addition to not contributing towards the economy, such individuals are also likely to have additional needs which need to be catered for, such as access to suitable education facilities for the school going population, and access to health care facilities in the case of the aged population. The dependency ratio is calculated by combining the number of children aged under 15 years, and the number of adults aged 65 years and older and dividing this by the working age population (i.e., those ages between 15 and 64 years of age).

Both Merafong City LM and West Rand DM have witnessed similar changes in youth and elderly population groups. Specifically, a decrease in youth population (aged 0-14 years) from 25.3% to 23.3% in Merafong City LM and 25.3% to 23.1% in West Rand DM, while the elderly population (over 65) increased from 3.2% to 4.6% in Merafong City LM and from 3.8% to 5.2% in West Rand DM.

The dependency of both regions has slightly decreased from 2011 to 2016, with the Merafong City LM and West Rand DM experienced an increase in their working population. The dependency ratio of Merafong City LM stands at 27.9%, implying that less than half of the population (28 individuals out of every 100) are considered dependant. Similarly, the dependency ration of West Rand DM stands at 28.3%, also implying that 28 individuals out of every 100 are considered dependant.

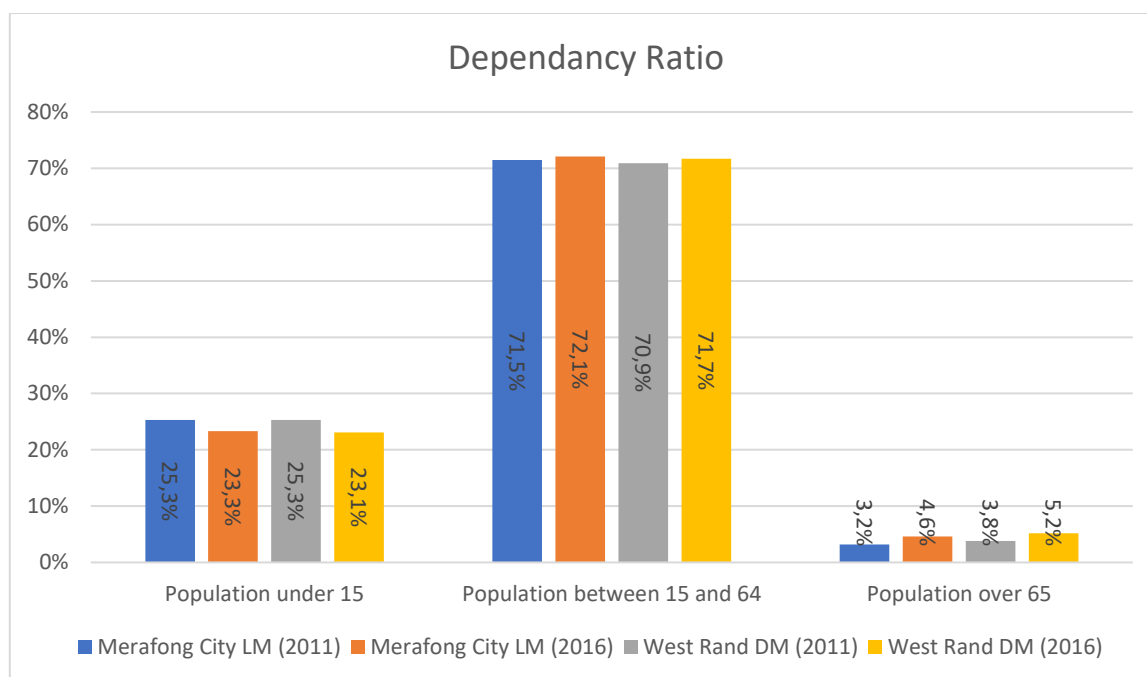


Figure 4.20: West Rand DM and Merafong City LM Age Distribution (Census 2011 and Community Survey 2016)

The higher proportion of potentially economically active persons within the Merafong City LM and West Rand DM implies that there is a considerable human resource base for development projects to involve local population. The economically active population represents the largest proportion of the population, which means that focus needs to be placed on employment creation.

4.6.6. Education Level

Education plays a pivotal role in community development. The level of education influences growth and economic productivity of a region. There is a positive correlation between a higher level of education and the level of development, and standard of living. Education levels in any given population will influence both economic and human development. While low levels of education typically lead to a low skills base within an area, high levels of education have the opposite effect, resulting in a skilled or highly skilled population. Household and personal income levels are also either positively or adversely affected by education levels.

The 2016 Community Survey revealed that in the Merafong City LM, the percentage of the population completing some secondary education increased from 37% to 39%, while the percentage completing matric rose from 27.8% to 31.1% during the same period. In contrast, the percentage of people with no schooling decreased from 6.1% to 4.2%. In the West Rand DM, the proportion of individuals completing matric rose from 36.1% in 2011 to 36.8% in 2016.

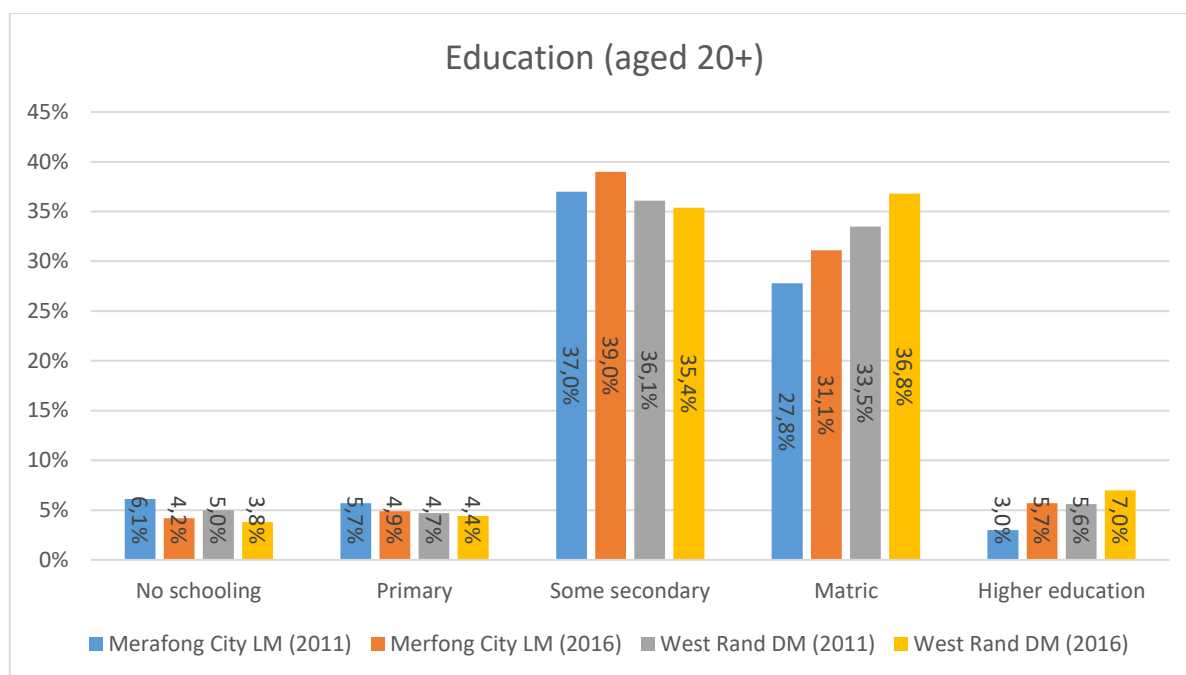


Figure 4.21: West Rand DM and Merafong City LM Education Level (Census 2011 and Community Survey 2016)

4.6.7. Employment

The employment profile of an area is an important indicator of human development, as poverty and unemployment are closely correlated. The quality of labour is reflected, amongst other things, by the educational profile of the economically active population and the availability of training facilities in the region. The term labour force refers to those people who are available for employment in a certain area. According to Statistics South Africa, the definitions of the following employment indicators are:

- Economically active person: “A person of working age (between 15 and 65 years inclusive) who is available for work, and is either employed, or is unemployed but has taken active steps to find work in the reference period.”
- Employed: “Those who performed work for pay, profit or family gain for at least one hour in the seven days prior to the interview or who were absent from work during these seven days but did have some form of paid work to return to.”
- Official and expanded definition of unemployment: “The unemployed are those people within the economically active population who: (a) did not work during the seven days prior to the interview, (b) want to work and are available to start work within two weeks of the interview, and (c) have taken active steps to look for work or start some form of self-employment in the four weeks prior to the interview.”
- Labour force: “All employed and unemployed persons of working age”.
- Unemployment rate: “The percentage of the economically active population that is unemployed.”

According to the Census 2011 data, the employment ratio in Merafong City LM was 46.5%, which is just below half the population. On the other hand, the employment ratios in the West Rand DM and Gauteng Province were slightly higher at 49.7% and 50.7%. In the Merafong City LM, 32.7% of the population were not economically active, and 17.4% unemployed. In contrast, the ratios for the West

Rand DM and Gauteng Province not economically active population were lower at 29.2% and 28%, and for unemployment they were higher at 17.8% and 18.1%.

The Merafong City LM, West Rand DM and Gauteng Province would benefit from additional job opportunities to reduce its dependency on social grants and pension.

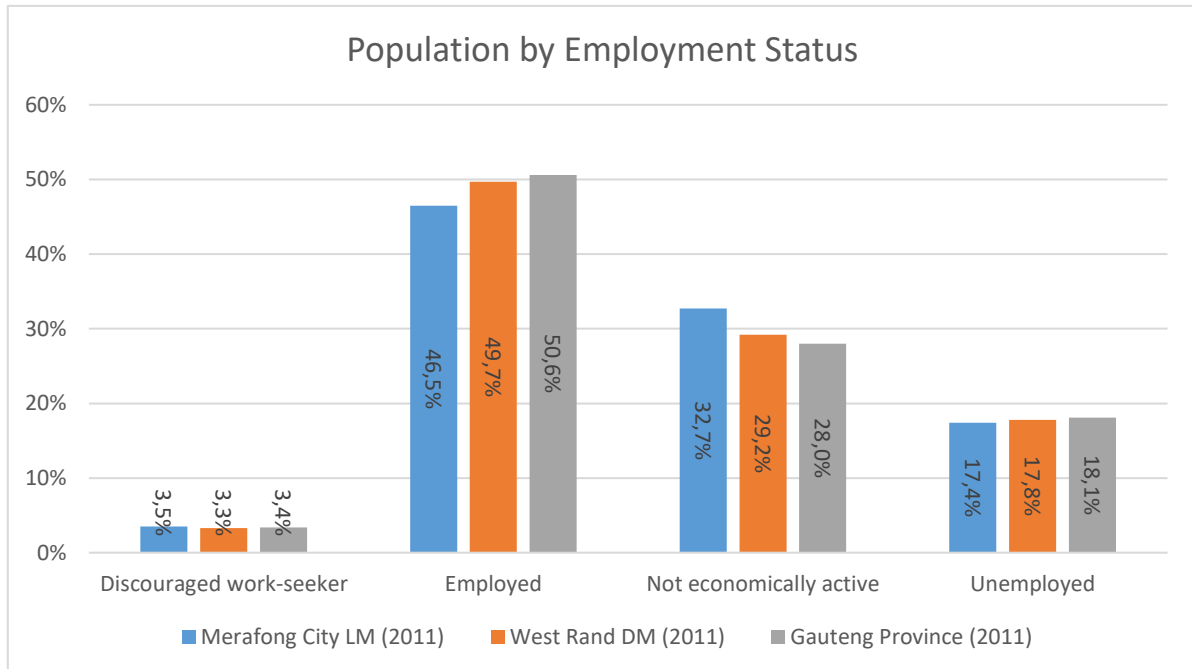


Figure 4.22: Employment Statistics for the Merafong City LM, West Rand DM and Gauteng Province (Census 2011)

4.6.8. Annual Household Income Levels

In order to determine the population’s standard of living, as well as their ability to pay for basic services, the income levels of the employed population are analysed. Household income levels are one avenue for determining poverty levels in a community. Households that have either no income or low income fall within the poverty level (R0 – R38 400 per annum), indicating the difficulty to meet basic need requirements. Middle-income is classified as earning R38 401 – R307 200, and high income is classified as earning R307 201 or more per annum.

Figure 4.23 illustrates 16% of households in Merafong City LM and 16.1% in the West Rand DM had no income. The majority of households in both regions had an annual income distribution between R40 000 and R75 000 per annum. Specifically, 26.4% of households in the Merafong City LM earned an annual income between R40 000 and R75 000, similar to the majority of households (19.2%) in West Rand DM earned an annual income between R40 000 and R75 000.

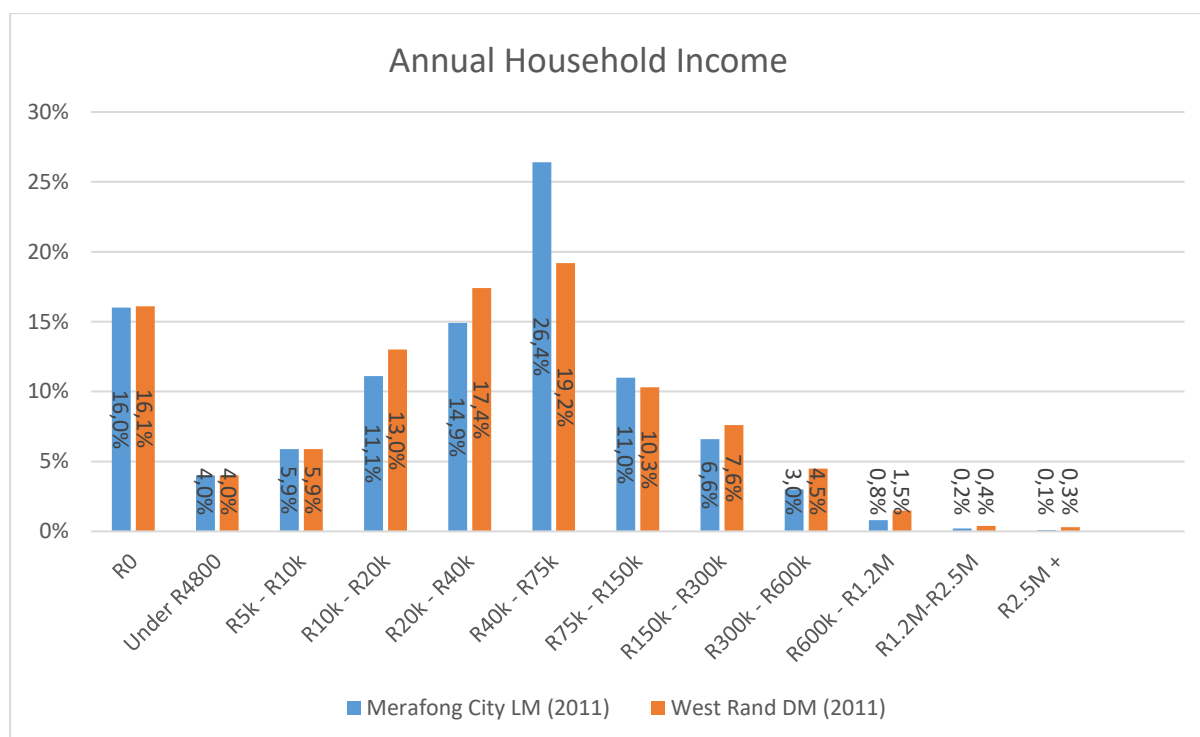


Figure 4.23: Annual Household Income for the Merafong City LM and West Rand DM (Census 2011)

4.6.9. Economic Activities

The Merafong City LM gains most of its economic activity within the mining sector with specific focus on gold mining. Mining's contribution has decreased in the area but is still overall the main economic sector, followed by manufacturing and then by financial and business services.

4.6.10. Health

The Merafong City LM health care system is based on the National outcomes, therefore increase life expectancy, decrease maternal and child mortality rates, combat HIV and Aids and decrease the burden of Tuberculosis, and strengthening the health system effectiveness.

4.6.11. Households

There were 79 833 households in the Merafong City LM in 2016, with the majority contributed by houses at 64.5% followed by informal dwellings at 17.2%. An improvement in housing standard were observed from 2011 to 2016 with the total number of informal dwellings decreasing from 20.1% to 17.2%, although only a slight decrease in the number informal dwellings the number of houses also increased. Almost half of the households in the Merafong City LM were rented at 42.3%, while 30.3% were owned and fully paid off. The average household size of the Merafong City LM was 2.6 people per household.

In comparison, West Rand DM had 330 573 households in 2016, with houses making up the majority (60.9%), followed by informal dwellings at 22.6%. The majority (33%) of these households were owned and fully paid off. The overall household quality improved with the ratio of houses increasing from 55.2% in 2011 to 60.9% in 2016, while the ratio of informal dwellings decreased from 23.5% in 2011 to 22.6% in 2016. The average household size of the West Rand DM was 2.5 people per household.

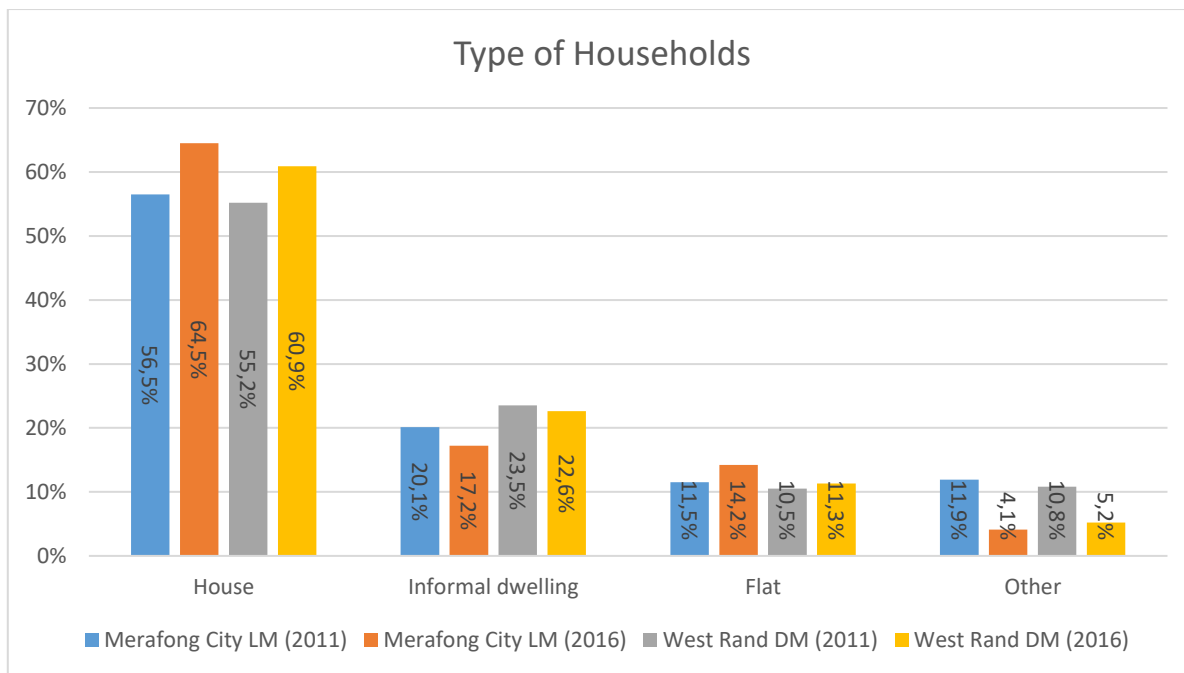


Figure 4.24: Households by type of dwelling in the West Rand DM and Merafong City LM (Census 2011 and Community Survey 2016)

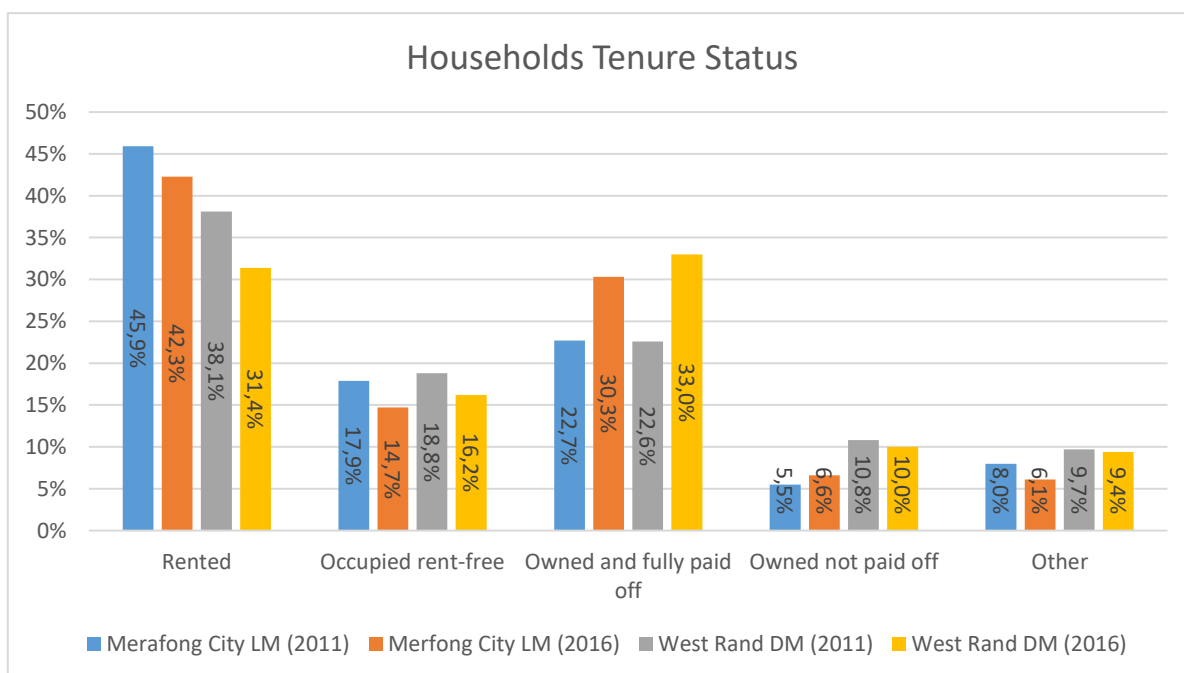


Figure 4.25: Households by tenure status in the West Rand DM and Merafong Dity LM (Census 2011 and Community Survey 2016)

4.6.12. Access to Basic Services

Basic services such as electricity, water and sanitation, and refuse and waste removal are considered critical for the improvement of people’s quality of life, and adequate supplies of basic services are also necessary to ensure life, well-being, and human dignity (Stats SA, 2017). Individuals’ rights to basic services are largely enshrined in Section 24 of the Constitution which states that everyone has the right to an environment that is not harmful to their health or well-being. The accessibility of basic

services is closely related to social inclusion and social capital, and the failure of municipalities to deliver services can have a detrimental impact on social and economic development (IDASA, 2010 in Stats SA, 2017). In terms of Section 73 of the Local Government Municipal Systems Act (No. 32 of 2000), municipalities have a general duty to give effect to the provisions of the Constitution and give priority to the basic needs of the local community, promote the development of the local community, and ensure that all members of the local community have access to at least the minimum level of basic municipal services. In addition, municipal services must be equitable and accessible, be provided in a manner that is conducive to the prudent, economic, efficient and effective use of available resources, and the improvement of standards of quality over time, be financially sustainable, be environmentally sustainable, and be regularly reviewed with a view to upgrading, extension and improvement. **Table 4.4** provides the classification of infrastructure quality and different levels of service provision developed by Statistics South Africa following World Bank studies (Stats SA, 2017).

Table 4.4: Classification of infrastructure quality (Stats SA, 2017)

Service Level	Water	Sanitation	Solid Waste	Electricity
None	No access to piped water.	No sanitation.	No facilities / dump anywhere	No access to electricity
Minimal	Communal standpipe >200m.	Bucket toilets.	Communal / own refuse dump.	Generator / solar
Basic	Communal standpipe <200m	Pit toilet without ventilation pipe.	Communal container / collection point	Access to electricity don't pay for
Intermediate	Piped water in the yard.	Ventilated Improved Pit (VIP) latrine toilet, Chemical, or ecological toilets.	Removed less than once per week.	Connected to source and paid for
Full	Piped water in dwelling	Conventional waterborne	Removed once per week	In-house pre- and post-paid meters.

Access to basic services is assessed at a household level. An overview of households within the Gauteng Province, West Rand DM and Merafong City LM access to basic services is described in the following sub-section.

4.6.12.1. Access to Basic Services

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

According to the 2016 Community Survey, it was found that 93.2% of households in the Merafong City LM had access to safe drinking water, which was slightly higher than the West Rand DM's 92.5% and the Gauteng Province's 92.9%.

In the Merafong City LM, the majority of households had piped water inside their homes at 65.5%, compared to 59.2% in the West Rand DM and 63.5% in the Gauteng Province. The second most common water supply source was piped water facilities inside yards, with 22.4% in the Merafong City LM, slightly lower than the 24.3% in the West Rand DM and the 28.2% in the Gauteng Province.

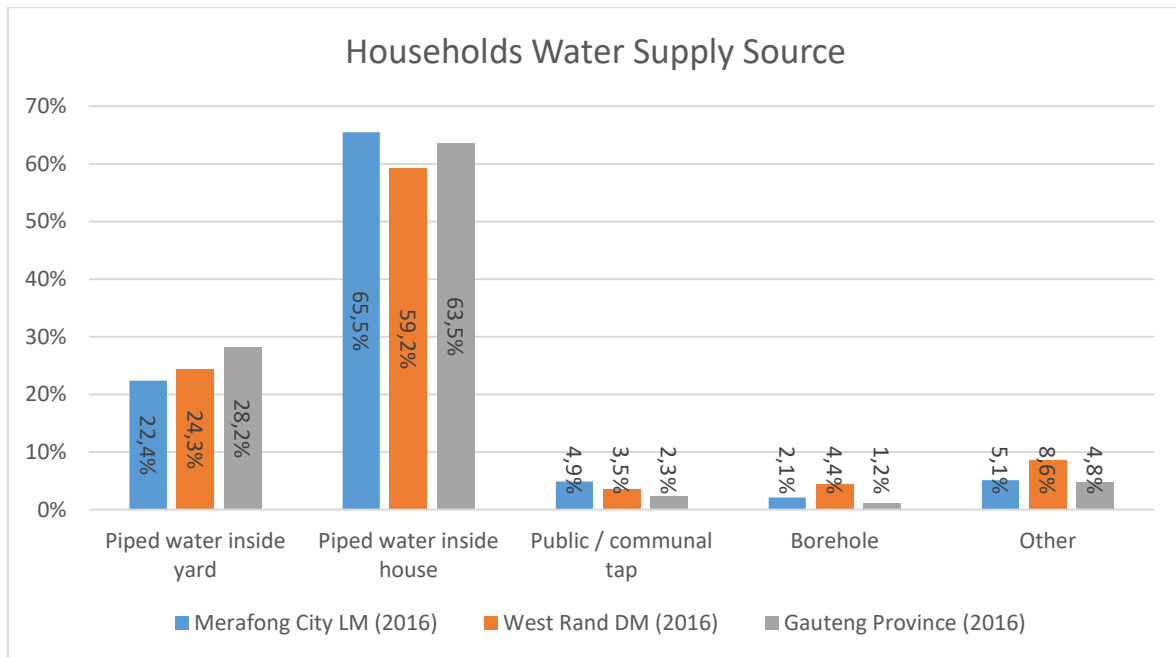


Figure 4.26: Households by main source of water supply for the Gauteng Province, West Rand DM and Merafong City LM (Community Survey 2016)

4.6.12.2. Access to Sanitation

Ensuring access to basic functional sanitation services is a critical development priority for South Africa as it promotes the well-being of communities. According to the Community Survey of 2016 and Census 2011, there was an increase in the number of households with flush toilet facilities in the Merafong City LM from 80.3% to 88.4%, similar to the West Rand DM which saw an increase from 79.8% to 85.5%. Pit latrines without ventilation were the second most common toilet facility in the Merafong City LM households at 5.1%, similar to the 5.1% in the West Rand DM. Both regions toilet facility standards have seen an overall improvement from 2011 to 2016.

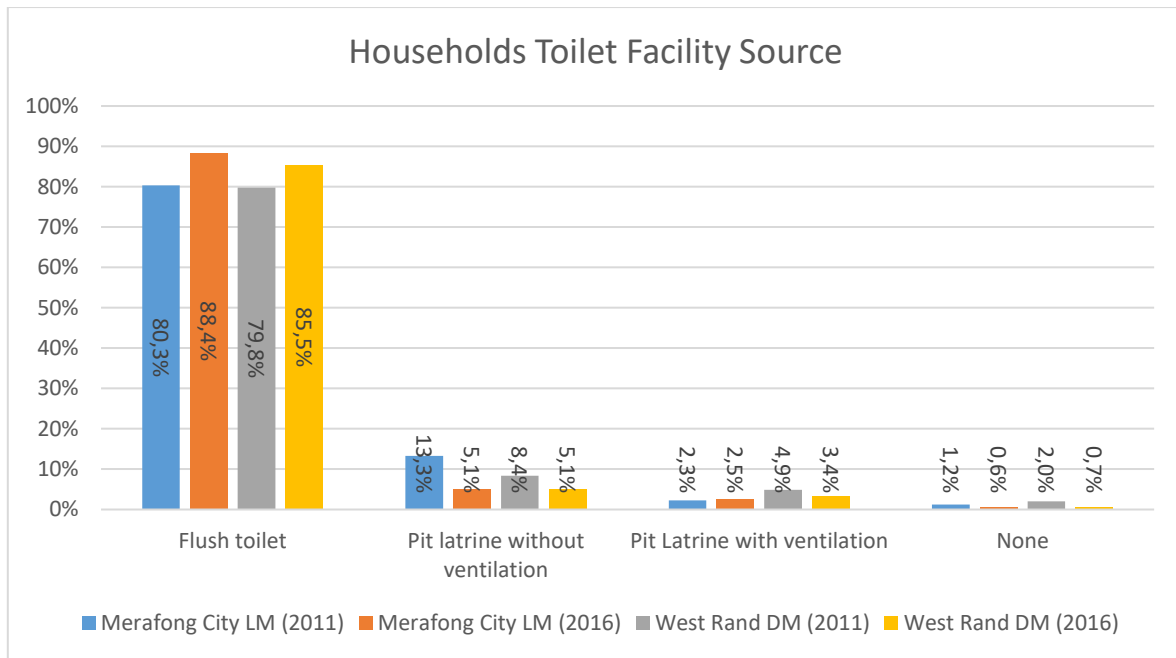


Figure 4.27: Households by main source of toilet facility for the West Rand DM and Merafong City LM (Census 2011 and Community Survey 2016)

4.6.12.3. Access to Electricity

Energy is required for cooking, heating, and lighting purposes. Individuals’ access to different energy sources for cooking, heating, and lighting purposes is significant, as the burning of fuel sources such as wood, coal, and / or animal dung over extensive periods of time could result in negative health impacts for household members. Health impacts would be most significantly experienced by those vulnerable members of society, such as young children, pregnant women, and the elderly.

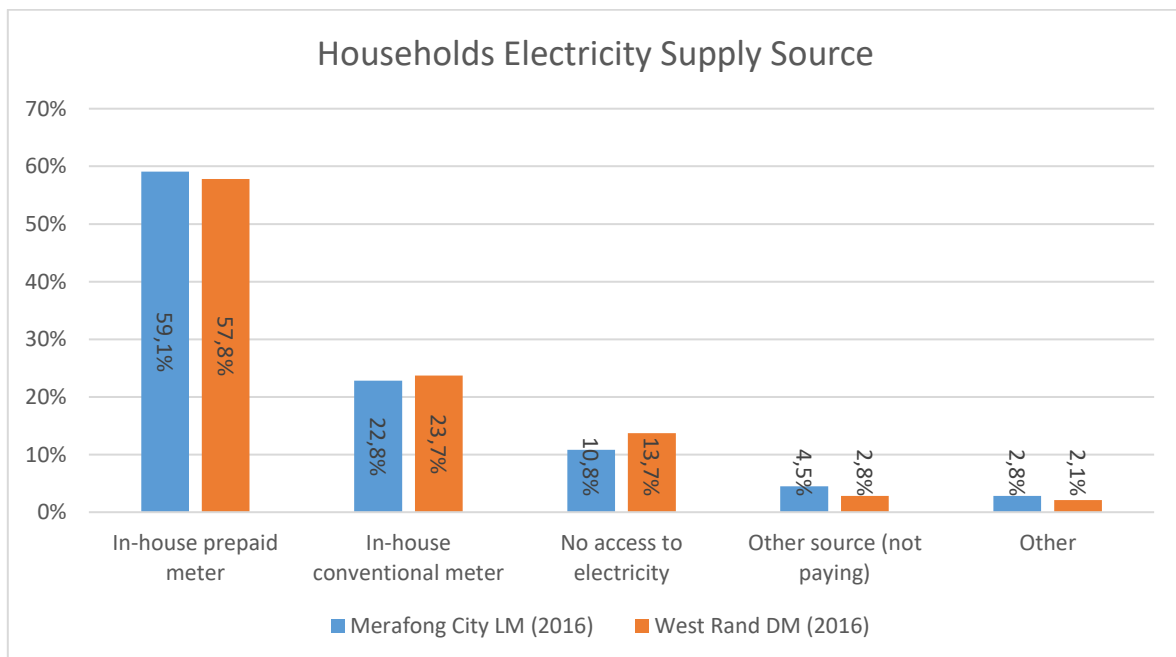


Figure 4.28: Energy sources for households in the Merafong City LM and West Rand DM (Community Survey 2016)

According to the Community Survey 2016, 81.9% of households in the Merafong City LM had access to in-house prepaid or conventional meters for electricity, while 10.8% of households had no access to electricity. A similar ratio of access to electricity was observed in the West Rand DM, with a similar percentage of households (81.5%) having access to in-house electricity and a higher percentage (13.7%) having no access to electricity. In the Merafong City LM, 4.5% of households obtained their electricity from sources not paid for by the households, while in the West Rand DM, this figure was 2.8%. Access to electricity is an important factor in the living conditions of the region, and households obtaining their electricity from illegal sources could face significant health risks

4.6.12.4. Access to Refuse Removal

In 2016, the majority of households in Merafong City LM had access to regular refuse removal through a service provider at 75.6%, which was a decrease from 77.8% in 2011. However, there was also an increase in the number of households with no access to refuse removal. In the West Rand DM, the majority of households refuse was removed by a regular service provide at 81% an increase from 79.1%.

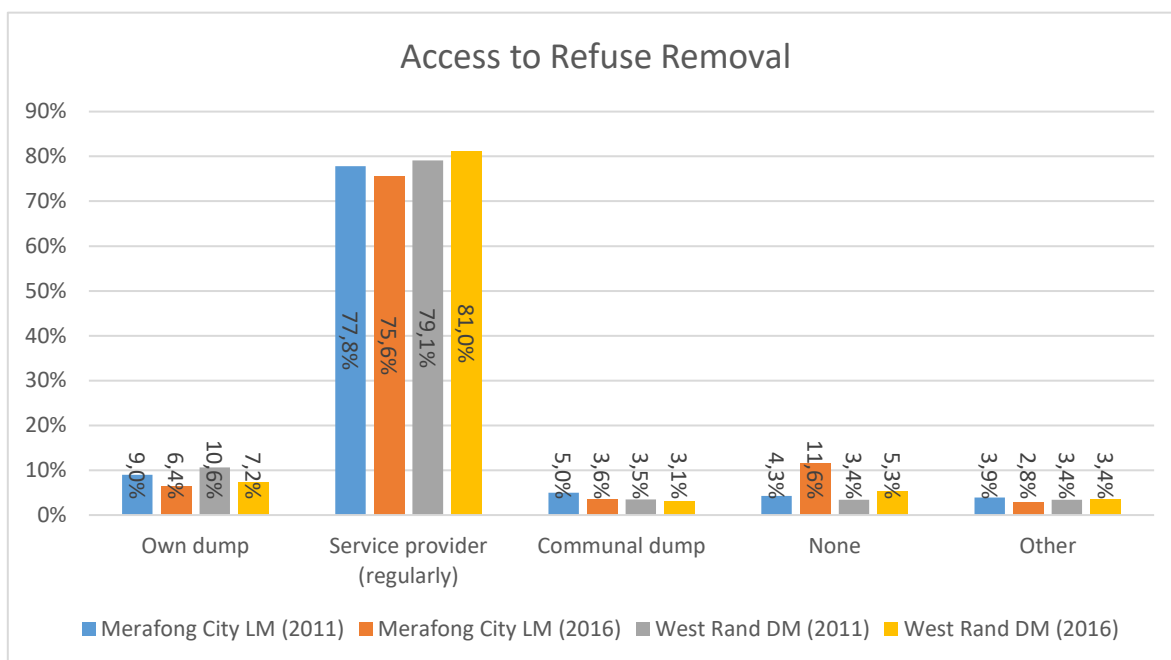


Figure 4.29: Access to refuse removal for Merafong City LM and West Rand DM (Census 2011 and Community Survey 2016)

4.6.13. Baseline Summary

In summary, the area was found to have the following socio-economic characteristics:

- The proposed project is located in the Merafong City LM. The Merafong City LM is a subdivision of the larger West Rand DM in the Gauteng Province. The Merafong City LM covers an area of 1 633.5km² and is home to a population of 188 843.
- The proposed project is situated 17km north of the town of Carletonville in the Merafong City LM a subdivision of the West Rand DM in the Gauteng Province.
- Merafong City LM is a Category B municipality, located in the south-western part of the West Rand DM situated in the western part of Gauteng Province.

- According to the Community Survey 2016 and Census 2011, that the population of South Africa, Gauteng Province, and West Rand DM had all increased. The only exception was the Merafong City LM population which decreased from 2011 to 2016.
- Black Africans were the majority of the population in the Merafong City LM (83.3%), followed by whites at 15.1%. Similarly black Africans were the majority in West Rand DM (78.7%) and Gauteng Province (80.4%).
- The gender profile in Merafong City LM, West Rand DM and Gauteng Province were all male skewed. Specifically, the Merafong City LM had a 53.6% male and 46.4% female distribution.
- The Merafong City LM and West Rand DM both illustrate a decreasing population, specifically with smaller proportions of the population in the younger age groups than the mid age groups.
- From 2011 to 2016, the Merafong City LM and West Rand DM experienced a decrease in dependency. In particular, the dependency ratio of Merafong City LM was 27.9%, implying that less than half of the population (28 individuals out of every 100) are considered dependent. The dependency ratio of the West Rand DM was 28.3%.
- The Merafong City LM and West Rand DM all indicated an improvement in their population over 20's education. Specifically, the Merafong City LM's population completing matric increased from 27.8% to 33.5%, while also improving the number people with some secondary education. Similarly, the population of West Rand DM completing matric increased from 33.5% to 36.8%, although a decrease was observed in people with some secondary education.
- According to the Census 2011, just under half of the Merafong City LM (46.5%) was employed, 49.7% of West Rand DM, and just over half of the Gauteng Province (50.6%) was employed.
- The majority of the households in the Merafong City LM (26.4%) and West Rand DM (19.2%) earn an annual income between R40 000 and R75 000 per annum. Households with no income was 16% for Merafong City LM and 16.1% for West Rand DM.
- The main labour absorbing and economic driver in the Merafong City LM is mining activities, specifically gold mining.
- According to the Merafong City IDP 2020 – 2021, the Merafong City LM health care system is based on the National outcomes. Specifically, increase life expectancy, decrease maternal and child mortality rates, combat HIV and Aids and decrease the burden of Tuberculosis, and strengthening the health system effectiveness.
- There were 79 833 households in the Merafong City LM, with the majority of 64.5% contributed by houses, followed by informal dwellings at 17.2%. Additionally, most households were rented at 42.3% in the Merafong City LM.
- The Community Survey conducted in 2016 indicated that 93.2% of households in Merafong City LM, 92.5% in West Rand DM, and 92.9% in Gauteng had access to safe drinking water. Specifically, 65.5% of households in Merafong City LM had access to piped water inside their homes, compared to 59.2% in West Rand DM and 63.5% in Gauteng Province.
- The most common toilet facility in the Merafong City LM and West Rand DM was flushing toilets. Specifically, improvement was seen in all, with flushing toilet increasing from 80.3% to 88.4% in Merafong City LM and from 79.8% to 85.5% in West Rand DM.
- A total of 81.9% of households in Merafong City LM obtained their electricity from either conventional or prepaid meters. Additionally, 81.5% of households in West Rand DM obtain their electricity from the same sources. In contrast, 10.8% of households in Merafong City LM and 13.7% in West Rand DM had no electricity.

- Refuse removal by a regular service provider was the most common refuse removal methods in all regions, specifically, at 75.6% in Merafong City LM and 81% in the West Rand DM.

5. KEY CONSIDERATIONS FOR PV SOLAR POWER PLANTS

While no industry sector Environmental, Health and Safety (EHS) Guidelines have been developed for PV Solar Power, the International Finance Corporation (IFC) has published a Project Developer's Guide to Utility-Scale Solar Photovoltaic Power Plants (IFC, 2015). Section 8 of the Project Developer's Guide pertains to Permits, Licensing and Environmental Considerations, and states that in order to deliver a project which will be acceptable to international lending institutions, environmental and social assessments should be carried out in accordance with the requirements of the key international standards and principles, namely the Equator Principles and IFC's Performance Standards (IFC PS).

Some of the key environmental considerations for PV facilities contained within the Project Developer's Guide are provided below:

5.1. Construction Phase Impacts

Construction activities lead to temporary air emissions (dust and vehicle emissions), noise related to excavation, construction and vehicle transit, solid waste generation and wastewater generation from temporary building sites and worker accommodation. In addition, Occupational Health and Safety (OHS) is an issue that needs to be effectively managed during construction in order to minimise the risk of preventable accidents leading to injuries and / or fatalities. Proper OHS risk identification and management measures should be incorporated in every project's management plan and standard Engineering, Procurement and Construction (EPC) contractual clauses.

5.2. Water Usage

Adequate provision of water will be a prerequisite for the development. Water for the proposed development will most likely be obtained from ground water resources, or alternatively from the local municipality. A large amount of water will be needed during the construction and operational phases of the project. Most of the usage during the operational phase is for the cleaning of the solar panels and will require approximately 2 litres per panel of water for cleaning. It is estimated that the panels may only need to be washed twice per annum, but provision is made for quaternary cleaning (March, May, July, and September).

5.3. Land Matters

As solar power is one of the most land-intensive power generation technologies, land acquisition procedures and in particular the avoidance or proper mitigation of involuntary land acquisition / resettlement are critical to the success of the project. This includes land acquired either temporarily or permanently for the project site itself and any associated infrastructure – i.e., access roads, powerlines, construction camps (if any) and switchyards. If involuntary land acquisition is unavoidable, a Resettlement Action Plan (RAP) (dealing with physical displacement and any associated economic displacement) or Livelihood Restoration Plan (LRP) (dealing with economic displacement only) will be required. This is often a crucial issue with respect to local social license to operate and needs to be handled with due care and attention by suitably qualified persons.

No involuntary land acquisitions are foreseen for the purpose of this project.

5.4. Landscape and Visual Impacts

Key impacts can include the visibility of the solar panels within the wider landscape and associated impacts on landscape designations, character types and surrounding communities. Common mitigation measures to reduce impacts can include consideration of layout, size and scale during the design process and landscaping / planting in order to screen the modules from surrounding receptors. Note that it is important that the impact of shading on energy yield is considered for any new planting requirements. Solar panels are designed to absorb, not reflect, irradiation. However, glint and glare should be a consideration in the environmental assessment process to account for potential impacts on landscape / visual and aviation aspects.

5.5. Ecology and Natural Resources

Potential impacts on ecology can include habitat loss / fragmentation, impacts on designated areas and disturbance or displacement of protected or vulnerable species. Receptors of key consideration are likely to include nationally and internationally important sites for wildlife and protected species such as bats, breeding birds and reptiles. Ecological baseline surveys should be carried out where potentially sensitive habitat, including undisturbed natural habitat, is to be impacted, to determine key receptors of relevance to each site. Mitigation measures can include careful site layout and design to avoid areas of high ecological value or translocation of valued ecological receptors. Habitat enhancement measures could be considered where appropriate to offset adverse impacts on sensitive habitat at a site, though avoidance of such habitats is a far more preferable option.

5.6. Cultural Heritage

Potential impacts on cultural heritage can include impacts on the setting of designated sites or direct impacts on below-ground archaeological deposits as a result of ground disturbance during construction. Where indicated as a potential issue by the initial environmental review / scoping study, field surveys should be carried out prior to construction to determine key heritage and archaeological features at, or in proximity to, the site. Mitigation measures can include careful site layout and design to avoid areas of cultural heritage or archaeological value and implementation of a 'chance find' procedure that addresses and protects cultural heritage finds made during a project's construction and/or operation phases.

5.7. Tourism

Potential impacts on tourism might be positive and negative. Tourism or lodging facilities in an area might benefit from guests or employees lodging at these facilities. Furthermore, tourists might see renewable energy facilities as positive or interesting, setting aside some time to visit these facilities when in the area. Some tourism facilities might see renewable energy development as negative in terms of visual impact, concerned that these developments might cause a financial loss due to lower interest from tourists. Mitigation may include proper screening of the facility to reduce the visual impact towards a tourist facility. Further mitigation may include the development of a tourist programme to attract tourists to the area.

5.8. Transport and Access

The impacts of transportation of materials and personnel should be assessed in order to identify the most appropriate transport route to the site while minimising the impacts on project-affected communities. The requirement for any oversized vehicles / abnormal loads should be considered to ensure access is appropriate. Onsite access tracks should be permeable and developed to minimise disturbance to agricultural land. Where project construction traffic has to traverse local communities, traffic management plans should be incorporated into the environmental and social management plan and EPC requirements for the project.

5.9. Drainage / Flooding

A review of flood risk should be undertaken to determine if there are any areas of high flood risk associated with the site. Existing and new drainage should also be considered to ensure run-off is controlled to minimise erosion.

5.10. Consultation and Disclosure

It is recommended that early-stage consultation is sought with key authorities, statutory bodies, affected communities and other relevant stakeholders. This is valuable in the assessment of project viability and may guide and increase the efficiency of the development process. Early consultation can also inform the design process to minimise potential environmental impacts and maintain overall sustainability of the project. The authorities, statutory bodies and stakeholders that should be consulted vary from country to country but usually include the following organisation types:

- Local and / or regional consenting authority.
- Government energy department / ministry.
- Environmental agencies / departments.
- Archaeological agencies / departments.
- Civil aviation authorities / Ministry of Defence (if located near an airport).
- Road's authority.
- Health and safety agencies / departments.
- Electricity utilities.
- Military authorities.

Community engagement is an important part of project development and should be an on-going process involving the disclosure of information to project-affected communities. The purpose of community engagement is to build and maintain over time a constructive relationship with communities located in close proximity to the project and to identify and mitigate the key impacts on project-affected communities. The nature and frequency of community engagement should reflect the project's risks to, and adverse impacts on, the affected communities.

5.11. Environmental Management Plan (EMP)

Whether or not an EIA has been completed for the site, an EMP should be compiled to ensure that mitigation measures for relevant impacts of the type identified above (and any others) are identified and incorporated into project construction procedures and contracts. Mitigation measures may include, for example, dust suppression during construction, safety induction, training and monitoring

programs for workers, traffic management measures where routes traverse local communities, implementation of proper waste management procedures, introduction of periodic community engagement activities, implementation of chance find procedures for cultural heritage, erosion control measures, fencing off any vulnerable or threatened flora species, etc. The EMP should indicate who will be responsible for implementing each action, and how this will be monitored and reported on at the project level. The plan should be in line with the nature and type of impacts identified.

6. SOCIAL IMPACT ASSESSMENT

This section provides a detailed description and assessment of the potential social impacts that were identified during the Scoping process for the detailed design and construction, operation, and decommissioning phases of Bonsmara SPP.

6.1. Design and Construction Phase

The design and construction phase are expected to take approximately 18 to 24 months to complete. It is anticipated that the following activities would be included and would form part of the detailed design and construction phase:

- **Pre-planning:** Several post-authorisation factors are expected to influence the final design of the facility and could result in small-scale modifications of the positioning of the PV array and / or associated infrastructure. The construction process is dynamic and unforeseen changes to the project specifications may occur. The final facility design is required to be approved by DFFE prior to any construction activities commencing on-site. Should any substantive changes or deviations from the original scope or layout of the project reflected in the EIA process occur, DFFE would need to be notified thereof, and where applicable additional approval may need to be obtained.
- **Conduct surveys:** Prior to initiating construction, several surveys will be required. These include, but are not limited to confirmation of the micro-siting footprint (i.e., confirming the precise location of the PV panels, substation, and the plant's associated infrastructure), and a geotechnical survey, as well as any other surveys that may be required.
- **Procurement and employment:** At the peak of construction the project is likely to create up to 800 employment opportunities. These employment opportunities will be temporary and will last for a period of approximately 18 to 24 months (i.e., the length of construction). Employment opportunities generated during the construction phase will include low skilled, semi-skilled, and skilled opportunities. Solar PV projects make use of large numbers of unskilled and semi-skilled labour so there will be good opportunity to use local labour. The injection of income into the area in the form of wages will represent an opportunity for the local economy and businesses in the area. Most of the labour force is expected to be sourced from the surrounding towns. No labourers will be accommodated on-site during the construction period.
- **Establishment of an access road to the site:** Access will be obtained from the public gravel road of off the R500 regional road to the east of the site. The access and internal roads will be constructed within a 25-meter corridor. The final layout will be determined following the identification of site related sensitivities.
- **Undertake site preparation:** Site preparation activities will include clearance of vegetation. These activities will require the stripping of topsoil which will need to be stockpiled, backfilled and / or spread on site.
- **Transport of components and equipment to site:** The national, regional, secondary and proposed internal access roads will be used to transport all components and equipment

required during the construction phase of the solar facility. Some of the components (i.e., substation transformer) may be defined as abnormal loads in terms of the National Road Traffic Act (No. 93 of 1996) (NRTA) by virtue of the dimensional limitations. Typical civil engineering construction equipment will need to be brought to the site (e.g., excavators, trucks, graders, compaction equipment, cement trucks, etc.) as well as components required for the mounting of the PV support structures, construction of the substation and site preparation.

- **Establishment of laydown areas on site:** Laydown and storage areas will be required for typical construction equipment. Once the required equipment has been transported to site, a dedicated equipment construction camp and laydown area will need to be established adjacent to the workshop area. The equipment construction camp serves to confine activities and storage of equipment to one designated area to limit potential impacts associated with this phase of development. The laydown area will be used for the assembly of the PV panels and the general placement / storage of construction equipment.
- **Erect PV arrays and construct substation and invertors:** The construction phase involves installation of the PV solar panels and structural and electrical infrastructure required for the operation of the facility. In addition, preparation of the soil and improvement of the access roads is likely to continue for most of the construction phase. For array installations, vertical support posts are driven into the ground. The posts will hold the support structures (tables) on which the PV modules would be mounted. Trenches are dug for the underground AC and DC cabling and the foundations of the inverter enclosures and transformers are prepared if necessary. Underground cables and overhead circuits connect the Power Conversion Stations (PCS) to the on-site AC electrical infrastructure and ultimately the solar facility's onsite substation. The construction of the substation will require a survey of the site, site clearing and levelling and construction of access road(s) (where applicable), construction of a level terrace and foundations, assembly, erection, installation and connection of equipment, and rehabilitation of any disturbed areas, and protection of erosion sensitive areas.
- **Establishment of ancillary infrastructure:** Ancillary infrastructure will include workshop, storage and laydown areas, gatehouse and security complex, as well as a temporary contractor's equipment camp. The establishment of the ancillary infrastructure and support buildings will require the clearing of vegetation and levelling of the development site, and the excavation of foundations prior to construction. Laydown areas for building materials and equipment associated with these buildings will also be required.
- **Undertake site rehabilitation:** Once construction is completed and all construction equipment has been removed, the site will be rehabilitated where practical and reasonable. In addition, on full commissioning of the solar facility, any access points which are not required during operation must be closed and rehabilitated accordingly.

The majority of social impacts associated with the project are anticipated to occur during the construction phase of development and are typical of the type of social impacts generally associated with construction activities. Impacts associated with the design and construction phase of a project are usually of a short duration and temporary in nature, but could have long-term effects on the surrounding social environment if not planned or managed appropriately. It is therefore necessary

that the design phase be conducted in such a manner so as not to result in permanent impacts associated with the ill placement of project components or associated infrastructure.

6.1.1. Construction Phase Impacts Associated with Bonsmara SPP

6.1.1.1. Direct and indirect employment opportunities and skills development

It is anticipated that at its peak the construction of the proposed project will result in the creation of approximately 600-800 employment opportunities. Of those employment opportunities likely to be generated, approximately 60% will accrue to low skilled workers, 25% to semiskilled workers, and 15% to skilled workers. Employment opportunities generated as a result of the project will be temporary in nature and will last for the duration of the construction period (i.e., approximately 18 to 24 months), while the skills developed through experience in the construction of the project will be retained by the community members involved. The project proponent anticipates that most of the general labour force will as far as possible be sourced from the local labour pool. Where relevant skills are unavailable from the local labour pool, these would need to be sought elsewhere. Solar PV projects make use of large numbers of unskilled and semi-skilled labour so there will be good opportunity to use local labour. The injection of income into the area in the form of wages will represent an opportunity for the local economy and businesses in the area.

In addition to direct employment opportunities associated with the construction of the project, a number of indirect employment opportunities will also be created. Indirect employment opportunities will predominantly be created in the service industry, through the opportunity for the provision of secondary services to the construction team. Services may include for example accommodation, catering, and laundry services. Indirect employment opportunities created as a result of the construction of the project would also be temporary in nature and would last for the duration of the construction period (i.e., approximately 18 to 24 months). While difficult to quantify, indirect employment opportunities are significant in that they provide greater opportunity for women to be included and benefit, albeit indirectly. Other indirect employment opportunities that will be created during construction relate to increased demand for transportation, equipment rental, sanitation and waste removal etc. which may benefit local service providers. The creation of employment opportunities is considered to be of moderate magnitude given the levels of unemployment within the area and the low average income.

Table 6.1: Impact assessment on direct and indirect employment opportunities

Nature: The creation of direct and indirect employment opportunities during the construction phase of the project.		
	Without Enhancement	With Enhancement
Extent	Local (2)	Local (2)
Duration	Short duration (1)	Short duration (1)
Magnitude	Medium (2)	High (3)
Probability	Definite (4)	Definite (4)

Significance	Positive Low (22)	Positive Medium (36)
Status	Positive	Positive
Reversibility	Completely reversible (1)	Completely reversible (1)
Irreplaceable loss of resources?	No loss of resource (1)	No loss of resource (1)
Cumulative Effect	Low (2)	Medium (3)
Can impact be enhanced?	Yes	
Enhancement:		
<ul style="list-style-type: none"> - A local employment policy should be adopted to maximise opportunities made available to the local labour force. - Labour should be sourced from the local labour pool as far as possible, and only if the necessary skills aren't available should labour be sourced from (in order of preference) the greater West Rand DM, Gauteng Province, South Africa, or elsewhere. - Where feasible, training and skills development programmes should be initiated prior to the commencement of the construction phase. - As with the labour force, suppliers should also as far as possible be sourced locally. - Where feasible, local contractors that are compliant with Broad-Based Black Economic Empowerment (B-BBEE) criteria should be used. - The recruitment selection process should seek to promote gender equality and the employment of women wherever possible. 		
No-Go Alternative:		
<ul style="list-style-type: none"> - The current status quo is maintained due to no impact; however, the no-go option would signify that the positive impacts in terms of employment and economic benefits would be lost. 		
Cumulative impacts:		
<ul style="list-style-type: none"> - Opportunity to decrease the local unemployment levels and increase the levels of income and spending power within the region. - Opportunity to upgrade and improve skills levels in the area. - Opportunity for local entrepreneurs to develop their businesses (which could result in the creation of additional employment opportunities, levels of income and spending power through sustainable growth). 		
Residual impacts:		
<ul style="list-style-type: none"> - Improved pool of skills and experience in the local area. - Economic growth for small-scale entrepreneurs. - Temporary employment during the construction phase will result in job losses and struggles for construction workers to find new employment opportunities. 		

6.1.1.2. Economic Multiplier effect

There are likely to be opportunities for local businesses and service providers to provide services and materials for the construction phase of the proposed project. The economic multiplier effects from the use of local goods and services will include, but is not limited to, the provision of construction

materials and equipment, and workforce essentials such as catering services, trade clothing, safety equipment, ablution, accommodation, transportation and other goods. In addition, off-site accommodation may be required in the nearby town of Carletonville for contract workers and certain employees. The increase in demand for goods and services may stimulate local business and local economic development (however locally sourced materials and services may be limited due to availability). There is likely to be a direct increase in industry and indirect increase in secondary businesses.

In terms of business opportunities for local companies, expenditure during the construction phase will create business opportunities for the regional and local economy. The increase in demand for new materials and services in the nearby area may stimulate local business and local economic development. There is likely to be a direct increase in industry and indirect increase in secondary businesses. The project proponent should source services needed from the local area as much as possible. These necessities should be sourced from nearby towns and local service providers. Potential opportunities for local economies, a decrease in current level of unemployment, and an increase in incomes will in turn stimulate further expenditure and sales within the local economies.

The injection of income into the area in the form of wages will represent an opportunity for the local economy and businesses in the area. Through the stimulation of employment and income, new demand may be created within local and regional economies. With increased income comes additional income for expenditure on goods and services supplied. Indirect impacts would occur as a result of the new economic development and would include new jobs at businesses that may support the construction workforce or provide project materials, and associated income. The intention should therefore be to maximise local labour employment opportunities, which is likely to have a positive impact on local communities and downstream benefits with regards to household income, education and other social aspects. Such benefits may however be limited given the short construction period (i.e., approximately 18 to 24 months).

Table 6.2: Economic multiplier effects impact assessment

Nature: Significance of the impact from the economic multiplier effects from the use of local goods and services.		
	Without Enhancement	With Enhancement
Extent	Local (2)	Local-Regional (3)
Duration	Short term (1)	Short term (1)
Magnitude	Medium (2)	High (3)
Probability	Possible (2)	Probable (3)
Significance	Positive Low (18)	Positive Medium (33)
Status	Positive	Positive
Reversibility	Completely reversible (1)	Completely reversible (1)

Irreplaceable loss of resources?	No loss of resource (1)	No loss of resource (1)
Cumulative Effect	Low (2)	Medium (3)
Can impact be enhanced?	Yes	
Enhancement:		
<ul style="list-style-type: none"> - It is recommended that a local procurement policy is adopted to maximise the benefit to the local economy. - A database of local companies, specifically Historically Disadvantaged Individuals (HDIs) which qualify as potential service providers (e.g., construction companies, security companies, catering companies, waste collection companies, transportation companies etc.) should be created (or sourced from the local Municipality, where available) and companies listed thereon should be invited to bid for project-related work where applicable. - Local procurement is encouraged along with engagement with local authorities and business organisations to investigate the possibility of procurement of construction materials, goods and products from local suppliers where feasible. 		
No-Go Alternative:		
<ul style="list-style-type: none"> - The current status quo is maintained due to no impact; however, the no-go option would signify that the positive impacts in terms of the lost injection of income into the area. 		
Cumulative impacts:		
<ul style="list-style-type: none"> - Opportunity for local capital expenditure which has the potential to benefit the local service sector. 		
Residual impacts:		
<ul style="list-style-type: none"> - Improved local service sector which will result in a growth in local business. 		

6.1.1.3. Potential loss of productive farmland

A negative impact identified for the construction phase is the potential loss of productive farmland. The activities associated with the construction phase may have a potential impact in terms of the loss of available farmland for grazing as well as other agricultural activities. The current land use of the identified area for the proposed Bonsmara SPP is used for the grazing of livestock (cattle).

Table 6.3: Assessment of potential impacts related to the potential loss of productive farmland

Nature: The potential loss in productive farmland during the construction phase, due to factors such as the construction of roads, the preparation of foundations, power lines, offices etc.		
	Without Mitigation	With Mitigation
Extent	Site (1)	Site (1)
Duration	Short term (1)	Short term (1)
Magnitude	High (3)	Medium (2)
Probability	Probable (3)	Possible (2)

Significance	Negative Medium (36)	Negative Low (20)
Status	Negative	Negative
Reversibility	Partly reversible (2)	Partly reversible (2)
Irreplaceable loss of resources?	Medium (2)	Medium (2)
Cumulative Effect	Low (2)	Low (2)
Can impact be mitigated?	Yes	-
Mitigation:		
<ul style="list-style-type: none"> - The proposed site for the Bonsmara SPP needs to be fenced off prior to the construction phase and all construction related activities should be confined in this fenced off area. - Livestock grazing on the proposed development footprint area need to be relocated. - All affected areas outside the development footprint, which are disturbed during the construction phase, need to be and should be continuously monitored by the Environmental Control Officer (ECO). - Implement, manage and monitor a grievance mechanism for the recording and management of social issues and complaints. - Mitigation measures from the Agricultural and Soil Report, should also be implemented. 		
No-Go Alternative:		
<ul style="list-style-type: none"> - The current status quo is maintained due to no impact. 		
Cumulative Impacts:		
<ul style="list-style-type: none"> - The cumulative impacts associated with the loss of productive farmland is the effect it has on the livelihoods of the farmers, their families and also the workers on the farms and their families. As indicated above this impacted can be mitigated. 		
Residual impacts:		
<ul style="list-style-type: none"> - The residual impacts for the potential loss of productive farmland are the overall loss of grazing for livestock. 		

6.1.1.4. Influx of jobseekers and change in population

Construction projects have the potential to attract jobseekers which may move into an area in search of employment opportunities. An influx of people looking for employment or other economic opportunities could result in increased pressure being placed on economic and social infrastructure, and a change in the local population. Population change refers to the size, structure, density as well as demographic profile of the local community.

An influx of jobseekers into an area, could lead to a temporary increase in the level of crime, cause social disruption and put pressure on basic services. This includes municipal services such as sanitation, electricity, water, waste management, health facilities, transportation and the availability of housing. It could also potentially create conflict between locals and outsiders due to potential differences in racial, cultural and ethnic composition. A further negative impact that could result due to an influx of jobseekers into an area is an increase in unemployment levels due to an oversupply of available workforce, particularly with respect to semi and unskilled workers.

Given the relatively large labour force required for the project (i.e., approximately 600-800 employment opportunities at the peak of construction), the short duration of the construction period (i.e., approximately 18 to 24 months), and the proximity of the site to the town of Carletonville (from which most of the labour is likely to be sourced), the construction of the project is not anticipated to result in changes to the population within the site or its surrounds. In addition, since no man camps will be established on site, the potential for an influx of people into the area or change in population demographics is anticipated to be minimal. The labour force is therefore also not anticipated to place significant pressure on local resources and social networks, or existing services and infrastructure, as they would already be accessing services at their places of residence.

Table 6.4: Assessment of impacts from an influx of jobseekers and change in population in the study area

Nature: In-migration of labourers in search of employment opportunities, and a resultant change in population, and increase in pressure on local resources and social networks, or existing services and infrastructure.		
	Without Mitigation	With Mitigation
Extent	Local (2)	Local (2)
Duration	Permanent (4)	Long term (3)
Magnitude	Medium (2)	Low (1)
Probability	Possible (2)	Possible (2)
Significance	Negative Medium (36)	Negative Low (16)
Status	Negative	Negative
Reversibility	Irreversible In the case of HIV/AIDS (4).	Irreversible In the case of HIV/AIDS (4).
Irreplaceable loss of resources?	Human capital plays a critical role in communities that rely on farming for their livelihoods. If workers with HIV/AIDS are contracted then yes, there will be a significant loss of resources (3).	Human capital plays a critical role in communities that rely on farming for their livelihoods. If workers with HIV/AIDS are contracted then yes, there will be a significant loss of resources (3).
Cumulative Effect	Medium (3)	Low (2)
Can impact be mitigated?	Yes	
Mitigation:		
<ul style="list-style-type: none"> - Develop and implement a local procurement policy which prioritises “locals first”, as far as possible to prevent the movement of people into the area in search of work. 		

<ul style="list-style-type: none"> - Engage with local community representatives prior to construction to facilitate the adoption of the locals first procurement policy. - Provide transportation for workers to ensure workers can easily access their place of employment and do not need to move closer to the project site. - As far as possible, working hours should be kept between daylight hours during the construction phase, and / or as any deviation that is approved by the relevant authorities. - Compile and implement a grievance mechanism. - Appoint a Community Liaison Officer (CLO) to assist with the procurement of local labour. - Prevent the recruitment of workers at the project site. - Implement, manage and monitor a grievance mechanism for the recording and management of social issues and complaints. - Establish clear rules and regulations for access to the proposed site. - Appoint a security company and implement appropriate security procedures to ensure that workers do not remain onsite after working hours. - Inform local community organisations and policing forums of construction times and the duration of the construction phase. - Establish procedures for the control and removal of loiterers from the construction site.
<p>No-Go Alternative:</p> <ul style="list-style-type: none"> - The current status quo is maintained due to no impact.
<p>Cumulative Impacts:</p> <ul style="list-style-type: none"> - Additional pressure on natural resources, services, infrastructure and social dynamics in the area due to an increase in people and change in population. - Possible increase in criminal activities and economic losses in area for property owners. - In the case of HIV/AIDS or unwanted pregnancies the impacts might be permanent and have permanent cumulative impacts on the affected individuals, families and the community.
<p>Residual impacts:</p> <ul style="list-style-type: none"> - Possibility of outside workers remaining in the area after construction is completed and subsequent pressures on local infrastructure, resources and services.

6.1.1.5. Safety and security impacts

The commencement of construction activities can be associated with an increase in crime within an area. The perceived loss of security during the construction phase of a project due to an influx of workers and / or outsiders to the area (as in-migration of newcomers, construction workers or jobseekers are usually associated with an increase in crime), may have indirect effects such as increased safety and security concerns for neighbouring properties, damage to property, increased risk of veld fire, stock theft, poaching, crime and so forth. All landowners have raised concerns regarding security in the area and have reiterated that crime in the area should not increase as a result of the project. A concern was raised regarding the location of the access to the site and the potential to open up the area as a thoroughfare.

Given the fact that a man camp will not be established onsite, and the labour force will therefore not permanently reside within the area, or have any reason to be onsite after hours, it is anticipated that the probability and significance of such safety and security impacts occurring will be reduced.

The project proponent should strive to develop and maintain good relationships and ongoing and open communication with neighbouring landowners. Suitable grievance control mechanisms must be developed and implemented, and the local community informed of the grievance mechanism to be followed. In addition, a security company must be appointed, and appropriate security measures implemented prior to the commencement of construction activities onsite.

Table 6.5: Assessment of safety and security impacts

Nature: Temporary increase in safety and security concerns associated with the influx of people during the construction phase.		
	Without Mitigation	With Mitigation
Extent	Local (2)	Local (2)
Duration	Short term (1)	Short term (1)
Magnitude	High (3)	Medium (2)
Probability	Possible (2)	Possible (2)
Significance	Negative Medium (30)	Negative Low (18)
Status	Negative	Negative
Reversibility	Completely reversible (1)	Completely reversible (1)
Irreplaceable loss of resources?	No loss of resources (1)	No loss of resources (1)
Cumulative Effect	Medium (3)	Low (2)
Can impact be mitigated?	Yes	
Mitigation:		
<ul style="list-style-type: none"> - Working hours should be kept within daylight hours during the construction phase, and / or as any deviation that is approved by the relevant authorities. - Provide transportation for workers to prevent loitering within or near the project site outside of working hours. - The perimeter of the construction site should be appropriately secured to prevent any unauthorised access to the site. The fencing of the site should be maintained throughout the construction period. - The appointed EPC Contractor must appoint a security company to ensure appropriate security procedures and measures are implemented. - Access in and out of the construction site should be strictly controlled by a security company appointed to the project. - A CLO should be appointed as a grievance mechanism. A method of communication should be implemented whereby procedures to lodge complaints are set out for the local community to express any complaints or grievances with the construction process. 		

<ul style="list-style-type: none"> - The EPC Contractor should implement a stakeholder management plan to address neighbouring farmer concerns regarding safety and security. - The project proposed must prepare and implement a Fire Management Plan; this must be done in conjunction with surrounding landowners. - The EPC Contractor must prepare a Method Statement which deals with fire prevention and management.
<p>No-Go Alternative:</p> <ul style="list-style-type: none"> - The current status quo is maintained due to no impact.
<p>Cumulative impacts:</p> <ul style="list-style-type: none"> - Possible increase in crime levels (with influx of people) with subsequent possible economic losses. - Increased risk of veld fires if vegetation clearing is not appropriately implemented, monitored and maintained.
<p>Residual impacts:</p> <ul style="list-style-type: none"> - Possible financial losses for adjacent landowners.

6.1.1.6. Impacts on daily living and movement patterns

Project components and equipment will be transported to site using road transport. A small gravel road off the R500 from Carletonville provides the primary access to the area, additionally the road is connected to the N14 national route. Traffic utilising the road is mainly property owners. Local farmers and residents utilise this road to access their properties.

Increased traffic due to construction vehicles could cause disruptions to road users, the local community and increase safety hazards, especially on the main road that will be utilised – the gravel off the R500 from Carletonville. The use of local roads and transport systems may cause road deterioration and congestion. An increase of traffic from the rise in construction vehicles is a safety concern for other road users and local communities in the area. Impacts will be magnified since farm roads are not designed to carry heavy traffic and are prone to erosion. Noise, vibrations, dust and visual pollution from heavy vehicle traffic during the construction phase could also negatively impact local residents and road users.

The upgrading of access roads may damage the fences along the access road. Infrastructure such as roads and fencing should be maintained in the present condition and repaired immediately, if damaged as a result of construction activities. The contractor should be responsible for managing this impact on private property.

There are a few residents living in the nearby area, which will be impacted by the project. In terms of regional and local roads involved, the expectation is that the proponent should consult with the relevant roads agency to ensure that they do not contribute to the deterioration of roads without taking some responsibility for repairing the impact that their construction vehicles may have on the road during construction phase.

Table 6.6: Assessment of impacts on daily living and movement patterns

Nature: Temporary increase in traffic disruptions and movement patterns during the construction phase.		
	Without Mitigation	With Mitigation
Extent	Local (2)	Local (2)
Duration	Short term (1)	Short term (1)
Magnitude	High (3)	Medium (2)
Probability	Possible (2)	Possible (2)
Significance	Negative Low (27)	Negative Low (16)
Status	Negative	Negative
Reversibility	Partly reversible (2)	Completely reversible (1)
Irreplaceable loss of resources?	No loss of resource (1)	No loss of resource (1)
Cumulative Effect	Negligible (1)	Negligible (1)
Can impact be mitigated?	Yes	
Mitigation:		
<ul style="list-style-type: none"> - 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, that have to be maintained for the duration of the construction phase, and control measures along the gravel road to warn road users of the construction activities taking place for the duration of the construction phase. Warning signs must be always visible, especially at night. - Implement penalties for reckless driving to enforce compliance to traffic rules. - As far as possible, avoid heavy vehicle activity during “peak” hours (when children are taken to school, or people are driving to work). - The developer and EPC Contractor must ensure that all fencing along access roads is maintained in the present condition or repaired if disturbed due to construction activities. - The developer and EPC Contractor must ensure that the roads utilised for construction activities are either maintained in the present condition or upgraded if disturbed due to construction activities. - The EPC 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. - A 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. 		

No-Go Alternative:
- The current status quo is maintained due to no impact.
Cumulative impacts:
- Possible increased traffic and traffic disruptions impacting local communities.
- If damage to roads is not repaired, then this will affect other road users and result in higher maintenance costs for vehicles of road users.
Residual impacts:
- Only damage to roads that is not fixed could affect road users.

6.1.1.7. Nuisance impacts (noise and dust)

Impacts associated with construction related activities include noise, dust, and possible disruption to adjacent properties. Site clearing activities increase the risk of dust and noise being generated, which can in turn negatively impact on adjacent properties. The primary sources of noise during construction would be from construction equipment, vehicle / truck traffic, and ground vibration. Noise levels can be audible over a large distance however are generally short in duration. Dust would be generated from construction activities as well as trucks / vehicles driving on gravel access roads. This impact will negatively impact sensitive receptors and could also potentially negatively impact surrounding land users. The impact of noise and dust on surrounding land users and local farmsteads can be reduced through the application of appropriate mitigation measures.

Table 6.7: Assessment of nuisance impacts (noise and dust)

Nature: Nuisance impacts in terms of temporary increase in noise and dust, and wear and tear on access roads to the site.		
	Without Mitigation	With Mitigation
Extent	Local (2)	Local (2)
Duration	Short term (1)	Short term (1)
Magnitude	High (3)	Medium (2)
Probability	Probable (3)	Possible (2)
Significance	Negative Medium (33)	Negative Low (18)
Status	Negative	Negative
Reversibility	Completely reversible (1)	Completely reversible (1)
Irreplaceable loss of resources?	No loss of resource (1)	No loss of resource (1)
Cumulative Effect	Low (2)	Low (2)
Can impact be mitigated?	Yes	
Mitigation:		

<ul style="list-style-type: none"> - The movement of heavy vehicles associated with the construction phase should be timed to avoid weekends, public holidays, and holiday periods where feasible. - Dust suppression measures must be implemented for heavy vehicles such as wetting of gravel roads on a regular basis and ensuring that vehicles used to transport sand and building materials are fitted with tarpaulins or covers. - Ensure all vehicles are road worthy, drivers are qualified and are made aware of the potential noise and dust issues. - A CLO should be appointed, and a grievance mechanism implemented.
No-Go Alternative: <ul style="list-style-type: none"> - The current status quo is maintained due to no impact.
Cumulative impacts: <ul style="list-style-type: none"> - Other construction activities in the area will heighten the nuisance impacts, such as noise, dust and wear and tear on roads.
Residual impacts: <ul style="list-style-type: none"> - Construction vehicles and construction could cause additional noise and dust in the area.

6.1.1.8. Increased risk of potential veld fires

During the construction phase there is an increased risk of veld fires due to the presence of construction related activities as well as the presence of construction workers on site. The risk of veld fires poses further threats to the loss of livestock and farmsteads in the area. This could result in the loss or damage of farm infrastructure and threaten human lives. The necessary mitigation measures should be implemented, specifically the site needs to be equipped with the correct firefighting equipment and workers should be trained in firefighting and how to work with the equipment. The area of the site also needs to be fenced off, to keep construction related activities within the vicinity of the site. The area surrounding the site's fences need to be cleared to ensure that veld fires that may occur won't jump to the neighbouring farms. For effective mitigation measures in this regard, see the mitigation measures given below.

Table 6.8: Assessment of potential impacts of increased risk of potential veld fires

Nature: The potential loss of livestock, crops, and farmsteads in the area. This also includes the damage and loss of farm infrastructure and the threatening of human lives that are associated with the increased risk of veld fires.		
	Without Mitigation	With Mitigation
Extent	Local (2)	Site (1)
Duration	Short term (1)	Short term (1)
Magnitude	High (3)	Medium (2)
Probability	Probable (3)	Probable (3)
Significance	Negative Medium (36)	Negative Low (18)
Status	Negative	Negative

Reversibility	Partly Reversible (2)	Completely reversible (1)
Irreplaceable loss of resources?	Significant loss of resources (3)	Marginal loss of resource (2)
Cumulative Effect	Negligible (1)	Negligible (1)
Can impact be mitigated?	Yes	
Mitigation:		
<ul style="list-style-type: none"> - A firebreak should be implemented during the construction phase. The firebreak should be controlled and implemented around the perimeters of the project site. - Adequate fire-fighting equipment should be provided and readily available on site and all staff should be trained in firefighting and how to use the fire-fighting equipment. - No staff (except security) should be accommodated overnight on site and the contractor should ensure that no open fires are allowed on site. The use of cooking or heating implements should only be used in designated areas. - Contractors need to ensure that any construction related activities that might pose potential fire risks, are done in the designated areas where it is also managed properly. - Precautionary measures need to be taken during high wind conditions or during the winter months when the fields are dry. - The project will adhere to the National Forest and Veld Fires act and the fire management plan. It is recommended that the project proponent join the local fire association. 		
No-Go Alternative:		
<ul style="list-style-type: none"> - The current status quo is maintained due to no impact. 		
Cumulative impacts:		
<ul style="list-style-type: none"> - There are no cumulative impacts because the potential losses can be compensated for. 		
Residual impacts:		
<ul style="list-style-type: none"> - The residual impacts include the impact on livelihoods and the income generated by the farming activities. The reduced carrying capacity due the loss of grazing fields. In the case thereof compensation need to be paid in the case of any damages and losses. 		

6.1.1.9. Visual and sense of place impacts

Intrusion impacts such as aesthetic pollution (i.e., building materials, construction vehicles, etc.), noise and light pollution, and impacts on the rural nature of the site will impact the “sense of place” for the local community. Construction related activities have the potential to negatively impact a local area’s “sense of place”. The alteration of the sense of place in view of the residents and road users will start during the construction phase and remain for the project’s operational lifetime.

A standalone Visual Impact Assessment has been undertaken as part of the EIA process.

Table 6.9: Assessment of impacts on the sense of place

Nature: Intrusion impacts from construction activities will have an impact on the area's "sense of place".		
	Without Mitigation	With Mitigation
Extent	Local (2)	Local (2)
Duration	Short term (1)	Short term (1)
Magnitude	High (3)	Medium (2)
Probability	Probable (3)	Probable (3)
Significance	Negative Medium (36)	Negative Low (22)
Status	Negative	Negative
Reversibility	Barely Reversible (3)	Partly reversible (2)
Irreplaceable loss of resources?	No loss of resources (1)	No loss of resources (1)
Cumulative Effect	Low (2)	Low (2)
Can impact be mitigated?	Yes	
Mitigation:		
<ul style="list-style-type: none"> - Implement mitigation measures identified in the Visual Impact Assessment (VIA) prepared for the project. - To the extent possible, limit noise generating activities to normal daylight working hours and avoid weekends and public holidays. - The movement of heavy vehicles associated with the construction phase should be timed to avoid weekends, public holidays, and holiday periods where feasible. - Dust suppression measures must be implemented for heavy vehicles such as wetting of gravel roads on a regular basis and ensuring that vehicles used to transport sand and building materials are fitted with tarpaulins or covers. - All vehicles must be road-worthy, and drivers must be qualified and made aware of the potential road safety issues and need for strict speed limits. - Communication, complaints, and grievance channels must be implemented and contact details of the CLO must be provided to the local community in the study area. 		
No-Go Alternative:		
<ul style="list-style-type: none"> - The current status quo is maintained due to no impact. 		
Cumulative impacts:		
<ul style="list-style-type: none"> - Other construction activities in the area will heighten the intrusion impacts, such as noise, dust and aesthetic pollution and further negatively impact the area's 'sense of place'. 		
Residual impacts:		
<ul style="list-style-type: none"> - Additional construction vehicles movement could cause a visual impact due to close proximity to urban area. 		

6.2. Operational Phase

Bonsmara SPP is anticipated to operate for a minimum of 20 years. The facility will operate continuously, 7 days a week, during daylight hours. While the solar facility will be largely self-sufficient, monitoring and periodic maintenance activities will be required. Key elements of the Operation and Management (O&M) Plan include monitoring and reporting the performance of the solar facility, conducting preventative and corrective maintenance, receiving visitors, and maintaining security.

The potential positive and negative social impacts which could arise as a result of the operation of the proposed project include the following:

6.2.1. Operational Phase Impacts Associated with Bonsmara SPP

6.2.1.1. Direct and Indirect employment opportunities and skills development

It is anticipated that the operation of the projects is likely to create a maximum of approximately 35-50 work opportunities. Maintenance activities will be carried out throughout the lifespan of the project, and will include washing of solar panels, vegetation control, and general maintenance around the solar energy facility. The employment opportunities generated as a result of the project will be long term and will last for the duration of operation (i.e., approximately 20 years). None of the employment opportunities will be permanently stationed onsite. In addition to the direct employment opportunities, it is anticipated that additional indirect employment opportunities will be generated during the operation of the project.

Table 6.10: Employment opportunities and skills development

Nature: The creation of employment opportunities and skills development opportunities during the operation phase for the country and local economy.		
	Without Enhancement	With Enhancement
Extent	Local-Regional (3)	Local-Regional (3)
Duration	Long term (3)	Long term (3)
Magnitude	Low (1)	Medium (2)
Probability	Probable (3)	Definite (4)
Significance	Positive Low (15)	Positive Medium (36)
Status	Positive	Positive
Reversibility	Barely reversible (3)	Irreversible (4)
Irreplaceable loss of resources?	No loss of resource (1)	No loss of resource (1)
Cumulative Effect	Low (2)	Medium (3)
Can impact be enhanced?	Yes	

Enhancement:

- It is recommended that local employment policy is adopted to maximise the opportunities made available to the local community.
- The recruitment selection process should seek to promote gender equality and the employment of women wherever possible.
- Vocational training programs could be established to promote the development of skills, or other investments in local skills development, education and/or local enterprise development initiatives.

No-Go Alternative:

- The current status quo is maintained due to no impact; however, the no-go option would signify that the positive impacts regarding employment and economic benefits would be lost.

Cumulative impacts:

- Opportunity to reduce unemployment rates.

Residual impacts:

- Improved pool of skills and experience in the local area.

6.2.1.2. Development of non-polluting, renewable energy infrastructure

South Africa currently relies predominantly on coal-generated electricity to meet its energy needs. As a result, the country's carbon emissions are considerably higher than those of most developed countries partly because of the energy-intensive sectors which rely heavily on low quality coal, which is the main contributor to GHG emissions. The use of solar technology for power generation is considered a non-consumptive use of a natural resource which produces zero GHG emissions during its operation. The generation of RE utilising solar power will contribute positively to South Africa's electricity market. Given South Africa's reliance on Eskom as a power utility, the benefits associated with a REIPPP Programme are regarded as an important contribution, and the advancement of RE has been identified as a priority for South Africa.

Increasing the contribution of the RE sector to the local economy would contribute to the diversification of the local economy and provide greater economic stability. The growth in the RE sector as a whole could introduce new skills and development into the area. This is especially true with regards to solar power specifically considering the number of other solar power projects proposed within the broader area.

The development of RE projects have the potential to contribute to the stability of the economy and could contribute to the local economy through employment generation (direct, indirect, and local service providers) and revenue generation. While the overall contribution of the project to South Africa's total energy requirements is small, the facility will also contribute towards offsetting the total carbon emissions associated with energy generation in South Africa. It should however be noted that such a benefit is associated with all RE projects and not only solar power projects.

Table 6.11: Assessment of the development of non-polluting, renewable energy infrastructure

Nature: Development of non-polluting, renewable energy infrastructure.		
	Without Enhancement	With Enhancement
Extent	Local-Regional-National (4)	Local-Regional-National (4)
Duration	Long term (4)	Long term (4)
Magnitude	Medium (2)	Medium (2)
Probability	Definite (4)	Definite (4)
Significance	Positive Medium (36)	Positive Medium (36)
Status	Positive	Positive
Reversibility	Completely reversible (1)	Completely reversible (1)
Irreplaceable loss of resources?	Marginal loss of resource (2), in terms of the impact of climate change on ecosystems.	Marginal loss of resource (2), in terms of the impact of climate change on ecosystems.
Cumulative Effect	Medium (3)	Medium (3)
Can impact be mitigated?	No	
Enhancement:		
- None identified.		
No-Go Alternative:		
- The current status quo is maintained due to no impact; however, the no-go option would signify that the positive impacts in terms of the generation of renewable energy for South Africa would be lost.		
Cumulative impacts:		
- Reduce carbon emissions through the use of renewable energy and contribute to reducing global warming.		
Residual impacts:		
- Reduce carbon emissions through the use of renewable energy and contribute to reducing global warming.		

6.2.1.3. Potential loss of agricultural land

The development of the proposed project on an agricultural property would result in the area of land required to support the development footprint being removed from potential agricultural production. This could have negative implications in terms of food production and security and could also threaten jobs of workers employed in the agricultural activities.

Table 6.12: Assessment on the loss of agricultural land and overall productivity

Nature: Loss of agricultural land and overall productivity as a result of the operation of the proposed project on an agricultural property.		
	Without Mitigation	With Mitigation
Extent	Site (1)	Site (1)
Duration	Long term (3)	Long term (3)
Magnitude	Medium (2)	Medium (2)
Probability	Probable (3)	Possible (2)
Significance	Negative Medium (30)	Negative Low (22)
Status	Negative	Negative
Reversibility	Partly reversible (2)	Reversible (1)
Irreplaceable loss of resources?	High (3)	Medium (2)
Cumulative Effect	Medium (3)	Low (2)
Can impact be mitigated?	Yes	
Mitigation:		
<ul style="list-style-type: none"> - The proposed mitigation measures for the construction phase should have been implemented at this stage. - Mitigation measures from the Agricultural and Soil Report, should also be implemented. 		
No-Go Alternative:		
<ul style="list-style-type: none"> - The current status quo is maintained due to no impact. 		
Cumulative impacts:		
<ul style="list-style-type: none"> - The cumulative impacts associated with the loss of productive farmland are the effect it has on the livelihoods of the farmers, their families and the workers on the farms and their families. As indicated above this impact can be mitigated through rehabilitation. This also has a cumulative effect on national food security. 		
Residual impacts:		
<ul style="list-style-type: none"> - The residual impacts for the potential loss of productive farmland are the overall loss of grazing for livestock if the productive farmland is not rehabilitated in the decommissioning phase 		

6.2.1.4. Contribution to Local Economic Development (LED) and social upliftment

Projects which form part of the DMREs REIPPP Programme are required, as part of their bidding requirements, to contribute towards LED and social upliftment initiatives within the area in which they are proposed. In addition, they are required to spend a percentage of their revenue on socio-economic and enterprise development, as well as allocate ownership shares to local communities that benefit previously disadvantaged communities around the project. A portion of the dividends generated by

each development also need to be invested into LED projects and programmes. The proposed development therefore has the potential to contribute positively towards socio-economic development and improvements within the local area.

Socio-economic spin-offs from the proposed development could therefore contribute towards better infrastructure provision, and the investment in education and skills development. An in-depth Community Needs Assessment (CNA) is required to ensure that the beneficiary community's needs are understood and sufficiently addressed by the proposed development programmes in order to contribute meaningfully towards local economic growth and development. It should be noted however that such a benefit would be associated with all RE projects and not just solar power projects in particular.

Table 6.13: Assessment of the contribution to LED and social upliftment

Nature: Contribution to LED and social upliftment during the operation of the project.		
	Without Enhancement	With Enhancement
Extent	Local-Regional-National (4)	Local-Regional-National (4)
Duration	Long term (3)	Long term (3)
Magnitude	High (3)	Very High (4)
Probability	Definite (4)	Definite (4)
Significance	Positive Medium (48)	Positive High (72)
Status	Positive	Positive
Reversibility	Partly reversible (2)	Barely reversible (3)
Irreplaceable loss of resources?	No loss of resources (1)	No loss of resources (1)
Cumulative Effect	Low (2)	Medium (3)
Can impact be enhanced?	Yes	
Enhancement:		
<ul style="list-style-type: none"> - A CNA must be conducted as far as practically possible to ensure that the LED and social upliftment programmes proposed by the project are meaningful. - Ongoing communication and reporting are required to ensure that maximum benefit is obtained from the programmes identified, and to prevent the possibility for such programmes to be misused. - The programmes should be reviewed on an ongoing basis to ensure that they are best suited to the needs of the community at the time (bearing in mind that these are likely to change over time). 		
No-Go Alternative:		
<ul style="list-style-type: none"> - Loss of contribution to LED and social upliftment during the operation of the project. 		
Cumulative impacts:		

<ul style="list-style-type: none"> - Significant LED and social upliftment of the local communities as a result of other IPP projects within the area.
<p>Residual impacts:</p> <ul style="list-style-type: none"> - Social upliftment of the local communities through the development and operation of the project.

6.2.1.5. Impact on tourism

In the Gauteng Province tourism is regarded as an important sector contributing to the provinces' economic sectors. The impact however of the proposed Bonsmara SPP on the tourism sector is likely to be low, but in some cases the Bonsmara SPP may attract tourists to the proposed area and its surroundings.

Table 6.14: Assessment of potential impacts related to the impact on tourism

Nature: The potential impact on tourism due to the establishment of the PV.		
	Without Mitigation / Enhancement	With Mitigation / Enhancement
Extent	Local (2)	Local (2)
Duration	Long term (3)	Long term (3)
Magnitude	Medium (2)	Medium (2)
Probability	Probable (3)	Probable (3)
Significance	Positive/ Negative Low (24)	Positive/ Negative Low (24)
Status	Positive / Negative	Positive / Negative
Reversibility	Reversible (1)	Reversible (1)
Irreplaceable loss of resources?	No loss of resource (1)	No loss of resource (1)
Cumulative Effect	Low (2)	Low (2)
Can impact be mitigated/enhanced?	Yes.	
Enhancement/Enhancement:		
<ul style="list-style-type: none"> - Due to the extent of the project no viable mitigation measures can be implemented to eliminate the visual impact of the PV panels, but the subjectivity towards the PV panels can be influenced by creating a "Green Energy" awareness campaign, educating the local community and tourists on the benefits of renewable energy. Tourists visiting the area should be made aware of South Africa's movement towards renewable energy. This might create a positive feeling of a country moving forward in terms of environmental sustainability. 		
No-Go Alternative:		
<ul style="list-style-type: none"> - The current status quo is maintained due to no impact. 		

Cumulative impacts:

- The cumulative impacts associated with the impact on the tourism sector are not rated significant. Tourism in the Carletonville region is not based on scenic attractions, but mostly accommodation to mining and contract workers.

Residual impacts:

- There are no residual impacts identified.

6.2.1.6. Visual and sense of place impacts

An area's sense of place is created through the interaction of various characteristics of the environment, including atmosphere, visual resources, aesthetics, climate, lifestyle, culture, and heritage. An area's sense of place is however subjective and largely dependent on the demographics of the population residing within the area and their perceptions regarding trade-offs. For example, while some individuals may prefer not to see any form of infrastructure development, others may have an interest in large-scale infrastructure, or engineering projects, and the operation of such facilities, and consider the impact to be less significant. Such a scenario may especially be true given that the project comprises a Renewable Energy project and could therefore be seen as benefitting the local environment, when compared to non-renewable energy generation projects.

An impact on the sense of place is one that alters the visual landscape to such an extent that the user experiences the environment differently, and more specifically, in a less appealing or less positive light. The social impacts associated with the impact on sense of place relate to the change in the landscape character and visual impact of the Bonsmara SPP. The area surrounding the project site is characterised by farmland, and electricity infrastructure. Considering this, it can be anticipated that the visual and sense of place impacts associated with the operation of the facility will be of low significance after mitigation measures.

Table 6.15: Assessment of the visual impact and impacts on sense of place

Nature: Visual impacts and sense of place impacts associated with the operation phase of the PV.		
	Without Mitigation	With Mitigation
Extent	Local (2)	Local (2)
Duration	Long term (3)	Long term (3)
Magnitude	High (3)	Medium (2)
Probability	Probable (3)	Possible (2)
Significance	Negative Medium (45)	Negative Low (24)
Status	Negative	Negative
Reversibility	Reversible (1) - In case of the no development alternative or in the removal of the PV.	Reversible (1) - In case of the no development alternative or in the removal of the PV.
Irreplaceable loss of resources?	Significant loss of resources (3)	Marginal loss of resources (2)

Cumulative Effect	Medium (3)	Low (2)
Can impact be mitigated?	Yes	
Mitigation:		
<ul style="list-style-type: none"> - To effectively mitigate the visual impact and the impact on sense of place during the operational phase of the proposed Bonsmara SPP, it is suggested that the recommendations made in the Visual Impact Assessment (specialist study) should be followed in this regard. 		
No-Go Alternative:		
<ul style="list-style-type: none"> - The current status quo is maintained due to no impact. 		
Cumulative impacts:		
<ul style="list-style-type: none"> - Potential impact on the current sense of place in the area due to other solar power developments within the area. 		
Residual impacts:		
<ul style="list-style-type: none"> - The visual impact of the PV will remain if the facility is not decommissioned and dismantled after the end of its operational life. 		

6.3. Cumulative Impacts

The EIA Regulations (as amended in 2017) determine that cumulative impacts, *“in relation to an activity, means the past, current and reasonably foreseeable future impact of an activity, considered together with the impact of activities associated with that activity, that in itself may not be significant, but may become significant when added to the existing and reasonably foreseeable impacts eventuating from similar or diverse activities.”* Cumulative impacts can be incremental, interactive, sequential or synergistic. EIAs and BAs have traditionally failed to come to terms with such impacts, largely as a result of the following considerations:

- Cumulative effects may be local, regional or global in scale and dealing with such impacts requires coordinated institutional arrangements;
- Complexity - dependent on numerous fluctuating influencing factors which may be completely independent of the controllable actions of the proponent or communities; and
- Project level investigations are ill-equipped to deal with broader biophysical, social and economic considerations

According to the DFFE’s database, eight other solar PV plant applications have been submitted to the Department within the geographic area of investigation (refer to **Table 6.16** and **Figure 6.1** for an overview of solar PV facilities within a 30km radius of the project site).

Table 6.16: A summary of related projects, that may have a cumulative impact, in a 30 km radius of the study area

Site	Distance from Study Area	Proposed generating capacity	DEFF Reference	EIA Process	Project status
Portion 3 (Portion of Portion 2 of the Farm Rietpoort 395)	19km	15 MW	12/12/20/2330	BAR	Approved
Portion 1, 2, 4, 5 and 6 of the Farm Uitval 280	23km	200 MW	14/12/16/3/3/2/919	Scoping and EIA	Approved
Jersey Solar Power Plant	30KM	350 MW	14/12/16/3/3/2/2257	Scoping and EIA	In process
Carmel Solar 1	28km	240 MW	To be obtained	Scoping and EIA	In process
Varkenslaagte Solar	28km	240 MW	To be obtained	Scoping and EIA	In process
Angus Solar Power Plant	0km	250MW	To be obtained	Scoping and EIA	In process
Tuli Solar Power Plant	0km	250MW	To be obtained	Scoping and EIA	In process
Simbra Solar Power Plant	0km	250MW	To be obtained	Scoping and EIA	In process

*** It is unclear whether other projects not related to renewable energy is or has been constructed in this area, and whether other projects are proposed. In general, development activity in the area is focused on agriculture and mining. It is quite possible that future solar farm development may take place within the general area.*

The potential for cumulative impacts to occur as a result of the projects is therefore likely. Potential cumulative impacts identified for the project include positive impacts on the economy, business development, and employment, as well as negative impacts such as an influx of jobseekers and change in the area's sense of place.

Table 6.17: Cumulative impacts of employment opportunities, business opportunities and skills development

Nature: An increase in employment opportunities, skills development and business opportunities with the establishment of more than one solar power 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 (3)	Long term (3)
Magnitude	High (3)	Very High (4)
Probability	Probable (3)	Definite (4)
Significance	Positive Medium (39)	Positive High (56)
Status	Positive	Positive
Reversibility	Reversible (1)	Reversible (1)
Irreplaceable loss of resources?	No loss of resources (1)	No loss of resources (1)
Cumulative Effect	Low (2)	Low (2)
Can impact be enhanced?	Yes	
Enhancement:		
<ul style="list-style-type: none"> - The establishment of several solar power projects under the REIPPP Programme in the area has 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. 		
Residual impacts:		
<ul style="list-style-type: none"> - Improved pool of skills and experience in the local area. - Economic growth for small-scale entrepreneurs. 		

6.3.1.2. Cumulative impact with large scale in-migration of people

While the development of a single solar power project may not result in a major influx of people into an area, the development of several projects may have a cumulative impact on the in-migration and movement of people. In addition, the fact that the project is proposed within an area characterised by good levels of solar irradiation suitable for the development of commercial solar energy facilities implies that the surrounding area is likely to be subject to considerable future applications for PV energy facilities. Levels of unemployment, and the low level of earning potential may attract individuals to the area in search of better employment opportunities and higher standards of living.

It is exceedingly difficult to control an influx of people into an area, especially in a country where unemployment rates are high. It is therefore important that the project proponent implement and

maintain strict adherence with a local employment policy in order to reduce the potential of such an impact occurring.

Table 6.18: Cumulative impact with large-scale in-migration of people

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-Regional (3)	Local-Regional (3)
Duration	Short term (1)	Long term (3)
Magnitude	Medium (2)	High (3)
Probability	Possible (2)	Probable (3)
Significance	Negative Low (20)	Negative Medium (39)
Status	Negative	Negative
Reversibility	Reversible (1)	Reversible (1)
Irreplaceable loss of resources?	No loss of resources (1)	No loss of resources (1)
Cumulative Effect	Low (2)	Medium (3)
Can impact be mitigated?	Yes	
Mitigation:		
<ul style="list-style-type: none"> - Develop a recruitment policy / process (to be implemented by contractors), which will source labour locally. - Work together with government agencies to ensure 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. 		
Residual impacts:		
<ul style="list-style-type: none"> - Possibility of outside workers remaining in the area after construction is completed and subsequent pressures on local infrastructure, services and poverty problems. 		

6.4. Decommissioning Phase

Typically, major social impacts associated with the decommissioning phase are linked to the loss of jobs and associated income and will be similar to the impacts during the construction phase. This has implications for the households who are directly affected, the communities within which they live, and the relevant local authorities. However, in the case of Bonsmara SPP it is anticipated that the proposed facility will be refurbished and upgraded to prolong its life. No decommissioning of the facility is proposed.

6.5. Assessment of Alternatives

No alternative sites have been identified for assessment. The final location of the proposed project on the proposed site will be informed by technical considerations and inputs from the relevant specialist studies (including the SIA) being undertaken as part of the EIA process.

6.6. Assessment of Impacts for the No-Go Alternative

The “no-go” alternative is the option of not constructing Bonsmara SPP. The implementation of Bonsmara SPP is expected to result in a number of positive and negative social impacts. The majority of 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 phase 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 and sense of place impacts.

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

- Potential direct and indirect employment opportunities.
- Potential economic multiplier effect.
- Development of non-polluting, renewable energy infrastructure.

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 job creation, skills development, and associated economic business opportunities for the local economy.

The option of not developing Bonsmara SPP would not compromise the development of RE facilities in South Africa. However, the socio-economic benefits for local communities associated with this specific project would be forfeited.

The use of renewable energy will increase. By reducing the use of coal, carbon emissions will reduce and effectively benefit climate change and global warming.

7. KEY FINDINGS AND RECOMMENDATIONS

This SIA focused on the collection of data to identify and assess social issues and potential social impacts associated with the development of Bonsmara SPP. Secondary data was collected and presented in a literature review and primary data was collected through consultations with affected and adjacent landowners and 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 and construction, and operation phase are presented in **Table 7.1** and

Table 7.2. A summary of the potential positive and negative cumulative social impacts identified for the project is provided in **Table 7.3**.

Table 7.1: Summary of potential social impacts identified for the detailed design and construction phase

Impact	Significance Without Mitigation / Enhancement	Significance With Mitigation / Enhancement
Positive Impact		
Creation of direct and indirect employment and skills development opportunities.	Positive Low (22)	Positive Medium (36)
Economic multiplier effects	Positive Low (18)	Positive Medium (33)
Negative Impacts		
Potential loss of productive farmland	Negative Medium (36)	Negative Low (20)
In-migration of people (non-local workforce and jobseekers).	Negative Medium (36)	Negative Low (16)
Safety and security impacts	Negative Medium (30)	Negative Low (18)
Impacts on daily living and movement patterns	Negative Low (27)	Negative Low (16)
Nuisance impact (noise and dust)	Negative Medium (33)	Negative Low (18)
Potential impacts of increased risk of potential veld fires	Negative Medium (36)	Negative Low (18)
Visual and sense of place impacts	Negative Medium (36)	Negative Low (22)

Table 7.2: Summary of potential social impacts identified for the operation phase

Impact	Significance Without Mitigation / Enhancement	Significance With Mitigation / Enhancement
Positive Impact		
Direct and indirect employment and skills development opportunities	Positive Low (15)	Positive Medium (36)
Development of non-polluting, renewable energy infrastructure	Positive Medium (36)	Positive Medium (36)
Contribution to LED and social upliftment	Positive Medium (48)	Positive High (72)
Potential impacts on tourism	Positive Low (24)	Positive Low (24)
Negative Impacts		
Potential impacts on tourism	Negative Low (24)	Negative Low (24)
Impacts associated with the loss of agricultural land.	Negative Medium (30)	Negative Low (22)
Visual and sense of place impacts	Negative Medium (45)	Negative Low (24)

Table 7.3: Summary of potential cumulative social impacts identified for the project

Cumulative Impact	Significance Without Mitigation / Enhancement	Significance With Mitigation / Enhancement
Positive Cumulative Impact		
Cumulative impact from employment, skills and business opportunities and skills development	Positive Medium (39)	Positive High (56)
Negative Cumulative Impacts		
Cumulative impact with large-scale in-migration of people	Negative Low (20)	Negative Medium (39)

7.1. Key Findings

The Carletonville and surrounding communities are some vulnerable communities within the project area that may be affected by the development of the Bonsmara SPP and its associated infrastructure. The construction is traditionally associated with the greatest social impact communities, as a result the town of Carletonville and its surrounding communities may be affected by social impacts. Many of the social impacts are unavoidable and will take place to some extent but can be managed through

the careful planning and implementation of appropriate mitigation measures. Several potential positive and negative social impacts have been identified for the project, however an assessment of the potential social impacts indicated that there are no perceived negative impacts that are so significant to allow them to be classified as “fatal flaws”.

Based on the social impact assessment, the following general conclusions and findings can be made:

- The construction phase of the Bonsmara SPP, like any other construction project, may bring about negative social impacts, such as the influx of non-local workers and job seekers, disturbance due to noise and dust pollution, increase in road usage which could lead to road damage, and safety concerns in the region. The impacts are not limited to PV projects but rather common in most construction projects. These impacts can be reduced by implementing proposed mitigation measures. Therefore, taking proactive measures to minimize the significance of these impacts on Carletonville and especially the surrounding rural communities.
- The development of the Bonsmara SPP will generate employment opportunities for individuals from the Carletonville and surrounding communities. During the construction phase, approximately 600-800 job opportunities will be created, providing a temporary source of employment. Specifically, this would benefit the Merafong City LM as a large proportion of the population is not economically active or is unemployed. Following the construction phase, a limited number of job opportunities will be available during the operational phase. By reducing the region’s dependency and boosting overall quality of life, the Bonsmara SPP will contribute significantly to the community’s economic growth.
- The implementation of the Bonsmara SPP is expected to enhance the skill development in the community and lead to better employment opportunities. This, in turn, will equip the workers with valuable knowledge and skills that can be beneficial for their future professional endeavours. Consequently, the overall educational level of the people residing in the Merafong City LM is expected to improve.
- The Merafong City LM’s economy has the potential to benefit from the proposed project by fostering entrepreneurial growth and opportunities, particularly for local businesses in Carletonville. These businesses, involved in the provision of general materials, goods, and services during both the construction and operational phases, are likely to experience positive impacts. Furthermore, the cumulative effects of developing additional solar facilities to the currently proposed facilities could amplify these benefits.
- The proposed development of the Bonsmara SPP represents an investment in non-polluting and renewable energy infrastructure. In comparison to energy generated through the combustion of fossil fuels, this presents a favourable social benefit for society.
- It should be noted that the perceived benefits associated with the Bonsmara SPP, which include renewable energy generation and local economic and social development, outweigh the perceived negative impacts associated with the project.
- The proposed development of the Bonsmara SPP could reduce current loadshedding associated with the country, specifically reducing the current strain on Eskom power generation facilities. Not only would it increase our green energy generation, but reduce strain imposed on companies as a result of loadshedding. In return this could lead current future

work opportunities to be of a more stable nature and not impose additional strain on companies.

7.2. Recommendations

The following recommendations are made based on the SIA. The proposed mitigation measures should be implemented to limit the negative impacts and enhance the positive impacts associated with the project. Based on the social assessment, the following recommendations are made:

- The appointment of a CLO to assist with the management of social impacts and to deal with community issues, if feasible.
- It is imperative that local labour be sourced, wherever possible, to ensure that benefits accrue to the local communities. Efforts should be made to involve local businesses during the construction activities. where possible. Local procurement of labour and services / products would greatly benefit the community during the construction and operational phases of the project.
- Local procurement of services and equipment is required where possible in order to enhance the multiplier effect.
- Involve the community in the process as far as possible (encourage co-operative decision making and partnerships with local entrepreneurs).
- Employ mitigation measures to minimise the dust and noise pollution and damage to existing roads.
- Safety and security risks should be considered during the planning / construction phase of the proposed project. Access control, security and management should be implemented to limit the risk of crime increasing in the area.

7.3. Conclusion

The proposed project and associated infrastructure are 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 recommended mitigation measures and management actions identified for the project.

The proposed Bonsmara SPP has the potential to generate additional income and employment opportunities for Carletonville and the surrounding communities. This benefit could be particularly significant to reduce the dependency of job opportunities in the mining sector. Additional positive impacts can be associated with the Bonsmara SPP with regards to additional renewable energy facilities.

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