

# **A BASIC ASSESSMENT FOR THE ROOS SOLAR PV FACILITY IN MPUMALANGA PROVINCE**

## **SOCIO-ECONOMIC IMPACT ASSESSMENT (SEIA)**

**JULY 2023**

**SOCIAL RISK RESEARCH (PTY) LTD**




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**A BASIC ASSESSMENT FOR THE ROOS SOLAR PV FACILITY IN MPUMALANGA  
PROVINCE  
SOCIO-ECONOMIC IMPACT ASSESSMENT (SEIA)**

**SUBMITTED TO**

 <p><b>SiVEST</b> Celebrating 70 Years 1952-2022 Engineering Consulting   Project Management   Environmental Consulting Town &amp; Regional Planning   Management Systems Consulting   Training</p>	<p><b>SiVEST SA (Pty) Ltd</b> Natalie Pullen Divisional Manager Environmental Consultant +27 82 558 9079</p>
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**SUBMITTED BY:**

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## EXECUTIVE SUMMARY

JUWI South Africa (Pty) Ltd proposes to develop a solar PV facility of 50 MW and grid connection infrastructure to connection to the national grid in the western part of the Emakhazeni Local Municipality in Mpumalanga Province. Salient features of the project are the following:

- Total site footprint: ~ 324 ha
- Developable area footprint: ~ 271 ha
- PV area footprint: ~ 51 ha
- No construction camps will be developed, and labour would be sourced from nearby areas, as per relevant procurement requirements.
- Estimated number of employment opportunities generated by each PV project:
  - o Construction phase: 100 (skills split would be in line with applicable procurement requirements but would be roughly 60% low-skilled, 25% semi-skilled and 15% skilled)
  - o Operational phase: 10 (skills split would be in line with applicable procurement requirements but would be roughly 70% low skilled, 25% semi-skilled and 5% skilled)
- Little information is available about the decommissioning phase. The parameters of the construction phase are therefore taken to apply to the decommissioning phase.

The proposed development site is next to the N4 Highway between Gauteng and Mbombela. The Emakhazeni Municipality is mainly a rural municipality. The area serves as a gateway to the tourism parks and private reserves in the Lowveld areas of the Province. There are no tourism related destinations within 15 km from the site.

The proposed development is in Ward One of the Municipality which will be most affected by the direct socio-economic impacts of the project. Whereas the total population of Emakhazeni is in the order of 54 400 in 2022/3, the population of Ward One was 5 853 in 2011. The community of Ward One is poor working mainly on the farms and mines in the region with an average annual income of R29 400 per household in 2011 and with a high unemployment rate of more than 24%. Most of the formally employed persons work in the agriculture and mining sectors. Ninety-nine percent (99%) of the population in Ward One is from the Black population group with an even male and female gender split. The population is a young population with a mean age of 23 years and 46% of the people are younger than 19 years of age. About 5% of the population is older than 60 years.

The following socio-economic impacts are identified during the construction and operational phases.

ROOS PV FACILITY IN MPUMALANGA	SIGNIFICANCE	
	BEFORE MITIGATION	AFTER MITIGATION
<b>Construction and Decommissioning Phases</b>		
Direct and indirect economic benefits due to the investment in construction and manufacturing of the infrastructure and installations.	Positive Low impact	Positive Low impact

Employment opportunities during construction with accompanying skills development.	Positive Low impact	Positive Low impact
Influx of job seekers	Negative Low impact	Negative Low impact
Temporary increase in safety, security, and uncontrolled fire risks	Negative Low impact	Negative Low impact
Temporary increase in traffic disruptions and movement patterns	Negative Low impact	Negative Low impact
Nuisance impacts in terms of temporary increase in noise and dust.	Negative Low impact	Negative Low impact
<b>Operational Phase</b>		
Avoidance of Climate Impacts	Positive Medium impact	Positive Medium impact
Creation of direct and indirect employment coupled with skills development	Positive Low impact	Positive Medium impact
Revenue for the fiscus and local municipality	Positive Medium impact	Positive Medium impact
Visual and sense of place impacts and related impacts on tourism	Negative Medium impact	Negative Low impact
Removed of productive agricultural land.	Negative Medium impact	Negative Medium impact

The 'no-go' alternative will result in no direct socio-economic impacts from the proposed project on the site or surrounding local area although, it does mean that some economic employment opportunities will be lost for the local community.

The socio-economic benefits and disadvantages of the proposed project relates to the broader environment outside of the site and do not relate to the specific solar site and grid infrastructure. The identification of preferred site options is not sensitive to the socio-economic impacts.

There are no other renewable energy projects within 15 km of the proposed PV project. Although the broader project area is known for its mining activities within 50 km from the site, the location of the site, which on the north of the N4, share few socio-economic impacts with the mines. It is therefore assessed that the proposed project will not contribute to the cumulative socio-economic impacts in the local area.

### **Impact statement**

The proposed project does not present any socio-economic fatal flaws and the project should go ahead. The benefits of the proposed project exceed the negative socio-economic impacts as well as the no-go option. Given that renewable energy development is highly desirable in South Africa from a social, environmental and development point of view, the positive economic and social opportunities lost under the no-go option renders it as an unattractive alternative.

### **Mitigations**

RISK IMPACT	MITIGATION
Influx of job seekers	Management of the recruitment practices to avoidance an influx of persons seeking employment. Community information and training concerning the project and recruitment requirements
Temporary increase in safety, security, and uncontrolled fire risks	Integrate the site security systems in the regional and farmer security processes, systems, and networks.
Temporary increase in traffic disruptions and movement patterns	Driver training and local traffic management systems
Nuisance impacts in terms of temporary increase in noise and dust.	Use of dust management practices during construction.
Visual and sense of place impacts and related impacts on tourism	See the specialist report. Landscaping to visually screen the project
Removed of productive agricultural land.	See the specialist report

### **Conclusion, recommendations, and mitigations**

It is recommended that the proposed project proceed with the following actions being undertaken:

- Implementation of the mitigations.
- Review comments received from members of the public, key stakeholders, and any organ of state during the public review process.
- Prepare a SIA Report for inclusion in the EIA Report to be prepared for the project.

## DFFE SPECIALIST REPORTING REQUIREMENTS

### 1. SPECIALIST INFORMATION

Specialist Company Name:	SOCIAL RISK RESEARCH PTY LTD		
B-BBEE	Contribution level (indicate 1 to 8 or non-compliant)	4	Percentage Procurement recognition
Specialist name:	EUGENE DE BEER		
Specialist Qualifications:	BSc Town and Regional Planning Master Of Business Leadership		
Professional affiliation/registration:	<b>Professional Membership:</b>		<b>Member Number</b>
	International Association of Impact Assessors South Africa		6773
	South African Planning Institute		10405
	Member of Economic Society South Africa (ESSA)		00140
	Project Management South Africa		19403937
Physical address:	22 BOTHA ROAD, BOTHAS HILL, ETHEKWINI, 3660		
Postal address:	22 BOTHA ROAD, BOTHAS HILL, ETHEKWINI, 3660		
Postal code:	3660	Cell:	0827793821
Telephone:	0827793821	Fax:	NA
E-mail:	<a href="mailto:EUGENE@SOCIALRISKRESEARCH.COM">EUGENE@SOCIALRISKRESEARCH.COM</a>		

### 2. DECLARATION BY THE SPECIALIST

I, Eugene de Beer, declare that –

- I act as the independent specialist in this application;
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, Regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the Act, Regulations and all other applicable legislation;
- I have no, and will not engage in, conflicting interests in the undertaking of the activity;
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
- all the particulars furnished by me in this form are true and correct; and
- I realise that a false declaration is an offence in terms of regulation 48 and is punishable in terms of section 24F of the Act.



Signature of the Specialist

SOCIAL RISK RESEARCH PTY LTD

Name of Company:

18 JULY 2023

Date

### SPECIALIST CV: EUGENE DE BEER

**Eugene de Beer** holds a BSc degree in Town and Regional Planning and a Master's in Business Leadership. The combination of town and regional planning and business economics, together with more than 35-years of socio-economic development consulting experience, exposed him to a wide spectrum of projects and research in the social and economic development fields with a strong spatial and infrastructure development focus. Eugene specializes in socio-economic development and impact assessments of large-scale projects.

Eugene has been involved in socio-economic impact assessments of major infrastructure, mining and port expansion projects, tourism projects and property development initiatives from housing and estate developments to retail shopping centres, office, warehousing, and manufacturing developments. Through his town and regional planning degree he is well equipped to understand and partake in spatial, physical infrastructure and social development projects. His business leadership (MBA) qualification enables him to undertake research of an economic and local (community) economic nature. Eugene's qualifications and experience leads him to apply a sustainable development approach to all the work he does.

Key Personal Characteristics	
Name	Eugene de Beer
Years of experience	35 Years
Gender	Male
South African ID Number	5401145059080

Education:	
University of Pretoria- January 1973. Student No. 73192156	BSc (Town and Regional Planning)
University of South Africa -January 1980. Student No. 4602730	Master of Business Leadership

Language Proficiency:	Reading	Writing	Speaking
English	Excellent	Excellent	Excellent
Afrikaans	Excellent	Excellent	Excellent

### Work Experience:

September 2022 to current	Social Risk Research Pty Ltd
1986- August 2022	Urban-Econ Development Economists (Pty) Ltd: Director
1985 to 1986	Development Bank of Southern Africa: Country Representative
1982 to 1985	South African Breweries: Strategic Long-Term Planning Manager
1979 to 1981	Johannesburg Municipality: Professional Town Planner

### Professional Registration

Professional Membership:	Member Number
International Association of Impact Assessors South Africa	6773
South African Planning Institute	10405
Member of Economic Society South Africa (ESSA)	00140
Project Management South Africa	19403937

### National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA) and Environmental Impact Assessment (EIA) Regulations, 2014 (as amended) - Requirements for Specialist Reports (Appendix 6)

Regulation GNR 326 of 4 December 2014, as amended 7 April 2017, Appendix 6	Section of Report
(a) details of the specialist who prepared the report; and the expertise of that specialist to compile a specialist report including a <i>curriculum vitae</i> ;	See DFFE Specialist Reporting Requirements
(b) a declaration that the specialist is independent in a form as may be specified by the competent authority;	See Declaration of the Specialist
(c) an indication of the scope of, and the purpose for which, the report was prepared;	See Section 1.2 Research Purpose and Methodology
(cA) an indication of the quality and age of base data used for the specialist report;	See Section 2: Profile of the Receptor Community
(cB) a description of existing impacts on the site, cumulative impacts of the proposed development and levels of acceptable change;	See Section 4: Socio-economic Impact Evaluation
(d) the duration, date and season of the site investigation and the relevance of the season to the outcome of the assessment;	See Section 4: Socio-economic Impact Evaluation
(e) a description of the methodology adopted in preparing the report or carrying out the specialised process inclusive of equipment and modelling used;	See Section 1.2 Research Purpose and Methodology
(f) details of an assessment of the specific identified sensitivity of the site related to the proposed activity or activities and its associated structures and infrastructure, inclusive of a site plan identifying site alternatives.	Not applicable
(g) an identification of any areas to be avoided, including buffers;	Not applicable
(h) 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;	Not applicable



Regulation GNR 326 of 4 December 2014, as amended 7 April 2017, Appendix 6	Section of Report
(i) a description of any assumptions made and any uncertainties or gaps in knowledge;	See Section 1.2.3 Assumptions and limitations
(j) a description of the findings and potential implications of such findings on the impact of the proposed activity, including identified alternatives on the environment or activities;	See Sections 3 and 4
(k) any mitigation measures for inclusion in the EMPr;	See Sections 4.2 and 4.5
(l) any conditions for inclusion in the environmental authorisation;	See Section 4.5
(m) any monitoring requirements for inclusion in the EMPr or environmental authorisation;	See Section 4.5
(n) a reasoned opinion— i. whether the proposed activity, activities or portions thereof should be authorised. iA. Regarding the acceptability of the proposed activity or activities; and ii. if the opinion is that the proposed activity, activities, or portions thereof should be authorised, any avoidance, management and mitigation measures that should be included in the EMPr or Environmental Authorization, and where applicable, the closure plan;	See Section 5
(o) a summary and copies of any comments received during any consultation process and where applicable all responses thereto; and	Not applicable
(p) any other information requested by the competent authority	Not applicable
(2) Where a government notice gazetted by the Minister provides for any protocol or minimum information requirement to be applied to a specialist report, the requirements as indicated in such notice will apply.	Not applicable

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# TABLE OF CONTENTS

EXECUTIVE SUMMARY .....	3
DFFE SPECIALIST REPORTING REQUIREMENTS.....	6
1. SPECIALIST INFORMATION.....	6
2. DECLARATION BY THE SPECIALIST.....	6
1 INTRODUCTION.....	12
1.1 PROJECT DESCRIPTION.....	12
1.2 RESEARCH PURPOSE AND METHODOLOGY .....	14
2 PROFILE OF THE RECEPTOR COMMUNITY .....	17
3 CONTEXT ANALYSIS.....	24
3.1 RELEVANT DEVELOPMENT LEGISLATION AND POLICIES .....	24
3.2 LITERATURE REVIEW .....	29
3.3 STAKEHOLDER ENGAGEMENTS.....	32
3.4 SPECIALISTS REPORT FINDINGS .....	33
3.5 SUMMARY OF POTENTIAL SOCIO-ECONOMIC IMPACTS .....	35
4 SOCIO-ECONOMIC IMPACTS EVALUATION.....	37
4.1 RATING METHODOLOGY.....	37
4.2 EVALUATION OF THE IMPACTS .....	38
4.3 ASSESSMENT OF NO-GO ALTERNATIVES .....	41
4.4 CUMULATIVE IMPACT ASSESSMENT.....	42
4.5 ENVIRONMENTAL MANAGEMENT PROGRAMME (EMPr).....	43
5 CONCLUSION AND RECOMMENDATIONS.....	46
5.1 IMPACT STATEMENT.....	46
5.2 NEED AND DESIRABILITY.....	46
5.3 MITIGATIONS .....	47
5.4 RECOMMENDATIONS.....	47

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## LIST OF TABLES

Table 1: Population of Emakhazeni Local Municipality, 2011 Census .....	17
Table 2: Economic structure of the Emakhazeni Municipality, %.....	21
Table 3: Economic profile of Emakhazeni .....	21
Table 4: Relevant national and provincial legislation and policies .....	24
Table 5: Literature review of similar and related reports.....	30
Table 6: Construction phase: EMPr for the facility and the the substations and powerlines .....	43
Table 7: Operational phase" EMPr for the facility and the substations and powerlines .....	44

## LIST OF FIGURES

Figure 1: Layout of the proposed development .....	13
Figure 2: Regional location context of the proposed development .....	14
Figure 3: The main towns close to the site .....	17
Figure 4: Ward One of Emakhazeni within which the site falls .....	18
Figure 5: Profile of Emakhazeni Ward One .....	19
Figure 6 continue: Profile of the Ward One community. ....	19
Figure 7: Focus on the site and surrounding from the Composite Mpumalanga SDF.....	28
Figure 8: SDF of Emakhazeni .....	29
Figure 9: Socio-economic Impact Assessment – Construction Phase.....	39
Figure 10: Socio-economic Impact Assessment - Operational Phase.....	40

# 1 INTRODUCTION

## 1.1 PROJECT DESCRIPTION

JUWI South Africa (Pty) Ltd (hereafter referred to as “JUWI”) proposes to develop a 50 MW solar PV facility and a grid connection infrastructure to facilitate the PV connection to the national grid. The Roos PV facility will be the solar PV component of the project. The intention is to develop the PV facility and associated infrastructure on the site, depending on site sensitivities.

The site is located within the Renewable Energy Development Zone (REDZ) but outside the Power Corridor. The Roos PV facility will be located on various land parcels located in the western part of the Emakhazeni Local Municipality in Mpumalanga Province. The land parcels for the PV facility are listed below and shown in Figures 1 and 2 overleaf:

- RE of the Farm Leeuwbank No 427
- Portion 3 of the Farm No 426
- Portion 4 of the Farm Leeuwbank No 427
- Portion 5 of the Farm Leeuwbank No 427
- Portion 6 of the Farm Zoekop No 426
- Portion 8 of the Farm Wintershoek No 423
- Portion 8 of the Farm Wintershoek No 390
- Portion 9 of the Farm Wintershoek No 390
- Portion 9 of the Farm Zoekop No 426
- Portion 14 of the Farm Generaalsdraai No 423
- Portion 16 of the Farm Zoekop No 426
- Portion 17 of the Farm Leeuwbank No 427
- Portion 19 of the Farm Leeuwbank No 427
- Portion 38 of the Farm Leeuwbank No 427.

Salient features of the project are the following:

- Total site footprint: ~ 324 ha
- Developable area footprint: ~ 271 ha
- PV area footprint: ~ 51 ha
- Laydown areas footprint: ~ 3 ha
- Temporary site office / construction camp footprint area: < 1 ha
- Buildings footprint: < 1 ha
- BESS area footprint: ~ 1 ha
- Inverter area footprint: < 0.1 ha
- Perimeter fence length: 14.9 km
- Internal roads length: 5.5 km.
- No construction camps will be developed, and labour would be sourced from nearby areas, as per relevant procurement requirements.
- Estimated number of employment opportunities generated by the PV project:
  - Construction phase: 100 (skills split would be in line with applicable procurement requirements but would be roughly 60% low-skilled, 25% semi-skilled and 15% skilled)
  - Operational phase: 10 (skills split would be in line with applicable procurement requirements but would be roughly 70% low skilled, 25% semi-skilled and 5% skilled)
- Little information is available about the decommissioning phase. The parameters of the construction phase are therefore taken to apply to the decommissioning phase.
- Construction: Methodology

- 1) Final design and micro-siting of the infrastructure based on topographical conditions and environmental sensitivities and following obtaining required environmental permits.
- 2) Vegetation clearance and construction of access roads (where required)
- 3) Construction of foundations
- 4) Assembly and erection of infrastructure on site
- 5) Stringing of inverters
- 6) Rehabilitation of disturbed areas
- 7) Continued maintenance.

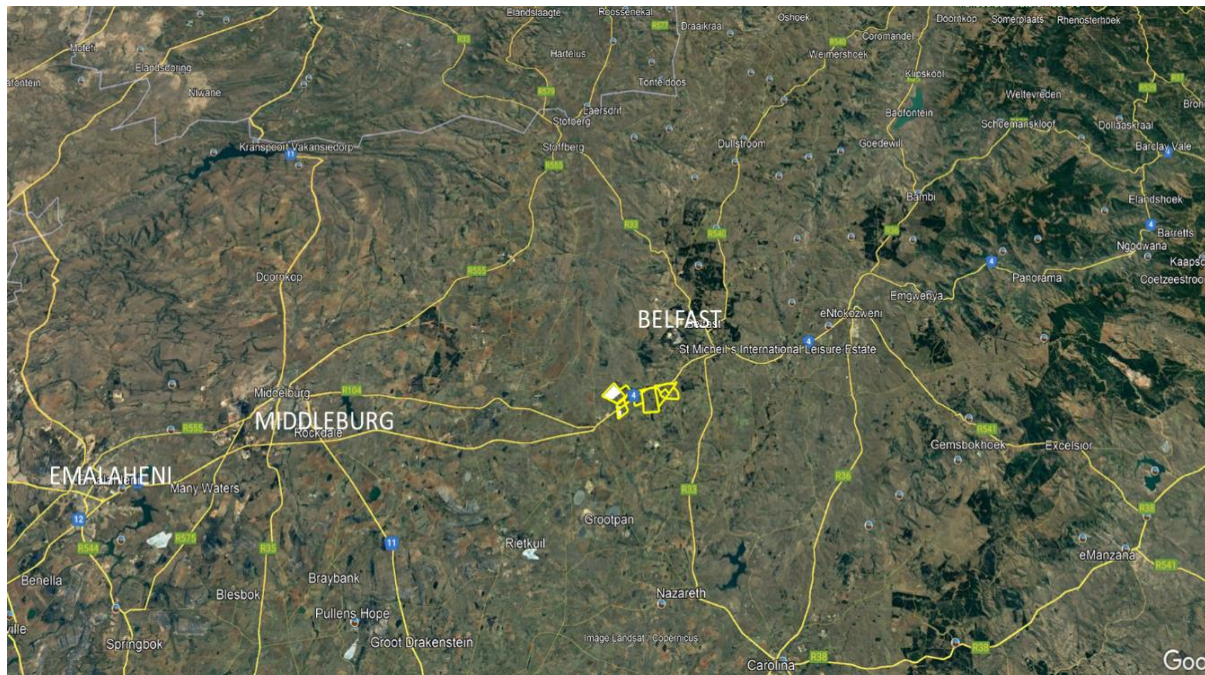
No other activity alternatives are being considered. Renewable energy development in South Africa is highly desirable from a social, environmental and development point of view and a solar energy installation is more suitable for the site due to the high solar resource. No other technology alternatives are being considered. Layout alternatives will be considered and assessed as part of the BA Process. These will include alternatives for the substation locations, BESS locations and for the construction / laydown areas.

The “no-go” alternative is the option of not undertaking the proposed grid connection infrastructure project. Hence, if the “no-go” option is implemented, there would be no development. This alternative will result in no socio-economic impacts from the proposed project on the site or surrounding local area although it means that economic opportunities for the local communities will be lost. The “no-go” option provides the baseline against which other alternatives are compared.

Figure 1: Layout of the proposed development



Figure 2: Regional location context of the proposed development



## 1.2 RESEARCH PURPOSE AND METHODOLOGY

### 1.2.1 Research purpose and scope of work

The objective of this project is to undertake a socio-economic impact assessment (SEIA) for a Basic Assessment of the Environmental Impact Assessment (EIA) Phase. The socio-economic impact assessment (SEIA) aims to assess any potential socio-economic impacts, either positive or negative, that may arise because of a proposed development. The socio-economic impacts will be analysed for the construction and operation phases of the proposed development. Additionally, mitigation measures to reduce the severity of negative impacts and measures to optimise the positive impacts will be included in the report. The socio-economic assessment considers the direct and the indirect impacts and may include the following:

- Impacts on local communities, neighbourhoods, and towns;
- Livelihood and food security;
- Employment and basic conditions of employment including housing where relevant;
- Skills development and enterprise development;
- Spatial-economic and social land-use including property, land rights and value impacts;
- Land reform, where relevant;
- Crime and security impacts;
- Government service delivery impacts: health and welfare facilities and services; educational facilities and services, sport and recreational facilities and services;
- The direct, indirect, and induced economic impacts in terms of sector economic impacts including tourism, agriculture, mining, manufacturing, construction and infrastructure utilisation, tertiary and business services, and public services.



### 1.2.2 *Research methodology*

The socio-economic impact assessment methodology is derived from the guidelines provided by the Department of Planning, Monitoring and Evaluation: the Socio-Economic Impact Assessment System (SEIAS), June 2018 and the Application Manual, April 2020, and the International Association for Impact Assessment: Social Impact Assessment: Guidelines for assessing and managing the social impacts of projects, 2015. The methodology followed entailed the following:

- Understanding the proposed project extent and scope;
- Profiling of the receptor community including the spatial and economic areas of impacts;
- Literature review of similar assessment findings;
- Reviewing municipal and provincial planning and development documents;
- Review of the technical specialist report findings;
- Engagements with key stakeholders and interested and affected parties;
- Evaluation of the socio-economic impacts during construction and operations and assessing the cumulative impacts;
- Considering the alternative development options as defined;
- Conclusion and write-up of findings with sensitivities and mitigations.

The PV facility and grid infrastructure will be authorized through a single application for Environmental Authorisation (EA). However, it is not possible to split the socio-economic impacts into the two distinct components as follows:

- Roos Solar PV Energy Facility
- Roos Electrical Grid Infrastructure.

### 1.2.3 *Assumptions and limitations*

The following limitations to the research have been identified:

- The legislation, policies and planning reports reflect the social norms and standards of the receptor community. The social assessment evaluates the proposed development against such planning and development reports and determines the need and desirability accordingly.
- It is assumed that the proposed site for the development is suitable for the purposes intended and as assessed by the technical specialists.
- The secondary data sources used to compile the socio-economic baseline (demographics, dynamics of the economy) are not exhaustive but are indicative of broad socio-economic trends within the study area. The Census 2022 data has not yet been made available and the profile of the community is therefore based on the 2011 census and the 2016 Community Survey and more recent planning and research reports as available. The study was done with the most recent and accessible information available to the specialist within the time frames and budget.
- The engagement process does not replace the official public participation processes of the EIA and as such is a sample of the key stakeholders and affected parties' views, opinions and perceptions.

- Possible impacts and stakeholder responses to these impacts cannot be predicted with complete accuracy, even when circumstances are similar, and these predictions are based on research and years of experience, taking the specific set of circumstances into account.
- The estimated year when construction will start is still to be confirmed, as various submissions are still to be completed.
- Most indirect social and economic impacts are of a secondary nature following from the technical bio-physical impacts. The research takes both the direct and indirect impacts of the project into account and is reliant on the technical bio-physical specialist reports to augment and refine the findings of the socio-economic assessment.

#### *1.2.4 Ethical research practices and POPIA*

Sound ethical standards was adhered to in conducting this study. To ensure the openness, transparency, and democratic standing of this research, participating individuals and institutions have been asked to give their informed consent to take part in the study and to do so voluntarily. The questions posed during interviews did not subject the participants to harm, embarrassment, or loss of self-esteem. The participants were informed of their rights, and they have been made aware of their right to opt out of the interviews. Participants have been assured of privacy and confidentiality of the information provided during the research process. The culture, norms and beliefs of participants have been respected.

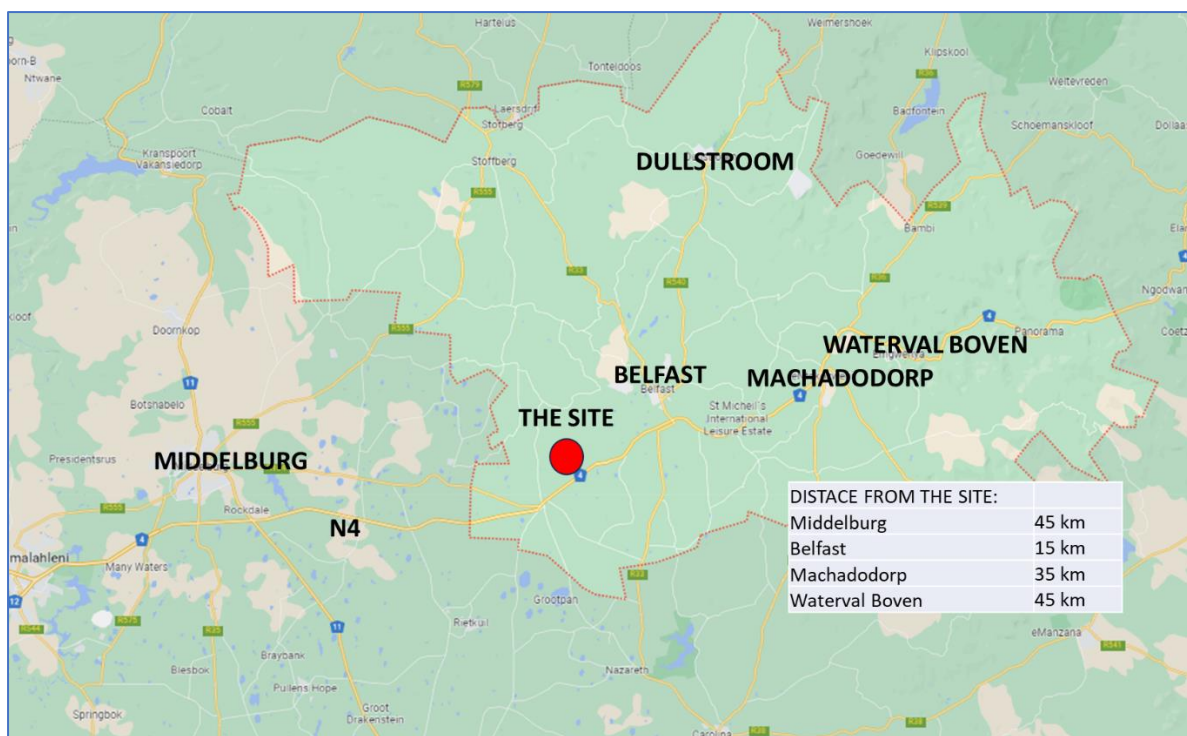
The conditions of the Protection of Personal Information Act (POPIA) have been adhered to. The POPIA sets out the minimum standards regarding accessing and processing of any personal information belonging to another. The Act defines “processing” as collecting, receiving, recording, organizing, retrieving, or the use, distribution or sharing of any such information. No personal information regarding the individuals or stakeholders participating in this research will be collected or distributed without their knowledge and consent.



## 2 PROFILE OF THE RECEPTOR COMMUNITY

The proposed development site is in the Emakhazeni Local Municipality in the Nkangala District Municipality of Mpumalanga Province next to the N4 Highway between Gauteng and Mbombela. Emakhazeni is bordered by Mbombela Local Municipality on the east and Steve Tshwete Local Municipality on the west. It is one of the six municipalities that fall within the Nkangala District Municipality, namely Dr JS Moroka Local, Emakhazeni Local, Emalahleni Local, Steve Tshwete Local, Thembisile Hani Local, and Victor Khanye Local. Emakhazeni comprises of four towns: Emakhazeni (Belfast), Dullstroom, Entokozweni (Machadodorp) and Emgwenya (Waterval Boven).

Figure 3: The main towns close to the site



The 2011 census population of the Emakhazeni Municipality is shown in the following table in terms of the main places.

Table 1: Population of Emakhazeni Local Municipality, 2011 Census

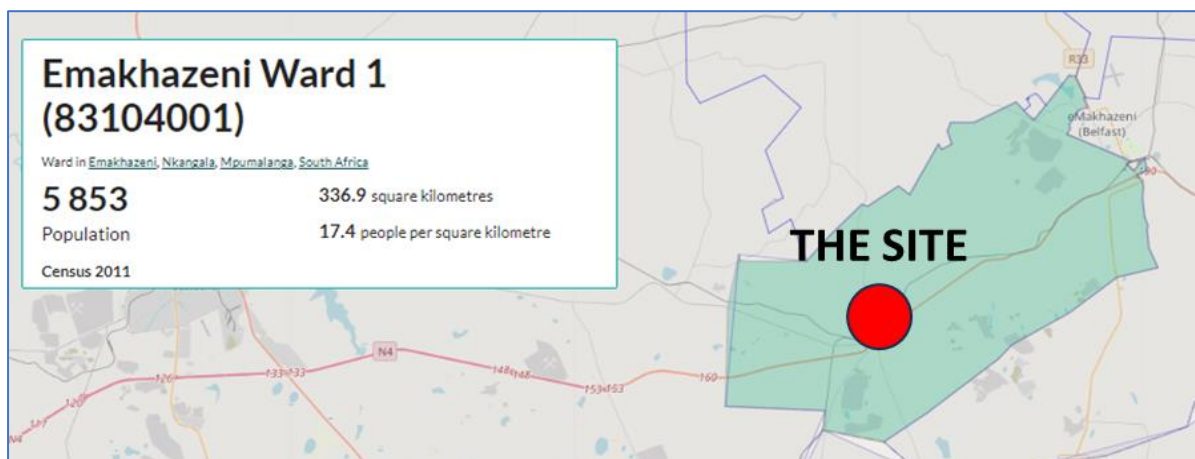
Main place name	Area (km <sup>2</sup> )	Population	Most spoken language
Belfast	80.0	4,564	Afrikaans
Dullstroom	30.4	558	English
Emgwenya	38.9	6,178	Swazi
eNtokozweni	33.2	8,835	Swazi
Machadodorp	25.6	1,060	Swazi
Sakhelwe	1.9	4,664	Northern Sotho

Main place name	Area (km <sup>2</sup> )	Population	Most spoken language
Siyathuthuka	3.3	12,159	Zulu
Waterval Boven	1.5	6,178	Swazi
Remainder rural population	4576.3	10,146	Southern Ndebele
Total population	4791.1	54,342	

The Emakhazeni Municipality is mainly a rural municipality with scattered rural settlements situated on farms. These settlements usually consist of a homestead, outbuildings, sheds, and farm workers' accommodation. Belfast is renowned for its excellent trout fishing conditions. Sheep and dairy farming take place here, and maize, potatoes and timber are produced. Coal and black granite are mined around Belfast. Dullstroom, also known as Emnothweni, lies 35 kilometres (22 miles) north of Belfast and some 53 kilometres (33 miles) south-west of Lydenburg on the R540 road. Dullstroom is known as a tourism and leisure town and is known for its trout fishing, arts, and crafts.

The proposed development is in Ward One of the Municipality and will be most affected by the direct impacts of the project. Whereas the total population of Emakhazeni is in the order of 54 400 in 2022/3, the population of Ward One was 5 853 in 2011 and they live throughout the ward on farms and in rural settlements. The towns of the municipality fall outside Ward One. Ninety-nine percent (99%) of the population in Ward One is from the Black population group with an even male and female gender split. The population is a young population with a mean age of 23 years and 46% of the people are younger than 19 years of age. About 5% of the population are older than 60 years. The main languages spoken in the Ward are isiZulu, isiNdebele, and SiSwati. Most (90%) of the households live in a house but 6% live in shacks. More than 82% of households receive water from the formal municipal service and 91% have access to flush or chemical toilets. 81% of the households receive formal refuse services.

Figure 4: Ward One of Emakhazeni within which the site falls



The community of Ward One is poor, working mainly on the farms and in the mines with an average annual income of R29 400 per household in 2011 and with a high unemployment rate of more than 24%. Most of the formally employed persons work in the agriculture and mining sectors.

Figure 5: Profile of Emakhazeni Ward One

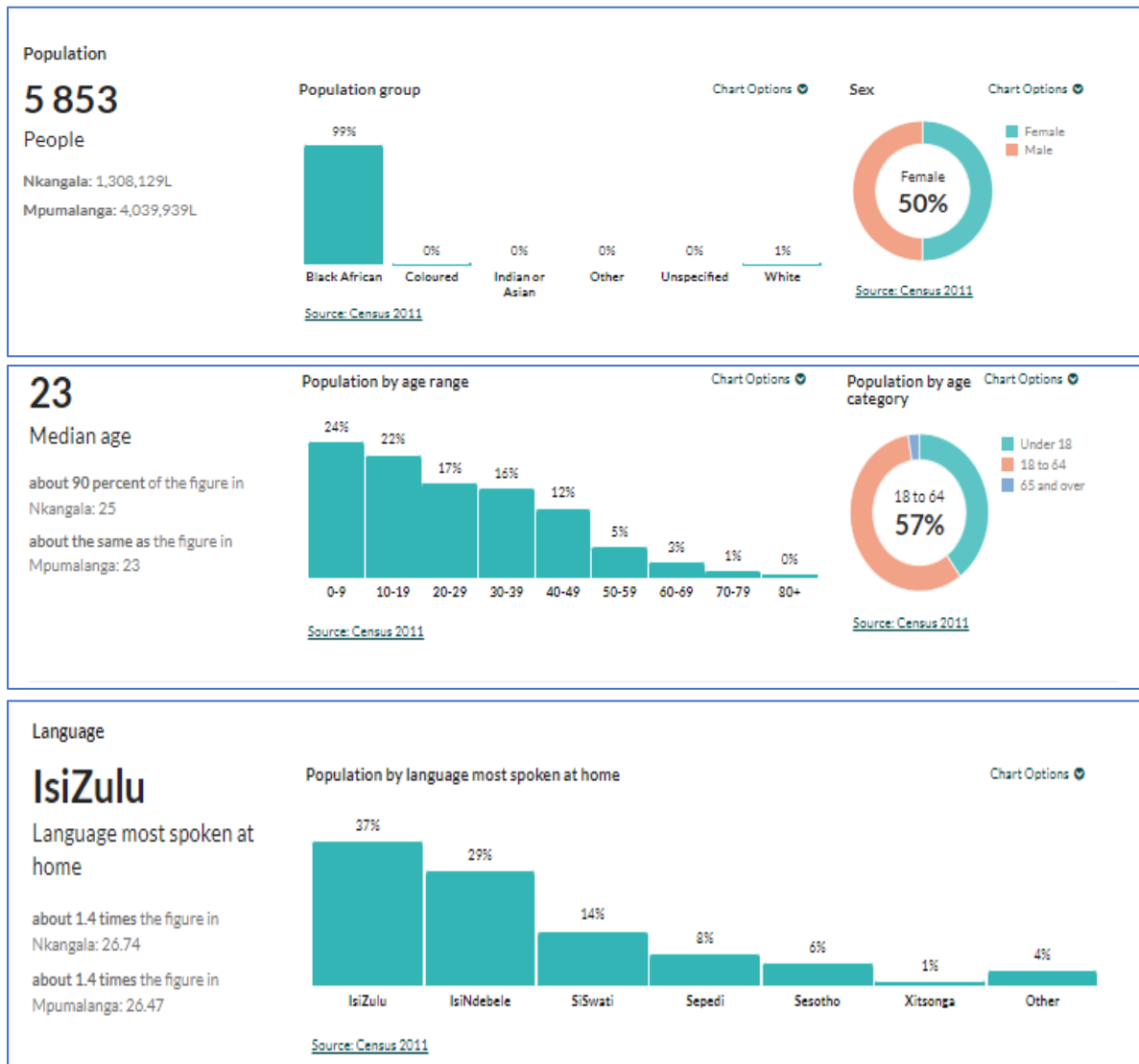
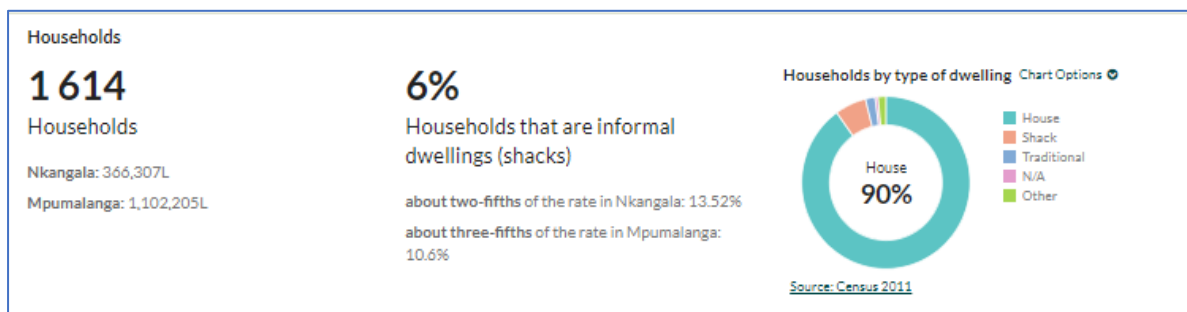
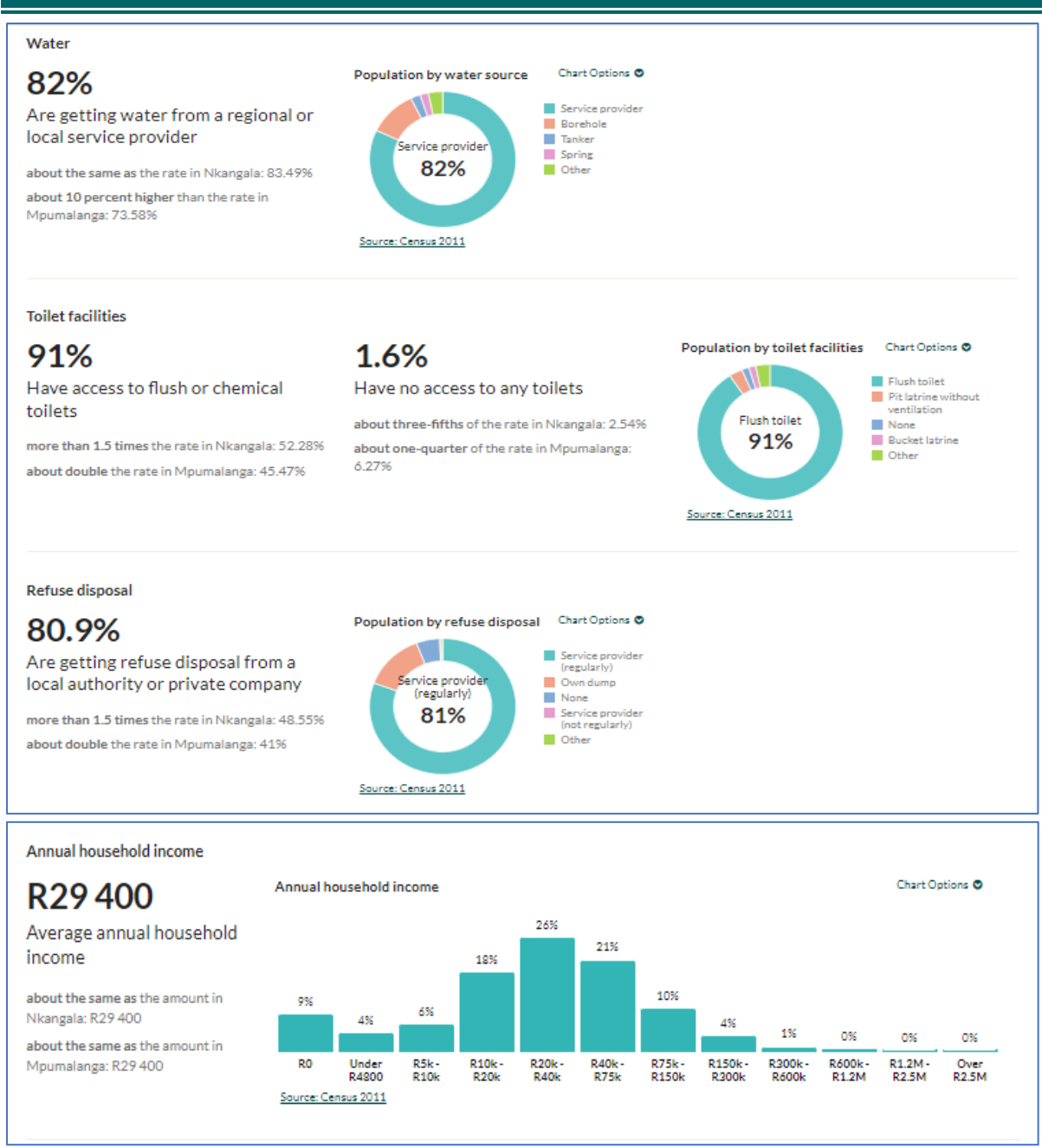


Figure 6 continue: Profile of the Ward One community.





Source: Census 2011

Economically Emakhazeni municipality is comparatively strong in the agriculture, mining, and tourism sectors. Farming is the dominant economic activity in the Emakhazeni area occupying the largest part of the physical area. The small towns serve as service centres to the agricultural sector. The most dominant agricultural activities include field crops, horticulture, animal husbandry, forestry, and some fishing. Agriculture generates an inter-regional income and has a high multiplier effect in the local economy. Belfast, Dullstroom, Machadodorp and Waterval-Boven act as service providers to the surrounding rural areas and provide social services as well as farming and household necessities to the farmers and farm workers in the region. Economically the leading sectors in terms of percentage

contribution to the economy is mining, trade, and community services. Mining is the biggest contributor in GDP in the municipality. The following mines operates within 25 km from the site:

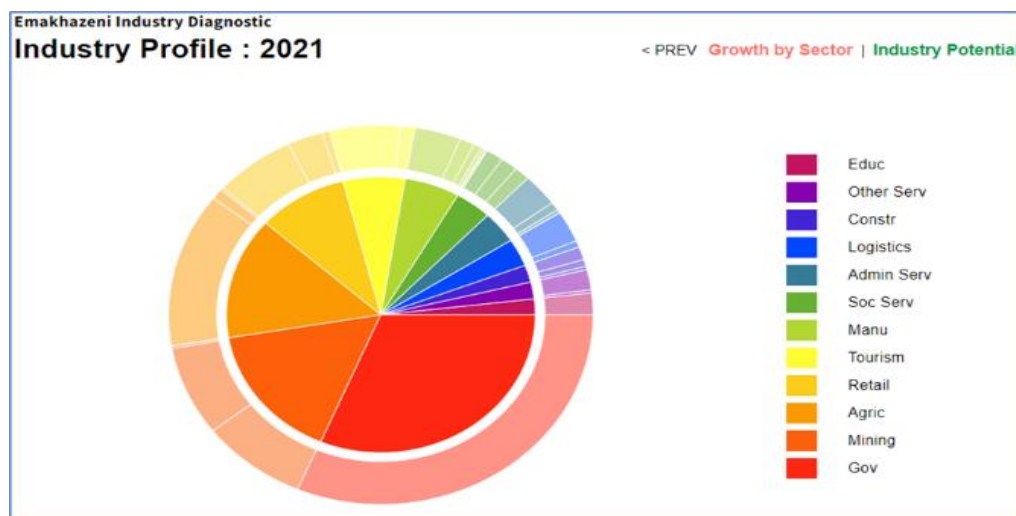
- Exxaro Belfast Mine
- Wonderfontein Colliers
- NBC Coal Mine.

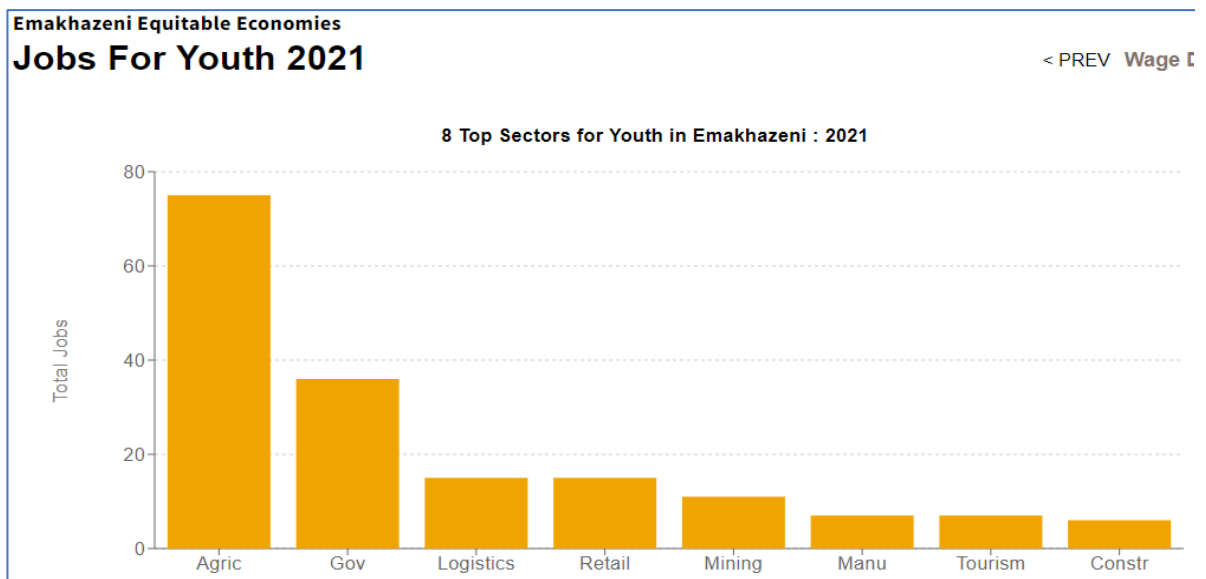
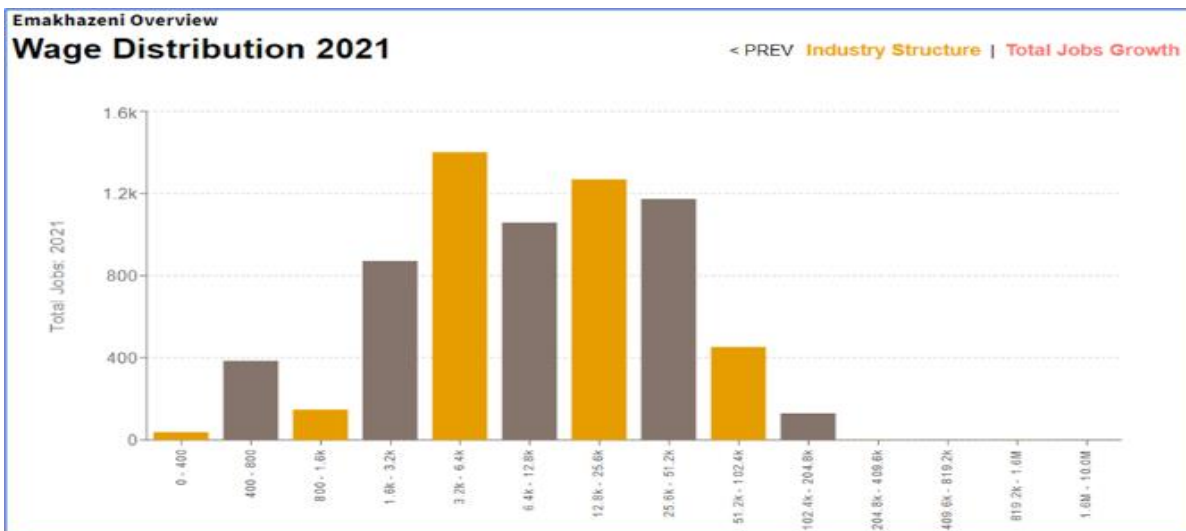
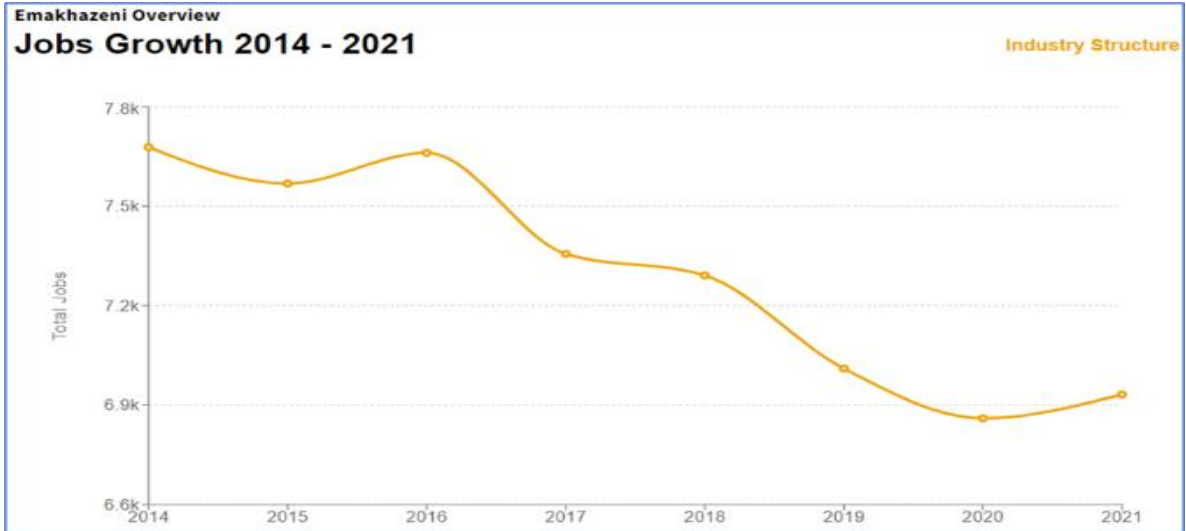
Table 2: Economic structure of the Emakhazeni Municipality, %

Sector	% GDP Contribution
Agriculture and hunting	10.7
Mining and quarrying	24.4
Manufacturing	8.5
Electricity, gas and water	0.5
Construction	6.5
Trade	18.5
Transport and communication	6.3
Finance and business services	3.6
Community services	12.7
General government	8.3
<b>TOTAL</b>	<b>100.0</b>

The profile of the economy of Emakhazeni shown in the following graphs indicate that the public sector is an important employer in the municipality followed by mining, agriculture, and retail sectors. The municipality has lost employment opportunities from 7 750 in 2014 to 6 500 in 2021. The loss in jobs in the municipality is ascribed to the low national economic growth, the impacts of Covid-19 and the slow decline of the mining and agricultural sectors as employers.

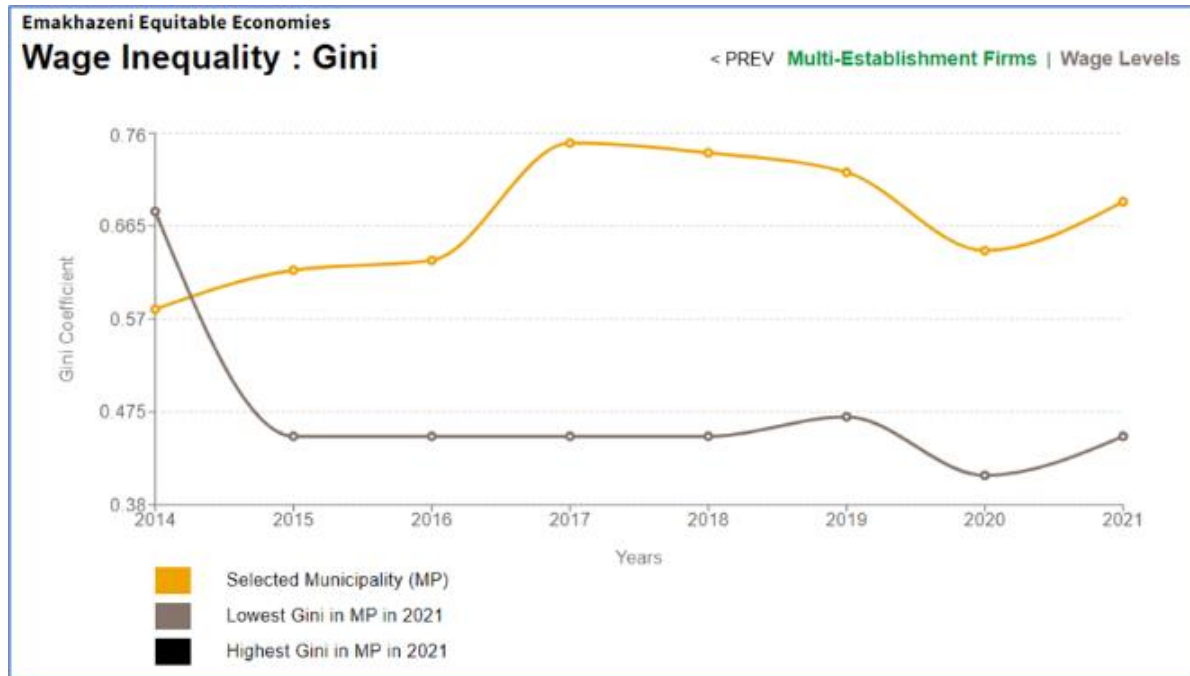
Table 3: Economic profile of Emakhazeni







The following diagram show the extent of the inequalities in the municipality in terms of wage employment which further highlights the poverty levels in the area. The gini coefficient is a statistical calculation of inequality where a value of 0 represents absolute equality and a value of 100 absolute inequality.



Source: Spatial Economic Data, 2023 (<https://spatialtaxdata.org.za/>)

Within the immediate environment within 5 km radius of the site the following area of socio-economic value is identified:

- N4 Highway to the south of the site
- Agri-village to the west of the site
- Individual loose standing farm homesteads to the west, north and east of the site
- Wonderfontein town to the east
- Wonderfontein Service Station
- Wonderfontein Farmers Hall
- Golden Division Suppliers
- Westfert Biominerale Fertilizer supplier
- BKB Grain Storage Wonderfontein Depot
- Agric Wonderfontein grain silos

### 3 CONTEXT ANALYSIS

#### 3.1 RELEVANT DEVELOPMENT LEGISLATION AND POLICIES

##### 3.1.1 National and provincial legislation, policies, and strategies

There are several social and economic developments related to national and provincial legislation and policies that are relevant to the development of renewable energy solutions in South Africa. A brief overview of the most relevant documents is provided in the following table.

Table 4: Relevant national and provincial legislation and policies

Policy	Key policy objectives	Source
<b>National Policy: South Africa</b>		
The Constitution of the Republic of South Africa 1996	<ul style="list-style-type: none"> <li>“Everyone has the right to an environment that is not harmful to their health or well-being” (S24)</li> <li>The environment should be protected for the benefit of present and future generations, through reasonable legislative and other measures that: <ul style="list-style-type: none"> <li>Prevent pollution and ecological degradation;</li> <li>Promote conservation;</li> <li>Secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development</li> </ul> </li> </ul>	(Constitution of the Republic of South Africa, 1996)
National Development Plan, 2030	<p>The National Development Plan (NDP) identifies the need for South Africa to invest in a strong network of economic infrastructure designed to support the country’s medium- and long-term economic, social, and environmental goals. Energy infrastructure is a critical component that underpins economic activity and growth across the country, and it needs to be robust, extensive, and affordable enough to meet industrial, commercial, and household needs.</p> <p>In formulating its vision for the energy sector, the NDP took as a point of departure the Integrated Resource Plan for electricity (IRP) 2010 to 2030 as promulgated in March 2011. This was subsequently updated, and the promulgated IRP 2019 replaced the IRP 2010 in October 2019 as the country’s official electricity infrastructure plan to 2030.</p>	(NPC, 2012)
New Growth Path Framework, 2011	<ul style="list-style-type: none"> <li>Infrastructure investment</li> <li>Main economic sectors as employment sectors seizing the potential of new economies.</li> <li>Investing in social capital and public services</li> <li>Fostering rural development and regional integration.</li> </ul>	(South African Government, 2011)
Renewable Energy Vision 2030 South Africa	<ul style="list-style-type: none"> <li>Renewable energy as an exceptional source of flexible supply within the context of uncertain energy demand</li> <li>Comprehensive renewable energy base will support a resilient South African future.</li> <li>A sustainable energy mix that excludes undue risks for the environment.</li> </ul>	(World Wildlife Fund, 2014)



<p>Integrated Resource Plan 2019</p>	<ul style="list-style-type: none"> <li>• South Africa should continue to track a diversified energy mix which lessens reliance on a few primary energy sources.</li> <li>• A total of 9 980 MW of additional wind capacity is to be introduced in South Africa by 2030. The wind Independent Power Producers (IPPs) constitute the largest single renewables technology procured to date under the Renewable Energy Independent Power Producer Procurement Programme.</li> <li>• Allocations to safeguard the development of wind energy projects aligned with the Integrated Resource Plan (IRP) 2010 should continue to be pursued: <ul style="list-style-type: none"> <li>○ Ensure energy security and supply.</li> <li>○ Reduce environmental impacts</li> <li>○ Endorse job creation and localisation</li> <li>○ Lessen cost of energy</li> <li>○ Reduce water consumption</li> <li>○ Diversify supply sources</li> <li>○ Promote energy efficiency</li> <li>○ Promote energy access.</li> </ul> </li> <li>• Additionally, the IRP (2019) indicates that wind energy will be 22.5% of the energy mix compared to solar at 11% by 2030</li> </ul>	<p>(Department of Energy, 2019)</p>
<p>White Paper on Energy Policy of the Republic of South Africa 1998</p>	<ul style="list-style-type: none"> <li>• Seeks to ensure that an equitable level of national resources is invested in renewable technologies, given their potential, and compared to investments in other energy supply options.</li> <li>• Aims to create energy security by diversifying the energy supply and energy carriers.</li> </ul>	<p>(Department of Minerals and Energy, 1998)</p>
<p>A Framework for a Just Transition in South Africa and Just Energy Transition Investment Plan (JET IP)</p>	<p>Just Transition in South Africa may be summarised as:</p> <ul style="list-style-type: none"> <li>• Just transition aims to achieve a quality life for all South Africans, in the context of adverse impacts of climate and fostering climate resilience.</li> <li>• Just transition aims at decent work for all, social inclusion, and the eradication of poverty.</li> <li>• Just transition puts people at the centre of decision making, especially the poor, women, people with disabilities, and the youth, empowering them for new opportunities of the future.</li> <li>• Just transition builds the resilience of the economy and people through renewable energy systems; conservation of natural resources; equitable access of water resources; an environment that is not harmful to one’s health and well-being; and sustainable, equitable, inclusive land-use for all, especially for the most vulnerable.</li> </ul>	<p>Presidential Climate Commission Report, 2022</p>
<p>South African Renewable Energy Masterplan (SAREM) Draft version for review 7 July 2023</p>	<p>SAREM is a social compact between government, business and labour unions. SAREM is an action-oriented plan that focuses on leveraging investment in the renewable energy and storage value chain to deliver industrial development and decent jobs while supporting inclusive development. The document provided a thorough understanding of global and local renewable energy and battery storage value chains, the industry’s contribution to employment and investment, challenges and opportunities, and recommended policy interventions. SAREM suggests a number of interventions aimed at building capabilities in the renewable energy and storage value chains.</p>	<p>Mineral Resources &amp; Energy Science and Innovation Trade, Industry and Competition, July 2023</p>

Provincial Policy: Mpumalanga		
Mpumalanga Economic Growth & Development Path	<ul style="list-style-type: none"> <li>Highlights the current economic landscape of Mpumalanga with a view of the future growth and development of the province.</li> <li>The MEGDP identifies the following key sectors: <ul style="list-style-type: none"> <li>Infrastructure</li> <li>Green Economy</li> <li>Agriculture</li> <li>Mining</li> <li>Manufacturing</li> <li>Tourism</li> </ul> </li> <li>The MEGDP focuses on the production of technologies for solar, wind and biofuels and is also supported by the Energy Integrated Resource Plan</li> </ul>	(Mpumalanga Economic Growth & Development Path, 2011)
Mpumalanga Draft Green Economy Sector Plan, 2016	<ul style="list-style-type: none"> <li>The Plan aims to provide an integrated approach towards developing the green economy in Mpumalanga by 2030 in line with the Vision 2030. Specific objectives include:</li> <li>Developing a sector plan based on the province's strengths in natural resources endowments.</li> <li>Expanding on the economic, green and environmental initiatives that are already under way in the province in order to facilitate quick wins.</li> <li>Support the DEDT's drive in sustainable economic development.</li> <li>Develop an action plan for implementation</li> </ul>	(DNA Economics, 2016)
Mpumalanga Tourism and Parks Agency Strategic Plan	<ul style="list-style-type: none"> <li>Mpumalanga possesses significant potential to capture large numbers of international and domestic tourists. In particular, the Kruger National Park, several other reserves, natural and cultural and historical heritage sites are attractions that are in demand by all tourist groups.</li> <li>While the environmental sector often puts much emphasis on biodiversity conservation it does not necessarily link it with eco-tourism. The plan states that much naivety has been observed about what ecotourism can do. The plan calls for improved implementation of policy that will see biodiversity promotion being embraced by the broader tourism industry and the need for improved awareness from players within the sector to reduce the adverse environmental impacts of tourism.</li> </ul>	Mpumalanga Tourism and Park Agency

### 3.1.2 REIPPPP Programme and the REDZs

The Renewable Independent Power Producer Programme (REIPPPP) is aimed at bringing additional megawatts onto the country's electricity system through private sector investment in wind, biomass and small hydro, among others. The programme's primary mandate is to secure electrical energy from the private sector for renewable and non-renewable energy sources. With regard to renewables, the programme is designed to reduce the country's reliance on fossil fuels, stimulate an indigenous renewable energy industry and contribute to socio-economic development and environmentally sustainable growth.

Under the REIPPPP Programme renewable energy projects are required to contribute to local economic development in the area. Awarded projects are required to spend a certain amount of their generated revenue (as defined in the agreement with DoE) on Socio-Economic Development (SED)

and Enterprise Development (ED) and share ownership in the project company with local communities.

The site falls within Renewable Energy Development Zones (REDZ9) but outside of the Strategic Transmission Corridor. On 16 February 2018, Minister Edna Molewa published Government Notice No. 114 in Government Gazette No. 41445 which identified eight renewable energy development zones for the development of large-scale wind and solar photovoltaic facilities. On 26 February 2021, Minister Barbara Dallas Creecy published Government Notice No. 142, 144 and 145 in Government Gazette No. 44191 and identified three additional REDZs for implementation. The site for the proposed development falls within this second set of REDZs identified. The legislation outlines the procedures to be followed when applying for environmental authorisation for electricity transmission or distribution infrastructure or large-scale wind and solar photovoltaic energy facilities in the REDZs.

On 16 February 2018 Minister Edna Molewa published Government Notice No. 113 in Government Gazette No. 41445 which identified five strategic transmission corridors important for the planning of electricity transmission and distribution infrastructure. In March 2019, a generic environmental management programme (EMPr) relevant to an application for environmental authorisation for substations and overhead transmission and distribution electricity transmission infrastructure was published. On 29 April 2021, Minister Barbara Dallas Creecy published Government Notice No. 383 in Government Gazette No. 44504, which expanded the eastern and western transmission corridors and gave notice of the applicability of the application procedures identified in Government Notice No. 113 to these expanded corridors. The legislation defines the procedure to be followed when applying for environmental authorisation for electricity transmission and distribution expansion when occurring in these corridors. The proposed development falls outside the identified corridors.

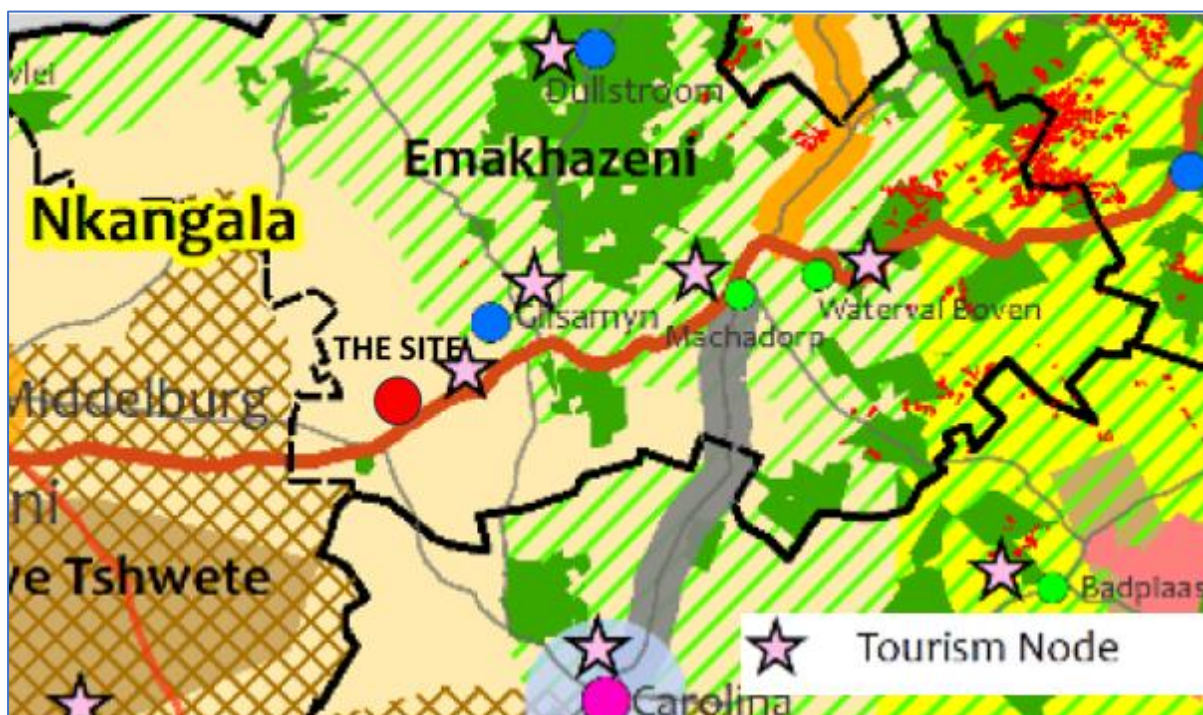
### *3.1.3 Mpumalanga Provincial Spatial Development Framework (SDF)*

The Mpumalanga Provincial Spatial Development Framework was finalised in January 2019 and identifies the spatial and land-use development strategy for the province and the local municipalities. The spatial development vision for the province is to have “A Mpumalanga that has a sustainable, vibrant and inclusive economy developing all resources and promoting a healthy environment through innovation.”

The proposed site is located on the N4 which is the main development corridor through the Province and along which most of the economic activities in the Province are located.

Important from the composite SDF is the number of tourism nodes that are located to the east of the proposed site and the fact that the area around the site serves as a “tourism gateway” to the tourism interests of the Province in the Lowveld and on the highland’s escarpment. Although there are no tourism attractions close to the site itself, it is an important socio-economic feature of the local economy.

Figure 7: Focus on the site and surrounding from the Composite Mpumalanga SDF



Source: Focused extract from the Composite Mpumalanga SDF

### 3.1.4 Emakhazeni Municipality Integrated Development Plan, 2020/21 (IDP)

The vision of the Emakhazeni Municipality is to have a developmental local municipality accelerating provision of quality services to the satisfaction of its communities. Within the IDP the municipality focuses on the high levels of poverty and unemployment and the need to develop economic opportunities for the youth through enterprise and skills development. The important economic sectors in the municipality highlighted by the IDP are mining, agriculture, tourism, and the tertiary sectors. To address the focus area of the municipality it has developed the following sector plans:

- Spatial development framework (SDF)
- Local economic development strategy (LED)
- Rural development chapter/sector plan (RDP)
- Disaster management plan (DMP)
- Integrated waste management plan (IWMP)
- Water services development plan (WSDP).

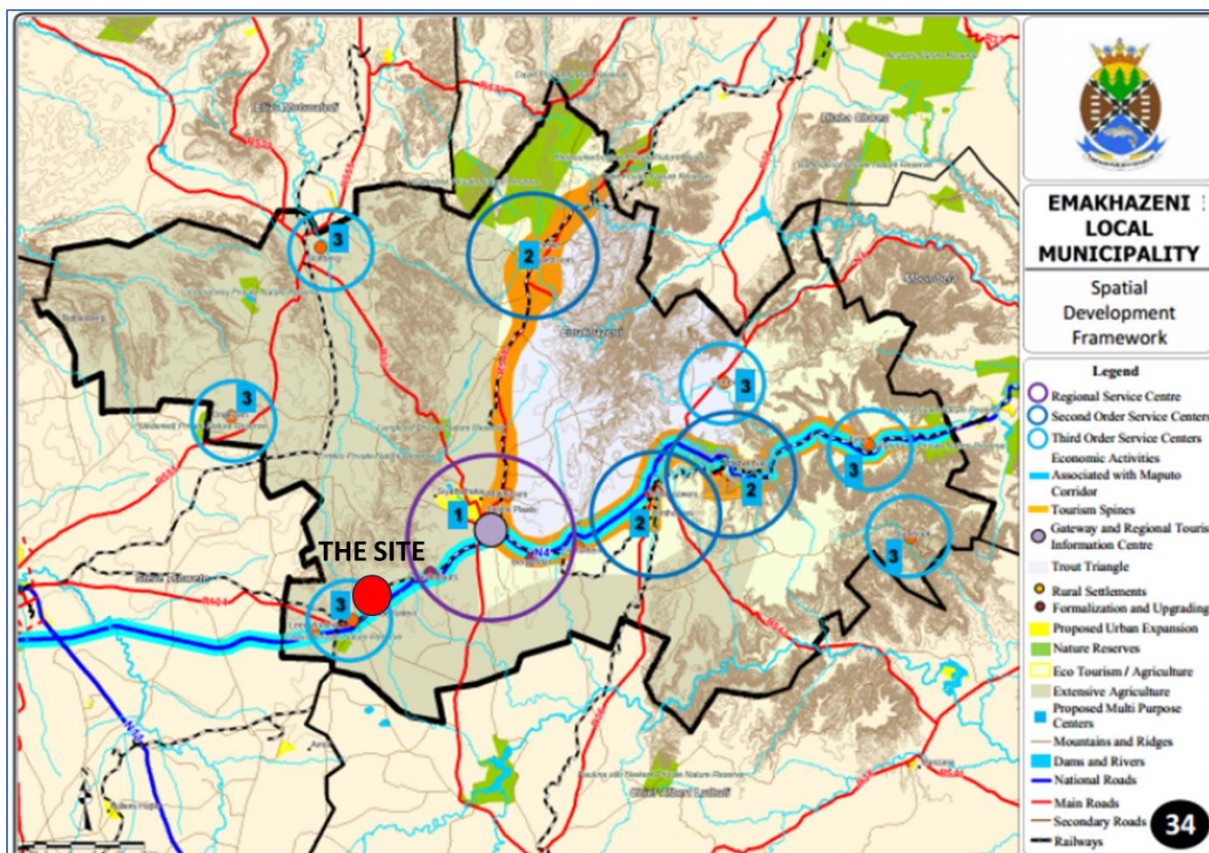
In terms of the SDF the municipality identified a place close to the site for the development of a rural settlement for upgrading and formalisation. With respect to Ward One, the SDF identifies several service delivery concerns and aspects to be addressed. From an economic perspective the need for business creation and employment opportunities are high on the agenda.

The eastern parts of the municipality near Belfast, Dullstroom, Machadodorp and Waterval Boven is part of a provincial tourism corridor. The area serves as a gateway to the tourism parks and private reserves in the Lowveld areas of the Province. Popular tourism resorts are developed in this area based



on trout fishing and the natural scenic beauty of the area. These areas start about 40 km east of the site on the N4 towards Mbombela.

Figure 8: SDF of Emakhazeni



Source: Extract from the Emakhazeni IDP, 2020/21

### 3.1.5 Conclusion

The review of the policy environment states that the use, application, and investment in renewable energy sources is an integral means of reducing the carbon footprint of the country, diversifying the national economy, reducing poverty, and creating much needed additional sources of energy. Any project contributing to the above-mentioned objectives can therefore be considered strategically important to South Africa. From a provincial and municipal policy perspective the facilitation of renewable energy projects and interventions that relate to the broader green economy are seen as a priority in terms of the policies and strategies developed.

## 3.2 LITERATURE REVIEW

The following reports were reviewed to identify typical impacts that PV facilities may have on the socio-economic environment.

Table 5: Literature review of similar and related reports

Report title	Prepared for	Prepared by	Date
Umbila Socio-Economic Impact Assessment For The Wind Farm <sup>1</sup>	Savannah Environmental	Urban-Econ Development Economists	2022
Allepad PV Four, Northern Cape Province	Savannah Environmental	ILEnergy Development (Pty) Ltd	2018
Social Impact Assessment Review For Khubu Solar Power Plant (Rf) (Pty) Ltd Northwest Province	Khubu Solar Power Plant (RF) (Pty) Ltd	Leandri Kruger	2016
Social Impact Assessment for the Installation of Solar Photovoltaic Power Plant at Arnot Coal fired Power Station	Iliso Consulting Services	Kayamandi Development Services	2015
Environmental Impact Assessment Study for the proposed Photovoltaic Plant on the farm Sand Draai 391, Northern Cape	Solafrica	Royal Haskoning DHV	2015

The main findings from the above reports in terms of the nature and type of socio-economic impacts identified are during the construction and operational phases as follows:

Impacts during construction phase	Positive and negative impacts
Construction of the project will result in the creation of several direct and indirect employment opportunities, which will contribute towards lessening the unemployment levels within the area and aid in skills development of communities in the area.	Positive
Economic multiplier effects from the use of local goods and services during the construction phase.	Positive
Possible increased pressure on infrastructure and basic services, and social conflicts during construction because of in-migration of people.	Negative
An influx of people into the area could lead to a temporary increase in crime levels, cause social disruption, and put pressure on basic services. An influx of people looking for economic opportunities could result in pressure on the local population such as a rise in social conflicts and change in social dynamics, increase in HIV, pregnancies, and drug abuse.	Negative
Temporary increase in safety and security concerns associated with the influx of people during the construction phase. The perception exists that an influx of jobseekers, and/or construction workers to an area is a contributor to increased criminal activities in an area, such as increased safety and security risk for neighbouring properties and damage to property, increased risk of veld fire, stock theft, and crime etc.	Negative
Temporary increase in traffic disruptions and movement patterns during construction. Increased traffic due to construction vehicles and heavy vehicles could cause disruptions to road users and increase safety hazards.	Negative

<sup>1</sup> This report is for a wind farm but it is located in the Lekwa Municipality of Mpumalanga and therefore deemed relevant to this study.

<b>Impacts during construction phase</b>	<b>Positive and negative impacts</b>
The use of local roads and transport systems may cause road deterioration and congestion.	
Nuisance impacts in terms of temporary increase in noise and dust, and wear and tear on access roads to the site. Impacts associated with construction-related activities include noise, dust and disruption or damage to adjacent properties. Site clearing activities increase the risk of dust and noise being generated, which can in turn negatively impact on adjacent properties.	Negative
Intrusion impacts from construction activities will have an impact on the area's "sense of place".	Negative

<b>Impacts during operational phase</b>	<b>Positive and negative impacts</b>
Development of non-polluting, renewable energy infrastructure. The generation of renewable energy will contribute to South Africa's electricity market and may contribute to the diversification of the local economy.	Positive
The growth in the renewable energy sector could introduce new skills and development to the area. The impact is likely to be positive, local-to-national in extent, long-term, and of medium significance.	Positive
Creation of direct and indirect employment, and skills development because of the operation of the project. Employment opportunities include safety and security staff, operation and monitoring, and maintenance crew. Maintenance activities are carried out throughout the lifespan of the project, and include washing of solar panels, vegetation control, and general maintenance around the solar energy facility. Coupled with employment creation are increased household incomes and standards of living.	Positive
Benefits to the local area resulting from Socio-Economic Development (SED) / Enterprise Development (ED) programmes and community trusts from social responsibilities flowing from the REIPPPP Programme. Under the REIPPPP Programme renewable energy projects are required to contribute to local economic development in the area. Awarded projects are required to spend a certain amount of their generated revenue (as defined in the agreement with DoE) on Socio-Economic Development (SED) and Enterprise Development (ED) and share ownership in the project company with local communities.	Positive
The solar energy sector provides jobs across industries – manufacturing, installation, engineering, sales, logistics, etc. These companies exist in large and small communities. Renewable energy installation projects almost always utilize local labour, which means more employment opportunities for locals, impacting rural and urban communities alike.	Positive
Municipal rates increase as opposed to the current agricultural use of the land.	Positive

Impacts during operational phase	Positive and negative impacts
Regional development: Solar energy is scalable in areas with minimal or no access to electricity. In remote areas not connected to the utility grid, the introduction of solar power has opened doors for development projects that improve human welfare and a general standard of living, such as educational and medical facilities.	Positive
Avoidance of climate impacts. The use of renewable energy technology reduces long-term economic losses from extreme weather events, worsened air quality, rising sea levels and other effects. Switching from fossil fuels to renewables could help slow down climate change and avoid some of these potential economic losses.	Positive
Sense of place impacts associated with the operational phase of the solar energy facility and associated infrastructure. The presence of the solar energy facility could impact the “sense of place” for the local community. This may have an impact on tourism in the area.	Negative
The development of the proposed project on agricultural property would result in an area of land required to support the development footprint being removed from potential agricultural production. If the land is currently used for agricultural production, farm jobs may be threatened.	Negative

### 3.3 STAKEHOLDER ENGAGEMENTS

Key stakeholders and interested and affected parties were contacted as part of the socio-economic assessment. The municipality and local stakeholders within a radius of 10 km were invited to comment on the proposed development. It should be noted that the engagements during this process only focused on socio-economic impacts and do not replace the official EIA public participation process which is to follow in due course. Emails, phone calls and WhatsApp message with a basic information document were sent to the following stakeholders and they were invited to register on the PP database:

- Emakhazeni Municipality
- Nkandla District Municipality
- Mpumalanga DEDET
- Puma Wonderfontein Service Station
- AGRI SA-MPUMALANGA
- Golden Dividend Supplies
- BKB Grain Storage Wonderfontein Depot Mpumalanga
- Morelig Combined School.

The response received were generally of a positive nature and some respondents commented on the favourable use of land compared to the impact of the mines in the area. The following points were raised by the IAPs:

- Local employment creation
- Additional economic benefits such as local business opportunities
- Dust from the construction of the facilities



- Additional traffic in the area which were seen as both positive to new business creation but also negative to the additional traffic generated.

It is noticeable that the visual impact of the solar facility was not mentioned by any of the stakeholders.

### 3.4 SPECIALISTS REPORT FINDINGS

The specialists' assessments relevant to the socio-economic assessment are:

- Agricultural Impact Assessment
- Archaeological and Cultural Heritage Impact Assessment
- Landscape/Visual Impact Assessment

The following is a high-level summary of the main findings of the specialist report. For more details the reports themselves must be studied.

#### 3.4.1 Soils and Agriculture<sup>2</sup>

The loss of Agricultural Resources and Infrastructure is directly related to the current agricultural land use and the equipment utilised. The areas being farmed through maize and the areas under grassland, will be lost and the equipment utilised as well as farm infrastructure will be rendered un-used or removed and therefore lost.

Loss of agricultural land and Infrastructure. Potential impacts include the removal of high value agricultural land and the associated infrastructure.

- High value agricultural infrastructure will be removed. The infrastructure such as farming equipment and farm buildings will be lost.
- The farming jobs provided will be lost.
- The Agricultural production and crops provided to the region will be lost.

The loss is assessed to be moderate High before mitigation and Moderate after mitigation.

Loss of agricultural land capability and potential / Loss of soil as a valuable and irreplaceable resource. Potential disturbances include compaction, physical removal, and potential pollution; The exposed soil surfaces have the potential to erode easily if left uncovered which could lead to the loss of the soil resource.

- Soils that are excavated will have their physical and chemical states altered negatively.
- Potential loss of stockpiled topsoil and other materials through erosion if not protected properly.
- Insufficient stormwater control measures may result in localised high levels of soil erosion, possibly creating dongas or gullies, which may lead to decreased water quality in surrounding watercourses.
- Increased erosion could result in increased sedimentation which could impact on ecological processes.
- The additional hardened surfaces created during construction could increase the amount of stormwater runoff, which has the potential to cause erosion.

<sup>2</sup> Eco Assist Environmental Consulting. Soils And Agricultural Potential Assessment For The Proposed Roos Solar Pv Project, Mpumalanga Province, June 2023.

- Physical disturbance of the soil and plant removal may result in soil erosion/loss; and
- Erosion and potential soil loss from cut and fill activities and areas where naturally dispersive soils occur.

The loss of land capability is assessed to be Moderate before and after mitigation while the Loss of Agricultural Resources and Infrastructure is assessed as being Low before and after mitigation.

The mitigation actions recommended are detailed and relates to:

- Site clearance and topsoil removal prior to the commencement of physical construction activities.
- The construction of stockpiles for the topsoil.
- Operation and maintenance of the topsoil stockpiles.
- Rehabilitation of the Project area will be undertaken, which includes the ripping of the compacted soil surfaces, spreading of topsoil and establishment of vegetation.
- Rehabilitation of the Project area will be undertaken. This includes the ripping of the compacted soil surfaces, spreading of topsoil and establishment of vegetation.
- Monitoring and rehabilitation will determine the level of success of the rehabilitation, as well as to identify any additional measures that must be undertaken to ensure that the project area is restored to an adequate state. Monitoring will include soil fertility and erosion.

The specialist finding is that the proposed project can be considered favourably from an agricultural and soils impact perspective based subject to the recommended mitigations being implemented.

### 3.4.2 Visual impact assessment<sup>3</sup> (VIA)

The visual impact assessment records that the proposed PV development is not a Fatal Flaw, but that there are aspects of the proposed development site that would need to be excluded. A full VIA is recommended to ensure that local landscape and visual resources are not further degraded.

A main aspect that needs to be taken into consideration is the N4 Highway as an important tourist view corridor accessing the eastern conservation areas and parks. The Key Observation Points (KOPs) are the people (receptors) located in strategic locations surrounding the property who views the site where the landscape modifications are proposed:

- N4 Highway
- Western Agri-village
- Western rural farmsteads.

The scenic quality of the proposed development site is rated Medium whereas the receptor sensitivity to landscape changes is rated Medium to Low.

### 3.4.3 Heritage Assessment<sup>4</sup>

The broader area surrounding this proposed for this development is known for a variety of kinds of heritage resources including Stone Age and Iron Age archaeology, significant structures and living heritage sites such as significant baobab trees as well as burial grounds and graves.

<sup>3</sup> Visual Resource Management Africa, Visual Impact Assessment: Baseline Sensitivity Report, March 2023

<sup>4</sup> CTS Heritage. Heritage Impact Assessment, May 2023.

The report finds that there is no objection to the proposed development from an archaeological perspective on condition that:

- A no development buffer of 100m is implemented around the sites 3, 4 and 9.
- The identified sensitive archaeology areas in Figure 6 are not impacted by the development of any new infrastructure.
- Should any buried archaeological resources or human remains, or burials be uncovered during the development activities, work must cease in the vicinity of these finds. The South African Heritage Resources Agency (SAHRA) must be contacted immediately to determine an appropriate way forward.

### 3.5 SUMMARY OF POTENTIAL SOCIO-ECONOMIC IMPACTS

Based on the preceding analysis the following socio-economic impacts have been identified.

#### 3.5.1 Construction phase

Impacts during construction phase	Potential nature of the impacts
Direct and indirect economic benefits in terms of business turnover due to the investment in construction and manufacturing of the infrastructure and installations.	Positive
Employment opportunities during construction with accompanying skills development.	Positive
Local business and supplier turnover.	Positive
Influx of job seekers	Negative
Temporary increase in safety, security, and fire concerns.	Negative
Temporary increase in traffic disruptions and movement patterns.	Negative
Nuisance impacts in terms of temporary increase in noise and dust.	Negative
Farm security including stock theft and unplanned veld fires.	Negative

#### 3.5.2 Operational phase

Impacts during operational phase	Potential nature of the impacts
Development of non-polluting, renewable energy infrastructure and growth of the renewable energy sector.	Positive
Avoidance of climate impacts using renewable energy generation technology.	Positive
Creation of direct and indirect employment coupled with skills development and a reduction in unemployment, increase in household income and standard of living.	Positive

Impacts during operational phase	Potential nature of the impacts
Benefits to the local area from Socio-Economic Development (SED) / Enterprise Development (ED) programmes as required by the REIPPPP Programme.	Positive
Income tax and municipal rates increase above that gained from the agricultural use of the land.	Positive
Visual and sense of place impacts and related impacts on tourism.	Negative
Removal of productive agricultural land.	Negative

## 4 SOCIO-ECONOMIC IMPACTS EVALUATION

### 4.1 RATING METHODOLOGY

The Sivest impact rating methodology is used to evaluate the significance of the identified impacts taking the following factors into account:

<b>EXTENT (E)</b> This is defined as the area over which the impact will be expressed. Typically, the severity and significance of an impact have different scales and as such bracketing ranges are often required. This is often useful during the detailed assessment of a project in terms of further defining the extent.		
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.
<b>PROBABILITY (P)</b> 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).
<b>REVERSIBILITY (R)</b> This describes the degree to which an impact on an environmental parameter 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.
<b>IRREPLACEABLE LOSS OF RESOURCES (L)</b> This describes the degree to which resources will be irreplaceably lost because 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 will result in a complete loss of all resources.
<b>DURATION (D)</b> This describes the duration of the impacts on the environmental parameter. Duration indicates the lifetime of the impact because of the proposed activity.		
1	Short term	The impact and its effects will either disappear with mitigation or will be mitigated through natural process in a span shorter than the construction phase (0–1 year), or the impact and its effects 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 and its effects 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 (10–50 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 transient (Indefinite).
<b>INTENSITY / MAGNITUDE (I / M)</b> Describes the severity of an impact (i.e. whether the impact has the ability to alter the functionality or quality of a system permanently or temporarily).		
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 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 (system collapse). Rehabilitation and remediation often impossible. If possible, rehabilitation and remediation often unfeasible due to extremely high costs of rehabilitation and remediation.

The Significance score is assigned as follows: Significance = (Extent + probability + reversibility + irreplaceability + duration) x magnitude/intensity

Points	Impact significance rating	Description
5 to 23	Negative Low impact	The anticipated impact will have negligible negative effects and will require little to no mitigation.
5 to 23	Positive Low impact	The anticipated impact will have minor positive effects.
24 to 42	Negative Medium impact	The anticipated impact will have moderate negative effects and will require moderate mitigation measures.
24 to 42	Positive Medium impact	The anticipated impact will have moderate positive effects.
43 to 61	Negative High impact	The anticipated impact will have significant effects and will require significant mitigation measures to achieve an acceptable level of impact.
43 to 61	Positive High impact	The anticipated impact will have significant positive effects.
62 to 80	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".
62 to 80	Positive Very high impact	The anticipated impact will have highly significant positive effects.

## 4.2 EVALUATION OF THE IMPACTS

The following two figures present the evaluation of the socio-economic impacts during construction and operation phases respectively.

Figure 9: Socio-economic Impact Assessment – Construction Phase

ROOS PV FACILITY IN MPUMALANGA																					
ENVIRONMENTAL PARAMETER	ISSUE / IMPACT / ENVIRONMENTAL EFFECT/ NATURE	ENVIRONMENTAL SIGNIFICANCE BEFORE MITIGATION										RECOMMENDED MITIGATION MEASURES	ENVIRONMENTAL SIGNIFICANCE AFTER MITIGATION								
		E	P	R	L	D	I/M	TOTAL	STATUS(+ OR-)	S	E		P	R	L	D	I/M	TOTAL	STATUS(+ OR-)	S	
<b>Construction and Decommissioning Phases</b>																					
Direct and indirect economic benefits idue to the investment in construction and manufacturing of the infrastructure and installations.	Economic multiplier effects from the use of local goods and services during the construction phase. The economic benefits through investment into capital construction and infrastructure and equipment manufacturing leads to growth in the national GGP, income and production output of the private and government sectors	4	4	1	1	1	2	22	POS		Positive Low impact	Not Applicable	4	4	1	1	1	2	22	POS	Positive Low impact
Employment opportunities during construction with accompanying skills development.	Construction of the project will result in the creation of several direct and indirect employment opportunities, which will contribute towards lessening the unemployment levels within the area and aid in skills development of communities in the area	2	4	1	1	1	2	18	POS		Positive Low impact	Skills development during construction of local employees	2	4	1	1	3	2	22	POS	Positive Low impact
Influx of job seekers	An influx of people into the area leading to a temporary increase in social disruption, pressures on basic services d change in social dynamics, increase in HIV, pregnancies, and drug abuse.	2	2	2	1	1	2	16	NEG		Negative Low impact	Management of the recruitment practices to avoid an influx of persons seeking employment. Community information and training concerning the project and recruitment requirements	2	2	2	1	1	2	16	NEG	Negative Low impact
Temporary increase in safety, security, and uncontrolled fire risks	Temporary increase in safety and security concerns associated with the influx of people during the construction phase. An influx of jobseekers, and / or construction workers to an area is a contributor to increased criminal activities in an area, such as increased safety and security risk for neighbouring properties and damage to property, increased risk of veld fire, stock theft, and crime etc.	2	3	2	1	1	2	18	NEG		Negative Low impact	Integrate the site security systems in the regional and farmer security processes, systems and networks	2	3	2	1	1	2	18	NEG	Negative Low impact
Temporary increase in traffic disruptions and movement patterns	Temporary increase in traffic disruptions and movement patterns during construction. Increased traffic due to construction vehicles and heavy vehicles could cause disruptions to road users and increase safety hazards. The use of local roads and transport systems may cause road deterioration and congestion	2	3	2	1	1	2	18	NEG		Negative Low impact	Driver training and local traffic management systems	2	3	2	1	1	2	18	NEG	Negative Low impact
Nuisance impacts in terms of temporary increase in noise and dust.	Nuisance impacts in terms of temporary increase in noise and dust, and wear and tear on access roads to the site. Impacts associated with construction related activities include noise, dust and disruption or damage to adjacent properties. Site clearing activities increase the risk of dust and noise being generated, which can in turn negatively impact on adjacent properties.	2	3	2	1	1	2	18	NEG		Negative Low impact	Use of dust management practices during construction	2	3	2	1	1	2	18	NEG	Negative Low impact

Figure 10: Socio-economic Impact Assessment - Operational Phase

ROOS PV FACILITY IN MPUMALANGA																				
Operational Phase																				
ENVIRONMENTAL PARAMETER	ISSUE / IMPACT / ENVIRONMENTAL EFFECT/ NATURE	ENVIRONMENTAL SIGNIFICANCE BEFORE MITIGATION									RECOMMENDED MITIGATION MEASURES	ENVIRONMENTAL SIGNIFICANCE AFTER MITIGATION								
		E	P	R	L	D	I/M	TOTAL	STATUS(+ OR-)	S		E	P	R	L	D	I/M	TOTAL	STATUS(+ OR-)	S
Avoidance of Climate Impacts	The use of renewable energy technology reduces long-term economic losses from extreme weather events, worsened air quality, rising sea levels and other effects. Switching from fossil fuels to renewables could help slow down climate change and avoid some of these potential economic losses.	4	3	1	1	3	3	36	POS	Positive Medium impact	Not applicable	4	3	1	1	3	3	36	POS	Positive Medium impact
Creation of direct and indirect employment coupled with skills development	Creation of direct and indirect employment, and skills development opportunities and skills development because of the operation of the project. Employment opportunities include safety and security staff, operation and monitoring, and maintenance crew. Maintenance activities are carried out throughout the lifespan of the project, and include washing of solar panels, vegetation control, and general maintenance around the solar energy facility. Coupled to employment creation are increased household income and standard of living.	2	4	1	1	3	2	22	POS	Positive Low impact	Benefits to the local area from Socio-Economic Development (SED) / Enterprise Development (ED) programmes and community trusts from REIPPP Programme social responsibilities. Under the REIPPP Programme renewable energy projects are required to contribute to local economic development in the area. Awarded projects are required to spend a certain amount of their generated revenue (as defined in the agreement with DoE) on Socio-Economic Development (SED) and Enterprise Development (ED) and share ownership in the project company with local communities	2	4	1	1	3	3	33	POS	Positive Medium impact
Revenue for the fiscus and local municipality	Income tax and Municipal rates increase above that gained from the agricultural use of the land	3	4	1	1	3	2	24	POS	Positive Medium impact	Not applicable	3	4	1	1	3	2	24	POS	Positive Medium impact
Visual and sense of place impacts and related impacts on tourism	Sense of place impacts associated with the operation phase of the solar energy facility and associated infrastructure. The presence of the solar energy facility could impact the "sense of place" for the local community. This may have an impact on tourism in the area.	2	3	3	1	3	2	24	NEG	Negative Medium impact	Landscaping to visually screen the project	2	2	2	1	3	2	20	NEG	Negative Low impact
Removed of productive agricultural land.	The development footprint on which the solar energy facility will be developed will be removed from agricultural production. The development of the proposed project on an agricultural property would result in an area of land required to support the development footprint being removed from potential agricultural production. If the land is currently used for agricultural production the farm jobs may be threatened	1	4	3	3	3	2	28	NEG	Negative Medium impact	See the specialist report	1	4	3	3	3	2	28	NEG	Negative Medium impact



## 4.3 ASSESSMENT OF NO-GO ALTERNATIVES

### 4.3.1 “No-go” Alternative

The “no-go” alternative is the option of not undertaking the proposed grid connection infrastructure project. Hence, if the “no-go” option is implemented, there would be no development. The “no-go” option provides the baseline against which other alternatives are compared.

This no-go alternative will result in no positive or negative socio-economic impacts from the proposed project. However, it also means that economic opportunities for the local communities will be lost. The socio-economic benefit from the project taking place exceeds the socio-economic benefits from the no-go option in terms of the following:

- Avoidance of Climate Impacts.
- Direct and indirect economic benefits due to the investment in construction and manufacturing of the infrastructure and installations.
- Employment opportunities during construction with accompanying skills development.
- Creation of direct and indirect employment coupled with skills development.
- Revenue for the fiscus and local municipality.

The negative socio-economic impacts will not materialise under the no-go option. However, the negative impacts are assessed of being of a Low impact nature except for the loss of agricultural land which is a negative medium impact. On balance, the positive impacts and the loss of socio-economic opportunities exceed the negative impacts which are mainly of a temporary or short-term nature.

### 4.3.2 Comparative Assessment of Alternatives sites

The socio-economic benefits and disadvantages of the proposed project relates to the broader environment outside of the site and do not relate to the specific Roos Solar sites PV1, 2, 3, 4 and the grid infrastructure. The identification of preferred site options is not sensitive to the socio-economic impacts. The positive and negative socio-economic impacts are:

#### **Positive impacts during construction and operations are not geographically sensitive:**

- Avoidance of Climate Impacts
- Direct and indirect economic benefits due to the investment in construction and manufacturing of the infrastructure and installations.
- Employment opportunities during construction with accompanying skills development.
- Creation of direct and indirect employment coupled with skills development.
- Revenue for the fiscus and local municipality

#### **Negative impacts during construction and operations are not geographically sensitive:**

- Influx of job seekers
- Temporary increase in safety, security, and uncontrolled fire risks
- Temporary increase in traffic disruptions and movement patterns
- Nuisance impacts in terms of temporary increase in noise and dust.

- Visual and sense of place impacts and related impacts on tourism
- Removed of productive agricultural land.

#### 4.4 CUMULATIVE IMPACT ASSESSMENT

There are no other renewable energy projects within 15 km of the proposed PV project. Although the broader project area is known for its mining activities within 50 km from the site, the location of the site, which is to the north of the N4, share few socio-economic impacts with the mines. It is therefore assessed that the proposed project will not contribute to the cumulative socio-economic impacts in the area.

Section 4.5: Environmental Management Programme (EMPr) follows on the next page.

## 4.5 ENVIRONMENTAL MANAGEMENT PROGRAMME (EMPr)

### 4.5.1 Construction phase

Table 6: Construction phase: EMPr for the facility and the the substations and powerlines

Aspects Impact	Impact Management Actions	Responsibility	Method	Impact Management Outcomes	Timeframes / Frequency
Local employment opportunities during construction with accompanying skills development.	Implementation of a local employment policy and skills development programme.	The developer monitored by the Municipality.	Development and implementation of Standard Operating Procedures. Link into the Artisan Recognition of Prior Learning in the renewable energy storage value chain.	Local employment of contractor personnel.	Before contractor appointment and staff recruitment.
Local business and supplier development	Implementation of the Socio-Economic Development (SED) / Enterprise Development (ED) programmes required in terms of the REIPPP Programme.	The developer monitored by the Municipality	Link into the Internship programmes/opportunities in the renewable energy and storage sector by participating in Yes4Youth.	Creation of local suppliers	Before appointment of suppliers.
Influx of job seekers	Formulation of operating practices for the recruitment of contract workers to avoid an influx of unwanted persons seeking employment.	The developer monitored by the Municipality	Community information and training concerning the project and recruitment requirements	Prevention of an influx of job seekers coming to the site.	Before recruitment of contract workers.

Aspects Impact	Impact Management Actions	Responsibility	Method	Impact Management Outcomes	Timeframes / Frequency
Temporary increase in safety, security, and fire concerns.	Integrate the site security systems in the regional and farmer security processes, systems and networks.	The developer.	Coordinate the project's security and fire prevention systems with local security networks and SAPS.	Lower security and fire hazard risks.	Before contractor appointment and staff recruitment.
Traffic and nuisance impact for the temporary increase in traffic, noise and dust.	Traffic management to the site and use of dust management practices during construction.	As per mitigation actions provided in the specialist report.	As per mitigation actions provided in the specialist report.	As per mitigation actions provided in the specialist report.	As per mitigation actions provided in the specialist report.

#### 4.5.2 Operational phase

Table 7: Operational phase" EMPr for the facility and the substations and powerlines

Aspects Impact	Impact Management Actions	Responsibility	Method	Impact Management Outcomes	Timeframes / Frequency
Creation of direct employment coupled with skills development.	Implementation of a local employment policy and skills development programme.	The developer monitored by the Municipality.	Development and implementation of Standard Operating Procedures. Link into the Artisan Recognition of Prior Learning in the renewable energy storage value chain.	Local employment of contractor personnel.	Before contractor appointment and staff recruitment.
Visual and sense of place impacts and related impacts on tourism.	As specified in the Landscaping to visually screen the project	As specified in the Landscaping to visually screen the project	As specified in the Landscaping to visually screen the project	As specified in the Landscaping to visually screen the project	As specified in the Landscaping to visually screen the project

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<b>Aspects Impact</b>	<b>Impact Management Actions</b>	<b>Responsibility</b>	<b>Method</b>	<b>Impact Management Outcomes</b>	<b>Timeframes / Frequency</b>
Removal of productive agricultural land.	As specified in the specialist report	As specified in the specialist report	As specified in the specialist report	As specified in the specialist report	As specified in the specialist report

## 5 CONCLUSION AND RECOMMENDATIONS

### 5.1 IMPACT STATEMENT

The proposed project does not present any socio-economic fatal flaws and the project should go ahead. The benefits of the proposed project exceed the negative socio-economic impacts as well as the no-go option. Given that renewable energy development is highly desirable in South Africa from a social, environmental and development point of view, the positive economic and social opportunities lost under the no-go option renders it as an unattractive alternative.

### 5.2 NEED AND DESIRABILITY

South Africa is in dire need of additional energy resources and renewable energy is, from a social-economic and environmental perspective, is the preferred methodology to generate such energy. The proposed project is in-line with the Framework for a Just Transition in South Africa and the Just Energy Transition Investment Plan. “A just energy transition in South Africa builds resilient economies and people. It does so by (i) accelerating affordable, decentralised, diversely owned renewable energy systems; (ii) restoring previous and future ecosystems and natural resources impacted by coal mining and energy production; (iii) reskilling present workforces and educating future ones in green and other new and viable development pathways; (iv) building new productive models for comprehensive economic transitions; and (v) supporting various impacted constituencies to play an active role in decisions and implementation of energy transition programs (be it government or non-government actors).”

The desirability of the proposed project is demonstrated by the following summary table of the positive and negative socio-economic impacts during construction and operations.

ROOS PV FACILITY IN MPUMALANGA		
ENVIRONMENTAL PARAMETER	SIGNIFICANCE	
	BEFORE MITIGATION	AFTER MITIGATION
<b>Construction and Decommissioning Phases</b>		
Direct and indirect economic benefits due to the investment in construction and manufacturing of the infrastructure and installations.	Positive Low impact	Positive Low impact
Employment opportunities during construction with accompanying skills development.	Positive Low impact	Positive Low impact
Influx of job seekers	Negative Low impact	Negative Low impact
Temporary increase in safety, security, and uncontrolled fire risks	Negative Low impact	Negative Low impact
Temporary increase in traffic disruptions and movement patterns	Negative Low impact	Negative Low impact
Nuisance impacts in terms of temporary increase in noise and dust.	Negative Low impact	Negative Low impact
<b>Operational Phase</b>		
Avoidance of Climate Impacts	Positive Medium impact	Positive Medium impact



ROOS PV FACILITY IN MPUMALANGA		
ENVIRONMENTAL PARAMETER	SIGNIFICANCE	
	BEFORE MITIGATION	AFTER MITIGATION
Creation of direct and indirect employment coupled with skills development	Positive Low impact	Positive Medium impact
Revenue for the fiscus and local municipality	Positive Medium impact	Positive Medium impact
Visual and sense of place impacts and related impacts on tourism	Negative Medium impact	Negative Low impact
Removed of productive agricultural land.	Negative Medium impact	Negative Medium impact

The need and Desirability of the proposed project is demonstrated by:

- A growing demand for electricity fuelled by economic growth, shortage of generation capacity and an increase in the levels of load shedding.
- An increased surety of sustainable supply.
- A lesser dependence on fossil generated fuel.
- Implementation of the REIPP programme opportunities.
- Economic investment and employment opportunities.

### 5.3 MITIGATIONS

The following mitigations are recommended.

RISK IMPACT	MITIGATION
Influx of job seekers	Management of the recruitment practices to avoidance an influx of persons seeking employment. Community information and training concerning the project and recruitment requirements
Temporary increase in safety, security, and uncontrolled fire risks	Integrate the site security systems in the regional and farmer security processes, systems, and networks.
Temporary increase in traffic disruptions and movement patterns	Driver training and local traffic management systems
Nuisance impacts in terms of temporary increase in noise and dust.	Use of dust management practices during construction.
Visual and sense of place impacts and related impacts on tourism	See the specialist report. Landscaping to visually screen the project
Removed of productive agricultural land.	See the specialist report

### 5.4 RECOMMENDATIONS

It is recommended that the proposed project proceed with the following actions being undertaken:

- Implementation of the mitigations.
- Review comments received from members of the public, key stakeholders, and any organ of state during the public review process.
- Prepare a SIA Report for inclusion in the EIA Report to be prepared for the project.