Appendix H.11

SOCIAL IMPACT ASSESSMENT

SOCIAL IMPACT ASSESSMENT

TOURNEÉ 2 PV SOLAR ENERGY FACILITY

MPUMALANGA PROVINCE

JULY 2023

Prepared

By

Tony Barbour

Tony Barbour
ENVIRONMENTAL CONSULTING

10 Firs Avenue, Claremont, 7708, South Africa
(Cell) 082 600 8266
(E-Mail) tony@tonybarbour.co.za

EXECUTIVE SUMMARY

INTRODUCTION AND LOCATION

WSP was appointed by Red Rocket to manage the Environmental Impact Assessment (EIA) process for the Tourneé 2 PV SEF, with a maximum capacity of up to 150 MW located in the Lekwa Municipality (LM) in the Mpumalanga Province of South Africa. The site is located approximately 25 km northeast of the town of Standerton.

Tony Barbour Environmental Consulting was appointed to undertake a specialist Social Impact Assessment (SIA) as part of an EIA process. This report contains the findings of the SIA for the proposed Tourneé 2 PV SEF.

SUMMARY OF KEY FINDINGS

KEY FINDINGS

The key findings of the study are summarised under the following sections:

- Fit with policy and planning.
- Construction phase impacts.
- Operational phase impacts.
- Cumulative impacts.
- Decommissioning phase impacts.
- No-development option.

POLICY AND PLANNING ISSUES

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

CONSTRUCTION PHASE

The key social issues associated with the construction phase include:

Potential positive impacts

- Creation of employment and business opportunities.

The construction phase will extend over a period of approximately 18-24 months and create in the region of 200 employment opportunities. Members from the local communities in Standerton, Thuthukani, Morgenson, Bethal and Secunda may qualify for a percentage of low skilled and semi-skilled employment opportunities and a number of skilled opportunities. The Most of these employment opportunities will accrue to Historically Disadvantaged (HD) members from the local community. Given relatively high local unemployment levels and limited job opportunities in the area, this will represent a significant, if localised, social benefit. The total wage bill will be in the region of R 30 million (2023 Rand values). A percentage of the wage bill will

be spent in the local economy which will also create opportunities for local businesses in the LM. The capital expenditure associated with the construction phase will be approximately R 2 billion (2023 Rand value). This will create opportunities for local companies and the regional and local economy. The local service sector will also benefit from the construction phase. The potential opportunities would be linked to accommodation, catering, cleaning, transport, and security, etc. associated with the construction workers on the site.

Potential negative impacts

- Impacts associated with the presence of construction workers on local communities.
- Impacts related to the potential influx of jobseekers.
- Increased risks to livestock and farming infrastructure associated with the construction related activities and presence of construction workers on the site.
- Increased risk of grass fires associated with construction related activities.
- Nuisance impacts, such as noise, dust, and safety, associated with construction related activities and vehicles.
- Impact on productive farmland.

The findings of the SIA indicate that the significance of the potential negative impacts with mitigation will be **Low Negative**. The potential negative impacts associated with the proposed construction phase can therefore be effectively mitigated if the recommended mitigation measures are implemented. Table 1 summarises the significance of the impacts associated with the construction phase.

Table 1: Summary of social impacts during construction phase

Impact	Significance No Mitigation/Enhancement	Significance With Mitigation/Enhancement
Creation of employment and business opportunities	Moderate (Positive)	Moderate (Positive)
Presence of construction workers and potential impacts on family structures and social networks	Low (Negative)	Low (Negative)
Influx of job seekers	Low (Negative)	Low (Negative)
Safety risk, stock theft and damage to farm infrastructure associated with presence of construction workers	Moderate (Negative)	Low (Negative)
Increased risk of grass fires	Moderate (Negative)	Low (Negative)
Impact of heavy vehicles and construction activities	Moderate (Negative)	Low (Negative)
Loss of farmland	Moderate (Negative)	Low (Negative)

OPERATIONAL PHASE

The following key social issues are of relevance to the operational phase:

Potential positive impacts

- Generate renewable energy and improve energy security.
- Creation of employment opportunities.
- Benefits associated with socio-economic contributions to community development.

The proposed project will supplement South Africa's energy and assist to improve energy security. In addition, it will also reduce the country's reliance on coal as an energy source. This represents a positive social benefit.

Potential negative impacts

- Visual impacts and associated impacts on sense of place.
- Potential impact on property values.
- Potential impact on tourism.

The findings of the SIA indicate that the significance of all the potential negative impacts with mitigation will be **Low Negative**. The potential negative impacts can therefore be effectively mitigated. The significance of the impacts associated with the operational phase are summarised in Table 2.

Table 2: Summary of social impacts during operational phase

Impact	Significance No Mitigation/Enhancement	Significance With Mitigation/Enhancement
Generate renewable energy	Moderate (Positive)	High (Positive)
Creation of employment and business opportunities	Low (Positive)	Moderate (Positive)
Benefits associated with socio-economic contributions	Moderate (Positive)	Moderate (Positive)
Visual impact and impact on sense of place	Moderate (Negative)	Moderate (Negative)
Impact on property values	Low (Negative)	Low (Negative)
Impact on tourism	Low (Negative)	Low (Negative)

CUMULATIVE IMPACTS

Cumulative impact on sense of place

The establishment of the proposed PV SEF and other renewable energy facilities in the area have the potential to create the potential for combined and sequential visibility impacts. However, the impact on the area's sense of place should be viewed within the context of the impact associated with the Thukuka Power station and coal mining activities on the area's sense of place. The cumulative impact on sense of place is rated as **Medium Negative**.

Cumulative impact on local services and accommodation

The significance of this impact with mitigation is rated as **Medium Negative**.

Cumulative impact on local economy

The significance of this impact with enhancement is rated as **High Positive**.

DECOMMISSIONING

Given the relatively small number of people employed during the operational phase (~ 20), the potential negative social impact on the local economy associated with decommissioning will be limited. In addition, the potential impacts associated with the decommissioning phase can also be effectively managed with the implementation of a retrenchment and downscaling programme. With mitigation, the impacts are assessed to be Low (negative). Decommissioning will also create temporary employment opportunities. The significance was assessed to be Low (positive).

NO-DEVELOPMENT OPTION

The No-Development option would represent a lost opportunity for South Africa to improve energy security and supplement its current energy needs with clean, renewable energy. Given South Africa's current energy security challenges and its position as one of the highest per capita producers of carbon emissions in the world, this would represent a significant negative social cost. The No-Development option is not supported by the findings of the SIA.

CONCLUSION

The findings of the SIA indicate that the proposed Tourneé 2 PV SEF and associated infrastructure will result in several social and socio-economic benefits, including creation of employment and business opportunities during both the construction and operational phase. The project will also contribute to local economic development though socio-economic development (SED) contributions. In addition, the development will improve energy security and reduce the carbon footprint associated with energy generation. The findings of the SIA also indicate that the potential negative impacts associated with both the construction and operational phase are likely to be **Low Negative** with mitigation. The potential negative impacts can therefore be effectively mitigated if the recommended mitigation measures are implemented. The potential negative impacts can therefore be effectively mitigated if the recommended mitigation measures are implemented.

Statement and reasoned opinion
The establishment of the proposed Tourneé 2 PV SEF is supported by the findings of the SIA.

TABLE OF CONTENTS

CONTENTS OF THE SPECIALIST REPORT – CHECKLIST[1]

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 *curriculum vitae*;	Section 1.6, Annexure C
(b) a declaration that the specialist is independent in a form as may be specified by the competent authority;	Section 1.7, Annexure D
(c) an indication of the scope of, and the purpose for which, the report was prepared;	Section 1.1, Section 1.2
(cA) an indication of the quality and age of base data used for the specialist report;	Section 1.2, Section 3
(cB) a description of existing impacts on the site, cumulative impacts of the proposed development and levels of acceptable change;	Section 4
(d) the duration, date and season of the site investigation and the relevance of the season to the outcome of the assessment;	N/A for SIA
(e) a description of the methodology adopted in preparing the report or carrying out the specialised process inclusive of equipment and modelling used;	Section 1.2, Annexure B
(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;	Section 4, Section 5
(g) an identification of any areas to be avoided, including buffers;	N/A
(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;	Section 3
(i) a description of any assumptions made and any uncertainties or gaps in knowledge;	Section 1.5
(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;	Section 4, Section 5,
(k) any mitigation measures for inclusion in the EMPr;	Section 4
(l) any conditions for inclusion in the environmental authorisation;	Section 4, Section 5
(m) any monitoring requirements for inclusion in the EMPr or environmental authorisation;	N/A
(n) a reasoned opinion— i. as to 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;	Section 5.3
(o) a summary and copies of any comments received during any consultation process and where applicable all responses thereto; and	Annexure A
(p) any other information requested by the competent authority	N/A
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.	

[1] Note: There is currently no protocol for Social Impact Assessments (SIAs).

ACRONYMS

BESS	Battery Energy Storage System
DEA	Department of Environmental Affairs
DEA&DP	Department of Environmental Affairs and Development Planning
EIA	Environmental Impact Assessment
GSDM	Gert Sibanye District Municipality
HD	Historically Disadvantaged
IDP	Integrated Development Plan
IPP	Independent Power Producer
LED	Local Economic Development
LM	Lekwa Municipality
MW	Megawatt
PGDS	Provincial Growth and Development Strategy
SDF	Spatial Development Framework
SIA	Social Impact Assessment
SIA	Social Impact Assessment
SEF	Solar Energy Facility

SECTION 1: INTRODUCTION

1.1 INTRODUCTION

WSP was appointed by Red Rocket to manage the Environmental Impact Assessment (EIA) process for the Tourneé 2 PV SEF, with a maximum capacity of up to 150 MW located in the Lekwa Municipality (LM) in the Mpumalanga Province of South Africa. The site is located approximately 25 km northeast of the town of Standerton (Figure 1.1).

Tony Barbour Environmental Consulting was appointed to undertake a specialist Social Impact Assessment (SIA) as part of an EIA process. This report contains the findings of the SIA for the proposed Tourneé 2 PV SEF.

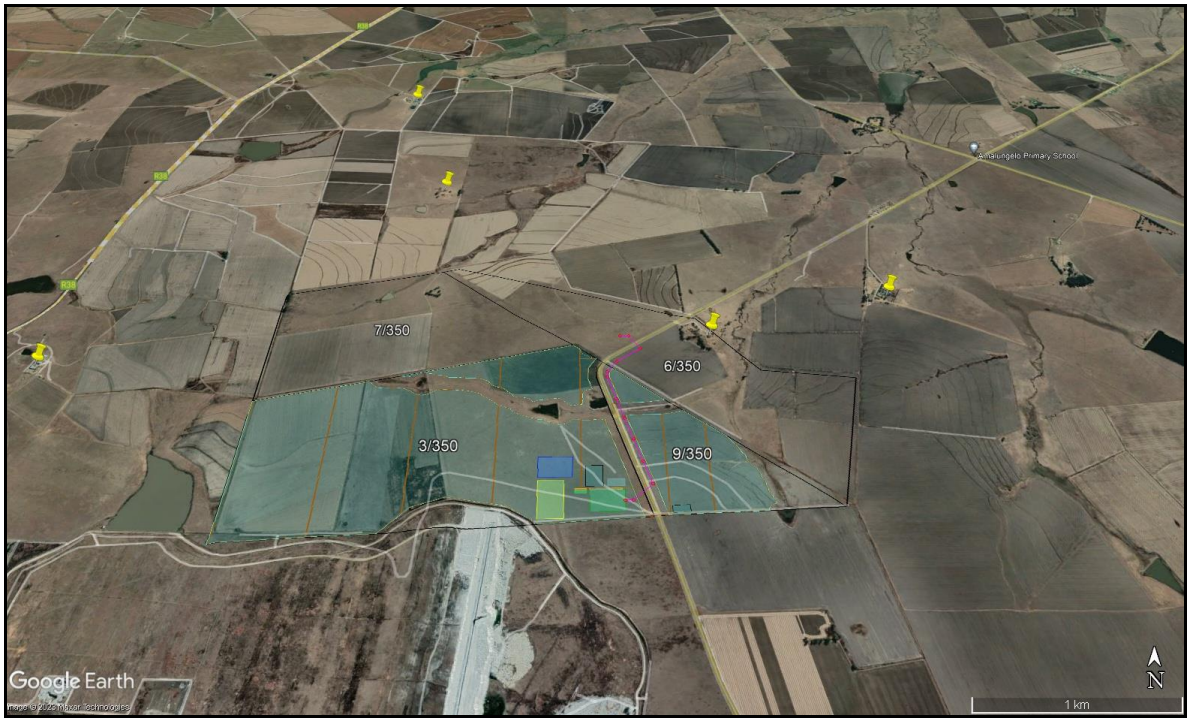


Figure 1.1: Location of Tourneé 2 PV SEF site

1.2 TERMS OF REFERENCE AND APPROACH

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

- Describing and obtaining an understanding of the proposed intervention (type, scale, and location), the settlements, and communities likely to be affected by the proposed project.
- Collecting baseline data on the current social and economic environment.

- Identifying the key potential social issues associated with the proposed project. This requires a site visit to the area and consultation with affected individuals and communities. As part of the process a basic information document was prepared and made available to key interested and affected parties. The aim of the document was to inform the affected parties of the nature and activities associated with the construction and operation of the proposed development to enable them to better understand and comment on the potential social issues and impacts.
- Assessing and documenting the significance of social impacts associated with the proposed intervention.
- Identifying and assessing alternatives and recommending alternatives and mitigation measures.

In this regard the study involved:

- Review of socio-economic data for the study area.
- Review of relevant planning and policy frameworks for the area.
- Review of information from similar studies, including the SIAs undertaken for other renewable energy projects.
- Site visit to study area and interviews with key stakeholders.
- Identifying the key potential social issues associated with the proposed project.
- Assessing and assessing the significance of social impacts associated with the proposed project.
- Identification of enhancement and mitigation measures aimed at maximizing opportunities and avoiding and or reducing negative impacts.

Annexure A contains a list of the secondary information reviewed and interviews conducted. Annexure B summarises the assessment methodology used to assign significance ratings to the assessment process.

1.3 PROJECT DESCRIPTION

Tourneé 2 Solar (Pty) Ltd is proposing to develop the Tourneé 2 PV SEF, with a maximum capacity of up to 150 MW, located in the Lekwa Municipality (LM) in the Mpumalanga Province of South Africa. Table 1.1 provides a summary of the technical details of the PV SEF. Figure 1.2 illustrates the location of the components that make up the PV SEF. The Tourneé 2 PV SEF is located on:

- Remaining Portion of Portion 3 of the Farm Dwars-In-D-Weg 350 and Portion 6 of the Farm Dwars-In-D-Weg 350, Registration Division I.S. Province of Mpumalanga and (344.0976 ha).

Table 1: Summary of technical details of PV SEF

FACILITY NAME	**TOURNÉE 2 PV**
Applicant Name	Tournée 2 Solar (Pty) Ltd
Affected Farms	Remaining Portion of Portion 3 of Farm Dwars-in-die-Weg 350 IS Portion 6 of Farm Dwars-in-die-Weg 350 IS
Extent	573.78 ha
Buildable area	Approximately 297 ha, subject to finalization based on technical and environmental requirements
Capacity	Up to 150MW

Power system technology (Photograph 1.1)	Solar PV
Operations and Maintenance (O&M) building footprint:	Operations building (including stores and workshop) – 1 500m^2
Construction camp and laydown area	Typical construction camp area 100m x 50m = 5,000m^2. Typical laydown area 100m x 200m = 20,000m^2. Sewage: Septic tanks and portable toilets
Cement batching plant (temporary):	Gravel and sand will be stored in separate heaps whilst the cement will be contained in a silo. The Alternative of utilising ready-mix trucks should also be considered.
Internal Roads:	Width of internal road – Up to 4m. Length of internal roads – Approximately 20ha.
Cables:	Communication, AC and DC cables.
Independent Power Producer (IPP) site substation and battery energy storage system (BESS) (Photograph 1.2)	Total footprint will be up to 7ha in extent (4ha for the BESS and 3ha for the IPP portion of the back-to-back substation). The substation will consist of a high voltage substation yard to allow for multiple (up to) 132kV feeder bays and transformers, control building, telecommunication infrastructure, access roads, etc. The associated BESS storage capacity will be up to 150MW/600MWh with up to four hours of storage (Photograph 1.2). It is proposed that Lithium Battery Technologies, such as Lithium Iron Phosphate, or Lithium Nickel Manganese Cobalt oxides will be considered as the preferred battery technology. The main components of the BESS include the batteries, power conversion system and transformer which will all be stored in various rows of containers.

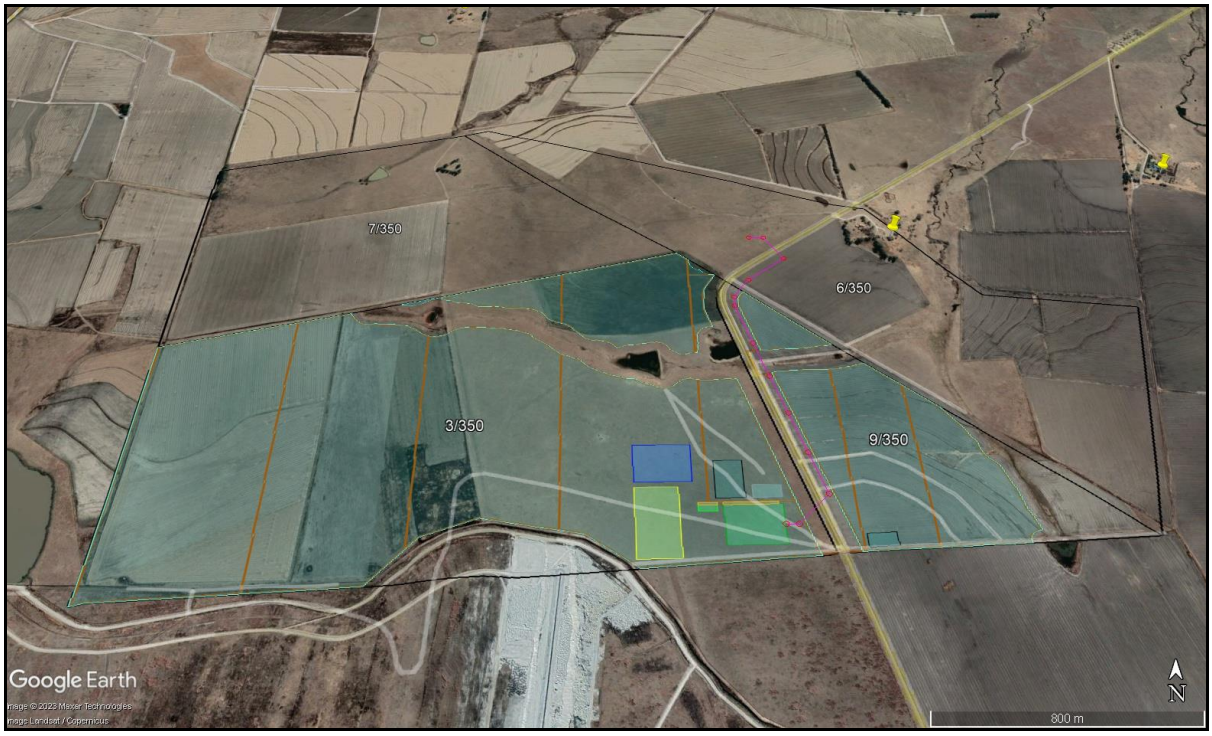


Figure 1.2: Layout of Tourneé 2 PV SEF components

- Olive green shaded area: PV SEF footprint.
- Light Green rectangle: BESS.
- Blue square: Concrete batching plant.

Photograph 1.1: Typical example of PV SEF panels

Photograph 1.2: Example of BESS located in storage containers

1.4 ASSUMPTIONS AND LIMITATIONS

1.4.1 Assumptions

Technical suitability
It is assumed that the development site represents a technically suitable site for the establishment of the proposed SEF and associated infrastructure.

Strategic importance of the project
The strategic importance of promoting renewable and other forms of energy is supported by the national and provincial energy policies.

Fit with planning and policy requirements
Legislation and policies reflect societal norms and values. The legislative and policy context therefore plays an important role in identifying and assessing the potential social impacts associated with a proposed development. In this regard, a key component of the SIA process is to assess the proposed development in terms of its fit with key planning and policy documents. As such, if the findings of the study indicate that the proposed development in its current format does not conform to the spatial principles and guidelines contained in the relevant legislation and planning documents, and there are no significant or unique opportunities created by the development, the development cannot be supported.

1.4.2 Limitations

Demographic data
Some of the provincial documents do not contain data from the 2016 Household Community Survey. However, where required the relevant 2016 data has been provided.

1.5 SPECIALIST DETAILS

Tony Barbour is an independent specialist with 26 years' experience in the field of environmental management. In terms of SIA experience Tony Barbour has undertaken in the region of 300 SIAs and is the author of the Guidelines for Social Impact Assessments for EIA's adopted by the Department of Environmental Affairs and Development Planning (DEA&DP) in the Western Cape in 2007. Annexure C contains a copy of CV for Tony Barbour.

1.6 DECLARATION OF INDEPENDENCE

This confirms that Tony Barbour, the specialist consultant responsible for undertaking the study and preparing the SIA Report, is independent and does not have a vested or financial interest in the proposed development being either approved or rejected. Annexure D contains a copy of signed declaration of independence.

1.7 REPORT STUCTURE

- Section 1: Introduction.
- Section 2: Summary of key policy and planning documents.
- Section 3: Overview of the study area.
- Section 4: Identification of key social issues.
- Section 5: Summary of key findings.

SECTION 2: POLICY AND PLANNING ENVIRONMENT

2.1 INTRODUCTION

Legislation and policy embody and reflect key societal norms, values, and developmental goals. The legislative and policy context therefore plays an important role in identifying, assessing, and evaluating the significance of potential social impacts associated with any given proposed development. An assessment of the "policy and planning fit[2]" of the proposed development therefore constitutes a key aspect of the Social Impact Assessment (SIA). In this regard, assessment of "planning fit" conforms to international best practice for conducting SIAs.

Section 2 provides an overview of the policy and planning environment affecting the proposed project. For the purposes of meeting the objectives of the SIA the following policy and planning documents were reviewed:

- National Energy Act (2008).
- White Paper on the Energy Policy of the Republic of South Africa (December 1998).
- White Paper on Renewable Energy (November 2003).
- Integrated Resource Plan (IRP) for South Africa (2019).
- National Infrastructure Plan (NIP) (2012 and 2021).
- National Development Plan (2011).
- Mpumalanga Vision 2030 Strategic Implementation Framework (2013-2030)
- Mpumalanga Economic Growth and Development Path (2011).
- Mpumalanga Spatial Development Framework (2019).
- Lekwa Integrated Development Plan (2021-2022).

2.2 NATIONAL POLICY ENVIRONMENT

2.2.1 National Energy Act (Act No 34 of 2008)

The National Energy Act was promulgated in 2008 (Act No 34 of 2008). One of the objectives of the Act was to promote diversity of supply of energy and its sources. In this regard, the preamble makes direct reference to renewable resources, including solar and wind:

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

2.2.2 White Paper on the Energy Policy of the Republic of South Africa

Investment in renewable energy initiatives, such as the proposed WEF, is supported by the White Paper on Energy Policy for South Africa (December 1998). In this regard, the document notes:

[2] Planning fit" can simply be described as the extent to which any relevant development satisfies the core criteria of appropriateness, need, and desirability, as defined or circumscribed by the relevant applicable legislation and policy documents at a given time.

"Government policy is based on an understanding that renewables are energy sources in their own right, are not limited to small-scale and remote applications, and have significant medium and long-term commercial potential".

"Renewable resources generally operate from an unlimited resource base and, as such, can increasingly contribute towards a long-term sustainable energy future".

The support for renewable energy policy is guided by a rationale that South Africa has a very attractive range of renewable resources, particularly ***solar*** and wind and that renewable applications are in fact the least cost energy service in many cases; more so when social and environmental costs are taken into account.

Government policy on renewable energy is thus concerned with meeting the following challenges:

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

The White Paper also acknowledges that South Africa has neglected the development and implementation of renewable energy applications, despite the fact that the country's renewable energy resource base is extensive, and many appropriate applications exist.

2.2.3 White Paper on Renewable Energy

The White Paper on Renewable Energy (November 2003) (further referred to as the White Paper) supplements the *White Paper on Energy Policy*, which recognizes that the medium and long-term potential of renewable energy is significant. This Paper sets out Government's vision, policy principles, strategic goals, and objectives for promoting and implementing renewable energy in South Africa.

The White Paper notes that while South Africa is well endowed with renewable energy resources that have the potential to become sustainable alternatives to fossil fuels, these have thus far remained largely untapped. As signatory to the Kyoto Protocol[3], Government is determined to make good the country's commitment to reducing greenhouse gas emissions. To this purpose, Government has committed itself to the development of a framework in which a national renewable energy framework can be established and operate.

South Africa is also a signatory of the Copenhagen Accord, a document that delegates at the 15th session of the Conference of Parties (COP 15) to the United Nations

[3] The Kyoto Protocol is a protocol to the United Nations Framework Convention on Climate Change (UNFCCC), aimed at fighting global warming. The UNFCCC is an international environmental treaty with the goal of achieving "stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system". The Protocol was initially adopted on 11 December 1997 in Kyoto, Japan and entered into force on 16 February 2005. As of November 2009, 187 states have signed and ratified the protocol (Wikipedia).

Framework Convention on Climate Change agreed to "take note of" at the final plenary on 18 December 2009. The accord endorses the continuation of the Kyoto Protocol and confirms that climate change is one of the greatest challenges facing the world. In terms of the accord South Africa committed itself to a reduction target of 34% compared to business as usual. In this regard, the IRP 2010 aims to allocate 43% of new energy generation facilities in South Africa to renewables.

Apart from the reduction of greenhouse gas emissions, the promotion of renewable energy sources is aimed at ensuring energy security through the diversification of supply (in this regard, also refer to the objectives of the National Energy Act).

Government's long-term goal is the establishment of a renewable energy industry producing modern energy carriers that will offer in future years a sustainable, fully non-subsidised alternative to fossil fuels.

2.2.4 Integrated Resource Plan (2019)

The South Africa's National Development Plan (NDP) 2030 offers a long-term plan for the country. It defines a desired destination where inequality and unemployment are reduced, and poverty is eliminated so that all South Africans can attain a decent standard of living. Electricity is one of the core elements of a decent standard of living. In formulating its vision for the energy sector, the NDP took as a point of departure the Integrated Resource Plan (IRP) 2010–2030 promulgated in March 2011. The IRP is an electricity infrastructure development plan based on least-cost electricity supply and demand balance, taking into account security of supply and the environment (minimize negative emissions and water usage).

On 27 August 2018, the then Minister of Energy published a draft IRP which was issued for public comment (Draft IRP). Following a lengthy public participation and consultation process the Integrated Resource Plan 2019 (IRP 2019) was gazetted by the Minister of Mineral Resources and Energy, Gwede Mantashe, on 18 October 2019, updating the energy forecast for South Africa from the current period to the year 2030. The IRP is an electricity capacity plan which aims to provide an indication of the country's electricity demand, how this demand will be supplied and what it will cost.

The IRP notes that South Africa is a signatory to the Paris Agreement on Climate Change and has ratified the agreement. The energy sector contributes close to 80% towards the country's total Green House Gas (GHG) emissions of which 50% are from electricity generation and liquid fuel production alone. A transmission from a fossil fuel-based energy sources is therefore critical to reducing GHG emissions. In September 2021 South Africa released its latest emission targets, indicating that it intended to limit Green House Gas (GHG) emissions to 398-510 MrCo2e by 2025, and 350-420 MrCo2e by 2030. These emissions are significantly lower than 2016 emission targets and will see South Africa's emissions decline in absolute terms from 2025, a decade earlier than planned (World Resource Institute, 2021).

The IRP (2019) notes that 39 730 MW of new generation capacity must be developed. Of the 39 730 MW determined, about 18 000 MW has been committed to date. This new capacity is made up of 6 422 MW under the REIPPP with a total of 3 876 MW operational on the grid. Under the Eskom build programme, the following capacity has been commissioned: 1 332MW of Ingula pumped storage, 1 588MW of Medupi, 800MW of Kusile and 100MW of Sere Wind Farm. In addition, IPPs have commissioned 1 005MW from two Open Cycle Gas Turbine (OCGT) peaking plants.1 005 MW from OCGT for peaking has also been commissioned (IRP 2019, page 14).

In terms of IRP (2019) provision has been made for the following new additional capacity by 2030:

- 1 500MW of coal.
- 2 500MW of hydro.
- 6 000MW of solar PV.
- 14 400MW of wind.
- 1 860MW of nuclear.
- 2 088MW for storage.
- 3 000MW of gas/diesel.
- 4 000MW from other distributed generation, co-generation, biomass and landfill technologies.

Figure 2.1 provides a summary of the allocations and commitments between the various energy sectors.

	Coal	Coal (Decommis-sioning)	Nuclear	Hydro	Storage	PV	Wind	CSP	Gas & Diesel	Other (Distributed Generation, CoGen, Biomass, Landfill)
Current Base	37,149		1 860	2,100	2 912	1 474	1 980	300	3 830	499
2019	2,155	-2,373					244	300		Allocation to the extent of the short term capacity and energy gap.
2020	1,433	-557				114	300			
2021	1,433	-1403				300	818			
2022	711	-844			513	400 1,000	1,600			
2023	750	-555				1000	1,600			500
2024			1,860				1,600		1000	500
2025						1000	1,600			500
2026		-1,219					1,600			500
2027	750	-847					1,600		2000	500
2028		-475				1000	1,600			500
2029		-1,694			1575	1000	1,600			500
2030		-1,050		2,500		1000	1,600			500
TOTAL INSTALLED CAPACITY by 2030 (MW)	33,364		1,860	4,600	5,000	8,288	17,742	600	6,380	
% Total Installed Capacity (% of MW)	43		2.36	5.84	6.35	10.52	22.53	0.76	8.1	
% Annual Energy Contribution (% of MWh)	58.8		4.5	8.4	1.2*	6.3	17.8	0.6	1.3	

Installed Capacity
Committed/Already Contracted Capacity
Capacity Decommissioned
New Additional Capacity
Extension of Koeberg Plant Design Life
Includes Distributed Generation Capacity for own use

- 2030 Coal Installed Capacity is less capacity decommissioned between years 2020 and 2030.
- Koeberg power station rated/installed capacity will revert to 1,926MW (original design capacity) following design life extension work.
- Other/ Distributed generation includes all generation facilities in circumstances in which the facility is operated solely to supply electricity to an end-use customer within the same property with the facility.
- Short term capacity gap is estimated at 2,000MW.

Figure 2.1: Summary of energy allocations and commitments based on the 2019 IRP

As indicated above, the changes from the Draft IRP capacity allocations see an increase in solar PV and wind, and a significant decrease in gas and diesel; and new inclusions include nuclear and storage.

In terms of renewable energy five bidding rounds have been completed for renewable energy projects under the RE IPP Procurement Programme. The most dominant technology in the IRP2019 is renewable energy from wind and solar PV technologies, with wind being identified as the stronger of the two technologies. There is a consistent annual allocation of 1 600MW for wind technology commencing in the year 2022 up to

2030. The solar PV allocation of 1 000MWs per year is incremental over the period 2022 to 2030, with no allocation in the years 2024 (being the year the Koeberg nuclear extension is expected to be commissioned) and the years 2026 and 2027 (presumably since 2 000MW of gas is expected in the year 2027). The IRP 2019 states that although there are annual build limits, in the long run such limits will be reviewed to take into account demand and supply requirements.

2.2.5 National Development Plan

The National Development Plan (NDP) contains a plan aimed at eliminating poverty and reducing inequality by 2030. The NDP identifies 9 key challenges and associated remedial plans. Managing the transition towards a low carbon national economy is identified as one of the 9 key national challenges. Expansion and acceleration of commercial renewable energy is identified as a key intervention strategy.

2.2.6 The New Growth Path Framework

Government released the New Economic Growth Path Framework on 23 November 2010. The aim of the framework is to enhance growth, employment creation and equity. The policy's principal target is to create five million jobs over the next 10 years and reflects government's commitment to prioritising employment creation in all economic policies. The framework identifies strategies that will enable South Africa to grow in a more equitable and inclusive manner while attaining South Africa's developmental agenda. Central to the New Growth Path is a massive investment in infrastructure as a critical driver of jobs across the economy. In this regard the framework identifies investments in five key areas namely: ***energy***, transport, communication, water, and housing.

The New Growth Path also identifies five other priority areas as part of the programme to create jobs, through a series of partnerships between the State and the private sector. The Green Economy is one of the five priority areas, including expansions in construction and the production of technologies for solar, wind and biofuels. In this regard clean manufacturing and environmental services are projected to create 300 000 jobs over the next decade.

2.2.7 National Infrastructure Plan

Government adopted a National Infrastructure Plan (NIP) in 2012. The aim of the plan is to transform the economic landscape while simultaneously creating significant numbers of new jobs and strengthening the delivery of basic services. The aim of the NIP is support investments is to improve access by South Africans to healthcare facilities, schools, water, sanitation, housing and electrification. The plan also notes that investment in the construction of ports, roads, railway systems, ***electricity plants***, hospitals, schools, and dams will contribute to improved economic growth.

As part of the National Infrastructure Plan, Cabinet established the Presidential Infrastructure Coordinating Committee (PICC). The Committee identified and developed 18 strategic integrated projects (SIPS). The SIPs cover social and economic infrastructure across all nine provinces (with an emphasis on lagging regions) and included three energy SIPs, namely SIP 8, 9 and 10.

- SIP 8: Green energy in support of the South African economy.
- SIP 9: Electricity generation to support socio-economic development.
- SIP 10: Electricity transmission and distribution for all.

The NIP 2050 was gazetted for public comment on 10 August 2021[4]. The first phase of the NIP 2050 focuses on four critical network sectors that provide a platform, namely, energy, freight transport, water, and digital infrastructure. In line with the NDP, the vision for the energy sector is to promote:

- Economic growth and development through adequate investment in energy infrastructure" (generation, transmission, and distribution) and reliable and efficient energy service at competitive rates, while supporting economic growth through job creation by stimulating supply chains.
- Social equity through expanded access to energy at affordable tariffs and through targeted, sustainable subsidies for needy households.
- Environmental sustainability through efforts to reduce pollution, reduce water usage and mitigate the effects of climate change.

The NIP 2050 notes that by 2030, the NDP set a target that more than 90% of the population should enjoy access to grid connected or off-grid electricity by 2030. To realise this vision, South Africa's energy system will be supported by effective policies, institutions, governance systems, regulation and, where appropriate, competitive markets. In terms of energy mix, NIP 2050 notes that coal will contribute significantly less to primary-energy needs in the future, while gas will have an important enabling role, energy supply will be ***increasingly dominated by renewable energy resources– especially wind and solar which are least cost and where South Africa has a comparative advantage.***

NIP 2050 also notes that South Africa is signatory of the Paris Agreement which aims to achieve Net Zero greenhouse gas emissions by 2050. To achieve this will require a shift to a least cost energy path that is increasingly reliant on renewables. For South Africa this is imperative for the following reasons:

- SA cannot afford to overspend while dramatically expanding capacity
- Renewables can be built quickly and in modular form thereby avoiding many of the challenges associated with mega projects.
- Trade partners are expected to increasingly impose border carbon taxes harming SA exports.
- SA will need to commit to emission reductions as a global citizen.

2.3 PROVINCIAL AND LOCAL LEVEL POLICY AND PLANNING

2.3.1 Mpumalanga Vision 2030

The Mpumalanga Vision Mpumalanga Vision 2030 Strategic Implementation Framework (2013-2030) provides a provincial expression of the key priorities, objectives and targets outlined in the National Development Plan 2030. In line with the objectives of the NDP the Mpumalanga Vision focusses on the following key socio-economic outcomes.

- Employment and Economic Growth
- Education and Training
- Health Care for all
- Social Protection

The Mpumalanga Vision 2030 also identifies nine key drivers that have a bearing on the spatial development of the province. Key Drivers 1 to 6 are focused towards

[4] Gazette No. 44951

promoting economic development and job creation, Key Drivers 7 and 8 are focused on human settlement in and around the key priority nodes/areas identified and linked to Key Drivers 1-6, and Key Driver 9 is focused on the conservation and sustainable management of the natural environment. The key relevant Key Drivers are summarised below.

Key Driver 1: Nodal Development. Key Driver 1 identifies corridors linked to key roads where investment should be focussed. Of relevance to the project the N17 is identified as a key corridor. Five primary nodes for development are also identified, including Secunda.

Key Driver 2: Business, Commercial and Industrial Development. Key driver 2 focuses on development of business and commercial sectors on the primary, secondary and rural nodes in Mpumalanga and the potential for these activities to generate employment job opportunities. Of relevance to the study the vision notes that the bulk of industrial investment in Mpumalanga Province should be clustered around the existing industrial strongholds, including Secunda (Petrochemical Industry).

Key Driver 9: Environmental Management and Conservation. The vision notes that in terms of mining it is important to establish proper environmental management systems during the operational phase of the mines to prevent large scale water and air pollution. While the section does not specifically refer to renewable energy, much of the mining in Mpumalanga is linked to coal mining and power generation, both of which are large consumers of water. The water demands associated with renewable energy are significantly lower than those associated with traditional coal power stations.

2.3.2 Mpumalanga Growth and Development Path

The Mpumalanga Economic Growth and Development Path (MEGDP)(2011) is informed by the National Economic Growth Path. The MEGDP notes that Mpumalanga is committed to increasing local economic development and job creation in the agricultural, industrial, manufacturing, ***green economy***, tourism, and mining sectors. The (MEGDP) is informed by six key pillars, namely:

- Job creation
- Inclusive and shared growth of a diversified economy
- Spatial distribution
- Integration of regional economies
- Sustainable human development
- Environmental sustainability

The pillars of job creation, the development of a diversified economy, and sustainable environmental development are all relevant to the proposed development.

The MEGDP also identifies a number of key employment drivers aimed at realising the MEGDP objectives and securing strong and sustainable growth for the next decade. Of relevance these include the creation of employment of economic sectors including energy and the development of new economies including green industries.

2.3.3 Mpumalanga Spatial Development Framework (2019)

The spatial vision for Mpumalanga Province is "A sustainable, vibrant and inclusive economy, Mpumalanga". The SDF identifies a number of opportunities and challenges

facing the province. The opportunities are linked to the province's natural resources, well developed economy, and established economies.

Natural Environment: The natural environment is diversified and is associated with the Highveld and the Lowveld areas in the province. Five major rivers systems in the flow through Mpumalanga and it is an important catchment area.

Connectivity and Infrastructure: The province is well connected in terms of infrastructure and is connected to Maputo and Richards Bay ports by both rail and road.

Economy: The province's rich biodiversity and scenic beauty support the tourism industry, while at the same time mining, specifically coal mining, plays a key role in the province's economy. The availability of high potential soil and diverse climatic condition also support a range of crops.

Urban settlements: The key urban centres are well established economic centres and offer the opportunity for further economic development by leveraging on the towns' economic bases.

In terms of challenges, climate change is identified as a key challenge. In this regard the activities in the province, specifically the generation of coal powered energy, account for 90% of South Africa's scheduled emissions. The province is also home to 50% of the most polluted towns in the country. The predicted impacts associated with climate change include decreased rainfall in the province and increase temperatures. This will increase the risk of natural disasters, including droughts, flooding, and fires.

The SDF identifies five spatial objectives, namely:

Connectivity and corridor functionality: The aim is to ensure connectivity between nodes, secondary towns, marginalised areas, the surrounding area, and to green open space systems.

Sustainable concentration and agglomeration: The aim is to promote the creation of an agglomeration economy that will encourage people and economic activities to locate near one another in urban centres and industrial clusters.

Conservation and resource utilisation: The aim is to promote the maximisation, protection and maintenance of ecosystems, scarce natural resources, high-potential agricultural land, and integrated open space systems.

Liveability and sense of place: The aim is to create settlements that contribute to people's sense of personal and collective wellbeing and to their sense of satisfaction in being residents of a settlements.

Rural diversity and transformation: The aim is to create Urban-Rural anchors and choices for residents within the rural economy linked to access to markets, food security and security of land tenure.

Connectivity and corridor functionality, Sustainable concentration and agglomeration, and Conservation and resource utilisation are of specific relevance the proposed development.

Section 3.2, describes the spatial development objectives and is dived into four subsections, namely:

- Connectivity and corridor functionality.
- Sustainable concentration and agglomeration.
- Conservation and resource utilisation.
- Liveability and sense of place.

The first three are relevant to the proposed development.

Connectivity and corridor functionality
The strategic objectives (SOs) associated with connectivity and corridor functionality that are relevant the study area and the proposed development include:

- Strategic Objective 1: Leverage the N4 corridor to facilitate regional and provincial connectivity. This includes establishment of proposed sub-regional access points linking the N4 to a number of towns including Middleburg.
- Strategic Objective 2: Development of the existing corridors and building new linkages to increase capacity and economic opportunities and ensure connectivity to the surrounding areas.
- Strategic Objective 3: Upgrade of tourism, and rural economy road networks with linkages to transportation corridors.
- Strategic Objective 5: Decongestion of the coal haul roads and Improvement of Freight Network.

In terms of SO 2, the spatial linkages identified for development and upgrading include the upgrade of N11 corridor which is located in the study area.

Sustainable concentration and agglomeration
Of specific relevance, Strategic Objective 4, Diversify Economy, focusses on the need to diversify the economy. The SDF notes that mining sector contributes 25% to Mpumalanga's GVA. In addition, there are a number of other sectors directly or indirectly dependent on mining such as manufacturing (specifically metal processing) and utilities (specifically power generation). The combined GVA of these three sectors makes up more than 40% of the provincial GVA.

However, the SDF recognises that mining is not a sustainable industry and resources are finite. There is therefore a need for a gradual shift from mining-oriented sectors to the sustainable economic sectors to maintain sustained growth of the provincial economy. Mpumalanga's Coal Mining and Coal Fired Power Plant region (located mainly in the Highveld area) will be come under increasing pressure due to environmental considerations. As a result, the region is likely to experience a decline in demand for coal and with it a decline in the associated employment it creates. There is therefore a need to diversify the regional economy and facilitate the gradual transition of economic activities in the region. The proposed development supports the objective of diversifying the provinces economy.

Conservation and resource utilisation
The strategic objectives (SOs) that are relevant the study area and the proposed development include:

- Strategic Objective 2: Ensure conservation of all water resources and catchment Areas.
- Strategic Objective 4: Promote a low carbon and climate resilient economy.
- Strategic Objective 6: To optimally utilise the mining potential without compromising the long-term sustainability of the natural environment.

Strategic Objective 2: Ensure Conservation of all Water Resources and Catchment Areas

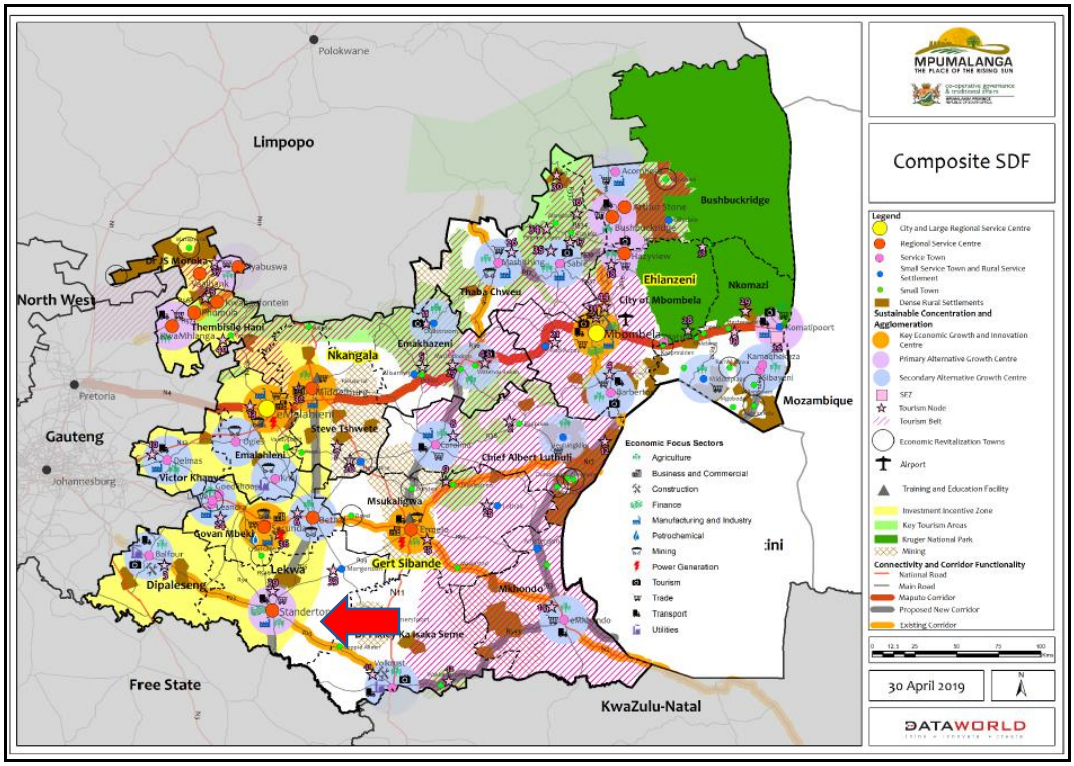
Achieving Strategic Objective 2, Ensure Conservation of all Water Resources and Catchment Areas is closely linked to diversifying the economy. The SDF notes that the provinces water resources are under pressure from high demand activities, including Eskom's power stations, mining, and industrial uses. The proposed development represents a low consumer of water.

Strategic Objective 4: Promote a Low Carbon and Climate Resilient Economy

Mpumalanga is home to 12 of Eskom's 15 coal-fired power stations; petrochemical plants including Sasol's refinery in Secunda; metal smelters; coal and other mines; brick and stone works; fertiliser and chemical producers; explosives producers; and other smaller industrial operations, making the Highveld one of South Africa's industrial heartlands (CER, 2017). As a result, the air quality within the Mpumalanga Province, especially within the Highveld area, is the poorest in South Africa. The Highveld region accounts for approximately 90 % of South Africa's scheduled emissions of industrial dust, sulphur dioxide and nitrogen oxides (Wells et al. 1996, as cited in Josipovic et al. 2009). Achieving Strategic 4, Promote a low carbon and climate resilient economy, is closely linked to diversifying the economy. The proposed development supports the development of a low carbon, climate resistant economy.

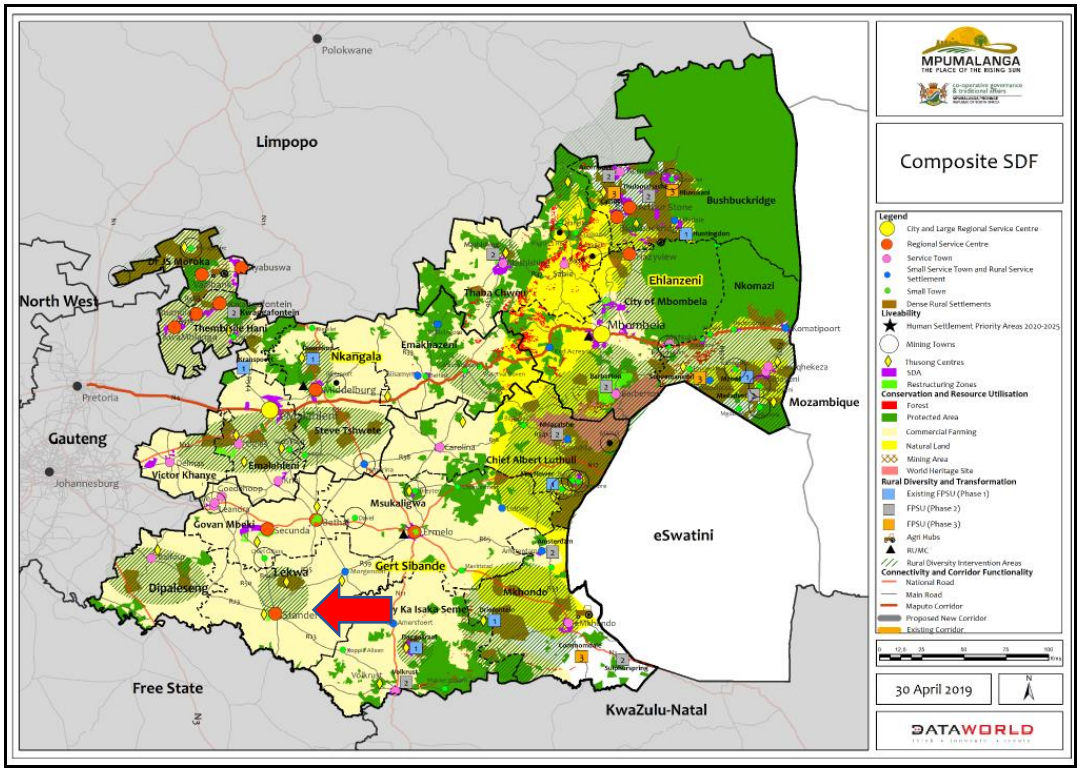
Strategic Objective 6: To optimally utilise the mining potential without compromising the long-term sustainability of the natural environment

Mining contributes R 49.6 billion (approximately 25%) to the provincial economy. The key mining sector is coal, which represents 83% of South Africa's coal production. The mining sector, specifically coal mining, creates employment opportunities and supports the manufacturing and power generation sector. However, mining is also associated with many issues including water and soil contamination, air pollution and environmental degradation. Achieving Strategic 6, To optimally utilise the mining potential without compromising the long-term sustainability of the natural environment is closely linked to diversifying and developing a low carbon climate resistant economy. The proposed development supports the objective of diversifying and developing a low carbon, climate resistant economy. In terms of the high-level composite spatial development framework, economic sectors in the area include mining and power generation. The study is located within an area defined as an Investment Incentive Zone (yellow) with Standerton identified as a Regional Service and Primary Alternative Growth Centre (red and purple dots) (Figure 2.2). In terms of land uses the development is located in an area identified as commercial farming (yellow) and a Rural Diversity Intervention Area (hatched green) (Figure 2.3).



Source: Mpumalanga SDF

Figure 2.2: Mpumalanga Composite SDF-Economic Activities (red arrow indicates location of site)



Source: Mpumalanga SDF

Figure 2.3: Mpumalanga Composite SDF-Land Uses (red arrow indicates location of site)

2.3.4 Lekwa Integrated Development Plan

Lekwa Local Municipality is situated within Mpumalanga province, it is one of the seven municipalities that make up the Gert Sibande District. The municipality was established on the 5 December 2000 after amalgamation of three former transitional local councils, namely Standerton, Sakhile and Morgenzon. The municipality covers a total area of 4585 km² and is rural in character and is named after the Vaal River which is commonly known as Lekwa (the Sesotho name for Vaal River).

The vision of the LM is "to be the leading, people centered municipality excelling in economic growth, development and governance". The mission that underpins the vision is:

- Transparent and accountable governance.
- Accelerated customer focused affordable service delivery.
- Creation of conducive environment for economic development and growth.
- Sustainable infrastructural development and maintenance.
- Enhance community participation in the affairs of the municipality.
- To initiate groundbreaking innovations in the way we conduct our business.

The IDP lists a number of Strategic Goals (SGs) and Key Performance Areas (KPAs) of which the following are relevant to the project.

Strategic Goals
- Improved access to water, sanitation, electricity, and waste removal
- Increased Economic growth.

Key Performance Areas
- KPA 1: Basic services delivery and infrastructure development
- KPA 4: Local Economic Development

The proposed vision of KPA 1 is to "to excel in the provision of sustainable infrastructural development and service delivery to our community". One of the key priorities is the provision of a reliable electricity supply. The proposed vision for KPA 4 is a "well governed and people-centred municipality." Of relevance the key priorities include the creation of conducive environment for economic development and growth.
The stakeholder engagement process undertaken as part of the IDP identified the key needs in each of the wards. The key needs in Ward 12 where the site is located included:

- Creation of employment opportunities for local community members.
- Creation of a skills development programme.

In terms of community services, the key needs included upgrading open spaces and the provision of training equipment in local parks. The SED contributions associated with the development can potentially be used to address some of the local needs in Ward 12. High unemployment and electricity outages were also identified as a key issue in Ward 12.

The IDP lists the key challenges facing the LM. Of relevance to the proposed development these include:

- Lack of/inadequate employment opportunities.
- Lack of reliable electricity supply.

The IDP also notes that the LM is one of the four municipalities in Mpumalanga that are listed on the COGTA's list (2018) list of dysfunctional municipalities.

The main settlements in the LM are Standerton, Morgenzon and Thuthukani. The location is illustrated in Figure 2.4. Standerton is the largest urban settlement in the LM and is also the only first order node in LM. Standerton also serves as the administrative and institutional hub of the municipality. It is a typical medium sized South African town, with a central CBD, industrial areas on the periphery, low density residential development and separation between white and black and rich and poor neighbourhoods.

Morgenzon is a third order node whose existence is mainly influenced by the transportation of coal from the Secunda complex to Majuba Power Station near Volksrust. It is a local service centre that served (and still does) the surrounding commercial farming areas with basic needs. The IDP notes that Morgenzon is a poverty-stricken area with deteriorating economic facilities. However, the IDP also notes that Morgenzon has a potential to be upgraded to a second order node due to its locality on the intersection of R39 and R35 as well as its distance from Standerton and its existing facilities.

Thuthukani lies approximately 25km northeast of Standerton, and essentially started as a worker's village to house employees of the Thuthuka power station which is located 3 km to the east of the village. It is surrounded by industrial uses such as Thuthuka power station, Alpha substation to the east as well as New Denmark Colliery to the north. Thuthukani is made up of two townships namely Thuthukani Proper and Thuthukani Extension 1 as well as Eskom Hostels to the west of town. The IDP notes Thuthukani has not officially been handed over to the municipality, this means that residents of Thuthukani do not pay tax and rates to the municipality which negatively affects the revenue base of the municipality. The IDP notes that because Thuthukani is solely dependent on Thuthuka Power Station and New Denmark Colliery the growth potential is limited.

The IDP notes that the Lekwa Municipal Area is not directly linked to the national road system. The major routes are thus provincial roads and minor roads. The IDP lists the roads that play an important role in terms of regional accessibility and linkages including the R38 and R39 which are located to the west and south east of the site respectively.

Of relevance to the development the LM and the study area also falls within the Highveld Priority Area (HPA) which was declared by the Minister on 23 November 2007 under the National Environmental Management: Air Quality Act (AQA). A priority area is defined as an area where ambient air quality standards are being exceeded or may be exceeded. The declaration necessitated the development of an Air Quality Management Plan (AQMP) for the area. A range of industrial, mining and agricultural activities are carried out in the priority area, including power generation, commercial forestry and related industries, metal processing, petrochemical refining, ceramic processes, quarries, mining (primarily of coal), fertiliser and chemical production, explosives production, charcoal production, and other smaller scale industrial operations which contribute to the air quality in the area that needs to be carefully managed to ensure the health of the population.

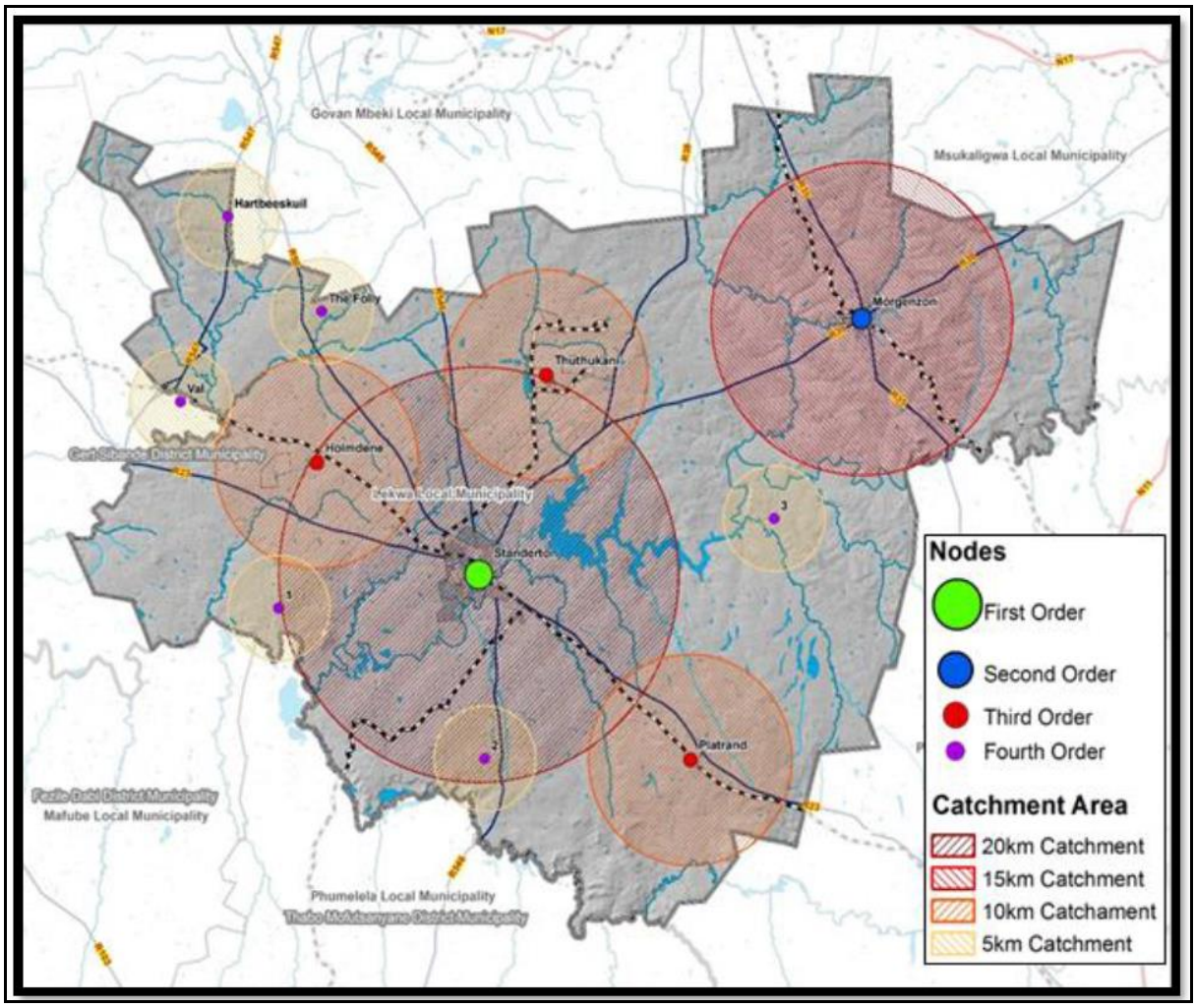


Figure 2.4: Location of settlements in the LM

The IDP highlights the risks posed by climate change, specifically to the agricultural sector, and the need for the LM to develop a climate change response policy. Of relevance the IDP notes that the policy should include:

- Climate change considerations into energy and electrical infrastructure and master planning.
- Develop and adopt by laws that promote renewable energy and energy efficiency.

A SWOT analysis was undertaken as part of the IDP process. The relevant findings are summarised below:

Strengths
- High youth rate that can contribute to economic growth.

Weaknesses
- Inadequate bulk infrastructure.
- Low population negatively affects economic growth.
- Poor relationship with private sector.
- Inadequate skills.

Opportunities

- Strategic location of the municipality.
- Arable land for agriculture.
- Economic Industries/drivers (Mining & Agriculture).
- Identified as growth point area by provincial SDF.

Threats

- High level of unemployment
- Poor relationship with private sector.
- Vandalism of technological infrastructure affects efficiency.

SECTION 3: OVERVIEW OF STUDY AREA

3.1 INTRODUCTION

Section 3 provides a baseline description of the study area with regard to:

- The administrative context.
- Provincial context.
- Overview of district and local municipalities.
- Site and the surrounding land uses.

3.2 ADMINISTRATIVE CONTEXT

The study area is located within the Lekwa Municipality (LM) within the Mpumalanga Province. The MM is one of the seven Local Municipalities that make up the Gert Sibande District Municipality (GSDM) (Figure 3.1). The town of Standerton is the administrative seat of the LM.

Figure 3.1: Location of Lekwa Municipality within the Gert Sibande District Municipality.

3.3 DEMOGRAPHIC OVERVIEW

Population

The population of the LM in 2016 was 123 418 (Community Household Survey 2016). Of this total, 33.4% were under the age of 18, 61.1% were between 18 and 64, and the remaining 5.6% were 65 and older. The figures or the percentage of the population falling within the economically active economic age category of 18-64 were higher than the figures for the GSDM and Mpumalanga (57.7% and 56.6% respectively). This is likely to be due to the employment opportunities associated with the mining and manufacturing activities in the LM. The population of Ward 12 (Census 2011) was 8 405, of which 36.2% were under the age of 18, 59.6% were in the active economic category (18-64) and 4.2% were older than 64.

The dependency ratio is the ratio of non-economically active dependents (usually people younger than 15 or older than 64) to the working age population group (15-64). The higher the dependency ratio the larger the percentage of the population dependent on the economically active age group. This in turn translates to reduced revenue for local authorities to meet the growing demand for services. The traditional approach is based people younger than 15 or older than 64. The information provided provides information for the age group under 18. The total number of people falling within this age group will therefore be higher than the 0-15 age group. However, most people between the age of 15 and 17 are not economically active (i.e., they are likely to be at school).

Using information on people under the age of 18 is therefore likely to represent a more accurate reflection of the dependency ratio. Based on these figures, the dependency ratios for the LM, the GSDM and Mpumalanga in 2016 were 63.8%, 73.5% and 77% respectively. The lower dependency ratios in the LM reflect the employment and economic opportunities in mining and power sector. The dependency ratio for Ward 12 (2011) was 67.8%.

In terms of race groups, Black Africans made up 85.5% of the population on the LM, followed by Whites, 13% and Indian or Asian (1.2%) (Table 3.1). The main first language spoken in the LM was isizulu, 56.6%, followed by Sesotho (22.7%) and Afrikaans (12.9%).

In Ward 12 Black Africans made up 90.2% of the population, followed by Whites, 9.6% and Indian or Asian (0.1%). The main first language spoken was isizulu, 70.1%, followed by Afrikaans (9.7%) and Sesotho (7.3%).

Table 3.1: Population group LM

Column	Lekwa		Gert Sibande		Mpumalanga	
Black African	89.2%	110,072	91.6%	1,040,425	93.6%	4,057,760
Coloured	1.8%	2,234	0.8%	9,429	0.8%	32,859
Indian or Asian	0.8%	993	0.7%	8,126	0.5%	19,786
White	8.2%	10,119	6.8%	77,429	5.2%	225,558

Source: Wazimap: 2016 Household Community Survey

Households and house types
The total number of households in the LM in 2016 was 37 335, which ~ 10% of the total number of households in the GSDM. Of these 63.1% were formal houses, 19.1% were shacks, and 10% were flats in backyards. The figures for the GSDM were 67.2%, 13.4%, 6.7% and 8.3% respectively. While the majority of dwellings in the LM are formal structures there are a high percentage of informal structures which reflects the migration of jobseekers to the area and the pressure this in turn places on housing. The figures for Ward 12 were 60% (formal house) and 16.9% (shack).

In terms of ownership, 58.7% of the dwellings in the LM were owned and fully paid off, while 5.6% were in the process of being paid off. 12.2% were occupied rent free and 15.2% of the dwellings were rented from private individuals. A relatively large percentage of the properties in the LM (64.4%) were owned and or in the process of being paid off. This reflects a relatively stable and established community.

In terms of household heads, approximately 36.8% of the households in the LM and 39.1% of the households in the GSDM were headed by women. These figures similar to the provincial figure of 39.71%. The high percentage of households headed by women in the LM reflects the likelihood that the men have left the area in search of employment opportunities in Gauteng. This is despite the well-developed mining and energy sector in the LM. Women headed households tend to be more vulnerable. The figure for Ward 12 was 21.4%, which is considerably lower that the LM and GSDM.

Household income
Based on the data from the 2011 Census, 10.8% of the population of the LM had no formal income, 3.9% earned less than R 4 800, 5.9% earned between R 5 000 and R 10 000 per annum, 17.8% between R 10 000 and R 20 000 per annum and 22.3% between R 20 000 and 40 000 per annum (2016). The figures for Ward 12 were 6.7%, 2.7%, 3.4%, 17.3% and 26.5% respectively.

The poverty gap indicator produced by the World Bank Development Research Group measures poverty using information from household per capita income/consumption. This indicator illustrates the average shortfall of the total population from the poverty line. This measurement is used to reflect the intensity of poverty, which is based on living on less than R3 200 per month for an average sized household (~ 40 000 per annum). Based on this measure, in the region of 60.7% of the households in the LM and 65.2% in the GSDM live close to or below the poverty line. The figure for Ward 12 was 56.6%.

The low-income levels in the LM and GSDM reflect the limited formal employment opportunities outside the urban areas. This is also reflected in the high unemployment rates. The low-income levels are a major concern given that an increasing number of individuals and households are likely to be dependent on social grants. The low-income levels also result in reduced spending in the local economy and less tax and rates revenue for the LM. This in turn impacts on the ability of the LM to maintain and provide services.

Household income levels are likely to have been impacted by the COVID-19 pandemic. The number of households in the LM and GSDM that live close to or below the poverty line is likely to have increased over the last 18 months. This, coupled with the high dependency ratio, is a major cause of concern for the area.

Employment
The official unemployment rate in the LM in 2016 was 15.5%, while 44.4% were employed, and 36.7% were regarded as not economically active (Table 3.2). However,

the COVID-19 pandemic is likely to have resulted in an increase in unemployment rates in the LM. Recent figures released by Stats South Africa also indicate that South Africa's unemployment rate is in the region of 36%, the highest formal unemployment rate in the world.

Table 3.2: Employment LM

Column	Lekwa		Gert Sibande		Mpumalanga	
Discouraged work-seeker	3.4%	2,600	5.3%	35,518	5.8%	150,844
Employed	44.4%	34,118	38.9%	259,129	37.5%	969,771
Other not economically active	36.7%	28,171	39.4%	262,387	39.4%	1,020,806
Unemployed	15.5%	11,895	16.5%	109,658	17.3%	448,126
Unspecified	0%	0	0%	0	0%	0

Source: Wazimap: 2016 Household Community Survey

Education

In terms of education levels, the percentage of the population over 20 years of age in the LM with no schooling was 9.3% in 2016, compared to 10.8% and 11.3% for the GSDM and Mpumalanga Province respectively (Table 3.2). The percentage of the population over the age of 20 with matric in the LM (2016) was 30.6%, compared to 34.3% and 36.1% for the GSDM and Mpumalanga. The education levels in the LM are therefore lower than the GSDM and Provincial figures. The figures for Ward 12 (2011) were 22.7% (no education) and 21.4% (matric). The education levels in Ward 12 are therefore lower than the LM, GSDM and province.

Table 3.3: Population by highest educational level LM

Column	Lekwa		Gert Sibande		Mpumalanga	
None	9.3%	7,495	10.8%	74,575	11.3%	289,024
Other	0.2%	122	0.4%	2,692	0.5%	13,008
Some primary	11.1%	8,914	10.3%	71,150	9.2%	235,202
Primary	4.7%	3,817	3.7%	25,654	3.6%	93,209
Some secondary	37%	29,835	32.7%	225,668	31.6%	807,658
Grade 12 (Matric)	30.6%	24,653	34.3%	236,452	36.1%	923,581
Undergrad	2.1%	1,725	2.6%	18,141	2.6%	65,572
Post-grad	1.9%	1,555	2.6%	17,873	2.6%	67,379
N/A	3%	2,434	2.5%	17,310	2.5%	64,704

Source: Wazimap: 2016 Household Community Survey

3.4 MUNICIPAL SERVICES

Electricity

Based on 2016 survey, 92.1% of households in the LM had access to electricity, compared to 90.4% for the GSDM and 93.2% for Mpumalanga. In terms of

connections, 84.3% has in-house prepaid meters, while 6.2% had traditional meters (Table 3.4).

Table 3.4: Population by electricity access

Column	Lekwa		Gert Sibande		Mpumalanga	
In-house prepaid meter	84.3%	103,987	76.1%	863,819	81.4%	3,531,211
No access to electricity	7.9%	9,742	9.6%	108,857	6.8%	294,078
In-house conventional meter	6.2%	7,601	12.8%	145,050	9.6%	416,614
Other source (not paying for)	1.1%	1,350	0.3%	3,412	0.8%	35,088
Other	0.6%	738	1.3%	14,272	1.4%	58,972

Source: Wazimap: 2016 Household Community Survey

Access to water

Based on the 2016 survey information, 88.6% of households in the LM were supplied by a regional or local service provider. This compares to 88.4% and 86.85% for the GSDM and Mpumalanga respectively. Of this total 46.3% had piped water inside the house and 42.3% in the yard (Table 3.5). The relatively high percentage that relied on piped water in their yards reflects the relatively high percentage of shacks (19.1%) in the LM.

Table 3.5: Population by water source

Column	Lekwa		Gert Sibande		Mpumalanga	
Piped water inside house	46.3%	57,127	33.6%	381,982	27.9%	1,210,646
Piped water inside yard	42.3%	52,240	49.2%	558,314	45.7%	1,980,179
Borehole outside yard	3.7%	4,594	3%	33,521	2.1%	90,998
Public/communal tap	1.8%	2,196	3%	33,872	5.1%	220,698
Other	5.9%	7,262	11.3%	127,721	19.2%	833,444

Source: Wazimap: 2016 Household Community Survey

Sanitation

85.6% of the households in the LM had access to flush toilets (2016), while 10% relied on pit toilets and 2.5% had not access to sanitation (Table 3.6). The figures with no access to sanitation are similar to the 2.6% and 2.8% for the GSDM and Mpumalanga respectively. The relatively high percentage of households that relied on pit toilets reflects the relatively high percentage of shacks (19.1%) in the LM. The figure for flush toilets is higher than the figures for the GSDM (65.3%) and Mpumalanga (42.1%) respectively.

Table 3.6: Population by toilet facilities

Column	Lekwa		Gert Sibande		Mpumalanga	
Flush toilet	85.9%	106,071	65.3%	741,197	42.1%	1,824,153
Pit toilet	10%	12,294	26.4%	299,583	47.5%	2,058,092
None	2.5%	3,120	2.6%	29,216	2.8%	119,896
Other	0.6%	789	3.6%	40,923	3%	128,618

Source: Wazimap: 2016 Household Community Survey

Refuse collection

66.5% of the households in the LM had access to regular refuse removal service, while for 13.6% relied on their own dump (Table 3.7). The relatively high percentage that relied on their own dump reflects the relatively high percentage of shacks (19.1%) in the LM. The figure for regular service is higher than the 52.2% for the GSDM.

Table 3.7: Population by refuse disposal

Column	Lekwa		Gert Sibande		Mpumalanga	
Service provider (regularly)	66.5%	82,069	52.2%	592,992	36.9%	1,598,974
Own dump	13.6%	16,804	26.8%	303,917	47.4%	2,054,914
None	12.5%	15,411	7.1%	80,341	6%	260,346
Communal dump	5.8%	7,162	4.2%	48,114	4.2%	183,389
Other	1.6%	1,971	9.7%	110,045	5.5%	238,341

Source: Wazimap: 2016 Household Community Survey

3.5 OVERVIEW OF STUDY AREA

The study area is located approximately 26 km to the north-east of the town of Standerton in the LM and 35km south-west of the town of Secunda in the adjacent Govan Mbeki Municipality (GMM). Standerton is the largest urban settlement in the LM and serves as the administrative and institutional hub of the municipality. It is a typical medium sized South African town, with a central CBD, industrial areas on the periphery, low density residential development and separation between white and black and rich and poor neighbourhoods.

Secunda has its origins in the 1973/74 international oil crisis when the then South African Government took the decision to establish a second coal liquefaction plant following the establishment of the first at Sasolburg in the 1950s. After the site for the Sasol complex had been identified, it had to be decided whether or not to combine the existing towns of Evander and Trichardt. The huge burden that extensions of this nature would have had on the financial and administrative resources of the established communities as well as the tempo at which such development should proceed was decisive and resulted in the decision to develop Trichardt and Secunda to be one town, named Secunda. Evander, located ~ 8km to the west of the current day Secunda, remained a separate town. Trichardt borders onto the northern part of Secunda. The

first town area was proclaimed in June 1976[5]. The name Secunda is derived from the from the Latin, secundi meaning second/following, and was given to the town as it was the second extraction refinery producing oil from coal, after Sasolburg, which is located approximately 140km west of Secunda. The town was located adjacent to the large coalfields in the area, including the Evander and Winkelhaak coal mines located to the northwest of the town. The Secunda facility consists of Sasol Two (1980) and Sasol Three (1982) is the largest coal liquefaction plant in the world, and produces synthetic fuel, diesel, and related fuels and petrochemicals from coal gasification. The Secunda facility is located to the south of the town (Photograph 3.1).

Photograph 3.1: Secunda Sasol Facility

The Thukuka Power station and Thuthukani settlement are located 4 and 10km to the west of the site respectively (Figure 3.2 and Photograph 3.2). Thuthukani started as a worker's village to house employees of the Thuthuka power station which is located 4 km to the east of the village. The IDP notes that Thuthukani is made up of two townships namely Thuthukani proper and Thuthukani Extension 1 as well as Eskom Hostels to the west of town. The IDP indicates that because Thuthukani is solely dependent on Thuthuka Power Station and the associated New Denmark Colliery the growth potential is limited. The New Denmark Colliery is located ~6km to the northwest of the Thuthuka Power station. The ash dump for the power station is located immediately to the south of the Tournée PV SEF site (Figure 3.3).

The other land uses in the study area commercial agriculture. Commercial agriculture in the study area includes livestock and grain farming. Based on the Google Earth information there are a limited number of farmsteads in the study area. As indicated in Figure 3.2, the farmsteads are located to the north of the site (yellow place marks).

[5] https://www.primidi.com/secunda_mpumalanga/early_history

The Visual Impact Assessment (Aquatic Environmental Services, July 2023) notes that most of the farmsteads have existing dense tree lines which partially or completely obscure the view towards Tourneé 2 and 1 Solar PV SEFs. The Tutuka ash dump also shields the PV SEFs from receptors located to the south and north.

An Eskom substation is located 5 km to the southwest of the site. The social environment can therefore be described is a working agricultural / industrial environment. There are no tourist related activities located in the study area. Therefore, from a social perspective there are a limited number of sensitive social receptors.

Source: Google Earth

Figure 3.2: Location of Tournée SEFs relative to Tukuka Power Station and Thuthukani settlement to the west (Tournée 2, green arrow, Tournée 1, red arrow)

Source: Google Earth

Photograph 3.2: Tukuka Power Station

Source: Google Earth

Figure 3.3: Location of Tournee 1 with ash dump to the south

SECTION 4: ASSESSMENT OF KEY SOCIAL ISSUES

4.1 INTRODUCTION

Section 4 provides an assessment of the key social issues identified during the study. The identification of key issues was based on:

- Review of project related information.
- Review of key policy and planning documents.
- Experience/ familiarity of the author with the area and local conditions based on previous site visit to the study area.
- Interviews with key stakeholders.
- Experience with similar projects.

The section is divided into the following sections:

- Compatibility with relevant policy and planning context ("planning fit");
- Social issues associated with the construction phase.
- Social issues associated with the operational phase.
- Social issues associated with the decommissioning phase.
- Social implications of "no development" alternative.
- Social implications associated with cumulative impacts.

Based on the findings of the SIA the potential social impacts associated with the BESS and on site IPP substation will be limited. Separate assessments have therefore not been undertaken.

4.2 ASSESSMENT OF POLICY AND PLANNING FIT

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

4.3 CONSTRUCTION PHASE SOCIAL IMPACTS

Potential positive impacts

- Creation of employment and business opportunities, and opportunity for skills development and on-site training.

Potential negative impacts

- Impacts associated with the presence of construction workers on local communities.
- Impacts related to the potential influx of job-seekers.
- Increased risks to livestock and farming infrastructure associated with the construction related activities and presence of construction workers on the site.
- Increased risk of grass fires associated with construction related activities.

- Nuisance impacts, such as noise, dust, and safety, associated with construction related activities and vehicles.
- Impact on productive farmland.

4.3.1 Creation of local employment, training, and business opportunities

The construction phase of the PV SEF will extend over a period of approximately 18-24 months and create in the region of 150 employment opportunities. Members from the local communities in the area, specifically Standerton, Thuthukani, Morgenson, Bethal and Secunda would be in a position to qualify for a percentage of the low skilled and semi-skilled employment opportunities. Most of these employment opportunities will accrue to Historically Disadvantaged (HD) members of the community. Based on information from similar projects the total wage bill will be in the region of R 30 million (2023 Rand values). A percentage of the wage bill will be spent in the local economy which will also create opportunities for local businesses in the local towns in the area.

Given relatively high local unemployment levels and limited job opportunities in the area, this will represent a localised, social benefit. The capital expenditure associated with the construction phase will be approximately R 2 billion (2023 Rand value). Due the lack of diversification in the local economy the potential for local companies is likely to be limited. The majority of benefits are therefore likely to accrue to contractors and engineering companies based outside the LM. The local service sector will also benefit from the construction phase. The potential opportunities would be linked to accommodation, catering, cleaning, transport, and security, etc. associated with the construction workers on the site. Construction workers are likely to be accommodated in Standerton.

The hospitality industry in the area will also benefit from the provision of accommodation and meals for professionals (engineers, quantity surveyors, project managers, product representatives etc.) and other (non-construction) personnel involved on the project. Experience from other construction projects indicates that the potential opportunities are not limited to on-site construction workers but also to consultants and product representatives associated with the project.

Table 4.1: Impact assessment of employment and business creation opportunities during the construction phase

Nature: Creation of employment and business opportunities during the construction phase		
	Without Mitigation	**With Enhancement**
Extent	Local (2)	Local (3)
Duration	Short term (2)	Short term (2)
Magnitude	Medium (3)	Medium (3)
Reversibility	N/A	N/A
Probability	Probable (3)	Highly probable (4)
Significance	Low (21)	Moderate (32)
Status	Positive	Positive
Can impact be enhanced?	Yes	
Enhancement: **Employment** • Preparation and implementation of a Stakeholder Engagement Plan (SEP) prior to and		

during the construction phase.

- Where reasonable and practical, the proponent should appoint local contractors and implement a 'locals first' policy, especially for semi and low-skilled job categories. However, due to the low skills levels in the area, the majority of skilled posts are likely to be filled by people from outside the area.
- Where feasible, efforts should be made to employ local contactors that are compliant with Broad Based Black Economic Empowerment (BBBEE) criteria.
- Before the construction phase commences the proponent should meet with representatives from the LM to establish the existence of a skills database for the area. If such as database exists, it should be made available to the contractors appointed for the construction phase.
- The local authorities, community representatives, and organisations on the interested and affected party database should be informed of the final decision regarding the project and the potential job opportunities for locals and the employment procedures that the proponent intends following for the construction phase of the project.
- Where feasible, training and skills development programmes for locals should be initiated prior to the initiation of the construction phase.
- The recruitment selection process should seek to promote gender equality and the employment of women wherever possible.

Business

- The proponent should liaise with the LM with regards the establishment of a database of local companies, specifically BBBEE companies, which qualify as potential service providers (e.g., construction companies, catering companies, waste collection companies, security companies etc.) prior to the commencement of the tender process for construction service providers. These companies should be notified of the tender process and invited to bid for project-related work.

Note that while preference to local employees and companies is recommended, it is recognised that a competitive tender process may not guarantee the employment of local labour for the construction phase.

Residual impacts: Opportunity to up-grade and improve skills levels in the area.

Assessment of No-Go option

There is no impact as the current status quo would be maintained.

4.3.2 Impact of construction workers on local communities

The presence of construction workers poses a potential risk to family structures and social networks. While the presence of construction workers does not in itself constitute a social impact, the manner in which construction workers conduct themselves can impact on local communities. The most significant negative impact is associated with the disruption of existing family structures and social networks. This risk is linked to potentially risky behaviour, mainly of male construction workers, including:

- An increase in alcohol and drug use.
- An increase in crime levels.
- The loss of girlfriends and/or wives to construction workers.
- An increase in teenage and unwanted pregnancies.
- An increase in prostitution.
- An increase in sexually transmitted diseases (STDs), including HIV.

The objective will be to source as many of the low and semi-skilled workers locally (Standerton, Thuthukani, Morgenson, Bethal and Secunda). These workers will be from the local community and form part of the local family and social networks. This will reduce the risk and mitigate the potential impacts on the local community. The

potential impact on the local community is therefore likely to be low. The balance of semi-skilled and skilled workers is likely to be accommodated in Standerton.

Table 4.2: Assessment of impact of the presence of construction workers in the area on local communities

Nature: Potential impacts on family structures and social networks associated with the presence of construction workers		
	Without Mitigation	**With Mitigation**
Extent	Local (2)	Local (1)
Duration	Short term (2)	Short term (2)
Magnitude	Low (2)	Low (2)
Reversibility	With rehabilitation/mitigation (3)	With rehabilitation/mitigation (3)
Probability	Probable (3)	Probable (3)
Significance	Moderate (27)	Low (24)
Status	Negative	Negative
Can impact be mitigated?	Yes, to some degree. However, the risk cannot be entirely eliminated	

Mitigation:

- Preparation and implementation of a Stakeholder Engagement Plan (SEP) prior to and during the construction phase.
- Preparation and implementation of a Community Health, Safety and Security Plan (CHSSP) prior to and during the construction phase.
- The SEP and CHSSP should include a Grievance Mechanism that enables stakeholders to report resolve incidents.
- Where possible, the proponent should make it a requirement for contractors to implement a 'locals first' policy for construction jobs, specifically for semi and low-skilled job categories.
- The proponent should consider the option of establishing a Monitoring Committee (MC) for the construction phase that representatives from local landowners, farming associations, and the local municipality. This MC should be established prior to commencement of the construction phase and form part of the SEP.
- The proponent and contractor should develop a Code of Conduct (CoC) for construction workers. The code should identify which types of behaviour and activities are not acceptable. Construction workers in breach of the code should be subject to appropriate disciplinary action and/or dismissed. All dismissals must comply with the South African labour legislation. The CoC should be signed by the proponent and the contractors before the contractors move onto site. The CoC should form part of the CHSSP.
- The proponent and the contractor should implement an HIV/AIDS, COVID-19 and Tuberculosis (TB) awareness programme for all construction workers at the outset of the construction phase. The programmes should form part of the CHSSP.
- The contractor should provide transport for workers to and from the site on a daily basis. This will enable the contactor to effectively manage and monitor the movement of construction workers on and off the site.
- The contractor must ensure that all construction workers from outside the area are transported back to their place of residence within 2 days for their contract coming to an end.
- No construction workers, with the exception of security personnel, should be permitted to stay over-night on the site.

Residual impacts: Impacts on family and community relations that may, in some cases, persist for a long period of time. Also, in cases where unplanned / unwanted pregnancies occur or members of the community are infected by an STD, specifically HIV and or AIDS, the impacts may be permanent and have long term to permanent residual/cumulative impacts on the affected individuals and/or their families and the community.

Assessment of No-Go option
There is no impact as the current status quo would be maintained.

4.3.3 Influx of job seekers

Large construction projects tend to attract people to the area in the hope that they will secure a job, even if it is a temporary job. These job seekers can in turn become "economically stranded" in the area or decide to stay on irrespective of finding a job or not. While the proposed project on its own does not constitute a large construction project, the establishment of a number of renewable energy projects in the area may attract job seekers to the area. As in the case of construction workers employed on the project, the actual presence of job seekers in the area does not in itself constitute a social impact. However, the way in which they conduct themselves can impact on the local community. The main areas of concern associated with the influx of job seekers include:

- Impacts on existing social networks and community structures.
- Competition for housing, specifically low-cost housing.
- Competition for scarce jobs.
- Increase in incidences of crime.

These issues are similar to the concerns associated with the presence of construction workers and are discussed in Section 4.3.1. Based on experience from the construction of other renewable energy facilities the potential for economically motivated in-migration and subsequent labour stranding is likely to limited. This is due to the relatively limited number of employment opportunities and short duration of the construction phase. In addition, the economic opportunities in Standerton are limited.

Table 4.3: Assessment of impact of job seekers on local communities

Nature: Potential impacts on family structures, social networks and community services associated with the influx of job seekers		
	Without Mitigation	**With Mitigation**
Extent	Local (2)	Local (1)
Duration	Short term (2)	Short term (2)
Magnitude	Low (2)	Low (2)
Reversibility	With rehabilitation/mitigation (3)	With rehabilitation/mitigation (3)
Probability	Probable (3)	Probable (3)
Significance	Low (27)	Low (24)
Status	Negative	Negative
Can impact be mitigated?	Yes, to some degree. However, the risk cannot be entirely eliminated	
Mitigation: • Preparation and implementation of a Stakeholder Engagement Plan (SEP) prior to and		

during the construction phase. • Preparation and implementation of a Community Health, Safety and Security Plan (CHSSP) prior to and during the construction phase. • The proponent, in consultation with the LM, should investigate the option of establishing a MC to monitor and identify potential problems that may arise due to the influx of job seekers to the area. The MC should also include the other proponents of solar energy projects in the area. • The proponent should implement a "locals first" policy, specifically with regard to unskilled and low skilled opportunities. • The proponent should implement a policy that no employment will be available at the gate.
Residual impacts: Impacts on family and community relations that may, in some cases, persist for a long period of time. Also, in cases where unplanned / unwanted pregnancies occur or members of the community are infected by an STD, specifically HIV and or AIDS, the impacts may be permanent and have long term to permanent cumulative impacts on the affected individuals and/or their families and the community.

Assessment of No-Go option
There is no impact as the current status quo would be maintained.

4.3.4 Risk to safety, livestock, and farm infrastructure

The presence on and movement of construction workers on and off the site poses a potential safety threat to local famers and farm workers in the vicinity of the site. In addition, farm infrastructure, such as fences and gates, may be damaged and stock losses may also result from gates being left open and/or fences being damaged, or stock theft linked either directly or indirectly to the presence of construction workers on the site. The potential risks (safety, livestock, and farm infrastructure) can be effectively mitigated by careful planning and managing the movement of construction workers and construction related activities during the construction phase.

The Tournée 2 PV SEF is located on Remaining Portion of Portion 3 of the Farm Dwars-In-D-Weg 350, owned by Eskom. Eskom have entered into lease agreements that enable local farmers to use the land. It is understood that the lease agreements will not be extended to enable the development of the PV SEF. The establishment of the PV SEF will therefore have a limited impact on farming operations. However, the construction activities may impact on adjacent landowners. These impacts can be effectively mitigated.

Table 4.4: Assessment of risk to safety, livestock, and damage to farm infrastructure

Nature: Potential risk to safety of farmers and farm workers, livestock and damage to farm infrastructure associated with the presence of construction workers on site		
	Without Mitigation	**With Mitigation**
Extent	Local (2)	Local (1)
Duration	Short term (2)	Short term (2)
Magnitude	Low (2)	Low (2)
Reversibility	Reversible with compensation (3)	Reversible with compensation (3)
Probability	Probable (3)	Probable (3)
Significance	Low (24)	Low (24)

Status	Negative	Negative
Can impact be mitigated?	Yes	

Mitigation:

- Preparation and implementation of a Stakeholder Engagement Plan (SEP) prior to and during the construction phase.
- Preparation and implementation of a Community Health, Safety and Security Plan (CHSSP) prior to and during the construction phase.
- The proponent should enter into an agreement with adjacent local farmers in the area whereby damages to farm property etc. during the construction phase will be compensated for. The agreement should be signed before the construction phase commences.
- All farm gates must be closed after passing through.
- Contractors appointed by the proponent should provide daily transport for low and semi-skilled workers to and from the site.
- The proponent should establish a MC and CoC for workers (see above).
- The proponent should hold contractors liable for compensating farmers and in full for any stock losses and/or damage to farm infrastructure that can be linked to construction workers. This should be contained in the Code of Conduct to be signed between the proponent, the contractors, and neighbouring landowners. The agreement should also cover loses and costs associated with fires caused by construction workers or construction related activities (see below).
- The proponent should implement a Grievance Mechanism that provides local farmers with an effective and efficient mechanism to address issues related to report issues related to damage to farm infrastructure, stock theft and poaching etc.
- The Environmental Management Plan (EMP) must outline procedures for managing and storing waste on site, specifically plastic waste that poses a threat to livestock if ingested.
- Contractors appointed by the proponent must ensure that all workers are informed at the outset of the construction phase of the conditions contained in the Code of Conduct, specifically consequences of stock theft and trespassing on adjacent farms.
- Contractors appointed by the proponent must ensure that construction workers who are found guilty of stealing livestock and/or damaging farm infrastructure are dismissed and charged. This should be contained in the CoC. All dismissals must be in accordance with South African labour legislation.
- It is recommended that no construction workers, with the exception of security personnel, should be permitted to stay over-night on the site.

Residual impacts: No**,** provided losses are compensated for.

Assessment of No-Go option

There is no impact as the current status quo would be maintained.

4.3.5 Increased risk of grass fires

The presence of construction workers and construction-related activities on the site may pose an increased risk of grass fires that could, in turn pose, a threat to livestock, crops, and farm infrastructure both on the site and for adjacent landowners. The potential risk of grass fires will be higher during the dry, windy winter months from May to October. The impacts are likely to be largely local and can be effectively mitigated.

Table 4.5: Assessment of impact of increased risk of grass fires

Nature: Potential noise, dust and safety impacts associated with movement of construction related activities and movement of traffic to and from the site		
	Without Mitigation	**With Mitigation**
Extent	Local (2)	Local (1)
Duration	Short term (2)	Short term (2)
Magnitude	Medium (3)	Low (2)
Reversibility	Reversible with compensation (3)	Reversible with compensation (3)
Probability	Probable (3)	Low Probability (2)
Significance	Moderate (30)	Low (12)
Status	Negative	Negative
Can impact be mitigated?	Yes	
Mitigation: • Preparation and implementation of a Stakeholder Engagement Plan (SEP) prior to and during the construction phase. • Preparation and implementation of a Community Health, Safety and Security Plan (CHSSP) prior to and during the construction phase. • The proponent should enter into an agreement with the local farmers in the area whereby damages to farm property etc., during the construction phase will be compensated for. The agreement should be signed before the construction phase commences. • Contractor should ensure that open fires on the site for cooking or heating are not allowed except in designated areas. • Smoking on site should be confined to designated areas. • Contractor should ensure that construction related activities that pose a potential fire risk, such as welding, are properly managed and are confined to areas where the risk of fires has been reduced. Measures to reduce the risk of fires include avoiding working in high wind conditions when the risk of fires is greater. In this regard special care should be taken during the high-risk dry, windy winter months. • Contractor should provide adequate fire-fighting equipment on-site, including a fire fighting vehicle. • Contractor should provide fire-fighting training to selected construction staff. As per the conditions of the Code of Conduct, in the advent of a fire being caused by construction workers and or construction activities, the appointed contractors must compensate farmers for any damage caused to their farms. The contractor should also compensate the fire-fighting costs borne by farmers and local authorities. • No construction staff, with the exception of security staff, to be accommodated on site overnight.		
Residual impacts: Loss of land for crops and grazing.		

Assessment of No-Go option
There is no impact as it maintains the current status quo.

4.3.6 Nuisance impacts associated with construction related activities

Construction related activities, including the movement of heavy construction vehicles of and on the site, has the potential to create dust, noise and safety impacts and damage to local roads. The impacts are likely to be largely local and can be effectively mitigated.

Table 4.6: **Assessment of the impacts associated with construction related activities**

Nature: Potential loss of livestock and grazing and damage to farm infrastructure associated with increased incidence of grass fires		
	Without Mitigation	**With Mitigation**
Extent	Local (2)	Local (1)
Duration	Short term (2)	Short term (2)
Magnitude	Medium (3)	Low (2)
Reversibility	Reversible with compensation (3)	Reversible with compensation (3)
Probability	Probable (3)	Low Probability (2)
Significance	Moderate (30)	Low (16)
Status	Negative	Negative
Can impact be mitigated?	Yes	
Mitigation: • Preparation and implementation of a Stakeholder Engagement Plan (SEP) prior to and during the construction phase. • Preparation and implementation of a Community Health, Safety and Security Plan (CHSSP) prior to and during the construction phase. • Timing of construction activities should be planned to avoid / minimise impact on key farming activities, including planting and harvesting operations. • The proponent should establish a MC to monitor the construction phase and the implementation of the recommended mitigation measures. The MC should be established before the construction phase commences, and should include key stakeholders, including representatives from local farmers and the contractor(s). The MF should also address issues associated with damage to roads and other construction related impacts. • Ongoing communication with landowners and road users during construction period. This should be outlined in the SEP. • The proponent should implement a Grievance Mechanism that provides local farmers and other road users with an effective and efficient mechanism to address issues related to construction related impacts, including damage to local gravel farm roads. • Implementation of a road maintenance programme throughout the construction phase to ensure that the affected roads maintained in a good condition and repaired once the construction phase is completed. • Repair of all affected road portions at the end of construction period where required. • Dust suppression measures must be implemented on un-surfaced roads, such as wetting on a regular basis and ensuring that vehicles used to transport building materials are fitted with tarpaulins or covers. • All vehicles must be roadworthy, and drivers must be qualified and made aware of the potential road safety issues and need for strict speed limits.		
Residual impacts: Loss of land for crops and grazing.		

Assessment of No-Go option
There is no impact as it maintains the current status quo.

4.3.7 Impacts associated with loss of farmland

The activities associated with the construction phase and establishment of the proposed project and associated infrastructure will result in the disturbance and loss of land available for grazing and crops. The impact on farmland associated with the construction phase can be mitigated by minimising the footprint of the construction related activities and ensuring that disturbed areas are fully rehabilitated on completion of the construction phase. In addition, the landowner will be compensated for the loss of land. As indicated above, The Tournée 2 PV SEF is located on Remaining Portion of Portion 3 of the Farm Dwars-In-D-Weg 350, owned by Eskom. Eskom have entered into lease agreements that enable local farmers to use the land. It is understood that the lease agreements will not be extended to enable the development of the PV SEF. Feedback from the lessees indicates that the development of the PV SEF and associated loss of the land will not impact significantly on their farming operations in the area.

Table 4.7: Assessment of impact on farmland due to construction related activities

Nature: The activities associated with the construction phase, such as establishment of access roads and the construction camp, movement of heavy vehicles and preparation of foundations for the project etc. will damage farmlands and result in a loss of farmlands for grazing / crops.		
	Without Mitigation	**With Mitigation**
Extent	Local (1)	Local (1)
Duration	Short term (2)	Short term (2)
Magnitude	Low (2)	Low (2)
Reversibility	Reversible with rehabilitation (3)	Reversible with rehabilitation (3)
Probability	Highly Probable (4)	Probable (3)
Significance	Moderate (40)	Low (24)
Status	Negative	Negative
Can impact be mitigated?	Yes	Yes
Mitigation: • The recommendations of the agricultural / soil assessment should be implemented. • The footprint associated with the construction related activities (access roads, construction platforms, workshop etc.) should be minimised. • An Environmental Control Officer (ECO) should be appointed to monitor the establishment phase of the construction phase. • All areas disturbed by construction related activities, such as access roads on the site, construction platforms, workshop area etc., should be rehabilitated at the end of the construction phase. • The implementation of a rehabilitation programme should be included in the terms of reference for the contractor/s appointed. The specifications for the rehabilitation programme should be drawn up by the Environmental Consultants appointed to manage the EIA. • The implementation of the Rehabilitation Programme should be monitored by the ECO.		
Residual impacts: Loss of land for crops and grazing.		

Assessment of No-Go option
There is no impact as it maintains the current status quo.

4.4 OPERATIONAL PHASE SOCIAL IMPACTS

The following key social issues are of relevance to the operational phase:

Potential positive impacts
- Generate renewable energy.
- Creation of employment opportunities.
- Benefits associated with socio-economic development contributions.

Potential negative impacts
- Visual impacts and associated impacts on sense of place.
- Impact on property values.
- Impact on tourism.

4.4.1 Improve energy security and develop the renewable energy sector

The primary goal of the proposed project is to improve energy security in South Africa by generating additional energy. The proposed SEF also reduces the carbon footprint associated with energy generation. The project should therefore be viewed within the context of the South Africa's current reliance on coal powered energy to meet most of its current energy needs. The project will be bid in the REIPPPP and consider private energy agreements. The development should also be considered within the context of the REIPPPP.

Improved energy security
South Africa's energy crisis, which started in 2007 and is ongoing, has resulted in widespread rolling blackouts (referred to as load shedding) due to supply shortfalls. The load shedding has had a significant impact on all sectors of the economy and on investor confidence. The mining and manufacturing sector have been severely impacted and will continue to be impacted until such time as there is a reliable supply to energy. The Minister of Mineral Resources and Energy, Gwede Mantashe, indicated in February 2023 that the cost of load shedding was estimated at R1 billion a day[6]. The South African Reserve Bank indicated in February 2023 that stage 3 and stage 6 loadshedding cost the South African economy between R204 million and R899 million a day.[7]

A survey of 3 984 small business owners in 2019 found that 44% said that they had been severely affected by load shedding with 85% stating that it had reduced their revenue, with 40% of small businesses losing 20% or more or revenue during due to load shedding period[8].

Impact of a coal powered economy
The Green Jobs study (2011) notes that South Africa has one of the most carbon-intensive economies in the world, thus making the greening of the electricity mix a national imperative. The study notes that renewable energy provides an ideal means for reaching emission reduction targets in a relatively easy manner. In addition, and of specific relevance to South Africa renewable energy is not as dependent on water compared to the massive water requirements of conventional power stations, has a

[6] https://www.citizen.co.za/news/load-shedding-cost-economy-billion/
[7] https://businesstech.co.za/news/energy/662515/stage-6-load-shedding-costs-south-africa-r900-million-a-day-sarb/
[8] "How does load shedding affect small business in SA?". The Yoco Small Business Pulse (3: Q1 2019):

limited footprint and therefore does not impact on large tracts of land, poses limited pollution and health risks, specifically when compared to coal and nuclear energy plants.

The Greenpeace Report (powering the future: Renewable Energy Roll-out in South Africa, 2013), also notes that within a broader context of climate change, coal energy does not only have environmental impacts, it also has socio-economic impacts. These include acid mine drainage from abandoned mines in South Africa and the risk this poses on the country's limited water resources.

Benefits associated with REIPPPP

Through the competitive bidding process, the IPPPP has effectively leveraged rapid, global technology developments and price trends, buying clean energy at lower and lower rates with every bid cycle, resulting in SA getting the benefit of renewable energy at some of the lowest tariffs in the world. The price for wind power has dropped by 50% to R0.94/kWh, while solar PV has dropped with 75% to R1.14/kWh between BW1 and BW4.

Prices contracted under the REIPPPP for all technologies are well below the published REFIT prices. The REIPPPP has effectively translated policy and planning into delivery of clean energy at very competitive prices. As such it is contributing to the national aspirations of secure, affordable energy, lower carbon intensity and a transformed 'green' economy.

Table 4.8: Improve energy security and support renewable sector

Nature: Development of infrastructure to improve energy security and support renewable sector		
	Without Mitigation	**With Mitigation**
Extent	Local, Regional and National (4)	Local, Regional and National (4)
Duration	Long term (4)	Long term (4)
Magnitude	High (4)	High (4)
Reversibility	N/A	N/A
Probability	Highly Probable (4)	Definite (5)
Significance	Moderate (48)	High (60)
Status	Negative	Positive
Can impact be enhanced?	Yes	
Enhancement: • Maximise the number of employment opportunities for local community members. • Implement training and skills development programs for members from the local community. • Maximise opportunities for local content and procurement.		
Residual impacts: Overall reduction in CO_2 emission, reduction in water consumption for energy generation, contribution to the development of the renewable energy sector in South Africa and benefit for economic development and investment.		

Assessment of No-Go option

There is no impact as it maintains the current status quo.

4.4.2 Creation of employment opportunities

The proposed development will create approximately 30 full time employment opportunities during the operational phase. Based on similar projects the annual operating budget will be in the region of R 25 million (2023 Rand values), including wages.

Table 4.9: Assessment of employment and business creation opportunities

Nature: Creation of employment, skills development and business opportunities associated with the operational phase		
	Without Mitigation	**With Enhancement**
Extent	Local and Regional (1)	Local and Regional (2)
Duration	Long term (4)	Long term (4)
Magnitude	Low (2)	Medium (3)
Reversibility	N/A	N/A
Probability	Low Probability (2)	Highly Probable (4)
Significance	Low (14)	Moderate (36)
Status	Positive	Positive
Can impact be enhanced?	Yes	
Enhancement: **Employment** • Where reasonable and practical, the proponent should appoint local contractors and implement a 'locals first' policy, especially for semi and low-skilled job categories. • Where feasible, efforts should be made to employ local contactors that are compliant with Broad Based Black Economic Empowerment (BBBEE) criteria. • Before the operational phase commences the proponent should meet with representatives from the HM to establish the existence of a skills database for the area. • The local authorities, community representatives, and organisations on the interested and affected party database should be informed of the final decision regarding the project and the potential job opportunities for locals and the employment procedures that the proponent intends following for the operational phase of the project. • Where feasible, training and skills development programmes for locals should be initiated prior to the initiation of the operational phase. • The recruitment selection process should seek to promote gender equality and the employment of women wherever possible. **Business** • The proponent should liaise with the LM with regards the establishment of a database of local companies, specifically BBBEE companies, which qualify as potential service providers prior to the commencement of the operational. These companies should be notified of the tender process and invited to bid for project-related work. • Where possible, the proponent should assist local BBBEE companies to complete and submit the required tender forms and associated information.		
Residual impacts: Creation of permanent employment and skills and development opportunities for members from the local community and creation of additional business and economic opportunities in the area		

Assessment of No-Go option
There is no impact as it maintains the current status quo.

4.4.3 Benefits associated with the socio-economic development contributions

The REIPPPP has been designed not only to procure energy but has also been structured to contribute to the broader national development objectives of job creation, social upliftment and broadening of economic ownership. Socio-economic development (SED) contributions are an important focus of the REIPPPP and are aimed at ensuring that local communities benefit directly from the investments attracted into the area. These contributions are linked to Community Trusts and accrue over the project operation life and, in so doing, create an opportunity to generate a steady revenue stream over an extended period. This revenue can be used to fund development initiatives in the area and support the local community. The long-term duration of the revenue stream also allows local municipalities and communities to undertake long term planning for the area. The revenue from the proposed SEF can be used to support a number of social and economic initiatives in the area, including:

- Creation of jobs.
- Education.
- Support for and provision of basic services.
- School feeding schemes.
- Training and skills development.
- Support for SMME's.

The minimum compliance threshold for SED contributions is 1% of the revenue with 1.5% the targeted level over the 20-year project operational life. For the current portfolio of projects, the average commitment level is 2%, which is 101% higher than the minimum threshold level. To date (across BW1-4) a total contribution of R22.8 billion has been committed to SED initiatives. Assuming an even, annual revenue spread, the average contribution per year would be R1.1 billion. Of the total commitment, R18.5 billion is specifically allocated for local communities where the IPPs operate. With every new IPP on the grid, revenues and the respective SED contributions will increase.

As a percentage of revenue, SED obligations become effective only when operations commence, and revenue is generated. Of the 91 IPPs that have reached financial close (BW1–BW4), 85 are operational. The SED contributions associated with these 85 projects has amounted to R 1.8 billion to date.

In terms of ED and SED spend, education, social welfare, and health care initiatives have a SED focus. SED spend on education has been almost double the expenditure on enterprise development. In this regard IPPs have supported 1 388 education institutions with a total of R437 million in contributions, from 2015 to the end of June 2021. A total of 1 276 bursaries, amounting to R210.8 million, have been awarded by 67 IPPs from 2015 until the end of June 2021. The largest portion of the bursaries were awarded to African and Coloured students (97.4%), with women and girls receiving 56.3% of total bursaries. The Northern Cape province benefitted most from the bursaries awarded, with 57.2%, followed by the Eastern Cape (20.2%) and Western Cape (14.1%). Enterprise development and social welfare are the focus areas that have received the second highest share of the contributions to date.

The Green Jobs study (2011) found that the case for renewable energy is enhanced by the positive effect on rural or regional development. Renewable energy facilities located in rural areas create an opportunity to benefit the local and regional economy through the creation of jobs and tax revenues. The SED contributions do therefore create significant benefits for local rural communities. However, the funds can be

mismanaged. This is an issue that will need to be addressed when allocating SED funds.

Table 4.10: Assessment of benefits associated with socio-economic development contributions

Nature: Benefits associated with support for local community's form SED contributions		
	Without Mitigation	**With Enhancement**[9]
Extent	Local and Regional (2)	Local and Regional (3)
Duration	Long term (4)	Long term (4)
Magnitude	Medium (3)	High (4)
Reversibility	N/A	N/A
Probability	Highly Probability (4)	Definite (5)
Significance	Moderate (36)	Moderate (55)
Status	Positive	Positive
Reversibility	N/A	
Can impact be enhanced?	Yes	
Enhancement: • The proponents should liaise with the LM and KHLM to identify projects that can be supported by SED contributions. • Clear criteria for identifying and funding community projects and initiatives in the area should be identified. The criteria should be aimed at maximising the benefits for the community as a whole and not individuals within the community. • Strict financial management controls, including annual audits, should be instituted to manage the SED contributions.		
Residual impacts: Promotion of social and economic development and improvement in the overall well-being of the community		

Assessment of No-Go option
There is no impact as it maintains the current status quo. However, the potential opportunity costs in terms of the supporting the social and economic development in the area would be lost. This would also represent a negative impact.

4.4.4 Visual impact and impact on sense of place

The proposed SEF has the potential to impact on the areas existing rural sense of place. However, given the location of the site next to the existing Thukuka Power station and associated fly ash dump the potential impact on the areas sense of place is likely to be limited. The visual character of the area has also been impacted by power lines associated with the Eskom substations.

The findings of the Visual Impact Assessment (VIA) (Scientific Aquatic Services, July 2023) are summarised below.

The proposed Tourneé 2 Solar PV Park is situated in a rural area with a relatively low number of sensitive receptors; comprising mostly of farmsteads. Based on the field assessment, the undulating topography and dense vegetation associated with the

9 Enhancement assumes effective management of the community trust

farmsteads partially obscures the view towards the Tourneé 2 Solar PV Park, therefore the visual impact for the Tourneé 2 Solar PV Park is considered moderately low as the visual intrusion on the receiving environment will be low to moderate depending on the location of the vantage point. The Tutuka ash dump will assist in screening and/ or absorbing the Tourneé 2 Solar PV Park, especially to receptors located to the south and north. In terms of significance the impact on local farmsteads in the vicinity of the site was rated a Moderate Negative with and without mitigation. The potential impact associated with nighttime lighting was rated as Low Negative with and without mitigation.

In conclusion the VIA notes that from a visual resource aspect, there are no fatal flaws associated with the Tourneé 2 Solar PV Park. Hence, it is the professional opinion of the visual specialist that the development of the Tourneé 2 Solar PV Park, from a visual resource management perspective, can be considered for authorisation.

Table 4.11: Visual impact and impact on sense of place

Nature: Visual impact associated with the proposed facility and associated infrastructure and the potential impact on the areas rural sense of place.		
	Without Mitigation	**With Mitigation**
Extent	Local (2)	Local (2)
Duration	Long term (4)	Long term (4)
Magnitude	Low (2)	Low (2)
Reversibility	Reversible with rehabilitation (3)	Reversible with rehabilitation (3)
Probability	Probable (3)	Probable (3)
Significance	Moderate (33)	Moderate (33)
Status	Negative	Negative
Can impact be mitigated?	Yes	
Enhancement: • The recommendations contained in the VIA should also be implemented.		
Residual impacts: Potential impact on current rural sense of place		

Assessment of No-Go option
There is no impact as it maintains the current status quo.

4.4.5 Potential impact on property values

The potential visual impacts associated with the proposed WEF have the potential to impact on property values. Based on the results of a literature review undertaken for wind farms the potential impact on property values in rural areas is likely to be limited. This is also likely to apply to PV SEFs. In this regard a study undertaken in Australia in 2016 (Urbis Pty Ltd) found that:

- Appropriately located wind farms within rural areas, removed from higher density residential areas, are unlikely to have a measurable negative impact on surrounding land values.
- There is limited available sales data to make a conclusive finding relating to value impacts on residential or lifestyle properties located close to wind farm turbines, noting that wind farms in NSW have been constructed in predominantly rural areas.

Based on the findings of the literature review the impact of the proposed PV SEF on property values is therefore likely to be low, specifically given the location of the site adjacent to the Thukuka Power station and associated fly ash dump.

Table 4.12: Assessment of potential impact on property values and operations

Nature: Visual impact associated with the proposed facility and associated potential impact on property values.		
	Without Mitigation	**With Mitigation**
Extent	Local (2)	Local (1)
Duration	Long term (4)	Long term (4)
Magnitude	Low (2)	Low (2)
Reversibility	N/A	N/A
Probability	Low Probability (2)	Low Probability (2)
Significance	Low (16)	Low (14)
Status	Negative	Negative
Can impact be mitigated?	Yes	
Enhancement: • The recommendations contained in the VIA should be implemented.		
Residual impacts: Potential impact on current rural sense of place and property values		

Assessment of No-Go option
There is no impact as it maintains the current status quo.

4.4.6 Potential impact on tourism

The potential visual impacts associated with the proposed PV SEF have the potential to impact on tourism facilities and tourism in the area. Based on the findings of the literature review there is limited evidence to suggest that the proposed PV SEF would impact on the tourism in the LM and or GSDM. Based on the findings of the SIA there are no tourism related facilities in close proximity to the site that would be impacted by the PV SEF.

As indicated above, the study area is also located next to the existing Thukuka Power station and associated fly ash dump. The visual character and quality of the area has therefore been impacted by these activities and the power lines associated with the Eskom substations.

Table 4.13: Impact on tourism in the region

Nature: Potential impact of the PV SEF on local tourism operations and activities		
	Without Mitigation	**With Mitigation**
Extent	Local (2)	Local (2)
Duration	Long term (4)	Long term (4)
Magnitude	Very Low (1)	Very Low (1)
Reversibility	N/A	N/A
Probability	Low Probability (2)	Low Probability (2)
Significance	Low (14)	Low (14)
Status	Negative	Negative
Can impact be mitigated?	Yes	
Enhancement: • The recommendations contained in the VIA should be implemented.		
Residual impacts: Potential impact on current rural sense of place and future tourism opportunities in the area.		

Assessment of No-Go option
There is no impact as it maintains the current status quo.

4.5 ASSESSMENT OF DECOMMISSIONING PHASE

Typically, the major social impacts associated with the decommissioning phase are linked to the loss of jobs and associated income. This has implications for the households who are directly affected, the communities within which they live, and the relevant local authorities. However, in the case of the proposed facility the decommissioning phase is likely to involve the disassembly and replacement of the existing components with more modern technology. This is likely to take place in the 20 - 25 years of post-commissioning. The decommissioning phase is therefore likely to create additional construction type jobs, as opposed to the jobs losses typically associated with decommissioning.

Given the relatively small number of people employed during the operational phase (~ 20), the social impacts at a community level associated with decommissioning will be limited. In addition, potential impacts associated with the decommissioning phase can be effectively managed with the implementation of a retrenchment and downscaling programme. With mitigation, the impacts are assessed to be Low (negative). Decommissioning will also create temporary employment opportunities, which would represent a positive temporary impact. The significance would be Low with enhancement due to limited opportunities and short duration.

Table 4.14: Social impacts associated with decommissioning

Nature: Social impacts associated with retrenchment including loss of jobs, and source of income. Decommissioning will also create temporary employment opportunities, which would represent a positive temporary impact		
	Without Mitigation	**With Mitigation**
Extent	Local (2)	Local (2)
Duration	Short term (2)	Short term (2)
Magnitude	Low (2)	Very Low (1)
Reversibility	N/A	N/A
Probability	Probability (3)	Probability (3)
Significance	Low (18)	Moderate (15)
Status	Negative	Negative
Can impact be mitigated?	Yes	
Enhancement: • The proponent should ensure that retrenchment packages are provided for all staff retrenched when the plant is decommissioned. • All structures and infrastructure associated with the proposed facility should be dismantled and transported off-site on decommissioning. • Revenue generated from the sale of scrap metal during decommissioning should be allocated to funding closure and rehabilitation of disturbed areas.		
Residual impacts: Loss of income and work opportunities.		

Assessment of No-Go option
There is no impact as it maintains the current status quo.

4.6 CUMULATIVE IMPACT ON SENSE OF PLACE

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

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

The guidelines also note that cumulative impacts need to be considered in relation to dynamic as well as static viewpoints. The experience of driving along a tourist road, for example, needs to be considered as a dynamic sequence of views and visual impacts, not just as the cumulative impact of several developments on one location. The viewer may only see one renewable energy facility and the associated infrastructure at a time,

but if each successive stretch of the road is dominated by views of renewable energy facilities, then that can be argued to be a cumulative visual impact (National Wind Farm Development Guidelines, DRAFT - July 2010).

As indicated above, the potential impact of the proposed PV SEF and associated infrastructure on the areas sense of place is likely to be limited. The cumulative impacts are also likely to be low with mitigation, specifically given the location of the site next to the Thukuka Power station and associated fly ash dump.

The findings of the (VIA) (Scientific Aquatic Services, July 2023) indicate that renewable energy facilities have the potential to cause large scale visual impacts and the location of several such developments in close proximity to each other could significantly alter the sense of place and visual character in the broader region. With the Tourneé Cluster PVs situated adjacent to each other and only one other approved PVSEF within a 50 km radius, the cumulative impact is considered sequential overall, however for motorists traveling along the gravel road the cumulative impact may be considered combined. Furthermore, with the moderately low viewer incidence, the cumulative visual impacted is expected to be of moderately low significance.

Table 4.15: Cumulative impacts on sense of place and the landscape

Nature: Visual impacts associated with the establishment of more than one REF and the potential impact on the area's rural sense of place and character of the landscape.		
	Overall impact of the proposed project considered in isolation	**Cumulative impact of the project and other projects in the area**
Extent	Local (2)	Local and regional (3)
Duration	Long term (4)	Long term (4)
Magnitude	Low (2)	Low (2)
Reversibility	Reversible with rehabilitation (3)	Reversible with rehabilitation (3)
Probability	Low Probability (2)	Probable (3)
Significance	Low (26)	Moderate (36)
Status (positive/negative)	Negative	Negative
Can impacts be mitigated?	Limited potential	
Mitigation: • The recommendations contained in the VIA should be implemented.		

Assessment of No-Go option
There is no impact as it maintains the current status quo.

4.7 CUMULATIVE IMPACT ON LOCAL SERVICES AND ACCOMMODATION

The establishment of a number of REFs has the potential to place pressure on local services and accommodation, specifically during the construction phase. The objective will be to source as many low and semi-skilled workers for the construction phase from the LM. This will reduce the pressure on local services and accommodation in the nearby towns, such as Standerton. The impact will however depend on the timing of the construction phase for the different projects. Based on the available information there are a limited number of renewable energy projects proposed within 30-50 km of

the site. The potential cumulative impact on local services is therefore likely to the limited.

The potential impact should also be viewed within the context of the potential positive cumulative impacts for the local economy associated with the establishment of the proposed facility and associated renewable energy projects in the GMDM. These benefits will create opportunities for investment in the LM, including the opportunity to up-grade and expand existing services. This potential pressure on local services in the LM should therefore be addressed in the Integrated Development Planning (IDP) process undertaken by the LM.

Table 4.16: Cumulative impacts on local services

Nature: The establishment of a number of renewable energy facilities and associated projects, such as the proposed SEF in the LM, has the potential to place pressure on local services, specifically medical, education and accommodation.		
	Overall impact of the proposed project considered in isolation	**Cumulative impact of the project and other projects in the area**
Extent	Local (2)	Local and regional (3)
Duration	Short term (2)	Medium term (3)
Magnitude	Low (2)	Medium (3)
Reversibility	N/A	N/A
Probability	Low Probability (2)	Low Probability (2)
Significance	Low (12)	Low (18)
Status (positive/negative)	Negative	Negative
Can impacts be mitigated?	Yes	
Mitigation: • The proponent should liaise with the LM to address potential impacts on local services as part of the IDP process.		

Assessment of No-Go option
There is no impact as it maintains the current status quo.

4.8 CUMULATIVE IMPACT ON LOCAL ECONOMY

In addition to the potential negative impacts, the establishment of renewable energy facilities and associated infrastructure, including the proposed SEF, will also create several socio-economic opportunities for the LM. The positive cumulative opportunities include creation of employment, skills development and training opportunities, and downstream business opportunities.

The potential cumulative benefits for the local and regional economy are associated with both the construction and operational phase of renewable energy projects and associated infrastructure and extend over a period of 20-25 years. However, steps must be taken to maximise employment opportunities for members from the local communities in the area and support skills development and training programmes.

Table 4.17: Cumulative impacts on local economy

Nature: The establishment of a number of renewable energy facilities and associated projects, such as the proposed SEF in the LM, will create employment, skills development and training opportunities, creation of downstream business opportunities.		
	Overall impact of the proposed project considered in isolation	**Cumulative impact of the project and other projects in the area**
Extent	Local and regional (2)	Local and regional (3)
Duration	Long term (4)	Long term (4)
Magnitude	Low (2)	High (4)
Reversibility	N/A	N/A
Probability	Highly Probable (4)	Definite (5)
Significance	Moderate (32)	Moderate (55)
Status (positive/negative)	Positive	Positive
Can impacts be enhanced?	Yes	
Enhancement: • The proponent should liaise with the LM to identify potential opportunities for the local economy and businesses as part of the IDP process.		

Assessment of No-Go option
There is no impact as it maintains the current status quo.

4.9 ASSESSMENT OF NO-DEVELOPMENT OPTION

The aim of the project is to produce renewable energy for the mining and industrial sector in the area. This will assist to reduce South Africa's carbon footprint. South Africa relies on coal-powered energy to meet more than 90% of its energy needs. South Africa is therefore one of the highest per capita producers of carbon emissions in the world and Eskom, as an energy utility, has been identified as the world's second largest producer carbon emissions.

The No-Development option would represent a lost opportunity for South Africa to produce renewable energy and reduce its carbon footprint. This would represent a significant negative social cost.

Table 4.18: Assessment of no-development option

Nature: No-development option would result in the lost opportunity for South Africa to improve energy security and reduce carbon emissions via the use of renewable energy and associated benefits in terms of global warming and climate change.		
	Without Mitigation10	**With Enhancement**11
Extent	Local-International (5)	Local-International (5)
Duration	Long term (4)	Long term (4)
Magnitude	Medium (3)	Medium (3)
Reversibility	N/A	N/A
Probability	High Probability (4)	High Probability (4)
Significance	Moderate (48)	Moderate (48)
Status	Negative	Positive
Can impact be mitigated?	Yes	
Enhancement: • The proposed SEF should be developed, and the mitigation and enhancement measures identified in the SIA and other specialist studies should be implemented.		
Residual impacts: Reduce carbon emissions via the use of renewable energy and associated benefits in terms of global warming and climate change.		

10 Assumes project is not developed.
11 Assumes project is developed.

SECTION 5: SUMMARY OF KEY FINDINGS

5.1 INTRODUCTION

Section 5 lists the key findings of the study and recommendations. These findings are based on:

- Review of project related information.
- Review of key policy and planning documents.
- Site visits to the study area for other renewable energy projects.
- Interviews with key stakeholders.
- Experience/ familiarity of the author with the area and local conditions.
- Experience with similar projects.

5.2 SUMMARY OF KEY FINDINGS

The key findings of the study are summarised under the following sections:

- Fit with policy and planning.
- Construction phase impacts.
- Operational phase impacts.
- Cumulative impacts.
- Decommissioning phase impacts.
- No-development option.

Based on the findings of the SIA the potential social impacts associated with the BESS and on site IPP substation will be limited. Separate assessments have therefore not been undertaken.

5.2.1 Policy and planning issues

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

5.2.2 Construction phase impacts

The key social issues associated with the construction phase include:

Potential positive impacts

- Creation of employment and business opportunities, and the opportunity for skills development and on-site training.

The construction phase will extend over a period of approximately 18-24 months and create in the region of 200 employment opportunities. Members from the local communities in Standerton, Thuthukani, Morgenson, Bethal and Secunda may qualify for a percentage of low skilled and semi-skilled employment opportunities and a number of skilled opportunities. The Most of these employment opportunities will accrue to Historically Disadvantaged (HD) members from the local community. Given

relatively high local unemployment levels and limited job opportunities in the area, this will represent a significant, if localised, social benefit. The total wage bill will be in the region of R 30 million (2023 Rand values). A percentage of the wage bill will be spent in the local economy which will also create opportunities for local businesses in the LM. The capital expenditure associated with the construction phase will be approximately R 2 billion (2023 Rand value). This will create opportunities for local companies and the regional and local economy. The local service sector will also benefit from the construction phase. The potential opportunities would be linked to accommodation, catering, cleaning, transport, and security, etc. associated with the construction workers on the site.

Potential negative impacts

- Impacts associated with the presence of construction workers on local communities.
- Impacts related to the potential influx of jobseekers.
- Increased risks to livestock and farming infrastructure associated with the construction related activities and presence of construction workers on the site.
- Increased risk of grass fires associated with construction related activities.
- Nuisance impacts, such as noise, dust, and safety, associated with construction related activities and vehicles.
- Impact on productive farmland.

The findings of the SIA indicate that the significance of the potential negative impacts with mitigation will be **Low Negative**. The potential negative impacts associated with the proposed construction phase can therefore be effectively mitigated if the recommended mitigation measures are implemented. Table 5.1 summarises the significance of the impacts associated with the construction phase.

Table 5.1: Summary of social impacts during construction phase

Impact	Significance No Mitigation/Enhancement	Significance With Mitigation/Enhancement
Creation of employment and business opportunities	Moderate (Positive)	Moderate (Positive)
Presence of construction workers and potential impacts on family structures and social networks	Low (Negative)	Low (Negative)
Influx of job seekers	Low (Negative)	Low (Negative)
Safety risk, stock theft and damage to farm infrastructure associated with presence of construction workers	Moderate (Negative)	Low (Negative)
Increased risk of grass fires	Moderate (Negative)	Low (Negative)
Impact of heavy vehicles and construction activities	Moderate (Negative)	Low (Negative)
Loss of farmland	Moderate (Negative)	Low (Negative)

5.2.3 Operational phase impacts

The following key social issues are of relevance to the operational phase:

Potential positive impacts
- Generate renewable energy and improve energy security.
- Creation of employment opportunities.
- Benefits associated socio-economic contributions to the community.

The proposed project will supplement South Africa's energy and assist to improve energy security. In addition, it will also reduce the country's reliance on coal as an energy source. This represents a positive social benefit.

Potential negative impacts
- Visual impacts and associated impacts on sense of place.
- Potential impact on property values.
- Potential impact on tourism.

The findings of the SIA indicate that the significance of all the potential negative impacts with mitigation will be **Low Negative**. The potential negative impacts can therefore be effectively mitigated. The significance of the impacts associated with the operational phase are summarised in Table 5.2.

Table 5.2: Summary of social impacts during operational phase

Impact	Significance No Mitigation/Enhancement	Significance With Mitigation/Enhancement
Generate renewable energy	Moderate (Positive)	High (Positive)
Creation of employment and business opportunities	Low (Positive)	Moderate (Positive)
Benefits associated with socio-economic contributions	Moderate (Positive)	Moderate (Positive)
Visual impact and impact on sense of place	Moderate (Negative)	Moderate (Negative)
Impact on property values	Low (Negative)	Low (Negative)
Impact on tourism	Low (Negative)	Low (Negative)

7.1.1 Assessment of cumulative impacts

Cumulative impact on sense of place
The establishment of the proposed PV SEF and other renewable energy facilities in the area have the potential to create the potential for combined and sequential visibility impacts. However, the impact on the area's sense of place should be viewed within the context of the impact associated with the Thukuka Power station and coal mining activities on the area's sense of place. The cumulative impact on sense of place is rated as **Medium Negative**.

Cumulative impact on local services and accommodation
The significance of this impact with mitigation is rated as **Medium Negative**.

Cumulative impact on local economy
The significance of this impact with enhancement was rated as **Moderate Positive**.

7.1.2 Decommissioning phase

Given the relatively small number of people employed during the operational phase (~ 20), the potential negative social impact on the local economy associated with decommissioning will be limited. In addition, the potential impacts associated with the decommissioning phase can also be effectively managed with the implementation of a retrenchment and downscaling programme. With mitigation, the impacts are assessed to be **Low Negative**. Decommissioning will also create temporary employment opportunities. The significance was assessed to be **Low Positive**.

7.1.3 Assessment of no-development option

The No-Development option would represent a lost opportunity for South Africa to improve energy security and supplement its current energy needs with clean, renewable energy. Given South Africa's current energy security challenges and its position as one of the highest per capita producers of carbon emissions in the world, this would represent a significant negative social cost. The No-Development option is not supported by the findings of the SIA.

7.2 CONCLUSION

The findings of the SIA indicate that the proposed Tourneé 2 PV SEF and associated infrastructure will result in several social and socio-economic benefits, including creation of employment and business opportunities during both the construction and operational phase. The project will also contribute to local economic development though socio-economic development (SED) contributions. In addition, the development will improve energy security and reduce the carbon footprint associated with energy generation. The findings of the SIA also indicate that the potential negative impacts associated with both the construction and operational phase are likely to be **Low Negative** with mitigation. The potential negative impacts can therefore be effectively mitigated if the recommended mitigation measures are implemented. The potential negative impacts can therefore be effectively mitigated if the recommended mitigation measures are implemented.

Statement and reasoned opinion
The establishment of the proposed Tourneé 2 PV SEF is supported by the findings of the SIA.

ANNEXURE A

CONTACT WITH LOCAL LANDOWNERS

- Mr Schoonraad. lessee on site, Portion 3 of Dwars in De Weg.
- Mr van Der Merwe, lessee on Portions 6 and 7 of Dwars in De Weg.

REFERENCES

- National Energy Act (2008).
- White Paper on the Energy Policy of the Republic of South Africa (December 1998).
- White Paper on Renewable Energy (November 2003).
- Integrated Resource Plan (IRP) for South Africa (2019).
- National Infrastructure Plan (NIP) (2012 and 2021).
- National Development Plan (2011).
- Mpumalanga Vision 2030 Strategic Implementation Framework (2013-2030)
- Mpumalanga Economic Growth and Development Path (2011).
- Mpumalanga Spatial Development Framework (2019).
- Lekwa Integrated Development Plan (2021-2022).

ANNEXURE B

METHODOLOGY FOR THE ASSESSMENT OF POTENTIAL IMPACTS

Assessment of Impacts and Mitigation

The assessment of impacts and mitigation evaluates the likely extent and significance of the potential impacts on identified receptors and resources against defined assessment criteria, to develop and describe measures that will be taken to avoid, minimise or compensate for any adverse environmental impacts, to enhance positive impacts, and to report the significance of residual impacts that occur following mitigation.

The key objectives of the risk assessment methodology are to identify any additional potential environmental issues and associated impacts likely to arise from the proposed project, and to propose a significance ranking. Issues / aspects will be reviewed and ranked against a series of significance criteria to identify and record interactions between activities and aspects, and resources and receptors to provide a detailed discussion of impacts. The assessment considers direct[12], indirect[13], secondary[14] as well as cumulative[15] impacts.

A standard risk assessment methodology is used for the ranking of the identified environmental impacts pre-and post-mitigation (i.e. residual impact). The significance of environmental aspects is determined and ranked by considering the criteria[16] presented in **Table 0-1**.

Table 0-1: Impact Assessment Criteria and Scoring System

CRITERIA	SCORE 1	SCORE 2	SCORE 3	SCORE 4	SCORE 5
Impact Magnitude (M) The degree of alteration of the affected environmental receptor	Very low: No impact on processes	Low: Slight impact on processes	Medium: Processes continue but in a modified way	High: Processes temporarily cease	Very High: Permanent cessation of processes
Impact Extent (E) The geographical extent of the impact on a given environmental receptor	Site: Site only	Local: Inside activity area	Regional: Outside activity area	National: National scope or level	International: Across borders or boundaries
Impact Reversibility (R) The ability of the environmental receptor to rehabilitate or restore after the activity has caused environmental change	Reversible: Recovery without rehabilitation		Recoverable: Recovery with rehabilitation		Irreversible: Not possible despite action
Impact Duration (D) The length of permanence of the impact on the environmental receptor	Immediate: On impact	Short term: 0-5 years	Medium term: 5-15 years	Long term: Project life	Permanent: Indefinite

[12] Impacts that arise directly from activities that form an integral part of the Project.

[13] Impacts that arise indirectly from activities not explicitly forming part of the Project.

[14] Secondary or induced impacts caused by a change in the Project environment.

[15] Impacts are those impacts arising from the combination of multiple impacts from existing projects, the Project and/or future projects.

[16] The definitions given are for guidance only, and not all the definitions will apply to all the environmental receptors and resources being assessed. Impact significance was assessed with and without mitigation measures in place.

CRITERIA	SCORE 1	SCORE 2	SCORE 3	SCORE 4	SCORE 5
Probability of Occurrence (P) The likelihood of an impact occurring in the absence of pertinent environmental management measures or mitigation	Improbable	Low Probability	Probable	Highly Probability	Definite
Significance (S) is determined by combining the above criteria in the following formula:	$[S = (E + D + R + M) \times P]$ $Significance = (Extent + Duration + Reversibility + Magnitude) \times Probability$				
IMPACT SIGNIFICANCE RATING					
Total Score	0 – 30	31 to 60	61 – 100		
Environmental Significance Rating (Negative (-))	**Low (-)**	**Moderate (-)**	**High (-)**		
Environmental Significance Rating (Positive (+))	**Low (+)**	**Moderate (+)**	**High (+)**		

ANNEXURE C

Tony Barbour
ENVIRONMENTAL CONSULTING AND RESEARCH

10 Firs Avenue, Claremont, 7708, South Africa
(Tel) 27-21-761 2355 - (Fax) 27-21-761 2355 - (Cell) 082 600 8266
(E-Mail) tony@tonybarbour.co.za, www.tonybarbour.co.za.

Tony Barbour's has 26 years' experience in the field of environmental consulting and management. His experience includes working for ten years as a consultant in the private sector followed by four years at the University of Cape Town's Environmental Evaluation Unit. He has worked as an independent consultant since 2004, with a key focus on Social Impact Assessment. His other areas of interest include Strategic Environmental Assessment and review work.

EDUCATION

- BSc (Geology and Economics) Rhodes (1984);
- B Economics (Honours) Rhodes (1985);
- MSc (Environmental Science), University of Cape Town (1992)

EMPLOYMENT RECORD

- Independent Consultant: November 2004 – current;
- University of Cape Town: August 1996-October 2004**:** Environmental Evaluation Unit (EEU), University of Cape Town. Senior Environmental Consultant and Researcher;
- Private sector: 1991-August 2000: 1991-1996**:** Ninham Shand Consulting (Now Aurecon, Cape Town). Senior Environmental Scientist; 1996-August 2000: Steffen, Robertson and Kirsten (SRK Consulting) – Associate Director, Manager Environmental Section, SRK Cape Town.

LECTURING

- University of Cape Town: Resource Economics; SEA and EIA (1991-2004);
- University of Cape Town: Social Impact Assessment (2004-current);
- Cape Technikon: Resource Economics and Waste Management (1994-1998);
- Peninsula Technikon: Resource Economics and Waste Management (1996-1998).

RELEVANT EXPERIENCE AND EXPERTISE

Tony Barbour has undertaken in the region of 260 SIA's, including SIA's for infrastructure projects, dams, pipelines, and roads. All of the SIAs include interacting with and liaising with affected communities. In addition, he is the author of the Guidelines for undertaking SIA's as part of the EIA process commissioned by the Western Cape Provincial Environmental Authorities in 2007. These guidelines have been used throughout South Africa.

Tony was also the project manager for a study commissioned in 2005 by the then South African Department of Water Affairs and Forestry for the development of a Social Assessment and Development Framework. The aim of the framework was to enable the Department of Water Affairs and Forestry to identify, assess and manage social impacts associated with large infrastructure projects, such as dams. The study also included the development of guidelines for Social Impact Assessment, Conflict Management, Relocation and Resettlement and Monitoring and Evaluation.

Countries with work experience include South Africa, Namibia, Angola, Botswana, Zambia, Lesotho, Swaziland, Ghana, Senegal, Nigeria, Mozambique, Mauritius, Kenya, Ethiopia, Oman, South Sudan, Sudan and Armenia.

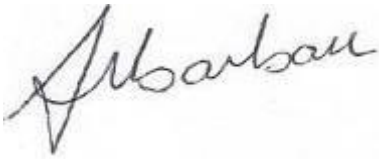
ANNEXURE C

The specialist declaration of independence in terms of the Regulations_

I, ~~Tony Barbour~~ , declare that --

General declaration:

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:

Tony Barbour Environmental Consulting and Research

Name of company (if applicable):

17 July 2023

Date: