SOCIAL IMPACT ASSESSMENT

BETHEL SOLAR PV FACILITY

LIMPOPO PROVINCE

JULY 2025

Prepared

by

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EXECUTIVE SUMMARY

INTRODUCTION AND LOCATION

Cape EAPrac was appointed to manage the Environmental Impact Assessment (EIA) process for the proposed Bethel Solar PV located approximately 40 km south of Louis Trichardt in the Limpopo Province. The site is located within the Makhado Municipality (MM) in the Vhembe District Municipality (VDM). The Bethel Solar PV is one of four projects that make up the Tabor Solar PV Cluster. Separate EIAs are being undertaken for each facility and the associated grid connection.

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 Bethel Solar PV.

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.

POLICY AND PLANNING ISSUES

The development of and investment in renewable energy is supported by the National Development Plan (NDP) and National Infrastructure Plan, which all refer to and support renewable energy. The Limpopo Development Plan and Makhado Municipality Spatial Development Framework (SDF) also support the development of renewable energy. The development of the proposed Solar PV is therefore supported by key policy and planning documents.

CONSTRUCTION PHASE

Potential positive impacts

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

The construction phase projects will extend over a period of approximately 18 months and create in region of 250-300 employment opportunities. Members from the local communities in the MM may potentially qualify for low skilled and semi-skilled and some skilled employment opportunities. Given the high unemployment levels in the area the creation of employment opportunities will represent a localised social benefit. However, the low education and skills levels in the area may limit the opportunities for local employment.

The wage bill will be in the region of R 60 million (2025 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.

The capital expenditure will be approximately R 4 billion (2025 Rand value). Due the lack of diversification in the local economy the potential for local companies in the MM is likely to be limited. Most benefits are therefore likely to accrue to contractors and engineering companies based outside the MM. The local service sector will 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 safety and security risks to landowners and farming operations associated with 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.

The findings of the SIA indicate that the significance of all the potential negative impacts with mitigation are likely to be **Low Negative**. The potential negative impacts 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	Medium (+)	Medium (+)
Presence of construction workers and potential impacts on family structures and social networks	Medium (-)	Low (-)
Influx of job seekers	Medium (-)	Low (-)
Safety and security risk, to landowners and disruption of farming associated with presence of construction workers	Medium (-)	Low (-)
Increased risk of grass fires	Medium (-)	Low (-)
Nuisance impacts associated with construction activities	Medium (-)	Low (-)

OPERATIONAL PHASE

Potential positive impacts

- Establishment of infrastructure to improve energy security and support renewable sector.
- Creation of employment and business opportunities.
- Benefits for project landowners.
- 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 except for visual impacts will be **Low Negative** with mitigation. Most 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
Establishment of infrastructure to improve energy security and support renewable sector	High (+)	High (+)
Creation of employment and business opportunities	Medium (+)	Medium (+)
Benefits associated with socio-economic contributions to community development	Medium (+)	High (+)
Benefits for project landowners	Low (+)	High (+)
Visual impact and impact on sense of place	Medium (-)	Low-Medium (-)
Impact on property values	Low (-)	Low (-)
Impact on tourism	Low (-)	Low (-)

ASSESSMENT OF GRID ALTERNATIVES

The environmental application process includes the establishment of 132kV Overhead Power Line (OHPL) to connect the Solar PV to the National Grid via the existing Tabor Main Transmission Substation (MTS). Three grid connection alternatives are proposed

to evacuate the power from the Tabor Solar PV Cluster to Eskom's Tabor MTS located to the east of the site and the N1, namely:

- Alternative 1 (Preferred Alternative).
- Alternative 2.
- Alternative 3.

Alternative 1 follows and existing Eskom transmission line corridor along its entire length and is also the shortest of the three alternatives. Alternatives 2 and 3 result in the establishment of OHPLs in areas that are currently not affected by power lines. Alternative 1 is therefore the preferred Alternative.

CUMULATIVE IMPACTS

- **Cumulative impact on sense of place:** The establishment of the proposed PV SEF project and other renewable energy facilities in the area will create the potential for combined and sequential visibility impacts. This impact is rated as **Medium Negative**.
- **Cumulative impact of construction workers local services and accommodation:** The significance of this impact with effective mitigation was rated as **Low Negative**.
- **Cumulative impact of construction workers on local communities:** The significance of this impact with effective mitigation was rated as **Low Negative***.*
- **Cumulative impact on local economy:** The significance of this impact with enhancement was rated as **High Positive***.*

DECOMMISSIONING PHASE

Given the relatively low number of people employed during the operational phase (~ 30), the social impacts at a community level associated with decommissioning can be managed with the implementation of a retrenchment and downscaling programme. With mitigation, the impacts are assessed to be **Low Negative**. 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.

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 AND RECOMMENDATIONS

The findings of the SIA indicate that the proposed Bethel Solar PV and associated infrastructure will create social and socio-economic benefits for the MM, including creation of employment and business opportunities during both the construction and operational phases. The project will also create socio-economic development opportunities for the MM and local community. The significance of this impact is rated as **High Positive**. The proposed development also represents an investment in clean, renewable energy infrastructure, which, given the negative environmental and socio-economic impacts associated a coal-based energy economy and challenges created by

climate change, represents a significant positive social benefit for society as a whole. The Renewable Energy Independent Power Producers Procurement Programme (REIPPPP) has resulted in significant socio-economic benefits, both at a national level and at a local, community level. These benefits are linked to foreign Direct Investment, local employment and procurement and investment in local community initiatives.

The findings 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.

Statement and reasoned opinion

The establishment of the proposed Bethel Solar PV and associated infrastructure, including the OHPL, is therefore supported by the findings of the SIA. Grid Connection Alternative 1 is the preferred option.

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CONTENTS OF THE SPECIALIST REPORT – CHECKLIST

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 1.5, Annexure A
(b) a declaration that the specialist is independent in a form as may be specified by the competent authority;	Section 1.6, 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;	Annexure A
(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
(g) an identification of any areas to be avoided, including buffers;	Section 4
(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 1.4,
(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
(k) any mitigation measures for inclusion in the EMPr;	Section 4
(l) any conditions for inclusion in the environmental authorisation;	Section 5
(m) any monitoring requirements for inclusion in the EMPr or environmental authorisation;	Section 4
(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
(o) a description of any consultation process that was undertaken during the course of preparing the specialist report	Annexure A
(p) a summary and copies of any comments received during any consultation process and where applicable all responses thereto; and	Annexure A
(q) 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.	Comply with the Assessment Protocols that were published on 20 March 2020, in Government Gazette 43110, GN

	320. This specifically includes Part A, which provides the Site Sensitivity Verification Requirements where a Specialist Assessment is required but no Specific Assessment Protocol has been prescribed. As at September 2020, there are no sensitivity layers on the Screening Tool for Socio-economic-features. Part A has therefore not been compiled for this assessment.

ACRONYMS

BA	Basic Assessment
BESS	Battery Energy Storage System
DM	District Municipality
EIA	Environmental Impact Assessment
HD	Historically Disadvantaged
IDP	Integrated Development Plan
IPP	Independent Power Producer
kV	Kilovolts
LED	Local Economic Development
LM	Local Municipality
MM	Makhado Municipality
MW	Megawatt
SEF	Solar Energy Facility
SDF	Spatial Development Framework
SIA	Social Impact Assessment
VDM	Vhembe District Municipality

SECTION 1: INTRODUCTION

1.1 INTRODUCTION

Cape EAPrac was appointed to manage the Environmental Impact Assessment (EIA) process for the proposed Bethel Solar PV located approximately 40 km south of Louis Trichardt in the Limpopo Province (Figure 1.1). The site is located within the Makhado Municipality (MM) in the Vhembe District Municipality (VDM). The Bethel Solar PV is one of four projects that make up the Tabor Solar PV Cluster. Separate EIAs are being undertaken for each facility and the associated grid connection.

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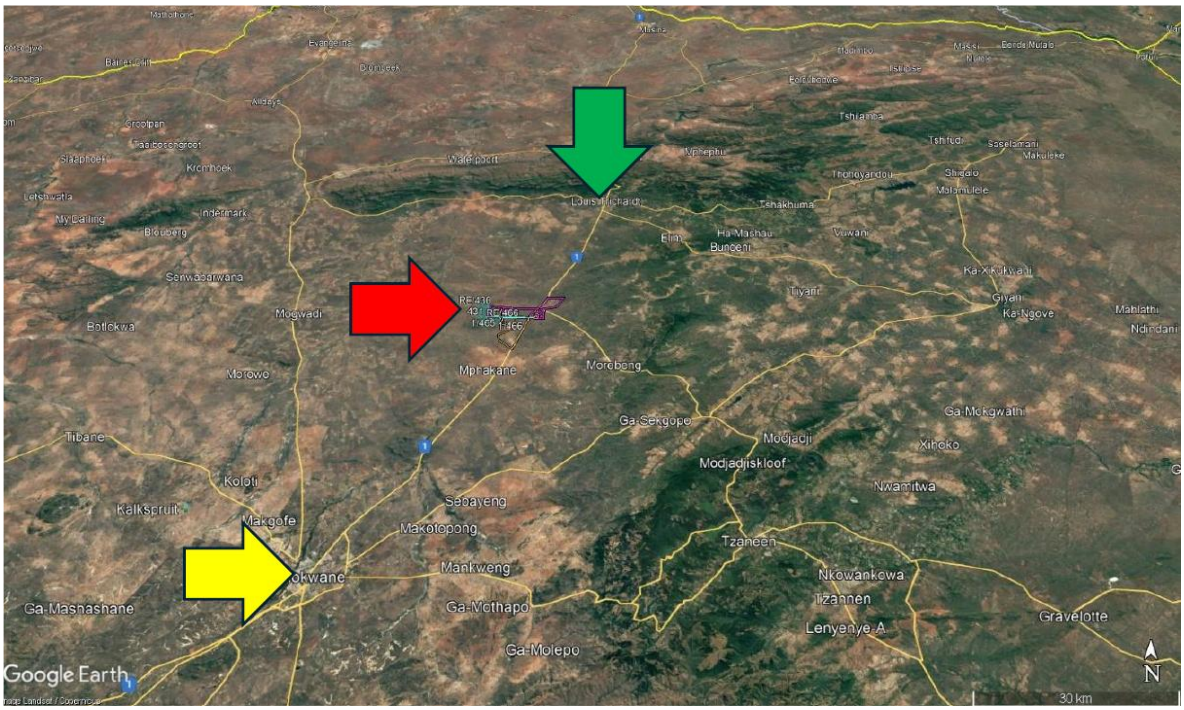

Figure 1.1: Location of site (red) relative to Louis Trichardt (green) and Polokwane (yellow)

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)[1] and International Association for Impact Assessors (IAIA) Guidance for Assessing and Managing Social Impacts (2015). The key activities in the SIA process embodied in the guidelines include:

[1] These guidelines are based on international best practice and are used throughout South Africa.

- 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 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

The Tabor Solar PV Cluster consists of four Solar PV projects, namely:

- Bethel Solar PV (blue arrow).
- Draailoop Solar PV (red arrow).
- Klipput Solar PV (yellow arrow).
- Makoppa Solar PV (green arrow).

The location of the four projects is illustrated in figure 1.2.

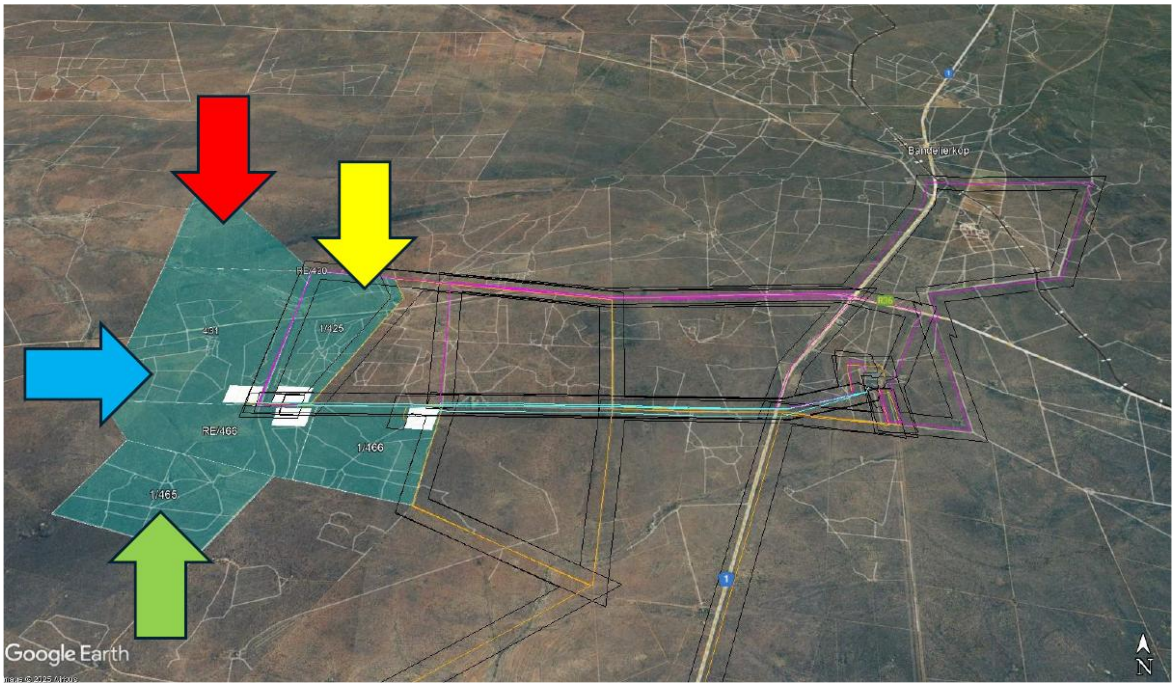

Figure 1.2: Location of Tabor Solar PV Cluster Projects-Bethel Solar PV (Blue Arrow)

As indicated above, separate EIAs are being undertaken for each Solar PV. This report is for the Bethel Solar PV.

Bethel Solar PV (Pty) Ltd are proposing the construction of a Solar Photovoltaic (PV) Energy Facility and associated infrastructure, known as Bethel Solar PV, on Farm 431 and the Remainder of Farm 466 located South of Louis Trichardt in the Makhado Local Municipality, Vhembe District, Limpopo Province. A study site of approximately 625ha is being assessed as part of this Environmental Process and the infrastructure associated with an up to 240 Megawatt (MW) PV facility.

The technical details are provided below.

PV facility (Photograph 1.1)

- Solar Arrays: PV modules
- Single axis tracking technology maximum height of 5m (aligned north-south).
- Solar module mounting structures comprised of galvanised steel and aluminium.
- Foundations which will likely be drilled and concreted into the ground
- Solar measurement and weather stations.
- Central/string Inverters and MV transformers in in field.

Associated infrastructure

- Medium Voltage (MV =22/33 kV) overhead powerlines and underground cables.
- MV Collector stations.
- Access road.
- Internal gravel roads.
- Fencing.
- General maintenance area.
- Storm water channels and berms.

- Water storage tanks and pipelines.
- Temporary work area during the construction phase (i.e. laydown area).
- O&M buildings, store

Project IPP Substation

- 132kV substation 200m x 200m.
- HV transformer.
- Substation Control Building.
- HV metering, Scada and protection building.
- MV collector switchgear buildings.
- Compensation equipment.

Battery Energy Storage system (BESS) (Photograph 1.2)

- AC coupled BESS installation (400m x 400m) at project substation and laydown area.
- Solid Sate Battery technology - either Lithium-Ion or Sodium Sulphide (NaS).
- Battery Cells, Modules, Racks and containers.
- Power Conversion Equipment.
- Battery Management System.
- Energy Management System.
- MV transformers.
- MV cabling and collector stations.
- Fencing.
- Offices, workshop.
- Fire Protection systems.

Grid Connection

The environmental application process includes Electrical Grid Connection Infrastructure required to connect the Bethel Solar PV to the National Grid via the existing Tabor Main Transmission Substation (MTS). The Electrical Grid Infrastructure includes:

- Onsite Switching Station (SS) (up to 1ha), adjacent to the IPP Substation.
- 132kV Overhead Power Line (OHPL) – 30m height from the switching station to the existing Eskom Tabor Substation.
- Access Road to Switching Station.
- Maintenance access road below or adjacent to the power line.

Three grid connection alternatives are proposed to evacuate the power from the Tabor Solar PV Cluster to Eskom's Tabor MTS located to the east of the site and the N1, namely:

- Alternative 1 (Preferred Alternative).
- Alternative 2.
- Alternative 3.

Alternative 1 (Preferred Alternative)
Alternative 1 is the shortest (~10 km[2]) and most direct alternative and follows an existing east-west aligned Eskom transmission line corridor over its entire alignment to the Tabor MTS and affects the following properties:

- Remainder of Farm 466
- Portion 1 of Farm 466

[2] Measured along centre line of assessment corridor.

- Portion 1 of Farm 425
- Portion 2 of Farm 425
- Remainder of Farm 424
- Portion 2 of Farm 470
- Farm 1211
- Remaining Extent of Portion 2 of Farm 472
- Farm 1209
- Portion 1 of Farm 473

Alternative 2

Alternative 2 (~15 km) consists of four segments. The first segment runs north from the Klipput PV Eskom switching station over a distance of ~ 3 km. The second segment swings southeast for a distance of ~ 3.5km to the north of the Mogwadi/Bottelier Road, before turning east and following the alignment of the Mogwadi/Bottelier Road for ~ 5km (third segment). The final segment swings south and follows and existing Eskom corridor over a distance of 1.5km and enters Tabor MTS from the north-east.

Alternative 2 affects the following properties:

- Remainder of Farm 466
- Farm 431
- Portion 1 of Farm 425
- Remainder of Farm 430
- Remainder of Farm 426
- Portion 2 of Farm 425
- Remainder of Farm 423
- Portion 1 of Farm 423
- Portion 1 of Farm 424
- Remainder of Farm 420
- Farm 1211
- Remainder of Farm 418
- Remainder of Farm 1210
- Farm 1209
- Portion 1 of Farm 473

Alternative 3

Alternative 3 (~13.5 km) runs in a north-easterly direction from the on-site substation for ~ 3.2km and intersects with the second segment of Alternative 2 to the north of the Mogwadi/Bottelier Road. The alignment then follows the alignment of Alternative 2 for ~ 4km, before swinging south over a distance of ~ 2.3 km and intersecting with Alternative 1. The alignment then follows the same alignment of Alternative 1 for ~ 3.9 km to the Tabor MTS.

Alternative 3 affects the following properties:

- Remainder of Farm 466
- Portion 1 of Farm 466
- Farm 431
- Portion 1 of Farm 425
- Portion 2 of Farm 425
- Remainder of Farm 426
- Remainder of Farm 423
- Portion 1 of Farm 423
- Portion 1 of Farm 424
- Remainder of Farm 420

- Remainder of Farm 424
- Farm 1211
- Portion 2 of Farm 470
- Remaining Extent of Portion 2 of Farm 472
- Farm 1209
- Portion 1 of Farm 473

Photograph 1.1: Typical PV SEF facility

Photograph 1.2: Example of BESS located in storage containers

1.4 ASSUMPTIONS AND LIMITATIONS

1.4.1 Assumptions

Land claims
The SIA acknowledges that the project area is subject to land claims. However, it is beyond the scope of the SIA to assess and or comment on the status of the land claims.

Technical suitability
It is assumed that the development site represents a technically suitable site for the establishment of the proposed PV 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
Ward level data from the 2022 Census was not available at the time of preparing the report. This limitation does not have a material bearing on the findings of the SIA.

1.5 SPECIALIST DETAILS

Tony Barbour, the lead author of this report, is an independent specialist with 34 years' experience in the field of environmental management. In terms of SIA experience Tony Barbour has undertaken in the region of 350 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 Tony Barbour's CV.

Schalk van der Merwe, the co-author of this report, has an MPhil in Environmental Management from the University of Cape Town and has worked closely with Tony Barbour over the last twenty years.

1.6 DECLARATION OF INDEPENDENCE

This confirms that Tony Barbour and Schalk van der Merwe, the specialist consultants responsible for undertaking the study and preparing the SIA Report, are independent and do not have any vested or financial interests in the proposed power line being either approved or rejected. Annexure D contains a signed declaration of independence.

1.7 REPORT STUCTURE

The report is divided into five sections, namely:

- Section 1: Introduction.
- Section 2: Policy and planning context.
- Section 3: Overview of study area.
- Section 4: Identification and assessment of key 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[3]" 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:

- The National Energy Act (2008).
- The National Development Plan (2011).
- The White Paper on Energy Policy (1998).
- The White Paper on Renewable Energy (2003).
- National Infrastructure Plan (2012 /2021)
- Integrated Resource Plan (IRP) for South Africa (2010-2030).
- Climate Change Bill (2018 / 2021).
- Just Energy Transition Investment Plan (2023-2027).
- Limpopo Provincial Development Plan (2020-2025).
- Limpopo Provincial Spatial Development Framework (2022).
- Makhado Integrated Development Plan (2023-2024).
- Makhado Spatial Development Framework (2020).

The section also provides a review of the renewable energy sector in South Africa.

2.2 NATIONAL POLICY ENVIRONMENT

2.2.1 National Energy Act (Act No 34 of 2008)

The National Energy Act (Act No. 34 of 2008) provides the legal framework for South Africa's energy policy, ensuring supply security, energy efficiency, and sustainability. The Act promotes the diversification of energy sources, including the integration of renewable energy, and ensures energy security with an uninterrupted and affordable supply. It also facilitates investment in infrastructure for the expansion and modernisation of the national grid and encourages renewable energy generation through independent power producers (IPPs). Additionally, the Act supports research and development in clean energy innovation. The Act underpins policies such as the IRP and REIPPPP, which are key to increasing renewable energy capacity.

2.2.2 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

[3] 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.

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.

2.2.3 White Paper on Energy Policy

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

- 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.

2.2.4 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[4], Government is determined to make good the country's commitment to reducing

[4] 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).

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 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 Integrated Resource Plan (IRP) 2010 aims to allocate 43% of new energy generation facilities in South Africa to renewables.

2.2.5 Integrated Resource Plan (2019)

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 (minimise 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 highlighted the need for 39,730 MW of new generation capacity by 2030. Of this, about 18,000 MW had been committed by 2019, comprising:

- 6,422 MW under the Renewable Energy Independent Power Producer Procurement Programme (REIPPPP), with 3,876 MW operational.
- 1,332 MW from Ingula Pumped Storage, 1,588 MW from Medupi, 800 MW from Kusile, and 100 MW from Sere Wind Farm under Eskom's build programme.
- 1,005 MW from Independent Power Producers' Open Cycle Gas Turbine (OCGT) plants.

The capacity provisions listed on the IRP 2019 are:

- 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.

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 seven bidding rounds have been completed for renewable energy projects under the RE IPP Procurement Programme. The most dominant technology in the IRP2019 was renewable energy from wind and solar PV technologies, with wind being identified as the stronger of the two technologies.

Following the release of the 2019 IRP, it was updated in 2023 and 2024. In December 2023, the South African Cabinet approved the Draft IRP 2023. Covering two-time horizons (to 2030 and 2050), the plan proposed 29.3 GW of new capacity by 2030, including:

- 7 GW of gas projects.
- 4.5 GW of wind.
- 3.6 GW of solar PV.
- 6.3 GW of distributed generation.

However, IRP 2023 acknowledged that energy security challenges might persist until the decade's end.

Released in November 2024 following stakeholder consultations, IRP 2024 marked significant revisions, particularly a substantial increase in onshore wind energy allocations, reaching up to 76.4 GW across scenarios. Key highlights include:

- Enhanced Renewable Energy Focus: Scaling up wind and solar PV to align with energy security and climate commitments.
- Improved Energy Availability: Adjusting assumptions about Eskom's energy availability factor to reflect operational improvements.
- Stakeholder Engagement: Ensuring diverse perspectives informed the updated plan.

The IRP 2024 reflects a forward-looking strategy, with finalisation anticipated in early 2025. This update underscores South Africa's commitment to a balanced and sustainable energy transition, addressing both immediate challenges and long-term goals.

2.2.6 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.
- SIP 28: Integrated Resource Efficiency and Renewable Energy Programme

The NIP 2050 was gazetted for public comment on 10 August 2021[5]. 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.

2.2.7 Climate Change Bill (2018 and 2021)

The Climate Change Bill provides a framework for climate change regulation in South Africa aimed at governing South Africa's sustainable transition to a climate resilient, low carbon economy and society. The Bill provides a procedural outline that will be developed through the creation of frameworks and plans. The following objectives are set within the Bill:

- Provide for the coordinated and integrated response to climate change and its impacts by all spheres of government in accordance with the principles of cooperative governance.

[5] Gazette No. 44951

- Provide for the effective management of inevitable climate change impacts through enhancing adaptive capacity, strengthening resilience and reducing vulnerability to climate change, with a view to building social, economic, and environmental resilience and an adequate national adaptation response in the context of the global climate change response.
- Make a fair contribution to the global effort to stabilise greenhouse gas concentrations in the atmosphere at a level that avoids dangerous anthropogenic interference with the climate system within a timeframe and in a manner that enables economic, employment, social and environmental development to proceed in a sustainable manner.

An updated Climate Change Bill was published in 2021 for comment. The Bill notes that climate change represents an urgent threat to human societies and the planet, and requires an effective, progressive and incremental response from both government and citizens. The updated Bill recognises that South Africa has a global responsibility to reduce greenhouse gasses and that the anticipated impacts arising as a result of climate change have the potential to undermine achieving of the country's developmental goals. The main objective of the Bill is to enable the development of an effective climate change response and the long-term, just transition to a climate-resilient and lower-carbon economy and society.

2.2.8 Just Energy Transition Investment Plan (2023-2027)

Following consultation amongst government, business, organised labour, and civil society, the Presidential Climate Commission (PCC) concluded the Just Transition Framework which was adopted by Cabinet in August 2022 to guide South Africa's overall approach to the climate transition. The Political Declaration was signed between the Government of South Africa and the Governments of France, Germany, United Kingdom (UK), United States (US), and the European Union (EU) (collectively, the International Partners Group [IPG]) at COP26, gave rise to the establishment of the Just Energy Transition Partnership (JETP). The JETP undertakes to

"Establish an ambitious long-term partnership to support South Africa's pathway to low emissions and climate resilient development, to accelerate the just transition and the decarbonisation of the electricity system, and to develop new economic opportunities such as green hydrogen and electric vehicles amongst other interventions to support South Africa's shift towards a low carbon future."

South Africa's Just Energy Transition Investment Plan (JET IP) for the five-year period, 2023–2027, sets out the scale of need and the investments required to support the decarbonisation commitments made by the Government of South Africa. The JET IP is premised on South Africa's National Development Plan (NDP) 2030 with its focus on tackling the country's systemic challenges of poverty, inequality, and unemployment. The document notes that South Africa's energy transition represents an opportunity for the country to drive industrial development, innovation, and economic diversification.

The JET IP defines a just *energy* transition as:

"A just energy transition in South Africa builds resilient economies and people to meet the NDC targets. It does so by (i) accelerating affordable, decentralised, diversely owned renewable energy systems; (ii) restoring previous and future ecosystems and natural resources impacted by coal mining and energy production; (iii) reskilling present workforces and educating future ones in green and other new and viable development pathways; (iv) building new productive models for comprehensive economic transitions; and (v) supporting various impacted constituencies to play an

active role in decisions and implementation of energy transition programs (be it government or non-government actors).”

The JET IP notes that South Africa faces considerable climate and energy-related risks. These include shortages of electricity supply, under-investment in the electricity system, as well as physical, social, and transition risks. High carbon-intensity of production and economic dependency on fossil fuel value chains require specific interventions to manage and mitigate the consequences of transition, particularly for impacted workers, communities, small business, and exporters’ exposure to carbon trade barriers. At the same time, embracing new economic opportunities in green technologies can drive industrial development, innovation, and economic diversification, leading to a sustainable and economically resilient future, characterised by decent work, social inclusion, and lower levels of poverty.
To support the goals of energy security, just transition, and economic growth, the JET IP identifies the priority investment requirements over the next five years in the electricity, NEVs, and GH2 sectors.

In terms of the electricity sector, the infrastructure investment priorities are:

- To manage the decommissioning of the retiring coal generation fleet, in line with a revised Integrated Resource Plan (IRP), and in tandem with the development of renewable energy generation at scale and pace.
- To timeously strengthen the transmission grid infrastructure to accommodate the shift to renewable energy.
- To modernise the electricity distribution system.

Section 4.2.2.2 of the IP covers the requirements for investment in new energy generation capacity. The section notes that the retirement of coal plants, the existing supply deficit, as well as growth in electricity demand, will necessitate considerable investment in new generation capacity by the country – which will include Eskom, local authorities who own and operate electricity distribution systems, by the private sector, and others. Rapid investment in new capacity will also address the current electricity supply crisis. The JET IP notes that in addition to relieving the current pressure on the existing coal plants, the short lead times for wind and solar PV plants imply considerable flexibility in capacity additions.

The IP notes that both the current supply crisis and the need to meet climate change mitigation objectives and compliance challenges, in relation to air pollution regulations, necessitates the addition to the electricity system of around 50 GW of new renewable electricity capacity to the grid, plus the associated gas/battery/storage capacity to ensure security of supply and grid stability. Therefore, over the 2023-2027 period, to resolve the electricity supply crisis and to keep pace with investment requirements to meet South Africa’s NDC targets and long-term decarbonisation objectives, it will be necessary to add around 6 GW of new renewable electricity capacity to the grid each year, as well as the required gas/storage capacity.

2.3 PROVINCIAL AND LOCAL LEVEL POLICY AND PLANNING

2.3.1 Limpopo Provincial Development Plan

The Limpopo Provincial Development Plan (LPDP) aims to transform the productive potential of Limpopo Province, while addressing its inherent socio-economic challenges and ensuring sustainable livelihoods. In terms of achieving its potential the plan highlights the risks posed by climate change. The LDP outlines the key role played by mining, agriculture, manufacturing, and tourism sectors, and identifies the following critical development objectives:

- Ensure sustainable development.
- Create decent employment through inclusive economic growth and sustainable livelihoods.
- Improve the quality of life of citizens.
- Raise the effectiveness and efficiency of a developmental public service.
- Promote vibrant and equitable sustainable rural communities.
- Prioritise social protection and social investment.

The vision for the LPDP is "Limpopo – The Pride of Africa. A resilient, vibrant, and prosperous Province inspired by its diverse and creative people and its environment." To realise this vision, the LPDP has developed a Development Strategy that provides a framework and is expressed in the following eight priorities:

- Priority 1: Transform the public service for effective and efficient service delivery.
- Priority 2: Transformation and modernisation of the provincial economy.
- Priority 3: Provision of quality education and a quality healthcare system.
- Priority 4: Integrated and sustainable socio-economic infrastructure development.
- Priority 5: Accelerate social change and improve quality of life of Limpopo's citizens.
- Priority 6: Spatial transformation for integrated socio-economic development.
- Priority 7: Strengthen crime prevention and social cohesion.
- Priority 8: Economic transformation and job creation through regional integration.

Each priority has several strategic responses, outcomes, and key actions needed to fulfil them. Priority 2 and 4 and their strategic responses are of relevance to the project.

2.3.2 Limpopo Provincial Spatial Development Framework

The Limpopo Provincial Spatial Development Framework (LPSDF) forms part of a hierarchy of plans that consolidate into the LPDP. It concentrates on the spatial aspects of development planning and identifies the economic and environmental opportunities and constraints associated with the province, while providing a spatial link between national and municipal planning.

The vision of the LPSDF is "The Limpopo SDF envisions a provincial spatial structure where the natural environment and valuable agricultural land in the rural areas are protected for future generations, with a strong, diverse and growing economy focused on a range of nodal areas and that offers its residents high quality living environments and good job opportunities in a sustainable manner."

To achieve this vision, five Provincial Spatial Outcomes where developed based on the National Spatial Outcomes and added to the spatial vision for Limpopo. Additionally, a number of Provincial Spatial Development Objectives were included as follows:

- Capitalise on the Province's strategic location within the SADC region to facilitate trade links and regional cooperation on resource sharing.
- Capitalise on and improve regional and local connectivity to establish a connected network of nodes and settlements.
- Provide a strategic and coherent rationale for public sector investment, including engineering, community and economic infrastructure, to optimise service delivery.
- Encourage urban and rural spatial restructuring to address spatial injustice and facilitate climate change mitigation and adaptation.
- Aggressively protect and enhance the Province's natural resources, including scarce fresh water sources and high biodiversity landscapes.

- Guard valuable agricultural land as a scarce resource and national asset.
- Consolidate and enhance the Province's ecotourism product.
- Encourage and institutionalise the sustainable development of its massive mineral potential and encourage diversification and industrialisation through green economy initiatives.
- Create an enabling environment for both large- and small-scale business development (retail, office, commercial, industrial).

The LPSDF also lists 11 Developmental Principles (DP) to support its vision, namely:

- DP 1: Define and protect a Provincial Regional Open Space System which ensures that ecosystems are sustained, and natural resources are utilised efficiently.
- DP 2: Facilitate efficient spatial targeting through the identification of a range of provincial, district, municipal and rural nodal points to serve as focal points for investment and service delivery.
- DP 3: Establish a multi-modal transport network to optimise the movement of people and goods between nodes in the province and to all major destinations in Southern Africa.
- DP 4: Direct engineering infrastructure investment towards the priority nodal points where the majority of economic activity and human settlements will establish.
- DP 5: Prioritise consolidation of community infrastructure at the identified nodal points and in line with the concept of multi-purpose Thusong Centres/ Rural Development Centres in Rural Nodes.
- DP 6: Create conditions conducive to development in multi-functional business areas and implement Urban Revitalisation Strategies in such areas where required.
- DP 7: Optimise the utilisation of agricultural potential of Limpopo Province to provide sustainable livelihoods to marginalised communities in rural areas in partnership with commercial farms.
- DP 8: Utilise the provincial environmental resources as attractions to promote sustainable tourism development (and conservation) in all parts of the Province.
- DP 9: Promote mining activity and associated job creation potential in an environmentally sustainable manner.
- DP 10: Address industrial sectoral diversification by way of area-specific investment in high value production and value-added technologies and industries.
- DP 11: Sustainable Human Settlements in urban and rural Limpopo Province.

Following the adoption of the LSDF in 2016, the Provincial Growth Point Programme was initiated, which applied the spatial nodal hierarchy in the allocation of public investment. Of relevance Lephalale forms one of the five priority provincial growth points and has been earmarked for the Energy and developed Green City Strategy. Additionally, the Limpopo Green Economy Plan was also identified in the LPSDF and centres on local production and consumption, efficient and sustainable use and provision of energy and water, and care of natural and created resources. The LSDF also references the Integrated Resource Plan and its proposal to diversify energy sources, which has spatial implications for the Province due to its reliance on coal and mining.

2.3.4 Makhado Municipality Integrated Development Plan

The vision statement for the MM is "a dynamic hub for socio-economic development by 2050". The supporting mission statement is "to ensure effective utilization of economic resources to address socio–economic imperatives through mining, agriculture and tourism".

The IDP lists five key performance areas (KPAs), namely:

- KPA 1: Financial stability
- KPA 2: Basic Service Delivery and Infrastructure Planning
- KPA 3: Municipal transformation and organizational development
- KPA 4: Local economic development
- KPA 5: Good Governance and Public Participation

KPA 2 and 4 are relevant to the development. The IDP identifies several developmental challenges and opportunities. The challenges and opportunities that are relevant to the development include:

Challenges
- Poverty and Unemployment.
- Low literacy rate.
- National Electricity Generation Capacity constraints.
- Climate change.

Opportunities
- Availability of land.
- Tourism attraction areas (destinations).
- Mining and agricultural opportunities.
- Favourable climatic conditions for agriculture.
- Game farming.
- Good communication and transport network

Some of the opportunities, such as game farming and tourism, may conflict with renewable energy facilities. However, all the opportunities, specifically mining and agriculture, are also dependent on a reliable, affordable energy supply. The IDP also identifies economic challenges and opportunities of which the following are relevant to the proposed development.

Economic challenges
- Small local economy compared to other economies in the Limpopo Province. As such the municipality is dependent on changes in the provincial economy.
- Low level of formal education, vocational training and the development of entrepreneurship.
- Weak forward and backward linkages between the various economic activities.
- SMME sector lacks institutional arrangements and structure.

Economic opportunities
The economic opportunities listed are all linked to the agricultural sector and include processing of agricultural products, which will require a reliable energy supply. The IDP also refers to the establishment of a special economic zone (SEZ) in the Makhado Municipality, noting that the minister of Trade and Industry has designated Makhado Municipality for the South African Energy and Metallurgical SEZ. MMSEZ Musina-Makhado Special Economic Zone is a flagship of the Limpopo Provincial Government. The MMZEZ website indicates that the MMSEZ is a green field investment platform consisting of two sites in the northern part of South Africa, in Limpopo Province. The clusters are organised around energy and metallurgy and the other on three sectors, i.e. general manufacturing, agro-processing and logistics. The North site is in the Musina Municipality, approximately 15 km southeast of Beitbridge Border Post between South Africa and Zimbabwe. No reference is made of the second site in the website.

In terms of land uses, the IDP notes that most of the population reside in rural areas that are largely undeveloped. The IDP also notes that there are pockets of extreme poverty within the Municipal area. The patterns of poverty and inequality have been

reinforced by economic trends that have impacted on semi-skilled and unskilled workers. This includes the seasonal nature of agricultural, tourism and domestic work. The economic opportunities for the poor have also been undermined by the lack of connectivity between residential areas and economic hubs (between towns), poor levels of social cohesion and gender inequality.

The high levels of poverty are reflected in the number of households that receive free basic services from the municipality. In this regard 129 224 of the 140 338 households in the MM receive free basic water and 6 041 receive free basic electricity.

Based on engagement with local communities as part of the IDP process a list of priority issues were identified, these include:

Infrastructure cluster priorities
- Electricity provision and community lighting.
- Sport facilities.
- Community facilities, e.g. Libraries and Community Halls

Social cluster priorities
- Community development.

Economic cluster priorities
- Creation of an enabling environment for economic development.
- Creation of jobs.
- Poverty alleviation.
- Promotion of tourism.
- Promotion of mining.
- Supporting Small Micro and Medium Enterprises.

At a ward level, the site is in Ward 20. The key needs identified for Ward 20 include need for a multi–sport facility and upgrading of existing sports facilities. It may be possible to address some of these needs as part of the socio-economic development contributions linked to the development.

2.3.5 Makhado Municipality Spatial Development Framework

The spatial vision for the MM is "By 2050 Makhado Local Municipality will be a hub for socio-economic development, and an environmentally sustainably and functionally efficient Municipality". The SDF identifies 5 spatial objectives (Sos), namely:

- Strategic Objective 1: Enhance economic potential and coordinated planning and implementation.
- Strategic Objective 2: Infrastructure Investment.
- Strategic Objective 3: Rural Development and Transformation.
- Strategic Objective 4: Development of road and rail networks.
- Strategic Objective 5: Environmental conservation and prime agricultural land protection.

Objectives 1, 2 and 5 are relevant to the development.
The SDF lists the spatial challenges and opportunities facing the MM.

Spatial challenges
- Fragmented spatial configuration between rural and urban areas which is characterised mostly by dispersed settlements, resulting in unbalanced services and infrastructure development between these areas

- Lack of integrated human settlements development in town.
- Tribal land has a significant impact on development. There is no agreement/arrangement between municipality and tribal authority on how to manage tribal land by the municipality. The agreement is required to be enforced by SPLUMA.
- The development and growth of the urban core is limited because of ongoing land claims.
- The land restitution process restricts investment and the development of land.

Spatial opportunities

- Use of strategically located vacant land parcels as a catalyst for densification, integration and mixed land use orientated development.
- The municipal area has a well-developed road and rail network. The road network includes links to the N1 running north-south through the area and the Trans-Limpopo corridor.
- The municipality owns substantial amount of land for residential development.
- There is also a land use management scheme in operation within the town including a densification policy.
- Biodiversity protection areas such as the Soutpansberg biosphere.
- Farming areas, namely, Commercial farming areas; and small scale or subsistence farming areas.

In terms of settlements**,** Louis Trichardt Town, including Tshikota, is identified as a 1st Order Settlement, namely a settlement that includes provincial growth points, district growth points and municipal growth points. The MMs transportation network is dominated by roads, with the N1 National Route the most important road link. At a regional level the N1 connects the Botlokwa/Machaka/Mphakane node with the logistics hub and provincial growth point of Polokwane to the south and the newly declared Special Economic Zone of Musina-Makhado. The SDF notes that with the massive investment earmarked for the new SEZ it is envisaged that more passenger transportation and freight will increase in volumes thereby serving as a stimulus for the economy of the Botlokwa/Machaka node and surrounding settlements that fall within the sphere of influence of the node. The SEZ is a joint venture between the MM and Musina. The aim of the SEZ is to attract investment and industrial development to the area.

The SDF notes that the formal economy of the MM can be described as a dual economy, that consists of two distinct elements namely the established economy of the Louis Trichardt and surrounding farms and the informal economies of surrounding townships and rural areas. Louis Trichardt provides a regional function to the surrounding areas (e.g., trade services, banking, manufacturing, storage, transport, etc), because of its size and level of sophistication.

The SDF identifies four Spatial Development Principles, namely:

- Spatial Development Principle 1: Create an Enabling Economic Environment and Strengthen the Bases of The Existing Economic Centres
- Spatial Development Principle 2: Optimise Agricultural production and processing in all parts of the municipality.
- Spatial Development Principle 3: Tourism development.
- Spatial Development Principle 4: Promote mining activity and associated job creation potential in an environmentally sustainable manner.

Spatial Development Principle 1 is relevant to the development. Investments in infrastructure is associated with Spatial Development Principle 1. Of specific relevance

the SDF notes that the MM will explore the possibility of generating energy from renewable sources. The SDF also highlights the importance of environmental conservation and the protection of prime agricultural land and notes that:

- All land development applications with a bearing on critical biodiversity environment should go through the municipality's environmental division before being submitted to the Municipal Planning Tribunal for consideration.
- Ensure new development and redevelopment is in line with the municipality's current environmental policy and trajectory.

As indicated in Figure 2.1, the proposed development is not located in an environmentally sensitive area. The land capability in the study area is also rated as low (pink area) (Figure 2.2).

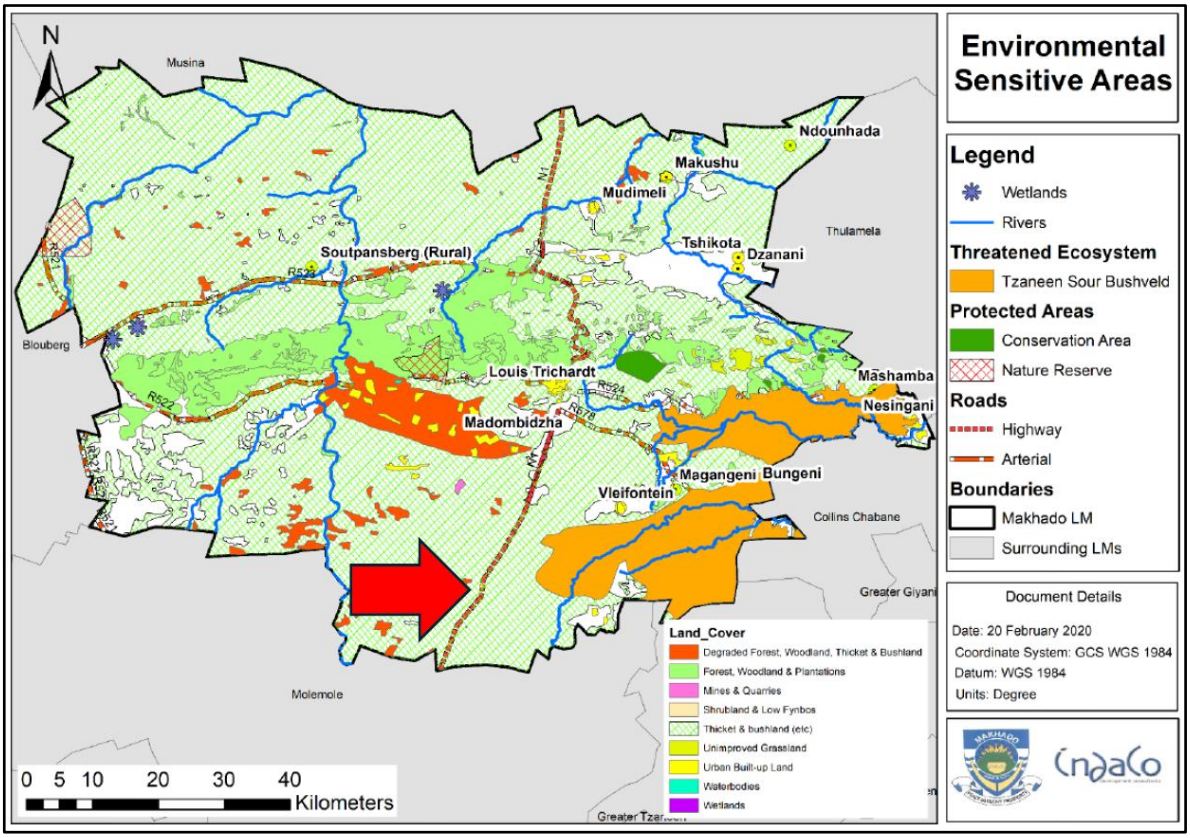

Figure 2.1: Location of environmental sensitive areas (location of site red arrow)

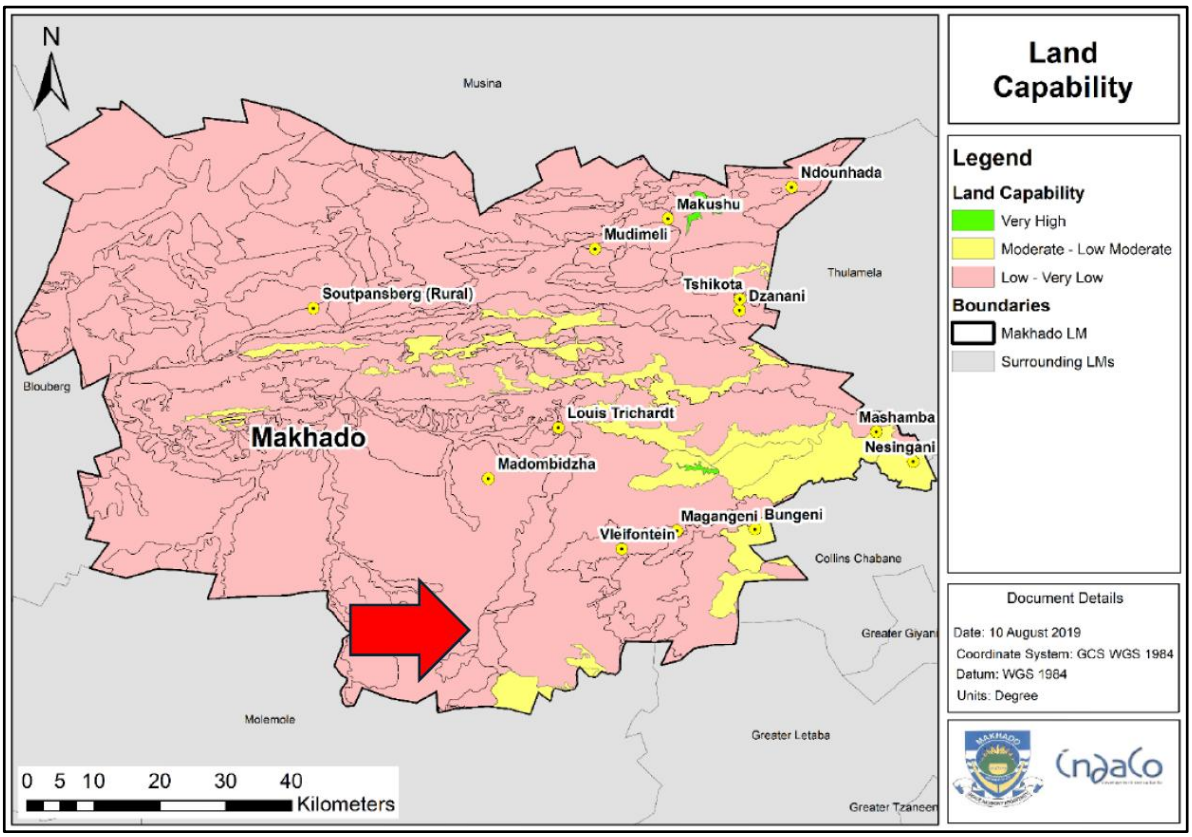

Figure 2.2: Land capability map (location of site red arrow)

2.4 OVERVIEW RENEWABLE ENERGY SECTOR IN SOUTH AFRICA

The generation of electricity from renewable energy resources offers a range of potential socio-economic and environmental benefits for South Africa. South Africa's Renewable Energy Independent Power Producer Procurement Programme (REIPPPP) is one of the world's most successful and progressive private sector renewable energy procurement programmes. The approach and design have contributed to the transformation of the economy towards a sustainable, low carbon energy growth trajectory, while, at the same time creating opportunities for a more equitable society.

Through a competitive bidding process, the IPPPP has leveraged global technology advances and price trends, securing renewable energy at some of the world's lowest tariffs. The average portfolio cost under the REIPPPP has steadily declined, reaching R0.56/kWh in BW6. Since BW5, bid design improvements have enhanced inclusivity, focusing on historically excluded groups, gender, and disability equality to strengthen the programme's national impact.

As of the end of December 2024 the REIPPPP has successfully procured 7 825 MW from 104 IPPs (that reached financial close) in BW1 to BW6, which are at various stages of construction or have commenced with commercial operation. By end December 2024, 6 206 MW of the procured capacity started operations and delivered 6 180 MW of actual capacity (i.e. 90 IPPs delivering 26 MW short of procured capacity). In addition to generating clean energy, the benefits associated of developing the renewable energy sector and the REIPPPP include:

- Increased energy security.

- Reducing CO_2 emissions and water consumption.
- Attracting foreign investment to South Africa.
- Creating opportunities for local shareholders.
- Creating employment and local procurement opportunities.
- Creating economic and socio-economic opportunities.
- Support for international agreements.

Increased energy security

Given that renewables can often be deployed in a short timeframe and in a decentralised manner close to consumers, they offer the opportunity for improving grid strength and supply quality in the short-term, while reducing expensive distribution losses. According to CSIR's power sector statistics[6], South Africa experienced load shedding for 1 169 hours in 2021 (~13% of the time) wherein 2 521GWh of estimated energy was shed (mostly stage 2 load shedding). This is a 40% increase on the total load shedding experienced during 2020. It is important to note that although extensive load shedding continued during 2021, record relative variable renewable energy contributions were recorded, with solar PV contributing 5.1 TWh.

Due to South Africa's wind and solar resources, coupled with a competitive procurement process, both wind power and solar PV power are cheaper forms of energy generation than coal power. Wind and solar therefore offer excellent value for money to the economy and citizens of South Africa while benefitting society through the development of clean energy.

Pollution reduction and resource saving

The release of by-products through the burning of fossil fuels for electricity generation impacts on climate change and human health and contributes to ecosystem degradation. Renewable energy creates an opportunity to address energy needs in an environmentally responsible manner, thereby allowing South Africa to contribute towards mitigating climate change through the reduction of GHG emissions. According to the Climate Transparency Report (2020), total GHG emissions in South Africa (excluding land use) have increased by 41% since 1990, but emissions in recent years have been almost constant, owing largely to low economic growth and a sharp rise in electricity prices. South Africa is ranked 12th worldwide in terms of per capita carbon dioxide emissions as of 2021.

According to the IPP Procurement Programme overview report dated December 2024 the energy generated by the REIPPP projects that have reached financial closure is sufficient to provide power for ~ 38 million households and has offset 123.5 Mton CO_2 and saved 146.1 million kilolitres of water that would typically have been used for cooling purposes in coal fired power plants. As a water-stressed country water conservation represents a key priority, specifically within the context of climate change. Renewable energy also translates into revenue savings, as fuel for renewable energy facilities is free, while compared to the continual purchase of fuel for conventional power stations.

Foreign and local investment

Total investment (total project costs[7]), including interest during construction, of projects that reached financial close in BW1-6 was R239 billion. This includes R43.1 billion (18%)

[6] CSIR Energy Centre. Statistics of utility-scale power generation in South Africa in 2021. April 2022,

[7] Total Project Costs means the total capital expenditure to be incurred up to the commercial operations date in the design, construction, development, installation and/or commissioning of a project, which is equal to the total debt and equity related to a project as reported at commercial close.

in foreign investment and financing. Local investment totalled R 195.8 billion (82%). The investment in the renewable energy programme has created opportunities for:

- Local production, manufacturing and new service industries.
- Formation of new research and knowledge centres amongst tertiary institutions and in the private sector.
- Economic activity and opportunities, particularly in rural areas.

South African shareholding
In terms of shareholding, for projects that reached financial close in BW1 to BW6, South African (local) equity shareholding equated to 54% (R36.1 billion) of total equity (R66.9 billion), which is more than the 40% requirement. Foreign equity amounted to R30.8 billion (46% of total equity).

The REIPPPP also contributes to Broad Based Black Economic Empowerment (BBBEE) and the creation of black industrialists. Black South Africans own, on average, 38% of projects that have reached financial close (projects in BW1 – BW6). This is 6% higher than the 32% target average. This includes black people in local communities that have ownership in the IPP projects that operate in or nearby their vicinities. On average, black local communities own 8% of projects that have reached financial close, which is higher than the 5% target average.

Shareholding by black South Africans has also been secured across the REIPPPP value chain. An average of 23% shareholding by black people in engineering, procurement and construction (EPC) contractors has been attained in projects that have reached financial close under the REIPPPP. This is higher than the 20% target average. In addition, shareholding by black people in operating companies of IPPs has averaged 33% (against the 23% target average) for the 90 projects in operation (i.e. in BW1 – 4).

Creation of employment opportunities
In terms of employment, to date (Bid Window 1-6), a total of 84 625 job years[8] have been created for South African citizens, of which 57 056 were in construction and 27 569 in operations.

Creation of opportunities for local procurement
The REIPPP makes specific provision for procurement from Broad Based Black Economic Empowered (BBBEE) suppliers, Qualifying Small Enterprises (QSE), Exempted Micro Enterprises (EME) and women owned vendors. Local content minimum thresholds and targets have been increased for each subsequent bid window.

Total procurement spend associated with the REIPPPP as at the end of December 2024 was R128 billion. Of this total R87.9 billion was linked to construction (5% more than planned) and R40.1 billion in operations (51% of planned spend over 20 years). Of the total R128 billion, 84% (R 107.4 billion) was preferential procurement spend (BBBEE linked procurement). This total was made up of R73.3 billion for construction and R34.1 billion in operations.

Total QSE & EME spend was R41.2 billion (32% of total procurement). Of this total R27.4 billion was in construction and R13.8 billion in operations. Total women-owned vendor spend was R8.9 billion (7% of total procurement). Of this total R5.5 billion in construction and R3.4 billion in operations.

[8] Job-years are the total years worked on a project across multiple employees; 50 job- years could mean 10 employees working for five years, or two employees working for 25 years.

Socio-economic development and enterprise development

A key component of the REIPPPP is to support socio-economic development and enable local communities to benefit directly from the investments attracted into the area. In terms of the bid obligations, IPPs are required to contribute a percentage of projected revenues accrued over the 20-year project operational life toward socio-economic development (SED) and enterprise development (ED) initiatives. The minimum compliance threshold for SED contributions is 1% of revenue with 1.5% the targeted level over the 20-year project operational life. The average commitment level for the current portfolio (BW1-4) is 2% or 101% more than the minimum compliance threshold. As a percentage of revenue, SED and ED obligations become effective only when operations commence, and revenue is generated. SED contributions to date amount to R3.2 billion (1.3% of total revenue generated to date). A total of R952.6 million has been contributed to ED (0.4% of total revenue generated to date). Enterprise and socio-economic development commitments have been made in five categories; namely, education and skills development, social welfare, healthcare, general administration, and enterprise development.

In terms of support, 44.3% of SED contributions to date have been linked to education initiatives, 23% to enterprise development, 18.3% to social welfare, 10.1% to general administration and 4.1% to health care.

In terms of geographical spread, the Northern Cape Province (SED, R 1.83 billion, ED, R 554.1 million) and Mpumalanga Province (SED R 1.3 billion, ED, R 219.7 million) have benefited the most from the REIPPPP, followed by the Eastern Cape (SED, R 687.3 million, ED, R 185.9 million) and Western Cape (SED, R 332.7 million, ED, R 83.2 million)

A study undertaken by the DMRE[9], National Treasury and the Development Bank of Southern Africa (DBSA) in June 2017 found that employment opportunities created during the construction phase of renewable energy projects implemented to date had created 40% more jobs for South African citizens than anticipated. The study also found that significantly more people from local communities were employed during construction than was initially planned, confirming the potential benefits for local communities associated with the implementation of renewable energy projects.

Research by Tait[10] found that the distributed nature of renewable energy generation can induce a more geographically dispersed pattern of development. As a result, renewable energy sites can be highly suited to rural locations with otherwise poor potential to attract local inward investment therefore enabling to target particularly vulnerable areas. In her conclusion, Tait notes that the thesis has found positive evidence for the establishment of community benefit schemes in the wind sector in South Africa. These benefits would also apply to solar projects.

Support for international agreements

The development of the renewable energy enables South Africa to demonstrate its commitment to its international agreements under the Kyoto Protocol and the Paris Agreement and its commitment to a Just Energy Transition.

[9] Now the DoEE

[10] The potential for local community benefits from wind farms in South Africa, Louise Tait (2012), Master's Thesis, Energy Research Centre University of Cape Town.

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 Makhado Municipality (MM), which falls within the Vhembe District Municipality (VDM) in the Limpopo Province (Figure 3.1). The MM is one of four local municipalities that make up the VDM. The other three are the Musina, Thulamela and Collins Chabane local municipalities. Louis Trichardt is the administrative seat of the MM. The administrative seat of the VDM is Thohoyandou.

Figure 3.1: Location of the Makhado Municipality within the Vhembe District Municipality

3.3 MUNICIPAL OVERVIEW

Population

The population of the MM was 502 397 in 2022 (Census 2022) compared to 411 353 in 2011. Of this total, 31.3% were under the age of 15, while 61.6% fell withing the economically active age of between the ages of 15 and 64, and the remaining 7.1% were 65 and older. Based on this breakdown the dependency rate was 62.3%, which is lower that the figure of 69.8% in 2011.

The dependency ratio is the ratio of non-economically active dependents (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.

In terms of race groups in 2022, Black Africans made up 96.47% of the population of the MM, followed by Whites (2.41%), and Indians or Asians (0.67%). The main home language spoken was Tshivenda (75.88%), followed by Xitsonga (14.58%), Shona (2.34%) and Sepedi (2.31%).

Households and house types

Based on the 2022 Census, there were a total of 140 338 households in MM. Of this total 91.3% reside in formal dwellings, while 3.7% reside in traditional dwellings. Information on the percentage of informal dwellings was not available. Based on 2022 Census ~ 9% of the households resided in IDP or government subsidized housing.

In terms of household heads, approximately 50.12% of the households in the MM were headed by women. The high percentage of households headed by women reflects the limited employment opportunities and the likelihood that the men have left the area in search of employment opportunities in Gauteng. Women headed households tend to be more vulnerable.

Household income[11]

Based on the data from the 2011 Census, 11.6% of the population of the MM had no formal income, 6.5% earned less than R 4 800, 11.8% earned between R 5 000 and R 10 000 per annum, 25% between R 10 000 and R 20 000 per annum and 22.6% between R 20 000 and 40 000 per annum. 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 77.5% of the households in the MM live close to or below the poverty line. The low-income levels reflect the rural nature of the local economy and the limited formal employment opportunities outside in 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 MM. This in turn impacts on the ability of the MM 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 MM and MM that live close to or below the poverty line is likely to have increased since the 2022 Census. This, coupled with the high dependency ratio, is a major cause of concern for the area.

Employment[12]

The official unemployment rate in the MM in 2011 was 14.9%, while 28.7% were employed, and 49.4% were regarded as not economically active. However, the COVID-

[11] Data form the 2022 Census on household income was not available at the time of preparing the report.

[12] Data from the 2022 Census was not available at the time of preparing the report.

19 pandemic is likely to have resulted in an increase in unemployment rates in the MM. South Africa's unemployment rate was 32.1% in Q4 of 2023, while the youth unemployment rate was 43.4% in Q3 2023, the highest recorded youth employment rate in the world.

Education
In terms of education levels, the percentage of the population over 20 years of age in the MM with no schooling in 2022 was 16.2%, down from 18.2% in 2011. The percentage of the population over the age of 20 with matric in 2016 was 24.7%, up from 22.2% in 2011. The population over 20 years of age with a higher education qualification was 10.1% compared to 9.2% in 2011.

3.1 MUNICIPAL SERVICES-MM

Electricity
Based on Census 2022, 95.7% of households in the MM had access to electricity compared to 89.4% in 2011.

Access to water
Based on Census 2022, only 26% of households in the MM had access to piped water inside their dwellings. 30.4% had piped water in the yard, but 31.8% had no access to piped water. This reflects the low service levels in terms of access to water at an individual household level.

Sanitation
Based on Census 2022, 29.7% of households in the MM had access to flush toilets, while 73% relied on pit latrines (ventilated and non-ventilated) and 1.7% of households had no access to any toilet facilities.

Refuse collection
Based on Census 2022, only 8.5% of households in the MM had their refuse removed on a weekly basis, while 6.9% used a communal refuse dump or collection point, and the majority, 80.1% used their own refuse dump. The high percentage of households that dispose of refuse at their own dump reflects the rural nature of the area.

3.2 OVERVIEW OF STUDY AREA

3.2.1 Introduction

The Bethel PV site is located in the southernmost part of the largely rural MM in the VDM. The nearest large settlements are Louis Trichardt approximately 40 km[13] to the north-east, and Polokwane approximately 56 km to the south-west (Figure 3.2). Louis Trichardt is the seat of the MM, and serves as a regional service centre. Polokwane is the seat of Limpopo Province, and also serves higeher order funcions. Several settlements are located to the south of the site on both sides of the N1. The nearest, Ga-Phasha, is located along the N1, approximately 6 km south-east of the site (Photograph 3.1). The small settlement of Bandelierkop is located alng the N1 approximately 12 km north-east of the site.

[13] All distances linear.

Figure 3.2: Bethel PV site (pink fill) and properties affected by proposed 132 kV line (yellow outlines) in context. Indicated are key public roads (red) and existing Eskom transmission lines (orange)

Photograph 3.1: Ga-Phasha located to the west of N1

The key roads in the study area are the north-south aligned N1 (Polokwane-Louis Trichardt) and R521 (Polokwane-Vivo, via Mogwadi). The N1 is located ~ 6.5 km to the east of the site. The Capricorn N1 Petroport and Toll Plaza are located on the N1 to the east of the site near the Eskom Tabor substation (Photograph 3.2 and 3.3). The N1 between Polokwane and Musina (Zimbabwe border) is one of 4 major provincial

development corridors, namely the Trans-Limpopo Development Corridor. The N1 and R521 are linked by the east-west aligned Mogwadi/Bottelier Road. The portion east of the Sand River up to the N1 – i.e., through the immediate study area is unsurfaced (Photograph 3.4). The Bethel PV site is located adjacent to and to the south of the road. The D1775 gravel road links the N1 from Ga-Phasha settlement to the south-east of the site to the Mogwadi/Bottelier Road (Photograph 3.5). The Bethel PV site is borders to the west of the D1775 Ga-Phasha Road. Study area properties are accessed directly off the N1, Mogwadi/Bottelier Road or D1775.

Photograph 3.2: Capricorn N1 Petroport

Photograph 3.3: Entrance to Eskom Tabor Substation with Capricorn N1 Toll Plaza in background

Photograph 3.4: View along Mogwadi/Bottelier Road looking west

Photograph 3.5: View along D1775 Road looking north

Land ownership in the study area is split roughly 50:50 between private- and communal (or state) ownership. Several land claims have been lodged on properties in the area in terms of the Restitution of Land Rights Act. Most have been resolved (settled or dismissed), but several are still pending. These include claims on the Tabor Solar PV Cluster properties as well as some adjacent ones. The immediate study area is rural. The settlement pattern is sparse, with dwellings located on only a few farms. Several owners are based outside the study area, and only caretaker staff reside on the properties. As indicated, several sizeable un-proclaimed residential settlements are located along the N1 to the south of the Tabor suite projects. These include Ga-Phasha, Sekakane, Mangata and Mphakane. The largest, Mphakane, straddles the N1. These settlements are largely residential. The only major business node is located in Mphakane, at the intersection of the N1 and Ramokgopa Road.

The study area is located just to the north of the Tropic of Capricorn and falls within the Central Bushveld Bioregion of the Savanna Biome. The Central Bushveld Bioregion stretches from Pretoria in the south to the Soutpansberg (Louis Trichardt) in the north. The tree component in the study area is dominated by relatively low-growing species such as thorn-trees (Vachellia), interspersed with taller tree euphorbias, conspicuous by their height and dark green coloration throughout the year. The grass veld component is classified as sweetveld. The terrain is essentially flat, punctuated by granite koppies. The topography drains towards the Sand River to the south, which is located approximately 5 km west of the Tabor Solar PV Cluster. A few small tributaries traverse the study area. Flow is highly seasonal. The study area falls within the Vhembe Biosphere Reserve but does not include any core or buffer areas. According to the national Protected Areas Register, no formally protected areas are located in significant proximity

to the Bethel site – the nearest, Blydschap Private Nature Reserve, is located approximately 10 km to the north of the site[14].

Agriculture is the backbone of the MM. The tourism sector is another key anchor. Forestry is confined around the Soutpansberg, and mining plays a relatively small role. Makhado is a major producer of subtropical fruit, citrus, and macadamia nuts, but activities are largely concentrated in the lowveld portion of the municipality. Makhado is also a major producer of field crops and vegetables gown under centre pivot irrigation. In the broader study area, irrigated cropping activities are concentrated to the west of the Sand River.

Limpopo is a major producer of beef cattle and game products. Cattle farming, often mixed with a game farming component, predominates in the immediate study area. The Makhado sweetveld vegetation type is very palatable to cattle and game. It is also said to be very nutritious and salubrious to cattle. The veld carrying capacity is high, approximately 1 head of cattle per 9 hectares[15]. MVB Feeders, based on Langgedacht along the N1 north of Tabor MTS, is a major player in the Makhado beef sector. The game sector is strongly linked to tourism, and especially hunting. Game is also bred for live selling. On some properties game is kept mainly for the enjoyment of owners. Stock theft and poaching (especially dog hunting) are both currently considered problematic in the study area. Cameras have been installed on local roads, and many farmers subscribe to private security service providers.

Tourism in the study area essentially falls into two categories, namely facilities providing accommodation and/or conferencing facilities associated with the N1, and ones anchored in the bushveld setting and game. The latter category includes bushveld-breakaway destinations and/ or hunting and game farms. The study area benefits from its strategic location near the N1 and relative proximity to Polokwane and Gauteng. The mixed woodland-grassland caters to a large suite of browsing and grazing plains game. Hunting operations cater to both international trophy hunters and local hunters. Commercial hunting operations that include accommodation facilities in the study area include Soetveld Game Farm, including the Klipput Lodge, and Vlugkraal, both of which are located between the Tabor Solar PV Cluster and the N1 to the east, and MVB Safaris near the Sand River to the north-west (Photograph 3.6 and 3.7).

[14] https://dffeportal.environment.gov.za/portal/apps/webappviewer/index.html?id=7e27f116dd194c1f9d446dacc76fe483

[15] 1LSU:2-10ha is the highest national grazing capacity category. https ://gis.elsenburg.com/apps/cfm/#

Photograph 3.6: Entrance to Klipput Lodge of Mogwadi/Bottelier Road

Photograph 3.7: View of Klipput Lodge from Mogwadi/Bottelier Road

Eskom's large Tabor Main Transmission Substation (MTS) to the east of the N1 is located approximately 9.1 km east of the Bethel Solar PV site. Two transmission corridors feed into Tabor, a roughly east-west aligned corridor (2 x 132 kV), and a north-south aligned one east of the N1 (2 x 275 kV + 1 x 132 kV south of Tabor, and 2 x 132 kV to the north of Tabor) (Photograph 3.8). The east-west corridor traverses the Bethel site. The preferred grid connection alternative follows this corridor. No other major infrastructure is currently located in the study area.

Photograph 3.8: Eskom transmission lines entering Tabor Substation

3.2.2 PV site and adjacent properties

The Bethel Solar PV site is located on portions two properties, namely Bethel 431 and Makoppa 466/RE (Figure 3.3). Only the portion of Bethel 431 south of the Mogwadi/Bottelier Road and the portion of 466/RE west of the Ga-Phasha road form part of the site. Two alternative access points are proposed directly off public roads, namely off the D1775 Ga-Phasha road (preferred), and Mogwadi/Bottelier Road. Construction phase- (laydown) and operational phase terrains (BESS, O&M buildings, diesel storage, IPP substation and Eskom switching station) are proposed in a cluster located adjacent to the preferred access point. The PV development areas are proposed on most of the balance of the 625-ha site.

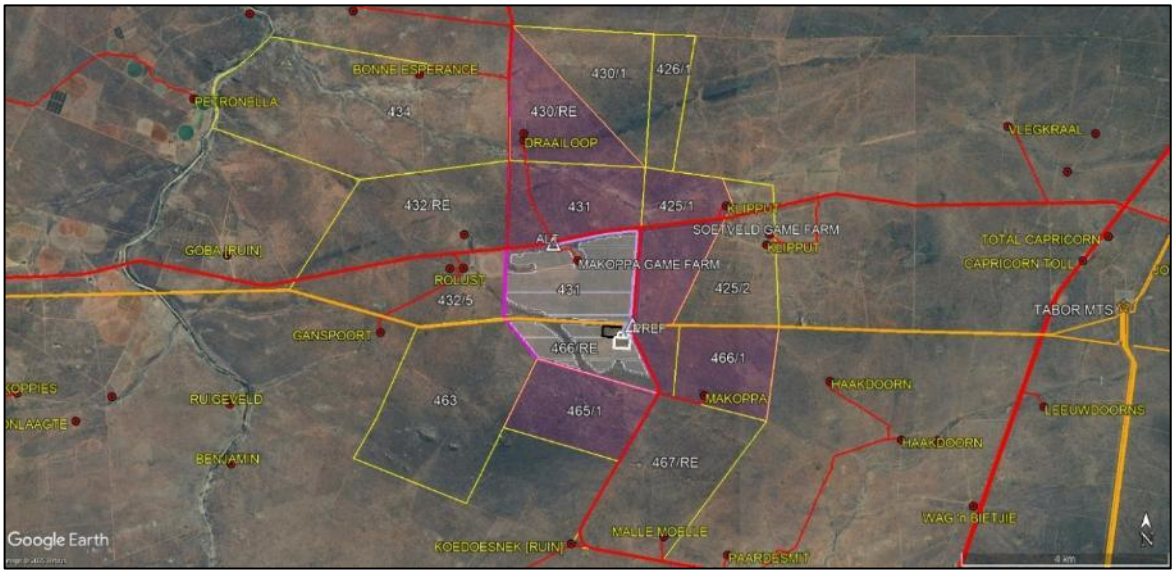

Figure 3.3: Bethel PV site (pink outline) and adjacent properties (yellow outlines) in relation to proposed PV infrastructure: site access point alternatives (white triangles), project roads (grey), panel development areas (white shading), operational terrains (white outlines), and construction phase terrains (black outline). Also indicated are existing roads (red), existing Eskom transmission lines (orange), and other Tabor PV suite sites (pink shading).

The site properties border onto 12 properties (Table 3.1). Of these, 6 border onto the site itself. The Frans Pieterse Family Trust is the registered owner of the site properties as well as 4 site-adjacent ones (Klipput 425/1, Draailoop 430/RE, Kaffernek 465/1 and Makoppa 466/1). Projects associated with the Tabor Solar PV Cluster are proposed on all 6 properties. Land claims have been lodged against one of the site properties, Bethel 431, as well as against 425/1, 430/RE, 465/1 and 466/1. The claims are currently being assessed by the Commission on the Restitution of Land Rights[16]. Three of the four claimants – the Chatleka CPA, Dithakone CPA and Mororkwane CPA) - already own properties which border onto the site properties. Properties of the Chatleka CPA (Dassieshoek 432/5/3) and Mororkwane CPA (Koppieskraal 463) border directly onto Bethal PV development areas.

[16] The Commission has confirmed by letter (2025-06-10) that assessment reports have been approved for all 5 properties. The relevant claimants are the Chatleka CPA (430/RE), Dithakone CPA (425/1, 466/1), Matjuda Family (431), and Mororkwane CPA (651/1). While the claims are pending, the properties may not be leased or sold without prior permission of the Office of the Regional Land Claims Commissioner: Limpopo. Land claimants must be consulted where application for permission is contemplated.

Table 3.1: Land use and inhabitation of affected and adjacent properties

OWNER	PROPERTY[17]	DWELLING	LAND USE
Chatleka CPA	430/1 Draailoop	n.a.	Grazing (livestock)
	432/5/3 Dassieshoek	Rolust FS	Grazing (livestock) Irrigated cropping
	434 Bonne Esperance	Bonne Esperance FS	Grazing (livestock) Irrigated cropping
Dithakone CPA	426/1 Doornveld	n.a.	Grazing (livestock)
Mokororwane CPA	463 Koppieskraal	n.a.	Grazing (livestock)
	467/RE Malle Moelle	Malle Moelle FS	Grazing (livestock)
Osmers	425/2 Klipput	Klipput FS Klipput/Soetveld Lodge	Soetveld Game Farm
Frans Pieterse Family Trust[18]	425/1 Klipput	Klipput FS	Makoppa Game Farm Tabor Klipput PV site
	430/RE Draailoop	Draailoop FS	Makoppa Game Farm Tabor Draailoop PV site
	431 Bethel	Makoppa lodge	Makoppa Game Farm Balance Draailoop PV site
	465/1 Kaffernek	n.a.	Makoppa Game Farm Tabor Makoppa PV site
	466/RE Makoppa	n.a.	Makoppa Game Farm Balance Klipput PV site
	466/1 Makoppa	Makoppa FS	Makoppa Game Farm Tabor Klipput PV site
Van der Gryp	432/RE Dassieshoek	Caretaker staff	Grazing (livestock)

The Pieterse Family Trust properties (Makoppa Game Farm) are mainly used for game farming. A wide variety of game has been introduced, including buffalo and giraffe. The owners are based in Polokwane. The properties are mainly used for the owners' own use and corporate functions/ activities linked to the owners' businesses. The corporate activities generate sufficient income to fund upkeep of the properties, but the properties are otherwise not used for commercial hunting or tourism. A lodge facility and landing strip are located on Bethel 431, just to the south of the Mogwadi/Bottelier Road. Farmsteads are located on Klipput 425/1, Draailoop 430/RE and Makoppa 466/1. The farmstead on Draailoop is no longer habitable. The farmstead on Klipput 425/1 is used by the owners for 'break-aways.' Four caretaker staff reside on Makoppa Game Farm, distributed between Bethel 431, Klipput 425/1 and Makoppa 466/1. Graves are located on Bethel 431 and may be impacted by proposed development (see below).

Land use on adjacent properties is typical for the study area, namely mainly focused on raising beef cattle. Small scale irrigated cropping is carried out on two of the properties (Dassieshoek 432/5/3 and Bonne Esperance 434) which are owned by the Chatleka Community Property Association (CPA). Farmsteads are located on both these properties, as well as on Malle Moelle 467/RE (Mororkwane CPA). Klipput 425/2 adjacent to the east of the site forms part of Soetveld Game Farm. Soetveld Game Farm also includes Bellvue 424/RE and 424/1 adjacent to the east of 425/2. The owner is based in Letsitele (lowveld) and uses the properties for game farming. The farmstead on 425/2 is occupied by the Soetveld farm manager. The Soetveld operation caters to both international (trophy) and local hunters. Activities are restricted to the hunting season (April to August) (Osmers, pers. comm). A small tourist facility (Klipput Lodge) consisting of a main building, three chalets and three safari tents (16 beds total) is

[17] Shading indicates PV site property.
[18] Note that land claims are currently being investigated against 5 of the properties on behalf of 4 claimants.

located just to the north of the Klipput farmstead at the foot of a koppie to its north (See Photograph 3.7).

3.2.3 Properties affected by grid connection alternatives

Three grid connection alternatives are proposed to evacuate the power from the Tabor Solar PV Cluster to Eskom's Tabor MTS located to the east of the site and the N1 (Figure 3.4).

Alternative 1 is the shortest (~10 km[19]) and most direct alternative and follows an existing east-west aligned Eskom transmission line corridor over its entire alignment to the Tabor MTS (Photograph 3.9). Alternative 2 (~15 km) consists of four segments. The first segment runs north from the Klipput PV Eskom switching station over a distance of ~ 3 km. The second segment swings southeast for a distance of ~ 3.5km to the north of the Mogwadi/Bottelier Road, before turning east and following the alignment of the Mogwadi/Bottelier Road for ~ 5km (third segment) (Photograph 3.10). The final segment swings south and follows and existing Eskom corridor over a distance of 1.5km and enters Tabor MTS from the north-east (See Photograph 3.8). Alternative 3 (~13.5 km) runs in a north-easterly direction from the on-site substation for ~ 3.2km and intersects with the second segment of Alternative 2 to the north of the Mogwadi/Bottelier Road. The alignment then follows the alignment of Alternative 2 for ~ 4km, before swinging south over a distance of ~ 2.3 km and intersecting with Alternative 1. The alignment then follows the same alignment of Alternative 1 for ~ 3.9 km to the Tabor MTS.

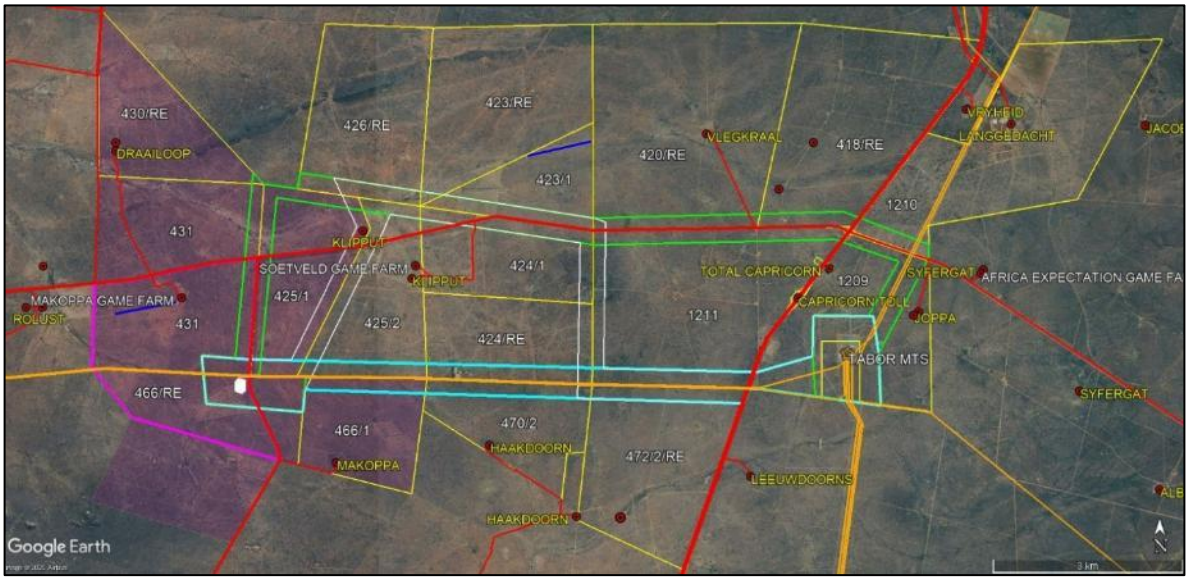

Figure 3.4: Proposed Bethel PV grid connection assessment corridor alternatives: Preferred (light blue), Alt 2 (green) and Alt 3 (white outline). Also indicated are the Tabor PV suite sites (pink shading), Bethel PV site (pink outline), Bethel substations (white fill), and properties affected by Alts 1-3 (yellow outlines), roads (red), existing Eskom transmission lines (orange), and landing strips (dark blue)

[19] Measured along centre line of assessment corridor.

Photograph 3.9: Eskom transmission line corridor south of Tabor Solar PV Cluster sire (OPHL Alternative 1)

Photograph 3.10: View along Mogwadi/Bottelier Road looking east (OHPL Alternative 2)

The grid connection proposal directly affects 26 properties, 7 of which road parcels (SANRAL), and 2 associated with Tabor MTS (Eskom). The remaining 17 properties belong to 6 registered owners (Figure 3.3 and Table 3.2). Six of the properties are registered in the name of the Frans Pieterse Family Trust. As indicated above, land claims have been lodged for 5 of the properties.

Table 3.2: Land use and inhabitation of properties affected by 132 kV line[20]

OWNER	PROPERTY[21]	DWELLINGS	LAND USE
De Nysschen, Mr Dirk	Vryheid 418/RE	Caretaker staff	Main operation in Letsitele; Grazing (livestock); Game farming; Bush camp used by owners; No commercial hunting; 472/2/RE, 1211 part of approved Ingwe Brandhoek PV; Existing Eskom corridor (2 x 132 kV) straddles boundary 472/2/RE and 1211
	Leeudoorns 472/2/RE	Bush camp	
	Brandhoek 1211	n.a.	
De Nysschen, Mr Koos	Vluchtkraal 420/RE	Vlugkraal FS	Main operation in Letsitele; Grazing (livestock); Game farming; Commercial biltong hunting; Farmstead 420/RE not inhabited, used by owners and hunters; Private airstrip on 423/1; Not currently affected by Tx lines
	Groenepunt 423/RE	n.a.	
	Groenepunt 423/1	n.a.	
	Doornveld 426/RE	n.a.	
Mokororwane CPA	Haakdoorn 470/2	Haakdoorn	Grazing (livestock); Inhabitation unclear; Existing Eskom corridor (2 x 132 kV) along N boundary
Osmers	Bellvue 424/RE	n.a.	Soetveld Game Farm (see above) 424/1, 424/2 signed with Atlantic Energy for PV development; Existing Eskom corridor (2 x 132 kV) along southern boundary
	Bellvue 424/1	n.a.	
	Klipput 425/2	Klipput FS; Tourist accommodation	
Frans Pieterse Family Trust	Klipput 425/1	Klipput FS	Makoppa Game Farm (see above); All properties part of Tabor suite; Existing Eskom corridor (2 x 132 kV)
	Draailoop 430/RE	Draailoop FS	
	Bethel 431	Makoppa lodge	
	Makoppa 466/RE	n.a.	
	Makoppa 466/1	Makoppa FS	
Vermaas Boerdery	1210/RE	Langgedacht FS	Grazing (livestock); Feedlot (MVB Feeders); Part of approved 150 MW Mafadi PV; Existing Eskom corridor (2 x 132 kV) across property

Land uses on the Makoppa and Soetveld properties are discussed above. Game farming is also associated with the properties owned by Messrs Dirk and Koos De Nysschen. Both owners are based in the lowveld and use the study area properties for game farming and cattle grazing. The properties owned by Mr Koos De Nysschen are used for commercial biltong hunting in season. The farmstead on Vlugkraal is used by the owners

[20] Excludes SANRAL and Eskom properties.
[21] Shading indicates PV site property.

and hunting guests. No commercial hunting or tourism accommodation associated with the properties of Mr Dirk De Nysschen. The small node of chalets on Leeudoorns 472/2/RE are used by the owner as a 'bush camp' for family and friends. The properties owned by the Mororkwane CPA (Haakdoorn 470/2) and Vermaas Boerdery (Farm 1210/RE) are primarily used for raising cattle. MVB Feeders is based on the Vermaas property. Feedlots are located just to the south of the farmstead (Langgedacht) near the N1.

As indicated above, all 6 Pieterse Family Trust properties form part of Tabor Solar PV Cluster. The four Solar PV projects that make up the cluster would occupy most of all 6 properties. Solar PV projects have also been approved on the properties owned by Mr Dirk De Nysschen (Ingwe Brandhoek PV) and Vermaas (Mafadi PV) properties. Atlantic Energy is also currently investigating a potential Solar PV development on the Bellevue (424/RE and 424/1) portion of Soetveld Game Farm (Osmers). Therefore, of the 6 affected owners, only the properties owned by the Mororkwane CPA and Mr Koos De Nysschen are not affected by potential Solar PV development. Mr Koos De Nysschen is also the only owner not currently affected by existing Eskom transmission lines.

3.2.4 Relationship to receptors-Bethel Solar PV

The Bethel Solar PV site is located on land which forms part of the Makoppa Game Farm. As indicated, Makoppa is used for game farming, but not for commercial (profit-generating) purposes. The bulk of Makoppa is proposed for Tabor Solar Cluster PV development (4 projects). The owners indicated that the income generated from the Solar PV development would offset the losses associated with the game farming activities. As development would likely be phased this would allow existing uses to continue. Income from the development could be used to acquire other properties (Pieterse, pers. comm). The Makoppa lodge facility on Bethel 431 would not be affected by PV development.

6 properties border directly onto the site. The relevant properties which do not form part of Tabor PV projects belong to three landowners, namely the Chatleka CPA to the west (Dassieshoek 432/5/3), Mr van der Gryp to the north-west (Dassieshoek 432/RE), and Mororkwane CPA to the south-west (Koppieskraal 463) and south-east (Malle Moelle 467/RE). The relevant properties are all primarily used for raising livestock. No tourism is associated with these properties. Dwellings are located on 432/5/3, 432/RE (caretaker) and 467/RE.

Both site access road alternatives are directly off public gravel roads and would only affect the site properties. The preferred alternative would not affect any receptors. The alternative would make use of the same access road as the Makoppa Lodge but would skirt the lodge 350 m to the north. No significant impacts are therefore associated with either alternative. Solar PV development areas are proposed within 1 km of only 2 residential receptors, namely Makoppa Lodge (40 m) on the site property, and Rolust farmstead on 432/5/3 (Chatleka CPA) to the east (800 m). The key sensitive receptor, the Soetveld Lodge node on Klipput 425/2, is located 2.5 km to the east of the nearest development area. Construction phase and operational phase terrains are located almost directly along the D1775 Ga-Phasha Road and are >1 km of all residential/ tourism receptors. Graves on Bethel 431 are however located within a Solar PV development area to the east of Makoppa Lodge, as well as within the proposed laydown area (Pieterse, pers. comm).

3.2.5 Grid connection Relationship to receptors-grid connections

Three of the 6 affected owners are affected by all three alternatives. Excluding the Tabor Solar PV Cluster properties, these are Messrs Dirk De Nysschen (Vlugkraal Farm) and

Heinrich Osmers (Soetveld Boerdery). Mr De Nysschen is affected over a 2.6 km[22] section (Alternative 1), 1.6 km section (Alternative 2) and 4.9 km section (Alternative 3), respectively. Mr Osmers is affected over 4.8 km section (Alternative 1), 3.7 km section (Alternative 2), and 9.5 km section (Alternative 3) respectively. Alternative 3 is not only the longest but would also result in Soetveld Game Reserve being affected by transmission lines running the length of all four of its boundary fences. Mr Koos De Nysschen is only affected by Alternative 2 (6 km) and Alternative 3 (4.85 km). The Mokororwane CPA is only affected by Alternative 1 (2.6 km) and 3 (430 m), and Vermaas Boerdery only by Alternative 2 (1.4 km). Physical impacts associated with the line would be on veld used for grazing by cattle and game. A 31 m lateral servitude (15.5 m + 15.5 m) and parallel Eskom maintenance road would be required. The land loss would affect land used for grazing.

As indicated, Alternative 1 (preferred) follows an existing east-west Eskom corridor (2 x 132 kV lines). Only the portion of Alternative 2 east of the N1 follows an existing corridor (also 2 x 132 kV), but most of the alignment follows the Mogwadi/Bottelier Road (west of the N1) and R36 (east of the N1). Only the portions of Alternative 3 shared with Alternative 1 follow an existing corridor, and only approximately half of the alignment shared with Alternative 2 follows the Mogwadi/Bottelier Road. The alignments of all 3 alternatives follow cadastral boundaries up to Farm 1209 (Eskom-owned) east of the N1.

Apart from Klipput 425/1 (Tabor Klipput PV site) located within the Alternative 3 assessment corridor, all residential receptors are located >700 m from all 3 alternatives, i.e., not in immediate proximity. The lodge node on Soetveld Game Farm is located approximately 700 m east of Alternative 3, and 720 m south of the shared alignment portion of Alternative 2 and 3. The view to the north is screened by a koppie. Alternative 1 is located ~ 1.6 km to the south of the facility.

A single 132 kV is proposed to serve all 4 Tabor Solar PV Cluster projects. Outside the Tabor Solar PV Cluster project area, the alignments of the grid connection alternatives for all 4 Tabor projects is identical. The potential for cumulative impacts from the Tabor projects is therefore limited. As indicated, four other affected properties form part of 2 potential PV projects (Atlantic, Ingwe). It is understood that line options for both would follow the existing west-east Eskom corridor (Alternative 1). Both affected owners have indicated that they would not support separate lines for each developer (Osmers, Dirk De Nysschen, pers. comm).

3.2.6 Relationship to other renewable energy projects

The Bethel Solar PV site is not located within a Renewable Energy Development Zone (REDZ). No operational renewable energy facilities (REFs) are currently located within 30 km of the site. The DFF&E's Renewable Energy Applications website[23] indicates that 4 solar PV projects have been approved within a 30 km radius of the site, namely Ingwe Brandhoek PV (150 MW) straddling the N1 to the east of the site, the adjacent Mafadi PV (150 MW) and MEC Power Solutions PV (50 MW) just to the east of the N1, and KPR Droogeloop PV (65 MW) along the R35 south-east of the site (Figure 3.5). The Ingwe Brandhoek site is located approximately 4.8 km to the east of the Bethel site. It includes the Eskom Tabor properties. As indicated, Atlantic is currently investigating development of a PV facility between the Tabor Solar PV Cluster and the Ingwe site.

[22] Measured along longest potential alignment across relevant property.
[23] https://egis.environment.gov.za/renewable_energy (June 2025).

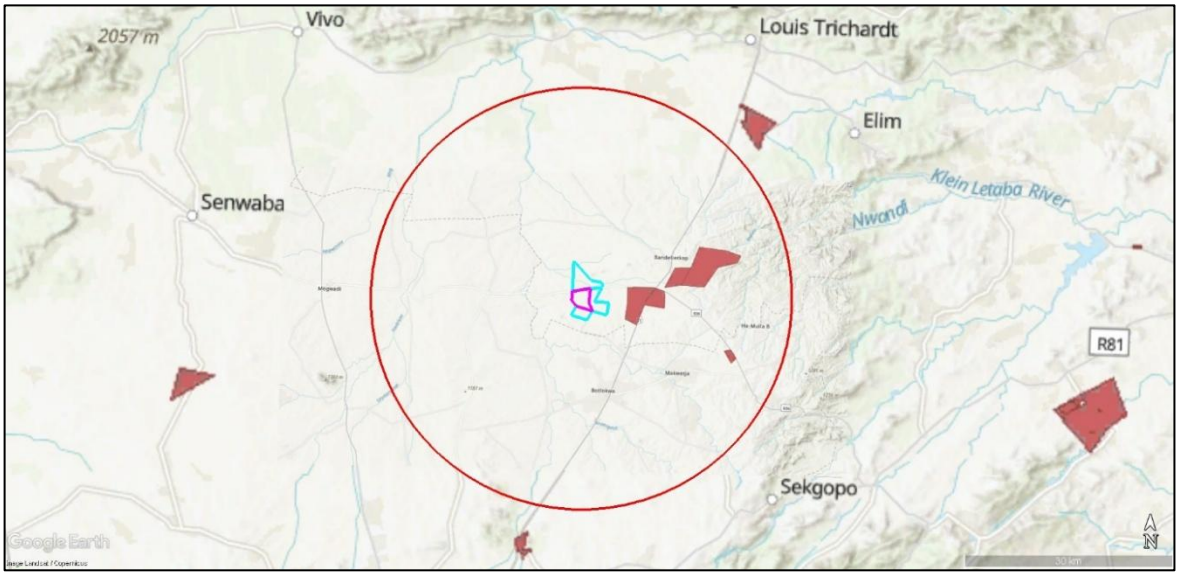

Figure 3.5: Bethel Solar PV site (pink outline) in relation to other REF projects within a 30 km radius (red circle): approved PV (red fill), and other proposed Tabor PV suite sites (light blue).

SECTION 4: OVERVIEW 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, including other specialist studies.
- Site visit and interviews with key interested and affected parties.
- Experience/ familiarity of the author with the area and local conditions.
- Experience with similar projects.

The assessment section is divided into the following sections:

- Assessment of compatibility with relevant policy and planning context ("planning fit").
- Assessment of social issues associated with the construction phase.
- Assessment of social issues associated with the operational phase.
- Assessment of social issues associated with the decommissioning phase.
- Assessment of the "no development" alternative.
- Assessment of cumulative impacts.

4.2 ASSESSMENT OF POLICY AND PLANNING FIT

The development of and investment in renewable energy is supported by the National Development Plan (NDP) and National Infrastructure Plan, which all refer to and support renewable energy. The Limpopo Development Plan and MM SDF also support the development of renewable energy. The development of the proposed PV 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.

Potential negative impacts

- Impacts associated with the presence of construction workers on local communities.
- Impacts related to the potential influx of job-seekers.
- Increased safety and security risks and impact on farming operations 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.

4.3.1 Creation of local employment and business opportunities

The construction phase will extend over a period of approximately 18 months and create in the region of 250-300 employment opportunities. Members from the local communities in the area, including the Botlokwa/Machaka/Mphakane node, would be in a position to qualify for most 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 50 million (2025 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 significant, if localised, social benefit. The capital expenditure will be approximately R 4 billion (2025 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 MM. 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.

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.

The creation of employment and business opportunities are confirmed by the findings of the Overview of the IPPPP undertaken by the Department of Energy, National Treasury and DBSA (December 2024). In terms of employment, the study found that to date (Bid Window 1-6), a total of 84 625 job years[24] have been created for South African citizens, of which 57 056 job years were in construction and 27 569 in operations. Of these, 14 866 employment opportunities have been created for women and 41 789 job years for youth.

Total investment (total project costs[25]), including interest during construction, of projects that reached financial close in BW1-6 was R239 billion. This includes R43.1 billion (18%) in foreign investment and financing. Local investment totalled R 195.8 billion (82%). The Overview (December 2024) notes that investment in the renewable energy programme has created opportunities for:

- Local production, manufacturing and new service industries.
- Formation of new research and knowledge centres amongst tertiary institutions and in the private sector.
- Economic activity and opportunities, particularly in rural areas.

[24] The equivalent of a full-time employment opportunity for one person for one year.

[25] Total Project Costs means the total capital expenditure to be incurred up to the commercial operations date in the design, construction, development, installation and/or commissioning of a project, which is equal to the total debt and equity related to a project as reported at commercial close.

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

Nature: Creation of employment and business opportunities during the construction phase facility		
	Without Enhancement	**With Enhancement**
Extent	Local – Regional (2)	Local – Regional (3)
Duration	Short term (2)	Short term (2)
Magnitude	Moderate (6)	Moderate (6)
Probability	Probable (3)	Highly probable (4)
Significance	Medium (30)	Medium (44)
Status	Positive	Positive
Reversibility	N/A	N/A
Irreplaceable loss of resources?	N/A	N/A
Can impact be enhanced?	Yes	
Enhancement Measures: **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. • 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 MM to establish the existence of a skills database for the area. If such a database exists, it should be made available to the contractors appointed for the construction phase. • The local authorities, CPAs 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 MM 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: Improved pool of skills and experience in the local area.		

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. These workers will be from the local community local communities in the area, including the Botlokwa/Machaka/Mphakane node, and form part of the local family and social networks. This will assist to reduce the risk and mitigate the potential impacts on the local community. The balance of semi-skilled and skilled workers will be accommodated in the nearby towns of Polokwane and Louis Trichardt.

Based on the assumption that 10-15% of the semi-skilled and low skilled workers can be sourced locally, the maximum number of semi and low skilled workers that will need to be provided with accommodation will be in the region of 200-260 for a single PV SF project. The total number of construction workers employed, and duration of the construction phase will depend on the timing and phasing of the timing and phasing of the construction of each of the five components of the project. This will have a bearing on the potential impact on local communities and services.

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	Moderate (6)	Low (4)
Probability	Probable (3)	Probable (3)
Significance	Medium (30)	Low (21)
Status	Negative	Negative
Reversibility	No in case of HIV and AIDS	No in case of HIV and AIDS
Irreplaceable loss of resources?	Yes, if people contract HIV/AIDS. Human capital plays a critical role in communities that rely on farming for their livelihoods	

Can impact be mitigated?	Yes, to some degree. However, the risk cannot be eliminated	

Recommended enhancement measures:

- In the event of a construction camp being established, it should conform to Guidance Note for Worker Accommodation by the IFC and European Bank for Reconstruction and Development (EBRD) (August 2009) and a Construction Camp Management Plan should be prepared.
- 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.

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.

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. 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. The potential for economically motivated in-migration and subsequent labour stranding is likely to be negligible. This is due to the isolated location of the area and the limited economic and employment opportunities in the Botlokwa/Machaka/Mphakane node.

While the potential risk associated with a single component of the Solar PV may be limited the establishment of the Tabor PV cluster may result in an influx of job seekers to the area. The influx will be linked to the phasing of the construction phase of the development and other renewable energy projects in the area. This issue is discussed under cumulative impacts.

Table 4.3: Assessment of impact of job seekers on local communities[26]

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	Moderate (6)	Low (4)
Probability	Probable (3)	Probable (3)
Significance	Medium (30)	Low (21)
Status	Negative	Negative
Reversibility	No in case of HIV and AIDS	No in case of HIV and AIDS
Irreplaceable loss of resources?	Yes, if people contract HIV/AIDS. Human capital plays a critical role in communities that rely on farming for their livelihoods	
Can impact be mitigated?	Yes, to some degree. However, the risk cannot be eliminated	
Recommended mitigation measures: It is impossible to stop people from coming to the area in search of employment. However, as indicated above, the proponent should ensure that the employment criteria favour residents from the area. In addition: • 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 MM 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 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.		

[26] The assessment is for the construction of a single PV facility. The potential impact associated with the construction of two or more PV facilities at the same time is assessed under cumulative impacts.

• 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.
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.

4.3.4 Risk to safety and security and farming operations

The presence on and movement of construction workers on and off the site poses a potential safety and security threat to landowners and workers on and in the vicinity of the site. Stock theft and poaching in the area is a key challenge and is linked to the proximity of the communities in the Botlokwa/Machaka/Mphakane node. The risks are exacerbated by the sparsely inhabited nature of the area which impacts on the ability to monitor illegal activities. Many private owners make use of private security service providers and security cameras have been established on some public roads. Illegal hunting with dogs was also identified as a key concern. Illegal hunting by construction workers also poses a risk to farming operations.

In addition, farm infrastructure, such as fences and gates, may be damaged and stock losses (livestock and game) may result from gates being left open and/or fences being damaged. The potential risks (safety, livestock, and farm infrastructure) can be effectively mitigated by careful planning and managing the movement of construction workers on and off the site workers during the construction phase.

The risk of informal settlements in the area linked to the influx of construction was also raised as a concern by local landowners.

The establishment of the proposed Solar PV will also create an opportunity to improve security in the area. This would benefit local landowners.

Table 4.4: Assessment of risk to safety, security and farming operations

Nature: Potential safety and security risks and impact on farming operations associated with the presence and movement of construction workers on site		
	Without Mitigation	**With Mitigation**
Extent	Local (3)	Local (2)
Duration	Short term (2)	Short term (2)
Magnitude	Medium (6)	Low (4)
Probability	Probable (3)	Probable (3)
Significance	Medium (33)	Low (24)
Status	Negative	Negative
Reversibility	Yes, compensation paid for stock losses and damage to farm infrastructure etc.	Yes, compensation paid for stock losses and damage to farm infrastructure etc.
Irreplaceable loss of resources?	No	No

Can impact be mitigated?	Yes	Yes
Recommended mitigation measures: • Install CCTV cameras at key intersection points and access roads to the PV sites. • Fence off the PV sites prior to the start of the construction phase. Where feasible the option of fencing in the entire property should be investigated. • The proponent should enter into an agreement with the local landowners 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 that are not accommodated in the construction camp to and from the site. • The proponent should consider the option of establishing a MF (see above) that includes local farmers and develop a Code of Conduct for construction workers. This committee should be established prior to commencement of the construction phase. The Code of Conduct should be signed by the proponent and the contractors before construction activities commence. • 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. • The Environmental Management Programme (EMPr) 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 construction workers who are found guilty of stealing livestock and/or damaging farm infrastructure are dismissed and charged. This should be contained in the Code of Conduct. All dismissals must be in accordance with South African labour legislation.		
Residual impacts No**,** provided losses are compensated.		

4.3.5 Increased risk of grass fires

The presence of construction workers and construction-related activities on the site poses an increased risk of grass fires that could, in turn pose, a threat to livestock, crops, wildlife and farm infrastructure. The potential risk of grass fires will be higher during the dry, windy winter months from May to October. Fire fighting capabilities in the area are limited. Fire fighting operations in the area are also hampered by the fact that many landowners are not based on their properties and must travel to the area in the event of fires occurring.

With effective mitigation the potential impacts associated with grass fires can be contained. However, the risk of grass fires spreading beyond the site and impacting on adjacent properties is a key concern.

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

Nature: Potential loss of livestock, crops and damage to farm infrastructure and threat to human life associated with increased incidence of grass fires		
	Without Mitigation	**With Mitigation**
Extent	Local (4)	Local (2)
Duration	Short term (2)	short term (2)
Magnitude	Moderate (6)	Low (4)
Probability	Probable (3)	Probable (3)
Significance	Medium (36)	Low (24)
Status	Negative	Negative
Reversibility	Yes, compensation paid for stock and infrastructure losses etc.	
Irreplaceable loss of resources?	No	No
Can impact be mitigated?	Yes	
Recommended mitigation measures • The proponent should become a member of the local Fire Protection Association. • 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.		
Residual impacts No, provided losses are compensated for.		

4.3.6 Nuisance impacts associated with construction related activities

Construction related activities, including the movement of heavy construction vehicles on and off the site, has the potential to create dust, noise and safety impacts and damage local roads. Access to project areas will be via the D 1775 and Mogwadi/Bottelier Road, both of which are unsurfaced roads. At the time of site visit (June 2025) the D 1775 that provides access to St Benedict's Catholic School, was in a poor condition. The Mogwadi/Bottelier Road is a sandy road and is likely to the prone to damage by heavy construction vehicles. Construction traffic therefore has the potential to damage these unsurfaced public roads. Experience from other projects also indicates that dust from construction traffic may impact negatively on the veld which in turn cam impact on grazing for livestock and game.

While the dust related impacts will be largely local and the number of potentially sensitive social receptors, such as farmsteads, are limited due to the sparse settlement

patterns and small number of farmsteads in the area, the impact on road surfaces will affect other road users. Given the scale of the project, the impact on road surfaces and repair should be discussed with the Limpopo Provincial Roads Department.

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

Nature: Potential noise, dust and safety impacts associated with construction related activities		
	Without Mitigation	**With Mitigation**
Extent	Local (2)	Local (1)
Duration	Short Term (2)	Short Term (2)
Magnitude	Medium (6)	Minor (2)
Probability	Probable (3)	Probable (3)
Significance	Medium (30)	Low (15)
Status	Negative	Negative
Reversibility	Yes	
Irreplaceable loss of resources?	No	No
Can impact be mitigated?	Yes	
Recommended mitigation measures The potential impacts associated with heavy vehicles can be effectively mitigated. The mitigation measures include: • The impact on road surfaces and repair thereof should be discussed with the Limpopo Provincial Roads Department. • Establishment of 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. • The movement of heavy vehicles associated with the construction phase should be timed to avoid times and days of the week, such as weekends, when the volume of traffic travelling along the access roads may be higher. • Dust suppression measures should be implemented, such as wetting on a regular basis and ensuring that vehicles used to transport sand and building materials are fitted with tarpaulins or covers. • All vehicles must be road worthy, and drivers must be qualified and made aware of the potential road safety issues and need for strict speed limits.		
Residual impacts If damage to local farm roads is not repaired then this will affect the farming activities in the area and result in higher maintenance costs for vehicles of local farmers and other road users. The costs will be borne by road users who were no responsible for the damage.		

4.4 OPERATIONAL PHASE SOCIAL IMPACTS

Potential positive impacts

- The establishment of infrastructure to improve energy security and support renewable sector.
- Creation of employment opportunities.
- Benefits to the affected landowners.
- Benefits associated with the socio-economic contributions to community development.

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 support the renewable energy sector

The primary goal of the proposed project is to improve energy security in South Africa by generating additional energy. As indicated in Section 2.4, the generation of electricity from renewable energy resources creates a range of potential socio-economic and environmental benefits for South Africa. These benefits include:

Increased 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[27]. 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[28].

Renewables can often be deployed in a short timeframe and in a decentralised manner close to consumers, they offer the opportunity for improving grid strength and supply quality in the short-term, while reducing expensive distribution losses.

The REIPPPP has successfully procured 7 825 MW from 104 IPPs (that reached financial close) in BW1 to BW6, which are at various stages of construction or have commenced with commercial operation. By end December 2024, 6 206 MW of the procured capacity started operations and delivered 6 180 MW of actual capacity (i.e. 90 IPPs delivering 26 MW short of procured capacity). In addition to improving energy security and generating clean energy, the benefits associated with the REIPPPP include reducing CO_2 emissions and water consumption.

Reducing CO_2 emissions and water consumption.

South Africa is ranked 12th worldwide in terms of per capita carbon dioxide emissions as of 2021. The energy generated by the REIPPP projects that have reached financial closure is sufficient to provide power for ~ 38 million households and has offset 123.5 Mton CO_2 and saved 146.1 million kilolitres of water that would typically have been used for cooling purposes in coal fired power plants.

Foreign and local investment

Total investment (total project costs[29]), including interest during construction, of projects that reached financial close in BW1-6 was R239 billion. This includes R43.1 billion (18%) in foreign investment and financing. Local investment totalled R 195.8

[27] https://www.citizen.co.za/news/load-shedding-cost-economy-billion/

[28]https://businesstech.co.za/news/energy/662515/stage-6-load-shedding-costs-south-africa-r900-million-a-day-sarb/

[29] Total Project Costs means the total capital expenditure to be incurred up to the commercial operations date in the design, construction, development, installation and/or commissioning of a project, which is equal to the total debt and equity related to a project as reported at commercial close.

billion (82%). The investment in the renewable energy programme has created opportunities for:

- Local production, manufacturing and new service industries.
- Formation of new research and knowledge centres amongst tertiary institutions and in the private sector.
- Economic activity and opportunities, particularly in rural areas.

Table 4.7: Improve energy security and support renewable sector

Nature: Development of infrastructure to improve energy security and support the renewable sector		
	Without Enhancement	**With Enhancement**
Extent	Local, Regional and National (4)	Local, Regional and National (4)
Duration	Long term (4)	Long term (4)
Magnitude	Moderate (6)	Moderate (6)
Probability	Highly Probable (4)	Definite (5)
Significance	Medium (56)	High (70)
Status	Positive	Positive
Reversibility	Yes	
Irreplaceable loss of resources?	Yes, impact of climate change on ecosystems	Reduced CO_2 emissions and impact on climate change
Can impact be mitigated?	Yes	
Recommended enhancement measures The proponent should: • Implement a skills development and training programme aimed at maximizing the number of employment opportunities for local community members. • Maximise opportunities for local content, procurement, and community shareholding.		
Residual impacts: Overall reduction in CO_2 emission, reduction in water consumption for energy generation, contribution to establishing an economically viable commercial renewables generation sector in the Northern Cape and South Africa.		

4.4.2 Creation of employment opportunities

Based on information from other PV SEFs, the development will create approximately 30 employment opportunities during the operational phase, of which 60% will be low-skilled, 35% semi-skilled, and 5% skilled. The annual operating budget is estimated to be in the region of R 50 million (2025 Rand values), including wages. A percentage of the annual operating budget, including wage income, will be spent in the local economy, which will benefit local businesses in Botlokwa/Machaka/Mphakane node, Polokwane and Louis Trichardt.

Non-local employees are also likely to reside in Botlokwa/Machaka/Mphakane node, Polokwane and Louis Trichardt. This will benefit the local property and hospitality market. The operational phase will initially extend over a period of 20-25 years. The benefits will therefore be sustained over the long term.

Table 4.8: Assessment of employment and business creation opportunities during operational phase

Nature: Creation of employment and business opportunities associated with the operational phase		
	Without Enhancement	**With Enhancement**
Extent	Local and Regional (2)	Local and Regional (3)
Duration	Long term (4)	Long term (4)
Magnitude	Low (4)	Moderate (6)
Probability	Highly Probable (4)	Highly Probable (4)
Significance	Medium (40)	Medium (52)
Status	Positive	Positive
Reversibility	N/A	
Irreplaceable loss of resources?	No	
Can impact be enhanced?	Yes	

Enhancement Measures:

Employment

- Where reasonable and practical, the proponent should appoint local service providers and implement a 'locals first' policy, especially for semi and low-skilled job categories.
- Where feasible, efforts should be made to employ local service providers that are compliant with Broad Based Black Economic Empowerment (BBBEE) criteria.
- Before the operational phase commences the proponent should meet with representatives from the MM to establish the existence of a skills database for the area and list of service providers.
- 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 MM with regards the establishment of a database of local companies, specifically BBBEE companies, which qualify as potential service providers.

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 operational phase.

Residual impacts: Creation of permanent employment and skills development opportunities for members from the local community and creation of additional business and economic opportunities in the area

4.4.3 Generate income for project landowners

The proponent will enter into rental agreements with the affected landowners for the use of the land for the establishment of the proposed PV SEF. In terms of the rental agreement, affected landowner/s are typically paid an annual amount linked to the energy generated. The additional income will reduce the risk to his livelihoods posed by droughts and fluctuating market prices for game and farming inputs, such as fuel, feed etc. As indicated in the assumptions (Section 1.5.1), the SIA acknowledges that the project area is subject to land claims. While the ownership of the affected properties

may change depending on the outcome of the land claim, the benefits to the project landowners whoever they are will remain. It is beyond the scope of the SIA to assess and or comment on the status of the land claims.

The project may also create opportunities for the project landowners to provide services linked to the operation of PV project, including maintenance, security etc. In addition to additional income, the establishment of the proposed SEF will also create an opportunity to improve local security in the study area associated with the security measures implemented by the operators of the PV facility, such as security cameras etc. This will also benefit other landowners in the area.

Table 4.9: Assessment of benefits associated with income generated for project landowners

Nature: The generation of additional income represents a significant benefit for the local project landowners and reduces the risks to their livelihoods posed by droughts and fluctuating market prices for game, farming inputs, such as feed, fuel etc.		
	Without Enhancement	**With Enhancement**
Extent	Local (1)	Local (3)
Duration	Long term (4)	Long term (4)
Intensity	Moderate (6)	Moderate (6)
Likelihood	Probable (3)	Definite (5)
Significance	Medium (33)	High (65)
Status	Positive	Positive
Reversibility	Yes	Yes
Can impact be enhanced?	Yes	
Recommended enhancement measures Implement agreements with affected landowners.		
Residual impacts: Support for local agricultural sector and farming		

4.4.4 Benefits associated with the socio-economic development contributions[30]

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 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.

[30] Note: The project may be submitted under the REIPPPP program or linked to a private off-take agreement

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

A key component of the REIPPPP is to support socio-economic development and enable local communities to benefit directly from the investments attracted into the area. In terms of the bid obligations, IPPs are required to contribute a percentage of projected revenues accrued over the 20-year project operational life toward socio-economic development (SED) and enterprise development (ED) initiatives. The minimum compliance threshold for SED contributions is 1% of revenue with 1.5% the targeted level over the 20-year project operational life. The average commitment level for the current portfolio (BW1-4) is 2% or 101% more than the minimum compliance threshold.

As a percentage of revenue, SED and ED obligations become effective only when operations commence, and revenue is generated. SED contributions to date amount to R3.2 billion (1.3% of total revenue generated to date). A total of R952.6 million has been contributed to ED (0.4% of total revenue generated to date). Enterprise and socio-economic development commitments have been made in five categories; namely, education and skills development, social welfare, healthcare, general administration, and enterprise development.

In terms of support, 44.3% of SED contributions to date have been linked to education initiatives, 23% to enterprise development, 18.3% to social welfare, 10.1% to general administration and 4.1% to health care. In terms of geographical spread, the Northern Cape Province (SED, R 1.83 billion, ED, R 554.1 million) and Mpumalanga Province (SED R 1.3 billion, ED, R 219.7 million) have benefited the most from the REIPPPP, followed by the Eastern Cape (SED, R 687.3 million, ED, R 185.9 million) and Western Cape (SED, R 332.7 million, ED, R 83.2 million)[31].

Research by Tait[32] also found that the distributed nature of renewable energy generation can induce a more geographically dispersed pattern of development. As a result, renewable energy sites can be highly suited to rural locations with otherwise poor potential to attract local inward investment therefore enabling to target particularly vulnerable areas. In her conclusion, Tait notes that the thesis has found positive evidence for the establishment of community benefit schemes in the wind sector in South Africa. These benefits would also apply to solar projects.

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 Enhancement	**With Enhancement[33]**
Extent	Local and Regional (2)	Local and Regional (3)
Duration	Long term (4)	Long term (4)
Intensity	Low (4)	Moderate (6)
Likelihood	Probable (3)	Definite (5)
Significance	Medium (30)	High (65)

[31] Overview of the IPPPP (Department of Energy, National Treasury and DBSA, December 2024.
[32] The potential for local community benefits from wind farms in South Africa, Louise Tait (2012), Master's Thesis, Energy Research Centre University of Cape Town.
[33] Enhancement assumes effective management of the SED contributions.

Status	Positive	Positive
Reversibility	Yes	Yes
Can impact be enhanced?	Yes	
Recommended enhancement measures To maximise the benefits and minimise the potential for corruption and misappropriation of funds the following measures should be implemented: • The proponents should liaise with the MM and CPAs 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		

4.4.5 Visual impact and impact on sense of place

The proposed PV SEF and associated OHPL has the potential to impact on the areas existing rural sense of place. The findings of the Visual Impact Assessment: Scoping Report (VRM March 2025) are summarised below.

The key finding of the landscape and visual impact scoping assessment is that most of the property is suitable for PV development and with the incorporation of the recommended setbacks and No-Go areas, would not result in degradation of significant landscape / visual resources. The Scoping Report also notes that that given that game farming takes place in the area care should be taken to ensure that game farm areas are well buffered, and that PV/ BESS development opportunities are linked to the existing Eskom OHPL corridor where the local landscapes are partially degraded.

The report lists four visual management classes that inform the scoping level assessment, namely:

- Classes I and II, which are the most valued.
- Class III represent a moderate value.
- Class IV is of least value.

In terms of the PV and BESS the report notes that Class I areas, which include drainage lines and areas adjacent to the public roads in the area should be excluded from the development footprint. Class II areas include farm buildings and areas within 100 m of Mogwadi/Bottelier Road. The reports recommends that these areas should be used as little as possible for development.

The Class III areas consist largely of undulating bushveld that makes up most of the site. The level of change in Class III areas, such as the proposed PV and BESS, can be high. The report notes that due to the moderate scenic value of these bushveld areas, these areas would be suitable for PV and BESS development with mitigation. Mitigation would require reduction in lights at night spillage, as well as a 3m (approx.) PV height for less dominating landscape change to the rural landscape context. The existing Eskom OHPL corridor is rated as Class VI.

In terms of the project OHPL and substations, the classes and recommendations are largely the same as those for the PV and BESS. The report does however indicate that development to the south of the Mogwadi/Bottelier Road has the potential to be more

visually intrusive on the Klipput Lodge. However, the report also notes that the area has been visually degraded by the Eskom OHPL corridor and that this area is suitable for development with light mitigation to retain the existing dark night sky sense of place of the rural landscape.

None of the stakeholders interviewed during the SIA raised concerns about visual impacts on sense of place. Solar PV projects are also proposed on 424/1 and 424/2 located to the east of the site and the Klipput Lodge located on 425/2. These properties make up the Soetveld Game Farm.

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 area's rural sense of place.		
	Without Mitigation	**With Mitigation**
Extent	Local (2)	Local (1)
Duration	Long term (4)	Long term (4)
Magnitude	Moderate (6)	Low-Moderate (4-6)
Probability	Probable (3)	Probable (3)
Significance	Medium (36)	Low (27)-Medium (36)
Status	Negative	Negative
Reversibility	Yes, PV components and other infrastructure can be removed.	
Irreplaceable loss of resources?	No	
Can impact be mitigated?	Yes	
Mitigation The recommendations contained in the VIA should be implemented.		
Residual impacts: Potential impact on current rural sense of place.		

4.4.6 Potential impact on property values

The potential visual impacts associated with the proposed PV SEF and associated OHPL 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. 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.

The impact of PV SEFs on property values is likely to be lower than the impact of WEFs due to the reduced visual impact. None of the stakeholders interviewed during the SIA raised concerns about impact on property values. As indicated above, Solar PV projects are also proposed on 424/1 and 424/2 located to the east of the site and the Klipput Lodge located on 425/2. These properties make up the Soetveld Game Farm.

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

Nature: Potential impact of the PV on property values		
	Without Mitigation	**With Enhancement / Mitigation**
Extent	Local (2)	Local (1)
Duration	Long term (4)	Long term (4)
Magnitude	Minor (2)	Minor (2)
Probability	Probable (3)	Probable (3)
Significance	Low (24)	Low (21)
Status	Negative	Negative
Reversibility	Yes	Yes
Irreplaceable loss of resources?	No	No
Can impact be enhanced?	Yes	
Mitigation The recommendations contained in the VIA should be implemented.		
Residual impacts: Linked to visual impact on sense of place.		

4.4.7 Potential impact on tourism

The potential visual impacts associated with the PV SEF and OHPL have the potential to impact tourism facilities and tourism in the area. As indicated in Section 3, there are several game farms in the study area. Based on the findings of the SIA and the Visual Scoping Report (VRM March 2025) the PV facilities and OHPL would be visible from the Klipput Lodge located to the south of Mogwadi/Bottelier Road. However, the Visual Scoping Report also notes that the area has been visually degraded by the existing Eskom OHPL corridor and that this area is suitable for development with light mitigation to retain the existing dark night sky sense of place of the rural landscape.

None of the stakeholders interviewed during the SIA raised concerns about visual impacts on sense of place. As indicated above, the Solar PV projects are also proposed on the properties associated with the Soetveld Game Farm located to the east of the site, namely 424/1 and 424/2. The Klipput Lodge is located on 425/2 and forms part of the Soetveld Game Farm.

Table 4.13: Impact on tourism in the region

Nature: Potential impact of the PV on local tourism		
	Without Mitigation	**With Mitigation**
Extent	Local (2)	Local (1)
Duration	Long term (4)	Long term (4)
Magnitude	Minor (2)	Minor (2)
Probability	Probable (3)	Probable (3)
Significance	Low (24)	Low (21)
Status	Negative	Negative

Reversibility	Yes	Yes
Irreplaceable loss of resources?	No	No
Can impact be enhanced?	Yes	
Mitigation The recommendations contained in the VIA should be implemented.		
Residual impacts: Linked to visual impact on sense of place.		

4.5 CUMULATIVE IMPACT ON SENSE OF PLACE

The potential cumulative impacts on the area's 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 solar or wind farms will be visible from one location).
- Sequential visibility (e.g. the effect of seeing two or more solar or wind farms along a single journey, e.g. road or walking trail).
- The visual compatibility of different solar or 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.

Cumulative visual impacts also 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.

As indicated above, the potential of the proposed PV SEF and associated infrastructure on the areas sense of place is likely to be limited. However, the cumulative impacts associated with the combined project are likely to be higher. Based on the findings of the Visual Impact Assessment: Scoping Report (VRM March 2025) the potential cumulative impact on the areas sense of please is rated as Medium Negative.

Table 4.14: Cumulative impacts on sense of place and the landscape

Nature: Visual impacts associated with the establishment of more than one PV 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 (2)
Duration	Long term (4)	Long term (4)
Magnitude	Moderate (6)	Moderate (6)
Probability	Probable (3)	Highly Probable (4)

Significance	Medium (36)	Medium (48)
Status (positive/negative)	Negative	Negative
Reversibility	Yes. SEF components and other infrastructure can be removed.	
Loss of resources?	No	No
Can impacts be mitigated?	Yes	
Confidence in findings: High.		
Mitigation: The recommendations of the VIA should be implemented.		

4.6 CUMULATIVE IMPACT ON LOCAL SERVICES AND ACCOMMODATION

The establishment of the four PV facilities associated with the Tabor Solar PV cluster and other renewable energy projects in the area has the potential to place pressure on local services and accommodation in the Botlokwa/Machaka/Mphakane node, and to a lesser extent Polokwane and Louis Trichardt. While the objective will be to source as many low and semi-skilled workers for the construction phase from the Botlokwa /Machaka/Mphakane node and the MM, the potential opportunities may be limited by the low education and skills levels.

The cumulative impact on the local services and accommodation will depend on the phasing and timing of the construction phase. The construction of two or more projects at the same time will require accommodation to be provided for between 500 and 700 construction workers. Based on the findings of the SIA there is likely to be sufficient accommodation available in Polokwane and Louis Trichardt to accommodate this number of construction workers. However, suitable accommodation options in the Botlokwa/Machaka/Mphakane node are likely to be limited. The presence of between 500 and 700 construction workers in the area also has the potential to place pressure on local services, specifically medical services in the Botlokwa/Machaka/Mphakane node. This will however depend on where they are accommodated. The impact on Polokwane and Louis Trichardt is likely to be 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 MM. These benefits will create opportunities for investment in the Botlokwa/Machaka/Mphakane node and Louis Trichardt, including the opportunity to up-grade and expand existing services and the construction of new houses. Socio-economic development (SED) contributions also represent an important focus of the REIPPPP and is aimed at ensuring that the build programme secures sustainable value for the country and enables local communities to benefit directly from the investments attracted into the area. The SED contributions will extend over a period of 20-25 years and provide revenue that can be used by the MM to invest in up-grading local services where required. In should also be noted that it is the function of national, provincial, and local government to address the needs created by development and provide the required services. The additional demand for services and accommodation created by the establishment of development renewable energy projects should therefore be addressed in the Integrated Development Planning process undertaken by the MM.

Table 4.15: Cumulative impacts on local services

Nature: The establishment of a number of renewable energy facilities and associated projects, such as the proposed PV, in the MM has the potential to place pressure on local accommodation and services (medical, etc).		
	Overall impact of the proposed project considered in isolation	**Cumulative impact of the project and other projects in the area**
Extent	Local (1)	Local and regional (2)
Duration	Long term (4)	Long term (4)
Magnitude	Low (4)	Low (4)
Probability	Probable (3)	Probable (3)
Significance	Low (27)	Medium (30)[34]
Status (positive/negative)	Negative	Negative
Reversibility	Yes. SEF components and other infrastructure can be removed.	
Loss of resources?	No	No
Can impacts be mitigated?	Yes	
Confidence in findings: High.		
Mitigation: The proponent should liaise with the MM to address potential impacts on local services.		

4.7 CUMULATIVE IMPACT OF CONSTRUCTION WORKERS ON LOCAL COMMUNIITIES

The establishment of the four PV facilities associated with the Tabor Solar PV Cluster and other renewable energy projects in the area and the presence of construction workers associated with the projects has the potential to have a cumulative impact on local communities. While the objective will be to source as many low and semi-skilled workers for the construction phase from the Botlokwa/Machaka/Mphakane node and the MM, the potential opportunities may be limited by the low education and skills levels.

The cumulative impact on the local community will depend on the phasing and timing of the construction phase. The construction of two or more projects at the same time will result in the presence of between 500 and 700 construction workers. The presence of construction workers poses a potential risk to family structures and social networks. The most significant negative impacts are 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.

Depending on where the construction workers are accommodated the cumulative impact on the local communities may be significant, especially if a large number are accommodated in the Botlokwa/Machaka/Mphakane node. However, as indicated above,

[34] With effective mitigation and planning, the significance will be Low Negative.

the availability of accommodation in the node is limited. Outside construction workers are therefore likely to be accommodated in Louis Trichardt and Polokwane. The risk of impacting on local communities in these towns is likely to be limited.

Table 4.16: Cumulative impact of construction workers on local communities

Nature: The construction workers associated with the establishment of a number of renewable energy facilities, including the Tabor PV SEF Cluster, have the potential to impact negatively on local communities in the area.		
	Overall impact of the proposed project considered in isolation	**Cumulative impact of the project and other projects in the area**
Extent	Local (1)	Local and regional (2)
Duration	Long term (4)	Long term (4)
Magnitude	Low (4)	Moderate (6)
Probability	Probable (3)	Probable (3)
Significance	Low (27)	Medium (36)[35]
Status (positive/negative)	Negative	Negative
Reversibility	Yes. PV components and other infrastructure can be removed.	
Loss of resources?	No	No
Can impacts be mitigated?	Yes	
Confidence in findings: High.		
Recommended enhancement measures: • 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, including reference to Gender Based Violence. 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 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.		

[35] With effective management the significance can be reduced to Low Negative.

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

4.8 CUMULATIVE IMPACT ON LOCAL ECONOMY

In In addition to the potential negative impacts, the establishment of the Tabor PV SEF Cluster and other renewable energy facilities and associated infrastructure in the area will also create several socio-economic opportunities for the Botlokwa/ Machaka/Mphakane node. Louis Trichardt and the MM. The positive cumulative opportunities include creation of employment, skills development and training opportunities, and downstream business opportunities.

The total expenditure associated with the full development of the Tabor PV SEF Cluster (4 Solar PVs) would be in the region of R 10-12 billion (2025 Rand values). The total number of construction employment opportunities would be in the region of 250-300 for each of the three 240 MW PV projects and 80-100 for the 74 MW PV SEF. The number of full-time employment opportunities created during the operational phase would be in the region of 80-100. These employment opportunities would extend over a period of 20-25 years. Given the high unemployment levels in the local area (Botlokwa/ Machaka/Mphakane node) and MM, this would represent a significant socio-economic benefit and opportunity. The Tabor PV SEF Cluster projects will also contribute to SED though annual contributions.

The review of the REIPPPP (December 2024) indicates that SED contributions to date amount to R3.2 billion (1.3% of total revenue generated to date). A total of R952.6 million has been contributed to ED (0.4% of total revenue generated to date). Enterprise and socio-economic development commitments have been made in five categories; namely, education and skills development, social welfare, healthcare, general administration, and enterprise development. In terms of support, 44.3% of SED contributions to date have been linked to education initiatives, 23% to enterprise development, 18.3% to social welfare, 10.1% to general administration and 4.1% to health care.

In terms of geographical spread, the Northern Cape Province (SED, R 1.83 billion, ED, R 554.1 million) and Mpumalanga Province (SED R 1.3 billion, ED, R 219.7 million) have benefited the most from the REIPPPP, followed by the Eastern Cape (SED, R 687.3 million, ED, R 185.9 million) and Western Cape (SED, R 332.7 million, ED, R 83.2 million). The benefits to the Limpopo Province have therefore been lower than the other provinces to date.

The potential cumulative benefits for the local and regional economy are therefore associated with both the construction and operational phase of the Tabor PV SEF Cluster and other renewable energy projects 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 to support skills development and training programmes.

Table 4.17: Cumulative impacts on local economy

Nature: The establishment of renewable energy facilities and associated projects, such as the Tabor PV SEF Cluster, in the MM 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 (1)	Local and regional (3)
Duration	Long term (4)	Long term (4)
Magnitude	Low (4)	High (8)
Probability	Highly Probable (4)	Definite (5)
Significance	Medium (36)	High (75)
Status (positive/negative)	Positive	Positive
Reversibility	Yes. PV components and other infrastructure can be removed.	
Loss of resources?	No	No
Can impacts be mitigated?	Yes	
Confidence in findings: High.		
Mitigation: The proposed establishment of suitably sited renewable energy facilities and associated projects, such as the proposed PV, within the MM should be supported.		

4.9 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. Given the number of people employed during the operational phase (~ 30), the social impacts at a community level associated with decommissioning can be managed with the implementation of a retrenchment and downscaling programme. With mitigation, the impacts are assessed to be Low (negative). 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 post commissioning. The decommissioning phase is therefore likely to create additional construction type jobs, as opposed to the jobs losses typically associated with decommissioning.

Table 4.18: Social impacts associated with decommissioning

Nature Social impacts associated with retrenchment including loss of jobs, and source of income.		
	Without Mitigation	**With Mitigation**
Extent	Local (4)	Local (2)
Duration	Short term (2)	short term (2)
Magnitude	Moderate (6)	Low (4)
Probability	Probable (3)	Probable (3)
Significance	Medium (36)	Low (24)

Status	Negative	Negative
Reversibility	N/A	
Irreplaceable loss of resources?	No	No
Can impact be mitigated?	Yes	
Mitigation: • 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.		
Residual impacts No, provided effective retrenchment package.		

4.10 ASSESSMENT OF NO-DEVELOPMENT OPTION

The primary goal of the Project is to assist in providing additional capacity to Eskom to assist in addressing the current energy supply constraints. The project also aims to reduce the carbon footprint associated with energy generation. As indicated above, energy supply constraints and the associated load shedding have had a significant impact on the economic development of the South African economy. South Africa also 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 improve energy security and supplement is 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.

Table 4.19: Assessment of no-development option

Nature: The no-development option would result in the lost opportunity for South Africa to improve energy security and assist to support with the development of clean, renewable energy		
	Without Enhancement [36]	**With Enhancement[37]**
Extent	Local-International (4)	Local-International (4)
Duration	Long term (4)	Long term (4)
Magnitude	Moderate (6)	Moderate (6)
Probability	Highly Probable (4)	Highly Probable (4)
Significance	Moderate (56)	Moderate (56)
Status	Negative	Positive
Reversibility	Yes	
Irreplaceable loss of resources?	Yes, impact of climate change on ecosystems	

[36] Assumes project is not developed.
[37] Assumes project is developed.

Can impact be mitigated?	Yes	
Enhancement: The proposed PV 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.		

4.11 ASSESSMENT OF GRID ALTERNATIVES

Three grid connection alternatives are proposed to evacuate the power from the Tabor Solar PV Cluster to Eskom's Tabor MTS located to the east of the site and the N1, namely:

Alternative 1 (Preferred Alternative)
Alternative 1 is the shortest (~10 km[38]) and most direct alternative and follows an existing east-west aligned Eskom transmission line corridor over its entire alignment to the Tabor MTS.

Alternative 2
Alternative 2 (~15 km) consists of four segments. The first segment runs north from the Klipput PV Eskom switching station over a distance of ~ 3 km. The second segment swings southeast for a distance of ~ 3.5km to the north of the Mogwadi/Bottelier Road, before turning east and following the alignment of the Mogwadi/Bottelier Road for ~ 5km (third segment). The final segment swings south and follows and existing Eskom corridor over a distance of 1.5km and enters Tabor MTS from the north-east.

Alternative 3
Alternative 3 (~13.5 km) runs in a north-easterly direction from the on-site substation for ~ 3.2km and intersects with the second segment of Alternative 2 to the north of the Mogwadi/Bottelier Road. The alignment then follows the alignment of Alternative 2 for ~ 4km, before swinging south over a distance of ~ 2.3 km and intersecting with Alternative 1. The alignment then follows the same alignment of Alternative 1 for ~ 3.9 km to the Tabor MTS.

Each of the proposed OHPL alternatives has the potential to impact on the areas existing rural sense of place. The findings of the Visual Impact Assessment: Scoping Report (VRM March 2025) indicate that most of the property is suitable for PV development and with the incorporation of the recommended setbacks and No-Go areas, would not result in degradation of significant landscape / visual resources. The Scoping Report also notes that that given that game farming takes place in the area care should be taken to ensure that game farm areas are well buffered, and that PV/ BESS development opportunities are linked to the existing Eskom OHPL corridor where the local landscapes are partially degraded.

In terms of the project OHPL and substations, the VIA Scoping report indicates that development to the south of the Mogwadi/Bottelier Road has the potential to be more visually intrusive on the Klipput Lodge. However, the report also notes that the area has been visually degraded by the Eskom OHPL corridor and that this area is suitable for development with light mitigation to retain the existing dark night sky sense of place of the rural landscape.

Alternative 1 follows and existing Eskom transmission line corridor along its entire length and is also the shortest of the three alternatives. Alternatives 2 and 3 result in the

[38] Measured along centre line of assessment corridor.

establishment of OHPLs in areas that are currently not affected by power lines. Alternative 1 is therefore the preferred Alternative.

Both key non-Tabor affected owners (Mr Dirk de Nysschen and Osmers) raised concerns about potential cumulative impacts resulting from the Tabor, Atlantic and Ingwe PV Solar projects and indicated that the transmission line alignment for the Tabor PV Cluster should be shared with the other projects. This was based on the assumption that the proposed Solar PV developments on their properties also proceeded (Dirk de Nysschen, Osmers, pers. comm). As indicated above, Solar PV projects and associated OHPLs are also proposed on 424/1 and 424/2 located to the east of the site and the Klipput Lodge located on 425/2. These properties make up the Soetveld Game Farm.

Alternative 2 is also acceptable to affected owners if the alignment is located on Tabor Solar PV property. Most of the alignment follows the alignment of the Mogwadi/Bottelier Road. However, there are currently no powerlines located along the Mogwadi/Bottelier Road.

Alternative 3 is the least acceptable given that sections of the alignment do not follow the Mogwadi/Bottelier Road or existing Eskom transmission line corridor.

Table 4.20: Visual impact of OHPL and impact on sense of place

Nature: Visual impact associated with the proposed OPHL and associated infrastructure and the potential impact on the area's rural sense of place.		
	Without Mitigation	**With Mitigation[39]**
Extent	Local (2)	Local (1)
Duration	Long term (4)	Long term (4)
Magnitude	Moderate (6)	Low-Moderate (4)
Probability	Probable (3)	Probable (3)
Significance	Medium (36)	Low (27)
Status	Negative	Negative
Reversibility	Yes, OHPL components and other infrastructure can be removed.	
Irreplaceable loss of resources?	No	
Can impact be mitigated?	Yes	
Mitigation Alternative 1 is the preferred option. The recommendations contained in the VIA should be implemented.		
Residual impacts: Potential impact on current rural sense of place.		

[39] Assumes Alternative 1 is developed.

SECTION 5: KEY FINDINGS AND RECOMMENDATIONS

5.1 INTRODUCTION

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

- A review of key planning and policy documents pertaining to the area.
- A review of social and economic issues associated with similar developments.
- Site visit and interviews with key stakeholders.
- A review of relevant literature on social and economic impacts.
- The experience of the authors with other renewable energy projects in the Free State Province

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.

5.2.1 Policy and planning issues

The development of and investment in renewable energy is supported by the National Development Plan (NDP) and National Infrastructure Plan, which all refer to and support renewable energy. The Limpopo Development Plan and Makhado Municipality Spatial Development Framework (SDF) also support the development of renewable energy. The development of the proposed Solar PV is therefore supported by key policy and planning documents.

5.2.2 Construction phase impacts

Potential positive impacts

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

The construction phase projects will extend over a period of approximately 18 months and create in region of 250-300 employment opportunities. Members from the local communities in the MM may potentially qualify for low skilled and semi-skilled and some skilled employment opportunities. Given the high unemployment levels in the area the creation of employment opportunities will represent a localised social benefit. However, the low education and skills levels in the area may limit the opportunities for local employment.

The wage bill will be in the region of R 60 million (2025 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.

The capital expenditure will be approximately R 4 billion (2025 Rand value). Due the lack of diversification in the local economy the potential for local companies in the MM is likely to be limited. Most benefits are therefore likely to accrue to contractors and engineering companies based outside the MM. The local service sector will 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 safety and security risks to landowners and farming operations associated with 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.

The findings of the SIA indicate that the significance of all the potential negative impacts with mitigation are likely to be **Low Negative**. The potential negative impacts 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	Medium (+)	Medium (+)
Presence of construction workers and potential impacts on family structures and social networks	Medium (-)	Low (-)
Influx of job seekers	Medium (-)	Low (-)
Safety and security risk, to landowners and disruption of farming associated with presence of construction workers	Medium (-)	Low (-)
Increased risk of grass fires	Medium (-)	Low (-)
Nuisance impacts associated with construction activities	Medium (-)	Low (-)

5.2.3 Operational phase impacts

Potential positive impacts

- Establishment of infrastructure to improve energy security and support renewable sector.
- Creation of employment and business opportunities.
- Benefits for project landowners.

- 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 except for visual impacts will be **Low Negative** with mitigation. Most potential negative impacts can therefore be effectively mitigated. The significance of the impacts associated with the operational phase are summarised in Table 5.22.

Table 5.2: Summary of social impacts during operational phase

Impact	Significance No Mitigation/Enhancement	Significance With Mitigation/Enhancement
Establishment of infrastructure to improve energy security and support renewable sector	High (+)	High (+)
Creation of employment and business opportunities	Medium (+)	Medium (+)
Benefits associated with socio-economic contributions to community development	Medium (+)	High (+)
Benefits for project landowners	Low (+)	High (+)
Visual impact and impact on sense of place	Medium (-)	Low-Medium (-)
Impact on property values	Low (-)	Low (-)
Impact on tourism	Low (-)	Low (-)

5.3 ASSESSMENT OF GRID ALTERNATIVES

The environmental application process includes the establishment of 132kV Overhead Power Line (OHPL) to connect the Solar PV to the National Grid via the existing Tabor Main Transmission Substation (MTS). Three grid connection alternatives are proposed to evacuate the power from the Tabor Solar PV Cluster to Eskom's Tabor MTS located to the east of the site and the N1, namely:

- Alternative 1 (Preferred Alternative).
- Alternative 2.
- Alternative 3.

Alternative 1 follows and existing Eskom transmission line corridor along its entire length and is also the shortest of the three alternatives. Alternatives 2 and 3 result in the

establishment of OHPLs in areas that are currently not affected by power lines. Alternative 1 is therefore the preferred Alternative.

5.4 ASSESSMENT OF CUMULATIVE IMPACTS

- **Cumulative impact on sense of place:** The establishment of the proposed PV SEF project and other renewable energy facilities in the area will create the potential for combined and sequential visibility impacts. This impact is rated as **Medium Negative**.
- **Cumulative impact of construction workers local services and accommodation:** The significance of this impact with effective mitigation was rated as **Low Negative**.
- **Cumulative impact of construction workers on local communities:** The significance of this impact with effective mitigation was rated as **Low Negative***.*
- **Cumulative impact on local economy:** The significance of this impact with enhancement was rated as **High Positive***.*

5.5 DECOMMISSIONING PHASE

Given the number of people employed during the operational phase (~ 30), the social impacts at a community level associated with decommissioning can be managed with the implementation of a retrenchment and downscaling programme. With mitigation, the impacts are assessed to be **Low Negative**.

5.6 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.

5.7 CONCLUSION AND RECOMMENDATIONS

The findings of the SIA indicate that the proposed Bethel Solar PV and associated infrastructure will create social and socio-economic benefits for the MM, including creation of employment and business opportunities during both the construction and operational phases. The project will also create socio-economic development opportunities for the MM and local community. The significance of this impact is rated as **High Positive**. The proposed development also represents an investment in clean, renewable energy infrastructure, which, given the negative environmental and socio-economic impacts associated a coal-based energy economy and challenges created by climate change, represents a significant positive social benefit for society as a whole. The Renewable Energy Independent Power Producers Procurement Programme (REIPPPP) has resulted in significant socio-economic benefits, both at a national level and at a local, community level. These benefits are linked to foreign Direct Investment, local employment and procurement and investment in local community initiatives. The findings 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.

Statement and reasoned opinion

The establishment of the proposed Bethel Solar PV and associated infrastructure, including the OHPL, is therefore supported by the findings of the SIA. Grid Connection Alternative 1 is the preferred option.

ANNEXURE A

INTERVIEWS

- De Faria, Mr Carlos (telephonic 2025-06-23). Kaffernek 465/RE.
- De Nysschen, Mr Dirk (telephonic 2025-06-25). Vryheid 418/RE, Leeudoorns 472/1 and 472/2/RE, Brandhoek 1211.
- De Nysschen, Mr Koos (telephonic 2025-06-27). Vluchtkraal 420/RE, Groenepunt 423/RE and 423/1, Doornveld 426/RE.
- Matimolane, Mr Motshewa (e-mail 2025-06-22). Chatleka Community Property Association: Draailoop 430/1, Benaauwdheid 429, Bonne Esperance 434, Dassieshoek 432/5/3.
- Osmers, Mr Heinrich (telephonic 2025-06-25). Bellvue 424/RE and 424/1, Klipput 425/2.
- Pieterse, Mr Frans (telephonic 2025-06-25). Klipput 425/1. Draailoop 430/RE, Bethel 431, Kaffernek 465/1, Makoppa 466/RE, 466/1.
- Van der Gryp, Me Sandra (telephonic 2025-06-25; 2025-06-26).

REFERENCES

- The National Energy Act (2008).
- The National Development Plan (2011).
- The White Paper on Energy Policy (1998).
- The White Paper on Renewable Energy (2003).
- National Infrastructure Plan (2012 /2021)
- Integrated Resource Plan (IRP) for South Africa (2010-2030).
- Climate Change Bill (2018 / 2021).
- Just Energy Transition Investment Plan (2023-2027).
- Limpopo Provincial Development Plan (2020-2025).
- Limpopo Provincial Spatial Development Framework (2022).
- Makhado Integrated Development Plan (2023-2024).
- Makhado Spatial Development Framework (2020).

Commission on Restitution of Land Claims, Office of the Regional Land Claims Commissioner: Limpopo, 2025-06-10. Letter regarding: Enquiries regarding land claims in terms of the Restitution of Land Rights Act, 1994 (Act no 22 of 1994): Draailoop 430/RE, Bethel 431, Kaffernek 465/1, Makoppa 466/RE and 466/1 and Klipput 425/1, Vhembe District.

MAPS

- Chief Directorate National Geo-Spatial Information, 2008. 2329BC Mphakane (North), Edition 4.
- Chief Directorate National Geo-Spatial Information. 2008. 2329BD Ramokgopa, Edition 4.

ANNEXURE B

METHODOLOGY FOR THE ASSESSMENT OF POTENTIAL IMPACTS

Direct, indirect and cumulative impacts of the above issues, as well as all other issues identified will be assessed in terms of the following criteria:

- The **nature**, which shall include a description of what causes the effect, what will be affected and how it will be affected.
- The **extent**, where it will be indicated whether the impact will be local (limited to the immediate area or site of development), regional, national or international. A score between 1 and 5 will be assigned as appropriate (with a score of 1 being low and a score of 5 being high).
- The **duration**, where it will be indicated whether:
  - the lifetime of the impact will be of a very short duration (0–1 years) – assigned a score of 1;
  - the lifetime of the impact will be of a short duration (2-5 years) - assigned a score of 2;
  - medium-term (5–15 years) – assigned a score of 3;
  - long term (> 15 years) - assigned a score of 4; or
  - permanent - assigned a score of 5.
- The **magnitude**, quantified on a scale from 0-10, where a score is assigned:
  - 0 is small and will have no effect on the environment;
  - 2 is minor and will not result in an impact on processes;
  - 4 is low and will cause a slight impact on processes;
  - 6 is moderate and will result in processes continuing but in a modified way;
  - 8 is high (processes are altered to the extent that they temporarily cease); and
  - 10 is very high and results in complete destruction of patterns and permanent cessation of processes.
- The **probability** *of occurrence*, which shall describe the likelihood of the impact actually occurring. Probability will be estimated on a scale, and a score assigned:
  - Assigned a score of 1–5, where 1 is very improbable (probably will not happen);
  - Assigned a score of 2 is improbable (some possibility, but low likelihood);
  - Assigned a score of 3 is probable (distinct possibility);
  - Assigned a score of 4 is highly probable (most likely); and
  - Assigned a score of 5 is definite (impact will occur regardless of any prevention measures).
- The **significance**, which shall be determined through a synthesis of the characteristics described above (refer formula below) and can be assessed as low, medium or high.
- The **status**, which will be described as either positive, negative or neutral.
- The *degree* to which the impact can be *reversed*.
- The *degree* to which the impact may cause *irreplaceable loss of reso*urces.
- The *degree* to which the impact can be *mitigated.*

The **significance** is determined by combining the criteria in the following formula:

S=(E+D+M)P; where

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

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

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

ANNEXURE C

Tony Barbour
ENVIRONMENTAL CONSULTING

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Tony Barbour's has 30 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 350 SIA's, including SIAs for infrastructure projects, dams, pipelines, and roads. All the SIAs include interacting with and liaising with affected communities. In addition, he is the author of the Guidelines for undertaking SIAs 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, Rwanda and Armenia.

ANNEXURE D

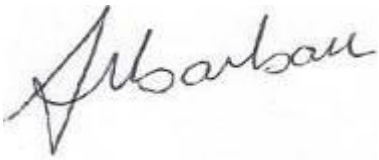
The specialist declaration of independence in terms of the Regulations_

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):

22 July 2025

Date: