SOCIO-ECONOMIC IMPACT ASSESSMENT FOR THE MUTSHO SOLAR POWER PROJECT (MUTSHO SOLAR PV4) ON A SITE NEAR MUSINA, LIMPOPO PROVINCE

Socio-Economic Impact Assessment
EIA Report - (Mutsho Solar PV4)
September 2022

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Abbreviations

NERSA	National Energy Regulator South Africa
JET	Just Energy Transition
IISD	International Institute for Sustainable Development
TIPS	Trade & Industry Policy Strategies
MW	Mega Watt
IRP	Integrated Resource Plan
WGBI	World Government Bond Index
GDP	Gross Domestic Product
SACCI	South African Chamber of Commerce and Industry
BCI	Business Confidence Index
FDI	Foreign Direct Investment
GVA	Gross Value Added
CAGR	Compound Average Growth Rate
AOI	Area of Impact
EMPr	Environmental Management Programme
DMRE's	Department of Mineral Resources and Energy's
REIPPP	Renewable Energy Independent Power Producer Procurement

Specialist Details

Company Name:	**Urban-Econ Development Economists (Pty)Ltd**
Company Profile:	**URBAN-ECON** Development Economists (Pty) Ltd is a professional consultancy firm specialising in the field of development economics. Development economics, as advocated by URBAN-ECON, refers to the field of research where spatial principles are applied in an economic context. **URBAN-ECON** combines specialised skills, extensive experience, professional ethics and personal service delivery to provide appropriate and practical economically viable solutions. A personal approach in efficient service delivery ensures that project deliverables align with the clients' needs, therefore equipping the client with the necessary knowledge to make informed decisions.
Economic Assessment Practitioner Managing the Report	**Pierre van Jaarsveld** Cell: +27 82 828 9374 Email: pierre@urban-econ.com Position: Manager Qualification: B.TRP HONS (Town and Regional Planning) Experience: 15 Years Memberships: Economics Society of South Africa (ESSA) - 00116 Brief Profile: **Pierre van Jaarsveld** completed his B.TRP Town and Regional Planning degree at the University of Pretoria, South Africa. His expertise lies in property market analysis, economic impact assessment, feasibility analysis, project management, and project implementation. He built up valuable experience in Local Economic Development, agricultural development, enterprise development and impact modelling. He has managed projects for various property and economic studies, such as integrated housing projects and socio-economic impact assessments. He has also facilitated a number of urban and rural renewal and development projects focusing on job creation opportunities and broadening the local economic base through investment attraction in bankable projects. Pierre currently serves as manager of infrastructure projects as well as of Urban-Econ in Mpumalanga and is responsible for the day-to-day operations of the office.

1 INTRODUCTION

1.1 Project Description

Urban-Econ Development Economist Pty (Ltd) has been appointed by Savannah Environmental (Pty) Ltd on behalf of the client Mutsho Power (Pty) Ltd, to provide specialist socio-economic impact assessment inputs of the proposed Mutsho Solar PV4 Facility near Musina. Mutsho Power (Pty) Ltd is proposing a development for a renewable energy facility, collectively known as the Mutsho Solar Power Project (MUTSHO SOLAR POWER PROJECT), consisting of the following segments:

- Mutsho Solar PV1
- Mutsho Solar PV2
- Mutsho Solar PV3
- **Mutsho Solar PV4**
- Associated grid infrastructure, including a battery energy storage system (the grid connection infrastructure is the subject of a separate Basic Assessment process).

Mutsho Power (Pty) Ltd proposes the construction and operation of four (4) Solar Photovoltaic (PV) Energy Facilities, each with a contracted capacity of up to 100MW, and Electrical Grid Infrastructure comprising a 132kV onsite substation (for the entire 4 x 100MW project), and a 132kV double circuit overhead power line from the onsite substation to the Nzhelele Substation to enable the connection of the four (4) Solar PV Energy Facilities to the national grid for the evacuation of the generated power. It is the developer's intention to develop the projects in a phased approach (i.e., 100MW at a time).

The four (4) Solar PV Energy Facilities and grid connection infrastructure are proposed on a site located approximately 8km south-west of Mopane and 39km south-west of Musina, within the Musina Local Municipality and the Vhembe District Municipality in the Limpopo Province on the following affected properties:

Table 1-1: Project Site Farm Portions

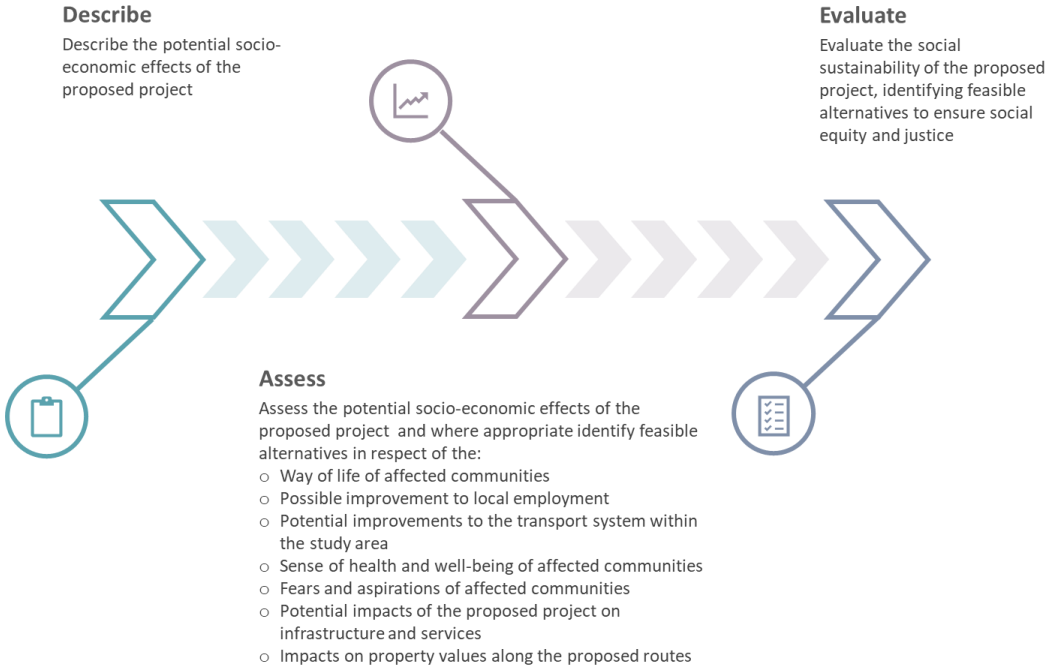
Property	Infrastructure
RE of Vrienden 589 MS	PV Facility
Grootpraat 564 MS	Grid route
RE of Steenbok 565 MS	Grid route
Farm 617 MS	Grid route
RE of Somme 611 MS	Grid route
Groot Endaba 581	Grid route
RE of Antrobus 566 MS	Grid route
Ptn 2 Scott 567 MS	Grid route

1.2 Overall Project Objective

The objective of this project is to undertake a Socio-Economic Impact Assessment (SEIA) for the Scoping and EIA phases for the MUTSHO SOLAR POWER PROJECT. This report deals with the EIA phase of the Mutsho Solar PV4 Facility.

Social-Economic Impact Assessment (SEIA) aims to assess any potential socio-economic impacts, either positive or negative, that may arise as a result of a proposed development. The socio-economic impacts will be analysed for the construction and operation phases of the proposed development. Additionally, mitigation measures to reduce the severity of negative impacts and measures to optimise the positive impacts will be included in the report.

Figure 1-1: Project Objective



1.3 Scope of Work

The scope of work for this assessment quote is in line with the NEMA protocols released in March 2020.

The Socio-Economic Impact Assessment will:

» Identify and assessment the socio-economic impacts associated with:
  - the construction phase,
  - the operational phase

- if relevant, the decommissioning, abandonment or rehabilitation phase of the proposed project

» Provide a general overview of the baseline conditions associated with the affected community

» Identify and assess any potential socio-economic impacts, either positive or negative, that may arise because of the proposed project of individuals, household, agricultural related activities including forestry and commercial businesses

» To identify and assess the economic impacts of the proposed project during construction and its operation of the economic activities (gross value added, income generation and employment due to the implementation of the project

» Identify mitigation measures to reduce the severity of negative impacts and measures to optimise the positive impacts are to be included in the report

1.4 Delineation of Study Area

Study area delineation depends on the type of economic activity that is analysed and the perceived spread of economic impacts that are expected to be generated from the project during both the construction and operation phases. The municipal area where the site is located is likely to experience some direct, indirect and induced impacts resulting from the activities on the site; however, it is unlikely that a local economy can be sufficiently diversified to supply all materials and services and support construction and operational activities from start to finish. Economic impacts therefore tend to extend far beyond municipal boundaries and spread throughout the entire national economy.

1.4.1 Primary, secondary, and tertiary study area

As indicated earlier, the effects of the proposed project will stretch across various farm portions as indicated in Table 1-1, however the project is located on only one farm portion. The potential zone of influence of the proposed project, will not be limited to these farm portions but, will extend beyond the boundaries of the project site due to the potential socio-economic impacts. As such, the following zones of influences are delineated for the purpose of the analysis:

- Primary zone of influence: For the purpose of the analysis of the impact on property values and the agricultural industry, as well as the assessment of potential local economic impacts that could ensue from the project, the primary zone of influence is determined to be the local municipality.
- Secondary and tertiary zones of influence: Economic benefits and impacts will not be limited to the site or the nearby towns and settlements only. Most of the goods and services that will be purchased for the construction and will be required for operation of the project will be

secured from outside the primary zone of influence and specifically from areas such Johannesburg. Therefore, the Limpopo Province and the rest of South Africa are defined as the secondary and tertiary zones of influence of the proposed project from an economic perspective.

1.5 Methodology

The following sections outline the research methods that have been employed in the study.

1.5.1 Project description and study area delineation

This step involves the description of the proposed projects and delineation of the core study areas for basic social impact assessment.

1.5.2 Data collection

This step will involve collection of both primary and secondary data. The former will involve virtual and/or telephonic interviews with the local government authorities, local community representatives, and affected landowners. The latter will encompass the collection and review of relevant policies, local and provincial strategic documents, and statistics presented by Stats SA and Quantec.

1.5.3 Baseline profiling

This step will focus on a description of the study areas' socio-economic environment based on the data collected in the previous step. The baseline profile will be used to interpret the impacts and measure the extent of socio- economic impacts that could ensue from the establishment of the proposed development.

1.5.4 Identification and description of the anticipated impacts

This step will include the description of the potential socio-economic impacts that could be expected to ensue considering the development's components.

1.5.5 Quantification of OPEX and CAPEX

Economic impact modelling will be undertaken for both the construction and operational phase of the project in order to quantify all upstream and downstream impacts to the local and national economy through the application of economic multipliers developed for the Limpopo Province. This will allow for impacts to be forecasted through the various sectors of the economy and provide for the magnitude of the development from a GDP_R, Production, Job creation and tax perspective. In addition, the economic impacts of the proposed SED infrastructure spend will also be modelled.

1.5.6 Interpretation and evaluation

Once the impacts are identified, they will be interpreted in the context of the affected environments, i.e., baseline profiles, and evaluated. The impacts and extent thereof will be assessed and categorised in line with the rating provided by the environmental specialist.

1.6 Source of Information

The following information will be sourced from various sources to inform the study:

- From the client:
    - Start of construction and operations
    - Cost of development and operating expenses
    - Construction methodology
    - Number of people to be employed during construction and operations
    - Contact details of I&APs as well as surrounding landowners
    - Percentage of jobs to be allocated to the local communities
    - Types of skills required and to be filled by people from the local communities
    - Small business development programme during broth construction and operational phase
- From the site visit/interviews:
    - Socio-economic challenges experienced by the affected stakeholders
    - Need and desirability of the proposed developments
    - Concerns and issues related to the developments
    - Affected stakeholders' expectations
    - Alignment with the local government vision and objectives
    - Other projects planned for the area
- From secondary sources:
    - Previously completed studies and reports
    - Stats SA Census 2011
    - StatsSA Labour Force Survey
    - Quantec Research database
    - Integrated Development Plans (IDP)
    - Spatial Development Frameworks
    - Local Municipal and Provincial strategic documents where applicable.

1.7 Assumptions, limitations and gaps in knowledge

- The secondary data sources used to compile the socio-economic baseline (demographics, dynamics of the economy) although not exhaustive, can be viewed as being indicative of broad trends within the study area.
- The study was done with the information available to the specialist within the time frames and budget specified.
- Possible impacts and stakeholder responses to these impacts cannot be predicted with complete accuracy, even when circumstances are similar, and these predictions are based on research and years of experience, taking the specific set of circumstances into account.
- It is assumed that the motivation, and ensuing planning and feasibility studies for the project were done with integrity and that all information provided to the specialist by the project proponent and its consultants to date is accurate.
- Only three of landowners responded to the survey that was distributed, with the majority of landowners not responding. A detailed response sheet is listed in Annexure B.

2 DESCRIPTION OF THE PROPOSED PROJECT

In this section a description of the proposed 4x100MW Solar PV Facility is provided. The site where the proposed project will be located and the activities that will take place on and off the site will be discussed. A preferred project site with an extent of ~1 237ha and a development area of ~277ha within the project site has been identified by Mutsho Power (Pty) Ltd as a technically suitable area for the development of the MUTSHO SOLAR POWER PROJECT.

Infrastructure associated with each of the Solar PV Facilities, which will enable the facility to supply a contracted capacity of up to 100MW (400MW combined), will include:

Table 2-1: Solar PV Facilities Description

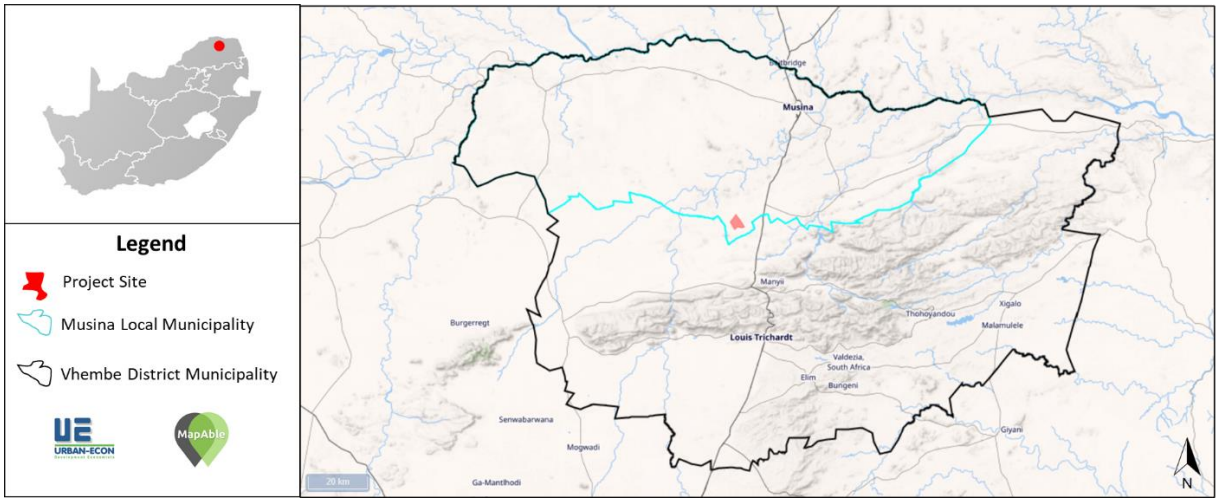
Project Name	Mutsho Solar PV1	Mutsho Solar PV2	Mutsho Solar PV3	Mutsho Solar PV4
Contracted capacity	100MW	100MW	100MW	**100MW**
Technology	Solar PV - Horizontal single axis tracking	Solar PV - Horizontal single axis tracking	Solar PV - Horizontal single axis tracking	**Solar PV - Horizontal single axis tracking**
Onsite substation (IPP Portion) size and capacity	*Capacity*: 33/132kV *Footprint*:130mx100m	**There will be a single substation location for the entire 4 x 100MW project. The onsite substation will be completely constructed as part of phase 1 but only equipped for the first 100MW. When such a time comes that the next 100 MW is constructed, the existing substation will be equipped for the additional 100MW generation capacity (i.e., additional transformers, extending the busbars, etc.). This approach will be followed as each 100MW is added.**		
Battery Energy Storage System (BESS)	*Capacity:* 80MWh *Footprint:* 100mx100m	**In a similar manner to the onsite substation, one BESS will be constructed for the entire 400MW project. The BESS will be added in a phased approach as required. Each project phase may or may not require a BESS, depending on the Power Purchase Agreement requirements.**		
Access roads (main and internal)	Existing gravel access roads will be utilised to access the project site. If the width of the existing roads is less than 4m, then it will be widened to 4m to ensure the passage of vehicles. The widened part will be covered with mud and gravel. Internal gravel roads of up to 5km in length and 4.5m in width will be required to access the PV panels and the onsite substation.	Existing gravel access roads will be utilised to access the project site. If the width of the existing roads is less than 4m, then it will be widened to 4m to ensure the passage of vehicles. The widened part will be covered with mud and gravel. Internal gravel roads of up to 5km in length and 4.5m in width will be required to access the PV panels and the onsite substation.	Existing gravel access roads will be utilised to access the project site. If the width of the existing roads is less than 4m, then it will be widened to 4m to ensure the passage of vehicles. The widened part will be covered with mud and gravel. Internal gravel roads of up to 5km in length and 4.5m in width will be required to access the PV panels and the onsite substation.	**Existing gravel access roads will be utilised to access the project site. If the width of the existing roads is less than 4m, then it will be widened to 4m to ensure the passage of vehicles. The widened part will be covered with mud and gravel.** **Internal gravel roads of up to 5km in length and 4.5m in width will be required to access the PV panels and the onsite substation.**
Other associated infrastructure	**Inverters and transformers; cabling between the project components; laydown areas; guardhouses; site offices; warehouses; and water storage tanks at the admin block for human consumption.**			

The Solar PV Facility is proposed in response to the identified objectives of the national and provincial government and local and district municipalities to develop renewable energy facilities for power generation purposes. It is the developer's intention to bid the facility under the Department of Mineral Resources and Energy's (DMRE's) Renewable Energy Independent Power Producer Procurement (REIPPP) Programme, or a similar programme, with the aim of evacuating the generated power into the national grid. This will aid in the diversification and stabilisation of the country's electricity supply, in line with the objectives of the Integrated Resource Plan (IRP) with PSPV set to inject up to 4x100MW into the national grid.

2.1 Site Location

The project is located in the Musina Local Municipality and within the Vhembe District Municipality in Limpopo. Map 2-1 below indicates the locations of the proposed MUTSHO SOLAR POWER PROJECT on a macro-level.

Map 2-1: Mutsho Solar Power Project Location



Source: MapAble, 2022

2.2 Description of Planned Construction Activities and Methodology

A reticulated Rcot Piles approach will be followed. Earthwork backfilling will be carried out 7 days after concrete pouring. Backfill layered compaction, and reserve settlement. After the concrete is poured, the surface watering curing must be carried out for 28 days. When the concrete reaches the design strength, the equipment can be installed. The duration for construction is calculated at 16 months.

3 NEEDS AND DESIRABILITY

South Africa is currently experiencing electricity supply challenges, which in turn is leading to periodic load shedding. The impact of load shedding has had massive effects on the economy and society at large. Furthermore, impacts of COVID-19, reduced business confidence and national sub-investment downgrades have all had impacts on the economy of the country. This section outlines the need and desirability of the proposed project based on the above-mentioned aspects.

3.1.1 South African electricity supply

South Africa's energy mix is largely focused on the use of non-renewable fossil fuels. The Department of Energy (DoE) notes that 83% of electricity production in South Africa is supplied by coal followed distantly by 6% pumped storage, 5% gas, 4% nuclear, 2% hydroelectric and 0,2% wind (National Department of Energy (DOE), 2019).

It is noted by the DoE that renewables are the future of energy generation in South Africa especially as the costs of generating electricity through traditional means increases (National Department of Energy (DOE), 2019). South Africa is also considered to be the world's 12th largest emitter of greenhouse gases (McSweeney & Timperley, 2018). The CO_2 emissions are principally due to a heavy reliance on coal to produce energy. South Africa has also pledged (through the Paris Accord) to reduce emissions and cap the amount of greenhouse gasses that would be emitted. This commitment was aligned to the national planning policy which promoted the utilisation of renewable resources to generate energy (McSweeney & Timperley, 2018).

Globally, there has been an increasing shift towards the responsible utilisation of non-renewable energy sources and towards sustainable and non-polluting methods of energy production. The Renewables 2019 Global Status Report GSR (The Renewables 2019 Global Status Report, 2019) noted that there has been an increase of utilisation of renewable energy around the world and there has been a steady increase in the amount of MW produced by sustainable sources (REN21, 2019). Renewables made up 29% of global electricity generation by the end of 2020. Led by wind power and solar PV, more than 256 GW of capacity was added in 2020, an increase of nearly 10% in total installed renewable power capacity (Renewables 2021, 2021).

Most areas in South Africa average more than 2 500 hours of sunshine per year, and average solar-radiation levels range between 4.5 and 6.5kWh/m^2 in one day. The southern African region, and in fact the whole of Africa, has sunshine all year round.

The annual 24-hour global solar radiation average is about 220 W/m^2 for South Africa, compared with about 150 W/m^2 for parts of the USA, and about 100 W/m^2 for Europe and the United Kingdom. This makes South Africa's local resource one of the highest in the world (Department of Energy, 2022). The use of solar energy is the most readily accessible resource in South Africa. It lends itself to a number of potential uses and the country's solar-equipment industry is developing. Annual photovoltaic (PV) panel-assembly capacity totals 5MW, and a number of companies in South Africa manufacture solar water-heaters.

Additionally, the supply of electricity in South Africa is currently exceptionally constrained. Load shedding in South Africa began in 2007 as a result of insufficient electricity generating capacity by the government-owned national power utility, Eskom. The advent of load shedding has brought numerous direct economic impacts, indirect economic impacts and social impacts to South Africa. These are outlined in the table below:

Table 3-1: The consequences of power interruptions

Direct Economic Impacts	Indirect Economic Impacts	Social Impacts
Loss of business and manufacturing production	Cost of postponed income	Loss of leisure time
Restart costs	Loss of market share	Risks to health and safety
Equipment damage	Limitations to expansion and growth of production	
Raw material spoilage	Loss of competitive advantages	
Cost of backup systems	Loss of investor confidence	

Source: (Goldberg, 2015)

These costs are associated with losses to productivity and limitation of growth for companies and as a result limit the growth of the country (Goldberg, 2015). Load shedding thus threatens jobs, economic recovery, and the livelihood of many South Africans around the country.

Local research done through government agencies has also noted the need for change in the electricity industry. The National Energy Regulator of South Africa (NERSA), (National Electricity Industry Regulation: A different focus on the electricity supply industry challenges and possible solutions, 2020) has examined the electricity supply industry challenges and possible solutions for those challenges and has maintained that continued price increases for electricity is unsustainable as it reduces demand. The increase in electricity prices has led to an increase in export of un-beneficiated ore which is likely to increase as the electricity price increases (NERSA, 2020). The latest data for electricity backlog from the DoE, per province is for 2017. The data is illustrated in Table 3-2 below.

Table 3-2: South Africa Provincial Electricity Backlog, 2017

PROVINCE	PROJECTED HOUSEHOLDS (APRIL TO MARCH 2017)	HOUSES WITHOUT ELECTRICITY	HOUSES ELECTRIFIED	ACCESS PER PROVINCE
EASTERN CAPE	1 826 480	353 125	1 473 355	80,67%
FREE STATE	891 184	110 352	780 832	87,62%
GAUTENG	4 231 251	704 248	3 527 003	83,36%
KWAZULU NATAL	2 748 760	501 262	2 247 498	81,76%
MPUMALANGA	1 164 143	98 533	1 065 610	91,54%
NORTHERN CAPE	326 250	41 071	285 179	87,41%
LIMPOPO	1 534 999	50 689	1 484 310	96,70%
NORTH WEST	1 149 559	152 075	997 484	86,77%
WESTERN CAPE	1 768 694	160 547	1 608 147	90,92%
TOTAL	**15 641 320**	**2 171 902**	**13 469 418**	**86,11%**

Source: (Department of Energy, 2022)

It is evident that South Africa experienced an electricity backlog of over 2 million households. A total percentage of 86,11% of households in South Africa indicated access to electricity in 2017. Eastern Cape has the lowest access to electricity, with Limpopo the highest.

It can be assumed that the electricity backlog since 2017 will have continued its trend, with the shortage and lack of electricity supply experienced since 2017 across the country. It has also been noted that there has been a reduction in export volumes of minerals which is likely a result of the increased price of electricity and unstable electricity supply. It has also been noted that the negative trend in exports mimic the Gross Domestic Product (GDP) growth trends, which seems to be inversely proportional to electricity prices (NERSA, 2020). NERSA has also noted that electricity price is a significant cost driver for some sectors. The increase in electricity cost has a greater impact on some sectors such as the metals, steel and mining industry and less of an impact on other industries such as the transport industry.

New energy trends have also been noted by NERSA (NERSA, 2020). Their position is that the obligation to supply the majority of domestic, commercial, and small industries energy (day load) should be removed from Eskom and be supplied by renewable energy IPP sources (NERSA, 2020). It can thus be deduced that at a national level any additional energy production which is sustainable, and renewable would improve energy security, further South Africa's goals towards international agreements, provide employment and assist in improving investor confidence in the country.

3.1.2 Just Energy Transition (JET)

According to International Institute for Sustainable Development (IISD), (Strategies for just energy transitions, 2018), energy transitions are shifts in the way people produce and consume energy using different technologies and sources. A low-carbon energy transition is a type of energy transition involving a shift from high-carbon energy sources such as oil, gas and coal to low-carbon and zero-carbon energy sources such as renewables.

A just energy transition is a negotiated vision and process centred on dialogue, supported by a set of guiding principles, to shift practices in energy production and consumption. It aims to minimize negative impacts on workers and communities with stakes in high-carbon sectors that will wind down, and to maximize positive opportunities for new decent jobs in the low-carbon growth sectors of the future. It strives to ensure that the costs and benefits of the transition are equitably shared. Acting sooner rather than later can make energy transitions less expensive and more equitable, while also providing new opportunities for countries to build low-carbon industries. Nonetheless, overcoming "carbon lock-in" is difficult, and targeted political and media efforts are required to speed up just energy transitions. Much may be done to help these processes, which are either underway or in the early stages in many nations. Based on case studies and research, the table below lists concrete steps that governments can take to begin or accelerate a just energy transition (IISD, 2018).

Table 3-3: Implementation Steps for JET

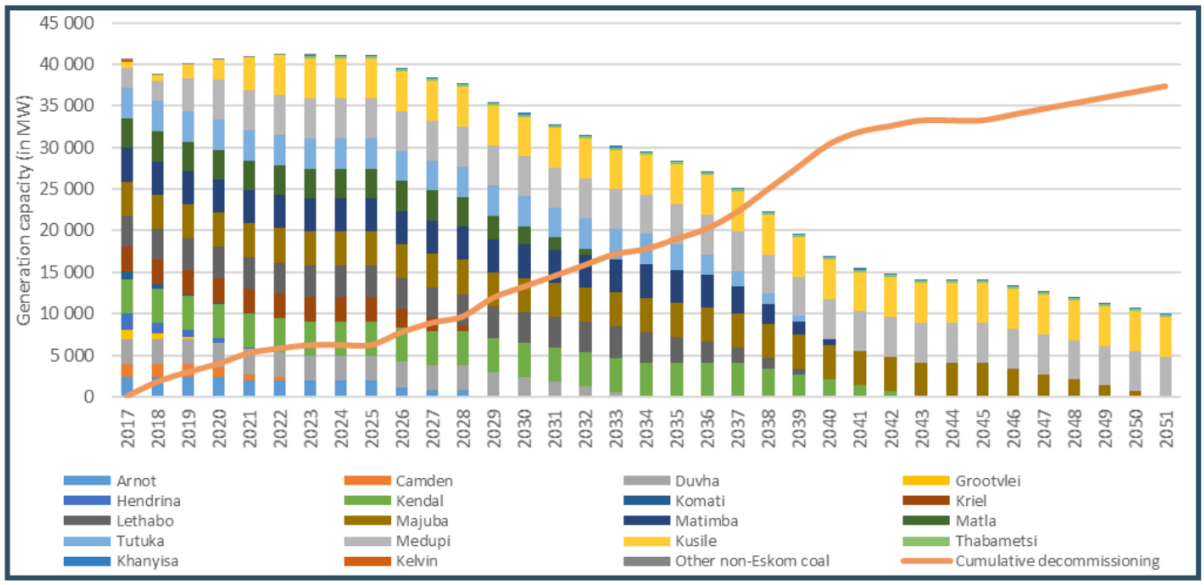
Understanding the context	• Map the political economy of an energy transition • Use detailed analyses of positive and negative impacts of an energy transition (at national, regional or even plant level)
Identifying champions	• Facilitate international and regional exchange and peer learning between countries at different stages of energy transition processes, including engagement with labour, businesses, civil society, especially for developing country contexts • Round tables at the country level to start or enhance a conversation on a just transition between all concerned stakeholders • High-level dialogue between countries in similar situations to promote the idea of a just transition at the highest levels of government (e.g., at the EU, OECD or G20 level or bilaterally)
Making the case	• Develop communications strategies for just energy transitions • Set up inclusive processes for “two-way communications” • Train government officials in communications
Implementing just transition measures	• Promote localized green jobs, including in decentralized energy and energy efficiency, and link this explicitly to the energy transition • Mobilize additional funding to promote visible and tangible just transition measures, and communicate about the benefits • Share best practices of just transition measures

Source: (International Institute for Sustainable Development, 2018)

According to Trade & Industry Policy Strategies (TIPS) (Making sense of jobs in South Africa’s just energy transition: Managing the impact of a coal transition on employment, 2021), South Africa's just transition plan is both essential and conspicuously absent as the reality of a coal transition and coal power decommissioning approaches.

The need to manage the transition's effects on employees and local economic development, particularly in coal-dependent regions and communities, is urgent. It is necessary to have a credible fact base from which to make suitable and widely supported decisions. Several specific political consensuses must be brokered in this conceptual clearing in order to enable policy creation and execution, as well as investment, for a green and just transition.

Figure 3-1: South Africa's coal-based generation capacity and scheduled decommissioning



Source: (Trade & Industry Policy Strategies, 2021)

The 2019 Integrated Resource Plan (IRP) for electricity scheduled the decommissioning of Eskom's fleet of coal-fired power stations, stipulating that 5 200 MW of coal-based generation capacity will be decommissioned by 2022, 11 000 MW by 2030, and 35 000 MW by 2050. This trajectory will fundamentally alter the energy mix in South Africa with broad socio-economic implications.

3.1.3 Likely impact of COVID-19 on the South African economy

As stated above, the impact of COVID-19 has yet to be fully quantified as the pandemic is still ongoing at the time of drafting this report. Predictions from various sources indicate that the impact of COVID-19 on the global economy may be similar or slightly worse than the global financial crisis of 2007-2008. Indeed, at this point the large declines in bank equity prices since mid-January 2020 suggest that investors are concerned about profitability and prospects for the banking sector (Adrian & Natalucci, 2020). For example, measures of bank capitalisation based on market prices are now worse than during the 2008 global financial crisis in many countries. The concern is that banks and other financial intermediaries may act as an amplifier should the crisis deepen further (Adrian & Natalucci, 2020).

Emerging markets risk bearing the heaviest burden in this time of distress. In fact, emerging markets have experienced the sharpest portfolio flow reversal on record—about $100 billion or 0.4 percent of their GDP—posing stark challenges to more vulnerable countries (Adrian & Natalucci, 2020). South Africa has not been spared this burden, which has been exacerbated as a result of the sub-investment downgrade by credit ratings agencies in 2017 and 2020.

At a local level, sources expect the GDP of South Africa to contract between 4%-8% e-SEK (Making sense of COVID-19's impact on South African businesses, 2020) and van Week (SA's "big bazooka" stimulus package explained, 2020), with a revenue shortfall of between R 70 and R 100 billion. The budget deficit is expected to accelerate from an initial forecast of 6.8% of GDP to more than 10% (van Wyk C. , 2020). Once this shock to the economic and social system has been dealt with at a national and international level, there will be a need to strengthen and develop the South African economy. One of the necessary components of a functional economy will be the provision of a stable electricity supply. The South African energy provision system is currently and has in the past decade been, notoriously unreliable which has had a major impact on investor confidence and the overall development of the country.

3.1.4 National sub-investment downgrades

On March 27th, 2020 Moody's Investor Service (Moody's) downgraded South Africa's long-term foreign-currency and local-currency issuer ratings to Ba1 from Baa3 (Junk Status). Moody's is the third and last of the major credit rating agencies to downgrade South Africa to junk status after Standard & Poor's and Fitch's both downgraded South Africa in 2017 (Duvenage, 2020).

While these sub-investment ratings are worrying for the country, it is difficult to understand and predict what will happen to the currency in the short and medium term and currency fluctuations may occur. This is largely as a result of global dynamics that are currently in play, in particular the appetite for safe haven assets which is a far more powerful force than any of the local challenges that are emerging (Duvenage, 2020).

One of the known impacts of the downgrade was that South Africa fell out of the World Government Bond Index (WGBI) and other popular bond indexes, an index that measures the performance of fixed-rate, local currency, investment-grade sovereign bonds. The sub-investment rating means that South Africa has dropped out of some of the widely used global bond indexes and forced international funds which track these indexes to sell South African bonds.

It is estimated that between $22-$28 billion in capital has already flowed out of local markets since 2018 with the recent downgrade account for between $1,5 and $8 billion (Duvenage, 2020). This will likely result in a rise in government debt-servicing costs which could bring strain to the already frail economic system with revenue shortfalls and contraction in GDP (Duvenage, 2020). Furthermore, on the 29th April 2020, Standard & Poors Global Ratings further downgraded South Africa's sovereign credit rating into non-investment grade citing the impact of COVID-19 on South Africa's public finances and economic growth as one of the reasons for its ratings action (Swart & Goncalves, 2020).

The downgrade casts further doubt over South Africa's ability to recover post COVID-19. Some other impacts expected from the downgrade, include the deterioration of South Africa's credit reputation, less access to conventional credit markets; deterioration in consumer and business confidence leading to a potential contraction in private investment and consumption demand; South Africa losing its status in various bond indices whereby some bond investors with mandate limitations are prohibited from buying the country's bonds; and a large forex outflow as foreign investors dump South African debt (Swart & Goncalves, 2020).

In terms of direct impacts on the construction of the proposed MUTSHO SOLAR POWER PROJECT is that of currency fluctuations. With an unstable local currency, there may be unexpected and unplanned costs involved when importing technology for the project. The development and utilisation of local supply chains could go a long way in minimising the risks associated with currency fluctuations.

3.1.5 Assessment of business confidence levels in South Africa

The South African Chamber of Commerce and Industry (SACCI) Business Confidence Index (BCI) increased by 7.4 index points from 86.5 index points in 2020 to 93.9 index points in 2021. This was followed by a slight increase in BCI to 95.6 in March 2022. However, BCI levels continued on its recovery path after the unrests and disruptions in July 2021. The unexpected Russian military campaign in Ukraine added to uncertainty in the global business environment and caused the BCI to lose thrust after indicating a faster recovery in January and February 2022 as the Covid-19 effect waned. The SACCI BCI average for the first quarter of 2022 improved by 2.3 index points over the fourth quarter of 2021 to 95.5 and is 1.2 index points higher than the first quarter of 2021. (SACCI, 2020a) (SACCI, 2020b).

The improved BCI over the previous year is primarily due to more new vehicles sold; increased real value of building plans passed; and a stronger rand exchange rate, despite higher nominal interest rates and a still lower real prime rate than a year ago.

The most prominent negative factors that hampered business confidence were higher inflation than in March 2021, lower merchandise export volumes, and significantly higher energy prices. The following indicators should be taken into consideration when analysing the business environment as they negatively contributed to the BCI:

- Energy Supply
- Exports
- Imports
- Inflation
- Share prices (SACCI, 2020a) (SACCI, 2020b).

However, there were positive contributors to the BCI, including:

- Manufacturing
- Vehicle sales
- Retail sales
- Construction – buildings
- Real finance cost
- Preciouses metal prices
- Rand exchange rate (SACCI, 2020a) (SACCI, 2020b).

The global economy continues to move from one uncertainty to the next, affecting economies all over the world. After the Covid-19 pandemic, global interaction and business links are once again disrupted. The global interdependence was threatened by the Covid-19 lockdown, and the conflict between Russia and Ukraine has once again exposed the vulnerability of global trade and linkages. This has an impact on supply chain logistics as well as a more pragmatic view on self-reliance where possible, putting international trade's comparative advantages under pressure. So far, the short-term effect of global reaction has been to improve on the setback of Covid19 and get economies back on track. However, the latest geopolitical conflicts should be approached with caution, as the global economy remains vulnerable and susceptible to further disruptions. Against this backdrop, South Africa's business confidence may struggle to maintain its current higher levels. The promotion of investor confidence in South Africa among both foreign and domestic investors remains critical to the country's approach to global issues.

The further development of renewable energy would likely lead to improved supply of electricity for the development of the economy. This is likely to improve business confidence in the country as sustainable energy supply is one of the key concerns of business moving forward. International investors have also noted, with concern, that the lack of availability of a consistent energy system does not lend itself to growth of Foreign Direct Investment (FDI) (Santander, 2020). The development of renewable energy systems is seen by local and foreign business owners as the future of energy generation and may increase business confidence both locally and internationally (Kovaleski, 2019).

3.1.6 Agricultural Price Increases

Fuel and diesel are commonly used for tillage, harvesting, machinery and transportation, making them a critical component for both small-scale and commercial farmers, as well as the entire agricultural value chain (Maree, 2019). According to van Wyk, (SABC News, 2018) the continuous rise in fuel price is having a negative impact on the agricultural sector. Diesel is now the second most expensive input cost for grain farmers after fertiliser. In a country where maize is a staple food, the rise in diesel will also have a negative effect on poor communities. Rising input costs — higher fuel, labour, fertiliser, energy and agrochemical costs for those in field crops and horticulture — are squeezing producers and calls have been made for some sort of intervention. Regarding direct input products, herbicides such as glyphosate, atrazine and metolachlor, prices were up by 99%, 33% and 32% respectively in 2021. The same trend persists in major fertilisers such as ammonium nitrate, urea and potassium chloride, the prices of which were up 107%, 58% and 125% respectively (Sihlobo & Kapuya, 2021).

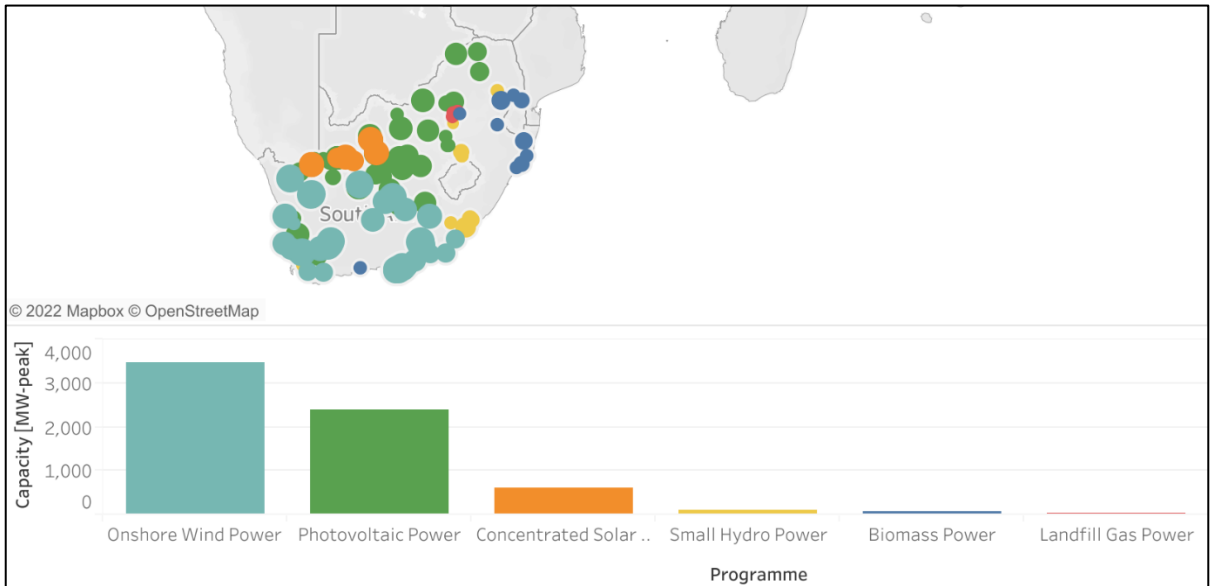
These increases in input costs continuously put pressure on farmers on a daily basis. It is worth mentioning that the proposed project could help diversify the landowner's income, potentially helping to counter these escalating costs.

3.1.7 Renewable Energy South Africa

The demand for Renewable Energy in the country is increasing on an annual basis. The figure below illustrated the various RE facilities and where in South Africa it is located. It is clear that the majority of wind power facilities are located on the shores on South Africa, whereas the PV and concentrated solar facilities are located in the central and northern parts.

Wind power facilities indicates the largest capacity with 3 466 MW, followed by PV facilities, 2 371 MW and concentrated solar 600 MW. The total RE capacity in South Africa is 6 632 MW in 2022.

Figure 3-2: Renewable Energy Facilities South Africa, 2022



	Programme								
	Capacity [MW-peak]								Capacity ..
Technology Category	Eskom	IPP 1	IPP 2	IPP 3	IPP 3.5	IPP 4	IPP Small	WEPS	Total
Landfill Gas Power				18					18
Biomass Power				17		25	10	33	84
Small Hydro Power	61		14			5		12	92
Concentrated Solar Power		150	50	200	200				600
Photovoltaic Power		626	417	435		813	80		2,371
Onshore Wind Power	100	649	559	787		1,363	9		3,466
Grand Total	161	1,424	1,040	1,457	200	2,205	99	45	6,632

Source: (Department of Energy, 2022)

The needs and desirability section outlines the importance of the project development to the economy and society at large of the country.

4 POLICY REVIEW AND PROJECT ALIGNMENT

This chapter examines the key legislation and polices relevant to the proposed development and includes a review of pertinent national, provincial and local polices that have a direct bearing on the development. Following this the chapter outlines the needs and desirability of such a development accordingly.

4.1 Policy and Planning Environment

The overall aim of this review process is to provide insight into the government's priorities and plans in terms of renewable energies. This assists in determining the relevance of the project with regard to the development objectives of the various spheres of government as well as in identifying potential developmental conflicts that the project might create. A brief review of the most relevant documents is provided in Table 4-1.

Table 4-1: Brief Overview of relevant policies

Policy	Key Policy Objectives	Source
National Policy: South Africa		
National Development Plan 2030	• Creating jobs and livelihoods • Expanding infrastructure • Transitioning to a low-carbon economy • Transforming urban and rural spaces • Improving education and training • Providing quality health care • Building a capable state • Transforming society and uniting the nation • Fighting corruption and enhancing accountability	(NPC, 2012)
New Growth Path Framework 2011	• Infrastructure investment • Main economic sectors as employment sectors • Seizing the potential of new economies • Investing in social capital and public services • Fostering rural development and regional integration	(South African Government, 2011)
Renewable Energy Vision 2030 South Africa	• Renewable energy as an exceptional source of flexible supply within the context of uncertain energy demand • Comprehensive renewable energy base will support a resilient South African future • A sustainable energy mix that excludes undue risks for the environment of society	(World Wildlife Fund, 2014)
Integrated Resource Plan 2019	• The IRP (2019) has indicated that South Africa should continue to track a diversified energy mix which lessens reliance on a few primary energy sources. • The IRP document expects a total of 9 980 MW of additional wind capacity to be introduced in South Africa by 2030. The wind Independent Power Producers (IPPs) constitute the largest single renewables technology procured to date under the Renewable Energy Independent Power Producer Procurement Programme.	(Department of Energy, 2019)

Policy	Key Policy Objectives	Source

	• Allocations to safeguard the development of wind energy projects aligned with the Integrated Resource Plan (IRP) 2010 should continue to be pursued:
	  ○ Ensure energy security and supply
	  ○ Reduce environmental impacts
	  ○ Endorse job creation and localisation
	  ○ Lessen cost of energy
	  ○ Reduce water consumption
	  ○ Diversify supply sources
	  ○ Promote energy efficiency
	  ○ Promote energy access
	
	Additionally, the IRP (2019) indicates that:
	• Wind energy will be 22.5% of the energy mix compared to solar at 11% by 2030	

The Constitution of South Africa 1996	• "Everyone has the right to an environment that is not harmful to their health or well-being" (S24) • The environment should be protected for the benefit of present and future generations, through reasonable legislative and other measures that: • Prevent pollution and ecological degradation • Promote conservation • Secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development	(Republic of South Africa, 1996)
White Paper on Energy Policy of the Republic of South Africa 1998	• Seeks to ensure that an equitable level of national resources is invested in renewable technologies, given their potential and compared to investments in other energy supply options • Aims to create energy security by diversifying the energy supply and energy carriers	(Department of Minerals and Energy, 1998)
White Paper on the Renewable Energy Policy of RSA 2003	• Pledges government support for the development, demonstration and implementation of renewable energy sources for both small and large-scale applications	(Department of Minerals and Energy, 2003)
Provincial Policy: Limpopo		
Limpopo Employment, Growth and Development Plan, 2009 – 2014	• Highlights the current economic landscape of Limpopo with a view of the future growth and development of the province. • The LEGDP prioritise sustainable resource management by diversification of the energy mix in pursuit of renewable energy alternatives and the promotion of energy efficiency The Limpopo province will prioritise the key challenges: • Authoritative voice for renewable energies across the province • Regulatory and capacity support in facilitating the use of renewable energy • High expertise in the use of all forms of renewable energy and integration into energy systems covering technological, economical and institutional, cultural, social and environmental aspects • Relevant information including reliable data on the potential of renewable energy, best practices, effective financial mechanisms and state-of-the-art technological expertise.	(Limpopo Provincial Government, 2009)

Policy	Key Policy Objectives	Source
	• The LEGDP further promotes renewable energy in the province and is prioritising (REP) Renewable Energy Partnership.	
Limpopo Development Plan 2015 - 2019	The purpose of the LDP: • Outlines the contribution from Limpopo to the NDP • Provide a framework for strategic plans • Create a structure for the constructive participation of private sector business and organised labour towards the achievement of provincial growth and development objective • The LDP supports the increase in interest of renewable energy • Solar PV electricity generation is listed as a priority infrastructure project within the LDP. • The LDP states that the LEDET department (Limpopo Economic Development, Environment and Tourism) will be responsible for implementing the Green Economy Strategy. • The Green Economy Unit will also be responsible to drive the provincial electricity risk mitigation strategy by way of new solar photovoltaic projects, as well the promotion of co-generation and a provincial electricity conservation campaign.	(Limpopo Provincial Government, 2015)
District & Local Municipal Policy: Vhembe DM & Musina LM		
Vhembe District Municipality IDP, 2021	• The Vhembe District IDP acknowledges green economy development as a primary objective. The IDP further states that investment in research for new technologies will be prioritised. • The IDP confirms that the district together with UNIVEN/Gondal/CLGH and Eskom are engaged in supporting the Bio energy projects and manufacturing of Solar power in the district.	(Vhembe District Municipality, 2021)
Musina Local Municipality IDP, 2022	• Solar energy is listed as an opportunity within the local municipalities' IDP.	(Musina Local Municipality, 2022)

The review of the policy environment suggests that utilisation, application and investment in renewable energy sources in South Africa is considered to be an integral means of reducing the carbon footprint of the country, diversifying the national economy, reducing poverty and creating much-needed additional sources of energy. Any project contributing to the above-mentioned objectives can therefore be considered strategically important to South Africa.

From a provincial and municipal policy perspective the facilitation of renewable energy projects and interventions that relate to the broader green economy are seen as a priority in terms of the policies and strategies developed. However, Local Economic Development Plans in both the district and local municipalities should be updated, to ensure clear objectives for these areas to be developed and sustainable economic development.

5 SOCIO-ECONOMIC PROFILE OF THE STUDY AREA

This section documents various aspects of the primary study area including, population and household numbers, income levels and employment. In addition, the chapter also reviews the economic structure and performance of the study area.

The intention of this review is to provide an overview of the socio-economic context of the area so as to better understand the dynamics of the area and to inform the SEIA process The Limpopo Province has been identified, as well as Musina local municipality that falls within the Vhembe district.

5.1 Population, Income and Employment Profile

The Musina Local Municipality falls within the Vhembe District Municipality, whereas Musina account for 24% of the population and of the households in the district.

Population growth between 2010 and 2020 was 3,0% year-on-year for the local municipality which compared favourably to the district municipality (1,1%) and Limpopo (0,9%) over the same period. The high population growth in Musina indicates that the municipality offers several opportunities, attracting people towards the area, this can also be motivated by the higher average monthly household income, which is the highest (R5 450).

Table 5-1: Overview of the primary study areas population structure

Indicator	Limpopo	Vhembe District Municipality	Musina Local Municipality
Area (km^2)	125 753	25 596	7 576
Population	5 953 748	1 458 007	79 224
Number of Households	1 555 907	375 966	23 401
Population density (km^2)	47	56	10
Average household size	3,8	3,8	3,3
Annual population growth (2010-2020)	0,9%	1,1%	3,0%
Average monthly household income	**R4 713**	**R3 887**	**R5 450**

Source: Quantec Standardised Regional (2022); Stats SA (2011) forecast to 2022

The average household income for the Vhembe District Municipality in 2022 is estimated to be R3 887,00. The proposed MUTSHO SOLAR POWER PROJECT will also attract additional population to the study area as several employment opportunities will be created through the development, this will ensure a sustainable population growth.

Table 5-2: Employment profile of the study areas

Indicator	Limpopo	Vhembe District Municipality	Musina Local Municipality
Employed	1 028 379	225 033	28 374
Unemployment Rate	35,9%	37,1%	20,2%
Not Economically Active	1 907 905	501 670	18 209
Labour force participation rate	29,3%	26,2%	52,8%

Source: Quantec Standardised Regional (2022)

Table 5-2 indicates the number of people employed and not economically active, the percentage of the population unemployed as well as the labour force participation rate for areas in review. The relatively lower unemployment rate and higher labour force participation relative to the district averages further suggests that the local municipality are subject to inward migration due to the employment opportunities available within the local municipalities.

5.2 Economic Profile

The following subsection outlines the economic profile at a national as well as a provincial, district municipal and local municipal level.

Nationally, South Africa's Gross Domestic Product (GDP) recorded its fourth consecutive quarter growth, expanding with 1,2% in the second quarter of 2021 (April-June), this followed the increase of 1% in the first quarter (January-March). However, despite the gains made over the last four quarters, the economy is 1,4% smaller than what it was before the COVID-19 pandemic (StatsSA, 2021).

5.2.1 Regional economic profile

The GVA (Gross Value Added) of the Musina Local Municipality was R9,8 million in 2020 (constant prices), which collectively accounts for just over 12% of the district economy's GVA, and 1,8% of the Limpopo's. The proposed MUTSHO SOLAR POWER PROJECT will contribute further to the economy and ensure sustainability.

Table 5-3: Economic structure between 2010 and 2020 (constant 2015 prices; R' millions)

Sector	Limpopo		Vhembe District Municipality		Musina Local Municipality	
	2010	2020	2010	2020	2010	2020
Agriculture and hunting	4,76%	7,52%	5,49%	9,29%	20,86%	29,41%
Mining and quarrying	26,55%	26,25%	3,19%	2,26%	14,43%	8,45%
Manufacturing	6,40%	5,91%	4,94%	3,97%	4,88%	3,89%
Electricity, gas and water	4,12%	3,38%	4,78%	3,55%	2,00%	1,61%
Construction	6,27%	4,93%	8,42%	5,28%	5,19%	3,74%
Trade	13,03%	11,54%	17,07%	15,55%	19,68%	21,24%
Transport and communication	5,20%	4,50%	6,77%	5,70%	7,07%	4,59%
Finance and business services	15,00%	16,61%	18,20%	20,71%	14,95%	16,27%
Community services	4,95%	5,38%	8,49%	9,45%	3,95%	4,18%
General government	13,72%	13,97%	22,65%	24,25%	6,98%	6,61%
TOTAL GVA	**R495 071**	**R547 117**	**R77 736**	**R82 798**	**R7 428**	**R9 857**

Source: Quantec Standardised Regional (2022)

The growth of the local municipality over the last few years was largely due to the strong performance of the agriculture, trade, finance business services sectors. Mining and quarrying indicated a contraction in the last 10-years in the district and local municipalities but remains a large contributor in the economy. Electricity is a small sized industry in the municipality, any new development would likely greatly increase the contribution of the utilities and construction sectors to the GVA.

Table 5-4: GVA per sector for the Musina Local Municipality (2015 constant prices; in R' millions)

Sector	Musina Local Municipality		
	2010	2020	Compound Annual Growth Rate (CAGR)
Agriculture and hunting	R1 550	R2 899	6,46%
Mining and quarrying	R1 072	R833	-2,49%
Manufacturing	R363	R384	0,57%
Electricity, gas and water	R149	R159	0,68%
Construction	R385	R368	-0,45%
Trade	R1 462	R2 093	3,65%
Transport and communication	R525	R453	-1,48%
Finance and business services	R1 111	R1 603	3,74%
Community services	R293	R412	3,46%
General government	R518	R652	2,32%
TOTAL GVA	**R7 428,4**	**R9 857,1**	**2,87%**

Source: Quantec Standardised Regional (2022)

Over the last ten years, the Compound Average Growth Rate (CAGR) of Musina Municipality increased with 2,87%. The sectors responsible for the increase of the overall GVA a growth over the 10-year period in Musina Local Municipality was agriculture and trade. The mining, construction and transport sectors indicated a contraction. The utilities sector indicates a growth of 0,68%, the proposed MUTSHO SOLAR POWER PROJECT will further increase this sector's performance.

As evident by Table 5-5 the agriculture sector employs the most with a 38,92% contribution in 2020 in the Musina Local Municipality. The utilities sector employs the least to employment in the municipality, the proposed MUTSHO SOLAR POWER PROJECT will increase the number of employees in this sector. The local agricultural sector includes limited subsistence (informal) farming, unlike other areas in Limpopo, where this practice is more dominant. The presence of this subsistence agricultural activity means that the number of households that are dependent on agricultural activities for income could be slightly greater than the figures presented in Table 5-5. This is due to the fact that the table only indicates those individuals that are formally employed in the agricultural sector.

Table 5-5: Employment structure and contribution of the Musina Local Municipality between 2010 and 2020 per economic sector

Sector	Musina Local Municipality	
	2010	2020
Agriculture and hunting	41,32%	38,92%
Mining and quarrying	1,15%	0,86%
Manufacturing	3,99%	3,52%
Electricity, gas, and water	0,18%	0,21%
Construction	3,37%	3,26%
Trade	18,22%	22,41%
Transport and communication	3,22%	3,45%
Finance and business services	8,80%	9,48%
Community services	3,91%	4,12%
General government	15,85%	13,77%
TOTAL EMPLOYMENT	**23 110**	**28 374**

Source: Quantec Standardised Regional (2022)

In general, agricultural activities are relatively labour intensive, thus a small decline in the size of the sector would generally lead to greater job losses than for example in manufacturing or utilities, which tend to be more capital intensive in nature. The agricultural sector is also frequently one of the largest employers in rural areas and it is for these two reasons that the sector is generally prioritised in development strategies.

5.3 Profile of the Immediately Affected Environment

A profile of the immediately affected environment was developed utilising available secondary information and surveys conducted with landowners of the affected area.

In order to develop a comprehensive understanding of formal economic activities and businesses that operate within the broader study area in which the Project is proposed, a database of farm portions and corresponding ownership was created. The intention of this database formulation, and subsequent contact with landowners was to solicit business, and enterprise-specific data, so as to better understand the economic activity and employment dynamics of the area. It should be noted that majority of owners chose not to respond to the survey, or to some of the specific questions.

The engagements were carried out via Survey Monkey, between July 2022 and September 2022, with follow up phone calls and emails. Table 5-6 below presents a synopsis of the engagements carried out with affected landowners. A full list of landowners contacted is presented in Annexure B.

Table 5-6: Survey & Landowner Engagements

Indicator	Number
Total farms identified	9
Total number of unique owners identified	7
Total number of owners spoken to telephonically	4
Total number of surveys distributed via emailed or electronic link	7
Total number of interviews and/or completed responses received	3

5.3.1 Land use profile of the directly affected area

The land portions on which the Project will be located are currently used for commercial tourism, such as trophy hunting and game breeding (predominant use), however, one landowner indicated that they also use the farm for commercial agriculture purposes, such as livestock farming. The majority of trophy hunters in the area is local, with an average of 10-15 visitors each year, followed by international hunters (4-6 visitors per year).

5.3.2 Socio-economic profile of the directly affected area

The following section presents a profile of the farms that will be directly affected by the Project. From the data obtained from surveyed landowners. It is recognised that the majority farms in the area practice a combination of commercial tourism (trophy hunting) and livestock activity. As such, most farms are involved in both land uses as indicated previously. The following observations were made regarding land use:

- Majority of the farmers are commercial farmers (tourism and agriculture)
- Game breeding of approximately 250 animals take place on one of the farms, whereas the livestock farmer indicated 20 animals (goats and sheep)
- The size of the commercial tourism property is 1 319 ha and the commercial agriculture 130 ha.
- The commercial tourism farmer lives on the farm with his wife, whereas the commercial agricultural farmer has 1 person residing on the farm, renting the house.

Given the number of responses received from owners in the area, it has not been possible through primary research to estimate the total contribution of the agricultural industry to the local economy. The landowners that were engaged and responded are listed in Annexure B. However, one landowner specifically mentioned that he will not be able to continue with his commercial tourism operations due to the sense of place being affect by the planned infrastructure.

6 THE AREA OF IMPACT

6.1 Introduction

In this section a description of the area that will be impacted on is provided. The geographic area (referred to hereafter as the Area of Impact/Influence - AOI) for which the socio-economic baseline is developed is based on the assumption that the people, communities and businesses immediately surrounding the projects are likely to experience the greatest socio-economic impacts as a result of the construction and operation of the proposed project.

The socio-economic AOI is determined based on the following:

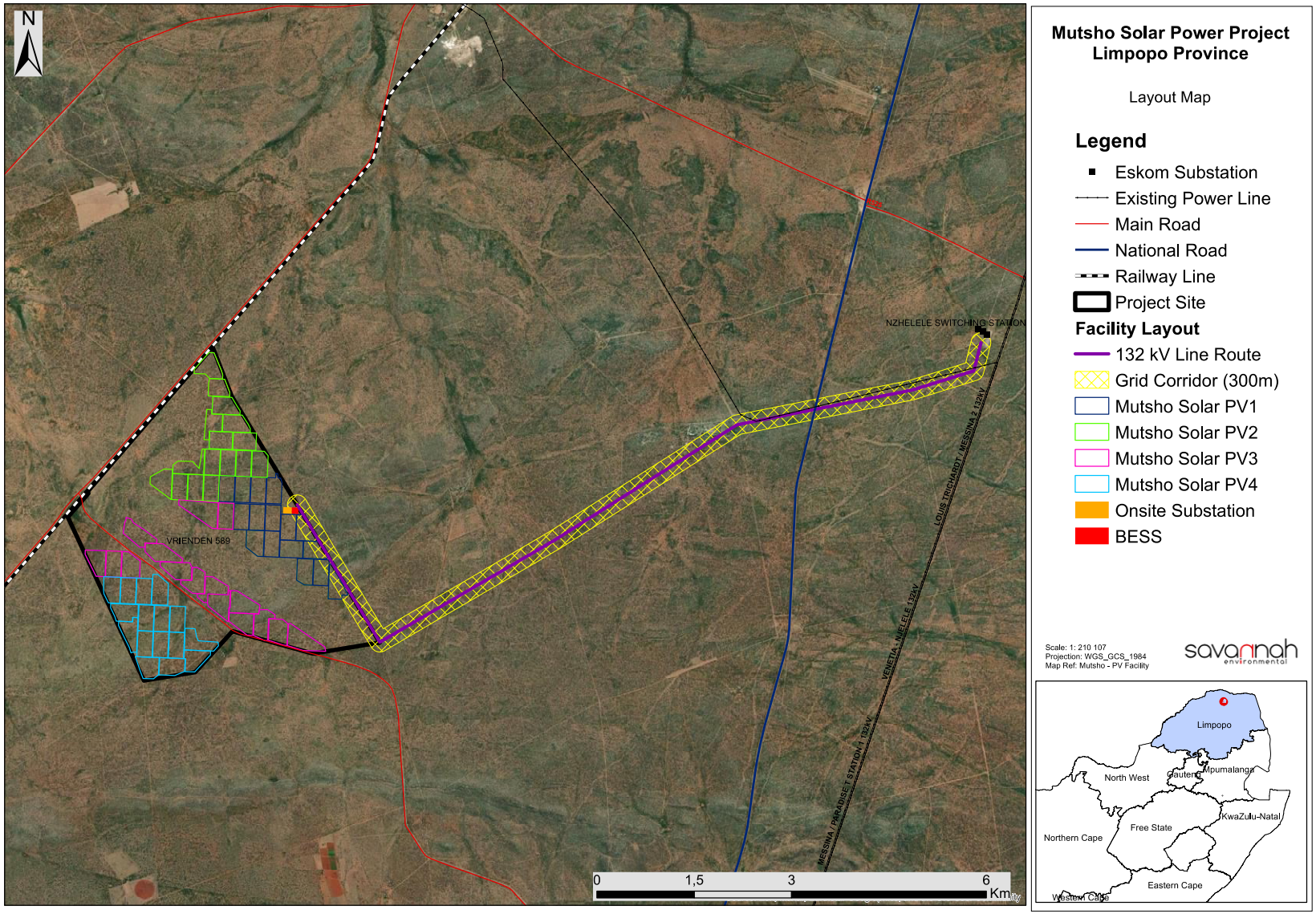
- Assessment of the area of impact based on the construction and operation activities on the sites.
- The nature of the activities such as the operation of heavy machines and equipment described in the preceding section, heavy vehicles and trucks moving to and from the site.
- Distances of communities and people living from the site and areas where the activities including the transport activities will take place.
- The likely impact of air quality, visual and noise generated on the site and along the transport routes. Note that separate air, noise and visual specialist reports are prepared that deals with these impacts in more detail.

6.2 Direct Area of Impact

The direct or immediate socio-economic Area of Impact (AOI) of the proposed project is indicated in Map 6-1. At this stage of the project, the direct AOI is seen as the total site and the roads giving access to the site this will be adjusted as the detailed layout plans are made available.

The majority of the direct AOI covers bushveld (game farms), with very few buildings. There are two sites identified where buildings are situated, it is still to be confirmed if it is permanent residents or only store facilities. The map also indicates the infrastructure of the project, it is clear that the two existing buildings are avoided.

Map 6-1: AOI and Zone of Influence



7 POTENTIAL IMPACTS AS A RESULT OF THE PROJECT

This section of the report seeks to describe the economic impacts that are expected to occur as a result of the development of the Project.

7.1 Impact Assessment Assumptions

This sub-section of the report describes the assumptions used in the socio-economic impact assessment study and specifically in the economic modelling exercise which aims to quantify the economic impact of the project. The assumptions presented in this section refer to construction, operation, and decommissioning assumptions applicable to the project as provided by Savannah Environmental. Each of four PV facilities were analysed individually.

7.1.1 Construction phase assumptions

The following assumptions regarding the construction phase of the Project is made:

- Construction will overlap the powerline construction.
- The total South African investment into the Project is valued at just over R 5 billion, it is assumed that each of the four PV facilities will cost the same, resulting in R1.4 billion per PV facility.
- Only local expenditure is considered in this analysis.
- The construction of the Project will create an estimated 400 project specific full time equivalent (FTE) employment positions respectively, (including foreign FTE positions) over the period of construction.

7.1.2 Operation phase assumptions

The assumptions regarding the operation phase of the Project used in the modelling exercise are as follows:

- The facility will operate for approximately 20 years.
- The operations and maintenance cost of the facility will be valued at R 64,1 million per annum over the 20-year operational life of the Project. The assumption is made that each PV facility will have the same operational cost, resulting in R18.0 million per PV facility.
- The operation of the Project will create an estimated 40 full time equivalent (FTE) employment (including foreign FTE positions) positions annually (for 20 years) for the lifetime of the operation of the facility.

7.1.3 Decommissioning phase assumptions

The costs of decommissioning REFs are not yet known. Given the nature of solar technology and the unlimited sun resource, it is highly likely that instead of decommissioning the REFs, they will be refurbished in order to extend its lifespan beyond the 20-year period.

7.2 Economic Impacts

Economic impacts can be defined as the effects (positive or negative) on the level of economic activity in a given area(s). The net economic impact is usually measured as the expansion or contraction of an area's economy, resulting from the changes (i.e., opening, closing, expansion or contraction) of a facility, project, or programme.

7.2.1 Temporal nature of impacts

All new projects/interventions have two basic types of investments namely an initial capital injection/expenditure (CAPEX) which can take the form of either a greenfield development (i.e. new construction project on vacant land) or brownfield development (i.e. a modification of an existing structure and there is an annual investment made to maintain/operate the investment). The economic impacts created by a capital injection (CAPEX) are once-off impacts that will only occur for the duration of construction. Thus, economic impacts associated with the construction phase are not sustainable economic impacts. Operational economic impacts, unlike capital expenditure economic impacts are sustainable and thus are calculated as an annual impact based on operational expenditure (OPEX) for a given year.

It is important to note that due to the temporal nature of CAPEX and OPEX, impacts should not be accumulated to determine the 'total' economic impact.

7.2.2 Types of economic impacts

The net economic impact of an exogenous change in the economy will be translated according to various direct and indirect economic effects, as are defined below:

- **Direct economic impacts:** These are the changes in local business activity occurring as a direct consequence of public or private activities in the economy, or public programmes and policies. Furthermore, increased user benefits lead to monetary benefits for some users and non-users (individuals and businesses) within the geographical area:
    - For affected businesses, there may be economic efficiency benefits in terms of product cost, product quality or product availability, stemming from changes in labour market access, cost of obtaining production inputs and/or cost of supplying finished products to customers. For affected residents, benefits may include reduced costs for obtaining goods and services, increased income from selling goods and services to

outsiders, and/or increased variety of work and recreational opportunities associated with greater location accessibility.

- **Indirect and induced impacts:** The direct benefits to business and the residents of communities and regions may also have broader impacts, including:
    - Indirect business impacts – business growth for suppliers to the directly affected businesses and potential growth of municipal revenue due to raised taxes and service levies.
    - Induced business impacts – business growth as the additional workers (created by direct and indirect economic impacts/effects) spends their income on food, clothing, shelter and other local goods and services.

7.2.3 Economic impacts considered

The direct and indirect economic impacts listed are measured according to the following broad economic variable categories:

- **Production/Business Sales**: refers to the value of all inter- and intra-sectoral business sales generated in the economy as a consequence of the introduction of an exogenous change in the economy. Explained more simply, new business sales equate to additional business turnover as a result of the introduction of an exogenous change in the economy.
- **Contribution to GVA:** GVA is a broader measure of the full income effect. This measure essentially reflects the sum of wage income and corporate profit generated in the study area as a result of an exogenous change in the economy.
- **Employment**: Refers to the employment resulting from the construction or operation of the project under investigation.
- **Personal Income:** Refers to the salaries and wages earned as a result of the employment generated from the development of the proposed project.

Using the Input/Output model methodology, various anticipated direct and indirect economic impacts of construction and operation phases of the proposed project have been identified. These economic impacts have been derived using an understanding of economic cause-effect relationships. The principle of cause-effect is that for any economic action, there can be a multitude of different economic reactions (effects).

7.2.4 Economic Impacts During the Construction Phase

The following table outlines the potential economic impacts during the construction phase of the Project. The total impact on production/business sales is likely to equate to R 5.8 billion (direct, indirect and induced) for the duration of construction and will largely be spent in Limpopo and

Gauteng. The total impact on GDP (direct, indirect, and induced) is likely to be R 1.7 billion and create 400 FTE employment positions over the period of 24 months with the total impact on employment being 1 629 FTE employment positions. These will largely be felt through the construction sector and through the value chains associated with the construction of a solar farm.

Table 7-1: Estimated impact on the national and local economies (R' millions) as well as employment (FTE positions) for the duration of construction (Mutsho Solar PV4)

Indicator	Direct	Indirect	Induced	TOTAL
Impact on Production	1 432,5	2 501,6	1 898,4	**5 832,5**
Impact on Gross Domestic Product	409,4	715,0	542,6	**1 667,0**
Impact on Personal Income	195,3	341,1	258,8	**795,2**
Impact on Employment	400	699	530	**1 629**

7.2.5 Economic Impacts During the Operation Phase

The table below provides the potential economic impacts during the operation phase of the Project, this specifically relates to the impact derived from the anticipated direct spend in the maintenance and upkeep of the facility. This does not account for the developer's mandated spend on community development projects, otherwise referred to as socio-economic development spend (SED).

The total impact on production/business sales once the project is fully operational is likely to equate to R 48.8 million (direct, indirect, and induced) per annum and will largely be spent in Limpopo and Gauteng. The total impact on GDP (direct, indirect, and induced) is likely to be R 29.6 million per year. It is anticipated that 10 South African based FTE employment positions will be created during the operational phase of the project. The total impact on employment will be 27 FTE employment positions which will largely be experienced in the utilities sector and other value chains associated with solar farm operations.

Table 7-2: Estimated impact on the national and local economies (R' million) as well as employment (FTE positions) for the duration of operation (Mutsho Solar PV4)

Indicator	Direct	Indirect	Induced	TOTAL
Impact on Production	18,1	14,6	16,2	**48,8**
Impact on Gross Domestic Product	11,0	8,8	9,8	**29,6**
Impact on Personal Income	3,0	2,4	2,7	**8,2**
Impact on Employment	10	8	9	**27**

7.3 Social and Socio-Economic Impacts

Socio-Economic Impact Assessments (SEIA) are instruments intended to identify and where possible quantify both economic and socio-economic impacts. Typically, socio-economic impacts are assessed from the perspective of the specific local people, households, community, business and other land-uses in the environment.

7.3.1 Construction Phase Impacts

The following sub-sections indicate the impacts that are likely to occur during the construction phase of the proposed project. Since the facility are expected to have both positive and negative effects in terms of the same indicator, the evaluation of impacts has been grouped accordingly.

7.3.1.1 Temporary stimulation of the national and local economy (GDP and Production)

The Project will cost R 1.43 billion (2022 prices) to establish. This will equate to a total impact of R 5.83 billion (direct, indirect, and induced) on production/new business sales in the country. The localised expenditure on the project will stimulate the local and national economies albeit for a temporary period of 24 months during construction. It is estimated that the project will increase the GDP directly in the country by R 409.4 million in 2022 prices, which will translate into a total impact of R 1.67 billion (direct, indirect, and induced) of Gross Domestic Product (GDP). These effects will take place for the duration of construction.

The greatest effects on production and GDP stimulated during construction activities will be created through the multiplier effects, specifically through a combination of production and consumption induced effects. The former refers to the impact generated along backwards linkages when the project creates demand for goods and services required for construction and subsequently stimulates the business sales of the suppliers of inputs that are required to produce these goods and services.
The latter refers to the effects of household spending which is derived from an increase in salaries and wages directly and indirectly stimulated by the project's expenditure.

Sectors and industries that will experience the greatest stimulus from this expenditure include:

- Basic metals, structural metal products and other fabricated metal products industries
- Trade
- Insurance
- Transport services
- Electrical machinery and apparatus

Increased Production:

Nature: Expenditure associated with the construction of the proposed Project will impact on the production of the local economy		
	Without enhancement	**With enhancement**
Extent	National (4)	National (4)
Duration	Short-term (1)	Short-term (1)
Magnitude	High (8)	High (8)
Probability	Definite (5)	Highly probable (5)
Significance	**High (65)**	**High (65)**
Status (positive or negative)	Positive	Positive
Reversibility	Medium	Medium
Irreplaceable loss of resources?	No	No
Can impacts be mitigated?	Yes (enhance)	Yes
Enhancement: » The project developer should use locally sourced inputs where feasible in order to maximize the benefit to the local economy. » Sub-contracting of local construction companies to occur as far as possible for the construction of facilities.		
Residual Impact: Short term Economic injection into the local and regional economy.		

Impact on GDP:

Nature: Temporary increase in country's GDP due to capital expenditure during the construction period		
	Without enhancement	**With enhancement**
Extent	National (4)	National (4)
Duration	Short-term (1)	Short-term (1)
Magnitude	Moderate (6)	Moderate (6)
Probability	Definite (5)	Definite (5)
Significance	**Medium (55)**	**Medium (55)**
Status (positive or negative)	Positive	Positive
Reversibility	Medium	Medium
Irreplaceable loss of resources?	No	No
Can impacts be mitigated?	Yes (enhance)	Yes
Enhancement: » The project developer is to use locally sourced inputs where feasible in order to maximize the benefit to the economy.		
Residual Impact: Short term Economic injection into the local and regional economy.		

7.3.1.2 Temporary increase employment in the national and local economies

The construction of the facility will create 400 Full Time Equivalent (FTE) employment positions over the course of the development. The total number of jobs that will be created is estimated to 1 629 (including direct, indirect and induced). Given the size of the construction sector within the municipality, it is anticipated that there will be sufficient local labour to satisfy the demand for 400 South African based construction workers. Furthermore, if most of the local staff comes from the Local Municipality it will have a positive effect on local unemployment. Beyond the direct employment opportunities that will be created by the project during the construction phase the development will also have a positive spin-off effect on the employment situation in other sectors of the national and local economies.

Through the procurement of local goods (i.e., consumption induced effects) the project will support an estimated total of 699 FTE employment positions (indirect). Most of these positions will be in sectors such as construction, business services and trade. The expenditure on the project outside of the local economies will also have a positive effect on employment creation, albeit for a temporary period of 24 months.

Through the production and consumption induced impacts the project is envisioned to create an estimated additional 530 FTE employment (induced) positions. Given that a significant portion of the multiplier effects will be generated through backward linkages, more than half of these FTE employment positions will be created along the supply chain and amongst industries providing inputs to the businesses in the supply chain. Throughout the construction phase it is recommended that the developer encourage the EPC contractor to fill as many local positions as possible using labour from within the Local Municipality rather than from outside of the municipal boundaries.

Nature: The construction of the project will positively impact the community and beyond by creating a number of job opportunities (albeit temporary).		
	Without enhancement	**With enhancement**
Extent	Regional (3)	Regional (3)
Duration	Short-term (1)	Short-term (1)
Magnitude	Moderate (6)	Moderate (6)
Probability	Definite (5)	Definite (5)
Significance	**Medium (50)**	**Medium (50)**
Status (positive or negative)	Positive	Positive
Reversibility	Medium	Medium
Irreplaceable loss of resources?	No	No
Can impacts be mitigated?	Yes (enhance)	Yes
Enhancement: » Organise local community meetings to advise the local labour on the project that is planned to be established and the jobs that can potentially be applied for. » Where feasible, effort must be made to employ locally in order to create maximum benefit for the communities.		
Residual Impact: No residual impacts are applicable.		

7.3.1.3 Contribution to skills development in the country and local economy

The construction of the proposed facility is likely to have a positive impact on the skills development in South Africa. During the solar panel component assembly and structure manufacturing period which is included as part of the construction phase and is planned to be conducted in Limpopo, it is likely that foreign technical experts will be involved. This will present an opportunity for skills and knowledge transfer between these technical experts and local manufacturers. It is also expected that the construction staff involved in the project will gain knowledge and experience in respect of the development of solar energy facilities.

More skilled local construction staff would most likely also lower the cost of future solar projects in the province. In addition to the direct effects of the project on skills development in the country and the local economy, the project could contribute to the development of the local research and development (R&D) and manufacturing industries associated with solar technology. This could be achieved through partnerships with the University of Mpumalanga (situated in the Local Municipality). Partnerships of this nature could further enhance the development of new skills and expertise.

Nature: Employees will develop and enhance skills thereby increasing experience and knowledge.		
	Without enhancement	**With enhancement**
Extent	Regional (3)	Regional (3)
Duration	Permanent (5)	Permanent (5)
Magnitude	Low (4)	Moderate (5)
Probability	Definite (5)	Definite (5)
Significance	**Medium (60)**	**High (65)**
Status (positive or negative)	Positive	Positive
Reversibility	Low	Low
Irreplaceable loss of resources?	No	No
Can impacts be mitigated?	Yes	Yes
Enhancement: » In order to maximise the positive impact, it is suggested that the project company provide training courses for employees where feasible to ensure that employees gain as much as possible from the work experience. » Facilitate the transfer of knowledge between experienced employees and the staff. » Perform a skills audit to determine the potential skills that could be sourced in the area.		
Residual Impact: Skills developed during the project can be utilised in future.		

7.3.1.4 Temporary increase in household earnings

The proposed Project will create an estimated total of 1 629 South African based FTE employment positions during construction generating R 795.2 million of revenue for the affected households in the country through direct, indirect, and induced effects. Of this figure R 195.3 million will be paid out in the form of salaries and wages to those individuals directly employed during the construction phase. The remaining R 599.9 million in households' earnings will be generated through indirect and induced effects resulting from project expenditure. Although temporary, this increase in household earnings will have a positive effect on the standard of living for these households. This is especially applicable to the households benefitting from the project that reside in the Local Municipality and broader Limpopo.

Nature: Employed individuals will increase the income of their respective households and thereby experience an improvement in their standard of living.		
	Without enhancement	**With enhancement**
Extent	Regional (3)	Regional (3)
Duration	Short-term (1)	Short-term (1)
Magnitude	Moderate (6)	Moderate (6)
Probability	Definite (5)	Definite (5)
Significance	**Medium (50)**	**Medium (50)**
Status (positive or negative)	Positive	Positive
Reversibility	Medium	Medium
Irreplaceable loss of resources?	No	No
Can impacts be mitigated?	Yes (enhance)	Yes
Enhancement: » Local employment will benefit local households and the local area.		
Residual Impacts: No residual impacts are applicable.		

7.3.1.5 Temporary increase in government revenue

The investment in the Project will generate revenue for the government during the construction period through a combination of personal income tax, VAT, companies' tax etc. Additional government revenue will also be earned through corporate income tax, however since the gross operating surplus of the EPC contractor employed to construct the facility is not known, an estimate of the overall corporate income tax value is not possible at this stage. Government earnings will be distributed by national government to cover public spending which includes amongst others the provision and maintenance of transport infrastructure, health, and education services as well as other public goods.

Nature: The investment in the facility will generate revenue for the government during the construction period through a combination of personal income tax, VAT, companies' tax etc.		
	Without enhancement	**With enhancement**
Extent	Local (2)	Local (2)
Duration	Short-term (1)	Short-term (1)
Magnitude	Moderate (6)	Moderate (6)
Probability	Highly probable (4)	Highly probable (4)
Significance	**Medium (36)**	**Medium (36)**
Status (positive or negative)	Positive	Positive
Reversibility	Medium	Medium
Irreplaceable loss of resources?	No	No
Can impacts be mitigated?	No	No
Enhancement: » N/A		
Residual Impacts: No residual impacts are applicable.		

7.3.1.6 Negative changes to the sense of place

A community's sense of place is developed over time as it embraces the surrounding environment, becomes familiar with its physical properties, and creates its own history.

The sense of place is created through the interaction of a number of different factors such as the areas visual resources, its aesthetics, climate, culture, and heritage as well as the lifestyle of individuals that live in and visit the area.

Most importantly, it is a highly subjective matter and dependent on the demographics of the population that resides in the area and their perceptions regarding trade-offs. For example, a community living in poverty is generally more likely to be accepting of industrial-type development that promises employment opportunities while a more affluent residential area is more likely to oppose such a development on the grounds that the development is not likely to generate gains for the community (Sinding, 2009). The area proposed for the development as well as its surrounds does have large-scale tourism activities and operations. Any rapid changes that alter the characteristics that define the area's sense of place could potentially have a negative impact to the local population's sense of place. However, during the landowner's survey, one landowner responded that the infrastructure would have a severe impact on his tourism business.

During the construction of the proposed Project there are likely to be noise and dust impacts caused by the movement of vehicles as well as construction activities on site. These impacts are anticipated to occur primarily during the day with illumination from the site being experienced during the night. As construction activities progress and the footprint of the facility grows, the visual impact will also become more apparent, and the sense of place experienced by households residing within the visually affected area will be altered further.

It is anticipated that residents residing on the farms on which solar panels and associated infrastructure are proposed to be established will experience the greatest disruption in their sense of place during the construction period. Individuals who live on the surrounding farms will, over the course of the construction phase of the project, be subjected to either visual or noise disruptions that are currently not present in the area. The sense of place at the farms located adjacent to or beyond the site of the proposed Project will also be affected to some extent. The Project will be visible from several of these farms. The visual exposure on all these farms during the construction phase will not be continuous given the proximity of some of the farms from the proposed Project.

Nevertheless, the knowledge of the REFs and associated infrastructure near the farm and the fact that it could be seen from some parts will still have a negative connotation and will alter the sense of place experienced by the households residing on these farms. As stated, the sense of place of local residents is likely to begin to be altered once the construction of the proposed Project begins.

Visual impacts will, however, remain for the entire operation of the Project, this means that although the effect on the sense of place could be relatively small considering the population to be affected, the duration of the impact increases it significantly. It is advisable that all efforts be made to address the factors that will affect individual's sense of place such as visual effects and noise pollution to make them less intrusive.

However, according to the landowners in the area, the proposed project will have a high significant impact on the sense of place/visual impacts, due to the physical characteristics of the study area.

Nature: Sense of place impacts (visual, noise and dust).		
	Without mitigation	**With mitigation**
Extent	Local (1)	Local (1)
Duration	Short duration (1)	Short duration (1)
Magnitude	High (8)	Moderate (6)
Probability	Definite (5)	Definite (5)
Significance	**Medium (50)**	**Medium (40)**
Status (positive or negative)	Negative	Negative
Reversibility	Medium	Medium
Irreplaceable loss of resources?	No	No
Can impacts be mitigated?	Yes	Yes
Mitigation: » Ensure proper health and safety plans in place during the construction period to ensure safety on and around site during construction » Install screens around the construction site to reduce the visual impact of construction on surrounding properties » Site watering (or use of appropriate dust suppressant) from time to time to reduce dust emitting from the construction site		
Residual Impacts: No residual impacts are applicable.		

7.3.1.7 Negative impact on the local agricultural operations

As construction begins at the proposed site, disturbances will likely be minimal. The presence of construction machinery, increased traffic to and from the site (transporting staff, equipment, and material) and staff on or near the site will likely be the largest disturbances.

The longer construction continues, the greater the disturbances will likely be. As the panels and infrastructure are erected there is likely to be an increased disturbance as panels and structures become increasingly visible in the surrounding area. Once construction is completed the disturbances associated with the vehicular traffic, equipment and staff will be reduced and the remaining disturbance will be that of the solar farm itself. According to the landowner's survey's one landowner mentioned that "the allure for the eco-tourist or hunter is to experience the unspoilt natural beauty, solitude and animal life of the area. Noise and light pollution will make this impossible. The unspoilt skyline and remoteness are what an African experience is all about.

These projects should be developed close to existing towns e.g., Musina or Makhado where the natural beauty has been impacted already. I would not be able to continue economic activities if this were to happen. There is no alternative farming activity as rainfall is too low and water is scarce".

Nature: *The negative impact on the sense of place will have a negative financial effect on the tourism business on the farm*		
	Without mitigation	**With mitigation**
Extent	Local (1)	Local (1)
Duration	Short duration (1)	Short duration (1)
Magnitude	Moderate (6)	Moderate (6)
Probability	Definite (5)	Highly probable (4)
Significance	**Medium (40)**	**Medium (32)**
Status (positive or negative)	Negative	Negative
Reversibility	Medium	Medium
Irreplaceable loss of resources?	No	No
Can impacts be mitigated?	Yes	Yes
Mitigation: » Construct the solar panels on parts where the least arable land will be affected.		
Residual Impacts: No residual impacts are applicable.		

7.3.1.8 Temporary increase in social conflicts associated with the influx of people

Neither the local nor the surrounding municipalities are sufficiently diversified to supply the entire workforce for the construction of the proposed Project, particularly in terms of skilled positions. A significant number of the unskilled and semi-skilled workers required during the construction phase will however be sourced locally. In addition, given the scale and extent of the development, the project is likely to attract job seekers from other parts of the country, particularly from within Limpopo and Gauteng. This would be in addition to the migrant workers contracted to work on the project. The migration of people to the area could result in social conflicts between the local population and the migrant work force as the local population could perceive these migrant workers as "stealing" their employment opportunities. Likewise, the influx of people into the area, could potentially lead to a temporary increase in the level of crime, illicit activity and possibly a deterioration of the health of the local community through the spread of infectious diseases. Semi-skilled and unskilled construction workers could also choose to remain in the area following the completion of the construction phase. Without any form of income these individuals run the risk of exacerbating the level of poverty within the Local Municipality.

Aside from the broader community issues the increase in the number of people in the area is likely to have an adverse effect on crime levels, incidents of trespassing, development of informal trading and littering. There is also potentially a likelihood of increased stock theft. The influx of job seekers and the potential social conflicts that can arise with in-migration of temporary workers to an area is difficult to mitigate.

Appropriate awareness campaigns and strict adherence to recruiting practices could, however, reduce the extent of the adverse effect. Addressing the challenges related to potential social impacts is best done in partnership with all stakeholders in the area, specifically the affected and adjacent property owners, local communities, ward communities and municipalities. This would promote transparency; information sharing and help build good relationships between all affected parties. In addition, all opportunities that would include the community in the project should be explored and where possible implemented. Employment opportunities, including the provision of ancillary services, are particularly relevant in this incidence as the creation of employment opportunities for locals could eliminate the potential alienation between the community and the project as well as migrant workers.

Nature: An impact on the demographics of the area as a result of in-migration in response to job opportunities will occur.		
	Without mitigation	**With mitigation**
Extent	Local (1)	Local (1)
Duration	Short duration (1)	Short duration (1)
Magnitude	Moderate (6)	Low (4)
Probability	Probable (3)	Probable (3)
Significance	**Low (27)**	**Low (18)**
Status (positive or negative)	Negative	Negative
Reversibility	Medium	Medium
Irreplaceable loss of resources?	No	No
Can impacts be mitigated?	Yes	Yes
Mitigation: » Where feasible, effort must be made to employ local labour in order to create maximum benefit for the communities and limit in-migration. » Train unemployed local community members with insufficient skills and increase absorption of local labour thereby decreasing in-migration.		
Residual Impacts: Workers remaining after the construction period without work will put strain on public resources.		

7.3.1.9 Impacts on economic and social infrastructure

The Project will create and estimated 400 FTE employment positions (South African based positions) for the duration of the project. Given that these workers will require services there is likely to be an increase in the demand for social services, access to water and electricity. Given the proximity of the development site to Musina, it is most likely that the health facilities in the area will experience additional demand for medical services brought about by the influx of job seekers.

These connections will, however, be minimal and it is unlikely to alter the demand significantly. The effects of the project on road infrastructure should also be considered as it is highly likely that the development will lead to an increase in traffic volumes on surrounding roads. The deterioration of these roads could place additional financial burdens on the municipality through additional maintenance costs. Additional traffic volumes are also likely to impact the condition of secondary roads used to access surrounding farms. The transport study will confirm the impact on roads for the Project.

Based on the above discussion it is expected that the basic service provision, health facilities and road infrastructure will be under additional strain during the construction period. Given that the project is anticipated to attract additional people to the area the significance of the impact is considered to be medium. These impacts can however be mitigated if the developer engages with the local municipalities and plans accordingly.

Nature:
An increase in traffic due to construction vehicles and heavy vehicles could create short-term disruptions and safety hazards for current road users.

	Without mitigation	**With mitigation**
Extent	Local (2)	Local (1)
Duration	Short duration (1)	Short duration (1)
Magnitude	Moderate (6)	Low (4)
Probability	Highly probable (4)	Highly probable (4)
Significance	**Medium (36)**	**Low (24)**
Status (positive or negative)	Negative	Negative
Reversibility	Medium	Medium
Irreplaceable loss of resources?	No	No
Can impacts be mitigated?	Yes	Yes

Mitigation:

- Provide public transportation service for workers in order to reduce congestion on roads
- Partner with local municipalities and other prominent users of the local roads to upgrade them to meet the required capacity and intensity of the vehicles related to the planned construction activities
- Transportation contractors must adhere to the road rules and regulations
- Utilise only designated access routes & entrance/exits from the site
- Implement appropriate signage & road safety measures at entrance/exit to the site and on site

Residual Impacts:
No residual impacts are applicable.

7.3.2 Operation Phase Impacts

The following sub-section describes the impact that the proposed Project will have once it is operational. The facility is envisaged to have a long lifespan, which means that the impacts observed during this phase, regardless of whether the impacts are positive or negative, will be long-lasting.

7.3.2.1 Sustainable increase in production and GDP nationally and locally

The proposed facility will require an annual operational expenditure of R 18.1 million over 20 years. The total impact on production in the country as a result of the project's operations will equate to R 48.8 million per annum in 2022 prices for the 20 years. Aside from the utilities sector, industries that will experience the greatest stimulus from the project will include electrical machinery and apparatus, insurance, trade, transport service and chemical production industry. It is estimated that the project will generate R 26.6 million of value add per year over the 20-year period (comprising gross operating surplus before taxes and labour) and taxes. The production and consumption induced multiplier effects of the project are considered to be relatively small compared to conventional electricity generating industries.

This is because the energy source used to produce electricity by the proposed solar energy facility is free, unlike conventional power stations where raw inputs (i.e., coal) and the transport thereof comprise a significant portion of operating expenditure. It is for this reason that such a facility is a highly attractive business venture. In addition to the positive production and GDP impacts arising from expenditure related to the operation of the facility, the local economy is anticipated to be positively stimulated by expenditure related to the developer's intended socio-economic development contributions in the immediate area. The contribution to the Local Municipality, although small relative to the combined size of the municipality's economy, will nevertheless be positive and more importantly, a sustainable contribution.

Increased Production:

Nature: Expenditure associated with the operation of the proposed Project will have a positive impact on production.		
	Without enhancement	**With enhancement**
Extent	Local (2)	Local (2)
Duration	Long-term (4)	Long-term (4)
Magnitude	Low (4)	Low(4)
Probability	Definite (5)	Definite (5)
Significance	**Medium (50)**	**Medium (50)**
Status (positive or negative)	Positive	Positive
Reversibility	Medium	Medium
Irreplaceable loss of resources?	No	No
Can impacts be mitigated?	Yes (enhance)	Yes
Enhancement: » The project developer should make effort to use locally sourced inputs where feasible in order to maximize the benefit to the local economy. » Local Small and Medium Enterprises are to be approached to investigate the opportunities for supplying inputs required for the maintenance and operation of the facility, as far as feasible.		
Residual Impacts: No residual impacts are applicable.		

Impact on GDP:

Nature: Positive impact on GDP due to operating expenditure during operations.		
	Without enhancement	**With enhancement**
Extent	Local (2)	Local (2)
Duration	Long-term (4)	Long-term (4)
Magnitude	Low (4)	Low (4)
Probability	Highly probable (4)	Highly probable (4)
Significance	**Medium (40)**	**Medium (40)**
Status (positive or negative)	Positive	Positive
Reversibility	Medium	Medium
Irreplaceable loss of resources?	No	No
Can impacts be mitigated?	Yes (enhance)	Yes
Enhancement: » The project developer is to make an effort to use locally sourced inputs where feasible in order to maximize the benefit to the local economy. » Local Small and Medium Enterprises are to be approached to investigate the opportunities for supplying inputs required for the maintenance and operation of the facility, as far as feasible.		
Residual Impacts: No residual impacts are applicable.		

7.3.2.2 Creation of sustainable employment positions nationally and locally

The proposed Project will create an estimated 10 permanent employment positions across the operation phase of the development which, will be retained for approximately 20 years. Of these, an estimated 10 will be South African based positions. It is envisaged that some of the skilled and low skilled staff will be employed from within the local area with the remaining staff being sourced from other parts of Limpopo and the country. Aside from the direct employment opportunities, the facility will support an estimated 27 FTE employment positions created through the production and consumption induced effects.

Due to the spatial allocation of procurement spending and direct employment created, most of the indirect and induced positions will also be created within the local area. The trade, agriculture and community and personal services sectors will benefit the most from these new employment opportunities.

Nature: The Project will create additional employment due to maintenance of the solar panels**.**		
	Without enhancement	**With enhancement**
Extent	Local (1)	Local (1)
Duration	Long-term (4)	Long-term (4)
Magnitude	Minor (2)	Minor (2)
Probability	Highly probable (4)	Highly probable (4)
Significance	**Low (28)**	**Low (28)**
Status (positive or negative)	Positive	Positive
Reversibility	Low	Low
Irreplaceable loss of resources?	No	No
Can impacts be mitigated?	Yes (enhance)	Yes
Enhancement: » Where feasible, effort must be made to employ locally in order to create maximum benefit for the communities.		
Residual Impacts: No residual impacts are applicable.		

7.3.2.3 Improved standards of living for benefiting households

The creation of an estimated 10 FTE employment positions throughout the country will generate R 3.0 million of personal income (2022 prices), which will be sustained for the entire duration of the Project's lifespan. Given the average household size in affected local municipalities and nationally, this increase in household earnings will support several people. The sustainable income generated as a result of the Project's operation will positively affect the standard of living of all benefitting households. This is specifically applicable to the Local Municipality, as the average income per employee at the facility would far exceed the average household income within these municipalities. Skills development coupled with sustainable employment creation opportunities as a result of the Developer's intended SED spend, are expected to contribute towards an improved standard of living amongst families that might not have had a sustainable income previously.

Nature: Employed individuals will increase the income of their respective households and therefore improve their standard of living.		
	Without enhancement	**With enhancement**
Extent	Local (2)	Local (2)
Duration	Long-term (4)	Long-term (4)
Magnitude	Minor (2)	Minor (2)
Probability	Highly Probable (4)	Highly Probable (4)
Significance	**Medium (32)**	**Medium (32)**
Status (positive or negative)	Positive	Positive
Reversibility	Medium	Medium
Irreplaceable loss of resources?	No	No
Can impacts be mitigated?	Yes	Yes
Enhancement: » Employing locally will increase benefit to local households and the local area.		
Residual Impacts: **No residual impacts are applicable.**		

7.3.2.4 Sustainable increase in national and local government revenue

The proposed Project will, through property taxes and salaries and wages payments, contribute towards both local and national government revenue. At a local level, the Project will contribute to local government through payments for utilities used in the operation of the Project. It will also increase its revenue through an increase in property taxes compared to the current level. Given that the Local Municipality has a relatively small economy, any additional income would greatly benefit the Municipality.

On a national level, the revenue derived by the Project during its operations, as well as the payment of salaries and wages to permanent employees will contribute to the national fiscus. Although it is impossible to trace exactly how such revenue is allocated, any additional revenue generated means that national governments can increase its spending on public goods and services.

Nature: Government revenue will be derived from the proposed development.		
	Without enhancement	**With enhancement**
Extent	Local (2)	Local (2)
Duration	Long term (4)	Long term (4)
Magnitude	Low (4)	Low (4)
Probability	Highly Probable (4)	Highly Probable (4)
Significance	**Medium (40)**	**Medium (40)**
Status (positive or negative)	Positive	Positive
Reversibility	Medium	Medium
Irreplaceable loss of resources?	No	No
Can impacts be mitigated?	No	No
Mitigation: No mitigation measures are required.		
Residual Impacts: No residual impacts are applicable.		

7.3.2.5 Sustainable rental revenue for farms where the solar farm is located

It is anticipated that farms where the solar panels are located on will enter into a rental agreement with the developer. The owners will likely thus receive rental revenue as a result of hosting the infrastructure on their property. The revenue that the owners of the properties receive will have a positive impact on the local economies especially if spent in the local area. This revenue is also likely to assist local property owners in dealing with economic shocks to their current business activities such as drought or unfavourable economic conditions that currently prevail. The revenue generated from the rental of land for the infrastructure will additionally assist farmers in investing in new technologies to improve the efficiencies of their current agricultural practices and allow farmers to better compete in the open market.

While these impacts are notably only for those farmers who have infrastructure located on their properties, the impact of additional revenue is likely to be very significant to those impacted.

Nature: Increase in revenue due to rental paid for landowners where the solar panels will be located		
	Without enhancement	**With enhancement**
Extent	Local (2)	Local (2)
Duration	Long-term (4)	Long-term (4)
Magnitude	Low (4)	Low (4)
Probability	Highly Probable (4)	Highly Probable (4)
Significance	**Medium (40)**	**Medium (40)**
Status (positive or negative)	Positive	Positive
Reversibility	Medium	Medium
Irreplaceable loss of resources?	No	No
Can impacts be mitigated?	No	No
Enhancement: » No mitigation measures are required.		
Residual Impacts: No residual impacts are applicable.		

7.3.2.6 Sustainable increase in electricity available for the local region and South Africa

The development of the solar farm will lead to a sustainable increase in the supply of electricity for the country. It was noted in Section 3 that lack of electricity and load shedding has had a notable impact on the economy of the country and is one of the reasons stated by foreign investors for the lack of investment in the country. With an improved supply of power to industry, there is likely to be an improvement in the economy as a whole. It should be noted that while these solar farms alone are unlikely to make a large impact in the shortages of electricity in the country, the cumulative impact of all the proposed solar energy products in the country will be substantial. The combined energy production for the Project will be up to 400 MW which begins to reflect a notable positive injection into the energy generation capacity from the region.

Nature: Improved energy security and energy sector will result due to the development of the Project.		
	Without enhancement	**With enhancement**
Extent	National (5)	National (5)
Duration	Long term (4)	Long term (4)
Magnitude	Moderate (6)	Moderate (6)
Probability	Highly probable (4)	Highly probable (4)
Significance	**Medium (60)**	**Medium (60)**
Status (positive or negative)	Positive	Positive
Reversibility	Low	Low
Irreplaceable loss of resources?	Yes	Yes
Can impacts be mitigated?	No	No
Mitigation: No mitigation measures are required.		
Residual Impacts: No residual impacts are applicable.		

7.3.2.7 Negative changes to the sense of place

The effects on the community's sense of place will initially be felt during the construction period and will continue into the operation phase. The assessment of the negative change in the sense of place that was examined in the construction phase will likely be in place during the operation phase due to the long-term presence of Project infrastructure. The visual impact will have a medium significance in the region, however, the visual impact on landowners where the infrastructure will be located will have a direct impact, resulting in a slightly higher significance.

Nature: Visual and sense of place impacts.		
	Without enhancement	**With enhancement**
Extent	Region (3)	Region (3)
Duration	Long term (4)	Long term (4)
Magnitude	Moderate (6)	Moderate (6)
Probability	Highly probable (4)	Highly probable (4)
Significance	**Medium (52)**	**Medium (52)**
Status (positive or negative)	Negative	Negative
Reversibility	Low	Low
Irreplaceable loss of resources?	Yes	Yes
Can impacts be mitigated?	No	No
Mitigation: No mitigation measures		
Residual Impacts: No residual risks are applicable.		

7.3.2.8 Negative impact on agricultural operations

The impact of tourism and agricultural land was assessed through a survey that was distributed among the landowners. According to the landowner's survey's one landowner mentioned that "the allure for the eco-tourist or hunter is to experience the unspoilt natural beauty, solitude and animal life of the area. Noise and light pollution will make this impossible. The unspoilt skyline and remoteness are what an African experience is all about. These projects should be developed close to existing towns e.g., Musina or Makhado where the natural beauty has been impacted already.

I would not be able to continue economic activities if this were to happen. There is no alternative farming activity as rainfall is too low and water is scarce". The impact is based on the landowners' responses, as the other landowners did not have inputs or did not respond to the survey or other forms of communication.

Nature: *The negative impact on the sense of place will have a negative financial effect on the tourism business on the farm*		
	Without mitigation	**With mitigation**
Extent	Local (1)	Local (1)
Duration	Long Term (4)	Long Term (4)
Magnitude	High (8)	Moderate (6)
Probability	Definite (5)	Definite (5)
Significance	**High (65)**	**Medium (55)**
Status (positive or negative)	Negative	Negative
Reversibility	Medium	Medium
Irreplaceable loss of resources?	No	No
Can impacts be mitigated?	Yes	Yes
Mitigation: » Construct the solar panels on parts where it will be least visible.		
Residual Impacts: No residual impacts are applicable.		

7.3.3 Decommissioning Phase Impacts

Upon the expiry of the solar farm's lifespan, the facility would need to be disbanded, although the facility would likely be upgraded in order to maintain and prolong the lifespan of the facility. If the facility is decommissioned, the land will be rehabilitated in order to return it to pre-project conditions.

7.4 Cumulative Impacts

Only one other known authorised renewable energy facility has been identified that will create the conditions for cumulative effect, namely ABC Prieska Solar PV Plant (see Map 7-1). Only cumulative impacts that will have the potential for a significant influence are analysed:

- Increase in production - The initial investment spend on the project will inject significant business sales/ production for the local and regional economy. The economic impact arising from the initial investment will be felt throughout the economy with windfall effects benefitting related sectors in the economy.
- Employment creation - Increase in employment creation for the local workforce.
- Demographic shifts - Influx of migrant labour and job seekers due to job opportunities presented by numerous projects.

In addition to the negative cumulative impact noted above (i.e., demographic shifts), numerous positive impacts are expected to accumulate in the region such as increased production, GDP, employment, skills and household income.

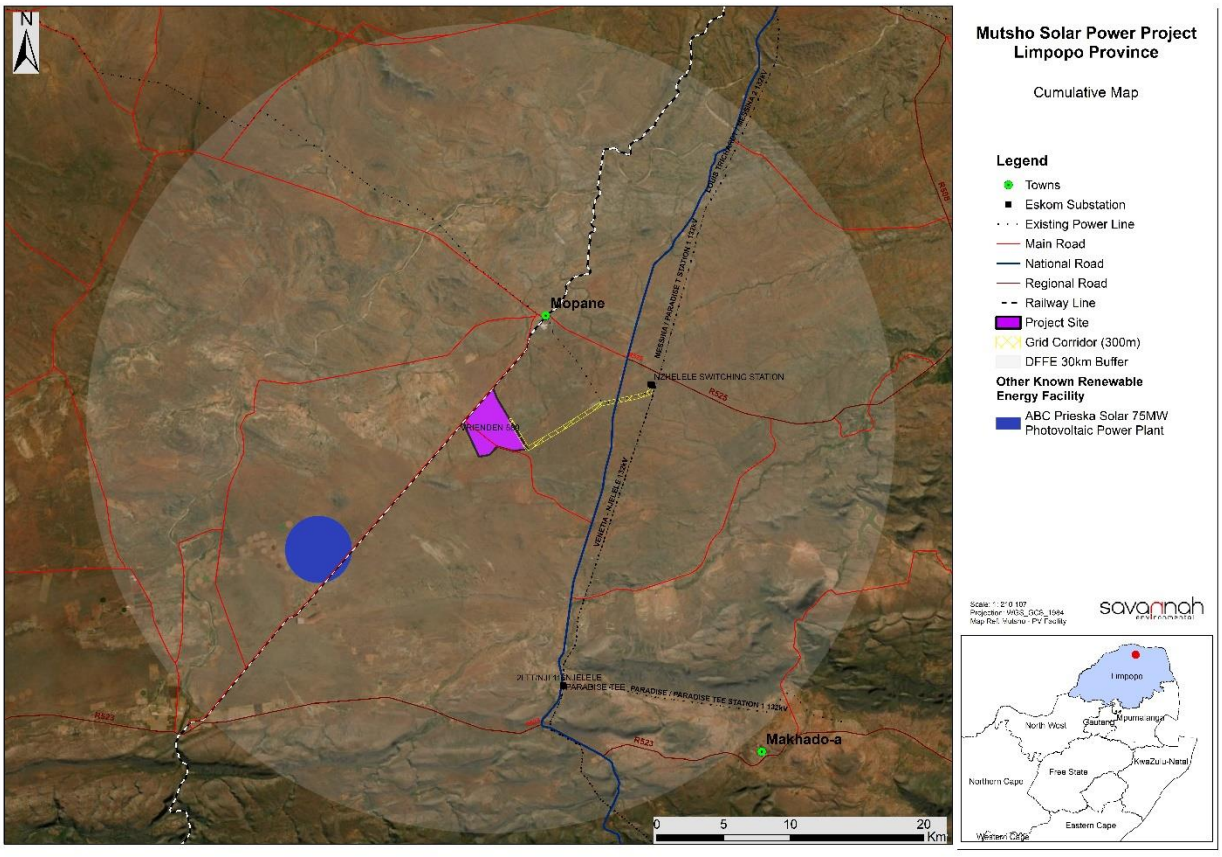
The following tables summarise and rate the expected cumulative effects.

Nature: *Increase in economic production*		
	Cumulative Contribution of proposed project	**Cumulative Impact without proposed project**
Extent	Regional (3)	Regional (3)
Duration	Long term (4)	Long term (4)
Magnitude	High (8)	High (8)
Probability	Highly Probable (4)	highly Probable (4)
Significance	**Medium (60)**	**Medium (60)**
Status (positive or negative)	Positive	Positive
Reversibility	Low	Low
Irreplaceable loss of resources?	No	No
Can impacts be enhanced?	Yes	Yes
Confidence in findings	High	
Enhancement: » No enhancement measures are required.		

Nature: *Increase in the number of employment opportunities*		
	Cumulative Contribution of proposed project	**Cumulative Impact without proposed project**
Extent	Regional (3)	Regional (3)
Duration	Long term (4)	Long term (4)
Magnitude	Moderate (6)	High (8)
Probability	Probable (3)	Probable (3)
Significance	**Medium (39)**	**Medium (45)**
Status (positive or negative)	Positive	Positive
Reversibility	Low	Low
Irreplaceable loss of resources?	No	No
Can impacts be enhanced?	Yes	Yes
Confidence in findings	High	
Enhancement: » Employment of local residents as far as possible should be encouraged.		

Nature: *Influx of migrant labour and job seekers due to job opportunities presented by numerous projects*		
	Cumulative Contribution of proposed project	**Cumulative Impact without proposed project**
Extent	Regional (3)	Regional (3)
Duration	Medium term (3)	Medium term (3)
Magnitude	Moderate (6)	Low (4)
Probability	Highly probable (4)	Highly probable (4)
Significance	**Medium (48)**	**Medium (40)**
Status (positive or negative)	Negative	Negative
Reversibility	Medium	Low
Irreplaceable loss of resources?	No	No
Can impacts be mitigated?	Yes	
Confidence in findings	High	
Mitigation: » Where feasible, effort must be made to employ local labour in order to create maximum benefit for the communities and limit in-migration. » Provide training for unemployed local community members with insufficient skills and thus increase absorption of local labour thereby decreasing in-migration. » Manage recruitment and marketing for vacancies with a preference of residents within the municipality.		

Map 7-1: Cumulative Map



8 CONCLUSION AND RECOMMENDATIONS

8.1 Conclusion

This EIA Report focused on the collection of available secondary and primary information in order to provide a social baseline against which potential social impacts which may be associated with the development of the Project could be identified. A summary of the potential positive and negative impacts identified for the detailed design and construction, and operation phase are presented in Table 8-1 and Table 8-2, as well as the cumulative impacts identified in Table 8-3.

Table 8-1: Summary of potential social impacts identified for the detailed design and construction phase

Impact	Status	Significance (Before mitigation)	Significance (After mitigation)
Impact on Production	Positive	High (65)	High (65)
Impact on GDP	Positive	Medium (55)	Medium (55)
Impact on Employment Creation	Positive	Medium (50)	Medium (50)
Skills Development	Positive	Medium (60)	High (65)
Household Income and Standard of Living	Positive	Medium (50)	Medium (50)
Temporary increase in government revenue	Positive	Medium (36)	Medium (36)
Change in sense of place	Negative	Medium (50)	Medium (40)
Impact on agricultural operations	Negative	Medium (40)	Medium (32)
Influx of people	Negative	Low (27)	Low (18)
Impact on economic and social infrastructure	Negative	Medium (36)	Low (24)

Table 8-2: Summary of potential social impacts identified for the operational phase

Impact	Status	Significance (Before mitigation)	Significance (After mitigation)
Impact on Production	Positive	Medium (50)	Medium (50)
Impact on GDP	Positive	Medium (40)	Medium (40)
Employment Creation	Positive	Low (28)	Low (28)
Household Income and Standard of Living	Positive	Medium (32)	Medium (32)
Increase in government revenue	Positive	Medium (40)	Medium (40)
Rental revenue for landowners	Positive	Medium (40)	Medium (40)
Improvement in Energy Sector Generation	Positive	Medium (60)	Medium (60)
Visual and Sense of Place Impacts	Negative	Medium (52)	Medium (52)
Impact on agricultural operations	Negative	High (65)	Medium (55)

Table 8-3: Summary of potential cumulative impacts

Impact	Status	Significance (Before mitigation)	Significance (After mitigation)
Impact on Production	Positive	Medium (60)	Medium (60)
Employment Creation	Positive	Medium (39)	Medium (45)
Influx of people	Negative	Medium (48)	Medium (40)

The potential social and economic impacts identified for the project and listed within Table 8-1 and Table 8-2 have been identified based on an assessment of available information and the current understanding of the proposed project and are not exhaustive.

8.2 Recommendations

Based on the information presented in this report, the following can be recommended from the socio-economic perspective:

- The net positive impacts associated with the development and operation of the proposed Project are expected to outweigh the net negative effects. The Project is also envisaged to have a positive stimulus on the local economy and employment creation, leading to the economy's diversification and a small reduction in the unemployment rate. The Project should therefore be considered for development. It should, however, be acknowledged that the negative impacts would be largely borne by the nearby farms and households residing on them, whilst the positive impacts will be distributed throughout both the local and national economies.

  Due to this imbalance, it is recommended that the mitigation measures suggested, be strictly adhered to. Application of these mitigation measures will ensure that the negative impacts on the nearby farms and businesses are minimised and that the distribution of the potential benefits of the project are more balanced. It is important to value to commercial tourism farmer as he believes that he will not be able to continue with is operations due to the projects. It is thus advised that further communication towards the landowners will be vital for the project.

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Appendix A: Impact Methodology

In terms of **Appendix 6 of 2014 EIA Regulations**, as amended;

» A specialist report prepared in terms of these Regulations must contain—

details of—

(i) the specialist who prepared the report; and

(ii) the expertise of that specialist to compile a specialist report including a curriculum vitae;

» a declaration that the specialist is independent in a form as may be specified by the competent authority;

» an indication of the scope of, and the purpose for which, the report was prepared;

» the date and season of the site investigation and the relevance of the season to the outcome of the assessment;

» a description of the methodology adopted in preparing the report or carrying out the specialised process;

» the specific identified sensitivity of the site related to the activity and its associated structures and infrastructure;

» an identification of any areas to be avoided, including buffers;

» a map superimposing the activity including the associated structures and infrastructure on the environmental sensitivities of the site including areas to be avoided, including buffers;

» a description of any assumptions made and any uncertainties or gaps in knowledge;

» a description of the findings and potential implications of such findings on the impact of the proposed activity, including identified alternatives on the environment;

» any mitigation measures for inclusion in the EMPr;

» any conditions for inclusion in the environmental authorisation;

» any monitoring requirements for inclusion in the EMPr or environmental authorisation;

» a reasoned opinion—

(i) as to whether the proposed activity or portions thereof should be authorised; and

(ii) if the opinion is that the proposed activity or portions thereof should be authorised, any avoidance, management and mitigation measures that should be included in the EMPr, and where applicable, the closure plan;

» a description of any consultation process that was undertaken during the course of preparing the specialist report;

» a summary and copies of any comments received during any consultation process and where applicable all responses thereto; and

» any other information requested by the competent authority.

Assessment of Impacts:

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

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

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

S=(E+D+M)P

S = Significance weighting

E = Extent

D = Duration

M = Magnitude

P = Probability

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

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

Appendix B: Landowners' responses

Farm Portion	Owner	Comment
RE of Vrienden 589 MS	Fumaria Prop Holdings Pty Ltd	No Response
Grootpraat 564 MS	Langdraai Forelle Pty Ltd	The allure for the eco-tourist or hunter is to experience the unspoilt natural beauty, solitude and animal life of the area. Noise and light pollution will make this impossible. The unspoilt skyline and remoteness is what an African experience is all about. These projects should be developed close to existing towns e.g. Musina or Makhado where the natural beauty has been impacted already. I would not be able to continue economic activities if this were to happen. There is no alternative farming activity as rainfall is too low and water is scarce.
Farm 617 MS	Private Person	No further comments on project
Groot Endaba 581	Private Person	No Response
Ptn 2 Scott 567 MS	Maitazwitoma Communal Prop Assoc	Did not complete the survey
RE of Steenbok 565 MS	Mulambwane Communal Prop Assoc	No Response
RE of Antrobus 566 MS		
RE of Somme 611 MS		
Command Game Lodge	Private Person	No Response