

KOTULO TSATSI ENERGY PV3 AND ASSOCIATED INFRASTRUCTURE

Northern Province

Social Impact Assessment

April 2023

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REPORT DETAILS

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SPECIALIST DECLARATION OF INTEREST

I, Molatela Ledwaba, declare that –

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

Molatela Ledwaba

Name

April 2023

Date



Signature

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ACRONYMS

CSP	Concentrated Solar Power
DM	District Municipality
DME	Department of Mineral and Energy
DoE	Department of Energy
DoJ	Department of Justice
DM	District Municipality
EEDSM	Energy efficiency demand-side management
EIA	Environmental Impact Assessment
EMPr	Environmental Management Programme
GNR	Government Notice
HLM	Hantam Local Municipality
IDP	Integrated Development Plan
IFC	International Finance co
IPP	Independent Power Provider
IRP	Integrated Resource Plan
km	Kilometre
kV	Kilovolt
LED	Local Economic Development
LM	Local Municipality
LTD	Limited
NDA	National Development Agency
NDM	Namakwa District Municipality
NEMA	National Environmental Management Act (No. 107 of 1998)
NDP	National Development Plan
PSDF	Provincial Spatial Development Framework
PV	Photovoltaic
RBS	Revised Balanced Scenarios
REIPPP	Renewable Independent Power Producer Programme
SDF	Spatial Development Framework
SIA	Social Impact Assessment
SP	Significance Points

1. INTRODUCTION

Savannah Environmental (Pty) Ltd has been appointed by **Kotulo Tsatsi Energy (Pty) Ltd** as the lead consultants to undertake and manage the Environmental Impact Assessment (EIA) process for the development of the proposed Kotulo Tsatsi Energy PV3 facility and associated infrastructure (hereafter referred to as “the Project”). The proposed development is located on a site ~70 km south-west of the town of Kenhardt and 60km northeast of Brandvlei in the Northern Cape Province (refer to Figure 1-1).

Molatela Ledwaba of Savannah Environmental (Pty) Ltd is the independent social consultant responsible for undertaking a Social Impact Assessment (SIA) and compiling the report as part of the EIA process being conducted for the project.

1.1 Study Objective

The purpose of this Scoping Study is to examine all relevant factors in order to provide unbiased assessment of the potential social impact of the proposed construction and operation of the Project. The report presents the potential prospects and constraints identified through the scoping study that would potentially arise as a result of the implementation of the project.

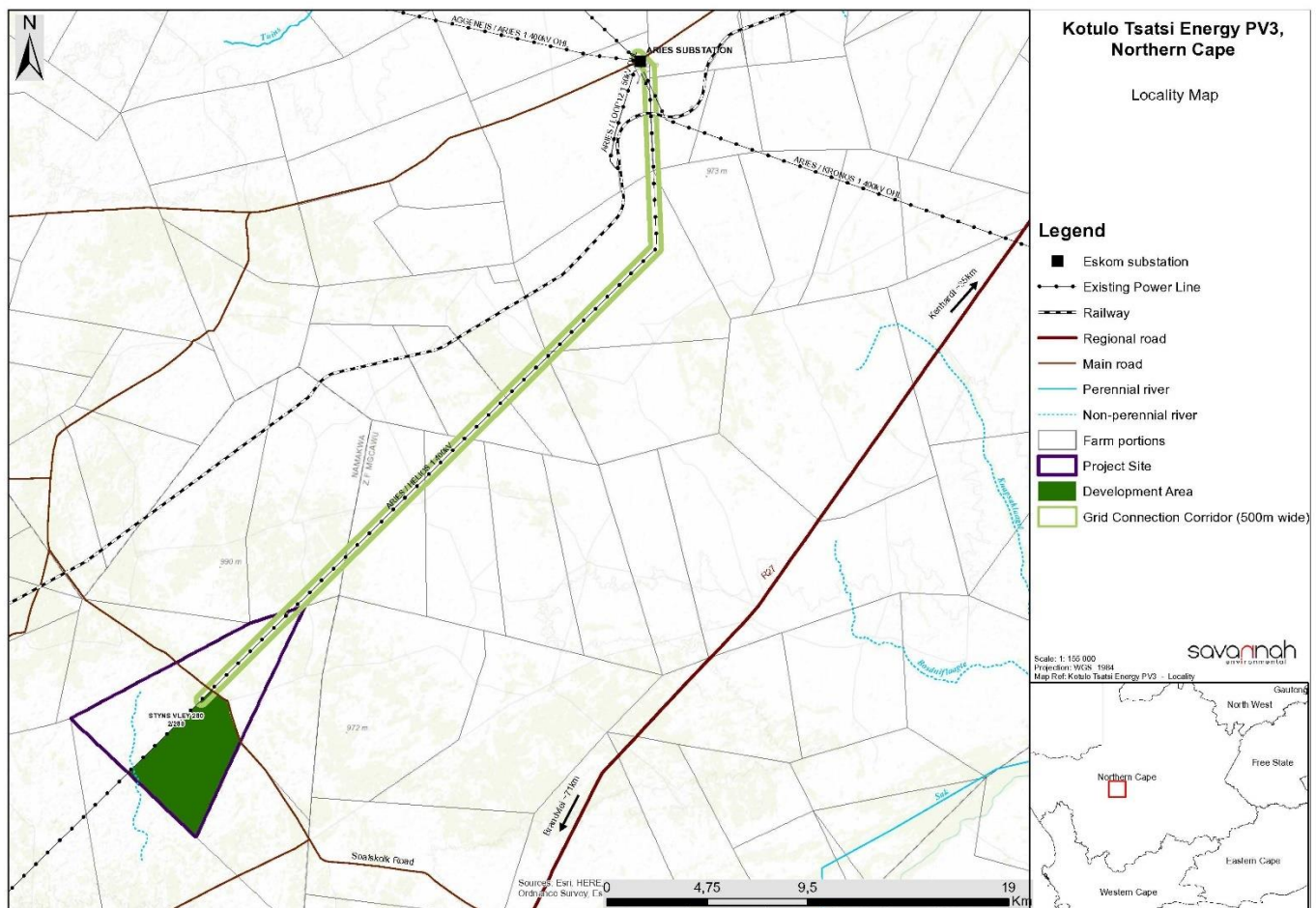


Figure 1-1 Locality map illustrating the location of the Kotulo Tsatsi Energy PV3 and Associated Infrastructure Northern Cape Province

1.2 Project Description

The proposed development is located on the Portion 2 of Farm Styns Vley 280. The facility development area of ~1840ha was defined through the Scoping evaluation of the site and has now been assessed for the facility footprint. The development footprint has an extent of ~1200ha. The solar energy facility will comprise several arrays of PV panels and associated infrastructure and will have a contracted capacity of up to 480MW. The PV facility is planned to be located within an area previously authorised for CSP project infrastructure, which is adjacent to the authorised Kotulo Tsatsi Energy PV3 and Facilities as well as the authorised CSP3 facility and associated infrastructure. The project site falls under the Hantam Local Municipality which is part of Namakwa District Municipality. The site is accessible via an existing gravel farm road (known as Soafskolk Road) which provides access to the farm off of the R27 which is located east of the project site.

The PV infrastructure assessed in this application is in response to the Applicant's need to change the authorised generation technology for the facility located on the farm Portion 2 of Farm Styns Vley 280. That is, a technology change from the previously authorised CSP project infrastructure to PV project infrastructure. In this regard, the solar PV facility will be connected to the grid via a 132kV grid connection solution to the authorised 400kV collector substation located on Portion 2 of Farm Styns Vley 280, and will comprise on-site switching substations, facility substations and a 132kV power line within a 500m wide corridor.

The infrastructure associated with the 480MW solar PV facility will include:

- » Solar PV array comprising PV modules and mounting structures.
- » Inverters and transformers.
- » Cabling between the project components.
- » BESS, O & M and laydown area hubs, including:
 - Battery Energy Storage System (BESS).
 - Site offices and maintenance building, including workshop areas for maintenance and storage.
 - Laydown areas and temporary construction camp area.
- » Access roads, internal distribution roads and fencing around the development area.
- » On-site facility substations, switching substations and 132kV power line to facilitate the connection between the PV Facility and the authorised 400kV collector substation.

1.3 Land Uses

Land uses within close proximity to the development area are very limited due to the remote location of the project. The land uses are mainly related to agricultural activities (low intensity sheep farming with the affected farms divided into livestock camps) and transportation infrastructure, which includes roads, railway and electricity transmission and distribution. There are no significant social receptors within or immediately adjacent to the development area. Adjacent landowners and local travellers using the R27 and surrounding gravel roads may be affected as social receptors (including the Soafskolk Road). Other social receptors include the surrounding homesteads, as well as agricultural activities such as livestock grazing. There are no major tourism activities in the project area, however a game hunting facility, known as Dagab, which is mainly utilised for hunting activities and not for leisure activities.



Photograph 1-1 Typical Photovoltaic Solar Energy Facility

1.3 Details of the Independent Specialist

This SIA Report has been undertaken by Molatela Ledwaba of Savannah Environmental. Tony Barbour has undertaken an external review of this SIA and has provided an external reviewer's letter. This letter is attached as **Appendix C**.

- » **Molatela Ledwaba** – holds a BA Environmental Management and has 13 years of experience. Her key focus is on Socio-Economic Baselines, Social Impact Assessment, public participation, stakeholder engagement, project coordination and production of maps using QGIS and ArcGIS.
- » **Tony Barbour** - is a social specialist who has undertaken in the region of 230 SIA's, including approximately 100 SIA's for a renewable energy projects, including wind and solar energy facilities. All of the SIAs have included an assessment of socio-economic issues. In addition, he is the author of the Guidelines for undertaking SIA's as part of the EIA process commissioned by the Western Cape Provincial Environmental Authorities in 2007. These guidelines have been used throughout South Africa. Tony has also undertaken a number of SIAs for PV facilities within the Northern Cape Province and is therefore familiar with the local socio-economic conditions.

1.4 Structure of the SIA Scoping Report

This SIA scoping report is divided into five (5) main sections:

- » Section 1: Introduction and Project Description
- » Section 2: Approach to Study and Methodology
- » Section 3: Related Policy and Planning Documents
- » Section 4: Overview of Study area
- » Section 5: Identification of key issues and
- » Section 6: Summary of Key findings

This SIA Scoping Report has been prepared in accordance with the requirements of Appendix 6 of the 2014 EIA Regulations, as amended. An overview of the contents of this SIA Scoping Report, as prescribed by Appendix 6 of the 2014 EIA Regulations (GNR 326), and where the corresponding information can be found within the report is provided in **Table 1-1**

Table 1-1: Specialist report requirements

Requirement	Location in Report
(a) Details of – (i) The specialist who prepared the report. (ii) The expertise of that specialist to compile a specialist report including a curriculum vitae.	Section 1
(b) A declaration that the specialist is independent in a form as may be specified by the competent authority.	Specialist Declaration of Interest
(c) An indication of the scope of, and the purpose for which, the report was prepared.	Section 1
(cA) An indication of the quality and age of base data used for the specialist report.	Section 4
(cB) A description of existing impacts on the site, cumulative impacts of the proposed development and levels of acceptable change.	Section 5
(d) The duration, date and season of the site investigation and the relevance of the season to the outcome of the assessment.	Section 2
(e) A description of the methodology adopted in preparing the report or carrying out the specialised process inclusive of equipment and modelling used.	Section 2
(f) Details of an assessment of the specific identified sensitivity of the site related to the proposed activity or activities and its associated structures and infrastructure, inclusive of a site plan identifying site alternative.	Section 4 Section 5
(g) An identification of any areas to be avoided, including buffers.	N/A
(h) A map superimposing the activity including the associated structures and infrastructure on the environmental sensitivities of the site including areas to be avoided, including buffers	N/A
(i) A description of any assumptions made and any uncertainties or gaps in knowledge.	Section 2
(j) A description of the findings and potential implications of such findings on the impact of the proposed activity or activities.	Section 6
(k) Any mitigation measures for inclusion in the EMPr.	Appendix A
(l) A description of any consultation process that was undertaken during the course of preparing the specialist report.	N/A
(m) A summary and copies of any comments received during any consultation process and where applicable all responses thereto.	Appendix A
(n) Any other information requested by the competent authority.	N/A
2. Where a government notice gazetted by the Minister provides for any protocol or minimum information requirement to be applied to a specialist report, the requirements as indicated in such notice will apply.	N/A

2. APPROACH TO STUDY AND METHODOLOGY

The method used for this SIA is based on the Social Impact Assessment Guidelines from the Western Cape Department of Environmental Affairs and Development Planning (DEA&DP) (February 2007). These recommendations are based on best practices from around the world. These are the essential steps used to implement the SIA process's key activities:

- » Gathering information and reviewing of reports and baseline socio-economic data on the area.
- » Identification of the elements involved in the construction and operational phase of the project, such as an estimate of total capital expenditure, number of employments created and breakdown of the employment opportunities in terms in skill levels.
- » Review from key findings of specialist studies that have an impact on SIA, such as the Visual Impact Assessment (VIA), Soils and Agricultural Potential Impact Assessment and Heritage Impact Assessment.
- » Review of interviews and public participation held between 22 January and 25 January 2021.
- » The project's construction, operational, and decommissioning phases all have potential implications, both positive and negative, which should be identified and evaluated.
- » Identification and assessment of key issues, as well as assessment of potential impacts (both positive and negative) associated with the project's construction, operational and decommissioning phases.
- » Identifying and assessing cumulative impacts (positive and negative).
- » Identifying appropriate measures to avoid, mitigate, enhance and compensate for potential social impacts.
- » Compilation of Social Impact Assessment (SIA) Report.

Data Collection

The specialist conducted desktop data collection (desktop review) to understand the socioeconomic baseline conditions of the project-affected areas and socio-economic implications of the proposed project to the receiving environment. Method used is elaborated further in the following section.

2.1.1 Desktop review

The specialist reviewed available documents to obtain information regarding the socio-economic conditions in the study area. The documents reviewed include the following:

- » Documents pertaining to the proposed project, including the project description document.
- » IDPs and Spatial Development Framework of the affected local and district municipalities
- » The review of demographic and Socio-economic statistics from the 2011 Census Survey and relevant data as received from the identified municipalities.
- » The review of relevant planning and policy framework for the proposed area of intervention.
- » A review of information from similar projects.
- » Identification and description of social impacts, which can be associated with the proposed project.
- » The formulation of key findings and recommendations based on the collected data for the proposed project.
- » Review of inhouse SIA documents for similar Solar Energy projects in the local area including the Kotulo Tsatsi Energy PV1, January 2021.
- » Consideration of all social issues raised during 2021 public participation process undertaken with the affected and adjacent landowners for the Kotulo Tsatsi energy PV1.

2.1.2 Limitations and Assumption

This section of the report briefly describes the assumption and limitations for this SIA Scoping Study.

Limitations

The one limitation identified for this SIA is the use and availability of demographic data. Data derived from the 2011 Census, documents from Namakwa District Municipality and Hantam Local municipality were used to generate most of the information in the baseline profile of the study area. Dated data was treated with care and have been updated with 2016 community survey data where needed.

Assumption

The first assumption is that it is strategically important to promote renewable energy sources like solar energy. This is supported by the National and Provincial policies discussed in Section 3 of this report. Additionally, a crucial part of the SIA process is determining how well the development fits with key planning and policy documents to detect and evaluate any potential social impacts. The planned development cannot be supported if the findings of this review show that it does not adhere to the relevant policy documents. The proposed study does, however, acknowledge the strategic value of supporting solar energy, as was already mentioned.

The 2011 Census and 2016 Community Survey data from Statistics South Africa were mainly used to conduct the baseline study. These are the latest sources of government statistics. It should be noted that the data is relatively out of date and that actual population demographics may differ, even though it does provide useful information about the social situation of the area concerned. Statistics South Africa's 2019 Mid-year population estimates were used to supplement demographic data where possible.

2.2 Method of assessing the Impact

The impact assessment was undertaken using a matrix selection process, the most used methodology, for determining the significance of potential environmental impacts/risks. This methodology takes into account two aspects for assessing the potential significance of impacts, namely occurrence and severity, which are further sub-divided into the following categories in (Table 2.3)

Table 2-2: Impact assessment factors

Occurrence		Severity	
Probability of occurrence	Duration of occurrence	Scale/extent of impact	Magnitude of impact

Table 2-.3: Impact assessment scoring methodology

Value	Description
Magnitude	
10	Very high/ unknown
8	High
6	Moderate
4	Low

2	Minor
Duration	
5	Permanent (impact continues post closure)
4	Long Term (>15 years) (Impact ceases after decommissioning and closure)
3	Medium-term(5-15 years) (Impact ceases after the operational phase)
2	Short -term (2-5 years) (impact ceases after the construction phases)
1	Immediate (0-1 year)
Scale/ Geographic Extent	
5	International
4	National
3	Regional
2	Local
1	Site Only
0	None
Probability	
5	Definite/ Unknown (impact will definitely occur)
4	Highly Probable (most likely, 60% - 90% chance)
3	Medium Probability (40% - 60% chance)
2	Low Probability (5% - 40% chance)
1	Improbable (less than 5% chance)
0	None

Significance Points = (Magnitude + Duration + Scale) x Probability.

Table 2-4: Significance of impacts based on point allocation

Points	Significance	Description
SP>60	High environmental significance	An impact which could influence the decision about whether or not to proceed with the project regardless of any possible mitigation.
SP 30-60	Moderate environmental significance	An impact or benefit which is sufficiently important to require management, and which could have an influence on the decision unless it is mitigated.
SP<30	Low environmental significance	Impacts with little real effect and which will not have an influence on or require modification of the project design.
+	Positive impact	An impact that is likely to result in positive consequences/ effects

For the methodology outlined above, the following definitions were used:

- » Magnitude is a measure of the degree of change in a measurement of analysis and is classified as none/negligible, low, moderate or high.
- » Scale/ Geographic extent refers to the area that could be affected by the impact and is classified as site, local, regional, national, or international.
- » Duration refers to the length of the time over which an environmental impact may occur i.e., immediate/ transient, short-term, medium-term, long-term or permanent; and
- » Probability of occurrence is a description of the probability of the impact actually occurring as improbable (< 5% chance) low probability (5% - 40% chance), medium probability (40% - 60% chance), high probable (most likely, 60% - 90% chance) or definite (Impact will definitely occurs)

3. RELATED POLICY AND PLANNING DOCUMENTS

This Section of the report provides an overview of the related policy and planning documents affecting the proposed Kotulo Tsatsi Energy PV3. The overview of these documents includes policy and planning documents on National, Provisional, District and Local level. The following policy and planning documents were reviewed to meet the objectives on this SIA report.

3.1 National Level

- » Constitution of the Republic of South Africa, 1996
- » White Paper on the Energy Policy of the Republic of South Africa (1998)
- » White Paper on Renewable energy of 2003
- » National Development Plan (NDP) 2030
- » National Energy Act (No. 34 of 2008)
- » Integrated Resource Planning for South Africa of 2010-2030

3.2 Provincial Level

- » Northern Cape Provincial Growth and Development Plan (NCPGDP)

3.3 District Level

- » Namakwa District Municipality: Integrated Development Plan 2017-2022

3.4 Local Level

- » Hantam Local Economic Development Strategy, 2011
- » Hantam Local Municipality: Integrated Development Plan 2020-2021

Table 3-1 Relevant legislation and policies for the proposed Kotulo Tsatsi Energy PV3 Facility

Relevant legislation or policy	Relevance to the proposed project
Constitution of the Republic of South Africa, 1996	Section 24 of the Constitution pertains specifically to the environment. It states that Everyone has the right to an environment that is not harmful to their health or well-being, and to have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that prevent pollution and ecological degradation, promote conservation and secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development. The Constitution outlines the need to promote social and economic development. Section 24 of the Constitution therefore requires that development be conducted in such a manner that it does not infringe on an individual's environmental rights, health, or well-being. This is especially significant for previously disadvantaged individuals who are most at risk to environmental impacts.
White Paper on the Energy Policy of the Republic of South Africa of 1998	The White Paper on the Energy Policy of the Republic of South Africa of 1998 (further referred to as the White Paper) provides an overview of the South African energy sector's contribution to the country's economic sector. The White paper states that the South African Energy systems can greatly contribute to a successful development strategy and a more sustainable national growth. Therefore, this White Paper supports investment initiatives in renewable energy. Globally there has been rapid development in renewable energy technologies, due to its

Relevant legislation or policy	Relevance to the proposed project
	<p>many advantages, including cost-effectiveness. However, in South Africa the development and the implementation hereof have been neglected. According to the White Paper approximately 10% of South Africa's primary energy resources are provided through renewable energy resources. The advantages of renewable energy applications include: the impact on the environment is kept to the minimum, more cost-effective than traditional supply technologies and higher labour intensities</p> <p>The disadvantages of the renewable energy applications include: higher capital costs, lower densities and level of availability (depending on specific environmental systems like the sun and wind). Despite these disadvantages, renewable energy resources still operate from an unlimited resource base, meaning that another major advantage is that renewable energy is a more sustainable energy resource on the long-term.</p> <p>South Africa consists of very attractive renewable energy resources, including solar. This statement according to the White Paper guides the development of South Africa's renewable energy policy. The Government policy according to the White Paper (1998:79) is still concerned with meeting the following challenges:</p> <ul style="list-style-type: none"> » To ensure that the technologies and applications which are being implemented are economically feasible. » To ensure that an equitable level of national resources is invested in these renewable energy technologies; and » To address the constraints experienced on the development of the renewable energy industry. <p>Despite the Government policy's concerns, the policy still recognise renewable energy sources as unlimited resource bases with potential sustainability for the long-term. The Government stated also its support by stating in the White Paper on the Energy Policy of the Republic of South Africa of 1998 (1998:80) that the "Government will provide focused support for the development, demonstration and implementation of renewable energy sources for both small and large-scale applications".</p>
<p>White Paper on Renewable Energy of 2003</p>	<p>The White Paper on Renewable Energy of 2003 (further referred to as the White Paper) sets out the Government's vision, goals, objectives, policies and principles with regards to promoting and implementing renewable energy in South Africa. This Paper can be considered as a supplement paper to the White Paper on Energy Policy of 1998, which recognised the significant potential of renewable energy over medium- and long-term periods. The White paper has two overarching goals, namely to inform the public and Government agencies, including the Organs of the State, and the international community, of the Government's goals and the manner in which the Government plan to achieve these goals.</p> <p>The Paper states that the Government recognised the emission of greenhouse gasses and the effect of climate change globally. For this reason, the Government committed in reducing the greenhouse gas footprint of South Africa. According to the White Paper the Government's vision for renewable energy is "an energy economy in which modern renewable energy increases its share of energy consumed and provides affordable access to energy throughout South Africa, thus contributing to sustainable development and environmental conservation."</p> <p>Besides referring to other technologies of renewable energy, this paper specifically refers to the potential of solar resources for solar water heating applications, solar photovoltaic and solar thermal power generation in South Africa, directly relating to the proposed Kotu</p>

Relevant legislation or policy	Relevance to the proposed project
National Development Plan 2030	<p>The National Development Plan (NDP) 2030 is a plan prepared by the National Planning Commission in consultation with the South African public which is aimed at eliminating poverty and reducing inequality by 2030.</p> <p>In terms of the Energy Sector's role in empowering South Africa, the NDP envisages that, by 2030, South Africa will have an energy sector that promotes:</p> <ul style="list-style-type: none"> » Economic growth and development through adequate investment in energy infrastructure. The sector should provide reliable and efficient energy service at competitive rates, while supporting economic growth through job creation. » Social equity through expanded access to energy at affordable tariffs and through targeted, sustainable subsidies for needy households. » Environmental sustainability through efforts to reduce pollution and mitigate the effects of climate change. <p>The NDP aims to provide a supportive environment for growth and development, while promoting a more labour-absorbing economy.</p>
National Energy Act (No.34 of 2008)	<p>The purpose of the National Energy Act (No. 34 of 2008) is to ensure that diverse energy resources are available, in sustainable quantities and at affordable prices, to the South African economy in support of economic growth and poverty alleviation, while taking environmental management requirements into account. In addition, the Act also provides for energy planning, and increased generation and consumption of Renewable Energies (REs). The objectives of the Act, are to amongst other things, to:</p> <ul style="list-style-type: none"> » Ensure uninterrupted supply of energy to the Republic. » Promote diversity of supply of energy and its sources. » Facilitate energy access for improvement of the quality of life of the people of the Republic. » Contribute to the sustainable development of South Africa's economy. <p>The National Energy Act therefore recognises the significant role which electricity plays growing the economy while improving citizens' quality of life. The Act provides the legal framework which supports the development of RE facilities for the greater environmental and social good and provides the backdrop against which South Africa's strategic planning regarding future electricity provision and supply takes place. It also provides the legal framework which supports the development of RE facilities for the greater environmental and social good.</p>
Integrated Resource Planning for Electricity - South Africa of 2010-2030	<p>The Integrated Resource Plan for Electricity for South Africa of 2010-2030 (further referred to as the IRP) is a "living plan" which is expected to be revised and updated continuously as necessary due to changing circumstances. According to the Summary of the plan the current IRP for South Africa, which was originally initiated by the Department of Energy (DoE) in June 2010, led to the Revised Balanced Scenarios (RBS) for the period 2010- 2030.</p> <p>"This scenario was derived based on the cost-optimal solution for new build options (considering the direct costs of new build power plants), which was then "balanced" in accordance with qualitative measures such as local job creation." In addition to all existing and committed power plants, the RBS included 11,4 GW of renewables, which relates to the proposed Kotulo Tsatsi PV3 Energy Facility. In 2010 several changes were made to the IRP model. The main changes in the IRP were the disaggregation of renewable energy</p>

Relevant legislation or policy	Relevance to the proposed project
	<p>technologies to explicitly display solar photovoltaic (PV), concentrated solar power (CSP) and wind option</p> <p>The summary of the IRP further explains that traditional cost-optimal scenarios were developed based on the previously mentioned changes in the IRP. This resulted in the Policy-Adjusted IRP, which stated that:</p> <ul style="list-style-type: none"> » “The installation of renewables (solar PV, CSP and wind) have been brought forward in order to accelerate a local industry; » To account for the uncertainties associated with the costs of renewables and fuels, a nuclear fleet of 9,6 GW is included in the IRP; » The emission constraint of the RBS (275 million tons of carbon dioxide per year after 2024) is maintained; and » Energy efficiency demand-side management (EEDSM) measures are maintained at the level of the RBS” (IRP, 2011:6). <p>“The Policy-Adjusted IRP includes the same amount of coal and nuclear new builds as the RBS, while reflecting recent developments with respect to prices for renewables. In addition to all existing and committed power plants (including 10 GW committed coal), the plan includes 9,6 GW of nuclear; 6,3 GW of coal; 17,8 GW of renewables; and 8,9 GW of other generation sources” (IRP, 2011:6).</p> <p>The IRP highlights the commitments before the next IRP. The commitments pertaining to the purpose of the proposed Kotulo Tsatsi PV3 Energy Facility in renewable energy is:</p> <ul style="list-style-type: none"> » “Solar PV programme 2012-2015: In order to facilitate the connection of the first solar PV units to the grid in 2012 a firm commitment to this capacity is necessary. Furthermore, to provide the security of investment to ramp up a sustainable local industry cluster, the first four years from 2012 to 2015 require firm commitment.” » “Solar PV 2016 to 2019: As with wind, grid upgrades might become necessary for the second round of solar PV installations from 2016 to 2019, depending on their location. To trigger the associated tasks in a timely manner, a firm commitment to these capacities is necessary in the next round of the IRP at the latest. By then, the assumed cost decreases for solar PV will be confirmed” (IRP, 2011:17). <p>In conclusion the IRP as envisage in the Policy-Adjusted IRP should pursue solar PV programmes and an accelerated roll-out renewable energy options should be allowed with regards to the benefits of the localization in renewable energy technologies.</p>
<p>Northern Cape Provincial Growth and Development Plan</p>	<p>The Northern Cape Provincial Growth and Development Plan (NCPGDP) is aligned with NDP 2030 and seeks to eradicate poverty, inequality and halve unemployment by 2030. The NCPGDP identifies four key drivers to achieve the vision and reduce poverty and unemployment. Economic transformation and growth, social transformation and human welfare and environmental sustainability and resilience are relevant to identifying and assessing needs.</p> <ul style="list-style-type: none"> » Economic transformation and growth, which is aimed at creating employment opportunities and thereby reducing poverty. Skills development and training is identified as a key need. » Social transformation and human welfare, which is aimed at improving education levels, access to affordable and quality health care, improved safety, and security, and creating sustainable human settlements.

Relevant legislation or policy	Relevance to the proposed project
	<ul style="list-style-type: none"> » Environmental sustainability and resilience, which is aimed at protecting the regions natural resources and addressing the threats posed by climate change.
<p>Namakwa District Municipality Integrated Development Plan</p>	<p>The NDM IDP contains thirteen Strategic Objectives, namely:</p> <ul style="list-style-type: none"> » Monitor and support local municipalities to deliver basic services which include water, sanitation, housing, electricity and waste management. » Support vulnerable groups » Improve administrative and financial viability and capability. » Promote and facilitate Local Economic development » Enhance good governance. » Promote and facilitate spatial transformation and sustainable urban development » Improve communication and communication systems » Establish a customer care system » Invest in the improvement of ICT systems » To render a municipal health service » To coordinate the disaster management and fire management services in the district » Implement the climate change response plan » Caring for the environment <p>The IDP includes sectoral plans which are intended to ensure alignment between the different organs of state while providing input in the overall strategic objectives of the municipality. Sectoral plans include the Rural Development Plan, Climate Change Response Plan, Tourism Sector Plan, Air Quality Plan and the Housing Sector Plan.</p> <p>The Rural Development Plan notes that the NDM has a competitive advantage in the energy sector with solar, wind, nuclear, wave and natural gas energy plants identified for the area. Of note is the potential for an Eskom nuclear power plant to be constructed at Klientee. RE has recently become one of the cornerstones of NDM's economy of the District and there needs to be engagement on a National level to ensure that the district profits from this resource. The plan notes unemployment as one of the main reasons for poverty and highlights the importance of productive employment opportunities for reducing poverty and poverty and achieving sustainable economic and social development. Economic diversification in rural areas is crucial for bringing about rural development.</p>
<p>Hantam Local Municipality Integrated Development Plan</p>	<ul style="list-style-type: none"> » According to the IDP, major private sector-driven projects like the Square Kilometre Array (SKA) megaproject and renewable energy production could help the municipality's economy grow. The promotion of renewable energy initiatives is included as one of the district Spatial Development Framework's (SDF) objectives. In conclusion, the Kotulo Tsatsi Energy PV3 proposal is supported by policy and is consistent with national, provincial, and municipal frameworks.
<p>Hantam Local Economic Development Strategy</p>	<p>The strategy identifies renewable energy including wind energy as an opportunity for development of the economy of Hantam both in terms of the development of wind energy facilities and the related jobs these will create.</p>

4. OVERVIEW OF THE STUDY AREA

4.1 INTRODUCTION

This section of the report provides an overview of the baseline socio-economic conditions in the area that are relevant to the social and economic assessment of the proposed Kotulo Tsatsi Energy PV3. The baseline was obtained through secondary data sources such as Statistics South Africa, National census, Integrated Development Plan, Namakwa District Municipality, Hantam Local Municipality Data and Specialist studies.

4.2 Northern Cape Province

The Northern Cape Province (NCP) has the largest land mass in the country, covering 372 889 km² and accounting for 30.5% of the total land mass. The NCP is located in the north western corner of South Africa, bordered on the west by the Atlantic Ocean. The Molopo river forms the northern border of Botswana, while the Orange river, a vital source of water for agriculture and alluvial diamonds, forms the southern border of Namibia.

The NCP landscape is defined by vast arid plains interspersed with rocky outcrops. The Nama-Karoo biome covers the majority of the province, with the Savanna and Succulent Karoo biomes to the north and east, respectively. (Provincial Spatial Development Framework for the Northern Cape Province, 2018; Mucina & Rutherford, 2006). The capital, Kimberly, Upington, which is important for karakul sheep and dried fruit, De Aar, a center for the South African railway network, and Springbok, which is located within the Namaqualand spring flower landscape, are all important towns. The Big Hole in Kimberly, the South African Large Telescope (SALT), Augrabies Falls, and the world-renowned annual spring flower display which attracts thousands of people.

The Province has rich sources of minerals underpinning the NCP's mining industry, a key industry supporting the province. Mineral sources include the beaches and sea between Alexander Bay and Port Nolloth, where alluvial diamonds are mined, the Sishen mine near Kathu, South Africa's largest source of iron ore, and copper mines near Springbok and Aggeneys. Other minerals include marble, semi-precious stones, fluorspar and manganese. Fertile agricultural land is found along the Orange River and supports the intensive cultivation of grapes and fruit. supplies water to the Orange River Valley. Along the Orange River, there is rich agricultural area that supports the extensive wine and fruit agriculture. provides water to the Orange River Valley. (Provincial Spatial Development Framework for the Northern Cape Province, 2018; Northern Cape Municipalities, 2019).

The NCP has the greatest population in the nation, but just 2.1% of the total population. According to the 2011 Census, there were roughly 1 145 861 people living in the NCP (Stats SA, 2012.b). The NCP's population increased by 15.5% between the 2001 and 2011 censuses, matching the rate of growth seen throughout South Africa (Stats SA, 2014). According to estimates, NCP's population grew by 10.3% in 2019 to 1 263 875 people.

The Northern Cape has a sex ratio of 97.3 men for every 100 females, which is higher than the national average. In terms of age distribution, 30.1% of people are under the age of 15, 64.2% are between the ages of 15 and 64, and 5.7% are 65 or older. The population pyramid shows that the NCP has a young population and a high birth rate. Migration has an impact on the age distribution and structures of the local population. Emigration from the province in search of employment may be the cause of the decline in population

between the age groups of 25-29 and 30-34. With regards to population groups, the majority of the population is black African, 50.4%. The coloured population makes up the second largest population group, 40.3%. 7.1% are white and 0.7 are Indian/Asian. Interesting to note is that between 1996 and 2011, the province has seen an increase in the black African population group and a decline in the other population groups. Afrikaans is the most widely spoken language in the Northern Cape, with 53.8% of the population speaking it as their first language. This was followed by Setswana, 33.1%, isiXhosa, 5.3%, and English, 3.4%. Various other languages make up the remaining 4.4% (Stats SA, 2014). The dependency ratio indicates the burden placed on the population of working age, between 15 and 64 years, who support children under 15 years and people over 65 years. Despite a youthful population, the dependency ratio for the NCP has been decreasing over the years, from 65,8 in 1996 to 55,8 in 2011. As of 2011, the unemployment rate for the Northern Cape was 28.1%, slightly lower than the national average of 29.8% (Stats SA, 2012.a; Stats SA, 2012.b).

According to the 2011 Census, there were 304 405 households within the NCP, with an average household size of 3.8. The average household income was R86 183 per annum. 84.5% of households lived in Formal Dwellings, while 11.5% lived in Informal Dwellings and 2.9% lived in Traditional Dwellings. Of the households, 65.2% were owned (either fully or not yet fully paid off), 14.4% were rented and 20.4% were occupied 'rent free'. With regards to household services, 69.2% of households had access to a type of 'flush toilet' and 79.7% had access to piped water within their dwelling. 89.3% of households used electricity for lighting and 68.9% had weekly refuse removal (Stats SA, 2014; Stats SA, 2012.a).

Education levels in the NCP have improved over the years, with the percentage of those achieving grade 12 increasing from 15.8% in 2001 up to 23.0% in 2011 (Stats SA, 2014). This improved to 32,1% in 2016 (Northern Cape Provincial Treasury, 2018). With regards to health matters, the NCP has the highest life expectancy of the nine provinces. Life expectancies are estimated at 59.1 years for males and 66 years for females (Stats SA, 2019). Based on a 2015 survey, the NCP has the second lowest prevalence of HIV (National Department of Health, 2015)



Figure 4-1 Maps indicating the location of the Northern Cape Province (<https://municipalities.co.za/>)

4.3 Namakwa District Municipality

The Namakwa District Municipality (NDM) is situated in the north-western corner of South Africa and is bordered by the Atlantic Ocean to the west, Namibia to the north, ZF Mgcawu and Pixley ka Seme District Municipalities to the north-east and east, respectively and the Western Cape Province to the south. The NDM is made up of six local municipalities, namely Richtersveld, Nama Khoi, Khai Ma, Kamiesberg, Hantam and Karoo Hoogland. The district has an area of 126 836km², making it the largest district municipality in South Africa, with the town of Springbok functions as the administrative centre. The National Route 7 (N7), an important transport route, passes through the district.

The main economic sectors contributing to the district are agriculture, mining, mari-culture, tourism, industry and electricity. Between 2003 and 2013, the tertiary sector had the highest contribution to the economy with an average annual contribution of 63.1%. This was followed by the primary sector contributing an annual average of 33.8%. The agricultural sector is the second largest employer in the district and includes stock-farming and the cultivation of various fruits along the Orange River. Abalone and oyster production along the western coast offer further opportunities which could be developed.

Mining is a major economic contributor to the NDM and occurs in four of the six local municipalities. Minerals mined include diamonds, copper, zinc, lead and granite. Several of the mines have come to the end of their economic life, which has led to a number of mines that have either closed or are about to close. One of the largest mines, O'kiep Copper Company, is one such mine that has closed. The closure of mines has had a large negative impact on the district's economy. The NDM had the highest solar radiation intensity in Southern Africa, making it an ideal location for solar projects. Wind, wave and nuclear energy have also been identified as renewable energy sources which could potentially support the energy sector (Namakwa District Municipality: IDP, 2017).

In terms of demographics, the NDM has a population of 132 056 people, (Source: IHS Markit Regional eXplorer version 1750). Between 2008 and 2018 the population increased by an average of 0.93% annually, which is less than half of South Africa's overall growth rate of 1.57%. Namakwa's population growth rate was 0.93%, which was roughly half of the Northern Cape's average yearly growth rate (1.66%). The coloured population are the largest population group within the district, making up approximately 83.1% of the population. Approximately 8.7% percent of the population are white, 6.8% are black African, 0.5% are Indian/Asian and 0.7% are classified as Other (Stats SA, 2014). The vast majority of the population, 96.5%, of the speak Afrikaans as their first language. IsiXhosa is spoken by 0.9% of the population and English by 0.7%. (Stats SA, 2016). Based on the 2016 Community Survey, the district has a total of 37 699 households. Of the households 95.2% live in Formal Dwellings, with 72.6% living in houses that were either owned or being paid off, and 10.4% of households rented. Piped water is supplied directly to 96% of the households, with 81.4% having access to flush toilets. 84% and 7.7% of households had in-house pre-paid and conventional electricity meters respectively. 86.2% of households had their refuse removed by a service provider on a regular basis. (Stats SA, 2016).



Figure 4-2 Map indicating the location of the Namakwa District Municipality and Hantam Local Municipality
(<https://municipalities.co.za/>)

4.4 Hantam Local Municipality

The Jurisdiction Hantam Municipality over 36 128 km², which accounts for 28% of the total area (126 836 km²) of the Namakwa District municipality within which it lies. The Hantam Municipality is located in the district's south-western corner, situated between the municipalities of the Northern Cape and the Western Cape(see Figure 4-2).

The majority of the population within the municipality lives in Calvinia, Nieuwoudtville, Loeriesfontein, Brandvlei, and Middelpos. The largest is Calvinia, followed by Loeriesfontein, Nieuwoudtville, Brandvlei, and Middelpos. In terms of demographics, the HLM has a population of 21 505 people, (Source: IHS Markit Regional eXplorer version 1750). Between 2011 and 2017 the population increased by an average of 0.2% annually with a marginally high increase (0,3%) per annum in the number of households.

Major tarred roads such as the R27 and the R63 connect these areas. The R357, R355, and R354 are the major gravel roads in the municipality. Calvinia has a small light aircraft airfield, and smaller airstrips have been discovered in Brandvlei. The Saldanha-Sishen railway line also cuts through the northern and western parts of the Hantam Local Municipality.

5. IDENTIFICATION AND EVALUATION OF SOCIAL IMPACTS

5.1 INTRODUCTION

This section focuses on the identification of the key social issues associated with the construction, operation and decommissioning of the proposed Kotulo Tsatsi Energy PV3. The preliminary identification of potential impacts is based on desktop information gathered as well as a review of documentation, including EIAs for similar projects in the area, as well as experience gained from conducting similar assessments. A full assessment of the potential impacts will be made in the EIA phase of the project once the project has been announced and field work is complete.

5.2 Social Impacts during the Construction Phase

The following construction phase impacts can be expected for the project:

Potential positive impacts

- » Creation of employment opportunities, Business opportunities and opportunity for skills development and training

Potential negative impacts

- » In- migration or potential influx of job seekers
- » Nuisance impacts
- » visual impacts
- » Safety and security impact
- » Impacts on daily living and movement patterns.
- » Risk to safety, livestock and farm infrastructure

5.2.1 Potential Positive Impact: Creation of local employment and business opportunities, skill development and training

According to the information provided, the construction phase of the proposed Kotulo Tsatsi PV3 Solar Energy Facility will extend over a period of 12-18 months. A total of approximately 200-250 people are expected to be employed during construction phase. This will provide a social benefit to the community, the closest towns (i.e Kenhardt and Brandvlei). The construction phase will also be beneficial for the local service industry. The possible employment prospects would be related to transportation, security, cleaning, catering, and accommodation needs for the construction workers. The availability of lodging will also help the region's hospitality economy.

Table 5-1 Impact Assessment of creation of local employment and business opportunities, skills development and training

Nature: The creation employment opportunities and skills development		
Impact description: The creation of employment opportunities and skills development opportunities during the construction phase for the country and local economy		
	Prior to Enhancement	Post Enhancement
Duration	Short-term (2)	Short-term (2)
Extent	Local- Regional (3)	Local- Regional (3)

Magnitude	Low (4)	Moderate (6)
Probability	Probable (3)	Highly Probable (4)
Significance	Medium (40)	Medium (45)
Enhancement measures:		
<p>To enhance the local employment, skills development and business opportunities associated with the construction phase, it is recommended that the following measures be considered for implementation:</p> <ul style="list-style-type: none"> » Adoption of a local employment policy to maximise the opportunities made available to the local labour force. The Kotulo Tsatsi (Pty) Ltd should make it a requirement for contractors to implement a 'locals first' policy, especially for semi and low skilled job categories. » Enhance employment opportunities for the immediate local area, i.e., Hantam Local Municipality. If this is not possible, then the broader focus areas should be considered for sourcing workers. » The recruitment selection process must seek to promote gender equality, consideration must be given to women during the process. » It is recommended that realistic local recruitment targets be set for the construction phase. 		
Residual Risks:		
<p>The residual impacts associated with the creation of employment, business opportunities and training during the construction phase is that the workers can improve their skills by gaining more experience, improve quality of life and economic growth for small-scale entrepreneurs.</p>		

5.2.2 Potential Negative Impact- In-migration or potential influx of job seekers

In the case of large construction projects, job seekers tend to migrate to the development area in search of work. In some cases, the job seekers' families accompany them. Whether or not the job seekers find work, they and their families may become economically stranded in the surrounding area. The influx of job seekers has no direct social impact, but their presence and behaviours can have an impact on community structures and social networks, competition for housing and jobs, which can lead to xenophobia and crime.

Table 5-2- Impact Assessment of potential in migration or potential of job seekers

Nature:		
Migration from jobseekers and population changes.		
Impact description: Added pressure on economic and social infrastructure during construction as a result of in-migration of people to the region		
	Prior to Mitigation	Post Mitigation
Duration	Short-term (2)	Short-term (2)
Extent	Local (2)	Local (2)
Magnitude	Low (4)	Minor (2)
Probability	Medium Probability (3)	Improbable (1)
Significance	Low Negative (24)	Low Negative (12)
Mitigation:		
<ul style="list-style-type: none"> » In collaboration with the municipality and local community leaders, create and implement a recruitment protocol. Make certain that the procedures for applying for jobs are clearly communicated. » Create and implement a local procurement policy that prioritizes "locals first" to prevent people from migrating to the area in search of work. » Prior to construction, engage with local community representatives to facilitate the adoption of the "locals first" procurement policy. » Provide workers with transportation (from towns such as Kenhardt, Brandvlei, and others) so that they can easily access their place of employment and do not need to relocate closer to the site. » Prevent the recruitment of workers at the site. » Create and implement a grievance procedure. » Appoint a Community Liaison Officer (CLO) to assist with local labour procurement. 		

<ul style="list-style-type: none"> » Implement a method of communication in which procedures for lodging complaints are laid out so that the local community can express any complaints or grievances about the construction process. » Establish clear access rules and regulations for the proposed site. » Appoint a security company and put in place appropriate security procedures to ensure that employees do not remain on the premises after working hours. » Inform local community organizations and law enforcement forums about construction activities, times, and duration.
<p>Residual Risks: Possibility of outside workers remaining in the neighbourhood after construction is completed and subsequent pressures on local infrastructure.</p>

5.2.3 Potential Negative Impact of heavy construction vehicles and increase in traffic.

The main entrance to the site is on Soafskolk road entrance. The gravel farm road (main entrance) provides access to the proposed development project area. The movement of heavy construction vehicles during the construction phase might potentially damage the current farm roads and in the process also increase traffic, create dust and safety impacts in the associated area. The road surface of the gravel road may deteriorate and will have to be maintained. The contractor should thus repair all the damages to the gravel road before the end of construction phase. The landowner that was interviewed for the purpose of this SIA expressed her concern regarding the possible damage to the existing road.

Table 5-3- Impact Assessment associated with construction related activities

Nature: Potential noise, dust, and safety impacts associated with construction-related activity movement and traffic movement to and from the site		
Impact description: The Soafskolk road and the R27 will be used more frequently and the slow-moving construction and delivery vehicles may cause the intersection to be more unsafe.		
	Prior to Mitigation	Post Mitigation
Duration	Short-term (2)	Short-term (2)
Extent	Local (2)	Local (2)
Magnitude	Moderate (6)	Low (4)
Probability	High Probability (4)	Probable (3)
Significance	Medium (36)	Low (21)
Mitigation:		
<ul style="list-style-type: none"> » During the construction phase, working hours should ideally be limited to daylight hours. Where a change in working hours is required, the relevant authorities must approve it, and surrounding landowners must be notified. » All vehicles must be roadworthy, and drivers must be licensed, follow traffic rules, adhere to speed limits, and be made aware of potential road safety issues. » The EPC contractor should inspect construction vehicles on a regular basis to ensure their roadworthiness. » For the duration of the construction period, it is necessary to establish traffic warning signs and control measures that are adequate and strategically located along the R27 and gravel access roads, including the Soafskolk road. At all times, but especially at night, warning signals must be seen. » Ongoing communication with land owners and road users during construction period. » It is necessary to create communication lines between the EPC contractor and the impacted and nearby landowners. A Community Liaison Officer should be recruited to carry out the suggested grievance mechanism. » To allow the local community to voice any issues or grievances over the construction process, a mechanism of contact with clear processes for filing complaints should be created. » Dust suppression measures must be implemented on un-surfaced roads, such as wetting on a regular basis and ensuring that vehicles used to transport building materials are fitted with tarpaulins or covers. 		

- » Before construction begins, hold informational seminars to ensure that the nearby communities are fully informed about the project that will be produced in its finished form. This needs to be done via the Community Liaison Officer (CLO).

Residual Risks:

If damage to local roads is not repaired, it will affect other road users and result in higher maintenance costs. The costs will be borne by road users who were not at fault for the damage.

5.2.4 Potential Negative Impact- Safety and Security

Construction activities are frequently linked to an increase in crime. As in-migration of newcomers, construction workers, or jobseekers is typically associated with an increase in crime, the perceived loss of security during the construction phase of the proposed project brought on by the influx of workers and/or outsiders may have indirect effects like increased safety and security issues for neighboring properties or damage to property, increased risk of veld fire, stock theft, etc. It is recommended that the project developer foster and maintain good relationships with adjacent landowners, as well as implement adequate grievance control mechanisms.

Table 5-4- Impact Assessment of safety and security

Nature:		
The influx of people during the construction phase may cause a temporary increase in safety and security concerns.		
Impact description: Added pressure on economic and social infrastructure during construction as a result of in-migration of people to the region		
	Prior to Mitigation	Post Mitigation
Duration	Short-term (2)	Short-term (2)
Extent	Local (2)	Local (2)
Magnitude	High (8)	Low (4)
Probability	Medium Probability (3)	Improbable (1)
Significance	Medium Negative (36)	Low Negative (16)
Mitigation:		
<ul style="list-style-type: none"> » During the construction phase, working hours should ideally be limited to daylight hours. Where a change in working hours is required, the relevant authorities must approve it, and surrounding landowners must be notified. » Employees must be easily identified and must follow the site's security rules. » A specific code of conduct and rules must be established and enforced for all employees who will be residing within the man camp. » Specific penalties must be imposed when these rules are not followed. » Provide transportation for workers (from towns such as Kenhardt and Barndvlei) who will not be residing on-site. » Enforce speed limits for all vehicles associated with the project, with fines issued to offenders as appropriate. » Road signage must be maintained during the construction phase, and appropriate road rules must be developed and enforced for all staff. » To prevent any unauthorized access to the construction site, the perimeter must be well protected. » During both the construction and operation phases, the site's fencing must be maintained. » The appointment EPC contractor is responsible for selecting a security firm and putting in place the necessary security protocols and measures. » A security firm hired for the project must strictly regulate access into and out of the construction site. » No open fire is permitted outside of designated areas. » The EPC is responsible for providing adequate firefighting equipment on-site as well as firefighting training to selected construction personnel. » The contractor should have first-aid personnel on hand to handle minor incidents that necessitate medical attention. 		

- » To implement a grievance mechanism, a CLO must be appointed, and communication protocol must be implemented in order for the local community to express any complaints or grievances regarding the construction process.
- » The EPC contractor must implement a stakeholder management plan to address adjacent landowner and tenant concerns about safety and security.
- » Land access protocols, fire management, and road safety would all be covered in a comprehensive employee induction program. This must be addressed in the construction EMPr in order to achieve the best results.

Residual Risks:

Residual impacts related to losses through crime, stock theft and lasting damage to properties and infrastructure.

5.2.5 Potential Negative Impact- on daily living and movement patterns

Increased traffic from construction vehicles may cause disruptions in the community and increase safety risks. Local road and transportation system use may result in road deterioration (and associated safety risks) and congestion. This effect could be amplified because gravel roads are not always designed to carry heavy traffic and are prone to erosion. Heavy vehicle traffic during the construction phase may also cause noise, vibrations, dust, and visual pollution, which may have a negative impact on local residents and road users.

Table 5-5 Impact Assessment on daily living and movement patterns

Nature:		
Temporary increase in traffic disruption and movement patterns during the construction phase.		
Impact description: Added pressure on economic and social infrastructure during construction as a result of immigration of people to the region		
	Prior to Mitigation	Post Mitigation
Duration	Short-term (2)	Short-term (2)
Extent	Local (2)	Local (2)
Magnitude	High (8)	Low (4)
Probability	High Probable (4)	Probable (3)
Significance	Medium Negative (48)	Low Negative (24)
Mitigation:		
<ul style="list-style-type: none"> » During the construction phase, working hours should ideally be limited to daylight hours. Where a change in working hours is required, the relevant authorities must approve it, and surrounding landowners must be notified. » Employees must be easily identified and must follow the site's security rules. » A specific code of conduct and rules must be established and enforced for all employees who will be residing within the man camp. » Specific penalties must be imposed when these rules are not followed. » Provide transportation for workers (from towns such as Kenhardt and Barndvlei) who will not be residing on-site. » Enforce speed limits for all vehicles associated with the project, with fines issued to offenders as appropriate. » Road signage must be maintained during the construction phase, and appropriate road rules must be developed and enforced for all staff. » To prevent any unauthorized access to the construction site, the perimeter must be well protected. » During both the construction and operation phases, the site's fencing must be maintained. » The appointment EPC contractor is responsible for selecting a security firm and putting in place the necessary security protocols and measures. » A security firm hired for the project must strictly regulate access into and out of the construction site. » No open fire is permitted outside of designated areas. 		

- » The EPC is responsible for providing adequate firefighting equipment on-site as well as firefighting training to selected construction personnel.
- » The contractor should have first-aid personnel on hand to handle minor incidents that necessitate medical attention.
- » To implement a grievance mechanism, a CLO must be appointed, and communication protocol must be implemented in order for the local community to express any complaints or grievances regarding the construction process.
- » The EPC contractor must implement a stakeholder management plan to address adjacent landowner and tenant concerns about safety and security.
- » Land access protocols, fire management, and road safety would all be covered in a comprehensive employee induction program. This must be addressed in the construction EMP in order to achieve the best results.
- »

Residual Risks:

Residual impacts related to losses through crime, stock theft and lasting damage to properties and infrastructure.

5.2.6. Risk to safety, livestock and farm infrastructure

The presence and movement of construction workers on and off the site poses a potential safety risk to nearby farmers and farm workers. Furthermore, farm infrastructure such as fences and gates may be damaged, and stock losses may occur if gates are left open. The presence of construction workers on the site also exposes local farming operations to the outside world, potentially increasing the risk of stock theft.

The potential risks (safety, livestock, and farm infrastructure) can be effectively mitigated by careful planning and management of construction worker movement on the construction site during the construction phase. These risks' mitigation strategies are outlined below. As a result, the proponent must take the necessary steps to ensure that the necessary procedures are in place to ensure that the mitigation measures are implemented effectively. During the construction phase, this includes implementing an effective monitoring and evaluation program.

Table 5-6 Impact Assessment of risk of safety, livestock and damage to farm infrastructure.

Nature:		
Temporary increase in traffic disruption and movement patterns during the construction phase.		
Impact description: Potential risk to safety of farmers and farm workers, livestock and damage to farm infrastructure associated with the presence of construction workers on site.		
	Prior to Mitigation	Post Mitigation
Duration	Short-term (2)	Short-term (2)
Extent	Local (2)	Local (2)
Magnitude	medium (3)	Low (2)
Probability	High Probable (4)	Low Probable (2)
Significance	Medium Negative (40)	Low Negative (16)
Mitigation:		
<ul style="list-style-type: none"> » The proponent should enter into an agreement with the local farmers in the area to compensate for damages to farm property and other property during the construction phase. The contract should be signed before the construction phase begins. » Contractors chosen by the proponent must see to it that all workers are made aware of the terms of the Code of Conduct at the beginning of the construction phase, specifically the repercussions of stock theft and trespassing on neighboring farms. » The Environmental Management Plan (EMP) must outline procedures for managing and storing waste on site, specifically plastic waste that poses a threat to livestock if ingested. 		

<ul style="list-style-type: none"> » Contractors appointed by the proponent must ensure that construction workers who are found guilty of stealing livestock and/or damaging farm infrastructure are dismissed and charged. This should be contained in the Code of Conduct. All dismissals must be in accordance with South African labour legislation. » It is advised that only security employees be allowed to spend the night on the building site.
<p>Residual Risks: No, if losses are compensated for.</p>

5.3 Social Impacts during the Operation Phase

Potential positive impacts

- » The establishment of the renewable energy infrastructure and generation of clean and renewable energy.
- » Creation of local employment and business opportunities, skills development and training

Potential negative impacts

- » The visual impacts and associated impact on the sense of place
- » Contribution to Local Economic Development (LED) and social upliftment

5.3.1 Potential Positive Impact: Creation of local employment and business opportunities, skill development and training.

This project will be beneficial for the community in the long run to execute a capacity building and skills development training program. As people receive training, their income will rise, and their material and economic well-being will advance. The majority of individuals in the area work in mining, agriculture, and tourism as they are the primary economic sectors within the Hantam Local Municipality. Since the energy industry is new to the area, the available talent pool is small. Members of the community will be able to work at other similar projects in the region with the help of their acquired skills.

Table 5-7- Long-term employment and business opportunities, skill development and training.

Nature: Job creation during operation.		
Impact description: The creation of employment opportunities and skills development opportunities during the operation phase for the country and local economy		
	Prior to Enhancement	Post Enhancement
Duration	Long term (4)	Long-term (4)
Extent	Local -Regional (3)	Local - Regional (3)
Magnitude	Low (4)	Low (4)
Probability	Medium Probable (3)	High Probable (4)
Significance	Medium Positive (28)	Medium Positive (32)
Enhancement measures:		
<ul style="list-style-type: none"> » It is recommended that a local employment policy is adopted by the Project Developer to maximise the project opportunities made available to the local community. Enhancement of employment opportunities for the immediate local area, HLM, if this is not possible, then the broader focus areas should be considered for sourcing employees. » The recruitment selection process should seek to promote gender equality and the employment of women wherever possible. 		

- » Wherever practicable, vocational training programs ought to be implemented to support employee skill development.
- » Proof of skills development must be provided to the upskilled and individual.

Residual Risks:

Improved pool of skills and experience in the local area

5.3.2 Potential Positive Impact: The development of infrastructure for the generation of renewable energy

Most South Africa's energy requirements are now satisfied by coal, according to an analysis of prior projects. Although the projected Kotulo Tsatsi Energy PV3 will only make a relatively small contribution to South Africa's overall electricity grid, it will help offset the country's overall carbon emissions from the energy generation sector. The projected Kotulo Tsatsi PV 3 will benefit the energy sector in this regard as an Independent Power Provider (IPP) for renewable energy.

Table 5-8 Impacts Assessment of development of infrastructure for the generation of renewable energy

Nature: Development of clean, renewable energy infrastructure.		
Impact description: Development of clean, renewable energy infrastructure		
	Prior to Enhancement	Post Enhancement
Duration	Long term (4)	N/A
Extent	Local – Regional -National (4)	N/A
Magnitude	Minor(2)	N/A
Probability	Highly Probable (4)	N/A
Significance	Medium Positive (40)	N/A
Enhancement measures: None anticipated		
Residual Risks: Reduce carbon emissions through the use of renewable energy and contributing to efforts to reduce global warming		

5.3.3 Potential Positive Impact: Assessment of the contribution to Local Economic Development (LED) and social upliftment

As part of their bidding requirements, projects in the DMRE's REIPPP Programme must contribute to LED and social upliftment initiatives in the area in which they are proposed. Furthermore, they must spend a portion of their revenue on socioeconomic and enterprise development, as well as allocate ownership shares to local communities that benefit previously disadvantaged communities surrounding the project. A portion of each development's dividends must also be invested in LED projects and programs. As a result, Kotulo Tsatsi Energy PV3 has the potential to positively contribute to socioeconomic development and improvement in the surrounding area.

The project's socioeconomic spin-offs may contribute to the upliftment of the surrounding communities. An in-depth Community Needs Assessment (CNA) is required to ensure that the beneficiary community's needs are understood and adequately addressed by the proposed development programs in order to contribute meaningfully to local economic growth and development.

Table 5-9- Impact Assessment of potential visual impact and impact on sense of place

Nature: Contribution to LED and social upliftment during the operation of the project		
Impact description: Visual impacts and sense of place impacts associated with the operation phase of the Project		
	Prior to Mitigation	Post Mitigation
Duration	Long term (4)	Long term (4)
Extent	Local - Regional (3)	Local - Regional (3)
Magnitude	Low (4)	Moderate (6)
Probability	Highly probable (4)	Definite (5)
Significance	Medium (44)	High (65)
Mitigation:		
<ul style="list-style-type: none"> » A CNA is required to ensure that the LED and social upliftment programs proposed by the project are relevant to the local communities and current situation. » Ongoing communication and reporting are required to ensure that the maximum benefit is obtained from the identified programs and to avoid the possibility of such programs being misused. » The programs must be reviewed on a regular basis to ensure that they are still meeting the needs of the community (bearing in mind that these are likely to change over time). 		
Residual Risks:		
Social upliftment of the local communities through the development and operation of the project.		

5.3.4 Potential Negative Impact: Visual impact and impact on sense of place.

The Kotulo Tsatsi Energy PV3 is expected to have a medium significance from a social perspective, which can be mitigated to a low significant because the proposed development is located on a private property, within an area that is characterized as having a low population density and being of a natural state. Beginning during the construction phase and continuing during the project's operating life, the project will affect the feeling of place in the eyes of the nearby citizens (more specifically, the neighboring landowners located within a 6 km radius of the project) and road users.

Table 5-10- Impact Assessment - Long-term employment and business opportunities, skill development and training.

Nature:		
Visual impacts and sense of place impacts associated with the operation phase of Kotulo Tsatsi Energy PV3.		
Impact description: Visual impacts and sense of place		
	Prior to Enhancement	Post Enhancement
Duration	Long term (4)	Long-term (4)
Extent	Local (2)	Local (2)
Magnitude	Moderate (6)	Low (4)
Probability	Medium Probable (3)	Medium Probable (4)
Significance	Medium (33)	Low (27)
Enhancement measures:		
<ul style="list-style-type: none"> » Maintain and manage the facility to keep it in good and neat condition so that no degradation of the area and site occurs and affects the visual quality of the area. » Implement the mitigation measures recommended in the Visual Impact Assessment for the change in character, sense of place, and landscape character. 		

Residual Risks:

The visual impact of Kotulo Tsatsi Energy PV3 will remain until the infrastructure is completely decommissioned and removed. Thereafter the impact will be removed.

5.4 Social Impacts during the Decommissioning Phase

These effects are likely to occur in 20-25 years, and new technologies may be available to extend the project's duration indefinitely. However, should the site be decommissioned there will be both negative and positive impacts.

Potential negative impacts

- » Opportunities for short-term employment in deconstruction
- » Restoration of sense of place due to reduction of noise and visual impacts

5.4.1 Potential Negative Impact: Loss of local employment and income

The most likely negative impact of the decommissioning phase is the loss of employment and income, which has a direct impact on the employees' households and the communities in which they live. The identified impacts associated with the decommissioning phase can be managed through the implementation of downscaling programs and retrenchment packages.

Table 5-11-Impact assessment of Loss of income and employment

Nature:		
Loss of income and employment		
Impact description: Loss of income and employment		
	Prior to Mitigation	Post Mitigation
Duration	Medium term (4)	Short (1)
Extent	Local (2)	Local 2
Magnitude	High (8)	Moderate (6)
Probability	Medium Probable (2)	Medium Probable (2)
Significance	Medium (18)	Medium
Mitigation:		
<ul style="list-style-type: none"> » During the decommissioning phase, retrenchment packages should be made available to all staff being retrenched. » Kotulo Tsatsi energy PV3 should be dismantled and removed from the site. Funds should also be set aside for rehabilitation and the closure of Kotulo Tsatsi energy PV3. 		
Residual Risks:		
No residual impacts		

5.5 Cumulative Impacts

There are a number of proposed and authorised projects in the broader area, which result in the potential for cumulative impacts on the social environment. Potential cumulative impacts identified for the project include positive impacts on the economy, business development, and employment, as well as negative impacts such as an influx of jobseekers and change in the areas sense of place.

5.5.1 Cumulative Impact of employment opportunities, business opportunities and skills development

The Kotulo Tsatsi Energy PV3 and the establishment of other solar energy facilities has the potential to result in significant positive cumulative impacts; specifically with the creation of a number of socio-economic opportunities for the Province, which in turn, will result in a positive social benefit. The proposed solar energy facility, will also create a number of socioeconomic opportunities for the Hantam Local municipality. Positive cumulative opportunities include job creation, skill development and training, and downstream business opportunities. The potential cumulative benefits for the local and regional economies are thus associated with both the construction and operational phases of renewable energy projects and associated infrastructure and span a 20-25-year period. However, steps must be taken to increase employment opportunities for members of the surrounding communities and to support skill development and training programs.

Table 5-12- Cumulative impacts of employment opportunities, business opportunities and skill development

Nature: An increase in employment opportunities, skills development and business opportunities with the establishment of more than one solar power facility.		
Impact description: Employment opportunities		
	Overall impact/benefit of the proposed project considered in isolation	Cumulative impact/benefit of the project and other projects in the area
Duration	Short term (2)	Long term (4)
Extent	Local-Regional (3)	Local-Regional (3)
Magnitude	Moderate (6)	Moderate (6)
Probability	Highly Probable (4)	Definite (5)
Significance	Medium (44)	High (65)
Mitigation: <ul style="list-style-type: none"> » The establishment of a number of solar power projects in the area has the potential to have a positive cumulative impact on the area in the form of job opportunities, skill development, business opportunities, and SED, where these opportunities are localized. The positive effects will be amplified if local employment policies are implemented, and local service providers are tapped by developers to maximize project opportunities for the local community. 		
Residual Risks: <ul style="list-style-type: none"> » Improved pool of skills and experience in the local area. » Improved standard of living through the creation of employment opportunities. » Economic growth for small-scale entrepreneurs 		

5.5.2 Cumulative Impact with large scale in-migration of people

While the development of a single solar power project may not result in a large influx of people, the development of several projects at the same time may have a cumulative effect on in-migration and movement of people. Additional pressure on municipal services and housing is another potential impact of in-migration to the area; however, this impact will need to be addressed in the municipal IDP process and considerations. Controlling an influx of people into a region is extremely difficult, especially in a country with high unemployment rates. To reduce the possibility of such an impact occurring, it is critical that project proponents implement and strictly adhere to a local employment policy.

Table 5-13- Cumulative impact with large scale in-migration of people

Nature: Negative impacts and change to the local economy with an in-migration of labourers, businesses and jobseekers to the area.		
Impact description: large scale in migration		
	Overall impact/benefit of the proposed project considered in isolation	Cumulative impact/benefit of the project and other projects in the area
Duration	Short term (2)	Long term (4)
Extent	Local (2)	Local-Regional (3)
Magnitude	Low (4)	Moderate (6)
Probability	Probable (3)	Probable (3)
Significance	Low (21)	Medium (39)
Mitigation:		
<ul style="list-style-type: none"> » Create a recruitment policy / process (to be implemented by contractors) for sourcing labour locally. » Collaborate with government agencies to ensure that service delivery is in line with local development needs. » Create and implement a recruitment protocol in collaboration with the municipality and local community leaders. » Ensure that the procedures for applying for jobs are clearly communicated. 		
Residual Risks:		
<ul style="list-style-type: none"> » Possibility of outside workers remaining in the area after construction is completed, putting additional strain on local infrastructure, services, and poverty issues 		

5.5.3 Potential Negative Impact: Cumulative Impact on Sense of Place

A sense of place impact is one that alters the visual landscape to the point where the user perceives the environment differently, specifically in a less appealing or less positive light. The social impacts associated with the impact on sense of place relate to the change in the landscape character and visual impact of Kotulo Tsatsi Energy PV3. As the location of the project is on a private property, the visual impact and impact on the area's sense of place associated with the operation of Kotulo Tsatsi Energy PV3 is likely to be minimal and this will be confirmed during the impact assessment phase.

Table 5-14- Cumulative impacts on sense of place and the landscape

Nature: Visual impact and impact on the sense of place and landscape character.		
Impact description: large scale in migration		
	Overall impact/benefit of the proposed project considered in isolation	Cumulative impact/benefit of the project and other projects in the area
Duration	Short term (2)	Long term (4)
Extent	Local (2)	Local-Regional (3)
Magnitude	Low (4)	Moderate (6)
Probability	Probable (3)	Probable (3)
Significance	Low (21)	Medium (39)
Mitigation:		
<ul style="list-style-type: none"> » To prevent deterioration of the area and its sites and an impact on the visual quality of the region, maintain and manage the facilities to be in excellent and orderly state. » Apply the appropriate mitigation strategies as advised by the Visual Impact Assessment. 		

Residual Risks:

- » The visual impact will remain until the infrastructure is completely decommissioned and removed. Thereafter the impact will be removed.

5.6 “No Development” Alternative

The option of no-development poses a lost opportunity for South Africa to provide its consumers with renewable energy. At a local level, this alternative would result in a lost opportunity in terms of job creation and socio-economic upliftment. However, it should be emphasized that the development of the suggested Kotulo Tsatsi energy PV3 Facility is not a unique development. A significant number of renewable energy facilities are proposed in the Northern Cape Province and already established renewable energy facilities are operational in certain parts of South Africa. Therefore, adopting the no development alternative would not comprise the renewable energy development across the Northern Cape Province and South Africa, but the socio-economic benefits to the Hantam Local Municipality and the communities will be lost. The impacts associated with this alternative will be assessed in the EIA Phase of the process.

6. CONCLUSION AND RECOMMENDATIONS

This section presents the final key findings and recommendations of the SIA. The key findings and recommendations are based on a review of the basic information identified during the EIA Scoping process, as well as a review of the policy and planning documents relating to the proposed Kotulo Tsatsi energy PV3 project. A review of selected specialist studies, as well as similar projects and literature, was conducted. This section was compiled based on the results of the tasks that were completed during this study.

6.1 Key Findings

The main findings of the review of policy documents at all levels of government indicated that renewable energy, specifically solar energy, received strong support. The Republic of South Africa's White Paper on Energy Policy of 1998 stated that because renewable energy resources operate from an infinite resource base, such as the sun, renewable energy can increasingly contribute to long-term sustainable energy for future generations. This policy also emphasizes that, due to South Africa's unlimited renewable energy resource base, renewable energy applications such as solar and wind energy are more sustainable in terms of social and environmental costs.

Renewable energy applications are supported by policy documents at the provincial, district, and local levels. The use of renewable energies is not explicitly addressed in policy documents at the provincial, district, and local levels; however, the transition to low-carbon economies and the reduction of municipal areas' carbon footprint, as well as their support for alternative energies as an LED program, are mentioned. More employment opportunities are being created to reduce community vulnerabilities in order to ensure more resilient communities and a more sustainable economy.

According to a review of relevant policies and documents related to the energy sector, renewables such as solar energy and the establishment of these facilities are supported at all levels of government. The author of this SIA report believes that the Kotulo Tsatsi energy PV3 establishment is supported by the policies and planning documents reviewed in this section at all levels of government.

6.2 Recommendations

The Social Impact Assessment conducted as part of the Scoping phase of the EIA process led to the following recommendations. To minimize the negative effects and maximize the beneficial effects, the suggested mitigation actions should be put into practice. The recommendations below are provided in light of the social assessment:

- » In terms of the impacts on employment, it is important to consider that there are not many chances for unskilled and semi-skilled workers in the project area, which could lead to rivalry among the local unemployed. Therefore, bringing in an outside labour is likely to make it harder for locals to find work, cause unrest, and put demand on the services that are already provided. To maximize the beneficial effects of job development in the area, local labour should be used. Wherever possible, local firms should be involved in the construction process. To make sure that the local communities' benefit, it is essential to use local workers. To guarantee that benefits accrue to the nearby community, it is essential to source local labour. Thus, it is preferable to engage local labour whenever possible during the project's construction and operation phases.
- » The environmental authorities should take into account the potential visual consequences of the project, which were covered in the Visual Impact Assessment (VIA)

6.3 Conclusion

In conclusion, the findings of this Social Impact Assessment (SIA) conducted for the proposed Kotulo Tsatsi energy PV3 indicate that various employment opportunities with varying levels of skill will be created during the construction and operational phases of the proposed project. Furthermore, this will create local business opportunities that will benefit the socioeconomic development of the local community. Investment in renewable energy facilities, such as the proposed Kotulo Tsatsi energy PV3, will address the challenges posed by climate change and global warming.

The findings of this Social Impact Assessment (SIA) completed for the proposed Kotulo Tsatsi Energy PV3 show that numerous employment possibilities with varying skill levels will be created during the construction and operational phase of the proposed development project. Additionally, this will open up prospects for small businesses in the area, which will help the Kenhardt and Brandvlei communities' socioeconomic development. As a result, the author of this SIA report advises that the Kotulo Tsatsi Energy PV3 proposal be supported in its current form. However, this suggestion is made subject to the application of the enhancement and mitigation suggestions made for the proposed project in Section 5 of this SIA as well as input from other Specialist studies.

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