



SOCIAL IMPACT REPORT

KLEINZEE
BASIC ASSESSMENT
OCTOBER 2022

SOCIAL IMPACT REPORT

Savannah Environmental, Northern Cape

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Reference: Eco Thunder Consulting (2022) Social Impact Assessment for Kleinzee Solar PV Development

ACRONYMS, ABBREVIATIONS AND GLOSSARY

Acronyms & Abbreviations	
DM	District Municipality
EA	Environmental Authorisation
EIA	Environmental Impact Assessment
EMPR	Environmental Management Programme
GDP	Gross Domestic Product
GNR	Government Notice
HDI	Human Development Index
I&AP	Interested and Affected Party
IDP	Integrated Development Plan
IEP	Integrated Energy Plan
IRP	Integrated Resource Plan
KM	Kilometre
LM	Local Municipality
NEMA	National Environmental Management Act (No. 107 of 1998)
NDP	National Development Plan
O&M	Operation and Maintenance
PGDS	Provincial Growth and Development Strategy
PICC	Presidential Infrastructure Coordinating Committee
PSDF	Provincial Spatial Development Framework
SDF	Spatial Development Framework
SIA	Social Impact Assessment
SIP	Strategic Infrastructure Project
SMME	Small, Medium and Micro Enterprises

EXECUTIVE SUMMARY

DESCRIPTION OF PROPOSED PHOTOVOLTAIC FACILITY

The development of a solar photovoltaic (PV) facility with a generating capacity of up to 200MW is proposed by Energy Team (Pty) Ltd on a site located approximately 20km west of the town of Komaggas, and 24km southeast of Kleinzee. The project is located in the Nama Khoi Local Municipality within the Namakwa District Municipality, Northern Cape. The solar PV development will be known as the Kleinzee Solar PV Facility. The Kleinzee Solar PV Facility is located within Focus Area 8 of the Renewable Energy Development Zones (REDZ), which is known as the Springbok REDZ, and within the Northern Corridor of the Strategic Transmission Corridors.

The infrastructure associated with the 200MW solar PV facility will include:

- Solar PV array comprising PV modules and mounting structures
- Inverters and transformers
- Low voltage cabling between the PV modules to the inverters
- 33kV cabling between the project components and the facility substation
- 132kV onsite facility substation
- 132kV power line to connect to the grid at Zonnequa Collector Substation within a 300m wide and 8.5km long corridor
- Battery Energy Storage System (BESS)
- Site offices and maintenance buildings, including workshop areas for maintenance and storage
- Laydown areas
- Site access and internal roads.

The power generated by Kleinzee Solar PV Facility will be sold to Eskom and will feed into the national electricity grid. Ultimately, Kleinzee Solar PV facility and the associated grid connection infrastructure is intended to be part of the renewable energy projects portfolio for South Africa, as contemplated in the Integrated Resources Plan (IRP) and Renewable Energy Independent Power Producer Procurement (REIPPP) Programme.

Table 1 below provides the details of the project, including the main infrastructure components and services that will be required during the project life cycle.

Table 1: Details of the Kleinzee Solar PV Facility and associated infrastructure

Component	Description / Dimensions
District Municipality	Namakwa District Municipality
Local Municipality	Nama Khoi Local Municipality
Ward Number (s)	Ward 8
Nearest town(s)	20km west of the town of Komaggas, and 24km southeast of Kleinzee
Farm name(s) and number(s) of properties affected by the PV Facility	<ul style="list-style-type: none"> • Portion 4 of Farm Zonnekwa 328 (C05300000000032800004)
Portion number(s) of properties affected by the Solar Facility	
SG 21 Digit Code (s)	
Farm name(s) and number(s) of properties affected by the Grid Connection	Switching Substation: <ul style="list-style-type: none"> • Portion 4 of Farm Zonnekwa 328 (C05300000000032800004)
Portion number(s) of properties affected by the Grid Connection	Grid corridor (300m wide): <ul style="list-style-type: none"> • Portion 0 of Farm Zonnekwa 326 (C05300000000032600000) • Portion 1 of Farm Zonnekwa 326 (C05300000000032600001)
SG 21 Digit Code (s)	

	<ul style="list-style-type: none"> • Portion 2 of Zonnekwa 328 • (C05300000000032800002) • Portion 3 of Farm Zonnekwa 328 • (C05300000000032800003) Portion 4 of Farm Zonnekwa 328 (C05300000000032800004)
Current zoning	Agricultural (i.e., grazing) and special use (i.e., energy generation)
Site Coordinates (centre of development area)	29°51'15.17"S, 17°16'29.43"E
Total extent of the Affected Properties, also referred to as the project site ¹	~1115.11ha
Total extent of the PV Development area ²	Up to ~300ha
Total extent of the PV Development footprint ³	Up to ~300ha
Contracted capacity of the PV facility	Up to 200MW
PV panels	Height: up to 5m from ground level (installed)
On-site Facility Substation	<ul style="list-style-type: none"> • Located within the development footprint. • Approximately 2ha in extent.
Coordinates of the On-site Facility Substation	<ul style="list-style-type: none"> • 29°50'55.44"S, 17°16'09.48"E
Switching substation	<ul style="list-style-type: none"> • Located within the development footprint • Approximately 2ha in extent.
Coordinates of the Switching Substation	<ul style="list-style-type: none"> • 29°50'56.81"S 17°15'56.16"E
Power line capacity	<ul style="list-style-type: none"> • 132kV
Power line servitude width	<ul style="list-style-type: none"> • Up to 32m
Length of the power line	<ul style="list-style-type: none"> • Approximately 8.5km
Grid corridor width (for assessment purposes)	<ul style="list-style-type: none"> • 300m
Grid corridor length (for assessment purposes)	<ul style="list-style-type: none"> • 8.5km
Grid coordinates	Start: 29°50'55.63"S, 17°16'05.20"E Mid: 29°49'17.04"S, 17°15'16.90"E End: 29°47'05.19"S, 17°14'11.61"E
Grid details	<ul style="list-style-type: none"> • The corridor extends between the switching substation located on the Kleinzee Solar PV Facility and the authorised Zonnequa Collector Substation, which will connect to the Eskom Gromis Substation.
Access gravel roads and internal roads	<ul style="list-style-type: none"> • Existing roads will be used, wherever possible, to access the project site and development area. • current existing gravel road that connects to the DR2964 located to the North of the site • The site can also be accessed off a provincial gravel minor road that connects from the surfaced MR751 road located to the west of the project site.

The proposed PV Development will create jobs during the construction phase. Once operational, the Power plant will aid job creation indirectly by providing the necessary infrastructure to support the development of further IPP projects. The power line will increase the electricity supply to the area, supporting further industrial development. Renewable energy developments plays an important role in supporting the energy requirements of South Africa's fast-growing economy in a sustainable manner and are key for the DMRE to achieve their goal of an energy mix with 30% clean energy sources by 2025. The proposed Solar PV development is situated in a Renewable Energy Development Zone, as per the Northern Cape PSDF, and will be situated in close proximity to solar and wind corridors as per the NKLM IDP.

¹ The project site is that identified area within which the development area and development footprint are located. It is the broader geographic area assessed as part of the BA process, within which indirect and direct effects of the project may occur. The project site is ~1115.11ha in extent.

² The development area is that identified area where the 200MW PV facility is planned to be located. This area has been selected as a practicable option for the facility, considering technical preference and constraints. The development area is ~300ha in extent.

³ The development footprint is the defined area (located within the development area) where the PV panel array and other associated infrastructure for the Kleinzee Solar PV facility is planned to be constructed. This is the actual footprint of the facility, and the area which would be disturbed.

With a decline in the mining industry and the looming threat of Climate Change, diversifying the economy and capitalizing on the Northern Cape's comparative advantages needs to be considered in order to strengthen the economy and reduce poverty.

Overall, the reviewed planning documentation supports the development of the proposed development and associated infrastructure as it will provide the necessary infrastructure to support future IPP developments and is situated within a Renewable Energy Development Zone. Additionally, the developments will benefit the area's economy through job creation and the increased supply of electricity.

Site Visit and Public Participation During the site visit none of the parties consulted were opposed to the proposed development. In general, the farmers consulted with were in favor of the development as they welcomed the extra income that compensation which it could provide. No comments were received from the guesthouses or businesses that were informed.

No-Go Areas

Based on the findings of a desktop evaluation, the site visit and the comments received, there are no No-Go Areas identified from a social impact perspective which were identified.

The findings of this SIA indicate that if mitigation measures are implemented, negative impacts can be lowered to acceptable levels. Thus, implementation of mitigation measures will ensure that the proposed development of the 200MW Solar PV facility and associated infrastructure will have social benefits that outweigh the negative impacts.

It is anticipated that during the construction and the operational phase of the proposed project, various employment opportunities, with different levels of skills will be created. In addition, this will also create local business opportunities benefitting the socio-economic development of the local community. The local community will however benefit from the establishment of a Community Trust if it is managed effectively. It is therefore recommended that the proposed Kleinzee Solar PV supported as it was proposed. However, this recommendation is made subject to the implementation of the suggested mitigation measures and recommendations made in other specialist studies for development.

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1. INTRODUCTION

Eco-Thunder Consulting was commissioned by Savannah Environmental (Pty) Ltd as the lead consultant to manage the Social Impact Assessment (SIA) process for the establishment of the proposed Kleinzee Solar PV Facility near Kleinzee in the Northern Cape Province.

This report contains the findings of the SIA undertaken as part of the broader Environmental Impact Assessment (EIA) process.

1.1. Terms of Reference

Objective of the Basic Assessment Process

This SIA Report has been prepared as part of the Basic Assessment (BA) process being undertaken for Kleinzee Solar PV Facility and associated infrastructure. The purpose of this SIA Report is to provide details on the nature and extent of development of Kleinzee Solar PV Facility and associated infrastructure, and the potential social impacts associated with the construction, operation, and decommissioning of the project. The inputs contained within this SIA Report are intended to provide a high-level overview of the social environment within which the project is proposed and identify potential social issues which will be addressed in detail as part of the BA process specialist investigations.

The objective of this SIA Report is therefore to:

- Identified and review policies and legislation which may have relevance to the activity from a social perspective.
- Provide comment on the need and desirability of the proposed activity from a social perspective.
- Identify potential impacts and risks associated with the preferred activity and technology alternatives.
- Identify key social issues to be addressed in the BA phase.
- Agree on the level of assessment to be undertaken, including the methodology to be applied to determine the impacts and risks the activity will impose on the preferred site through the life of the activity, including the nature, significance, consequence, extent, duration and probability of the impacts to inform the location of the development footprint within the preferred site.
- Identify suitable measures to avoid, manage or mitigate identified social impacts and determine the extent of residual risks that need to be managed and monitored.

1.2. Specialist Details

Eco-Thunder Consulting (ETC) is a 100% woman-owned, private company that specializes in a range of specialist studies, such as socio-economic research, economic development planning, development program design and implementation as well as community trust management. Based in Johannesburg, South Africa, Eco-Thunder has established itself as an expert on the conditions, needs and assets of communities that are linked to independent power generation facilities.

ETC has conducted research on behalf of and advised IPPs since 2017. Its client base is thus comprised of IPPs that have been successful across all the REIPPPP bidding rounds. ETC also implements development programs in energy communities, which ensures a comprehensive understanding of the how to drive positive social impact.

1.3. Report Structure

The report is organised into six sections:

- Section 1: Introduction.
- Section 2: Methodology & Approach.
- Section 3: Policy and Planning Review.
- Section 3: Overview of the Study Area.
- Section 5: Assessment of Key Social Issues and Impact.
- Section 6: Conclusions and Impact Statement.

1.4. Project Description

The development of a solar photovoltaic (PV) facility with a generating capacity of up to 200MW is proposed by Energy Team (Pty) Ltd on a site located approximately 20km west of the town of Komaggas, and 24km southeast of Kleinzee. The project is located in the Nama Khoi Local Municipality within the Namakwa District Municipality, Northern Cape. The solar PV development will be known as the Kleinzee Solar PV Facility. The Kleinzee Solar PV Facility is located within Focus Area 8 of the Renewable Energy Development Zones (REDZ), which is known as the Springbok REDZ, and within the Northern Corridor of the Strategic Transmission Corridors.

The infrastructure associated with the 200MW solar PV facility will include:

- Solar PV array comprising PV modules and mounting structures
- Inverters and transformers
- Low voltage cabling between the PV modules to the inverters
- 33kV cabling between the project components and the facility substation
- 132kV onsite facility substation
- 132kV power line to connect to the grid at Zonnequa Collector Substation within a 300m wide and 8.5km long corridor
- Battery Energy Storage System (BESS)
- Site offices and maintenance buildings, including workshop areas for maintenance and storage
- Laydown areas
- Site access and internal roads.

The power generated by Kleinzee Solar PV Facility will be sold to Eskom and will feed into the national electricity grid. Ultimately, Kleinzee Solar PV facility and the associated grid connection infrastructure is intended to be part of the renewable energy projects portfolio for South Africa, as contemplated in the Integrated Resources Plan (IRP) and Renewable Energy Independent Power Producer Procurement (REIPPP) Programme.

Table 1 below provides the details of the project, including the main infrastructure components and services that will be required during the project life cycle.

Table 1: Details of the Kleinzee Solar PV Facility and associated infrastructure

Component	Description / Dimensions
District Municipality	Namakwa District Municipality
Local Municipality	Nama Khoi Local Municipality
Ward Number (s)	Ward 8
Nearest town(s)	20km west of the town of Komaggas, and 24km southeast of Kleinzee
Farm name(s) and number(s) of properties affected by the PV Facility	<ul style="list-style-type: none"> • Portion 4 of Farm Zonnekwa 328 (C05300000000032800004)
Portion number(s) of properties affected by the Solar Facility	
SG 21 Digit Code (s)	
Farm name(s) and number(s) of properties affected by the Grid Connection	Switching Substation: <ul style="list-style-type: none"> • Portion 4 of Farm Zonnekwa 328 (C05300000000032800004)
Portion number(s) of properties affected by the Grid Connection	Grid corridor (300m wide): <ul style="list-style-type: none"> • Portion 0 of Farm Zonnekwa 326 (C05300000000032600000) • Portion 1 of Farm Zonnekwa 326 (C05300000000032600001) • Portion 2 of Zonnekwa 328 (C05300000000032800002) • Portion 3 of Farm Zonnekwa 328
SG 21 Digit Code (s)	

	<ul style="list-style-type: none"> (C05300000000032800003) Portion 4 of Farm Zonnekwa 328 (C05300000000032800004)
Current zoning	Agricultural (i.e., grazing) and special use (i.e., energy generation)
Site Coordinates (centre of development area)	29°51'15.17"S, 17°16'29.43"E
Total extent of the Affected Properties, also referred to as the project site ⁴	~1115.11ha
Total extent of the PV Development area ⁵	Up to ~300ha
Total extent of the PV Development footprint ⁶	Up to ~300ha
Contracted capacity of the PV facility	Up to 200MW
PV panels	Height: up to 5m from ground level (installed)
On-site Facility Substation	<ul style="list-style-type: none"> Located within the development footprint. Approximately 2ha in extent.
Coordinates of the On-site Facility Substation	<ul style="list-style-type: none"> 29°50'55.44"S, 17°16'09.48"E
Switching substation	<ul style="list-style-type: none"> Located within the development footprint Approximately 2ha in extent.
Coordinates of the Switching Substation	<ul style="list-style-type: none"> 29°50'56.81"S 17°15'56.16"E
Power line capacity	<ul style="list-style-type: none"> 132kV
Power line servitude width	<ul style="list-style-type: none"> Up to 32m
Length of the power line	<ul style="list-style-type: none"> Approximately 8.5km
Grid corridor width (for assessment purposes)	<ul style="list-style-type: none"> 300m
Grid corridor length (for assessment purposes)	<ul style="list-style-type: none"> 8.5km
Grid coordinates	Start: 29°50'55.63"S, 17°16'05.20"E Mid: 29°49'17.04"S, 17°15'16.90"E End: 29°47'05.19"S, 17°14'11.61"E
Grid details	<ul style="list-style-type: none"> The corridor extends between the switching substation located on the Kleinzee Solar PV Facility and the authorised Zonnequa Collector Substation, which will connect to the Eskom Gromis Substation.
Access gravel roads and internal roads	<ul style="list-style-type: none"> Existing roads will be used, wherever possible, to access the project site and development area. current existing gravel road that connects to the DR2964 located to the North of the site The site can also be accessed off a provincial gravel minor road that connects from the surfaced MR751 road located to the west of the project site.

1.5. Project Location

The Development is planned to be located in the Nama Khoi Local Municipality within the Namakwa District Municipality in the Northern Cape Province. The Province is situated in the north-western corner of South Africa and has a land area of 372,889 km², therefore occupying approximately 30% of South Africa's land area and making it the largest province in South Africa even though it has the smallest population. The Namakwa District Municipality is a Category C municipality, which denotes that the municipality has a municipal executive and legislative authority in an area that includes more than one municipality (Statutes of Republic of South Africa, 1996). Namakwa is the largest of the five district municipalities in the Northern Cape. It is comprised of six local municipalities, namely Nama Khoi, Hantam, Khâi-Ma, Kamiesberg, Karoo Hoogland, and Richtersveld. The Nama Khoi local Municipality is a Category B municipality, which means it shares a municipal executive and legislative authority with a Category C municipality,

⁴ The project site is that identified area within which the development area and development footprint are located. It is the broader geographic area assessed as part of the BA process, within which indirect and direct effects of the project may occur. The project site is ~1115.11ha in extent.

⁵ The development area is that identified area where the 200MW PV facility is planned to be located. This area has been selected as a practicable option for the facility, considering technical preference and constraints. The development area is ~300ha in extent.

⁶ The development footprint is the defined area (located within the development area) where the PV panel array and other associated infrastructure for the Kleinzee Solar PV facility is planned to be constructed. This is the actual footprint of the facility, and the area which would be disturbed.

within whose area it falls (Statutes of Republic of South Africa, 1996).

The proposed 200MW Kleinzee PV facility is situated between Kleinsee and Kommagas. The development also includes the 360MW Daisy PV facility. As indicated by figure 1 is strategically located within an area which has been earmarked for the development of renewable development projects, in particular wind energy projects, the associated grid infrastructure is assumed to be aligned to make use of the substations from the wind farm project/s.

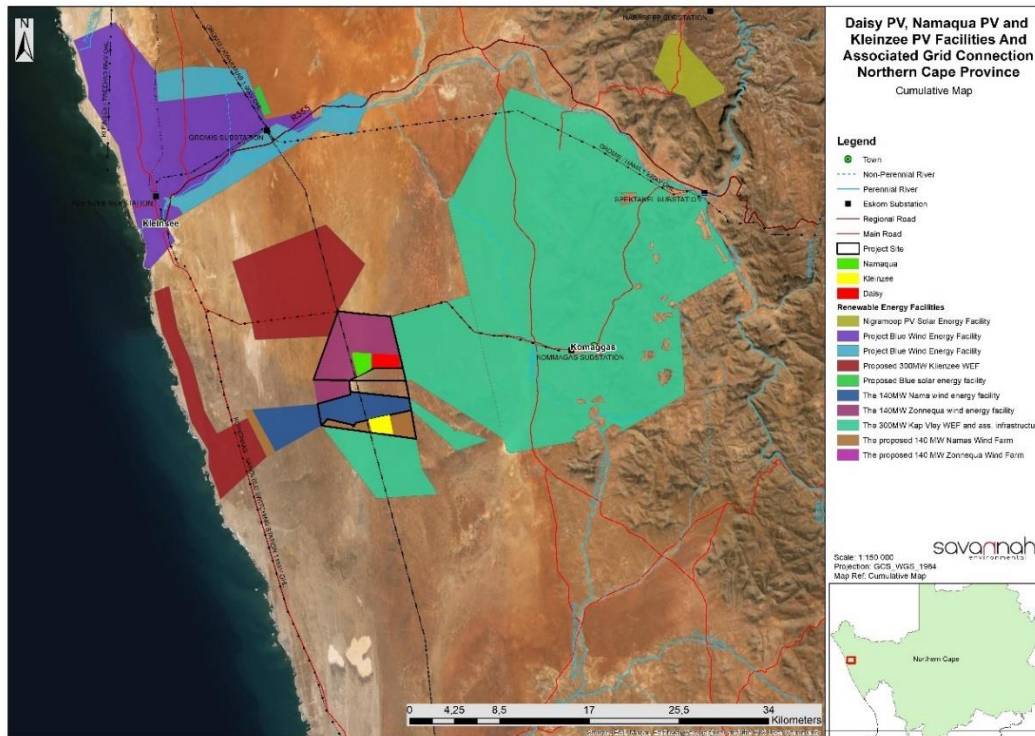


Figure 1: Cumulative renewable energy developments surrounding the proposed Kleinzee development.

The site is located in a relatively remote area (except for the surrounding proposed but not yet constructed renewable development facilities) between Kleinsee (approximately 24km Northwest) and Kommagas (17km north east) connected via an unnamed road which runs parallel to the north of the development area as seen in figure 1.

Kleinsee is a small village on the west coast of the Northern Cape province in South Africa at the mouth of the Buffels River. It is just south of Grootmis, 72 km south-east of Port Nolloth and 105 km west of Springbok. Set on the coast, Kleinsee was a diamond mining town. Tourists visited as part of the diamond route. Until De Beers closed their mining operations. By the end of 2011 the 370 houses in Kleinsee were mostly empty and the town's population had dwindled from about 7000 to 1000. The media spoke about it as a 'ghost town'. Normally mining towns are declared 'mining disturbances', bulldozed and planted over, but De Beers had Kleinsee declared a public town to the Nama Khoi municipality.

The development is also located near Kommagas, a Settlement 40 km south-west of Springbok and 45 km north of Soebatsfontein, on the Komaggas River, a tributary of the Buffels River. Founded as a station of the London Missionary Society in 1829, it was taken over by the Rhenish Missionary Society in 1843 and by the Dutch Reformed Church in 1936. The name is variously explained as 'abundance of maws of animals' and 'place of many wild olive-trees'.

The directly affected surrounding areas are largely undeveloped, the area has large stretches vacant land with some parcels every so often showing evidence for small stock grazing. The only infrastructure present consists of sparsely distributed farm houses, farm tracks and fences and a number of stock posts. Roads in the immediate area are all gravelled.

Agricultural activity in the area is severely restricted by the arid nature of the local climate and livestock rearing (sheep and cattle) is the dominant activity. There are no areas of cultivation present within the assessment zone and as such, the natural vegetation has been retained across much of the study area (of which could be observed). Other human influence is visible in the area in the form of secondary roads which traverse the study area. These are gravel roads

which are predominantly used by local farmers to access the nearby towns of Komaggas and Kleinsee.

The Existing Sandveld/Komaggas 1 66kV Overhead Line is directly adjacent to (to the north) of the development and runs in line with the unnamed road.

Access to the site is likely to be from the existing gravel roads in the study area, as well as the proposed internal access roads as indicated in figure 1. Within the site itself, access will be required between the PV panels for construction purposes (and later limited access for maintenance), it is suggested that as far as possible, existing gravel roads would be utilised, and upgraded where required, and that areas which have already been disturbed be utilized for spaces such as laydown areas, etc, to avoid unnecessary environmental impacts. Special haul roads may need to be constructed to and within the site to accommodate abnormally loaded vehicle access and circulation.

Attribute Identified	Description	Impact associated	Score
Eskom Overhead lines	<p>A host of power lines criss-cross the study area, these include, but are not limited to:</p> <ul style="list-style-type: none"> • Lines which run Directly Paralleled <ul style="list-style-type: none"> ○ Sandveld/Komaggas 1 66kV Overhead Line 	<p>Powerlines do not pose a social risk, and the development area has been exposed to similar activities previously, this must however be taken into consideration in terms of avifauna.</p> <p>The planned grid connection will be in line with the approved Wind energy facility and therefore will not contribute any to any additional visual impact.</p> <p>Although limited, the construction and maintenance of these lines will also create employment opportunity.</p>	Positive social
Other Renewable energy developments	<p>As indicated in the above figure, the proposed development is located in an area which has been earmarked for the development of renewable development with a number of projects being granted environmental authorisation, many of these projects being Wind energy facilities.</p>	<p>The cumulative development may heavily transform the landscape of the area.</p> <p>There are already a number of renewable energy projects in the province. The province should continue providing support to the renewable energy sector to ensure that it continues growing in order to play its part in stimulating both the national and provincial economy and in a way that is better for the environment.</p>	Social Positive
Substations	<p>The proposed PV development will connect into Zonnequa Collector Substation to the north of the Proposed Daisy development</p>	<p>The substations for the proposed development both on the PV side as well as on the WEF side are yet to be constructed, therefore it should be insured that, during both the construction and operation period the focus should be on providing the operators who will be working at these facilities, the technician servicing these areas ect, the proper tools and training to safely operate within these spaces without placing their health and safety at risk.</p> <p>These areas must also be properly secured and monitored to ensure that the general public do not gain access and are able to endanger themselves here.</p>	Negative Health and safety

Main access roads	<p>The N7 national road provides access to the region and is the main connecting route in between Kleinsee and Cape Town.</p> <p>Additionally, routes such as:</p> <ul style="list-style-type: none"> • Third Avenue (Kleinsee to Kommagas) • The R355 (Kleinsee to Nigramoep) • The R382 (Kleinsee to Port Nolloth) • The R355 (Kleinsee to Springbok) • Checkpoint Drive (Kleinsee to Koingnaas) <p>Exist to access the general region</p>	<p>From a social perspective it is critical to ensure that, once the routes that will be utilized have been identified the correct safety measures are implemented to prevent the loss or injury of community members utilizing these roads. Additionally, mitigation measures are followed to ensure that traffic congestion or other similar impact do not impact on surround communities' quality of life in terms of road usage.</p> <p>These will provide access for the components of the solar PV to be transported along, as well as for the workers to gain access, it is therefore important that public transport exists along these routes.</p>	Positive social
Internal mine access/ gravel roads	<p>The area tends to be, at least to some degree already disturbed accompanied along with this is informal gravel roads which lends access to otherwise undisturbed areas of the site.</p>	<p>These areas are already disturbed and provided for valuable access to the site for evaluation. Additionally, these disturbed areas can be utilized for laydown areas or for the development of permanent internal access roads, therefore reducing the loss of vegetation on site</p>	Positive social
Private Agricultural holdings	<p>Small agricultural holdings on the outskirts of the study area</p>	<p>The development is primarily in mixed agricultural region. Development of the PV may pose a security risk and increase the rate for small petty crimes in the surrounding communities, this includes theft of items, livestock, produce, etc. These areas are however located far from the development and should not be directly impacted</p>	Negative Social
Protected areas	<p>The Rooiklippies nature reserve (to the west, along the shoreline) and the Namaqua National Park are not within the development area.</p>	<p>No perceived social impact</p>	
Towns and Settlements	<p>The site is located in a relatively remote area (except for the surrounding proposed but not yet constructed renewable development facilities) between Kleinsee (approximately 24km Northwest) and Kommagas (17km north east)</p>	<p>Alternative employment opportunities will be provided to the local community members, although the employment opportunities are anticipated to be limited.</p>	Positive social

1.6. Need and Desirability

For numerous years, Eskom has been unable to maintain a constant supply of electricity. At the outset of the 2022 winter, the utility informed the public that rolling power disruptions could last up to 100 days. At the end of June, there was a 6,000 MW shortage in electrical supply, which equated to nearly 20% of night-time peak demand.

South Africa has some of the best solar and wind resources in the world and currently the running costs are very low as there are effectively no fuel purchases. Prices of solar and wind technology have dropped very sharply in the past 10 years. The cost – including building and other expenses – of solar and wind electricity is now well below the corresponding expenses for electricity from gas, nuclear and even coal. Their extremely low carbon emissions mitigate global warming and makes solar and wind energy attractive for investors.

However, these sources are unfortunately weather dependent. A recent announced for the construction of an additional 2,600 MW of wind and solar farms will effectively only produce electricity equivalent to about 900 MW averaged over a day

Overcoming the present 6,000 MW power shortages therefore requires approximately 15,000 MW of new solar and wind plants. The continuing deterioration in the efficiency of the large coal power plants means that the actual need for new renewable generating capacity in the next five years is closer to 20,000 MW.

There is now an increasing recognition that the energy crisis must be treated as such. A speedy renewable energy boom is the only way to escape the downward spiral in power cuts in the medium term.

Independent Power Producers (IPPs) have rapidly become key electricity producers, and the establishment of large-scale renewable energy (RE) generation is becoming a primary driver of network development, particularly in the Western, Eastern and Northern Cape Provinces. The Northern Cape Province (NCP) is particularly suited to solar projects due to the high levels of solar radiation it receives (Northern Cape PSDF, 2018).

Developing the energy sector holds huge potential benefits for the Northern Cape and would have significant knock-on effects for the local economy. In order to facilitate the development of this industry the necessary infrastructure and associated amenities need to be provided through innovative planning (Northern Cape PSDF, 2018).

The Nama Khoi Municipality's IDP (2017-2022) identifies an increasing backlog in electricity provisioning in the municipal area. Even though this Solar PV will not supply electricity directly to the municipality, the energy produced by the facility will feed into the national grid.

The IDP has also identified embarking on renewable energy and upgrading electricity supply to water pump stations and incorporation of Eskom electricity network to address the electricity needs in the Komaggas area; this depicts a need for an alternative source of energy. Furthermore, the DEA commissioned a SEA to identify the areas in South Africa that are of strategic importance for Wind and Solar development. The SEA aims to identify strategic geographical areas best suited for the roll-out of large-scale wind and solar PV energy projects, referred to as REDZs.

The proposed Kleinzee PV falls within REDZ 8 and is therefore aligned with national priority areas for the development of renewable energy projects. This will mean that the municipality will also benefit from these upgrades and potentially alleviate the electrification backlogs present in the area. One of the economic priority issues identified within the Nama Khoi Local Municipality IDP (2017– 2022) is the high levels of unemployment. The IDP further states that the majority of the adult population within the Nama Khoi Local Municipality have low skills levels and need employment. The proposed project will create job opportunities and economic spin offs during the construction and operational phases (if an EA is granted by the DFFE).

It should, however, be noted that employment during the construction phase will be temporary, whilst being long-term during the operational phase. Therefore, the proposed Solar PV development would help to address the need for increased electricity supply while also providing advanced skills transfer and training to the local communities and creating contractual and permanent employment in the area. The proposed activity does not compromise any of the objectives set within the Nama Khoi Local Municipality IDP (2017 – 2022). The proposed project will also be supportive of the IDP's objective of facilitating job creation to address the high unemployment rate.

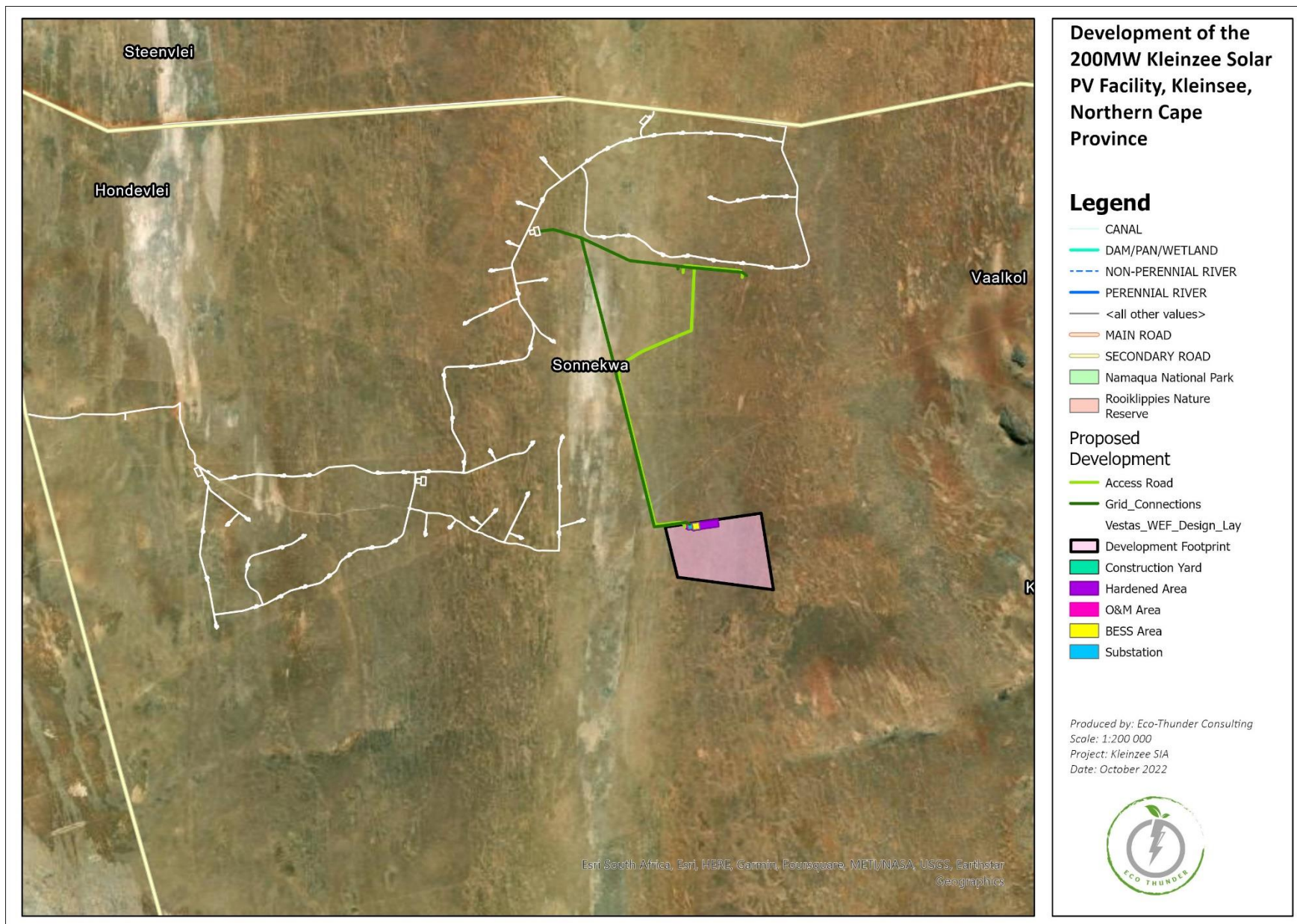


Figure 2: The locality of the Kleinzee solar PV

2. METHODOLOGY AND APPROACH

2.1. Purpose of the Study

The International Principles for Social Impact Assessment define SIA as:

“The processes of analysing, monitoring and managing the intended and unintended social consequences, both positive and negative, of planned interventions (policies, programs, plans, projects) and any social change processes invoked by those interventions”.

The International Principles for Social Impact Assessment define social impacts as changes to one or more of the following:

- People’s way of life – that is, how they live, work, play and interact with one another on a day-to-day basis.
- Their culture – that is, their shared beliefs, customs, values and language or dialect.
- Their community – its cohesion, stability, character, services and facilities.
- Their political systems – the extent to which people are able to participate in decisions that affect their lives, the level of democratisation that is taking place, and the resources provided for this purpose.
- Their environment – the quality of the air and water people use, the availability and quality of the food they eat, the level of hazard or risk, dust and noise they are exposed to, the adequacy of sanitation, their physical safety, and their access to and control over resources.
- Their health and wellbeing – health is a state of complete physical, mental, social and spiritual wellbeing and not merely the absence of disease or infirmity.
- Their personal and property rights – particularly whether people are economically affected, or experience personal disadvantage which may include a violation of their civil liberties.
- Their fears and aspirations – their perceptions about their safety, their fears about the future of their community, and their aspirations for their future and the future of their children.

The purpose of this SIA Process is therefore to:

- Provide baseline information describing the social environment within which the project is proposed, and which may be impacted (both positively and negatively) as a result of the proposed development.
- Identify, describe and assess possible social risks/fatal flaws and social impacts that may arise as a result of the proposed development (in terms of the detailed design and construction, operation, and decommissioning phases of the project).
- Recommend ways in which negative impacts can be avoided, minimised, or their significance reduced, and positive impacts maximised or enhanced.

2.2. Approach to Study

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

- Describing and obtaining an understanding of the proposed intervention (type, scale, and location), the settlements, and communities likely to be affected by the proposed project.
- Collecting baseline data on the current social and economic environment.
- Identifying the key potential social issues associated with the proposed project. This requires a site visit to the area and consultation with affected individuals and communities. As part of the process a basic information document was prepared and made available to key interested and affected parties. The aim of the document was to inform the affected parties of the nature and activities associated with the construction and operation of the proposed development to enable them to better understand and comment on the potential social issues and impacts.
- Assessing and documenting the significance of social impacts associated with the proposed intervention.
- Identifying alternatives and mitigation measures.
- A site visit will be undertaken during the Assessment Phase of the SIA. The site visit will include interviews with interested and affected parties. Annexure A contains a list of the secondary information reviewed. Annexure B summarizes the assessment methodology used to assign significance ratings to the assessment process.

- Preparation of a SIA Report for inclusion in the Basic Assessment Report to be prepared for the project.

Collection and Review of Existing Information

Existing desktop information that has relevance to the proposed project, project area and/or surroundings was collected and reviewed. The following information was examined as part of this process:

- Project maps and layouts.
- Google Earth imagery.
- A description of the project (as provided by the project proponent).
- Responses to questions posed to the project proponent regarding employment and social upliftment and local economic development opportunities (as provided by the project proponent).
- Census Data (2011), and the Local Government Handbook (2019).
- Planning documentation such as Provincial Growth and Development Strategies (PGDSs), Local and District Municipality Integrated Development Plans (IDPs), Spatial Development Frameworks (SDFs), and development goals and objectives.
- Relevant legislation, guidelines, policies, plans, and frameworks.
- Available literature pertaining to social issues associated with the development and operation of solar PV power plant and associated infrastructure.

The identification of potential social issues associated with the proposed Solar PV Facility is based on primary and secondary information about the area and visits to the relevant communities and town by field workers/members of the SIA study team. Annexure A contains a list of the secondary information reviewed and interviews conducted. Annexure B summarises the assessment methodology used to assign significance ratings to the assessment process.

2.2.1. Definition of Social Impacts

Social impacts can be defined as “The consequences to human populations of any public or private actions (these include policies, programmes, plans and/or projects) that alter the ways in which people live, work, play, relate to one another, organise to meet their needs and generally live and cope as members of society. These impacts are felt at various levels, including individual level, family or household level, community, organisation or society level. Some social impacts are felt by the body as a physical reality, while other social impacts are perceptual or emotional” (*Vanclay, 2002*).

When considering social impacts, it is important to recognise that social change is a natural and on-going process (*Burdge, 1995*). However, it is also important to recognise and understand that policies, plans, programmes and/or projects implemented by government departments and/or private institutions have the potential to influence and alter both the rate and direction of social change. Many social impacts are not in themselves “impacts” but change process that may lead to social impacts (*Vanclay, 2002*). For example, the influx of temporary construction workers is in itself not a social impact. However, their presence can result in range of social impacts, such as increase in antisocial behaviour. The approach adopted by Vanclay stresses the importance of understanding the processes that can result in social impacts. It is therefore critical for social assessment specialists to think through the complex causal mechanisms that produce social impacts. By following impact pathways, or causal chains, and specifically, by thinking about interactions that are likely to be caused, the full range of impacts can be identified (*Vanclay, 2002*).

An SIA should therefore enable the authorities, project proponents, individuals, communities and organisations to understand and be in a position to identify and anticipate the potential social consequences of the implementation of a proposed policy, programme, plan or project. The SIA process should alert communities and individuals to the proposed project and possible social impacts, while at the same time allowing them to assess the implications and identify potential alternatives. The assessment process should also alert proponents and planners to the likelihood and nature of social impacts and enable them to anticipate and predict these impacts in advance so that the findings and recommendations of the assessment are incorporated into and inform the planning and decision-making process.

However, the issue of social impacts is complicated by the way in which different people from different cultural, ethnic, religious, gender, and educational backgrounds, etc. view the world. This is referred to as the “social construct of reality”. The social construct of reality informs people’s worldview and the way in which they react to changes.

2.2.2. Timing of Social Impact

Social impacts vary in both time and space. In terms of timing, all projects and policies go through a series of phases, usually starting with initial planning, followed by implementation (construction), operation, and finally closure (decommissioning). The activities, and hence the type and duration of the social impacts associated with each of these phases are likely to differ.

2.3. Assumptions and Limitations

2.2.3. Assumptions

- The identification of the proposed site was informed by technical information relating to local climatic conditions in the area, specifically annual rates of solar radiation, local topography and land availability. It is therefore assumed that the project site identified fulfils the requirements for a suitable site to install a photovoltaic project with the outlined specifications.
- Legislation and policies reflect societal norms and values. The legislative and policy context therefore plays an important role in identifying and assessing the potential social impacts associated with a proposed development. In this regard a key component of the SIA process is to assess the proposed development in terms of its fit with key planning and policy documents. As such, if the findings of the study indicate that the proposed development in its current format does not conform to the spatial principles and guidelines contained in the relevant legislation and planning documents, and there are no significant or unique opportunities created by the development, the development cannot be supported.
- It is assumed that the motivation for as well as the planning and feasibility study of the project was undertaken with integrity, and that information provided by the project proponent was accurate and true at the time of preparing this SIA Report.

2.2.4. Limitations

- This SIA Report was prepared based on information that was available to the specialist at the time of preparing the report. The sources consulted are not exhaustive, and the possibility exists that additional information which might strengthen arguments, contradict information in this report, and/or identify additional information might exist. Additional information available from the public participation undertaken during the BA process will be included and considered within the final report, where relevant.
- The socio-economic data presented in this study is largely based on Census information and data and research conducted or contracted by other levels of government. The quality of this data is compromised by the limitations associated with the Census data collection process.
- The census data is supported through additional data. The study draws primary data collected from towns/villages located in close proximity to the proposed project site. This additional information was collected through a survey of the communities within a 50km radius of the site. Limitation associated with this data include:
 - A small sample size.
 - Lack of qualitative data to support quantitative findings.

2.4. Assessment Criteria

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).

The summarising of assessment impacts in a prescribed table format including the rating values as per above criteria. Measures for inclusion in the Environmental Management Programme.

3. POLICY AND PLANNING

This section introduces the relevant policies on various levels of government and their content. Relevant policy content is contained in the National White Paper on Renewable Energy, National Energy Act, Integrated Resources Plan for Electricity and the National Development Plan (NDP).

The National Energy Regulator of South Africa (NERSA) and the Department of Mineral Resources and Energy (DMRE) govern the energy sector's regulatory framework. Critical stakeholders further include the national utility Eskom, National Treasury, Department of Trade and Industry, and the Department of Economic Development

The legislative and policy context applicable to a project plays an important role in identifying and assessing the potential social impacts associated with the development. In this regard a key component of the SIA process is to assess a proposed development in terms of its suitability with regards to key planning and policy documents.

The following key pieces of documentation were reviewed as part of this legislation and policy review process:

National Policy and Planning Context:

- Constitution of the Republic of South Africa, 1996
- National Environmental Management Act (No. 107 of 1998) (NEMA)
- White Paper on the Energy Policy of the Republic of South Africa (1998)
- National Energy Act (No. 34 of 2008)
- Integrated Energy Plan (IEP) (2015)
- National Development Plan (NDP) 2030 (2012)
- Strategic Infrastructure Projects (SIPs)

Provincial Policy and Planning Context:

- Northern Cape Provincial Spatial Development Framework Executive Summary (2018)
- Northern Cape Provincial Government Socio-Economic Review and Outlook (2021)

Local Policy and Planning Context:

- Namakwa District Municipality Integrated Development Plan (IDP) (2022 – 2027)
- Nama Khoi Local Municipality Draft Integrated Development Plan (IDP) (2022 – 2023)

The reviewed documents demonstrate government's support for initiatives that promote sustainable renewable energy use, which includes the development of the required associated infrastructure. Moreover, the initiation of renewable energy into the country's electricity production is grounded in the Constitution.

National policy indicates a need to advance energy infrastructure, increase and improve access to electricity while reducing carbon emissions, and emphasises the use of natural resources, all of which lead to economic, social and environmental development. All these objectives are pursued within the provincial, district and local levels. Therefore, there has been a growing need to change the mix of energy sources in the country and to ensure that renewables (including the associated required grid infrastructures) play a greater role in the mix. Solar Power is one such resource and the Northern Cape Province demonstrates a potential comparative advantage in solar. Therefore, the establishment of solar farms (and the required associated grid infrastructure) within the Province would be beneficial for the economy and the citizens therein. It is partially due to these reasons why the province also holds the **Springbok REDZ**. District policy seeks to ensure the delivery of basic services, such as electricity, and ensure good governance with regard to implementing these strategies and plans. Furthermore, the Nama Khoi Local Municipality (2022) emphasises the need to promote solar energy projects and to support the linkage with the wind farm and other renewable energy projects surrounding the Kleinsee area.

To conclude, the review of strategic documents and policies did not identify any potential red flags from a social perspective. On the contrary, the project is to be located within the Springbok REDZ and just outside of the Wind

Energy Corridor delineated in the Nama Khoi SDF. Development of renewable energy projects in the area is therefore supported at various government levels; since such developments need to be accompanied by the establishment of associated grid connection infrastructure, the proposed development of the associate power line and substation is not expected to result in any spatial development conflicts given its location.

3.1. National Planning and Policies

3.1.1. Constitution of South Africa

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.

3.1.2. The National White Paper on Renewable Energy

In 1998, the White Paper on Energy Policy for South Africa (December 1998) identifies renewable energy as a future commercial opportunity for the country. "Government policy is based on an understanding that renewables are energy sources in their own right, are not limited to small-scale and remote applications, and have significant medium and long-term commercial potential".

The document argues that the abundant renewable energy resources have an important role to play in promoting sustainable energy security going forward. "Renewable resources generally operate from an unlimited resource base and, as such, can increasingly contribute towards a long-term sustainable energy future".

3.1.3. National Energy Act

Government promulgated the National Energy Act in 2008 (Act No 34 of 2008). Next to other objectives, the Act sets out to promote diversity of supply of energy and energy sources. The preamble makes direct reference to this objective, emphasizing the importance of renewable resources, including solar:

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

3.1.4. Integrated Resource Plan for Electricity

The latest, promulgated Integrated Resource Plan was written in 2010. An updated version was released in 2013 for public comment. Both versions support the procurement of renewable energy. The 2010 version allocates 17.8 GW to renewables by 2030. The 2013 version stipulates that 2.2 GW shall be integrated into the grid, on an annual basis.

3.1.5. National Development Plan

The National Development Plan, which was adopted by government, makes various suggestions for the enhancement of energy and electricity infrastructure. The NDP, published in 2013, specifically supports the procurement of renewable energy. It stipulates a goal of a minimum of 20 GW to be procured by 2030.

3.2. Provincial Planning and Policy

The study site is located in the Northern Cape Province. Relevant policy and planning documents on provincial level include:

3.2.1. Northern Cape Provincial Spatial Development Framework (PSDF) - Executive Summary (2018)

The Northern Cape PSDF is a provincial spatial and strategic planning policy that responds to and complies with the National Development Plan Vision 2030 and the National Spatial Development Perspective (NSDP). The latter encourages all spheres of government to prepare spatial development plans and frameworks (such as the PSDF) that promote a developmental state in accordance with the principles of global sustainability as is advocated by, among others, the South African Constitution, and the enabling legislation.

The PSDF is intended to be a mechanism that will effectively manage resources to ensure that all land uses enable people to make a sustainable living while enhancing environmental integrity, bring resource demand into balance with environmental carrying capacity, and capitalize on the Northern Cape's comparative advantages.

The PSDF identifies four Spatial Development Strategies which provide Strategic Focus Areas. The strategies and sub-points relevant to the proposed development are listed:

- Enhance Regional Connectivity
 - Support diversification of economies, tourism, the knowledge economy, the entertainment industry, the green economy and alternative energy-related enterprise development.
- Protect and Manage Biodiversity, Water and Agricultural Resources
 - Protecting and managing the protected national and provincial parks, as well as protected ocean areas.
 - Expand and further the establishment of the Protected Areas Network.
 - Protecting high potential and unique agricultural resources.
- Infrastructure Investment
 - Ensure efficient supply of water, electricity and waste management services to sustain additional industry growth.
 - Provide green infrastructure e.g., water tanks, renewable energy (e.g., solar).
- Urban and Rural Development
 - Reviving rural areas into vibrant, equitable and sustainable rural communities.

The solar PV development will contribute to sustainable and economic development goals of the Northern Cape PSDF, once completed and formally adopted.

3.2.2. Northern Cape Provincial Government Socio-Economic Review and Outlook (2021)

The Northern Cape Provincial Government - Socio-Economic Review and Outlook, 2021, offers a provincial socio-economic profile that may be used to advise decision makers about where gaps exist and where resources should be directed. Demography, the economy, labour, and human development are all addressed in the study.

Northern Cape, like most provinces, experienced an increase in its population size between 2019 and 2020. The province however remains the one with the smallest share of the national total population, accounting for only 2 per cent. The Frances Baard district had the largest share (32.6 per cent) of the province's total population in 2019, followed by ZF Mgcawu (21.1 per cent). As the province's population had been increasing from one year to the other, so did the number of households. The Black African population group represented the largest share of South Africa's and Northern Cape's total population. Regarding age groups, children aged 0 to 4 years represented the largest age cohort in the province, while those between 70 and 74 years represented the smallest share. The province's population density was very low but has been rising every year from 2010 to 2019. Looking at life expectancy, females had a longer life expectancy in the province in comparison to males.

The national unemployment rate was a concerning 32.5 per cent in the fourth quarter of 2020, which was higher than the provincial unemployment rate of 28.7 per cent. On a national level, the number of unemployed people increased by 701 000 from the previous quarter while it increased by 38 000 provincially. The industry that employed the largest share of the workers was Community and social services both nationally and provincially. In 2019, females recorded a higher unemployment rate than males, while the Coloured population group recorded the highest unemployment rate among the population groups in the province. Frances Baard followed by ZF Mgcawu contributed the largest respective shares to total employment in the province. The district that recorded the highest unemployment rate in the province in 2019 was Frances Baard.

3.3. District Level Planning and Policies

3.3.1. Namakwa District Municipality Integrated Development Plan (IDP) (2022 – 2027)

The NDM IDP contains five Strategic Objectives, namely:

- 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 connection to all towns.
 - Establish a customer care system (LGMIM)
 - Invest in the improvement of ICT system
 - To render municipal health services
 - To coordinate the disaster management and fire management services in the district
 - Implement the climate change response plan
 - Caring for the environment (Waste, Pollution, Air Quality, Working for Water, Climate Change)

To this effect, this IDP is compatible with the IDPs of local municipalities within the district, the provincial and national development plans and planning requirements binding on the municipality in terms of legislation, and to this effect, and it takes cue from the National Development Plan (NDP), and to the extent possible, aims to achieve the goals set out therein through an application of the following priorities:

- Creating jobs and livelihoods
- Expanding infrastructure
- Transitioning to a low-carbon economy
- Transforming our spatial reality
- Improving education and training
- Providing quality healthcare
- Building a capable state
- Fighting corruption and enhancing accountability
- Transforming society and uniting the nation

Through the provincial IDP assessments, we continue to grow in our understanding and that an Integrated Development Plan must simultaneously comply with relevant legislations and convey the following:

- Compliance and adherence to constitutional and policy mandate for developmental local government;
- Awareness by municipality of its role and place in the regional, provincial and national context and economy;
- Awareness by municipality of its own intrinsic characteristics and criteria for success;
- Comprehensive description of the area – the environment and its spatial characteristics including backlogs;
- A clear strategy, based on local developmental needs and that the IDP must not be a ‘wish-list’ but subjected to the realities of what can be delivered by the budget over the three to five year horizons;
- Insights into the trade-offs and commitments that are being made such as economic choices, integrated service delivery, etc;
- The key deliverables for the next 5 years;
- Clear measurable budget and implementation plans aligned to the SDBIP;
- Performance Management Systems and mechanisms required for performance planning, monitoring and evaluation;
- Continuously measuring the capacity of municipality to deliver;
- Communication, participatory and decision-making mechanisms;
- The degree of intergovernmental action and alignment to government wide priorities;
- Reporting timeframes and the regulatory periods for reporting;
- Alignment with, and indication of, an aligned organogram; and

- Alignment between the SDBIP and the performance contracts of section 57 managers.

The proposed solar PV facility is consistent with the SDF in the IDP. Through the field of renewable energy, the development will help the District Municipality achieve economic growth and build a sustainable economy.

3.3.2. Nama Khoi Local Municipality Integrated Development Plan IDP (2022 – 2023)

The Municipality's vision and mission are translated into the following five municipal key performance areas:

- KPA 1: Basic Services and Infrastructure
- KPA 2: Financial Viability
- KPA 3: Local Economic Development
- KPA 4: Municipal Transformation and Institutional Development
- KPA 5: Good governance and Community Participation

The Nama Khoi Local Municipality recognises the need to meet the energy requirements of its residents in a dynamic changing sector. The LM understands the benefits of renewable energy development as playing the following factors to the region:

- Savings on the current and already substantial Eskom Bill as the Project's tariff is lower than the Eskom tariff and the escalation rate is fixed per year at its applicable CPI rates during the life-cycle of the Project;
- Potential to attract foreign investments and subsequently achieve economic growth;
- Additional revenue stream due to the innovational technology, which has the potential to enable the selling of excess power to Eskom or another off-taker;
- Refinancing the current Eskom debt for immediate relief;
- Promote the reduction of Eskom's relative carbon footprint and support the demand side management energy efficiency programme;
- Financial investment into the municipality jurisdiction that will boost the economic cycle of the community;
- New upcoming industrialization activity attraction;
- Job creation, skills development and Small Medium Micro Enterprises (SMME) development; and
- Transforming the energy sector in SA and Africa as per its current timeline.

The proposed solar PV facility is consistent with the IDP's goals and projects, and it will help to create jobs and diversify the rural economy, thereby supporting the economy, which is especially important given the mining industry's decline.

3.4. Conclusion

The review of relevant legislation, policies and documentation pertaining to the proposed development indicates that the establishment of the solar PV development and associated infrastructure is supported at a national, provincial, and local level, and that the proposed project will contribute positively towards a number of targets and policy aims.

4. OVERVIEW OF THE STUDY AREA

4.1. Overview of Study Area

This section outlines the relevant administrative context as well as the provincial socio-economic and municipal contexts. It closes with a description of the local context of the immediate surroundings of the proposed PV Facility site.

The Kleinsee Solar PV Facility will be located on Farm Zonnekwa 328, portion 4. The development is located approximately 24km south-east of the town of Kleinsee within the Nama Khoi Local Municipality, and within the Namakwa District Municipality, Northern Cape Province.

This chapter provides an overview of the socio-economic environment of the province, DM, and LM within which the Kleinsee Solar PV Facility is proposed and provides the socio-economic basis against which potential issues can be identified.

The Northern Cape is home to some of the country's most sought-after tourist spots, as well as some of the most starkly beautiful untouched landscapes in the country. It is the largest province in South Africa, taking up almost a third of the country, stretching across the land at 372 889km². While it is the largest province, it is the most sparsely populated, with only 2.3 percent of the population living in the small towns found there. Languages spoken include Afrikaans (53.8%), Tswana (33.1%) and Xhosa (3.4%).

The Tertiary sector was the largest sector in the Northern Cape, having made a contribution towards the provincial GDP of 53.7 per cent in 2017 and a slightly smaller contribution in 2018 at 53.4 per cent. The Tertiary sector grew by 0.5 per cent in 2017, compared to 8.1 per cent growth for the Primary sector and a 0.4 per cent contraction in the Secondary sector for the same year. In 2018, the Tertiary sector grew by 0.9 per cent, compared to a 0.3 per cent contraction for each of the Primary and Secondary sectors. In 2017, the agriculture, forestry and fishing industry recorded the highest growth rate at 12.4 per cent but contracted in 2018 at -5.9 per cent. The industry with the highest growth rate in 2018 was General government services, growing at a low 1.3 per cent. Mining and quarrying remained the largest industry in 2018, contributing 20.5 per cent to the provincial economy, with Construction remaining the smallest industry, contributing only 2.7 per cent.

The Nama Khoi Municipal area is situated in the north-western part of the Northern Cape Province. It forms part of the Namakwa District Municipality with the town of Springbok as the administrative centre. The municipality includes the communities of Springbok, Steinkopf, Okiep, Rooiwinkel, Concordia, Komaggas, Buffelsrivier, Nababeep, Bulletrap, Vioolsdrift, Goodhouse, Kleinsee and Carolusberg. An independent survey, done by Empowerdex during 2009, rated Nama Khoi as the best municipality in the country. According to this research, 94% of the inhabitants have access to basic services.

The Nama Khoi Local Municipality is a Category B municipality situated on the north-western side of the Northern Cape Province in the Namakwa District. It is one of the six municipalities that make up the district. Nama and Khoisan people occupied this area for hundreds of years. The town of Springbok is the administrative centre. Springbok is the most densely populated area, is close to the N7, and functions as the sub-regional centre for administrative, commercial and higher-order social facilities. Mining used to form the backbone of the economy, with tourism being seen as the new frontier for economic development.

A combination of increasing temperatures and reduced and/or more variable rainfall could have severe negative impacts for the Nama Khoi municipality. The municipality is characterised by fairly high levels of poverty and inequality, isolated communities, and a large geographical area, which results in a vulnerable population. Large numbers of people, both private and communal, are also directly dependent on agriculture, and therefore on functioning ecosystems and water regimes, for their livelihoods. These are sensitive to climate change. Water quality and availability will likely be the greatest area of impact in Nama Khoi.

4.2. Administrative Context of Study Area

The Kleinsee Solar PV Facility is located within the Nama Khoi Local Municipality (NKLM), which is one of four local

municipalities that make up the Namakwa District Municipality (NDM) in the Northern Cape Province. The town of Springbok is the administrative seat for both the NDM and NKLM.

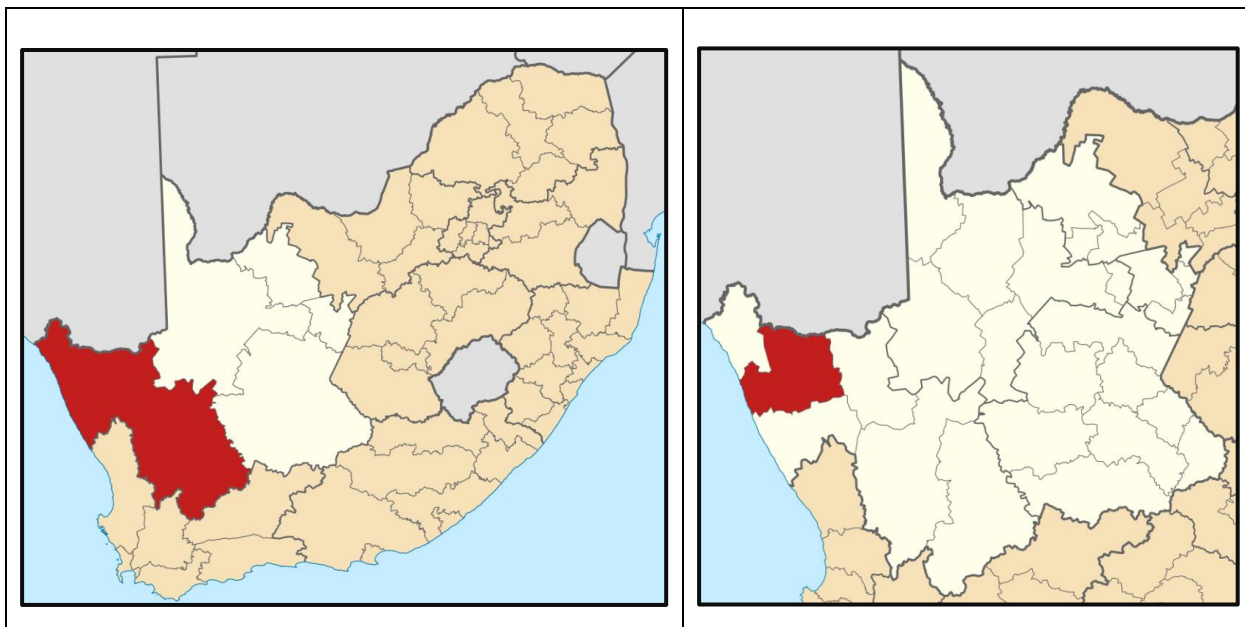


Figure 3: Location of Namakwa District Municipality (left) and Nama Khoi Local Municipality (right) within the Northern Cape Province

Table 1: Spatial Context of the study area for the development of the Kleinzee Solar PV

Province	Northern Cape Province
District Municipality	Namakwa District Municipality
Local Municipality	Nama Khoi Local Municipality
Nearest town(s)	~15km south-west of the town of Komaggas
Current Zoning	Agriculture
Access	The site can be readily accessed via an existing gravel access road (Unnamed Rd Komaggas, Northern Cape)

4.3. Provincial Socio-Economic Context

The proposed Solar PV Facility is in the Northern Cape Province which covers an area of 372 889 km² and has a population of close to 1.3 million, the least populous of South Africa’s provinces. The vast and arid Northern Cape is the largest province in South Africa, taking up nearly a third of the country’s land area. It is bordered by Namibia and Botswana to the north, and also by the North West, Free State, Eastern Cape and Western Cape provinces. The cold Atlantic Ocean forms the province’s western boundary.

The capital city is Kimberley. Other important towns are Upington, centre of the karakul sheep and dried-fruit industries, and the most northerly winemaking region of South Africa; Springbok, in the heart of the Namaqualand spring-flower country; Kuruman and De Aar, the second most important junction of South Africa’s railway network. Sutherland is host to the southern hemisphere’s largest astronomical observatory, the multinational sponsored Southern African Large Telescope.

The Northern Cape is rich in minerals. Alluvial diamonds are extracted from the beaches and the sea between Alexander Bay and Port Nolloth. The Sishen Mine near Kathu is the biggest source of iron ore in South Africa, while the copper mine at Okiep is one of the oldest mines in the country. Copper is also mined at Springbok and Aggeneys. The province is rich in asbestos, manganese, fluorspar, semi-precious stones and marble.

The province has fertile agricultural land in the Orange River Valley, especially at Upington, Kakamas and Keimoes, where grapes and fruit are cultivated intensively. The interior Karoo relies on sheep farming, while the karakul-pelt industry is one of the most important in the Gordonia district of Upington. Wheat, fruit, peanuts, maize and cotton are

produced at the Vaalharts Irrigation Scheme near Warrenton.

The Northern Cape is divided into five district municipalities and further subdivided into 26 local municipalities.

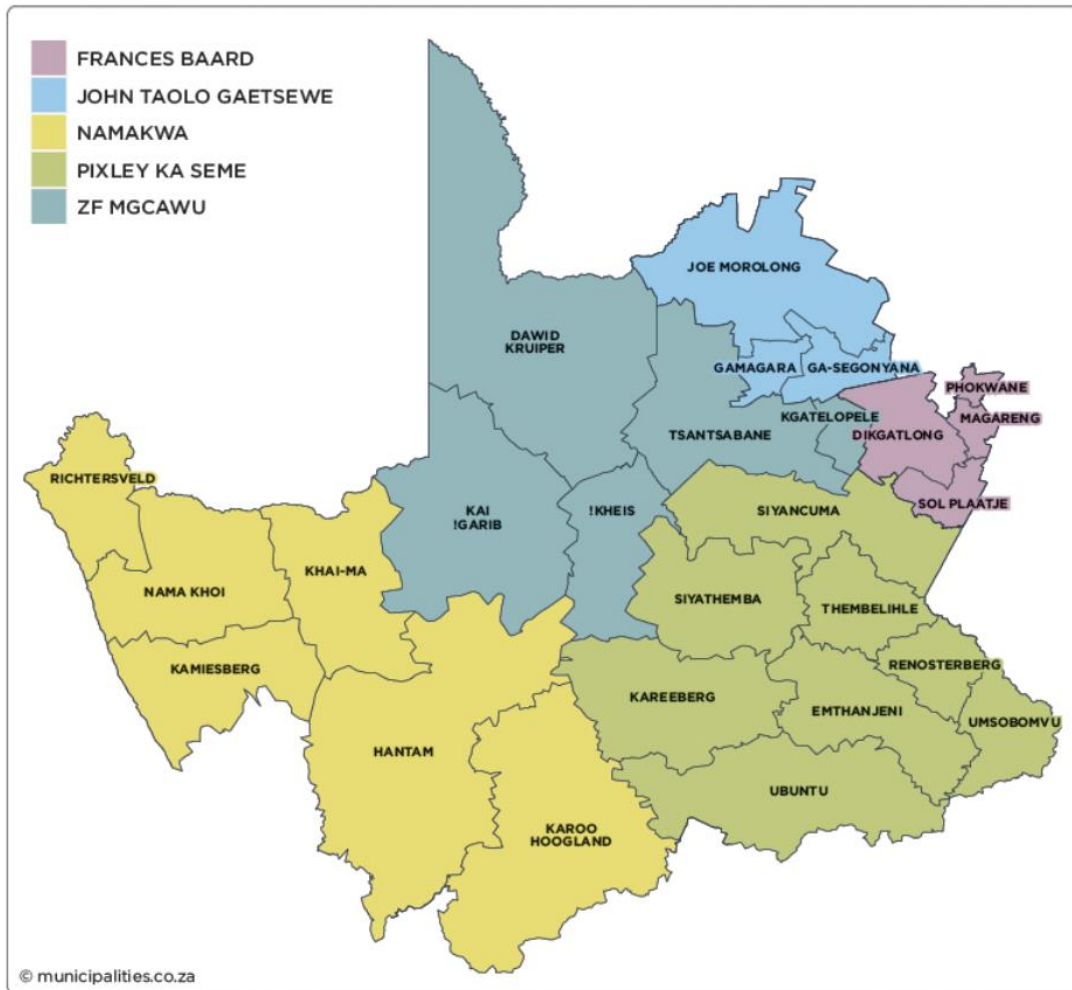


Figure 4: Map showing the districts of the Northern Cape Province (Source: www.municipalities.co.za).

4.3.1. Population

Gauteng remains the largest in terms of the population size in South Africa. In 2020, the province’s population increased to 15.488 million which represented about 26 per cent of the national population. KwaZulu-Natal had the second largest population, followed by Western Cape and Eastern Cape. Northern Cape remains the province with the smallest population size, estimated at 1.293 million (2 per cent of the country’s population). Eight provinces experienced an increase in their population sizes between 2019 and 2020, with Gauteng having the largest (312 022) while Eastern Cape had the smallest (21 725). Limpopo was the only province which had a decrease in its population size.

It is also important to know how the province's population is spread between its districts. Table 2 shows the population of each district in 2019 as well as its percentage of the province's population.

Table 2: Population Structure of the District municipality

	Number	Share (%)
Namakwa	139 381	10.4
Pixley ka Seme	220 842	16.4
ZF Mgcawu	284 391	21.1
Frances Baard	438 901	32.6
John Taolo Gaetsewe	261 363	19.4

Frances Baard district had the largest population size of the five districts in the province. In 2019, the district represented 32.6 per cent of the total population provincially. ZF Mgcawu district followed at 21.1 per cent. The district with the smallest population size is Namakwa accounting for only 10.4 per cent.

The province had more females than males in 2019, which was the same for the country. Regarding the population groups, the Black African group represented the largest share of the country’s population, whereas Indians/Asians were the smallest. This was the same for the Northern Cape. The population characteristics of the province as well as the district municipalities are visually represented by the pyramids below.

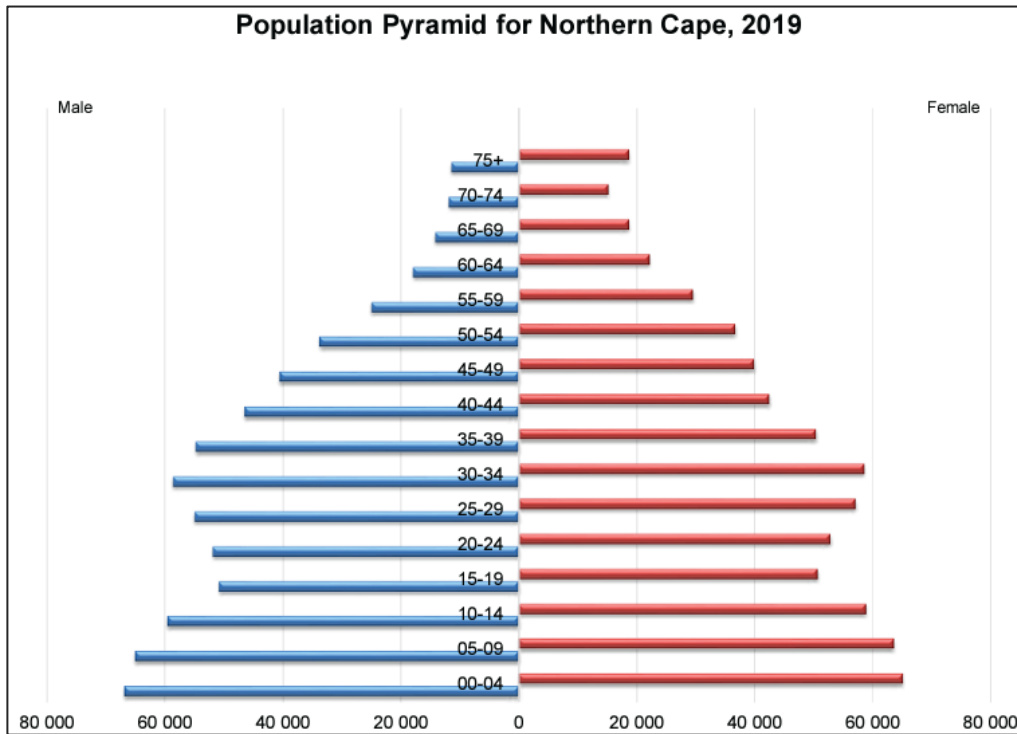


Figure 5: Population pyramid of the Northern Cape Province

The province’s population pyramid is expansive, as it displays a young and growing population. Children between 0 and 4 years represented the largest cohort (132 020) in the province in 2019, while those aged 70 to 74 constituted the smallest (27 035). Those aged 5 to 9 years had the second largest population size (128 668). The large number of young people (children) suggest that the province has a high fertility rate.

4.3.2. Economy

The figure below illustrates the GDP growth rates of South Africa and the Northern Cape. Growth figures for the Northern Cape are provided for 2009 to 2018 and for South Africa for 2009 to 2023.

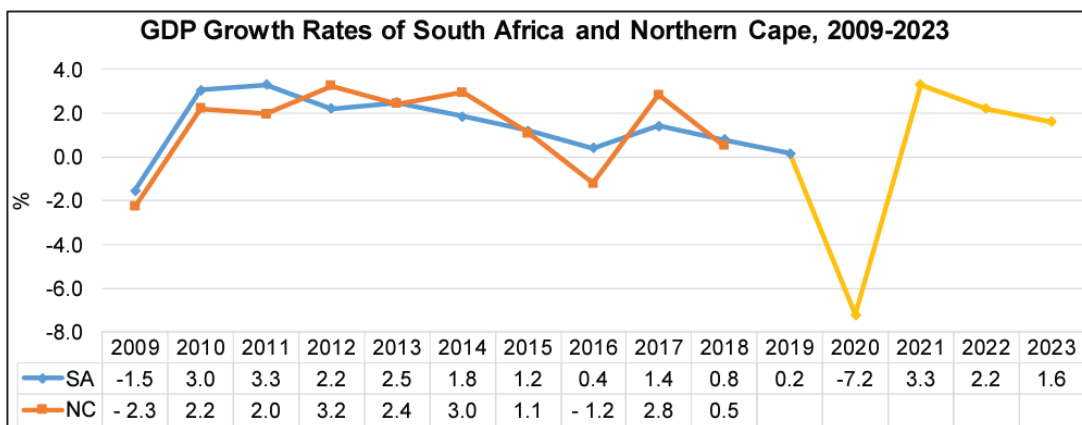


Figure 6: GDP Growth Rates of South Africa and the Northern Cape

In 2009, the economy of the Northern Cape and the country recorded a contraction of 2.3 per cent and 1.5 per cent respectively. After the contraction of 2009, the economy of the Northern Cape went on to grow positively for six consecutive years after which the economy contracted by 1.2 per cent in 2016. The economy of the province recovered in 2017 after output grew by 2.8 per cent and grew by a further 0.5 per cent in 2018. After contracting in 2009, the

national economy went on to record positive growth each year until 2019. In 2020, the estimated contraction that the country is expected to have recorded was -7.2 per cent. National Treasury's forecasts indicate that the economy of the country is expected to show some recovery, with projected growth of 3.3 per cent in 2021, 2.2 per cent in 2022 and 1.6 per cent in 2023.

The table below includes the Northern Cape economic sectors' growth and contributions to GDP for 2017 and 2018.

Table 3: Northern Cape economic sectors' growth and contributions to GDP.

Sector	Growth Rate (%)		Contributions to GDP (%)	
	2017	2018	2017	2018
Primary sector	8.1	-0.3	27.3	26.9
Agriculture, forestry and fishing	12.4	-5.9	7.1	6.4
Mining and quarrying	7.1	1.1	20.2	20.5
Secondary sector	-0.4	-0.3	9.2	9.8
Manufacturing	-0.7	0.4	3.1	3.2
Electricity, gas and water	0.2	0.3	3.5	3.9
Construction	-0.9	-1.8	2.7	2.7
Tertiary sector	0.5	0.9	53.7	53.4
Trade, catering and accommodation	-0.8	0.2	10.7	9.5
Transport, storage and communication	0.6	0.7	10.8	10.3
Finance, real estate and business services	1.5	1.2	11.9	12.4
Personal services	1.8	0.8	4.8	5.0
General government services	0.0	1.3	15.5	16.1
All industries at basic prices	3.0	0.3	90.2	90.0
Taxes less subsidies on products	0.9	2.1	9.8	10.0
GDPR at market prices	2.8	0.5	100.0	100.0

The Tertiary sector was the largest sector in the Northern Cape, having made a contribution towards the provincial GDP of 53.7 per cent in 2017 and a slightly smaller contribution in 2018 at 53.4 per cent. The Tertiary sector grew by 0.5 per cent in 2017, compared to 8.1 per cent growth for the Primary sector and a 0.4 per cent contraction in the Secondary sector for the same year. In 2018, the Tertiary sector grew by 0.9 per cent, compared to a 0.3 per cent contraction for each of the Primary and Secondary sectors. In 2017, the agriculture, forestry and fishing industry recorded the highest growth rate at 12.4 per cent but contracted in 2018 at -5.9 per cent. The industry with the highest growth rate in 2018 was General government services, growing at a low 1.3 per cent. Mining and quarrying remained the largest industry in 2018, contributing 20.5 per cent to the provincial economy, with Construction remaining the smallest industry, contributing only 2.7 per cent.

World output is projected to grow by 5.5 per cent in 2021, following the estimated contraction of 3.5 per cent in 2020 due to the economic crisis brought about by the global Covid-19 pandemic. According to National Treasury, the national economy is estimated to have contracted by a significant 7.2 per cent in 2020 but is expected to show some recovery in 2021 with the economy projected to grow by 3.3 per cent. Before the start of the pandemic, South Africa was already in a recession. Gauteng made the largest contribution to the national economy in 2018, while the Northern Cape made the smallest. The provincial economy recorded low economic growth of 0.5 per cent in 2018 after growing at a higher rate in 2017 at 2.8 per cent. Provincially, Mining and quarrying remained the largest contributor to the provincial GDP. The district that made the largest contribution to the economy of the province, was Frances Baard. The largest industry in Frances Baard and Pixley ka Seme was Community services in 2019, while in Namakwa, ZF Mgcawu and John Taolo Gaetsewe, Mining was the largest.

4.3.3. Employment

Nationally, the number of employed people increased by 333 000 on a quarterly basis (from quarter 3 of 2020 to quarter 4 of 2020), while it decreased by an alarming 1.397 million on an annual basis (from quarter 4 of 2019 to quarter 4 of 2020). The number of unemployed people increased by 701 000 on a quarterly basis and by 507 000 on an annual basis. Discouraged work-seekers also increased on both a quarterly and an annual basis. The national absorption rate, which

is the proportion of the working-age population aged 15 to 64 years that are employed, increased by 0.7 of a percentage point from 37.5 per cent in quarter 3 of 2020 to 38.2 per cent in quarter 4 of 2020, while it decreased by 4.2 percentage points on an annual basis. The unemployment rate increased by 1.7 percentage points from the third quarter to the fourth quarter of 2020 and increased by 3.4 percentage points year-on-year. The nation's unemployment rate stood at 32.5 per cent in the fourth quarter of 2020.

The labour market status of the Northern Cape for quarter 4 of 2019 and quarters 3 and 4 of 2020 is shown in the following table.

Table 4: Labour Market Status of the Northern Cape.

Labour market	2019 Q4 (‘000)	2020 Q3 (‘000)	2020 Q4 (‘000)	Qtr-to-qtr change (‘000)	Yr-on-yr change (‘000)
Population aged 15-64	806	812	816	4	10
Labour force	458	373	431	59	-27
Employed	335	287	308	21	-27
Unemployed	123	86	124	38	1
Not economically active	348	439	384	-54	37
Discouraged work-seekers	67	91	74	-17	7
Other	281	348	311	-37	29
Rates	(%)	(%)	(%)	(Percentage point)	(Percentage point)
Unemployment rate	26.9	23.1	28.7	5.6	1.8
Absorption rate	41.6	35.3	37.7	2.4	-3.9
Labour force participation rate	56.8	45.9	52.9	7.0	-3.9

The number of people employed in the Northern Cape increased by 21 000 on a quarterly basis while it decreased by 27 000 on an annual basis. The number of unemployed people increased on both a quarterly as well as an annual basis. Discouraged work-seekers decreased by 17 000 from the previous quarter but increased by 7 000 from the fourth quarter of 2019.

On a quarterly basis, the unemployment rate for the Northern Cape increased by 5.6 percentage points from 23.1 per cent in quarter 3 of 2020 to 28.7 per cent in quarter 4 of 2020. The absorption rate increased by 2.4 percentage points on a quarterly basis while the labour force participation rate increased by 7.0 percentage points. On an annual basis, the Northern Cape's unemployment rate increased by 1.8 percentage points while the absorption rate and the labour force participation rate each decreased by 3.9 percentage points.

4.3.4. Human Development

The HDI increased for all provinces. For the Northern Cape, it increased from 0.58 in 2010 to 0.66 in 2019. This indicates that development is taking place and the lives of the people are changing for the better in the province. The Western Cape had the highest HDI in both years under review at 0.69 and 0.74 respectively. Namakwa had the highest HDI at 0.61 in 2010 and 0.69 in 2019. The district with the lowest was John Taolo Gaetsewe at 0.55 and 0.63 in 2010 and 2019 respectively. The HDI of all the districts in the Northern Cape increased between 2010 and 2019.

4.3.5. Education

Table 5 shows the education attainment in Northern Cape and South Africa in 2019 with Table 6 providing the education attainment in the districts within the Northern Cape for 2010 and 2019.

The education category with the largest share of people in both the province and in South Africa was National Senior Certificate (NSC) Grade 12, followed by Upper secondary. Looking at those with no education, at 4.4 per cent compared to 3.7 per cent, the Northern Cape had a larger percentage than the country.

Table 5: Education Attainment for Individuals Aged 20 Years and Older, 2019

	Northern Cape (%)	South Africa (%)
Other	0.4	0.5
Post School	9.2	15.4
NSC Grade 12	29.1	30.8
Upper Secondary	22.6	25.1
Lower Secondary	16.8	11.8
Completed Primary	5.9	4.2
Some Primary	11.7	8.5
None	4.4	3.7

Table 6: Education Attainment for Individuals Aged 20 Years and Older per District, 2019

District	Year	No schooling	Grade 0-2	Grade 3-6	Grade 7-9	Grade 10-11	Certificate / diploma without matric	Matric only	Matric & certificate / diploma	Matric & Bachelors degree	Matric & Postgrad degree
Namakwa	2010	5 585	1 808	12 056	28 049	12 878	455	15 757	4 296	1 803	636
	2019	4 385	1 383	11 669	30 748	19 134	431	21 941	5 693	2 564	796
Pixley ka Seme	2010	17 307	3 922	18 412	27 574	17 088	447	22 383	3 633	2 886	981
	2019	14 707	3 158	18 450	31 873	27 428	620	32 631	4 874	4 455	1 042
ZF Mgcau	2010	14 600	4 495	22 879	40 729	26 879	633	32 165	5 950	3 135	1 174
	2019	11 876	3 953	21 572	46 456	43 651	695	48 570	7 553	4 098	1 121
Frances Baard	2010	22 693	5 094	25 495	47 424	44 942	1 276	56 979	10 718	6 330	2 636
	2019	19 774	4 689	27 920	54 066	67 371	1 246	81 022	14 706	9 673	3 302
John Taolo Gaetsewe	2010	16 553	3 859	18 258	20 919	21 117	533	23 082	6 067	2 427	959
	2019	15 050	3 558	19 376	26 173	36 695	633	37 716	9 238	3 148	1 282

In all districts, the number of people in the Matric and post graduate degree category increased except in ZF Mgcau where it decreased. The number of people in the category of No schooling decreased in all districts between 2010 and 2019. Frances Baard district had the largest number of people in the Matric only category at 56 979 and 81 022 in 2010 and 2019 respectively.

4.3.6. Income and poverty

In 2010, John Taolo Gaetsewe had the largest percentage of people in poverty at 61.2 per cent, while in 2019 Frances Baard had the largest percentage at 62.3 per cent. Looking at the percentage of people living in poverty, John Taolo Gaetsewe remained unchanged at 61.2 per cent in 2010 and 2019, while the number of people in poverty increased from 126 862 in 2010 to 160 043 in 2019. The district with the smallest percentage of people living in poverty in both years was Namakwa even though the percentage and number of people in poverty increased. All districts had an increase in the number of people living in poverty between 2010 and 2019 with Frances Baard having the largest number in both years.

Table 7: Poverty Indicators by District, 2010 and 2019

District	2010		2019	
	No. of People in Poverty	Percentage of People in Poverty (%)	No. of People in Poverty	Percentage of People in Poverty (%)
Namakwa	48 499	38.7	55 319	39.7
Pixley Ka Seme	99 878	52.3	118 017	53.4
ZF Mgcau	116 004	47.9	138 775	48.8
Frances Baard	201 309	56.1	273 376	62.3
John Taolo Gaetsewe	126 862	61.2	160 043	61.2
Northern Cape	592 552	52.7	745 530	55.4

The Northern Cape's Gini-coefficient increased from 0.59 in 2010 to 0.61 in 2019, which shows a slight increase in income inequality. With the exception of Gauteng and Mpumalanga, all provinces recorded an increase in income inequality.

The income bracket with the largest number of households in 2019 was R192 000 to R360 000 per annum. Very few households in the province were earning below R6 000 and above R2 400 000 per annum. In South Africa and the Northern Cape, most households derived their income from salaries followed by grants. Very few households earned an income from pensions. There is a high dependence on grants in the province as well as on a national level.

4.4. Namakwa District Municipality

The Namakwa District Municipality (NDM) is located in the northwestern corner of South Africa, bordered to the west by the Atlantic Ocean, to the north by Namibia, to the east by the ZF Mgcawu District Municipality, and to the south by the Western Cape Province. Richtersveld, Nama Khoi, Khai Ma, Kamiesberg, Hantam, and Karoo Hoogland are the six local municipalities that comprise the NDM. The district municipality has an area of 126 836km², making it the largest in South Africa, and the town of Springbok serves as the administrative center. The district is serviced by National Route 7 (N7), an important transportation route.

The main economic sectors contributing to the district are agriculture, mining, mari-culture, tourism, industry and electricity. The agriculture industry, which includes animal farming and the production of different fruits along the Orange River, is the district's second major employment. Abalone and oyster farming along the western coast provide other prospects that might be explored.

Mining is a significant economic contributor to the NDM, with operations taking place in four of the six local municipalities. Diamonds, copper, zinc, lead, and granite are among the minerals extracted. Several mines have reached the end of their economic lives, resulting in a number of mines that have either closed or are set to shut. O'kiep Copper Company, one of the major mines, is one such mine that has closed. Mine closures have had a significant detrimental influence on the district's economy.

The NDM has the greatest intensity of solar radiation in Southern Africa, making it an attractive site for solar installations. Wind, wave, and nuclear energy have also been considered as viable renewable energy sources to help the energy sector.

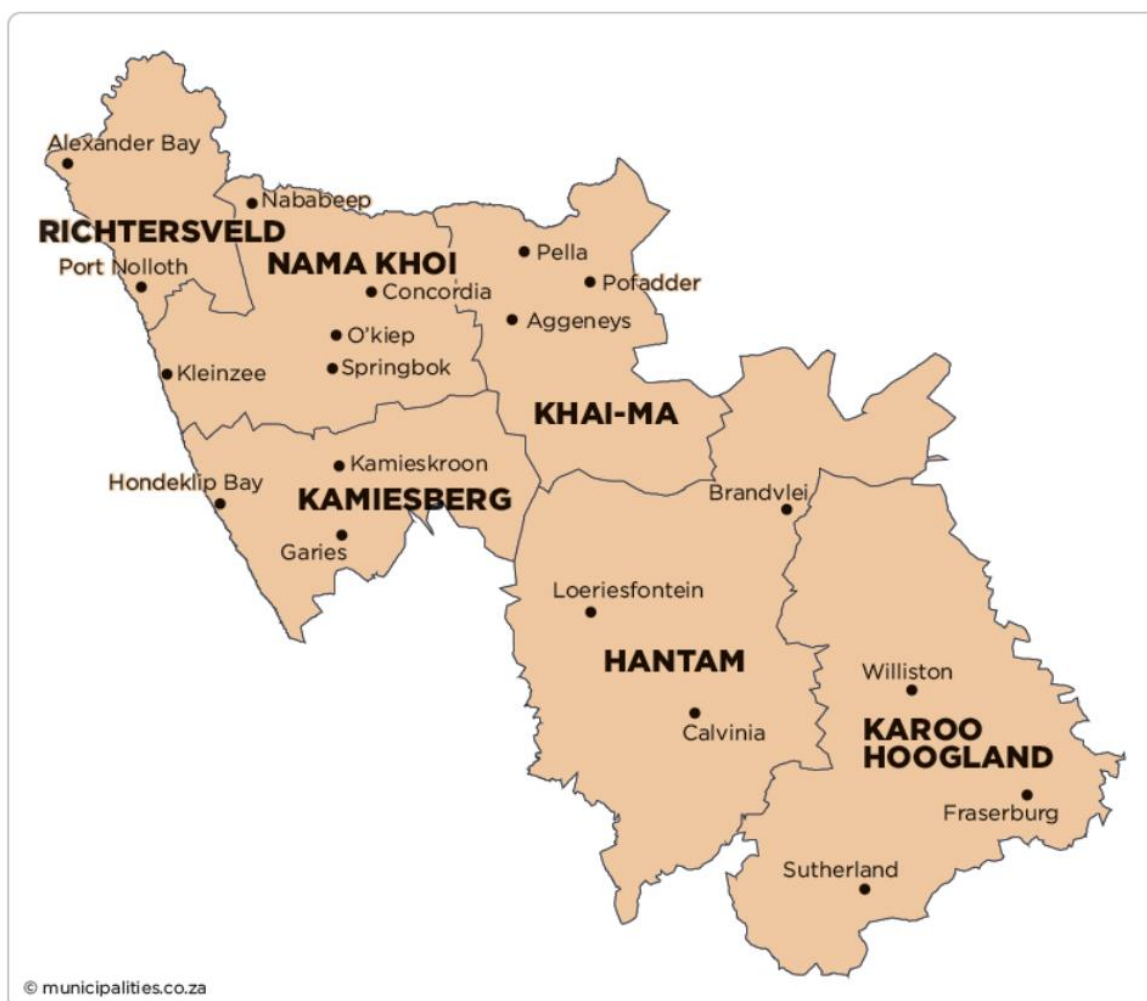


Figure 7: Local Municipalities of Namakwa District Municipality Source: (Local Government Handbook, 2015)

4.4.1. Population

The Namakwa District is also the District in the Northern Cape Province with the lowest population in 2016 namely 115 488. This is a slight decline from the 2011 census figure of 115 842 and is the least populated district in the Province (and Country, although geographically the largest) with a population comprising 10% of the Provincial total population.

The population projection of Namakwa District Municipality shows an estimated average annual growth rate of 1.1% between 2020 and 2025. The average annual growth rate in the population over the forecasted period for Northern Cape Province and South Africa is 1.6% and 1.3% respectively. The Northern Cape Province is estimated to have average growth rate of 1.6% which is higher than the Namakwa District Municipality. The South Africa as a whole is estimated to have an average annual growth rate of 1.3% which is higher than that of Namakwa's growth rate.

Namakwa District Municipality's male/female split in population was 99.9 males per 100 females in 2020. The Namakwa District Municipality has significantly more males (49.97%) relative to South Africa (48.97%), and what is typically seen in a stable population. This is usually because of physical labour-intensive industries such as mining. In total there were 70 500 (50.03%) females and 70 500 (49.97%) males. This is different from the Northern Cape Province as a whole where the female population counted 692 000 which constitutes 50.63% of the total population of 1.37 million.

4.4.2. Economy

With a GDP of R 10.7 billion in 2020 (up from R 7.39 billion in 2010), the Namakwa District Municipality contributed 10.59% to the Northern Cape Province GDP of R 101 billion in 2020 increasing in the share of the Northern Cape from 12.30% in 2010. The Namakwa District Municipality contributes 0.21% to the GDP of South Africa which had a total GDP of R 4.97 trillion in 2020 (as measured in nominal or current prices). Its contribution to the national economy stayed similar in importance from 2010 when it contributed 0.27% to South Africa, but it is lower than the peak of 0.27% in 2010.

Table 9: Gross Domestic Product (GDP) - Namakwa, Northern Cape and National Total, 2010-2020.

	Namakwa	Northern Cape	National Total	Namakwa as % of province	Namakwa as % of national
2010	7.4	60.1	2,748.0	12.3%	0.27%
2011	7.8	64.0	3,023.7	12.1%	0.26%
2012	8.3	68.2	3,253.9	12.1%	0.25%
2013	8.7	72.5	3,540.0	12.0%	0.25%
2014	9.9	83.5	3,805.3	11.8%	0.26%
2015	9.9	86.2	4,049.9	11.5%	0.25%
2016	10.2	90.4	4,359.1	11.3%	0.24%
2017	10.8	96.5	4,653.6	11.2%	0.23%
2018	11.0	100.1	4,873.9	11.0%	0.23%
2019	11.2	103.4	5,077.6	10.8%	0.22%
2020	10.7	100.7	4,973.0	10.6%	0.21%

Primary Sector

In figure 8 it is indicated that between 2010 and 2020, the agriculture sector experienced the highest positive growth in 2017 with an average growth rate of 11.3%. It is evident for the mining sector that the highest positive growth rate also existed in 2017 and it experienced a growth rate of 7.5% which is lower than that of the agricultural sector. The agricultural sector experienced the lowest growth for the period during 2011 at -11.1%, while the mining sector reaching its lowest point of growth in 2020 at -11.2%. Both the agriculture and mining sectors are generally characterised by volatility in growth over the period.

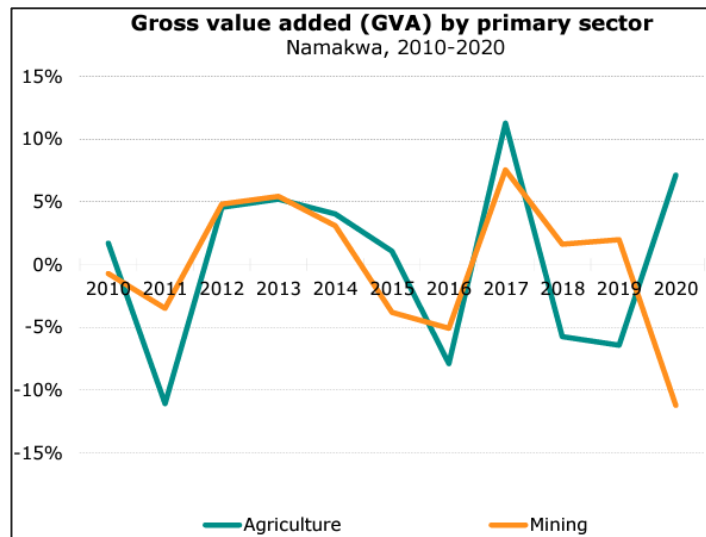


Figure 8: Gross Value Added (GVA) by primary sector - Namakwa, 2010-2020

4.4.3. Employment

When looking at the total employment (formal plus informal), the Community services industry employed the largest portion of people in each district, at 28.6 per cent in Namakwa, 31.9 per cent in Pixley ka Seme, 25.5 per cent in ZF Mgcawu, 38.1 per cent in Frances Baard and 24.8 per cent in John Taolo Gaetsewe. The industry employing the second largest share of people, was Trade in Namakwa (18.2 per cent), Frances Baard (20.6 per cent) and Pixley ka Seme (18.4 per cent), Agriculture in ZF Mgcawu (20.2 per cent) and Mining in John Taolo Gaetsewe (23.3 per cent). The Electricity industry employed the smallest share of people in all districts.

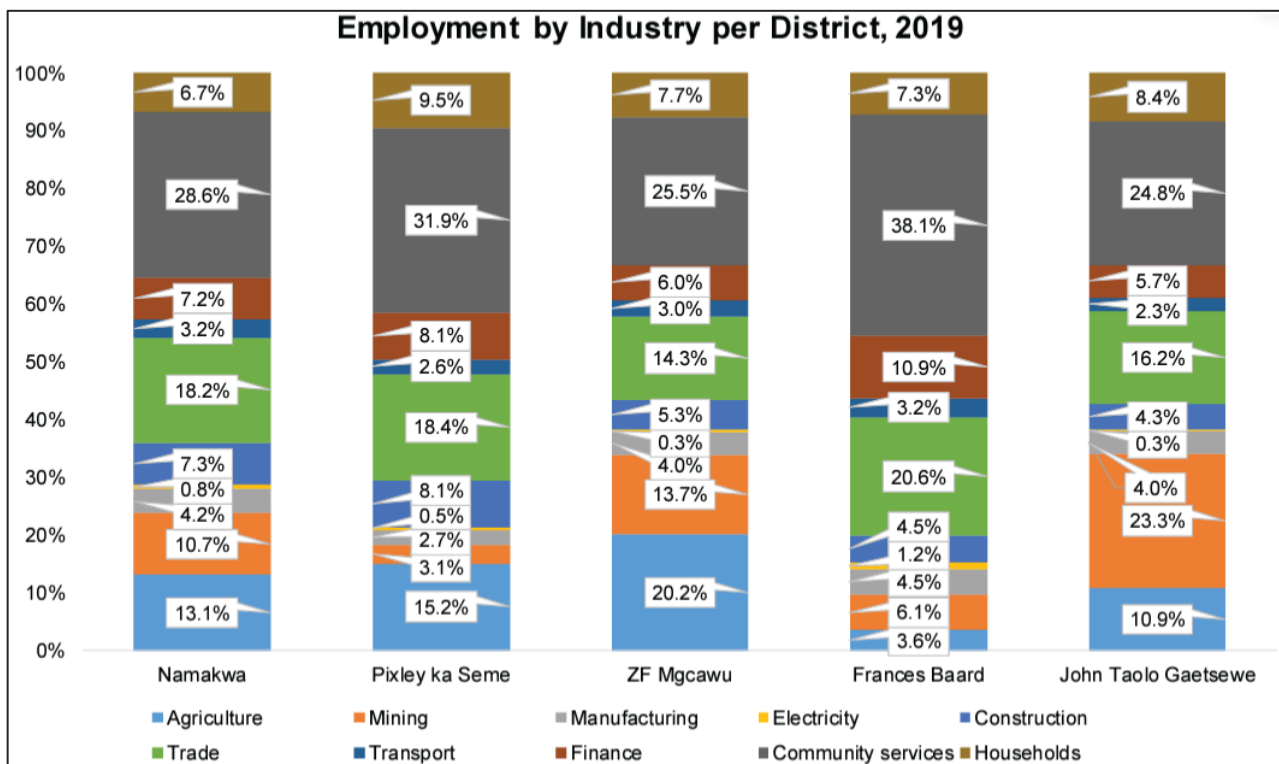


Figure 9: Employment by Industry per District, 2019

In 2020, the Gini coefficient in Namakwa District Municipality was at 0.582, which reflects a increase in the number over the ten-year period from 2010 to 2020. The Northern Cape Province and South Africa, both had a more unequal spread of income amongst their residents (at 0.619 and 0.635 respectively) when compared to Namakwa District Municipality. The Gini coefficient of Namakwa indicates an upward trend which indicates inequality is increasing.

4.4.4. Education

Within Namakwa District Municipality, the number of people without any schooling decreased from 2010 to 2020 with an average annual rate of -3.73%, while the number of people within the 'matric only' category, increased from 15,800 to 24,100. The number of people with 'matric and a certificate/diploma' increased with an average annual rate of 4.33%, with the number of people with a 'matric and a Bachelor's' degree increasing with an average annual rate of 2.14%. Overall improvement in the level of education is visible with an increase in the number of people with 'matric' or higher education.

The number of people without any schooling in Namakwa District Municipality accounts for 6.75% of the number of people without schooling in the province and a total share of 0.21% of the national. In 2020, the number of people in Namakwa District Municipality with a matric only was 24,100 which is a share of 9.82% of the province's total number of people that has obtained a matric. The number of people with a matric and a Postgrad degree constitutes 10.01% of the province and 0.13% of the national.

4.5. Nama Khoi Local Municipality

Nama Khoi Municipal is an area located in the Northern Cape Province's north-western corner. It is part of the Namakwa District Municipality, with Springbok serving as the administrative center. This region is known as Nama land, the domain of the indigenous Khoi- San. The mighty Orange River not only soothes the soul of the avid nature-lover, but also provides watersports such as river rafting for the more daring. Tourism has emerged as an economic pillar, alleviating hardships and serving as a reminder of the rich cultural heritage buried beneath the Namakwa plains.

It is the biggest municipality in comparison to the other five municipalities that also form part of the Namakwa District Municipality. The municipality includes the communities of Springbok, Steinkopf, Okiep, Rooiwinkel, Concordia, Komaggas, Buffelsrivier, Nababeep, Bulletrap, Vioolsdrift, Goodhouse, Kleinzee and Carolusberg. An independent survey, done by Empowerdex during 2009, rated Nama Khoi as the best municipality in the country. According to this research, 94% of the inhabitants have access to basic services.

The Nama Khoi Local Municipality (NKLM) includes parts of both the Greater Richtersveld and Central Namaqualand Coast biodiversity priority areas within its boundaries - thus making it an important region for conservation activities, as it spans two areas identified through the SKEP process as areas important for biodiversity conservation. Its incorporation into both the arid Richtersveld, and the biodiversity rich coastal region, places the NKLM as a nexus of a variety of different vegetation types and species variation. The conservation of the NKLM's biodiversity will do more to contribute to the future socio-economic well-being and development of all inhabitants of the municipality than mining has in the past - and to do it sustainably.

Climate change threatens food security, poverty alleviation and sustainable socio-economic growth, core mandates of the municipality. Climate change will impact persons and groups that are already vulnerable. Policy decisions taken in the next decade will largely determine the dimension of the impact of climate change. Eco-systems-based adaptation approaches, using nature and biodiversity to help people cope with and respond to the negative impacts of climate change, will have an important role to play in Nama Khoi.

4.5.1. Population

With 56 600 people, the Nama Khoi Local Municipality housed 0.1% of South Africa's total population in 2021. Between 2011 and 2021 the population growth averaged 1.04% per annum which is close to half than the growth rate of South Africa as a whole (1.50%). Compared to Namakwa's average annual growth rate (1.12%), the growth rate in Nama Khoi's population at 1.04% was very similar than that of the district municipality.

Compared to other regions, the Nama Khoi Local Municipality accounts for a total population of 56,600, or 40.4% of the total population in the Namakwa District Municipality, which is the most populous region in the Namakwa District Municipality for 2021. The size of Nama Khoi compared to the other regions remained the same between 2011 and 2021. In terms of its share the Nama Khoi Local Municipality was slightly smaller in 2021 (40.4%) compared to what it was in 2011 (40.7%). When looking at the average annual growth rate, it is noted that Nama Khoi ranked fourth (relative to its peers in terms of growth) with an average annual growth rate of 1.0% between 2011 and 2021.

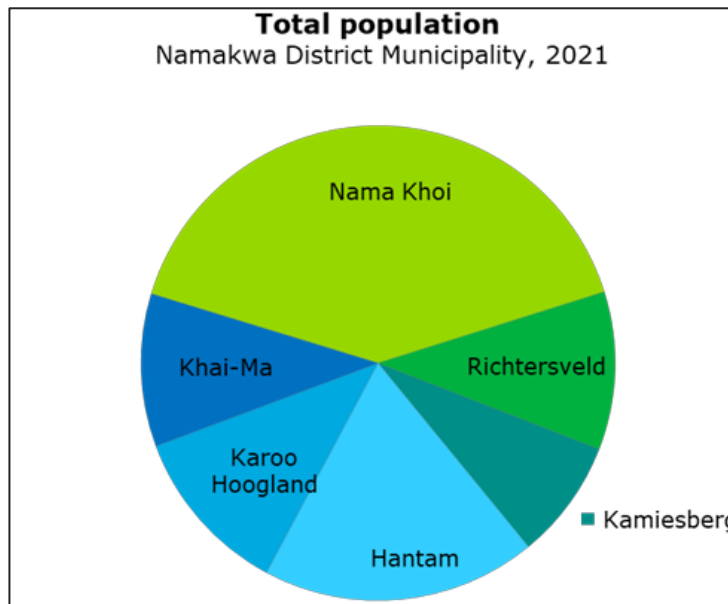


Figure 10: Namakwa District Municipality Total Population 2021

The population pyramid reflects a projected change in the structure of the population from 2021 and 2026. The differences can be explained as follows:

- In 2021, there is a significantly larger share of young working age people between 20 and 34 (22.1%), compared to what is estimated in 2026 (20.6%). This age category of young working age population will decrease over time.
- The fertility rate in 2026 is estimated to be slightly higher compared to that experienced in 2021. The share of children between the ages of 0 to 14 years is projected to be significant smaller (18.1%) in 2026 when compared to 2021 (19.3%).
- In 2021, the female population for the 20 to 34 years age group amounts to 11.7% of the total female population while the male population group for the same age amounts to 10.4% of the total male population.
- In 2026, the male working age population at 9.7% does not exceed that of the female population working age population at 10.9%, although both are at a lower level compared to 2021.

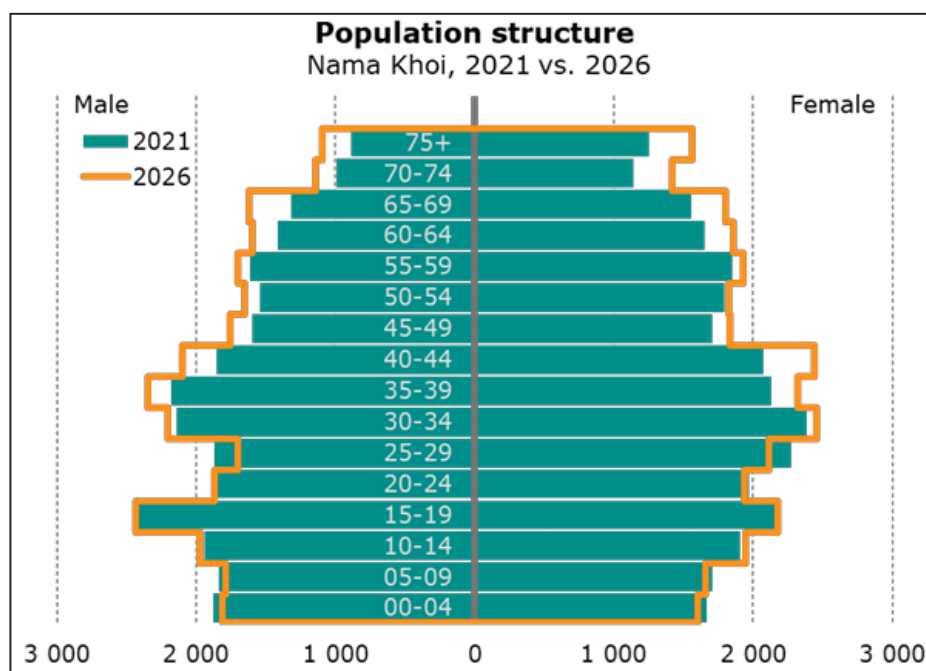


Figure 11: Projected Population Structure of Nama Khoi Local Municipality 2021 – 2026

4.5.2. Economy

With a GDP of R 5.39 billion in 2021 (up from R 3.19 billion in 2011), the Nama Khoi Local Municipality contributed 42.03% to the Namakwa District Municipality GDP of R 12.8 billion in 2021 increasing in the share of the Namakwa from 42.97% in 2011. The Nama Khoi Local Municipality contributes 4.28% to the GDP of Northern Cape Province and 0.09% the GDP of South Africa which had a total GDP of R 6.21 trillion in 2021 (as measured in nominal or current prices). It's contribution to the national economy stayed similar in importance from 2011 when it contributed 0.10% to South Africa, but it is lower than the peak of 0.10% in 2011.

In 2021, the mining sector is the largest within Nama Khoi Local Municipality accounting for R 3.26 billion or 64.6% of the total GVA in the local municipality's economy. The sector that contributes the second most to the GVA of the Nama Khoi Local Municipality is the community services sector at 10.9%, followed by the finance sector with 9.5%. The sector that contributes the least to the economy of Nama Khoi Local Municipality is the construction sector with a contribution of R 53.9 million or 1.07% of the total GVA.

Table 8: Gross Value Added (GVA) by Broad Economic Sector - Nama Khoi Local Municipality, 2021

	Nama Khoi	Namakwa	Northern Cape	National Total	Nama Khoi as % of district municipality	Nama Khoi as % of province	Nama Khoi as % of national
Agriculture	0.1	1.3	8.5	150.9	5.5%	0.83%	0.05%
Mining	3.3	5.0	27.3	481.0	65.7%	11.96%	0.68%
Manufacturing	0.1	0.2	4.0	726.4	28.1%	1.55%	0.01%
Electricity	0.1	0.2	3.6	171.9	51.6%	2.27%	0.05%
Construction	0.1	0.2	2.0	139.0	30.6%	2.71%	0.04%
Trade	0.3	1.1	11.4	759.8	26.0%	2.47%	0.04%
Transport	0.2	0.7	9.5	392.3	30.3%	2.18%	0.05%
Finance	0.5	1.3	18.9	1,319.9	37.6%	2.53%	0.04%
Community services	0.5	2.0	29.6	1,422.3	27.5%	1.86%	0.04%
Total Industries	5.0	11.8	114.8	5,563.5	42.7%	4.40%	0.09%

Primary Sector

The primary sector consists of two broad economic sectors namely the mining and the agricultural sector. The following chart represents the average growth rate in the GVA for both of these sectors in Nama Khoi Local Municipality from 2011 to 2021.

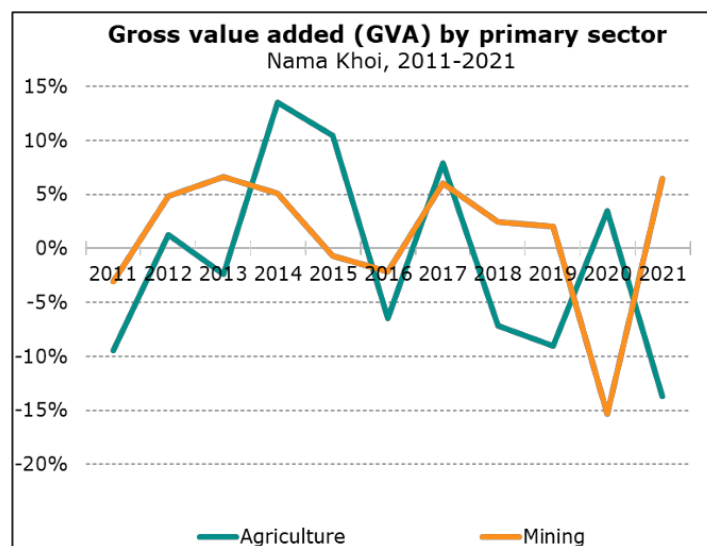


Figure 12: GVA by Primary Sector of Nama Khoi Local Municipality 2011 – 2021

Between 2011 and 2021, the agriculture sector experienced the highest positive growth in 2014 with an average growth rate of 13.5%. The mining sector reached its highest point of growth of 6.6% in 2013. The agricultural sector experienced the lowest growth for the period during 2021 at -13.7%, while the mining sector reaching its lowest point of growth in 2020 at -15.3%. Both the agriculture and mining sectors are generally characterised by volatility in growth over the period.

4.5.3. Employment

The working age population in Nama Khoi in 2021 was 38 500, increasing at an average annual rate of 1.00% since 2011. For the same period the working age population for Namakwa District Municipality increased at 1.18% annually, while that of Northern Cape Province increased at 1.58% annually. South Africa's working age population has increased annually by 1.51% from 33.9 million in 2011 to 39.4 million in 2021.

The graph below combines all the facets of the labour force in the Nama Khoi Local Municipality into one compact view. The chart is divided into "place of residence" on the left, which is measured from the population side, and "place of work" on the right, which is measured from the business side.

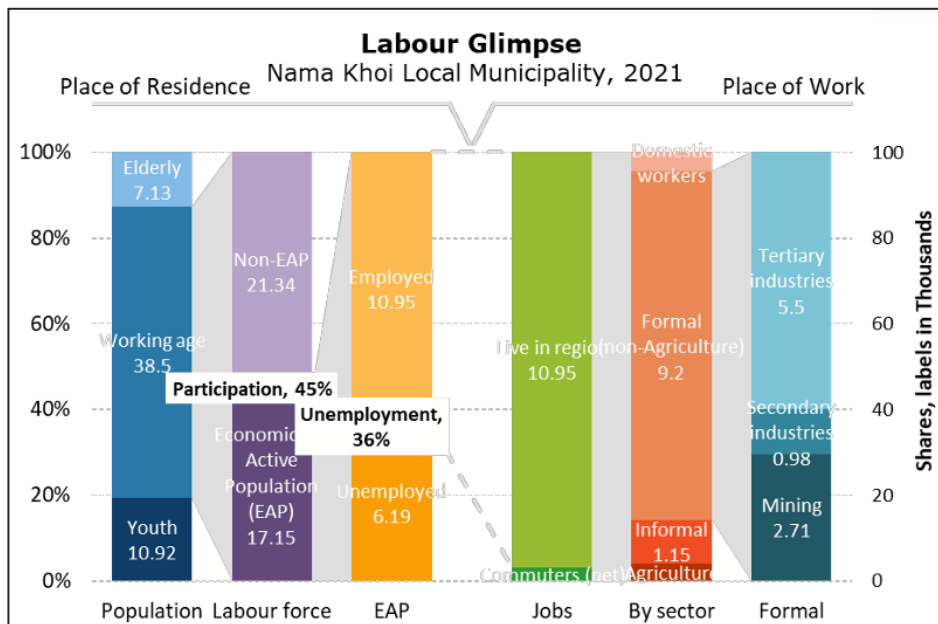


Figure 13: Labour Glimpse of Nama Khoi Local Municipality 2021

Reading the chart from the left bar, breaking down the total population of the Nama Khoi Local Municipality (56 600) into working age and non-working age, the number of people that are of working age is about 38 500. As per definition, those that are of age 0 - 19 (youth) or age 65 and up (pensioners) are part of the non-working age population. Out of the working age group, 44.6% are participating in the labour force, meaning 17 200 residents of the local municipality forms currently part of the economically active population (EAP). Comparing this with the non-economically active population (NEAP) of the local municipality: fulltime students at tertiary institutions, disabled people, and those choosing not to work, sum to 21 400 people. Out of the economically active population, there are 6 200 that are unemployed, or when expressed as a percentage, an unemployment rate of 36.1%. Up to here all the statistics are measured at the place of residence.

On the far right we have the formal non-Agriculture jobs in Nama Khoi, broken down by the primary (mining), secondary and tertiary industries. The majority of the formal employment lies in the Tertiary industry, with 5 510 jobs. When including the informal, agricultural and domestic workers, we have a total number of 11 300 jobs in the area. Formal jobs make up 81.3% of all jobs in the Nama Khoi Local Municipality. The difference between the employment measured at the place of work, and the people employed in the area can be explained by the net commuters that commute every day into the local municipality.

4.5.4. Education

Within Nama Khoi Local Municipality, the number of people without any schooling decreased from 2011 to 2021 with an average annual rate of -4.82%, while the number of people within the 'matric only' category, increased from 6,840 to 10,700. The number of people with 'matric and a certificate/diploma' increased with an average annual rate of 5.06%, with the number of people with a 'matric and a Bachelor's' degree decreasing with an average annual rate of -0.55%.

The number of people without any schooling in Nama Khoi Local Municipality accounts for 12.37% of the number of

people without schooling in the district municipality, 0.89% of the province and 0.03% of the national. In 2021, the number of people in Nama Khoi Local Municipality with a matric only was 10,700 which is a share of 41.25% of the district municipality's total number of people that has obtained a matric. The number of people with a matric and a Postgrad degree constitutes 34.29% of the district municipality, 3.51% of the province and 0.04% of the national.

Table 9: Highest Level of Education Age 15+ in 2021

	Nama Khoi	Namakwa	Northern Cape	National Total	Nama Khoi as % of district municipality	Nama Khoi as % of province	Nama Khoi as % of national
No schooling	425	3,430	47,800	1,470,000	12.4%	0.89%	0.03%
Grade 0-2	237	850	8,840	439,000	27.9%	2.68%	0.05%
Grade 3-6	3,260	9,030	75,100	2,630,000	36.2%	4.35%	0.12%
Grade 7-9	12,200	28,600	171,000	5,840,000	42.7%	7.13%	0.21%
Grade 10-11	9,260	21,000	200,000	9,880,000	44.1%	4.64%	0.09%
Certificate / diploma without matric	248	485	3,440	177,000	51.0%	7.21%	0.14%
Matric only	10,700	25,900	256,000	12,800,000	41.3%	4.18%	0.08%
Matric certificate / diploma	3,260	6,770	47,200	2,680,000	48.1%	6.89%	0.12%
Matric Bachelors degree	622	1,810	17,700	1,650,000	34.3%	3.51%	0.04%
Matric Postgrad degree	311	809	9,120	853,000	38.4%	3.41%	0.04%

4.5.5. Income and poverty

It was estimated that in 2021 4.57% of all the households in the Nama Khoi Local Municipality, were living on R30,000 or less per annum. In comparison with 2011's 11.60%, the number is about half. The 192000-360000 income category has the highest number of households with a total number of 2 660, followed by the 132000-192000 income category with 2 120 households. Only 0.068 households fall within the 0-2400 income category.

Table 10: Households by Income Category 2021

	Nama Khoi	Namakwa	Northern Cape	National Total	Nama Khoi as % of district municipality	Nama Khoi as % of province	Nama Khoi as % of national
0-2400	0	0	22	1,260	20.8%	0.31%	0.01%
2400-6000	15	37	486	22,200	41.7%	3.15%	0.07%
6000-12000	48	128	3,370	197,000	37.6%	1.43%	0.02%
12000-18000	92	243	6,070	361,000	37.9%	1.52%	0.03%
18000-30000	607	1,480	24,000	1,350,000	41.2%	2.53%	0.05%
30000-42000	855	2,110	28,200	1,480,000	40.6%	3.03%	0.06%
42000-54000	937	2,340	28,500	1,440,000	40.1%	3.29%	0.07%
54000-72000	1,710	4,160	39,700	1,910,000	41.1%	4.30%	0.09%
72000-96000	1,960	4,820	38,300	1,730,000	40.7%	5.13%	0.11%
96000-132000	2,060	5,080	40,800	1,770,000	40.5%	5.06%	0.12%
132000-192000	2,120	5,230	37,600	1,520,000	40.6%	5.64%	0.14%
192000-360000	2,660	6,760	47,400	1,870,000	39.4%	5.62%	0.14%
360000-600000	1,650	4,410	31,600	1,310,000	37.5%	5.24%	0.13%
600000-1200000	1,290	3,650	25,800	1,100,000	35.3%	5.00%	0.12%
1200000-2400000	599	1,810	12,700	567,000	33.1%	4.74%	0.11%
2400000+	78	271	1,950	102,000	28.8%	3.99%	0.08%
Total	16,700	42,500	366,000	16,700,000	39.3%	4.56%	0.10%

In 2021, there were 24 700 people living in poverty, using the upper poverty line definition, across Nama Khoi Local Municipality - this is 43.63% higher than the 17 200 in 2011. The percentage of people living in poverty has increased from 33.74% in 2011 to 43.71% in 2021, which indicates an increase of -9.97 percentage points.

The population group with the highest percentage of people living in poverty in 2021 was the African population group with a total of 66.7% people living in poverty, using the upper poverty line definition. The proportion of the White population group, living in poverty, decreased by -8.97.

5. ASSESSMENT OF KEY SOCIAL ISSUES AND IMPACT

5.1. Introduction

Section 5 highlights the key social issues identified during the SIA study. The identification of social issues was based on:

- Review of project related information, including other specialist studies;
- Application of relevant legislation from a local to national level;
- Experience of the authors of the area and the local conditions; and
- Experience with similar projects.

This section presents the impacts on which the findings of the SIA are based for the relevant components and activities. The significance of impacts has been rated using an Impact Rating methodology provide by Savannah Environmental. Please refer to Section 2.4. for the methodology.

Activities associated with the proposed PV development and associated infrastructure include the development of development area for the PV; laydown area, substation, O&M building, Battery energy storage facility, access roads, grid connection infrastructure clearing land for pylons, installing pylons and cabling, compensation negotiations, maintenance once operational and the decommissioning activities.

Social impacts have been grouped according to the categories and assessed for the construction, operational and decommissioning phases. In order to be able to be able to map impact ratings for the whole study area. Impacts are then re-rated with the implementation of mitigation measures. The impact ratings have been summarized in this section. Please refer to Appendix A for the full impact rating tables.

5.2. Identification of Key Social Issues

The identified key social issues are discussed below. They are divided into policy and planning related, as well as local and site-specific issues. Local and site-specific issues are further divided into construction and operational related issues.

A Social Impact Assessment (SIA) has been prepared to provide a description of the environment that may be impacted by the activity as well as the manner in which the environment may be impacted. This section also includes a description and assessment of the potential social issues associated with the proposed facility, as well as the identification of enhancement and mitigation measures aimed at maximizing opportunities and avoiding or mitigating negative impacts.

The proposed mitigation measures should be implemented to limit the negative impacts and enhance the positive impacts associated with the project.

The proposed project and associated infrastructure are unlikely to have long-term negative social consequences. From a social standpoint, it is concluded that the project could be developed subject to the implementation of recommended mitigation measures and project management actions.

5.3. Social Impacts Associated with the Construction Phase

The majority of the social impacts associated with the project are expected to occur during the development's construction phase and are typical of the types of social impacts typically associated with construction activities. These effects will be temporary and short-term (12 – 18 months), but they may have long-term consequences on the surrounding social environment if not properly planned and managed. As a result, the detailed design phase must be carried out in such a way that it does not result in long-term social impacts due to improper placement of project components or associated infrastructure, or mismanagement of construction phase activities.

The positive and negative social impacts identified and assessed for the construction phase includes:

Potential positive impacts

- Creation of employment and business opportunities
- Contributions to the local economy
- Skills Development
- Growth of the local communities

Potential negative impacts

- Impacts associated with the presence of construction workers on site
- Threat to safety and security surrounding developments or land users
- Fire Risks
- Pressure on local services
- Impact of heavy vehicles, including damage to roads, safety, noise and dust

Construction Phase

Nature:

Employment opportunities and skills development

Impact description: The area is sparsely populated, primarily dominated by agricultural development and vacant land within the surrounding communities.

The directly affected communities are unskilled farm workers or individuals working and residing in the surrounding settlements and small towns. Areas such as Kleinsee and Komaggas may attract more semi-skilled workers, a need for employment and direct skill-based work is required aimed at providing either long term employment or generating new skills within the existing work force.

It is vital that all employment be sourced locally where possible, and where not possible (highly skilled provisions) the opportunity for skills transfer is made available.

Several indirect employment opportunities will also be created. Indirect employment opportunities will predominantly be created in the service industry, through the opportunity for the provision of secondary services to the construction team. Services may include, but are not limited to, accommodation, catering, and laundry services.

	Rating	Motivation	Significance
<i>Prior to Enhancement</i>			
Duration	Short-term (1)	The construction period will last less than one year	Low Positive (30)
Extent	Local – Regional (5)	The impact will occur at a local, regional and national level	
Magnitude	Low (4)	The creation of employment opportunities will assist to an extent in alleviating unemployment levels within the area	
Probability	Probable (3)	Construction of the project will result in the creation of a number of direct and indirect employment opportunities, which will assist in addressing unemployment levels within the area and aid in skills development of communities in the area	

Enhancement measures:

To enhance the local employment, skills development and business opportunities associated with the construction phase, the following measures should be implemented:

- The developers be committed to involving and benefiting the communities surrounding the development, contributing to their development and growth
- It is recommended to conduct structured and proactive engagement sessions within the municipal district, to expose local small, micro and medium enterprises which will benefit from the proposed development
- Training and skills development programmes should be initiated prior to the commencement of the construction phase
- The communities which are most in need of employment on a local level should be considered for employment before outsourcing.

Post Enhancement

Duration	Short-term (1)	The construction period will last for less than one year	Medium Positive (55)
Extent	Regional (4)	The impact will occur at a local, regional and national level	
Magnitude	Moderate (6)	The creation of employment opportunities will assist to an extent in alleviating unemployment levels within the area	
Probability	Definite (5)	Construction of the project will result in the creation of a number of direct and indirect employment opportunities, which will assist in addressing unemployment levels within the area and aid in the skills development of communities in the area	

Residual opportunities

- Initiatives to eliminate unfair discrimination in employment
- Recruit and select suitably qualified individuals from the designated groups
- Employees from designated groups who have been identified in the talent pool should be advanced and accelerated through targeted training and development programs
- Assist individuals in obtaining an initial vocational education and pre-qualification, as well as additional education and training that refreshes knowledge, skills, work and life competencies that are critical for overall development
- Provide portable skills training to employees who express an interest in obtaining such training, with a special emphasis on employees who have been incapacitated or retrenched, in order for them to remain economically active, employable, or self-sustaining in their communities
- Growth of talent is facilitated, thereby providing opportunities for all employees to contribute to their full potential

Nature:

Contributions to the local economy

Impact description: The developer should be committed to the long-term socioeconomic development and well-being of the communities in which they operate by contributing to community development that will last long after the PV development has been decommissioned.

It is therefore important that the developer use and source from local suppliers as much as possible to stimulate the local economy, this includes but is not limited to things such as the purchasing of construction materials, provision of services, transportation, and acquisition of other goods.

	Rating	Motivation	Significance
<i>Prior to Enhancement</i>			
Duration	Long-term (4)	Will continue for the duration of the project due to legal obligation to pay taxes	Medium Positive (36)

Extent	Local – Regional (4)	Will include mostly local and some regional impacts	
Magnitude	Low (4)	Will derive from increased cash flow from wages, local procurement, economic growth, taxes and procurement initiatives	
Probability	Probable (3)	Will depend on; proportion of local spending by employees, capacity of local enterprises to supply; effectiveness of initiatives, contributions to local government	

Enhancement measures:

- Preference is given to suppliers that are local to the operation where the service will be consumed
- Establishing liaison and communication structures with the district and local government structures
- Liaises with the local governmental structures and municipal authorities in the labour- sending communities to ensure that group development initiatives are integrated into the economic and development plans of those areas
- The continuous review of the economic development of the project during the implementation process will ensure that the project does not become static but is revised in terms of changing needs and also to ensure sustainability
- It is recommended that a local procurement policy be adopted by the developer to maximise the benefit to the local economy, where feasible
- Create job opportunities, boost local economies by supporting business activities, and contribute to government tax revenues through the development of the Solar Facility
- Prior to the start of the construction contractor procurement, the Developer of the Solar Facility should create a database of local companies, specifically Historically Disadvantaged (HD) companies, that qualify as potential service providers (e.g., construction companies, catering companies, waste collection companies, security companies, etc.). These businesses should be informed about the tender process and invited to bid on project-related work, if applicable
- Engage with local authorities and business organisations to investigate the feasibility of obtaining construction materials, goods, and products from local suppliers, where possible

Post Enhancement

Duration	Long-term (4)	As for pre-enhancement	Medium Positive (60)
Extent	Local – Regional (4)	SMME capacity building will limit procurement from outside the local municipality	
Magnitude	Low (4)	Mitigation will likely increase intensity of multiplier effects as it will concentrate impact to local area, sustainability of initiatives will also be increased if aligned with other those of other institutions	
Probability	Definite (5)	Increased local employment and procurement as well as skilled SMME’s skill enhance likelihood of benefits to local economy	

Residual opportunity

- Improved local service sector, growth in local business
- Community development and stimulation of the local economy
- Growth in the local markets

Nature:

Safety and security

Impact description: Temporary increase in safety and security concerns associated with the influx of people during the construction phase.

The commencement of construction activities can be associated with an increase in crime within an area. The perceived loss of security during the construction phase of a project due to an influx of workers and / or outsiders to the area may have indirect effects such as increased safety and security concerns for neighbouring properties, damage to property, increased risk of veld fire, stock theft, poaching, crime and so forth.

It is advised that no personal camp be established onsite, and the labour force will therefore not permanently reside within the area, or have any reason to be onsite after hours significantly reducing the probability of such safety and security impacts occurring.

The project proponent should strive to develop and maintain good relationships and ongoing and open communication with neighbouring landowners. Suitable grievance control mechanisms must be developed and implemented, and the local community informed of the grievance mechanism to be followed additionally a security company must be appointed and security measures implemented prior to the commencement of construction activities onsite.

	Rating	Motivation	Significance
<i>Prior to Mitigation</i>			
Duration	Short-term (2)	Will be limited to the construction phase which is less than one year	Moderate Negative (33)
Extent	Local – Regional (3)	Safety concerns will affect nearby communities	
Magnitude	Moderate (6)	Could place the lives of neighbouring community members at risk	
Probability	Probable (3)	Traffic would need to be considered in the area	

Mitigation:

- Stopping significant unwanted events by focusing on critical control management
- Safety awareness and training as well as positive behaviour reinforcement
- Improving system monitoring and analysis to improve risk management
- Employment of a local security company
- Making the surrounding land owners aware of the dangers associated with the influx of workers during the construction period
- Identifying abandoned buildings and utilizing them or ensuring they can not be used for malicious activities
- Ensuring that access can not be gained to surrounding properties
- Encourage employees to stop working when a workplace is considered unsafe and/or to prevent unsafe actions
- Education, Training and Development Services must be implemented
- Access in and out of the construction area should be strictly controlled by a security company
- The contractor must provide adequate firefighting equipment on site and provide firefighting training to selected construction staff
- Have clear rules and regulations for access to the proposed site to control loitering
- A comprehensive employee induction programme would cover land access protocols, fire management and road safety must be prepared
- A Community Liaison Officer should be appointed

- A method of communication should be implemented whereby procedures to lodge complaints are set out in order for the local community to express any complaints or grievances with the construction process

Post Mitigation

Duration	Short-term (2)	As for pre-mitigation	Low Negative (16)
Extent	Local (2)	Safety measures will likely restrict impacts on nearby communities	
Magnitude	Low (4)	Appropriate mitigation will reduce the risk of this project	
Probability	Improbable (2)	As for pre-mitigation	

Residual Risks:

- Theft of livestock, equipment and stock
- Trespassing onto private property

Nature:

Disruption of daily living and movement patterns

Impact description: The transportation of components of the solar PV facility via the access roads, which will result in increased traffic conditions, over utilizations of the roads, road safety concerns, congestion and disruption to local commuters

As indicated previously a lot of the social aspects identified sit along the access roads and therefore increased traffic may slightly inconvenience these businesses. It must be noted that the majority of the road is gravel and therefore the correct safety may not be in place (such as road signs and speed limits) to ensure the general public’s safety, this must be given attention to when developing the preferred access routes.

	Rating	Motivation	Significance
<i>Prior to Mitigation</i>			
Duration	Short-term (2)	Will be limited to the construction phase which is less than one year	Medium Negative (40)
Extent	Local (2)	Will affect road users from nearby communities	
Magnitude	Moderate (6)	Will affect the quality of life of neighbouring communities	
Probability	Highly probable (4)	Traffic would need to be considered in the area	

Mitigation:

- Implement standard dust control measures on gravel roads, including periodic spraying (frequency will depend on many factors including weather conditions, soil composition and traffic intensity and must thus be adapted on an on-going basis) of construction areas and access roads, and ensure that these are continuously monitored to ensure effective implementation
- Stagger component delivery to site
- Reduce the construction period
- Make use of mobile batch plants and quarries in close proximity to the site
- All vehicles must be road worthy, and drivers must be qualified, obey traffic rules, follow speed limits and be made aware of the potential road safety issues
- Heavy vehicles should be inspected regularly to ensure their road worthiness

- Provision of adequate and strategically placed traffic warning signs, which must be maintained throughout the construction phase, as well as control measures along the gravel roads to warn road users of construction activities taking place throughout the construction phase. Warning signs must be always visible, especially at night.
- Implement penalties for reckless driving to enforce compliance to traffic rules
- Avoid heavy vehicle activity during “peak” hours (when children are taken to school, or people are driving to work)
- Ensure that all fencing along access roads is maintained in the present condition or repaired if disturbed due to construction activities
- The Contractor must ensure that damage/wear and tear caused by construction related traffic to the access roads is repaired before the completion of the construction phase
- Method of communication must be implemented whereby procedures to lodge complaints are set out for the local community to express any complaints or grievances with the construction process

Post Mitigation

Duration	Short-term (2)	As for pre-mitigation	Low Negative (16)
Extent	Local (2)	Safety measures will likely restrict impacts on road users	
Magnitude	Low (4)	Appropriate mitigation will reduce the risk of this project	
Probability	Improbable (2)	As for pre-mitigation	

Residual Risks:

- None anticipated

Nature:

Increased pressure on local services/resources

Impact description: Added pressure on economic and social infrastructure during construction as a result of in-migration of people.

	Rating	Motivation	Significance
<i>Prior to Mitigation</i>			
Duration	Short-term (2)	Influx related pressure on services will start during construction and continue during the operational phase	Medium Negative (30)
Extent	Local (2)	May affect resource management on local district municipal level	
Magnitude	Moderate (6)	Intensify existing service delivery and resource problems and backlogs, especially sewerage and road networks	
Probability	Probable (3)	Population influx will affect the ability of the local municipality to meet increased demand	

Mitigation:

- It is necessary to appoint a Community Liaison Officer. A method of communication should be implemented, with procedures for filing complaints outlined, so that the local community can express any complaints or grievances about the construction process
- Current procurement channels set up by the mine should be utilized to reduce any complications which may arise from the development

Post Mitigation

Duration	Short-term (2)	As for pre-mitigation	Low Negative (16)
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Extent	Local (2)	Safety measures will likely restrict impacts on road users	
Magnitude	Low (4)	Appropriate mitigation will reduce the risk of this project	
Probability	Improbable (2)	As for pre-mitigation	
Residual Risks:			
<ul style="list-style-type: none"> Possibility of outside workers remaining in the area after construction is completed and subsequent pressures on local infrastructure 			

Nature:
Increased probability of fire risk

Impact description: Risk from accidental or intentional fire being set to the surrounding area which then spreads to the adjacent properties

	Rating	Motivation	Significance
<i>Prior to Mitigation</i>			
Duration	Short-term (2)	Although the fire itself is a short term, the affects may be more long term	Medium Negative (30)
Extent	Local (2)	Will be the directly affected landowners on who's property the fire was	
Magnitude	Moderate (6)	Depending on the intensity and the severity of the fire, highly dependent on the climate and time of the year as well as rain fall conditions, this is a moderate estimate.	
Probability	Probable (3)	If a fire is set, it's probable there will be impacts and people affected.	

Mitigation:

- Ensure training is given to employees on the risks of fires
- Ensure that fire fighting equipment is present and working
- No fires are to be made on site for any reason
- No hunting or cooking of any animals or plants in or around the development footprint

<i>Post Mitigation</i>			
Duration	Short-term (2)	As for pre-mitigation	Low Negative (16)
Extent	Local (2)	Safety measures will likely restrict impacts on road users	
Magnitude	Low (4)	Appropriate mitigation will reduce the risk of this project	
Probability	Improbable (2)	As for pre-mitigation	

Residual Risks:

- None identified

Nature:
Nuisance impacts (noise& dust)

Impact description: Construction activities will result in the generation of noise and dust, the area is situated in a relatively agricultural area which is not frequently subjected to dust and noise disturbances therefore all possible measures must be made to mitigate these impacts

	Rating	Motivation	Significance
<i>Prior to Mitigation</i>			

Duration	Short-term (2)	Nuisance impacts will only be limited to the construction phase	Medium Negative (44)
Extent	Local (1)	This will remain within the project extent from construction activities	
Magnitude	High (8)	Dust impacts and noise nuisance from construction activities	
Probability	Highly Probable (4)	Movement of heavy construction vehicles during the construction phase has a potential to create noise, damage to roads and dust	

Mitigation:

- During construction, care should be taken to ensure that noise from construction vehicles and plant equipment does not intrude on the residential areas nearby. Plant equipment such as generators, compressors, concrete mixers, and vehicles should be kept in good working order and, where possible, equipped with effective exhaust mufflers
- The movement of construction vehicles on the site should be confined to agreed access road/s
- Heavy vehicle movement during the construction phase should be timed (where possible) to avoid times of the week, such as weekends, when the volume of traffic on the access roads may be higher
- Dust suppression measures should be implemented, such as wetting on a regular basis and ensuring that vehicles used to transport sand and building materials are fitted with tarpaulins or covers

Post Mitigation

Duration	Short-term (2)	As per pre-mitigation	Low Negative (18)
Extent	Local (1)	Mitigation measures will assist with increasing the impact	
Magnitude	Moderate (6)	Appropriate mitigation will reduce the risk of this project	
Probability	Improbable (2)	As per pre-mitigation	

Residual Risks:

- Noise and Dust generation will remain an issue irrespective of the Solar PV development

5.4. Social Issues Associated with the Operation Phase

The operational phase is associated with the following key potential positive and negative social issues.

Potential positive impacts

- Creation of employment and business opportunities
- Contributions to the local economy
- Skills Development
- Development of Renewable energy projects

Potential negative impacts

- In-migration of people (non-local workforce and jobseekers).
- Pressure on local services
- Health and Safety of workers and communities

Nature:

Employment opportunities and skills development

Impact description: The area is sparsely populated, primarily dominated by agricultural development and vacant land within the surrounding communities.

The directly affected communities are unskilled farm workers or individuals working and residing in the surrounding settlements and small towns. Areas such as Kleinsee and Komaggas may attract more semi-skilled workers, a need for employment and direct skill-based work is required aimed at providing either long term employment or generating new skills within the existing work force.

A PV Facility of this size will create employment opportunities comprising a mixture of skilled, semi-skilled and unskilled positions during the operational phase.

It is vital that all employment be sourced locally where possible, and where not possible (highly skilled provisions) the opportunity for skills transfer is made available.

	Rating	Motivation	Significance
<i>Prior to Enhancement</i>			
Duration	Short-term (1)	The facility will be operational for over 20 years based on the technology and purpose of the facility.	Low Positive (30)
Extent	Local – Regional (5)	The impact will occur at a local, regional and national level	
Magnitude	Low (4)	The creation of employment opportunities will assist to an extent in alleviating unemployment levels within the area	
Probability	Probable (3)	An operating facility such as this will result in economic enhancements throughout the area, during the operational phase. This includes the need for waste services, panel cleaning services, security and maintenance services, etc.	

Enhancement measures:

To enhance the local employment, skills development and business opportunities associated with the construction phase, the following measures should be implemented:

- The developers be committed to involving and benefiting the communities surrounding the development, contributing to their development and growth
- It is recommended to conduct structured and proactive engagement sessions within the municipal district, to expose local small, micro and medium enterprises which will benefit from the proposed development
- Training and skills development programmes should be initiated prior to the commencement of the construction phase
- The communities which are most in need of employment on a local level should be considered for employment before outsourcing.

<i>Post Enhancement</i>			
Duration	Short-term (1)	The facility will be operational for over 20 years based on the technology and purpose of the facility.	Medium Positive (55)
Extent	Regional (4)	The impact will occur at a local, regional and national level	
Magnitude	Moderate (6)	The creation of employment opportunities will assist to an extent in alleviating unemployment levels within the area	
Probability	Definite (5)	An operating facility such as this will result in economic enhancements throughout the area, during the operational phase.	

		This includes the need for waste services, panel cleaning services, security and maintenance services, etc.	
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Residual opportunities

- Initiatives to eliminate unfair discrimination in employment
- Recruit and select suitably qualified individuals from the designated groups
- Employees from designated groups who have been identified in the talent pool should be advanced and accelerated through targeted training and development programs
- Assist individuals in obtaining an initial vocational education and pre-qualification, as well as additional education and training that refreshes knowledge, skills, work and life competencies that are critical for overall development
- Provide portable skills training to employees who express an interest in obtaining such training, with a special emphasis on employees who have been incapacitated or retrenched, in order for them to remain economically active, employable, or self-sustaining in their communities
- Growth of talent is facilitated, thereby providing opportunities for all employees to contribute to their full potential

Nature:

Contributions to the local economy

Impact description: The developer should be committed to the long-term socioeconomic development and well-being of the communities in which they operate by contributing to community development that will last long after the PV development has been decommissioned.

It is therefore important that the developer use and source from local suppliers as much as possible to stimulate the local economy, this includes but is not limited to things such as the purchasing of construction materials, provision of services, transportation, and acquisition of other goods.

	Rating	Motivation	Significance
<i>Prior to Enhancement</i>			
Duration	Long-term (4)	Will continue for the duration of the project due to legal obligation to pay taxes	Medium Positive (36)
Extent	Local – Regional (4)	Will include mostly local and some regional impacts	
Magnitude	Low (4)	Will derive from increased cash flow from wages, local procurement, economic growth, taxes and procurement initiatives	
Probability	Probable (3)	Will depend on; proportion of local spending by employees, capacity of local enterprises to supply; effectiveness of initiatives, contributions to local government	

Enhancement measures:

- Preference is given to suppliers that are local to the operation where the service will be consumed
- Establishing liaison and communication structures with the district and local government structures
- Liaises with the local governmental structures and municipal authorities in the labour- sending communities to ensure that group development initiatives are integrated into the economic and development plans of those areas
- The continuous review of the economic development of the project during the implementation process will ensure that the project does not become static but is revised in terms of changing needs and also to ensure sustainability
- It is recommended that a local procurement policy be adopted by the developer to maximise the benefit to the local economy, where feasible
- Create job opportunities, boost local economies by supporting business activities, and contribute to government tax revenues through the development of the Solar Facility
- Prior to the start of the construction contractor procurement, the Developer of the Solar Facility should create a database of local companies, specifically Historically Disadvantaged (HD) companies, that qualify as potential service providers (e.g., construction companies, catering companies, waste collection companies, security companies, etc.). These businesses should be informed about the tender process and invited to bid on project-related work, if applicable
- Engage with local authorities and business organisations to investigate the feasibility of obtaining construction materials, goods, and products from local suppliers, where possible

Post Enhancement

Duration	Long-term (4)	As for pre-enhancement	Medium Positive (60)
Extent	Local – Regional (4)	SMME capacity building will limit procurement from outside the local municipality	
Magnitude	Low (4)	Mitigation will likely increase intensity of multiplier effects as it will concentrate impact to local area, sustainability of initiatives will also be increased if aligned with other those of other institutions	
Probability	Definite (5)	Increased local employment and procurement as well as skilled SMME’s skill enhance likelihood of benefits to local economy	

Residual opportunity

- Improved local service sector, growth in local business
- Community development and stimulation of the local economy
- Growth in the local markets

Nature:

Development of renewable energy

Impact description:

South Africa is in the midst of a power crisis. Eskom's ageing infrastructure, reduced reliability and inferior quality of coal, and the significant gap in power generation capacity and demand has left the country susceptible to rolling blackouts. These have also contributed to an increased frequency of load shedding needed to reduce the burden on its power generation facilities.

The rising energy demand has started to overwhelm the existing power generating plants in South Africa. Also, the conventional electricity generating plants are largely responsible for the high greenhouse gas emissions recorded in

the country. In an attempt to mitigate CO2 emissions and provide reliable electricity for its people, South Africa is gradually developing its renewable energy sector.

South Africa has some of the best solar and wind resources in the world and currently the running costs are very low as there are effectively no fuel purchases. Prices of solar and wind technology have dropped very sharply in the past 10 years. The cost – including building and other expenses – of solar and wind electricity is now well below the corresponding expenses for electricity from gas, nuclear and even coal. Their extremely low carbon emissions mitigate global warming and makes solar and wind energy attractive for investors.

	Rating	Motivation	Significance
<i>Prior to Enhancement</i>			
Duration	Long term (4)	The PV plant will be in operation for approximately 20 years, supporting the national energy supply.	Medium Positive (52)
Extent	Local – Regional (5)	The impact will occur at a local, regional and national level	
Magnitude	Low (4)	The creation alternative energy will help alleviate the national energy crisis	
Probability	Highly Probable (4)	If the project is approved and constructed it is highly probable that it will assist in the generation of electricity during operation	
<i>Enhancement measures:</i>			
<ul style="list-style-type: none"> • None recommended 			
<i>Post Enhancement</i>			
Duration	Long term (4)	The PV plant will be in operation for approximately 20 years, supporting the national energy supply.	Medium Positive (52)
Extent	Local – Regional (5)	The impact will occur at a local, regional and national level	
Magnitude	Low (4)	The creation alternative energy will help alleviate the national energy crisis	
Probability	Highly Probable (4)	If the project is approved and constructed it is highly probable that it will assist in the generation of electricity during operation	
<i>Residual opportunities</i>			
<ul style="list-style-type: none"> • Contributing to carbon reduction goals • Contribution to the alleviation of the national energy crisis 			

Nature:

In migration of individuals for job opportunities

Impact description:

The energy sector currently employs the least number of people in the Nama Khoi LM. The operation of the Kleinzee Solar PV Facility will improve this situation as about 10 jobs may be created for a long-term period (i.e. 20-25 years). Further, employment opportunities will be created within the local municipality and across South Africa as a result of the project’s multipliers and the additional electricity supply to the national grid.

The demand for supporting services and other goods and services to be created as a result of multiplier effects will also lead to the creation of additional indirect jobs, increasing the positive effect on employment in the region.

	Rating	Motivation	Significance
<i>Prior to Mitigation</i>			
Duration	Long term (4)	Will be limited to the operational phase	Moderate (39)
Extent	Local – Regional (3)	Will affect the small communities in the direct vicinity as well as the broader study area	
Magnitude	Moderate (6)	A relatively small-scale project.	
Probability	Probable (3)	The community in the area is relatively small so there is a decent probability some migration for work will be required	
Mitigation:			
<ul style="list-style-type: none"> • Employ local where at all possible • Promote fair and honest employment practises 			
<i>Post Mitigation</i>			
Duration	Long term (4)	Will be limited to the operational phase	Moderate (39)
Extent	Local – Regional (3)	Will affect the small communities in the direct vicinity as well as the broader study area	
Magnitude	Moderate (6)	A relatively small-scale project.	
Probability	Probable (3)	The community in the area is relatively small so there is a decent probability some migration for work will be required	
Residual Risks:			
<ul style="list-style-type: none"> • Shift in employment from agricultural workers to working at the solar plant. 			

Nature:

Health and Safety Risks associated with facilities such as a BESS and Substations

Impact description: The project will include a substation, a control and maintenance building, civil works, and electrical infrastructure required to connect to the existing electricity network as well as a Battery energy storage system. The BESS will improve the efficiency and reliability of the electrical grid by collecting energy from the electricity grid, storing it and discharging that energy to provide electricity when needed, in addition to providing critical grid support services.

Unplanned battery fires or explosions may result in the loss of human lives and/or injuries. Assessing the impacts of an unforeseen event is difficult as the nature and severity of the accident cannot be predicted. This is also the case for the operation and maintenance of areas such as substations which must be regulated to ensure that the correct protocols are followed.

	Rating	Motivation	Significance
<i>Prior to Mitigation</i>			
Duration	Long term (4)	Will be limited to the operational phase	Low (26)
Extent	Local (1)	Will be limited to the facility.	
Magnitude	High (8)	May be severe if loss of life or damage to the environment occurs	
Probability	Improbable (2)	Current technology and practices help prevent such disasters from occurring, however there is still a small likelihood of human error occurring.	

Mitigation:

- Compile an Emergency Response Plan and ensure that this is located on within the offices at all times and that all personal are familiar with the procedures.
- Ensure that emergency procedures (in relation to fire, spills, contamination of the ground, accidents to employees, use of hazardous substances, etc.) are established prior to commencing operation.
- Make all emergency procedures available, including responsible personnel, contact details of emergency services, etc. to all the relevant personnel.
- Clearly demarcate emergency procedures at the relevant locations around the property
- Ensure a health and safety representative is on site at all times during operational hours
- Ensure that no fires are permitted on or adjacent to operations except in areas designated for this purpose.
- Liaise with the local fire-fighting department in regard to correct procedures to combat battery fires.
- Properly train staff and crew who operate in these areas on the correct procedures and safety guidelines to follow.
- Ensure a spill procedure which informs the community on a way forward in the event of any toxic spillages is available.

Post Mitigation

Duration	Long term (4)	Will be limited to the operational phase	Low (22)
Extent	Local (1)	Will be limited to the facility.	
Magnitude	Moderate (6)	May be severe if loss of life or damage to the environment occurs, adequate training and accountability may mitigate negligibility.	
Probability	Improbable (2)	Current technology and practices help prevent such disasters from occurring, however there is still a small likelihood of human error occurring.	

Residual Risks:

- Health and safety risks to the community

5.5. Social Issues Associated with the Decommissioning Phase

The social impact of decommissioning the Kleinzee PV project is likely to be significant. While the relatively small number of people employed during the operational phase, the associated funding available for community projects and benefits are significant and expected to end with decommissioning of the plant. With mitigation however, the impacts are assessed to be low.

The proponent should inform and discuss the stakeholder and wider community involved and affected in the governance, management, and implementation of community funds about the decommissioning of the energy project. This communication needs to be timed well in advance of the decommissioning, allowing all relevant parties to prepare. Further consideration is required to develop strategies for rehabilitation of the land.

5.6. Social Issues Associated with the No-Development Option

The “no-go” alternative is the option of not constructing the Kleinzee Solar PV. The implementation of the proposed project is expected to result in several positive and negative social impacts. Most negative impacts identified for the project are associated with the construction phase of the project, while the positive impacts are associated with both the construction and operation phases of the project.

The impacts of pursuing the “no-go” alternative can therefore be summarised as follows:

- The benefits would be that there is no disruption from nuisance impacts (noise and dust during construction), visual impacts and safety and security impacts. The impact is therefore neutral
- There would also be an opportunity loss in terms of limited job creation, skills development, community upliftment and associated economic business opportunities for the local economy. This impact is

- considered to be negative
- The opportunity to strengthen the grid connection within the municipal area would be lost which will have a negative impact on economic growth and development and therefore result in negative social impacts

The No-Development option would mean that the electricity generated through renewable sources, in this case solar energy, is not generated and fed into the national electricity grid. In the given and described policy context, this would represent a negative social and environmental cost.

In addition, the employment opportunities associated with the construction and operational phase, as well as the benefits associated with the additional funding for socio-economic and enterprise development measures and the established local ownership entity representing beneficiary communities would be forgone.

5.7. Social Issues Associated with the Cumulative Impact

The extent to which a proposed project will influence the zone of influence is based on the baseline conditions of that environment, which includes other constructed and proposed projects in the zone. Such projects, depending on their timing in relation to the project that is the subject of this impact study, may influence the manifestation and significance of socio-economic impacts that could result from the current project. As such, knowledge of such projects is required in order to accurately predict and rate socio-economic impacts.

The Scottish Natural Heritage (2005) describes a range of potential cumulative landscape impacts associated with wind farms on landscapes. These issues are also likely to be relevant to solar facilities and associated infrastructure. The relevant issues identified by Scottish Natural Heritage study include:

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

This Solar PV Facility has cumulative impacts; especially, the installation of several Solar PV facilities (in combination with Wind) in the Local Municipality will offer socio-economic prospects for the area, resulting in a positive social benefit. Job creation, skill development, and downstream business opportunities are good cumulative effects. Local, regional, and national economies could profit from job creation and service procurement if many renewable energy installations are established. This value will be considerably increased if a critical mass is reached that allows local enterprises to develop the capabilities to support building and maintenance activities and to manufacture renewable energy facility components in South Africa. The cumulative impact at the municipal level could be good, encouraging O&M companies to focus on education and training.

The map included in **section 1.5**. indicated ten renewable (10) energy developments which been identified in the Springbok REDZ, in addition to the one other clustered project (The 360MW Daisy PV) and that is close to the project site which might contribute to the accumulation of impacts in terms of Solar PV, grid connection and associated infrastructure in the region.

The construction of the PV facility and additional power line near would likely cumulate existing visual impacts. It is typically desirable to cluster industrial infrastructure, keeping other areas free from industrial clutter. Given the area's current 'sense of place', and the trend of environmental approvals for similar types of projects being authorized there is a probability that this could significantly cumulate visual impacts.

Nature:

An increase in employment opportunities, skills development, and business opportunities with the establishment of a solar PV facility.

	Overall impact of the proposed project considered in isolation	Cumulative impact of the project and other projects in the area
<i>Extent</i>	Local -regional (3)	Local-regional (3)
<i>Duration</i>	Long-term (4)	Long-term (4)
<i>Magnitude</i>	Low (4)	Moderate (6)
<i>Probability</i>	Probable (3)	Probable (3)
<i>Significance</i>	Medium (33)	Medium (39)
<i>Status (positive or negative)</i>	Positive	Positive
<i>Reversibility</i>	N/A	N/A
<i>Irreplaceable loss of resources?</i>	N/A	N/A
<i>Can impacts be mitigated?</i>	Yes	Yes

Confidence in findings: High.

Mitigation:

The establishment of a number of solar energy plants in the area has the potential to have a positive cumulative impact on the area in terms of job prospects, skill development, and business opportunities. The positive benefits will be magnified if developers hire local service providers and follow local employment policies to maximize project opportunities available to the local community.

Nature:

Negative impacts and change to the local economy with an in-migration of labourers, businesses, and jobseekers to the area.

	Overall impact of the proposed project considered in isolation	Cumulative impact of the project and other projects in the area
<i>Extent</i>	Local (1)	Local-regional (3)
<i>Duration</i>	Long-term (4)	Long-term (4)
<i>Magnitude</i>	Minor (2)	Low (4)
<i>Probability</i>	Very improbable (1)	Improbable (2)
<i>Significance</i>	Low (7)	Low (22)
<i>Status (positive or negative)</i>	Negative	Negative
<i>Reversibility</i>	Yes	
<i>Irreplaceable loss of resources?</i>	No	
<i>Can impacts be mitigated?</i>	Yes	

Confidence in findings: High.

Mitigation:

- Develop a recruitment policy/process (to be implemented by contractors), which will ensure the sourcing of labour locally, where available
- Work together with government agencies to ensure that service provision is in line with the development needs of the local area
- Form joint ventures with community organisations, through Trusts, which can provide local communities with benefits, such as employment opportunities and services
- Develop and implement a recruitment protocol in consultation with the municipality and local community leaders. Ensure that the procedures for applications for employment are clearly communicated

6. CONCLUSIONS AND IMPACT STATEMENT

The aim of the SIA process is to provide sufficient information to allow the EAP to make an informed decision with regards to allowing the proposal solar PV plant and associated transmission lines to proceed. The SIA provides this information and has been compiled in alignment with national legislation. The impacts of the construction and operation of the solar PV plant are discussed in section 5. The solar PV facility and grid connection site is located on private land, the IPP is assumed to have entered into an agreement with the land owner on the use of the for this purpose, it must be noted that these land portions currently do not support some informal livelihood activities.

Occupational health and safety issues for the workforce during both the construction and operational phases of the project are of however, this can easily be mitigation through appropriate training and implementation of health and safety management system. The benefits of job creation and opportunities for local suppliers cannot be overstated. This combined with a well-structured Corporate Social Responsibility plan will result in increased benefits to the surrounding local communities. The assessment of the construction and operation of the solar PV plant shows there are no impacts, as a result of the solar PV plant, that are assessed to be of high significance after mitigation.

6.1. Key findings

The key documents reviewed can be found under Section 3 “Policy and Planning Environment”. A brief summary can be found in this section explaining the main aims of the different Policy documents reviewed during the SIA study determining the validity of the proposed facility and its potential impact at all levels: local, provincial and national:

National

- Constitution of the Republic of South Africa, 1996
- National Environmental Management Act (No. 107 of 1998) (NEMA)
- White Paper on the Energy Policy of the Republic of South Africa (1998)
- National Energy Act (No. 34 of 2008)
- Integrated Energy Plan (IEP) (2015)
- Integrated Resource Plan for Electricity 2016
- National Climate Change Response Policy White Paper 2011
- National Development Plan (NDP) 2030 (2012)
- Strategic Infrastructure Projects (SIPs)

Regional

- Northern Cape Provincial Spatial Development Framework Executive Summary (2018)
- Northern Cape Provincial Government Socio-Economic Review and Outlook (2018)

District and Local

- Namakwa District Municipality Rural Development Plan (RDP) 2017
- Namakwa District Municipality Integrated Development Plan (IDP) (2022 – 2027)
- Nama Khoi Local Municipality Draft Integrated Development Plan (IDP) (2022 – 2023)

The proposed PV Development will create jobs during the construction phase. Once operational, the Power plant will aid job creation indirectly by providing the necessary infrastructure to support the development of further IPP projects. The power line will increase the electricity supply to the area, supporting further industrial development. Renewable energy developments plays an important role in supporting the energy requirements of South Africa’s fast-growing economy in a sustainable manner and are key for the DMRE to achieve their goal of an energy mix with 30% clean energy sources by 2025. The proposed Solar PV development is situated in a Renewable Energy Development Zone, as per the Northern Cape PSDF, and will be situated in close proximity to solar and wind

corridors as per the NKLM IDP.

With a decline in the mining industry and the looming threat of Climate Change, diversifying the economy and capitalizing on the Northern Cape's comparative advantages needs to be considered in order to strengthen the economy and reduce poverty.

Overall, the reviewed planning documentation supports the development of the proposed development and associated infrastructure as it will provide the necessary infrastructure to support future IPP developments and is situated within a Renewable Energy Development Zone. Additionally, the developments will benefit the area's economy through job creation and the increased supply of electricity.

Site Visit and Public Participation During the site visit none of the parties consulted were opposed to the proposed development. In general, the farmers consulted with were in favor of the development as they welcomed the extra income that compensation which it could provide. No comments were received from the guesthouses or businesses that were informed.

No-Go Areas

Based on the findings of a desktop evaluation, the site visit and the comments received, there are no No-Go Areas identified from a social impact perspective which were identified.

Assessment of No-Go Alternative

Should the option of not constructing the proposed PV Facility be opted for, the negative impacts associated with the construction phase, such as a disturbance to daily life and a potential increase in crime will not be realized. The area's sense of place would not be affected by construction activities. Positive impacts such as job creation, economic development and a more stable electricity supply will not be realized. While the option of not constructing the Solar PV facility will avoid several negative impacts it will result in a high opportunity cost. Economic benefits associated with the development of IPP projects would be forfeited. Landowners would not receive the extra income in the form of compensation, an income source which would particularly benefit farmers struggling due to the drought. With a gradually declining mining industry and climate change threatening the viability of agriculture in the Northern Cape, alternative economic contributors will become increasingly important. Not exploiting the comparative advantages held by the Northern Cape, in terms of wind and solar, will result in high opportunity costs at both a local and national scale. Furthermore, the opportunity for combating climate change by capitalizing on renewable energy sources would not be realized.

6.2. Recommendations

The following recommendations are made based on the Social Impact Assessment and a thorough review of the concerns and suggestions raised by stakeholders and interested and affected parties during the stakeholder engagement process. The proposed mitigation measures should be implemented to limit the negative impacts and enhance the positive impacts. Based on the social assessment, the following recommendations are made:

- Local labour should be utilised to enhance the positive impact of employment creation in the area.
- The appointment of a CLO to assist with the management of social impacts and to deal with community issues, if feasible
- Local businesses should be involved with the construction activities where possible.
- Safety and security concerns should be considered during the planning and construction phases of the proposed project
- Contractors to strictly monitor for any non-employees on site and to report any immediately..
- Monitor dust levels and ensure dust mitigation measures are in place.
- Do not block access roads.
- As far as possible, hire staff from the surrounding areas, make use of local service providers and make use of local service providers for accommodation, sustenance, equipment hire, construction materials etc.
- Maintain contact with farmers in the surrounding area and keep them updated regarding planned

- construction activities.
- Install proper grievance and communication systems;
- Involve the community in the process as far as possible – encourage co-operative decision-making and management and partnerships with local entrepreneurs

6.3. Impact Statement

The findings of this SIA indicate that if mitigation measures are implemented, negative impacts can be lowered to acceptable levels. Thus, implementation of mitigation measures will ensure that the proposed development of the 200MW Solar PV facility and associated infrastructure will have social benefits that outweigh the negative impacts.

It is anticipated that during the construction and the operational phase of the proposed project, various employment opportunities, with different levels of skills will be created. In addition, this will also create local business opportunities benefitting the socio-economic development of the local community. The local community will however benefit from the establishment of a Community Trust if it is managed effectively. It is therefore recommended that the proposed Kleinzee Solar PV supported as it was proposed. However, this recommendation is made subject to the implementation of the suggested mitigation measures and recommendations made in other specialist studies for development.

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Appendix A: SIA ENVIRONMENTAL MANAGEMENT PROGRAMME (EMPR)

Construction Phase:

Direct employment and skills development

OBJECTIVE: Maximise local employment and skills opportunities associated with the construction phase		
Project component/s	Construction of the proposed Kleinzee Solar PV facility solar and associated infrastructure	
Potential Impact	Employment opportunities and skills development	
Activity/risksource	<ul style="list-style-type: none"> » Construction procurement practice employed by the Contractor » Developers' investment plan 	
Mitigation Target/Objective	The developer should aim to employ as many low-skilled and semi-skilled workers from the local area as possible. This should also be made a requirement for all contractors.	
Enhancement: Action/control	Responsibility	Timeframe
<ul style="list-style-type: none"> • The developers be committed to involving and benefiting the communities surrounding the development, contributing to their development and growth 	The Proponent & EPC Contractors	Pre-construction & construction phase
<ul style="list-style-type: none"> • It is recommended to conduct structured and proactive engagement sessions within the municipal district, to expose local small, micro and medium enterprises which will benefit from the proposed development 	The Proponent & EPC Contractors	Pre-construction & construction phase
<ul style="list-style-type: none"> • Training and skills development programmes should be initiated prior to the commencement of the construction phase 	EPC Contractors	Pre-construction & construction phase
<ul style="list-style-type: none"> • The communities which are most in need of employment on a local level should be considered for employment before outsourcing. 	The Proponent & EPC Contractors	Pre-construction & construction phase
Performance Indicator	<ul style="list-style-type: none"> » Employment and business policy document that sets out local employment and targets completed before construction phase commences; » Employ as many semi and unskilled labour from the local area or local municipality as possible » Training and skills development programme undertaken prior to the commencement of construction phase. 	
Monitoring	<ul style="list-style-type: none"> » The developer and EPC contractor must keep a record of local recruitments and information on local labour to be shared with the ECO for reporting purposes. 	

Safety and security impacts

OBJECTIVE: To avoid or reduce the possibility of the increase in crime and safety and security issues during the construction phase	
Project component/s	Construction of the proposed Kleinzee Solar PV facility and associated infrastructure
Potential Impact	Increase in crime due to influx of non-local workforce and job

	seekers into the area
Activity/risksource	Safety and security risks associated with construction activities
Mitigation Target/Objective	To avoid or minimise the potential impact on local communities and their livelihoods
Enhancement: Action/control	Responsibility Timeframe
Access in and out of the construction camp should be strictly controlled by a security company	EPC Contractor Construction phase
The appointed EPC contractor must appoint a security company and appropriate security procedures are to be implemented	EPC Contractor Construction phase
Open fires on the site for heating, smoking or cooking are not allowed, except in designated areas.	EPC Contractor Construction phase
Contractor must provide adequate firefighting equipment on site and provide firefighting training to selected construction staff.	EPC Contractor Pre-construction & construction phase
A comprehensive employee induction programme to be developed and utilised to cover land access protocols, fire management and road safety	EPC Contractor Pre-construction & construction phase
Method of communication should be implemented whereby local landowners can express any complaints or grievances with construction process	EPC Contractor Pre-construction & construction phase
Performance Indicator	<ul style="list-style-type: none"> » Employee induction programme, covering land access protocols, fire management and road safety » The construction site is appropriately secured with a controlled access system » Security company appointed and security procedures implemented
Monitoring	» The developer and EPC contractor must monitor the indicators listed above to ensure that they have been met for the construction phase

Impacts on daily living and movement patterns

OBJECTIVE: To avoid or reduce traffic disruptions and movement patterns of local community during the construction phase	
Project component/s	Construction of the proposed Kleinzee Solar PV facility and associated infrastructure
Potential Impact	Increase in traffic disruptions, safety hazards, and impacts on movement patterns of local community as well as impact on private property due to the upgrade of the existing road and heavy vehicle traffic in the local area
Activity/risksource	Construction activities affecting daily living and movement Patterns
Mitigation Target/Objective	To avoid or minimise the potential impact on local communities and their livelihoods
Enhancement: Action/control	Responsibility Timeframe
All vehicles must be road worthy and drivers must be qualified, obey traffic rules, follow speed limits and made aware of the potential road safety issues	EPC Contractor Construction phase

Heavy vehicles should be inspected regularly to ensure their road safety worthiness.	EPC Contractor	Construction phase
Implement penalties for reckless driving for the drivers of heavy vehicles as a way to enforce compliance to traffic rules.	EPC Contractor	Construction phase
Any damage/wear and tear caused by construction related traffic to the roads is repaired	The Proponent & EPC contractor	Construction phase
Provide adequate and strategically placed traffic warning signs and control measures along the R38 and secondary roads to warn road users of the construction activities taking place, displaying road safety messages and speed limits for the duration of the construction phase. Traffic warning signs must also be well illuminated at night.	EPC Contractor	Pre-construction & construction phase
A comprehensive employee induction programme to cover land access protocols and road safety. This must be addressed in the	EPC Contractor	Construction phase
Appoint a Community Liaison Officer and create method of communication whereby local community member can express any complaints or grievances	EPC Contractor	Pre-construction & construction phase

Performance Indicator	<ul style="list-style-type: none"> » Vehicles are roadworthy, inspected regularly and speed limits are adhered to » Traffic warning signs along R38 and secondary roads, also illuminated at night appointed and security procedures implemented
Monitoring	<ul style="list-style-type: none"> » The developer and EPC contractor must monitor the indicators listed above to ensure that they have been met for the construction phase

Pressure on economic and social infrastructure impacts from an in migration of people

OBJECTIVE: Reduce the pressure on economic and social infrastructure and social conflicts from an influx of a non-local workforce and jobseekers during the construction phase

Project component/s	Construction of the proposed Kleinzee Solar PV facility and associated infrastructure
Potential Impact	Increase in traffic disruptions, safety hazards, and impacts on movement patterns of local community as well as impact on private property due to the upgrade of the existing road and heavy vehicle traffic in the local area
Activity/risk source	Construction activities affecting daily living and movement patterns
Mitigation Target/Objective	To avoid or minimise the potential impact on local communities and their livelihoods

Enhancement: Action/control	Responsibility	Timeframe
Where possible, make it a requirement for contractors to implement a 'locals first' policy. Should be advertised for construction employment opportunities, especially for semi and low-skilled job categories (preference to the local Municipality). Enhance employment opportunities for the immediate local area, , if this is not possible, then the broader focus areas should be considered for sourcing workers such as the Local Municipality	The proponent & EPC Contractor	Pre- construction phase & construction phase
Prior to construction commencing representatives from the local community e.g. ward councillor, surrounding landowners should be informed of details of the construction schedule and exact size of the workforce.	EPC Contractor	Construction phase
Recruitment of temporary workers at the gates of the development	EPC Contractor	Construction phase

should not be allowed. A recruitment office located in town with a Community Liaison officer should be established to deal with jobseekers.		
Have clear rules and regulations for access to the proposed site to control loitering.	The Proponent & EPC contractor	Construction phase
A Community Liaison Officer should be appointed. A method of communication should be implemented whereby procedures to lodge complaints are set out in order for the local community to express any complaints or grievances with the construction process	EPC Contractor	Pre-construction & construction phase
Performance Indicator	» Percentage of the workers employed in construction that come from local communities	
Monitoring	» The developer must keep a record of local recruitments and information on local labour to be shared with the ECO for reporting purposes	

Nuisance impacts (Noise & Dust)

OBJECTIVE: To avoid or minimise the potential impacts of noise and dust from construction activities during the construction phase		
Project component/s	Construction of the proposed Kleinzee energy facility and associated infrastructure	
Potential Impact	Heavy vehicles and construction activities can generate noise and dust impacts.	
Activity/risksource	Construction activities	
Mitigation Target/Objective	To avoid and or minimise the potential noise and dust impacts associated with construction activities	
Enhancement: Action/control	Responsibility	Timeframe
Implement dust suppression measures for heavy vehicles such as wetting the roads on a regular basis and ensuring that vehicles used to transport sand and building materials are fitted with tarpaulins or covers	EPC Contractor	Construction phase
Ensure all vehicles are road worthy, drivers are qualified and are made aware of the potential noise and dust issues	EPC Contractor	Construction phase
Ensure that drivers adhere to speed limits	EPC Contractor	Construction phase
A Community Liaison Officer should be appointed. A method of communication should be implemented whereby procedures to lodge complaints are set out in order for the local community to express any complaints or grievances with the construction process	The Proponent & EPC contractor	Pre-construction & construction phase
Performance Indicator	<ul style="list-style-type: none"> » Dust suppression measures implemented for all heavy vehicles that require such measures during the construction phase » Enforcement of strict speeding limits » Road worthy certificates in place for all vehicles » Community liaison officer available for community grievances and communication channel 	
Monitoring	» The EPC contractor must monitor the indicators to ensure that they have been met for the construction phase	

Operational Phase:

Direct employment and skills development during operation phase

OBJECTIVE: Maximise local employment and skills opportunities associated with the construction phase			
Project component/s	Operation and maintenance of the proposed Kleinzee Solar PV facility and associated infrastructure		
Potential Impact	Loss of opportunities to stimulate production and employment of the local economy		
Activity/risksource	Labour practices employed during operations		
Enhancement: Target/Objective	Maximise local community employment benefits in the local Economy		
Enhancement: Action/control		Responsibility	Timeframe
Adopt a local employment policy to maximise the opportunities made available to the local labour force. (preference to Local Municipality)		The Proponent & EPC Contractors	Operation phase
The recruitment selection process should seek to promote gender equality and the employment of women wherever possible		The Proponent & EPC Contractors	Operation phase
Establish vocational training programs for the local labour force to promote the development of skills		The Proponent & EPC Contractors	Operation phase
Performance Indicator	<ul style="list-style-type: none"> » Percentage of workers that were employed from local communities (Local Municipality) » Number of people attending vocational training throughout the operation phase 		
Monitoring	<ul style="list-style-type: none"> » The developer must keep a record of local recruitments and information on local labour to be shared with the ECO for reporting purposes 		

Visual and 'sense of place' impacts

OBJECTIVE: Reduce the visual and sense of place impacts associated with the operation phase of the project			
Project component/s	Operation and maintenance of the Proposed Kleinzee Solar PV facility and associated infrastructure		
Potential Impact	Change in the sense of place that also leads to the negative impact on the area and visual intrusions		
Activity/risksource	The PV facility and associated infrastructure		
Enhancement: Target/Objective	Reduce the visual disturbances to minimise the losses of the sense of place		
Enhancement: Action/control		Responsibility	Timeframe
» Vegetation screening to be placed between the site and adjacent properties if required.		The Proponent	Operation phase
Performance Indicator	<ul style="list-style-type: none"> » Vegetation screening if required/necessary 		

Monitoring

- » The developer must monitor the indicators if vegetation screening is required by adjacent landowners