

Draft Social Impact Assessment for the proposed Kiwano Battery Energy Storage System and Solar Photovoltaic Project, Upington, Northern Cape, South Africa

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September 2022

TERMS AND ACRONYMS

Term/acronym	Description
AC	Alternating Current
AET	Adult Education and Training
Applicant	Eskom Holdings SOC Ltd
BA	Basic Assessment
BAR	Basic Assessment Report
BESS	Battery Energy Storage System
DC	Direct Current
DFFE	Department of Forestry, Fisheries and the Environment
DoE	Department of Energy
DoEL	Department of Employment and Labour
EA	Environmental Authorisation
EAP	Environmental Assessment Practitioner (Zitholele Consulting (Pty) Ltd)
EIA	Environmental Impact Assessment
EIA Regulations	Environmental Impact Assessment Regulations, 2014 (as amended)
EMPr	Environmental Management Programme
EPC	Engineering, Procurement and Construction
ha	Hectare
HDI	Human Development Index
HIV/AIDS	The human immunodeficiency virus that causes acquired immunodeficiency syndrome
I&AP	Interested and affected party/person
IAIASa	International Association for Impact Assessment South Africa
IDP	Integrated Development Plan
IPP	Independent Power Producer
IPPPP	Independent Power Producer Procurement Program
IRP	Integrated Resource Plan, 2019
LED	Local Economic Development
MTS	Main transmission substation
MW	Megawatt
NEMA	National Environmental Management Act 107 of 1998
NQF	National Qualifications Framework
NWA	National Water Act 36 of 1998
O&M	Operation and Maintenance
Proposed project/ development	Kiwano Battery Energy Storage System and Solar Photovoltaic Project, Upington, Northern Cape, South Africa
PV	Photovoltaic
S&EIR	Scoping And Environmental Impact Reporting
SDF	Spatial Development Framework
SETA	Sectoral Education and Training Authority
SIA	Social Impact Assessment
Stats SA	Statistics South Africa
TB	Tuberculosis

Term/acronym	Description
TVET	Technical and Vocational Education and Training
WUL	Water Use Licence
WULA	Water Use Licence Application

SPECIALIST REPORT CHECKLIST

Appendix 6 of the EIA Regulations outlines minimum information that must be provided in a specialist report. These requirements, and the sections of this SIA in which they are addressed, are summarised in Table 1:

Table 1: EIA Regulations, Appendix 6 SIA required content

EIA Regulations Requirement Appendix 6 item (1)		Relevant section
(a)	details of— (i) the specialist who prepared the report; and (ii) the expertise of that specialist to compile a specialist report including a curriculum vitae;	ANNEXURE 1
(b)	a declaration that the specialist is independent in a form as may be specified by the competent authority;	ANNEXURE 2
(c)	an indication of the scope of, and the purpose for which, the report was prepared;	Sections 2 and 3
(cA)	an indication of the quality and age of base data used for the specialist report;	Section 6.1 and 6.9.
(cB)	a description of existing impacts on the site, cumulative impacts of the proposed development and levels of acceptable change;	Sections 8.9, 8.11 and 9.7
(d)	the duration, date and season of the site investigation and the relevance of the season to the outcome of the assessment;	Section 6.2
(e)	a description of the methodology adopted in preparing the report or carrying out the specialised process inclusive of equipment and modelling used;	Section 6
(f)	details of an assessment of the specific identified sensitivity of the site related to the proposed activity or activities and its associated structures and infrastructure, inclusive of a site plan identifying site alternatives;	Sections 9.4, 9.5 and 9.6
(g)	an identification of any areas to be avoided, including buffers;	Sections 9.4, 9.5 and 9.6
(h)	a map superimposing the activity including the associated structures and infrastructure on the environmental sensitivities of the site including areas to be avoided, including buffers;	See Visual, Heritage, Terrestrial and Wetland Specialist reports.
(i)	a description of any assumptions made and any uncertainties or gaps in knowledge;	Section 6.9
(j)	a description of the findings and potential implications of such findings on the impact of the proposed activity or activities;	Sections 9.4, 9.5 and 9.6
(k)	any mitigation measures for inclusion in the EMPr;	Sections 9.4, 9.5 and 9.6
(l)	any conditions for inclusion in the environmental authorisation;	Section 10 / N/A?
(m)	any monitoring requirements for inclusion in the EMPr or environmental authorisation;	Sections 9.4.4 and 9.4.5
(n)	a reasoned opinion—	
	(i) whether the proposed activity, activities or portions thereof should be authorised;	Section 10
	(iA) regarding the acceptability of the proposed activity or activities; and	

	(ii) if the opinion is that the proposed activity, activities or portions thereof should be authorised, any avoidance, management and mitigation measures that should be included in the EMP, and in the case of a closure activity, the closure plan;	
(o)	a description of any consultation process that was undertaken during the course of preparing the specialist report;	Section 6.2 and 8.12
(p)	a summary and copies of any comments received during any consultation process and where applicable all responses thereto; and	Section 8.12
(q)	any other information requested by the competent authority.	N/A
(2)	Where a government notice gazetted by the Minister provides for any protocol or minimum information requirement to be applied to a specialist report, the requirements as indicated in such notice will apply.	

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1. INTRODUCTION

This report serves as the Social Specialist Assessment prepared as part of the Environmental Authorisation (EA) by Eskom Holdings SOC Ltd (Eskom/ the Applicant) for the establishment of the proposed Kiwano Battery Energy Storage System (BESS) and Solar Photovoltaic (PV) project, near Upington, Northern Cape Province.

Eskom is in the process of developing and executing the distributed BESS and PV portfolio of projects in two phases. The Kiwano BESS and PV project is part of Phase 2, and comprises an envisaged PV capacity of 58 MW; BESS capacity of 40 MW / 200 MWh; a 132 kV substation with 5 feeder bays; and a single twin-tern 132 kV overhead line on a double circuit support structure, connecting the Kiwano substation to Upington substation.

The Applicant appointed Zitholele Consulting (Pty) Ltd (Zitholele), an independent environmental and engineering consulting firm, to undertake the environmental impact assessment (EIA) and related studies in support of the EA. As part of the EIA, Zitholele was appointed to undertake a Social Impact Assessment (SIA) in accordance with the requirements of the Environmental Impact Assessment Regulations, 2014 (EIA Regulations).¹

This specialist assessment has been undertaken by Ursula Pape of Solarys (Pty) Ltd. Ursula is a social sustainability and stakeholder engagement consulting professional with a background in environmental law. She holds LLM in Constitutional, Administrative and Environmental Law with distinction from the University of Pretoria. She has 15 years' experience in the coordination of projects in the mining, oil & gas, and power sectors in South Africa, Kenya, Mozambique, Uganda and Zambia. A curriculum vitae is included in ANNEXURE 1 of this specialist assessment. In addition, a signed Specialist Declaration of Interest is included in ANNEXURE 2.

2. STUDY OBJECTIVES

The objectives of the SIA are as follows:

- To develop a broad understanding of the socio-economic conditions within the study area.
- To identify potential socio-economic impacts that could result from the proposed project.
- To recommend appropriate mitigation measures to reduce and, if possible, avoid negative impacts, while enhancing positive impacts.

3. TERMS OF REFERENCE

The scope of the SIA is as follows:

- Consider the applicable policy and legal framework.
- Outline of the baseline socio-economic environment, placing emphasis on local communities that may be directly affected by the proposed project.
- Describe and assess potential impacts of the proposed project on the livelihoods, income, access to health care, and other social aspects relevant to project affected people. The assessment will take into account the United Nations Sustainable Development Goals (SDGs).
- Assess whether the two alternative sites will have differing impacts on the community at large and recommend a preferred alternative, if applicable.

¹ Environmental Impact Assessment Regulations, 2014 GN R982 published in GG 38282 of 4 December 2014 (as amended) (EIA Regulations) Appendix 6.

- Review comments and inputs received from interested and affected parties (I&APs) during the public review period to identify issues, concerns, potential impacts, and potential mitigation options.
- Engage with other specialists whose studies may have a bearing on the SIA.
- Identify and assess mitigation measures to avoid or minimise potential negative impacts and optimise positive impacts.
- Following guidance as outlined in the Guideline on Need and Desirability, Department of Environmental Affairs;² provide a reasoned opinion on the acceptability of the proposed development and its alternatives; whether it should be authorised; and under what conditions.

4. PROJECT DESCRIPTION

This section provides a summary of the project description of the proposed Kiwano BESS and PV facility as outlined in the Preliminary Technical Scope Report for BESS Kiwano PV Project.³

4.1 Proposed project infrastructure

The proposed Kiwano BESS and PV facility will be comprised of the following:⁴

- PV installation with envisaged capacity of 58 MW.
- BESS installation with envisaged capacity of 40 MW / 200 MWh.
- Kiwano 132 kV substation with five feeder bays.
- Single twin-tern 132 kV overhead powerline on a double circuit support structure, connecting Kiwano substation to Upington substation.

The PV facility proposed for Kiwano will include the following associated infrastructure:⁵

- Solar PV modules, up to a total of 45 ha that convert solar radiation directly into electricity. The solar PV modules will be elevated above the ground, and will be mounted on either fixed tilt systems or tracking systems (comprised of galvanised steel and aluminium). The solar PV modules will be placed in rows in such a way that there is allowance for a perimeter road and security fencing along the site boundary, and access roads in between the PV module rows.
- Inverter stations, each occupying a footprint of up to approximately 30 m², with up to 60 inverter stations installed on the site. Each inverter station will contain an inverter, step-up transformer, and switchgear. The inverter stations will be distributed on the site, located alongside associated solar PV module arrays. The inverter station will perform conversion of direct current (DC) to alternating current (AC), and step-up the low voltage (LV) of the inverter to 22 kV, to allow the electricity to be fed into the Kiwano substation. Inverter stations will connect several arrays of solar PV modules and will be placed along the internal roads for easy accessibility and maintenance.
- Below ground electrical cables with trenching connecting PV arrays, inverter stations, operations and maintenance (O&M) buildings, and the 132kV Kiwano substation.
- Adequately designed foundations and mounting structures that will support the solar PV modules and inverter stations.
- Infrastructure required for the operation and maintenance of the Kiwano PV Plant installation:
 - Meteorological station.
 - O&M building – comprising control room, server room, security equipment room, offices, boardroom, kitchen, and ablution facilities (including sewage infrastructure).
 - Spares warehouse and workshop.

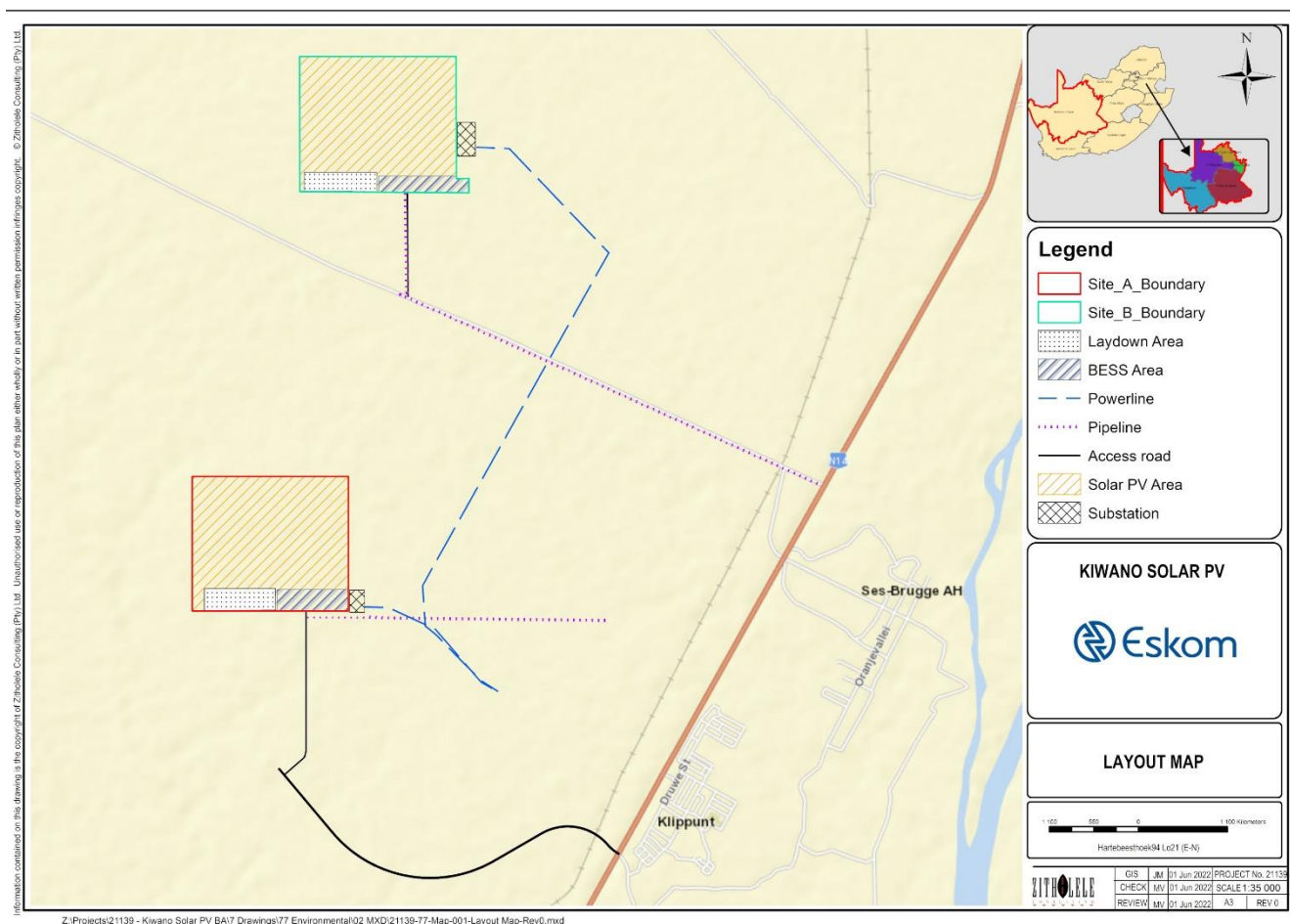
² Guideline on Need and Desirability, Department of Environmental Affairs (DEA), Pretoria, South Africa, 2017 (Need and Desirability Guideline).

³ Eskom Report 474-12577: Preliminary Technical Scope Report for BESS Kiwano PV Project, October 2021.

⁴ Eskom (note 3 above) 4.

⁵ Eskom (note 3 above) 4 – 6.

- Hazardous chemical store.
- Security building.
- Parking areas and roads.
- Small diameter water supply pipeline connecting existing municipality pipeline, approximately 5 km long.
- Stormwater channels.
- Temporary laydown area, occupying a footprint of up to 10 ha. The laydown area will be used during construction and rehabilitated thereafter. The laydown area will also accommodate water storage tanks or lined ponds (estimated 815 kl/month for the first 3 months and 408 kl/month for the remaining 21 months, until construction is completed).
- Temporary concrete batching plant, occupying a footprint up to 1 ha. The concrete batching plant area will be used during construction and rehabilitated thereafter.
- Temporary site construction office area, occupying a footprint up to 1 ha. This area will accommodate the offices for construction contractors during construction and rehabilitated thereafter.



4.2 Site location and alternatives

The proposed Kiwano BESS and PV facility will be located at the Eskom owned Kiwano site, approximately 13 km south-west of Upington, Dawid Kruiper Local Municipality (DKLM), and 23 km west of Keimoes, Kai !Garib Local Municipality (KGLM), ZF Mgawu District Municipality, Northern Cape Province (Figure 2).⁶

⁶ Baker, I. *Wetland Baseline and Risk Assessment for the proposed Kiwano Battery Energy Storage System and Solar Photovoltaic Project*, The Biodiversity Company (April 2022) section 2. Eskom (note 3 above) 3.

The total estimated site area for the proposed project including linear infrastructure will be up to 140 hectares (ha).⁷ The area is fenced off, with a locked/access-controlled gate. Two site alternatives have been proposed, Site A and Site B as indicated in (Figure 2). The Site A alternative is located directly adjacent to Ward 8 of the KGLM.

4.3 Site access

Where possible, existing roads that provide access to the proposed Kiwano site will be used, upgraded, and extended as necessary.⁸ Site access for the two proposed alternatives will be as follows (Figure 2):⁹

- Site A: An access road, approximately 6 m wide and estimated up to 5 km long, will be required to provide access to the PV site.
- Site B: A new access road from the existing D3276 gravel road to the site will be required, approximately 6 m wide and estimated up to 1 km long. The existing D3276 gravel road will require upgrading, approximately 6 m wide and estimated up to 4 km long (from N14 to site access road).

Further road infrastructure that will be required for the proposed project includes:¹⁰

- A perimeter road around the site, approximately 5 m wide and 4.5 km in length.
- Internal roads for access to the inverter stations, approximately 5 m wide and 18 km total length.
- Internal roads/paths between the solar PV module rows, approximately 2-3 m wide, to allow access to the solar PV modules for operations and maintenance activities.
- Perimeter fencing of the Kiwano site, with access gates. Detailed requirements will be determined following the security risk assessment.

⁷ Eskom (note 3 above) 4.

⁸ Eskom (note 3 above) 5.

⁹ As above:

¹⁰ As above.

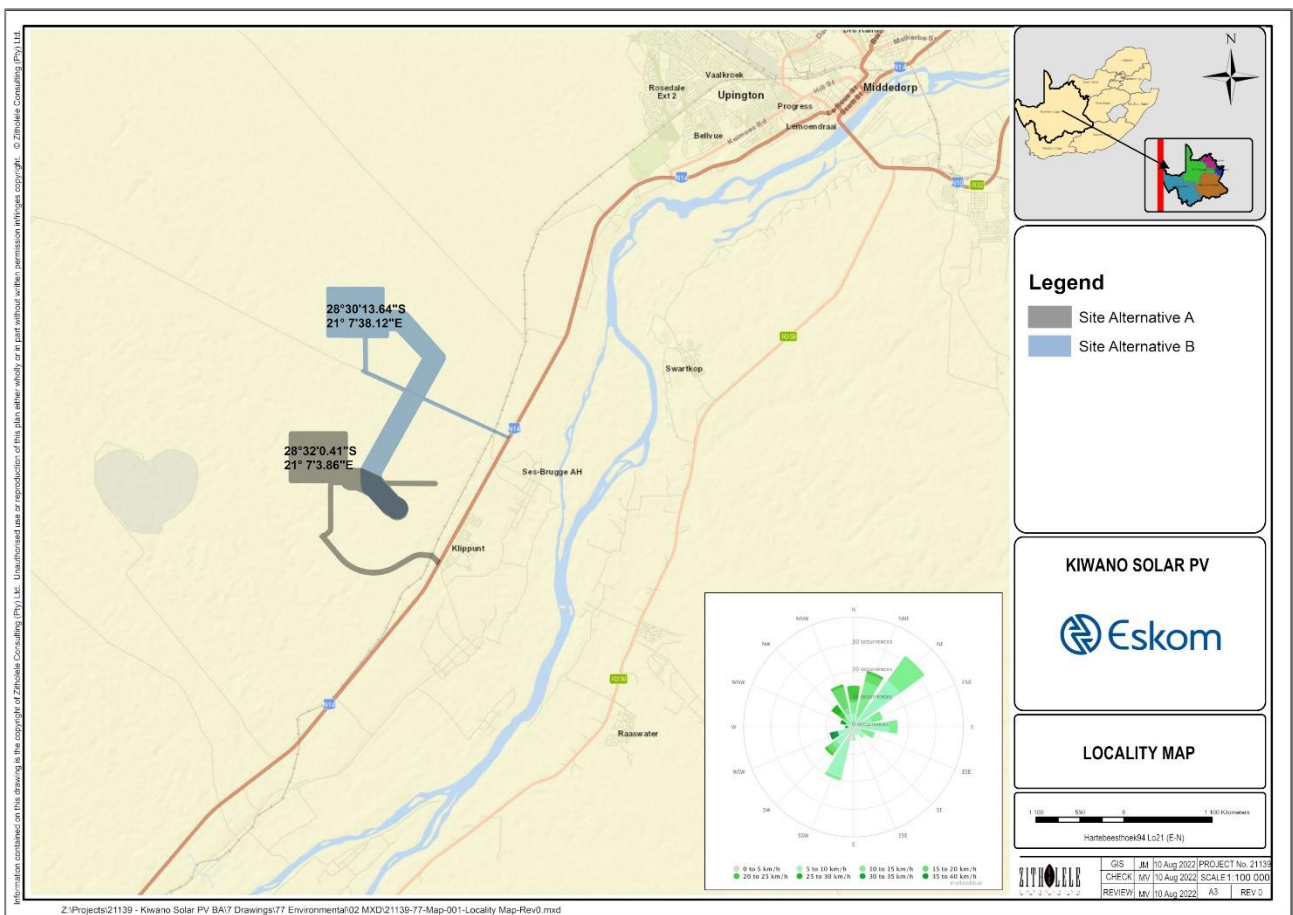


Figure 2: Locality map

4.4 Project development cycle

4.6.1 Construction

During the construction phase of the project the following activities are anticipated:¹¹

Site preparation

Vegetation and topsoil will be cleared to make way for project infrastructure as well as for the access roads to the solar PV site, internal roads and the laydown yard, etc. Topsoil that will be removed will be stored for site rehabilitation purposes.

Transportation of equipment

All equipment to site will be transported by means of national, provincial and district roads. This includes, but is not limited to, transformers, solar PV modules, inverters, excavators, graders, trucks, compacting equipment, construction material, etc.

Site establishment works

The site will have temporary laydown areas and offices for the construction contractors. This will include the contractor's chosen electricity supply infrastructure e.g. use of generators and fuel storage that will be required to conform to acceptable measures to ensure no harm to the environment. The laydown area will also be used for assembling of solar PV modules and structures. A concrete batching plant may also be required as part of the site establishment works.

¹¹ Eskom (note 3 above) 5.

Construction of the solar PV facility

Trenches would need to be excavated for underground cabling to connect solar PV arrays and inverter stations. Foundations for the solar PV array mounting structures and inverter stations may need to be excavated, with the final extent depending on the geotechnical studies that will be conducted. The geotechnical studies will determine the type of foundations that can be utilised at the PV site. Construction of access, perimeter, and internal gravel roads may require material to be imported from outside the site, from a permitted quarry.

Water consumption during construction phase

The total estimated water required during the construction phase is estimated as 11,000 kilolitres (total for a 24-month construction period). It is assumed that more water will be required in the beginning of the construction period, 815 kilolitres per month for the first three months of construction, and 408 kilolitres per month for the remaining construction period.

Construction of electrical interconnection line

Construction and installation of underground electrical interconnection cables, connecting the solar PV facility to the 132 kV Kiwano substation.

Site rehabilitation

Once all the construction activities are completed, all temporary structures and facilities will be removed and the site will be rehabilitated to the extent possible.

4.6.2 Operation and maintenance

During the life of the solar PV plant, the following activities will be undertaken:¹²

- Normal maintenance of all electrical and mechanical components.
- Periodic cleaning and washing of the solar PV modules, estimated to occur 2-4 times a year, or when the reference cells show a difference greater than 50 W/m² between the clean and soiled cells.

Estimated water required during the operational phase for period cleaning of the solar PV models and consumption by operational staff is estimated at 5,240 kilolitres per year.¹³

4.6.3 Plant decommissioning

The solar PV plant has a minimum design life of 25 years.¹⁴ Towards the end of the plants design life, Eskom will consider a life extension when assessing its economic viability to remain operational.¹⁵

Decommissioning activities anticipated, once the facility has reached its end of life, are as follows:¹⁶

- Disassembling all components of the facility, including solar PV modules, structures, foundations, inverters, cabling, etc.
- Site preparation, removal of all equipment for disposal and re-use.
- Site rehabilitation to acceptable level as per an approved Environmental Management Programme (EMPr).

4.7 Employment

The proposed project will create short-term employment opportunities during the construction and decommissioning phases, and long-term employment during the operational phase. The construction phase

¹² Eskom (note 3 above) 7.

¹³ As above. Estimate based on four cleaning events using 3 litres of water per 1m³ of PV modules per event; and 20 full time operations staff each consuming 50 litres per day; for an estimated 25 years.

¹⁴ As above.

¹⁵ As above.

¹⁶ As above.

is estimated to take approximately 24 months and the estimated life of the facility, once operational, is estimated to be a minimum of 25 years.¹⁷

4.7.1 Construction phase

During the construction phase, most of the workforce will be employed by an Engineering, Procurement and Construction (EPC) contractor. It is expected that the EPC workforce will consist primarily of unskilled, semi-skilled and skilled employees who are likely to be sourced from either DKLM or KGLM. The estimated workforce during the peak construction phase will be approximately **120** employees. The type of jobs that could potentially be created during the construction phase of the proposed project are as follows:

- Engineering manager.
- Solar system engineer.
- Health Safety and Environment (HSE) manager.
- Site manager.
- Procurement officer/contract administrator.
- Project manager.
- Maintenance manager.
- Electrician.
- Welder.
- Plumber.
- Solar and electrical technician.
- Solar PV installer.
- General construction workers.
- Driver.
- Security guards.
- Cleaners.

Procurement of a local EPC contractor from DKLM, KGLM or the ZF Mgcawu District will be prioritised to the extent possible. As such, employment and procurement opportunities for people already residing within DKLM, KGLM or the broader ZF Mgcawu District will be prioritised where practicable. However, should it be necessary to recruit workers from outside this area, suitable accommodation will be provided in close proximity to the proposed project site, in consultation with all relevant stakeholders such as adjacent landowners; EPC contractors; officials from DKLM and KGLM; and organised labour.

4.7.2 Operational phase

During the operational phase, the solar PV and BESS facility will operate for 24-hours per day, 7 days a week, 365 days per year. Routine maintenance activities during the operational phase will be undertaken by Eskom employees. The anticipated manpower requirements during the operational phase will be approximately **18** full time employees. The types of jobs that could potentially be created during the operational phase of the proposed project are as follows:

- Engineering manager
- Health Safety and Environment (HSE) manager
- Maintenance manager
- Solar and electrical technician
- Solar repairs and maintenance technician
- Security guards
- Cleaners

¹⁷ Eskom (note 3 above) 7 based on the minimum design life of the solar PV plant.

Initial estimates of labour requirements for the proposed project per labour category are detailed in Table 2. The occupational levels summarised in Table 2 are aligned with the Employment Equity Regulations, 2014 Form EEA9 descriptions as follows:

- *Unskilled*: Unskilled & defined decision-making level. Steps to accomplish work or processes are clearly defined and understood. Tasks are sometimes repetitive and uncomplicated, and the work cycle is short.
- *Semi-skilled*: Semi-skilled & discretionary decision-making level. Accountable for direct product, process or service quality. Incremental improvement of existing processes and procedures according to clear guidelines. Choosing of correct action on the basis of set standards, training procedures and past experience.
- *Skilled*: Skilled technical & academically qualified/ junior management/ supervisors/ foremen/ superintendents. Applies broad knowledge of products, techniques and processes. Evaluates procedures and applies previous experience. A good solution can usually be found. Determines own priorities. What has to be done is stipulated; but may require initiative in terms of how it should be done.
- *Professional*: Professionally Qualified & experienced specialists/mid-management level. Professional knowledge of sub-discipline or discipline. Provide input in the formulation of Organisational/Functional Unit business plans. Formulate and implement departmental/team plans that will support the BU business plans. Optimisation of resources (finances, people, material, information and technology) to achieve given objectives in most productive and cost-effective way.
- *Senior management*: Knowledge of entire business area/BU/company or group. Provide inputs for/formulation of the overall Organisational strategy. Translates the overall strategy into business plans for BU/Functional Unit, thereby operationalising organisational strategy. Implements and manages business plan, goals and objectives and ensures the achievement of overall key Organisational/BU/Functional outputs. Manages the development of innovation and change.
- *Top management*: Controls the functional integration of the business. Determines the overall strategy and objectives of the business. Directs the company into the future. The nature of the work and focus is long-term. Sign-off on policy or strategy.

Table 2: Estimated number of local employment opportunities

Project phase	Unskilled	Semi-skilled	Skilled	Professional	Snr Management	Top Management	TOTAL
Construction	40	30	20	15	10	5	120
Operation	5	5	3	2	1	2	18

These labour estimates are subject to change based on operational requirements at the time of implementation of the project.

During the various project phase, all relevant local legislation and regulations pertaining to occupational health and safety will be adhered to. In instances where the local legislation is silent, and where specific occupational health and safety risks have been identified as part of a detailed risk assessment, internationally recognised best practice risk management methods will be implemented to safeguard the work environment and protect employees and contractors working at the proposed project site.

5. STUDY AREA

This section provides an outline of the socio-economic context in which the proposed project will be developed.

5.1 Regional study area

The proposed project site is located within the jurisdiction of the DKLM, which is situated in the northern region of the Northern Cape Province, within the boundaries of the ZF Mgcawu District Municipality. The proposed project area, Site A alternative is directly adjacent to the KGLM. Figure 3 indicates where DKLM and KGLM are located within the broader ZF Mgcawu District.¹⁸

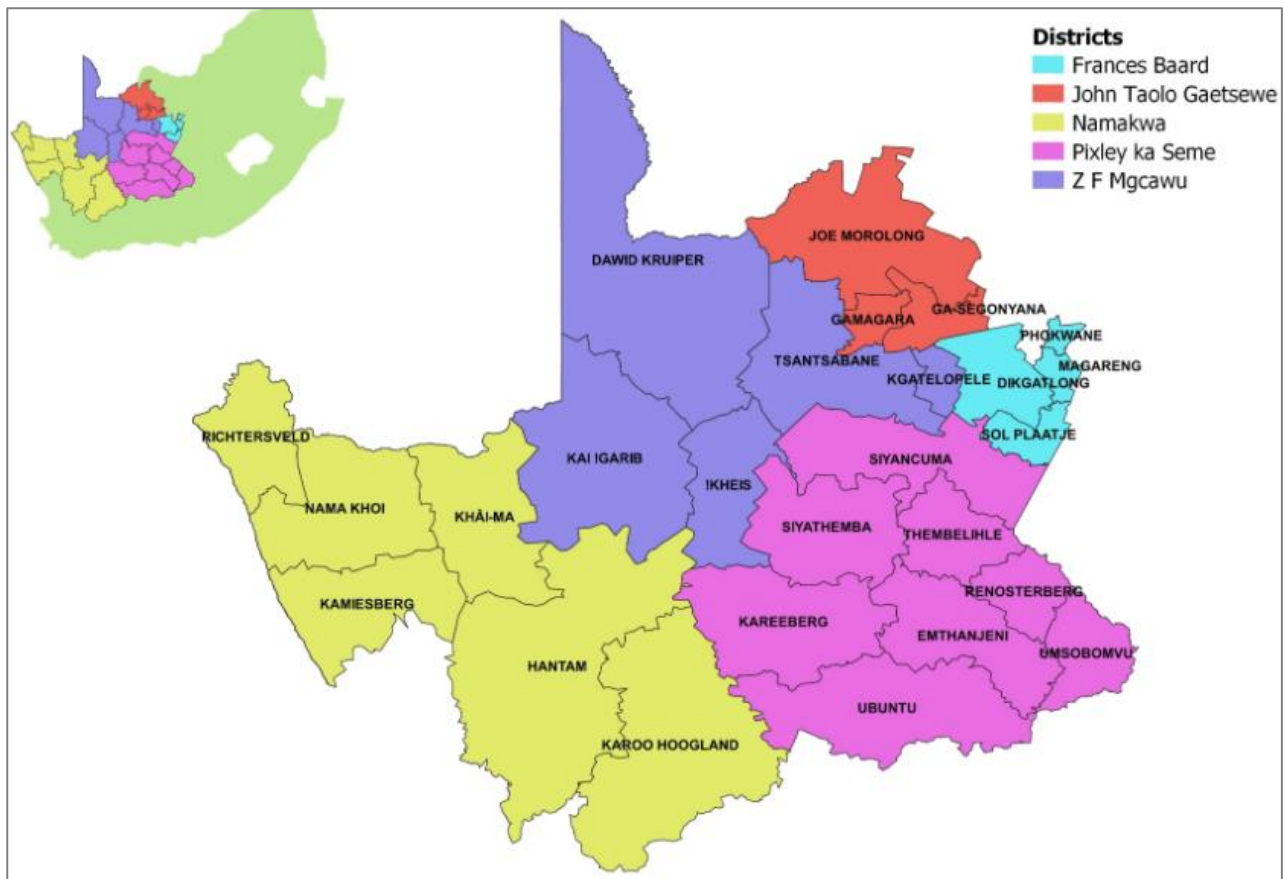


Figure 3: Regional locality

Source: <https://letsrespondtoolkit.org/municipalities/northern-cape/>

ZF Mgcawu District Municipality extends across an area of 102 504km², almost a third of the Northern Cape Province.¹⁹ Much of this area (65 000km²) comprises the Kalahari Desert, Kgalagadi Transfrontier Park and the former Bushmanland.²⁰ The district comprises five local municipalities which include Dawid Kruiper, Kai !Garib, Tsantsabane, !Kheis and Kgatelopele (Figure 3).²¹ ZF Mgcawu District shares borders with Botswana to the northeast and Namibia to the north;²² John Taolo Gaetsewe District Municipality to the north west; Frances Baard District to the west; Pixley ka Seme to the south east; and Namakwa District Municipality to the south west (Figure 3).

¹⁸ Map obtained from <https://letsrespondtoolkit.org/municipalities/northern-cape/> (accessed 2 August 2022)..

¹⁹ Local Government Handbook, ZF Mgcawu District <https://municipalities.co.za/overview/138/zf-mgcawu-district-municipality> (accessed 2 August 2022).

²⁰ As above.

²¹ As above.

²² Department of Cooperative Governance and Traditional Affairs (COGTA) ZF Mgcawu District Profile 2020 10.

Municipal government is situated in Upington, the district capital.²³ Agriculture, mining, tourism and manufacturing are the four primary drivers of the ZF Mgcawu District's economy.²⁴ At 34%, the largest contributor to the district's real Gross Value Added (GVA) in manufacturing is the food, drinks and tobacco subsector.²⁵

5.2 Local study area

DKLM occupies an area of 44 231km²,²⁶ a vast area comprised of 21 clearly identifiable communities in 17 different wards. Table 3 provides a list of the various towns, communities and settlements as per the DKLM SDF 2018.²⁷

Table 3: DKLM towns, settlements and communities

Local towns	Rural settlements/ smaller formalised towns and communities	Communities in the process of formalisation (as at 2018)
Greater Upington area and Rietfontein	Louisvleweg, Raaswater, Louisvale, Leseding, Ntsikelelo, Karos, Leerkrans, Lambrechtsdrift, Melkstroom, Kalksloot, Askham, Welkom, Groot Mier, Klein Mier, Loubos, Philandersbron and Swartkopdam	Noenieput and Andriesvale

DKLM hosts two Indigenous People groups,²⁸ namely the #Khomani San and the Mier Communities.²⁹ The #Khomani Cultural Landscape, a UNESCO World Heritage Site, is located on the border with Botswana and Namibia within the Kgalagadi Transfrontier Park, a distance of approximately 250 km from Upington. The project therefore does not trigger any processes related to the assessment of projects impacts associated with Indigenous People's rights.

KGLM, directly adjacent to DKLM and the proposed project site, is a Category B municipality situated along the Orange River.³⁰ It is the second largest of the five municipalities that make up the ZF Mgcawu District, accounting for a quarter of the district's geographical area (Figure 3). The municipality was established by the amalgamation of the Mier and //Khara Hais Local Municipalities in August 2016.³¹ The proposed project site is situated adjacent to KGLM Ward 8 which hosts the settlements of Eksteenskuil Islands, Soverby, McTaggers Camp, Curriescamp, Bloemsmond, Blaauwskop and Kanoneiland.³²

²³ As above.

²⁴ COGTA (note 22 above) 6.

²⁵ As above.

²⁶ Local Government Handbook <https://municipalities.co.za/overview/1245/dawid-kruiper-local-municipality> (accessed 7 August 2022).

²⁷ Dawid Kruiper Local Municipality All-inclusive Spatial Development Framework, Final Report, February 2018 (DKLM SDF) <http://dawidkruiper.xyz/?p=6682> (accessed 7 August 2022) 7-8.

²⁸ E Greenspan 'Free, prior and informed consent in Africa: An emerging standard for extractive industry projects, Oxfam America Research Backgrounder Series' (2014) 5 notes that the practice of identifying communities as "indigenous" is debated in some African countries but that the African Commission on Human and Peoples' Rights (ACHPR) has identified a few characteristics that embody the concept. These characteristics include self-identification; a special attachment to and use of traditional land; and a state of subjugation or marginalization resulting from ways of life or modes of production different from the national hegemonic and dominant model.

²⁹ UNESCO <https://whc.unesco.org/en/list/1545> (accessed 7 August 2022) and #Khomani San Website <http://www.khomanisan.com/about-us/> (accessed 7 August 2022).

³⁰ Local Government Handbook <https://municipalities.co.za/overview/1183/kai-garib-local-municipality> (accessed 19 August 2022).

³¹ As above.

³² Kai !Garib Municipality Integrated Development Plan 2022/2023 (KGLM IDP) <https://www.kaigarib.gov.za/wp-content/uploads/2022/04/Draft-IDP-March-2022.pdf> (accessed 19 August 2022) 22.

For the purposes of this SIA, the local study area will include DKLM Ward 11 and KGLM Ward 8 as the proposed project site is located either within or directly adjacent to these two municipal wards. The Site A alternative of the proposed project is furthermore located directly adjacent to the KGLM which also falls within the ZF Mgcawu District (Figure 2 and Figure 3).

5.3 Proposed project site

The proposed Kiwano BESS and PV facility will be located on a portion of the farm Olyvenhouts Drift Settlement Agricultural Holding 1080 Portion 0, Ward 11, DKLM (Figure 2). The proposed project site is located approximately 13 km south-west of Upington, DKLM, and 23 km east of Keimoes, KGLM, within close proximity (2 km) of the Orange River.³³ The N14 highway runs along the southern edge of the proposed project site.

The project area falls within one of the 11 identified Renewable Energy Development Zone (REDZ) (Figure 4).³⁴ As seen in Figure 5, the entire footprint of the proposed project and related project infrastructure is located within the Upington REDZ 7.

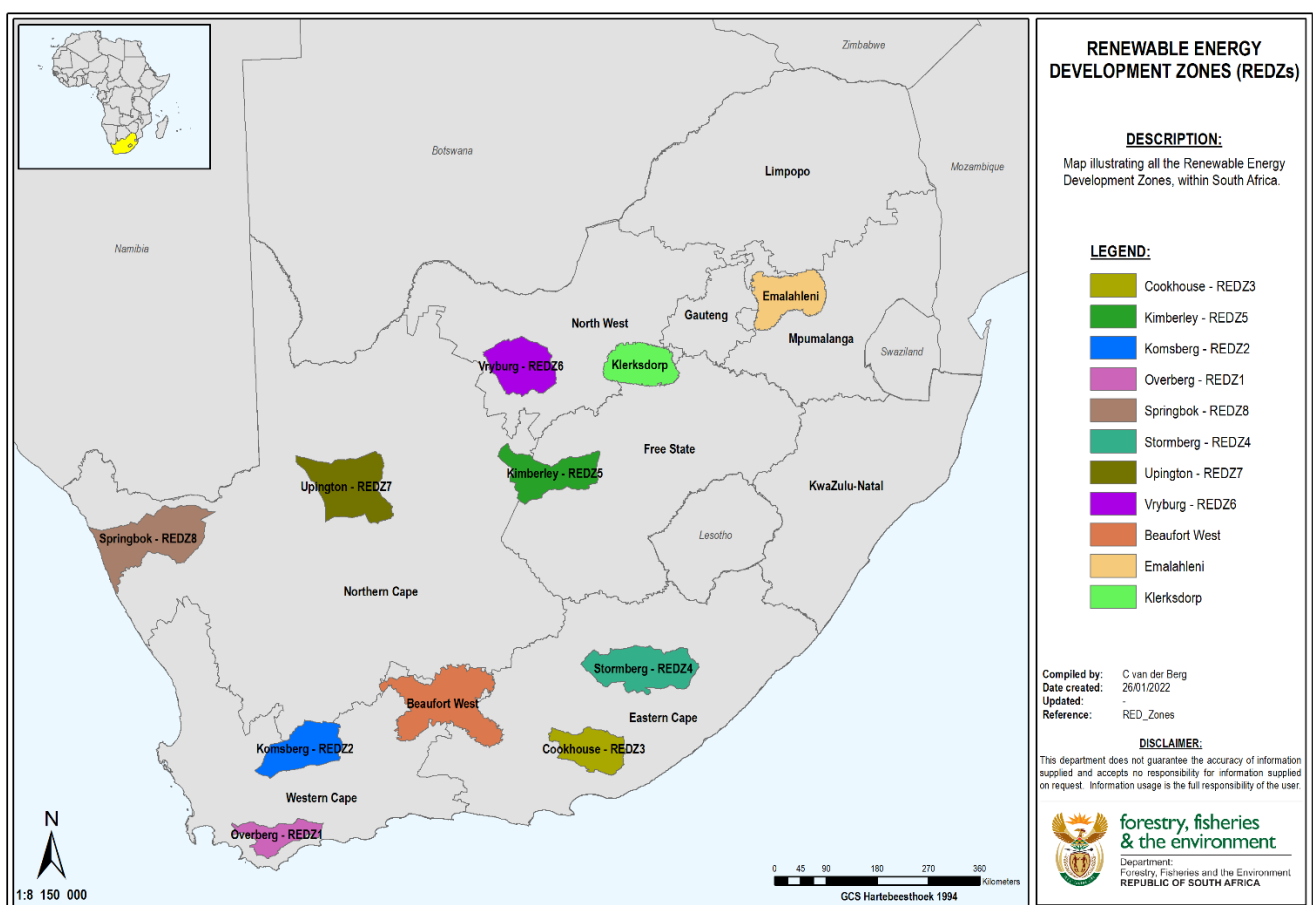


Figure 4: Renewable Energy Development Zones in South Africa

Source: Department of Forestry, Fisheries and the Environment (DFFE)

³³ Baker (note 6 above) 3.

³⁴ DFFE https://sfiles.environment.gov.za:8443/ssf/s/readFile/folderEntry/49343/8afbc1c77f1bb7ca017f6433d7460a0c/1643207123000/last/REDZ_11_Zones.png (accessed 9 August 2022).

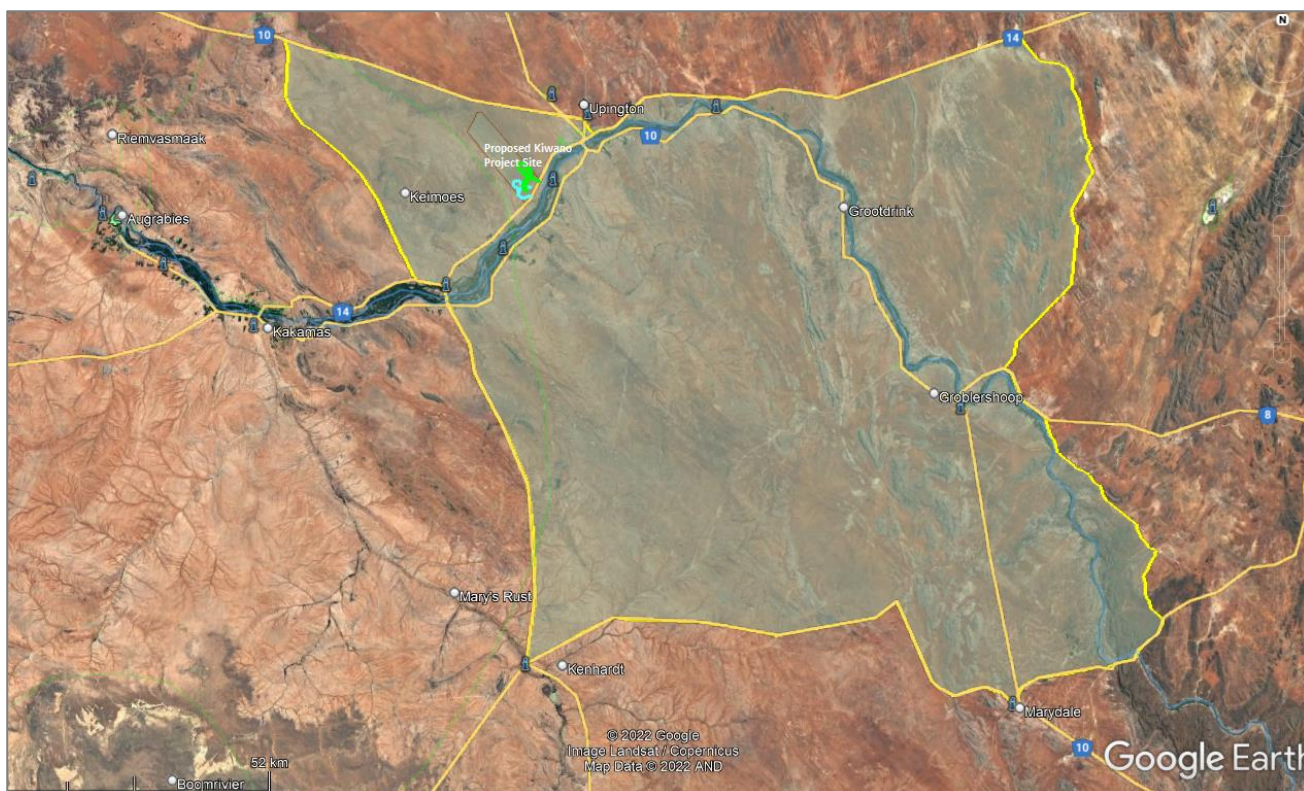


Figure 5: Upington Renewable Energy Development Zone (REDZ7)

Source: DFFE and Google Earth

6. STUDY METHODOLOGY

This study followed the approach and guidance outlined in the DEAT (2006) Socio-Economic Impact Assessment Integrated Environmental Management Information Series 22 and considered social and economic impacts in an integrated manner.³⁵ The methodology employed to compile the SIA is described below.

6.1 Data gathering

The study was undertaken by way of a desktop review of available secondary data sources. The following strategic planning documents and online sources were reviewed:

- Dawid Kruiper Local Municipality Draft Revised Integrated Development Plan for 2022/2027 (DKLM IDP).
- Dawid Kruiper Local Municipality All-inclusive Spatial Development Framework, Final Report, February 2018 (DKLM SDF).
- Kai !Garib Local Municipality Draft Integrated Development Plan 2022/2023 (KGLM IDP).
- ZF Mgcawu District Municipality Final Integrated Development Plan 2022/2023 (2022 – 2027).
- ZF Mgcawu District Profile, 2020 (ZF Mgcawu District Profile).
- Statistics South Africa Mid-year population estimates 2021 and 2022 (Stats SA MYPE 2021 and 2022).
- Statistics South Africa Non-Financial Census of Municipalities, 2020 (Stats SA NFC 2020).
- Statistics South Africa P0211 Quarterly Labour Force Survey (Q1:2022).
- Statistics South Africa Community Survey 2016 (Stats SA Community Survey 2016).
- Statistics South Africa General Household Survey 2021 (Stats SA GHS 2021).

³⁵ DEAT (2006) Socio-Economic Impact Assessment, Integrated Environmental Management Information Series 22, Department of Environmental Affairs and Tourism (DEAT), Pretoria https://www.dffe.gov.za/sites/default/files/docs/series22_socioeconomic_impact_assessment.pdf (accessed 11 August 2022) 4.

- Various SIAs undertaken in DKLM and KGLM between 2018 and 2021.
- Northern Cape Province, Department of Economic Development and Tourism, Revised Strategic Plan for 2020 – 2025.

The purpose of the desktop review was to gain an understanding of the regional context and community needs as identified in various studies and documents that are available online.

6.2 Interviews

The fieldwork programme to be undertaken as part of this SIA will involve interviews and meetings with key I&APs to secure the necessary primary data that will inform preparation of the SIA.

Stakeholder comments and contributions to the BA process and suggestions regarding the proposed project will be summarised in section 8.12.

6.3 Data analysis

The information will be analysed to determine the socio-economic conditions relevant to the study area. Analysis involved the following:

- Integration and comparison of information from various sources to gain a broad understanding of the socio-economic conditions in the area.
- Analysis of information across various time periods to identify key socio-economic trends.

A description of the socio-economic baseline and key trends is provided in section 8.

6.4 Impact assessment

Potential socio-economic impacts of the proposed project were identified based on the project description provided by the Applicant; an analysis of the baseline data in section 8; and a review of similar studies and projects in the area. Significance of the proposed impacts was assessed using the methodology outlined in section 9.

Measures to mitigate and reduce the significance of negative impacts and enhance positive impacts were identified. Impact significance is rated both with and without mitigation.

This section will be updated after conclusion of a site visit and public participation process.

6.5 Environmental Impact Assessment Regulations, 2014

This study has been prepared in accordance with Appendix 6 of the EIA Regulations which outlines minimum information that must be provided in a specialist report.³⁶ These requirements, and the sections of this SIA in which they are addressed, are summarised in Table 1.

6.6 Guideline on Need and Desirability, Department of Environmental Affairs

When considering an EA, the competent authority must comply with section 24O of National Environmental Management Act 107 of 1998 (NEMA) and have regard for any guideline published in terms of section 24J of the Act and any minimum information requirements for the application. This includes the Guideline on Need and Desirability which provides information and guidance for Applicants, Authorities and I&APs when considering the need and desirability of a proposed project in terms of NEMA, the EIA Regulations, the National Environmental Management: Air Quality Act 39 of 2004 (NEMAQA) and the National Environmental Management Waste Act 59 of 2008 (NEMWA). The guideline also aims to assist

³⁶ EIA Regulations (note 1 above).

Applicants, Environmental Assessment Practitioners (EAPs) and Competent Authorities to ensure that need and desirability is given due consideration in every EIA application, to help ensure well-informed decision-making is promoted. In preparing this SIA, the requirement to address the various need and desirability questions was given due consideration and formed an integral part of the study approach and methodology. Table 24 in ANNEXURE 3 provides a summary of the respective questions as outlined in the Guideline on Need and Desirability, and the sections of this SIA in which they are addressed.

6.7 IAIA Guidance for Assessing and Managing Social Impacts of Projects

To the extent applicable, this SIA followed the approach outlined in the International Association for Impact Assessment (IAIA) Guidance Note for assessing and managing the social impacts of projects.³⁷ The Guidance Note identifies four key phases and 26 tasks that typically comprise a SIA. Figure 6 depicts the various phases of a comprehensive SIA. Note that all tasks outlined in Figure 6 might not be relevant to the current study.

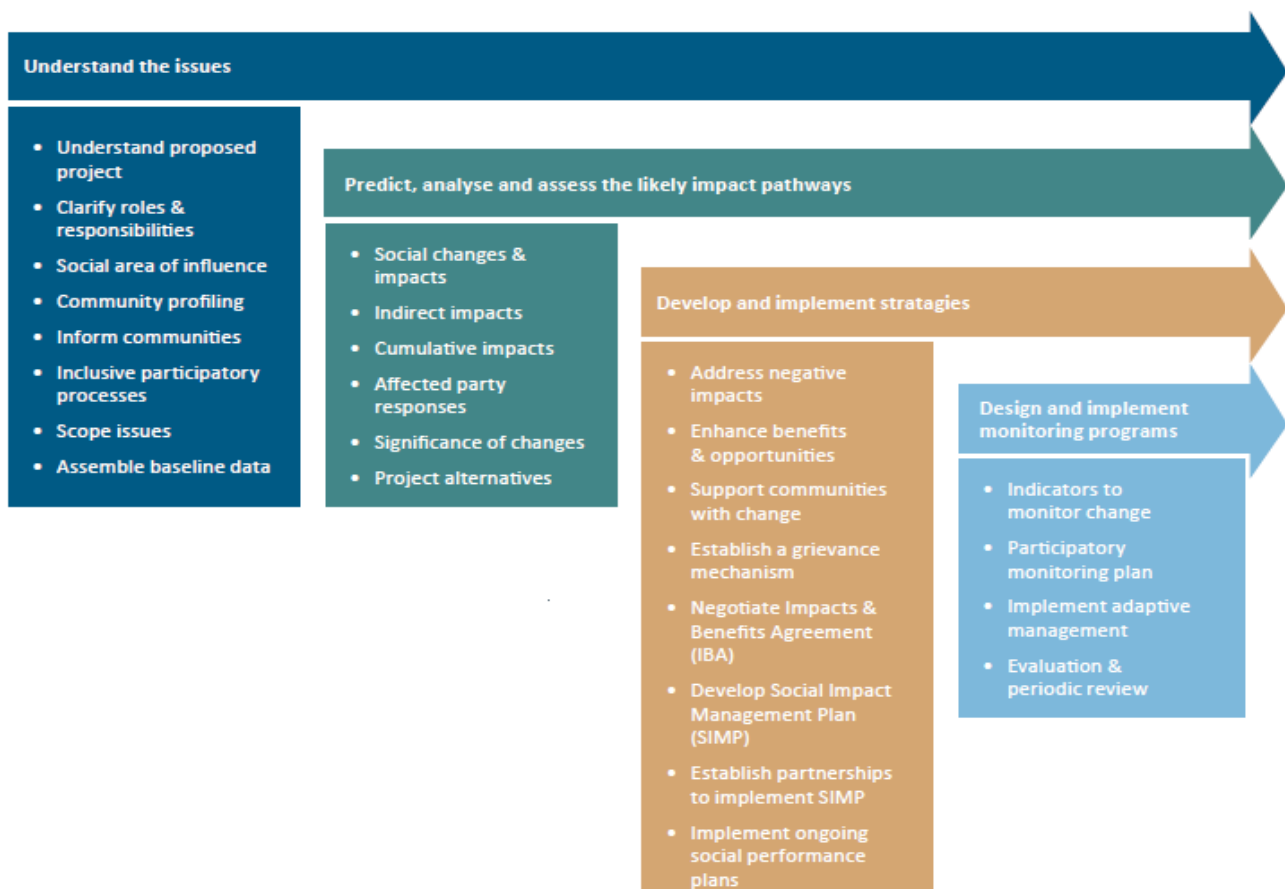


Figure 6: IAIA phases of SIA

6.8 Performance Standards on Environmental and Social Sustainability

The International Finance Corporation (IFC) Performance Standards on Environmental and Social Sustainability were considered throughout this assessment.³⁸ IFC Performance Standards (PS) that may be applicable to this SIA are summarised below.

³⁷ International Association for Impact Assessment, Social Impact Assessment: Guidance for assessing and managing the social impacts of projects, F Vanclay, AM Esteves, et al (2015) 7.

³⁸ IFC https://www.ifc.org/wps/wcm/connect/Topics_Ext_Content/IFC_External_Corporate_Site/Sustainability-At-IFC/Policies-Standards/Performance-Standards (accessed 21 August 2022).

PS 1: Assessment and management of environmental and social risks and impacts (2012)

The objectives of PS 1 are as follows:³⁹

- To identify and evaluate environmental and social risks and impacts of the project.
- To adopt a mitigation hierarchy to anticipate and avoid, or where avoidance is not possible, minimize, and, where residual impacts remain, compensate/offset for risks and impacts to workers, Affected Communities, and the environment.
- To promote improved environmental and social performance of clients through the effective use of management systems.
- To ensure that grievances from Affected Communities and external communications from other stakeholders are responded to and managed appropriately.
- To promote and provide means for adequate engagement with Affected Communities throughout the project cycle on issues that could potentially affect them and to ensure that relevant environmental and social information is disclosed and disseminated.

PS 2: Labour and working conditions

The objectives of PS 2 are as follows:⁴⁰

- To promote the fair treatment, non-discrimination, and equal opportunity of workers.
- To establish, maintain, and improve the worker-management relationship.
- To promote compliance with national employment and labour laws.
- To protect workers, including vulnerable categories of workers such as children, migrant workers, workers engaged by third parties, and workers in the client's supply chain.
- To promote safe and healthy working conditions, and the health of workers.
- To avoid the use of forced labour.

PS 4: Community health, safety and security

The objectives of PS 4 are as follows:⁴¹

- To anticipate and avoid adverse impacts on the health and safety of the Affected Community during the project life from both routine and non-routine circumstances.
- To ensure that the safeguarding of personnel and property is carried out in accordance with relevant human rights principles and in a manner that avoids or minimizes risks to the Affected Communities.

6.9 Study limitations

While every reasonable effort was made to prepare a SIA that addresses relevant impacts associated with the proposed project, this study is subject to the following limitations:

- The socio-economic baseline section is based on a desktop review of available information sourced from the various sources outlined in section 6.1. While some data outlined in these sources might not contain the latest statistical data, sufficient information was secured to establish a baseline that is reasonably accurate, allowing for the establishment of trends.
- A desktop assessment of sensitive receptors was undertaken by examining information available on Google Earth; findings of site visits undertaken by the Visual; Heritage; Terrestrial Biodiversity; and Wetland specialists; and reviewing the record of consultations with key stakeholders regarding land use arrangements and impact identification referred to in section 6.2.

³⁹ IFC Guidance Note 1 (GN1) https://www.ifc.org/wps/wcm/connect/6df1de8f-2a00-4d11-a07c-c09b038f947b/GN1_English_06142021_FINAL.pdf?MOD=AJPERES&CVID=nXqn5Ts (accessed 21 August 2022) 2.

⁴⁰ IFC https://www.ifc.org/wps/wcm/connect/321a0a72-3278-4c77-bd3f-6d31f5decd55/Updated_GN4-2012.pdf?MOD=AJPERES&CVID=nXqnbLh (accessed 21 August 2022).

⁴¹ As above.

- Comments received during the site visit, interviews and public participation process will provide valuable information regarding concerns of I&APs.

7. POLICY, ADMINISTRATIVE AND LEGAL FRAMEWORK

The legal, policy and administrative framework plays an important role in determining the potential social impacts associated with a proposed development. As such, an important component of an SIA is to assess a proposed development to determine its fit with relevant legislation, planning and policy documents. Where a proposed project is mis-aligned with prevailing legislation, policies, principles and guidelines, it should not be supported. In preparing this SIA, various sources described below were consulted.

7.1 Constitution of the Republic of South Africa, 1996

The Constitution, which is the supreme law in South Africa, contains a substantive environmental right which includes a right to 'secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development'.⁴² The Constitution also provides for procedural rights of access to information;⁴³ and just administrative action.⁴⁴ These constitutional rights find expression in various statutes that regulate development projects and decision-making such as the Promotion of Administrative Justice Act 3 of 2000; Promotion of Access to Information Act 2 of 2000; National Environmental Management Act 107 of 1998 (NEMA); and the various specific environmental management acts (SEMAS).⁴⁵

The Constitution furthermore enshrines a right to equality which includes a prohibition against unfair discrimination; a right to human dignity; a right to life; a prohibition against forced labour; and a right to fair labour practices.⁴⁶ To give expression to these rights within the context of the employer/employee relationship, the Labour Relations Act 66 of 1995; and Employment Equity Act 55 of 1998 were enacted.

Rights enshrined in the Constitution bind the legislature; the executive; the judiciary; all organs of state; and natural or juristic persons to the extent applicable.⁴⁷ These right may also be directly enforceable in certain circumstances.⁴⁸ As such, all conduct or decisions that may have an impact on employees; contractors; or communities must comply with rights enshrined in the Constitution.

7.2 National Energy Act 34 of 2008

The National Energy Act 34 of 2008 (NEA) was enacted, amongst other reasons, 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

⁴² Constitution of the Republic of South Africa, 1996 (Constitution) SS 2 & 24. The World Commission on Environment and Development 'Our Common Future: Report of the World Commission on Environment and Development' (Brundtland Report) (1987). Describes sustainable development as follows:

a process of change in which the exploitation of resources; the direction of investments; the orientation of technological development; and institutional change are all in harmony and enhance both current and future potential to meet human needs and aspirations.

⁴³ Constitution (note 42 above) S 32 (1) provides that:

Everyone has the right of access to

(a) any information held by the State; and

(b) any information that is held by another person and that is required for the exercise or protection of any rights.

⁴⁴ Constitution (note 42 above) S 33(1) provides that '[e]veryone has the right to administrative action that is lawful, reasonable and procedurally fair'.

⁴⁵ National Environmental Management Act 107 of 1998 (NEMA) S 1 lists various Specific Environmental Management Acts (SEMAS) which include: the NWA; the NEMPAA; the NEMBA; the NEMAQA; and the NEMWA. The definition of SEMAs includes any regulation or other subordinate legislation made in terms of these Acts.

⁴⁶ Constitution (note 42 above) S 9, 10, 11, 13 and 23.

⁴⁷ Constitution (note 42 above) S 8(1)-(2).

⁴⁸ Constitution (note 42 above) S 38.

management requirements and interactions amongst economic sectors; to provide for energy planning, increased generation and consumption of renewable energies ...'.⁴⁹

7.3 National Environment Management Act 107 of 1998

The NEMA is South Africa's framework environmental legislation. NEMA outlines environmental management principles that seek to pursue and give content to the principle of sustainable development. As noted in the Guideline on Need and Desirability, sustainable development implies the selection and implementation of a development option, which allows for appropriate and justifiable social and economic goals to be achieved, based on the meeting of basic needs and equity, without compromising the natural system on which it is based.⁵⁰ Table 24 provides a summary of questions that relate to the NEMA environmental management principles and the sections of this SIA in which these questions are addressed.

7.4 National Water Act 36 of 1998

The National Water Act 36 of 1998 (NWA) outlines the following key strategic objectives which may be relevant to an SIA. The NWA was enacted to:⁵¹

- Meeting basic needs of current and future generations.
- Promoting equitable access to water.
- Redressing the results of past racial and gender discrimination.
- Promoting the efficient, sustainable and beneficial use of water in the public interest.
- Facilitating, social and economic development.
- Providing for the growing demand for water.

The proposed project may require a WUL under the section 21 of the NWA.⁵² The objectives of the NWA listed above may therefore also be applicable.

7.5 National Development Plan

The National Development Plan 2030 (NDP) aims to eliminate poverty and reduce inequality by 2030.⁵³ As part of this overarching goal, Chapter 5 of the NDP highlights the need for targeted interventions to ensure environmental sustainability and an equitable transition to a low-carbon economy. This includes incorporating at least 20 000MW of additional renewable energy sources, such as solar PV, in the energy mix.⁵⁴ The NDP takes cognisance of the anticipated solar energy development potential in the Northern Cape, noting that this area has 'proven potential to create green jobs'.⁵⁵ The proposed project is therefore broadly aligned with the vision of the NDP and could contribute to the goal of transitioning to a low-carbon economy.

7.6 National Infrastructure Plan 2050

As part of the NDP vision of achieving inclusive growth, the National Planning Commission (NPC) recently undertook a review of public sector and state-owned enterprises (SOEs) infrastructure delivery and performance against stated NDP investment-to-GDP targets.⁵⁶ It concluded that public sector infrastructure

⁴⁹ National Energy Act 34 of 2008 (NEA) Preamble.

⁵⁰ DEA (note 2 above) 7.

⁵¹ National Water Act 36 of 1998 (NWA) s 2(a) – (c).

⁵² NWA (note 51 above) S21(c) impeding or diverting the flow of water in a watercourse; and (i) altering the bed, banks, course or characteristics of a watercourse.

⁵³ National Development Plan 2030 (NDP), National Planning Commission, Department: The Presidency, Republic of South Africa 24.

⁵⁴ NDP (note 53 above) 64.

⁵⁵ NDP (note 53 above) 281,

⁵⁶ National Infrastructure Plan 2050 (NIP 2050) Phase I, GN 1874 published in GG 46033 of 11 March 2022 6. The review was concluded in 2020. The NDP targets a 30% investment-to-GDP ratio, one-third of which would be delivered by the state.

investment is unlikely to meet NDP goals and provided concrete ‘course-correction’ suggestions.⁵⁷ These suggestions are outlined in the National Infrastructure Plan 2050 (NIP 2050) Phase 1 document, published in March 2022.⁵⁸ The NIP 2050 identifies key steps for improving public infrastructure delivery, leading to both short and short and long-term impacts.⁵⁹ Phase 1 of NIP 2050 focusses on four ‘mission critical’ infrastructure areas including energy, freight transport, water, and digital infrastructure.⁶⁰ The NIP 2050 outlines changes to strengthen and augment government’s Strategic Integrated Projects (SIPs) relevant to the four infrastructure areas, as well as applicable action plans.⁶¹ Of relevance to the current SIA, is the dominant role that renewables, especially solar and wind, will play in South Africa’s ‘least-cost energy mix’.⁶² The NIP 2050 details key energy specific strategic goals and how the goals will be achieved.⁶³ The following top-priority energy SIPs listed in the NIP 2050 include:⁶⁴

- SIP 8 which includes green energy projects.
- SIP 9 which includes the expansion of electricity generation capacity, with attention to a low-carbon energy transition.
- SIP 10 which includes the expansion of electricity transmission and distribution networks.
- SIP (no 20) includes the following:
 - Emergency or Risk Mitigation Power Purchase Procurement Programme (2,000 MW) – national.
 - Embedded Generation Investment Programme (EGIP) (400 MW) – national.

To achieve its vision for energy infrastructure, a revision of the Integrated Resources Plan (IRP) described below will be required. The IRP will need to be extended to 2050 with an update to medium-term targets reflecting a focus on sustainability and least cost.⁶⁵

7.7 Integrated Resource Plan

The IRP published by the Minister of Mineral Resources and Energy in 2019 is an ‘electricity infrastructure development plan based on least-cost electricity supply and demand balance, taking into account security of supply and the environment.’⁶⁶ The IRP indicates that there is an electricity supply gap of approximately 6000 MW of solar PV that will need to be filled by new additional capacity not already committed/contracted.⁶⁷ It further recognises solar PV, wind and CSP with storage as an opportunity to diversify South Africa’s energy mix; to produce distributed generation and to provide off-grid electricity; potentially create new industries; promote job creation; and localisation across the energy value chain.⁶⁸

7.8 Just Transition Framework: Final Report and Recommendations (July 2022)

Under the auspices of the Presidential Climate Commission (PCC), an independent, multistakeholder body established by President Cyril Ramaphosa with the goal of overseeing and facilitating a just and equitable transition towards a low-emissions and climate-resilient economy, the PCC recently released its framework report for a just energy transition in South Africa.⁶⁹ The document lists a need for clear political support for,

⁵⁷ As above.

⁵⁸ As above.

⁵⁹ As above.

⁶⁰ As above.

⁶¹ NIP 2050 (note 56 above) 6 & 15, 21-24.

⁶² NIP 2050 (note 56 above) 8.

⁶³ NIP 2050 (note 56 above) 21 – 24.

⁶⁴ NIP 2050 (note 56 above) 23.

⁶⁵ NIP 2050 (note 56 above) 5.

⁶⁶ Integrated Resource Plan 2019, GN 1360 published in GG 42784 of 18 October 2019 (IRP) 8.

⁶⁷ IRP (note 66 above) Table 5, 42.

⁶⁸ IRP (note 66 above) Table 5, 13.

⁶⁹ Just Transition Framework: Final Report and Recommendations (July 2022)

<https://pcccommissionflow.imgix.net/uploads/documents/A-Just-Transition-Framework-for-South-Africa-with-dedication-FSP-002.pdf> (accessed 21 August 2022).

and implementation of an accelerated renewable energy build at a scale that allows for local manufacturing chains to develop, supported by an updated IRP.⁷⁰ Key policy areas associated with a just transition include a need to for skills development and capacity building within the renewable energy and battery manufacturing sectors.⁷¹

7.9 Northern Cape, Office of the Premier, Strategic plan 2020/25

To ensure alignment with various national and provincial strategic plans and goals, the Northern Cape Province Office of the Premier published a strategic plan for the 2020-2025 period.⁷² The NC OTP Strategic Plan is aligned with, and intended to implement the following provincial strategic plans:⁷³

- Northern Cape Provincial Growth and Development Plan (NCPGDP).
- Northern Cape Provincial Medium Term Strategic Framework Programme of Action (MTSF POA) 2019-2024.
- Provincial Government 5-year Implementation Plan (5YIP).

The NC OTP Strategy lists finalisation of the Northern Cape Renewable Energy Strategy / Provincial Energy Strategy given the high potential for the solar renewable energy sector to attract investment to the Province.⁷⁴

7.10 Northern Cape Provincial Spatial Development Framework

The Northern Cape Provincial Development and Resource Management Plan / Provincial Spatial Development Framework (NCPSPDF) approved in 2012 is a statutory document intended to direct spatial land-use planning to promote environmental, economic, and social sustainability through sustainable development. It provides a legal basis to direct provincial government programmes and projects. It provides a framework for integrated land-use planning within the province. The NCPSPDF highlights the potential of the energy sector to stimulate economic growth; reduce greenhouse emissions through renewable energy sources; and the need for targeted investment in renewable energy infrastructure.⁷⁵

The NCPSPDF lists the following key energy objectives that relate specifically to renewable energy:⁷⁶

- Advancing the development of renewable energy supply. Large-scale renewable energy supply schemes are crucial for diversifying domestic energy supplies, avoiding energy imports, and mitigating negative environmental impacts.
- Develop and implement innovative new technology solutions to expand access to reliable, sustainable, and cost-effective energy services, with the aim of achieving sustainable economic development and growth. The objectives of assuring supply, providing energy services, combating climate change, avoiding air pollution, and achieving sustainable development in the province offer opportunities and synergies that require local, provincial, and private sector collaboration for planning.

With a goal of promoting development of renewable energy sources, including solar, the NCPSPDF set down the following policy principles:⁷⁷

⁷⁰ Just Transition Framework (note 69 above) 15.

⁷¹ Just Transition Framework (note 69 above) 16.

⁷² Northern Cape, Office of the Premier, Strategic plan 2020/25 <http://premier.ncpg.gov.za/index.php/resource/more-info/strat-plan?download=71:sp-2020-2025-otp-northern-cape> (accessed 5 August 2022) (NC OTP Strategic Plan).

⁷³ NC OTP Strategic Plan (note 72 above) 3.

⁷⁴ NC OTP Strategic Plan (note 72 above) 20.

⁷⁵ Northern Cape Provincial Development and Resource Management Plan / Provincial Spatial Development Framework (NCPSPDF) (August 2012) section B14.4.

⁷⁶ NCPSPDF (note 75 above) section C8.2.3.

⁷⁷ NCPSPDF (note 75 above) section C8.3.3.

- Appropriate financial mechanisms must be used to encourage the development of sustainable renewable energy developments.
- Pricing policies need to take into account all economic, social, and environmental costs and benefits of proposed developments.
- Access to basic services should be equitable in order to meet human needs and promote human well-being. Each generation owes it to future generations not to impede their capacity to secure their own well-being.
- Government recognizes its shared responsibility for global and regional concerns and acts in accordance with the principles outlined in relevant policies and applicable international and regional agreements.
- Within the Constitutional framework of cooperative governance, government will delegate energy policy objectives to the institutions and areas of government most capable of achieving those objectives.
- The development, adoption, and ongoing refinement of an efficient legislative system for promoting the use of renewable energy sources is a task that must be completed.
- It is imperative that the general public be educated about the merits and potential of renewable sources of energy.
- In accordance with the Sustainable Development Initiative, or any other analogous approach, the development of renewable energy systems is to be utilised as a tool for economic development throughout the province.
- Prior to being exported, renewable energy produced in the province must first be utilized to meet provincial demands.

7.11 ZF Mgcawu District Municipality Integrated Development Plan

The ZF Mgcawu District Municipality Final Integrated Development Plan 2022/2023 (2022 – 2027) lists facilitation of sustainable regional land use, economic, spatial and environmental planning as a key strategic objective of the municipality.⁷⁸ The aim of this broad objective is to support and guide the development of a diversified, resilient and sustainable district economy.⁷⁹ To further these goals and objectives, the municipality intends to establish a vehicle to ensure co-operation amongst local businesses such a District LED Forum.⁸⁰ The municipality furthermore intends to both invest in, and take steps to encourage investment in renewable energy developments in order to contribute towards the national goal of transitioning to a lower carbon economy.⁸¹

7.12 Dawid Kruiper Local Municipality Integrated Development Plan

In its Draft Integrated Development Plan for 2022/2027, the DKLM lists the renewable energy sector as one of the key drivers of economic development in the local municipality.⁸² The DKLM Draft IDP notes the importance of the Uppington Solar Special Economic Zone (SEZ) positioning itself to provide businesses and investors with prime locations for renewable energy developments.⁸³ The IDP lists a number of ‘main development thrusts’ that include:⁸⁴

⁷⁸ ZF Mgcawu District Municipality Final Integrated Development Plan 2022/2023 (2022 – 2027) 10-11 <https://www.zfm-dm.gov.za/documents/?dir=4651> (accessed 21 August 2022).

⁷⁹ As above.

⁸⁰ As above.

⁸¹ ZF Mgcawu IDP (note 78 above) 39 - 40.

⁸² Dawid Kruiper Local Municipality Draft Integrated Development Plan 2022/2027 (DKLM Draft IDP) http://dawidkruiper.xyz/wp-content/uploads/2020/01/DRAFT-2022_2027-FIVE-YEAR-IDP.FINAL-DRAFT-2.pdf (accessed 21 August 2022) 93.

⁸³ DKLM Draft IDP (note 82 above) 95.

⁸⁴ As above.

- **Thrust 2:** Manufacturing which focused on value adding of agricultural products, mining products, construction and renewable energy products.
- **Thrust 6:** Construction which is an integral part of economic activity in the DKLM through production of building materials, renewable energy plant equipment, steel pipe manufacture, manufacture of storage equipment, increased demand for housing in urban areas, construction of shopping malls and industrial space both within and beyond the municipality. DKLM is responsible for nearly half of all construction related activities in the ZF Mgcawu District.
- **Thrust 9:** Renewable energy and in particular, the Upington REDZ given that the town is ideally situated to exploit an optimal power per unit area of solar radiation for solar energy production.

Key priority areas and corresponding development priorities identified in the IDP update process that may be applicable to the proposed project are listed in Table 4.

Table 4: DKLM IDP KPAs and development priorities

Key priority area	Development priority	Development objectives
Spatial Development Framework	Spatial Development, Town Planning And Land Use Management	<ul style="list-style-type: none"> ▪ Develop, manage and maintain essential bulk water infrastructure and facilities to accommodate the aspirations, needs and pressures of present and future industries, businesses and dependent communities. ▪ Develop, manage and maintain necessary infrastructure and facilities required to improve the provision of water services.
Service Delivery and infrastructure development	Sewerage	<ul style="list-style-type: none"> ▪ Develop, manage and maintain essential bulk sewerage infrastructure and facilities to accommodate the aspirations, needs and pressures of present and future industries, businesses and dependent communities. ▪ Develop, manage and maintain necessary infrastructure and facilities required to improve the provision of sewerage services.
	Human settlements and housing	<ul style="list-style-type: none"> ▪ Eradicate housing backlogs in municipal area. ▪ Provide for sustainable human settlements (housing).
	Energy and electricity	<ul style="list-style-type: none"> ▪ Provide, manage and maintain essential infrastructure required to improve the provision of electrical services.
	Roads, transport and stormwater drainage	<ul style="list-style-type: none"> ▪ Develop, manage and maintain necessary Road, Transport and Storm Water infrastructure and facilities required to improve transportation in, and Aesthetic qualities of urban areas.
	Sanitation, waste management and waste removal	<ul style="list-style-type: none"> ▪ Regulate and manage waste disposal to prevent pollution of the natural environment and natural resources.
	Community development and facilities	<ul style="list-style-type: none"> ▪ Pro-active prevention, mitigation, identification and management of environmental health, fire and disaster risks. ▪ Provide safety to communities through law enforcement services and through legislative requirements. ▪ Provide equal access to sport, park, recreational facilities and other public amenities to all residents.

Local economic development	Economic growth and job creation	▪ Create an environment that promotes the development of a diversified and sustainable economy
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7.13 Dawid Kruiper Local Municipality Spatial Development Framework

The DKLM Spatial Development Framework (SDF) records that the DKLM by Council Resolution endorsed the establishment of a Solar SEZ in 2014.⁸⁵ The SDF notes that the Upington SEZ is a business entity of the Northern Cape provincial government, responsible for a combination of industrial activities including renewable and solar energy, mining, agricultural, aeronautical and various other sectors.⁸⁶ The SDF Implementation Plan indicates that the area in which the proposed project site is located falls within the Upington Renewable Energy Park (REP).⁸⁷ The project site is located within the C.a.2 Agriculture (Ward 11) Spatial Planning Category.

7.14 United Nations Sustainable Development Goals

The United Nations Development Programme (UNDP) Sustainable Development Goals (SDG) Impact Standards were also considered in preparing this SIA.⁸⁸ The 2030 Agenda for Sustainable Development and its 17 SDGs are the world's roadmap for a better and more sustainable future for everybody. They target poverty, inequality, climate change, environmental degradation, peace and justice. All 193 UN Member States committed to the SDGs, which rely on both state and the private sector to solve sustainable development concerns. The SDGs break down silos between actors and geographies, creating space and opportunities for new ways of working towards solutions, including working collaboratively with a broader range of partners and constituencies to operate more sustainably and contribute positively to sustainable development and the UN Sustainable Development Goals (SDGs).⁸⁹

During this assessment potential social impacts associated with the proposed project will be identified, highlighting linkages to the SDGs.

The following SDGs may be applicable to the proposed project:

SDG 1

End poverty in all its forms everywhere.

Target 1.4: By 2030, ensure that all men and women, in particular the poor and the vulnerable, have equal rights to economic resources, as well as access to basic services, ownership and control over land and other forms of property, inheritance, natural resources, appropriate new technology and financial services, including microfinance.

SDG 3

Ensure healthy lives and promote well-being for all at all ages.

Target 3.3 By 2030, end the epidemics of AIDS, tuberculosis, malaria and neglected tropical diseases and combat hepatitis, water-borne diseases and other communicable diseases

⁸⁵ DKLM SDF (note 27 above) 30.

⁸⁶ DKLM SDF (note 85 above) 53.

⁸⁷ DKLM SDF Implementation Plan <http://dawidkruiper.xyz/wp-content/uploads/2015/03/SDF-Implementation-plan-2020.pdf> (accessed 21 August 2022).

⁸⁸ United Nations Development Programme (UNDP) SDG Impact website <https://sdgimpact.undp.org/assets/About-the-SDG-Impact-Standards.pdf> (accessed 21 August 2022).

⁸⁹ As above.

SDG 4

Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all.

Target 4.4: By 2030, substantially increase the number of youth and adults who have relevant skills, including technical and vocational skills, for employment, decent jobs and entrepreneurship.

SDG 5

Achieve gender equality and empower all women and girls.

Target 5.1: End all forms of discrimination against all women and girls everywhere.

Target 5.5: Ensure women's full and effective participation and equal opportunities for leadership at all levels of decision-making in political, economic and public life.

SDG 7

Ensure access to affordable, reliable, sustainable and modern energy for all.

Target 7.2: By 2030, increase substantially the share of renewable

Target 7.b: By 2030, expand infrastructure and upgrade technology for supplying modern and sustainable energy services for all in developing countries, in particular least developed countries, small island developing States and landlocked developing countries, in accordance with their respective programmes of support energy in the global energy mix

SDG 8

Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all.

Target 8.4: Improve progressively, through 2030, global resource efficiency in consumption and production and endeavour to decouple economic growth from environmental degradation, in accordance with the 10-Year Framework of Programmes on Sustainable Consumption and Production, with developed countries taking the lead.

Target 8.8: Protect labour rights and promote safe and secure working environments for all workers, including migrant workers, in particular women migrants, and those in precarious employment.

SDG 9

Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation.

Target 9.4: By 2030, upgrade infrastructure and retrofit industries to make them sustainable, with increased resource-use efficiency and greater adoption of clean and environmentally sound technologies and industrial processes, with all countries taking action in accordance with their respective capabilities.

SDG 10

Reduce inequality within and among countries.

Target 10.2: By 2030, empower and promote the social, economic and political inclusion of all, irrespective of age, sex, disability, race, ethnicity, origin, religion or economic or other status.

SDG 12

Ensure sustainable consumption and production patterns.

Target 12.7: Promote public procurement practices that are sustainable, in accordance with national policies and priorities.

SDG 13

Take urgent action to combat climate change and its impacts.

Target 13.2 Integrate climate change measures into national policies, strategies and planning.

SDG 16

Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels.

Target 16.1: Significantly reduce all forms of violence and related death rates everywhere.

Target 16.10: Ensure public access to information and protect fundamental freedoms, in accordance with national legislation and international agreements.

The above SDFs are referenced throughout the remaining sections of this report, where applicable.

8. SOCIO-ECONOMIC CONTEXT AND BASELINE DATA

This section provides an outline of the socio-economic context in which the proposed project will be developed. Baseline data in this section was sourced by way of a desk-top review of available on-line sources and information provided by Eskom.

8.1 Institutional arrangements

The proposed project is located within the jurisdiction of the DKLM which is a Category-B municipality.⁹⁰ The municipality is comprised of 17 wards and is governed by way of an Executive Mayoral System in conjunction with a ward-participatory system.⁹¹ The DKLM Municipal Council is comprised of 32 members which includes the Executive Mayor, Speaker, 17 Wards Councillors and 13 Proportional Representative Councillors.⁹² The Executive Mayor is the Head of a Mayoral Committee which comprises six Councillors who are heads of various departments. The majority party in the Council is the African National Congress (ANC).⁹³

The DKLM occupies an area of 44 399km² and is one of five municipalities in the district (Figure 3).⁹⁴ As indicated above in Figure 7, the local study area does not appear to be subject to the jurisdiction of a Tribal Council.

⁹⁰ Local Government Handbook (note 26 above). A Category-B municipality is a municipality that shares executive and legislative authority with the relevant Category-C (District) municipality within whose area it falls.

⁹¹ Demarcation Board <https://www.demarcation.org.za/ward-delimitation-2019-2020/> (accessed 21 August 2022) and DKLM Website <http://dawidkruiper.xyz/council/> (accessed 21 August 2022).

⁹² DKLM Website <http://dawidkruiper.xyz/council/> (accessed 21 August 2022).

⁹³ As above.

⁹⁴ Local Government Handbook (note 26 above).

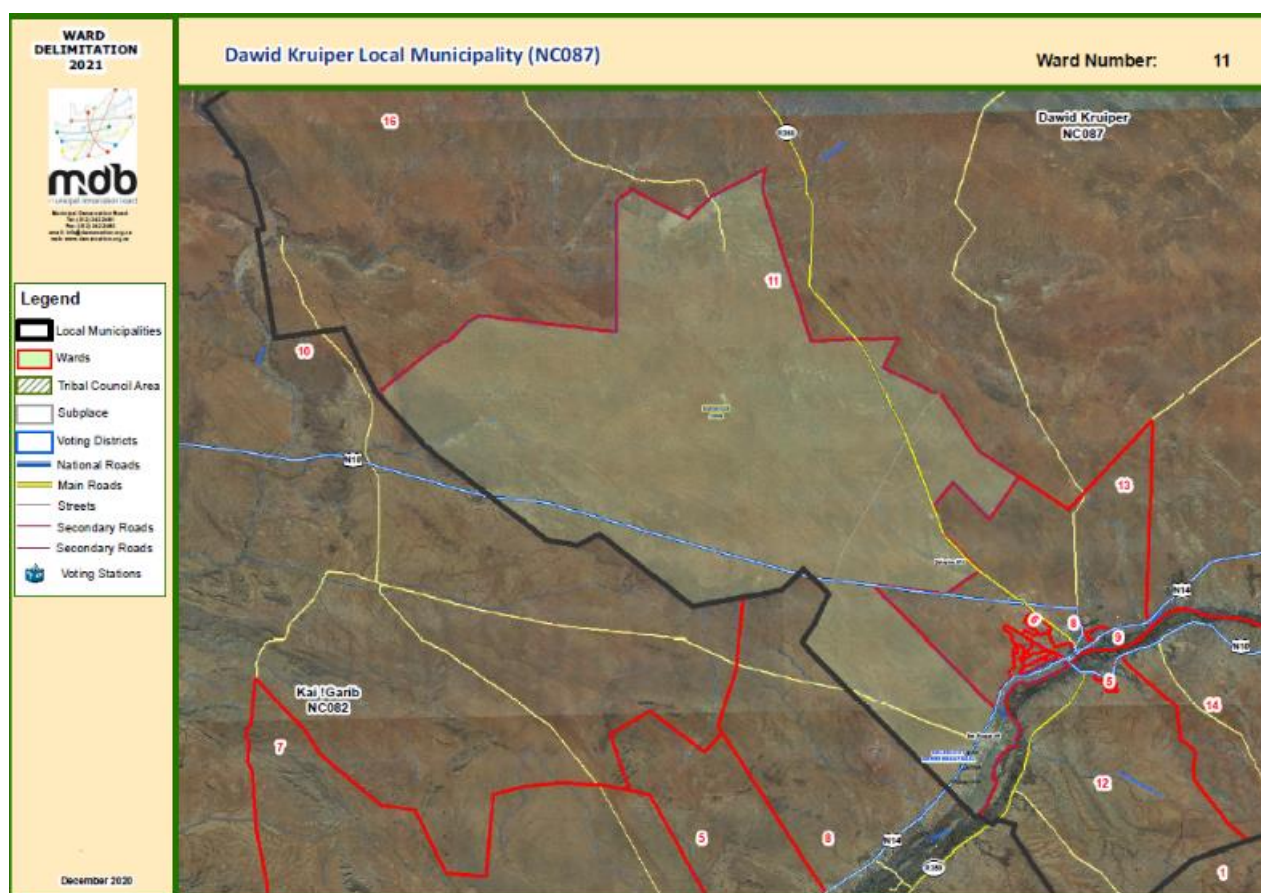


Figure 7: DKLM Ward 11 (Municipal Demarcation Board 2021)

8.2 Population, race and gender profile

Demographic information in this section was sourced from Statistics South Africa (Stats SA) Local Municipality Population Estimates 2002 – 3030 (MYPE 2021).⁹⁵ Table 5 provides an overview of key demographic indicators for ZF Mgcawu District, DKLM and KGLM. The data is based on estimates for 2016 and 2021.

Table 5: Key demographic indicators for ZF Mgcawu District and DKLM

Indicator	ZF Mgcawu		DKLM		KGLM	
	2016	2021	2016	2021	2016	2021
Total population	262 067	283 313	109697	118259	74710	80981
% population increase	8.11		7.8		8.39	
% of population below the age of 15	27.16	26.42	29.08	28.53	22.24	20.96
% of population between 15 and 64	66.96	67.18	64.31	64.15	72.29	73.37
% of population aged 65+	5.88	6.39	6.61	7.31	5.48	5.67
Dependency ratio	49.34	48.84	55.50	55.88	38.34	36.29
Child dependency ratio	40.55	39.33	45.22	44.48	30.76	28.56
Old age dependency ratio	8.78	9.52	10.28	11.40	7.58	7.73
% of population male / female	49.97 / 50.03	50.06 / 49.94	48.51 / 51.49	48.34 / 51.66	51.50 / 48.50	52.00 / 48.00

Source: Stats SA MYPE 2021

⁹⁵ Stats SA https://www.statssa.gov.za/publications/P0302/LM_MYPE_2021%20series.xlsx (accessed 23 July 2022).

As seen in Table 5, the estimated total population of ZF Mgcawu, DKLM and KGLM increased between 7.8 and 8.39% between 2016 and 2021. The ratio of males versus females remained largely the same over the 2016 to 2021 period for ZF Mgcawu, DKLM and KGLM.

In all three municipalities there was an increase in the old age dependency ratio and a decrease in the child dependency ratio.⁹⁶ In DKLM, the old age dependency ratio increased by 1.12%. This trend could be attributed to declining fertility rates and increased life expectancy as a result of improved access to anti-retroviral (ARV) treatment which has enabled HIV positive people to live longer.⁹⁷ The overall total dependency ratios for ZF Mgcawu District and KGLM has decreased slightly which represents a positive socio-economic trend in the district. The converse is however apparent in DKLM, which had a slight overall increase, suggesting that the number of elderly people that depend on the working age population (aged between 15 and 64) is increasing.

Figure 8 provides an overview of the race composition of the Northern Cape Province, ZF Mgcawu District, DKLM and KGLM as recorded in the Stats SA Community Survey 2016. While the predominant race group in ZF Mgcawu, DKLM and ZF Mgcawu District is Coloured, followed by Black African, the Northern Cape Province by contrast has an almost equal percentage of Black African and Coloured people that comprise the total population. Whites comprise a higher percentage of the population in DKLM than in KGLM (11% and 6.74% respectively).

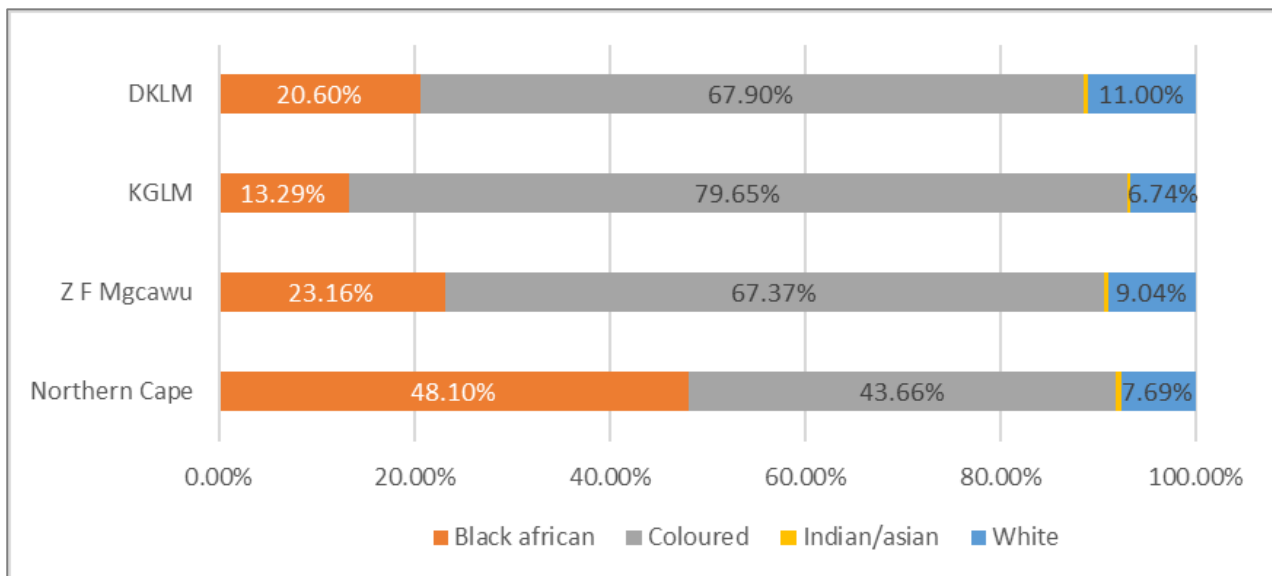


Figure 8: Population groups

Source: Stats SA Community Survey, 2016

According to the Stats SA Community Survey 2016, the dominant language in both DKLM and KGLM is Afrikaans (89.54% and 88.61% respectively). Other languages most spoken in households include IsiXhosa (3.39% of DKLM households) and Setswana (6.62% of KGLM and 2.33% of DKLM households). English is spoken by only 1.5% and 0.79% of DKLM and KGLM households respectively.

8.3 Health and HIV/AIDS Prevalence

According to Stats SA Mid-year Population Estimates for 2022, life expectancy in the Northern Cape Province has increased steadily for both males and females as seen in Figure 9. This trend is likely to

⁹⁶ The dependency ratio is an indicator of the potential dependency burden of children (0-14) and the elderly (65+) on those who are of economically productive ages (15-64).

⁹⁷ Stats SA https://www.statssa.gov.za/publications/P0302/Mid%20year%20estimates%202021_presentation.pdf (accessed 23 July 2022).

increase in the foreseeable future. Life expectancy for males in the Northern Cape Province has however been slightly below the national average for males since 2001. Female life expectancy in the province kept pace with the national average for females up until 2011. Since 2011, females in the Northern Cape Province have a shorter life expectancy than the national average for females (Figure 9).

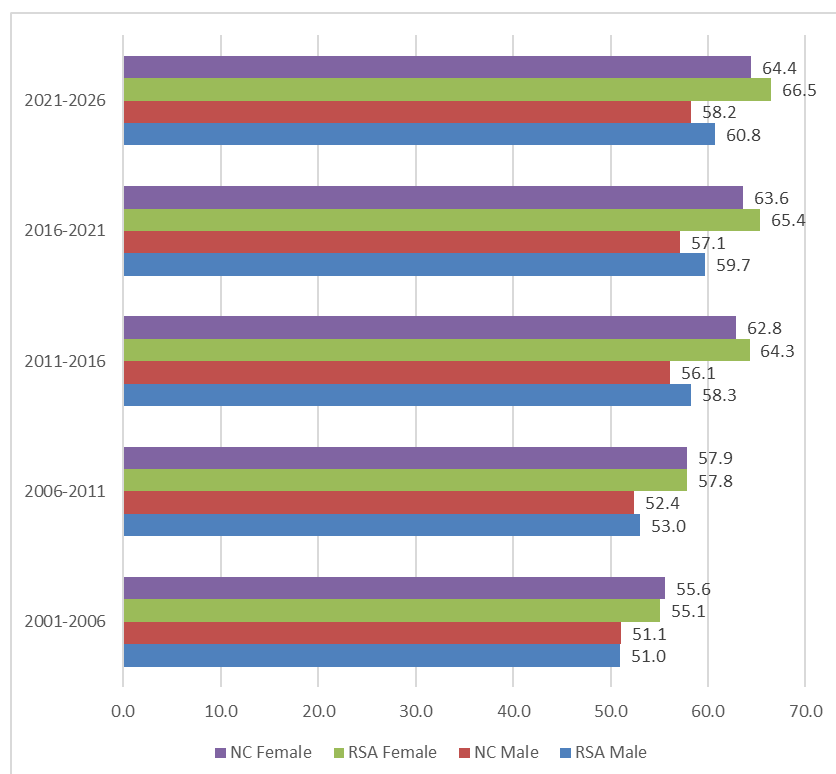


Figure 9: Life expectancy, Northern Cape Province vs RSA average

Source: Stats SA MYPE 2022

According to Stats SA 2018 data, the primary natural cause of death in the ZF Mgcawu District is Tuberculosis.⁹⁸ Other leading causes of death in the ZF Mgcawu District are listed in Table 6.

Table 6: Leading causes of death in ZF Mgcawu district in 2018

Causes of death	Total deaths in 2018	Percentage of all deaths
Tuberculosis (TB)	232	8.08%
Hypertensive diseases	194	6.75%
Chronic lower respiratory diseases	184	6.40%
HIV disease	154	5.36%
Influenza and pneumonia	144	5.01%
Diabetes mellitus	139	4.84%
Certain disorders involving the immune mechanism	137	4.77%
Cerebrovascular diseases	129	4.49%
Other forms of heart disease	83	2.89%
Ischemic heart disease	80	2.78%
Other natural causes	1109	38.60%
Non-natural (e.g. accidents, homicides, suicides, etc.)	288	10.02%
All causes	2873	

Source: Stats SA

⁹⁸ Stats SA Mortality and Causes of Death 2018 Statistical Release <https://www.statssa.gov.za/publications/P03093/P030932018.pdf> (accessed 28 July 2022) 140.

In a 2019 study commissioned by Anglo-American Group and undertaken by a consortium of researchers under the auspices of London School of Hygiene and Tropical Medicine, key health concerns and priority needs in various mining communities, including those situated in the ZF Mgcawu District, were identified. The study involved a review of available health data benchmarked against UN Sustainable Development Goal 3 (SDG3); stakeholder workshops; and key informant interviews between June and August 2019.⁹⁹ Key findings from this study are summarised below in Table 7.¹⁰⁰ The data shows that ZF Mgcawu District is performing well below the SDG 3.1 and 3.3 targets in relation to maternal mortality and TB incidence respectively. It is also noteworthy that alcohol consumption and road traffic accidents in the Northern Cape Province are significantly higher than the national average.

Table 7: Priority SDG3 indicators (2019)

Key health indicators	South Africa	Northern Cape	ZF Mgcawu District
Maternal mortality ratio (number of deaths per 100,000 live births). <i>Note SDG 3.1 target is <70 deaths per 100,000 live births</i>	138	65.9	87.4
TB incidence (number of cases per 100,000). <i>Note: SDG 3.3 target is <20 per 100,000</i>	567	867.3	938.2
Alcohol consumption (l of pure alcohol consumed per capita)	Females: 2.7 Males: 16.2	Females: 10.7 Males: 23.3	
Road traffic accident (RTA) mortality (number of deaths per 100,000)	15.94	21.78	

Source: Rice et al. BMC Public Health (2022) 22:68

The ZF Mgcawu District Development Profile 2020 records that there are 52 primary healthcare clinics and hospitals in the District.¹⁰¹ This total is comprised of 15 clinics; six community healthcare centres; 15 satellite clinics; 13 mobile clinics; two district hospitals; and one regional hospital.

8.4 Education levels

Progress in education outcomes, such as a matric pass, is an important indicator of socio-economic development in a region. A matric pass is a foundational step and an important starting point for an individual's future engagement in economic activities. In this regard, the Stats SA QLFS data consistently demonstrates that unemployment rates for people with less than a Grade 12 education are higher than any other group.

Table 8 provides comparative estimated education levels for the total Northern Cape Province, ZF Mgcawu District, DKLM and KGLM populations as per the Stats SA Community Survey 2016. According to these estimates, it is apparent that the DKLM and KGLM population is poorly educated, with less than a third of the total population having attained a matric pass. This suggests a need for interventions in local education and training initiatives.

Table 8: DKLM estimated education levels (2016)

Highest level of education achieved (total population, all age groups)	Northern Cape	ZF Mgcawu District	DKLM	KGLM
No / up to pre-AET level schooling	23.00%	20.75%	20.56%	17.96%
Completed primary	22.22%	22.51%	21.77%	24.72%
Completed some secondary	23.33%	25.58%	24.39%	31.27%
Completed secondary	24.75%	25.96%	27.63%	21.38%
Higher education	4.99%	3.74%	4.31%	2.78%

⁹⁹ B Rice *et al* 'Health and wellbeing needs and priorities in mining host communities in South Africa: a mixed-methods approach for identifying key SDG3 targets' (2022) 22:68 <https://doi.org/10.1186/s12889-021-12348-6> (accessed 28 July 2022) p 2.

¹⁰⁰ Rice (note 99 above) p 7.

¹⁰¹ COGTA (note 22 above) 16.

Source: Stats SA Community Survey 2016

The DKLM Draft IDP notes that there are currently eight high schools and 30 primary schools in the municipality.¹⁰² The following institutions of higher education have campuses or satellite campuses in Upington:¹⁰³

- Upington College for Vocational Education.
- Vaal Triangle University of Technology.
- Universal College Outcomes.
- Technikon SA (UNISA).

Challenges in the area include:¹⁰⁴

- A backlog of school in areas where there are new informal settlements.
- Access to school for children with learning disabilities.
- There is a need for an English medium school and an additional high school.
- Land is required for the development of appropriate Early Childhood Development Centres (ECD).
- Aftercare facilities for learners in informal settlements.

8.5 Employment levels

According to a comparative analysis of municipalities in the ZF Mgcawu District undertaken by the Northern Cape Provincial Treasury, the unemployment rate in //Khara Hais (DKLM) decreased from 26.5% in 2005 to 24.9% in 2015, according to the strict definition of unemployment which excludes discouraged work seekers.¹⁰⁵ In KGLM during this period the unemployment rate decreased from a level of 14.0% to 12.5%.

Unemployment trends relating to race and gender between 2005 and 2015 in //Khara Hais (DKLM) and KGLM are listed in Table 9.¹⁰⁶

Table 9: Race and gender distribution of unemployed people in Khara Hais (DKLM) and KGLM (2005/2015)

Race/gender	Khara Hais (DKLM) % of total unemployed population		KGLM % of total unemployed population	
	2005	2015	2005	2015
African	31.2	21	1.9	1.3
White	4.4	5.5	4.4	3.9
Coloured	31.3	30.2	26.8	25.7
Asian	27	22.8	33.2	24.4
Male	22.8	23.8	13.2	12.1
Female	31.2	26.4	15.1	13.1

Source: NC Provincial Treasury, 2017 citing Global Insights, 2016

The largest single contributor to total employment in KGLM in 2015 was agriculture (over 50%).¹⁰⁷ In DKLM, the community services sector dominated (30.4%) given that Upington is the seat of local and district government.¹⁰⁸

¹⁰² DKLM Draft IDP (note 82 above) 98-99.

¹⁰³ As above.

¹⁰⁴ As above.

¹⁰⁵ Northern Cape Provincial Treasury, Comparative Analysis for ZF Mgcawu District Municipality, 2017 14 Table 3.1. Note that the study was undertaken before the amalgamation of the Mier and //Khara Hais Local Municipalities into the DKLM.

¹⁰⁶ NC Treasury (note 105 above) 15.

¹⁰⁷ NC Treasury (note 105 above) 17.

¹⁰⁸ As above.

8.6 Poverty, development indicators and household income

According to the comparative analysis undertaken by the Northern Cape Provincial Treasury, the Human Development Index (HDI) for //Khara Hais (DKLM) improved between 2005 and 2015 from 0.58 to 0.67.¹⁰⁹ During this period, KGLM also experienced an increase in the HDI from 0.52 to 0.63. The HDI is a composite indicator used by the United Nations (UN) to assess the relative level of socio-economic development in a region. HDI is represented as a value between 0 and 1, with 1 indicating a high level of human development and 0 indicating no human development.

This improvement in HDI must however be understood within the context of prevailing levels of inequality in the region, which indicates that the benefits of socio-economic development are not necessarily experienced by everyone in the municipality. During the 2005 - 2015 period, the Gini coefficient of //Khara Hais (DKLM) improved from 0.609 in 2005 to 0.573 in 2015.¹¹⁰ KGLM experienced a similar trend, with the Gini coefficient improving slightly from 0.587 in 2005 to 0.563 in 2015. The Gini coefficient is an indicator of income or wealth inequality within a population. It ranges between 0 and 1, with 0 indicating complete equality and 1 complete inequality.

As seen in Table 10, the percentage of households earning R3 500 per month or less was 26.69% and 30.18% for DKLM and KGLM respectively. The percentage of people in poverty decreased from a level of 52.1% in 2005 to 34.4% in 2015 for //Khara Hais (DKLM).¹¹¹ In KGLM, the percentage of people in poverty decreased from 53.3% in 2005 to 37.8% in 2015 which signifies a positive socio-economic trend in these local municipalities.¹¹²

Table 10: Annual income distribution data for ZF Mgcawu District, //Khara Hais (DKLM) and KGLM 2015

ANNUAL INCOME	ZF Mgcawu	//Khara Hais (DKLM)	KGLM
0 - 2 400	0.03%	0.02%	0.01%
2 400 - 6 000	0.24%	0.24%	0.13%
6 000 - 12 000	1.71%	1.70%	1.19%
12 000 - 18 000	2.53%	2.49%	2.01%
18 000 - 30 000	5.66%	5.48%	5.37%
30 000 - 42 000	8.50%	7.86%	9.68%
42 000 - 54 000	9.65%	8.90%	11.78%
54 000 - 72 000	11.52%	10.77%	13.70%
72 000 - 96 000	11.60%	10.91%	13.14%
96 000 - 132 000	10.45%	11.52%	12.50%
132 000 - 192 000	11.68%	11.90%	10.58%
192 000 - 360 000	12.75%	13.83%	10.16%
360 000 - 600 000	7.52%	8.08%	5.41%
600 000 - 1 200 000	4.58%	4.86%	3.26%
1 200 000 - 2 400 000	1.33%	1.26%	0.92%
2 400 000+	0.25%	0.19%	0.16%

Source: NC Provincial Treasury, 2017 citing Global Insights, 2016

¹⁰⁹ NC Treasury (note 105 above) 20.

¹¹⁰ NC Treasury (note 105 above) 21.

¹¹¹ NC Treasury (note 105 above) 19.

¹¹² As above.

8.7 Economic profile

According to the DKLM Local Economic Development (LED) Strategy, community services was the largest sector within the municipality, contributing 24.3% of the total Gross Value Added (GVA) followed by the finance (20.0%) and trade (16.5%) sectors.¹¹³

In 2015 //Khara Hais (DKLM) contributed 34.6% to the total ZF Mgcawu GDP, the largest in the district.¹¹⁴ KGLM was the second largest contributor at 24.9%.¹¹⁵ Table 11 details the contributions of //Khara Hais (DKLM) and KGLM to the various economic sector totals in the ZF Mgcawu District in 2015.¹¹⁶

Table 11: Contribution of //Khara Hais (DKLM) and KGLM to ZF Mgcawu economic sector totals in 2015 (constant 2010 prices)

Sector	Contribution to ZF Mgcawu economic sector total in 2015	
	//Khara Hais (DKLM)	KGLM
Finance	50.8%	29.6%
Trade	50.1%	31.7%
Manufacturing	48.6%	30.2%
Transport	46.9%	30.1%
Construction	40.2%	34.9%
Electricity	37.2%	28.6%
Community Services	35.1%	30.1%
Agriculture	34.8%	47.9%
Mining	3.6%	2.6%

Source: NC Provincial Treasury, 2017 citing Global Insights, 2016

8.8 Housing and basic services

The Constitution stipulates that everyone has the right to have access to adequate housing and that the state must take reasonable legislative and other measures within its available resources to achieve the progressive realisation of this right.¹¹⁷ Access to housing also includes access to services such as potable water, basic sanitation, safe energy sources and refuse removal services, to ensure that households enjoy a decent standard of living. This section considers to what extent this has been achieved by reflecting on the latest available information from Quantec Research for 2020; Stats SA 2016 Community Survey; and the Stats SA non-financial census of municipalities, 2019.

8.8.1 Housing

As indicated in Figure 10, which is based on Stats SA Community Survey 2016 data, 66.6% of the DKLM population reside in formal dwellings while 25.7% live in informal dwellings or shacks.¹¹⁸ In KGLM, 82.5% reside in formal dwellings, while 4.7% reside in informal dwellings. Most of the residents of DKLM (53.07%) and KGLM (56.46%) own the properties they live in.

¹¹³ Dawid Kruiper Local Municipality Local Economic Development Strategy for 2019 – 2024 <http://dawidkruiper.xyz/wp-content/uploads/2015/01/LED-Strategy-for-Dawid-Kruiper-Municipality-Final-Final-draft-MAY-EDIT.docx> (accessed 7 August 2022) (DKLM LED Strategy) 34.

¹¹⁴ NC Treasury (note 105 above) 10 Figure 2.1.

¹¹⁵ As above.

¹¹⁶ NC Treasury (note 105 above) 12 Table 2.3.

¹¹⁷ Constitution (note 42 above) S 26.

¹¹⁸ Stats SA Community Survey 2016.

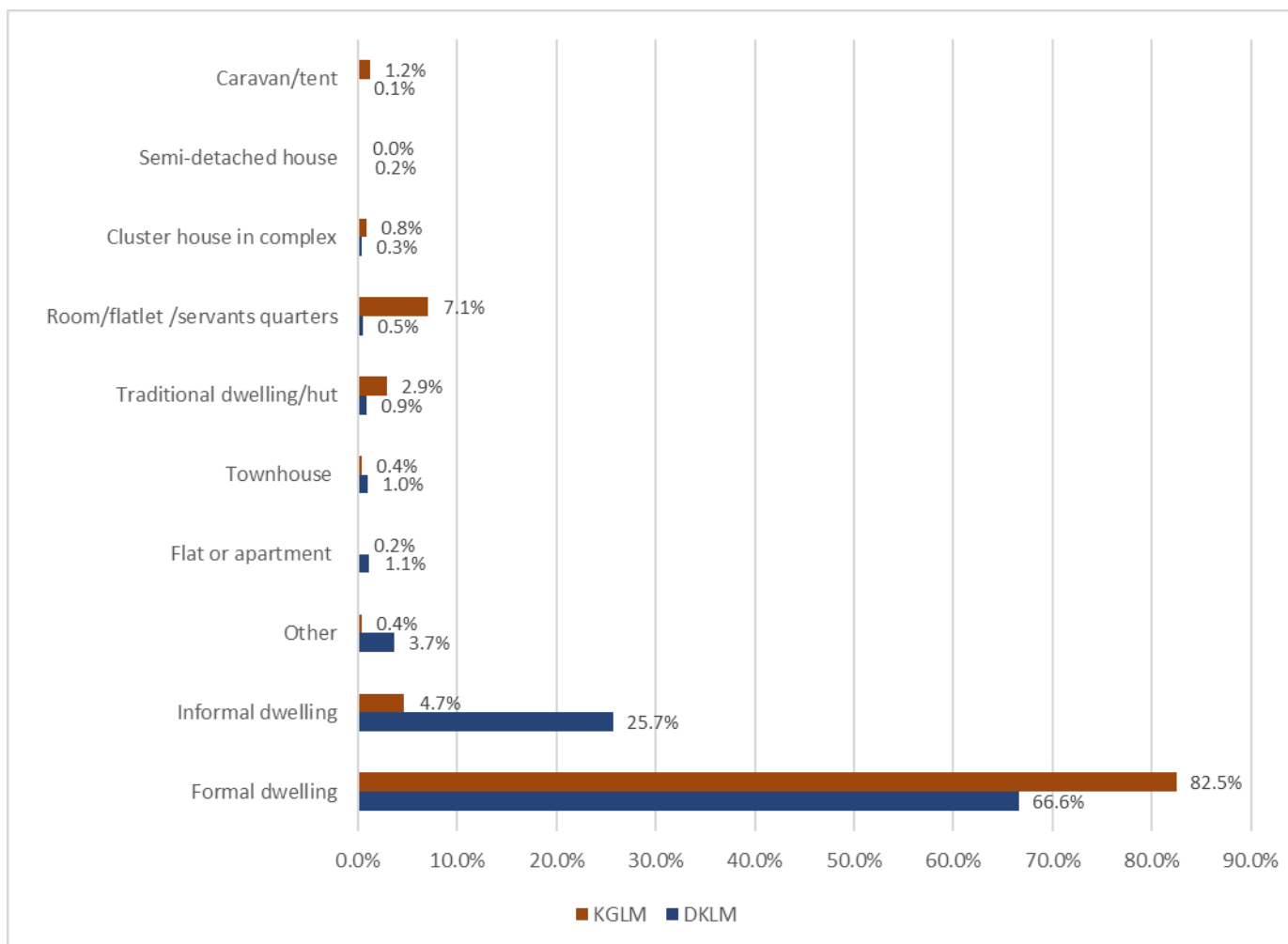


Figure 10 : Main dwelling type in DKLM (2016)

Source: Stats SA Community Survey 2016

The DKLM IDP notes that the municipality aims to service all settlements, but that it faces challenges with staying ahead of the demand, due to the constant influx of new people into the area.¹¹⁹ New developments listed in the DKLM IDP include:¹²⁰

- Servicing of the 100 stands in Noenieput.
- Upgrading of the Kalksloot, Ses Brugge and Klippunt water supply.
- Upgrading of bulk water services for all small settlements.
- Servicing of 1700 stands by the Northern Cape Department of Cooperative Governance, Human Settlements and Traditional Affairs (COGHSTA).
- Upton water scheme assessment to assess future growth and configure to improve management of water provision.
- Augmentation of water supply in Welkom – Connection to the KEWUA system.
- Melkstroom, Dakota, water reticulation services.
- Augmentation of water supply in Swartkopdam – connection from Noenieput.
- Upgrading of the Rietfontein water services for new settlements.

¹¹⁹ DKLM Draft IDP (note 82 above) 57.

¹²⁰ As above.

8.8.2 Basic services

According to Stats SA mid-year population estimates (MYPE) projections for 2022, DKLM is currently comprised of approximately 33 133 households.¹²¹ The number of households increased by around 5.3% from an estimated number of 31 476 in 2020. Table 12 lists basic services available to the estimated 31 476 households in DKLM in 2020.

Table 12: Municipal services provided/available in DKLM (2020)

Service	Domestic units provided in 2020	% of estimated household in 2020
Water inside the yard	25225	80.14%
Water less than 200m from yard	1940	6.16%
Flush toilets connected to public sewerage system	18973	60.28%
Flush toilets connected to septic tank	1825	5.80%
Bucket system	2090	6.64%
Ventilated improved pit latrine system	2341	7.44%
Other	1551	4.93%
Number of domestic units receiving free basic services (indigent support) including water; electricity; sewerage and sanitation; and solid waste management	8300	26.37%

Source: Stats SA Non-Financial Census of Municipalities 2020

Limited information for KGLM was provided in the Stats SA Non-Financial Census of Municipalities 2020. According to the Stats SA Community Survey 2016 data, KGLM has shown improvement in provision of municipal services with 85.15% of the population having access to safe drinking water; 73% of households have access to flush toilets; and 64.3% have weekly municipal refuse removal.

Electricity supply to the populations of ZF Mgcawu District, DKLM and DKLM, according to the Stats SA 2016 Community Survey is provided in Table 13. While DKLM is performing above the district average in respect of all electricity services provided, KGLM is lagging behind, especially in respect of electricity for cooking.

Table 13: Electricity supply within ZF Mgcawu and DKLM

Service provided by municipality in 2016	ZF Mgcawu	DKLM	KGLM
Access to electricity	87.24%	91.52%	83.38%
Electricity from mains for lighting	87.71%	89.30%	85.40%
Electricity from mains for cooking	82.03%	85.09%	75.51%
Electricity from mains for water heating	85.18%	87.44%	82.53%

Source: Stats SA Stats SA Community Survey 2016

As indicated in Table 12 and Table 13, the majority of individuals residing in DKLM have access to water inside the yard; access to flush toilets connected to a sewerage system and electricity supplied either by Eskom or by the Municipality. There is however a large contingent (23.37%) of households in DKLM that rely on indigent support. In the event of a large influx of hopeful job seekers into the area, this number could increase, without a corresponding increase in municipal revenue generation.

Similar challenges are evident in KGLM. As noted in the KGLM IDP, key challenges highlighted by municipal officials and councillors include:¹²²

- Lack of basic services on private land (islands)/ commercial farms.
- Increased complaints about service delivery from residents of farming areas during harvest times, i.e. insufficient water.

¹²¹ Stats SA mid-year population estimates, 2021 https://www.statssa.gov.za/publications/P0302/LM_MYPE_2021%20series.xlsx (accessed 29 July 2022).

¹²² KGLM IDP (note 32 above) 97.

- Housing backlog; sanitation and roads maintenance not being addressed sufficiently.
- Increase in informal settlements due to an influx into the area.
- Disaster management is provided but not to the extent needed.

8.9 Land use and human settlements

The Applicant owns the directly affected farm portion, Olyvenhouts Drift Settlement Agricultural Holding 1080 Portion 0. Existing electrical infrastructure on the site includes the Eskom Upington Main Transmission Substation (MTS) (Figure 11) and related transmission lines.

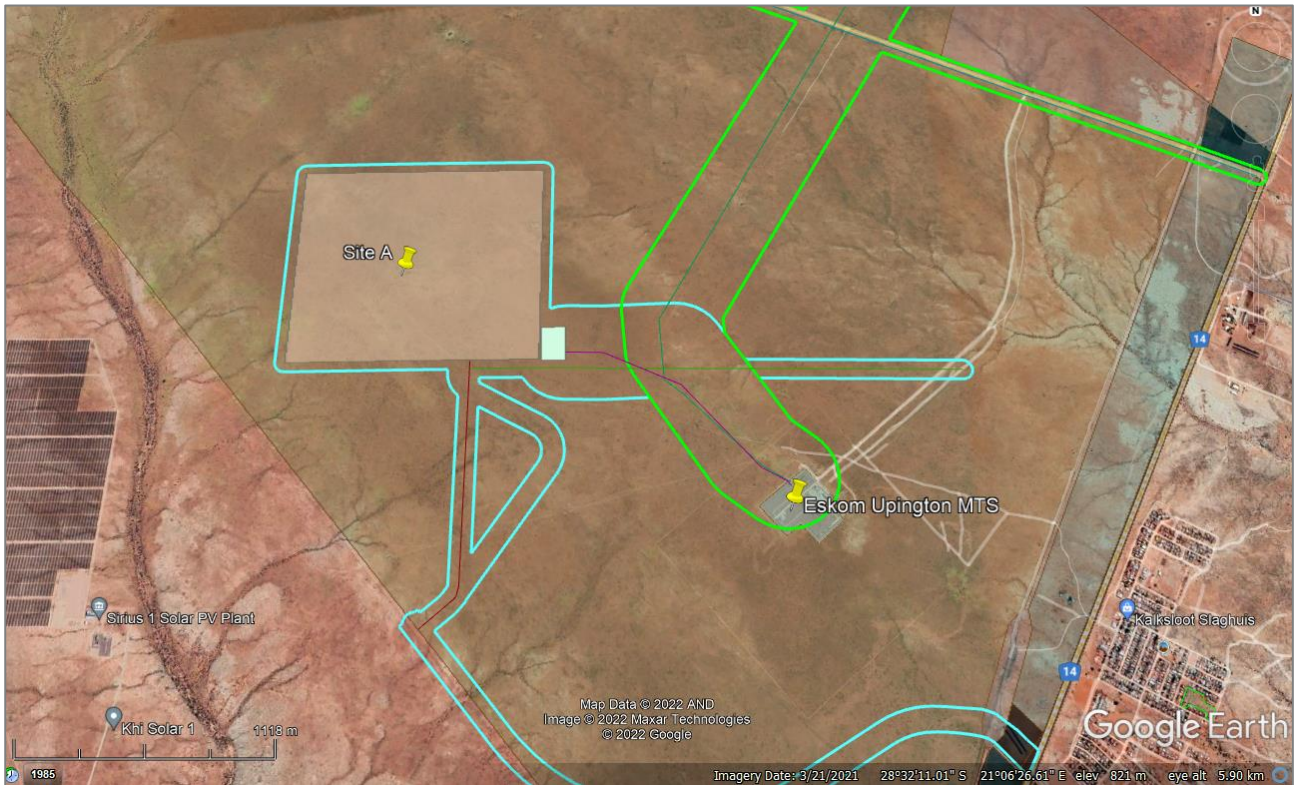


Figure 11: Existing Eskom Upington Main Transmission Substation (MTS) in relation to proposed project infrastructure
Source: Google Earth

A preliminary list of properties located directly adjacent to the proposed Kiwano project site is provided in Table 14. Please note that this list will be updated during the public participation process that will be undertaken as part of the project.

Table 14: Adjacent landowners

Property Name	Adjacent landowner
Gordonia Rd, 449, 0	Blue Dot Properties 567 (Pty) Ltd
Klip Punt, Gordonia Rd, 452, 1	Tobias Nicolaas Hanekom
Klip Punt, Gordonia Rd, 452, 12	Summerdown Farming CC (Khi Power)
Olyvenhouts Drift Settlement Agricultural Holding, 1079, 0	Unknown
Olyvenhouts Drift Settlement Agricultural Holding, 1081, 0	Rekopane Estates (Pty) Ltd
Olyvenhouts Drift Settlement Agricultural Holding, 1082, 0	Michael Willem Kennedy
Olyvenhouts Drift Settlement Agricultural Holdings, 700, 0	Rekopane Estates (Pty) Ltd
Olyvenhoutsdrift Sett, Erf 537	Unknown Probably same as Erf 563

Property Name	Adjacent landowner
Olyvenhoutsdrift Sett, Erf 563	Unknown [see pic]
Rooipunt, Gordon Rd, 617, 0	Vaaldoorn Boerdery CC
Tungsten Lodge, Gordon Rd, 638, Portion 0,	Zelpy 2418 (Pty) Ltd

The area towards the north and west of the proposed project site is undeveloped and used predominantly for livestock grazing (Photograph 1). While Eskom is the landowner for Erf 1080, there is a 5-year grazing agreement with the previous landowner. To the south-east, along the N14 and down towards the banks of the Orange River, livestock grazing, cultivation of grapes and other crops are the predominant land use (Photograph 2). Settlement patterns in this area are characterised by a number of farmsteads, farm employee accommodation and farming related infrastructure (Photograph 3).¹²³ Inhabitants of this area are therefore likely to rely primarily on agriculture to support their livelihoods. The closest human settlement to the proposed project site is the rural agricultural settlement of Kalksloot which is located approximately 3.5 km from the Site A alternative (Photograph 4). Oranjevallei is the next closest settlement located approximately 4.7 km from Site A. Other settlements within close proximity of the proposed project site include Louisvale (8.4 km); Dysons Klip (8.3 km); Raaswater (9.5 km); and Bloemsmond (12 km) (Figure 12).



Photograph 1: Local landscape into which proposed development will be placed

Source: Quayle Kiwano VIA (April 2022)



Photograph 2: Cultivation of grapes along the Orange River valley and livestock grazing along the N14

Source: Google Earth (March 2022) and Quayle Kiwano VIA (April 2022)

¹²³ Quayle, L. *Visual Impact Assessment for the Proposed Eskom Kiwano Solar PV and BESS*, Geonest GIS and Environmental Advisory (April 2022) 17.



Photograph 3: Farmstead, employee accommodation and infrastructure along the N14 between Upington and Keimoes
Source: Quayle Kiwano VIA (April 2022)



Photograph 4: Kalksloot settlement located between the N14 and the Orange River
Source: Quayle Kiwano VIA (April 2022) and Google Earth (March 2022)

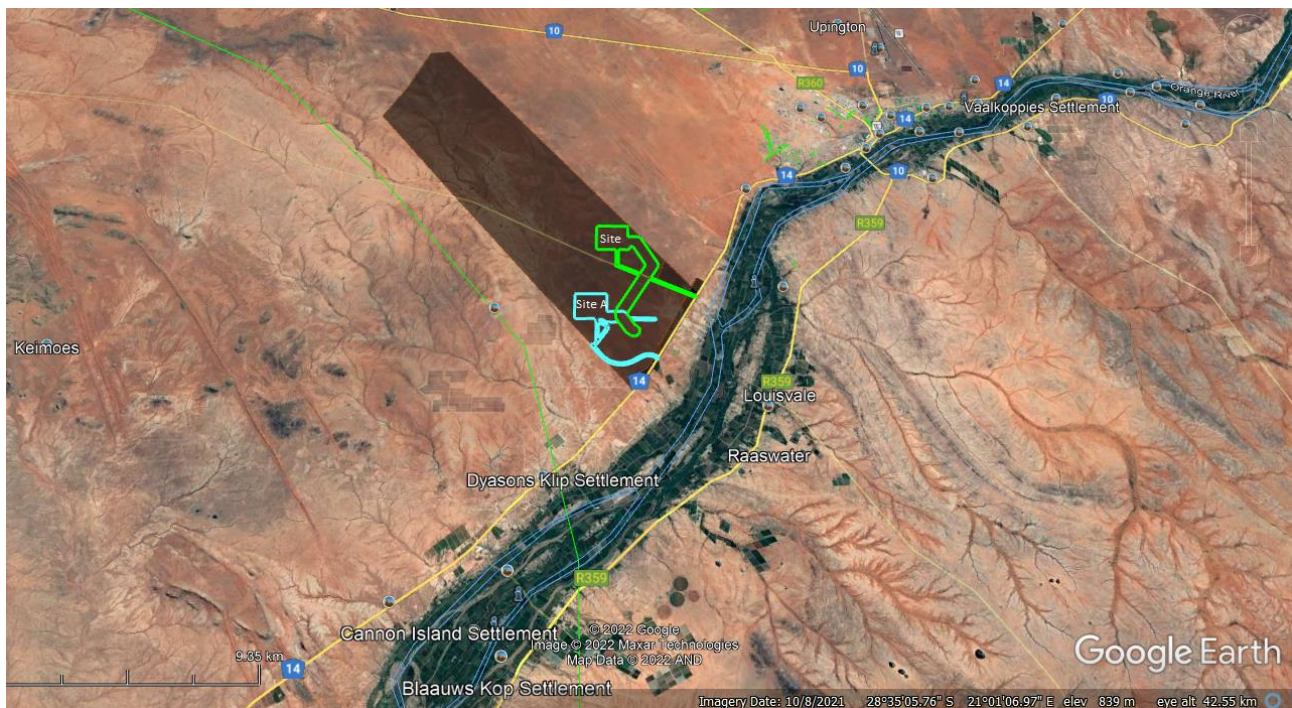


Figure 12: Settlements near the proposed project site

8.10 Land claims status

Pursuant to a land claims enquiry made by the EAP on behalf of the Applicant, the Office of the Regional Land Claims Commissioner: Northern Cape confirmed that there are no land claims that may have an impact on the proposed project.

8.11 Other approved and proposed solar PV developments in the area

To the north, east and west of the proposed project site, there are a number of renewable energy facilities, including two solar PV farms and the Khi Solar One solar concentrator plant (CSP) complex located (Photograph 5).¹²⁴ The proposed Kiwano project is located on the property adjacent to the 258 MW Scatec Solar complex. Table 15 provides details for some of the current facilities located within close proximity of the proposed Kiwano project site.

Table 15: Current operational renewable energy facilities in the area

Project	Operator	Municipality	Generation capacity	Operational since
Khi Solar One CSP ¹²⁵	Abengoa, Industrial Development Corporation (IDC) and Khi Community Trust	DKLM	50 MW	February 2016
Upington Airport Solar PV ¹²⁶	Airports Company of South Africa (ACSA)	DKLM	8.9 MW	April 2016
Ilanga CSP ¹²⁷	Karoshhoek Solar One (RF) (Pty) Ltd	DKLM	100 MW	December 2018
Sirius Solar PV Project One ¹²⁸	Scatec Solar	KGLM	86 MW	February 2020
Dyason's Klip 1 ¹²⁹	Scatec Solar	KGLM	86 MW	February 2020
Dyason's Klip 2 ¹³⁰	Scatec Solar	KGLM	86 MW	February 2020

¹²⁴ Department of Environment, Forestry and Fisheries (DFFE) interactive map for Renewable Energy EIA Applications <https://portal.environment.gov.za/portal/apps/webappviewer/index.html?id=1c45081a7f65490c9ce58fad88e3b9e3> (accessed 9 August 2022) and Energydesk.africa Blog https://energydesk.africa/database/?province=NC&district=Z+F+Mgcawu&local_municipality=122 (accessed 9 August 2022).

¹²⁵ Abengoa https://www.abengoa.com/web/en/noticias_y_publicaciones/noticias/historico/2016/02_febrero/abg_20160205.html (accessed 9 August 2022).

¹²⁶ ACSA <https://www.airports.co.za/business/commercial/business-opportunities/upington> (accessed 9 August 2022).

¹²⁷ SENER <https://www.energy.sener/press-releases/ilanga-1-csp-plant-successfully-completed> (accessed 9 August 2022).

¹²⁸ SCATEC <https://scatec.com/locations/south-africa/#upington-south-africa> (accessed 9 August 2022).

¹²⁹ As above.

¹³⁰ As above.



Photograph 5: Khi Solar One solar concentrator facility viewed from the proposed project site and N14
Source: Quayle Kiwano VIA (April 2022)

Electricity related infrastructure from existing solar operations and a municipal landfill (5 km from Site B) are located within close proximity of the proposed Kiwano project site (Photograph 6).



Photograph 6: Existing powerlines and municipal landfill
Source: Quayle Kiwano VIA (April 2022)

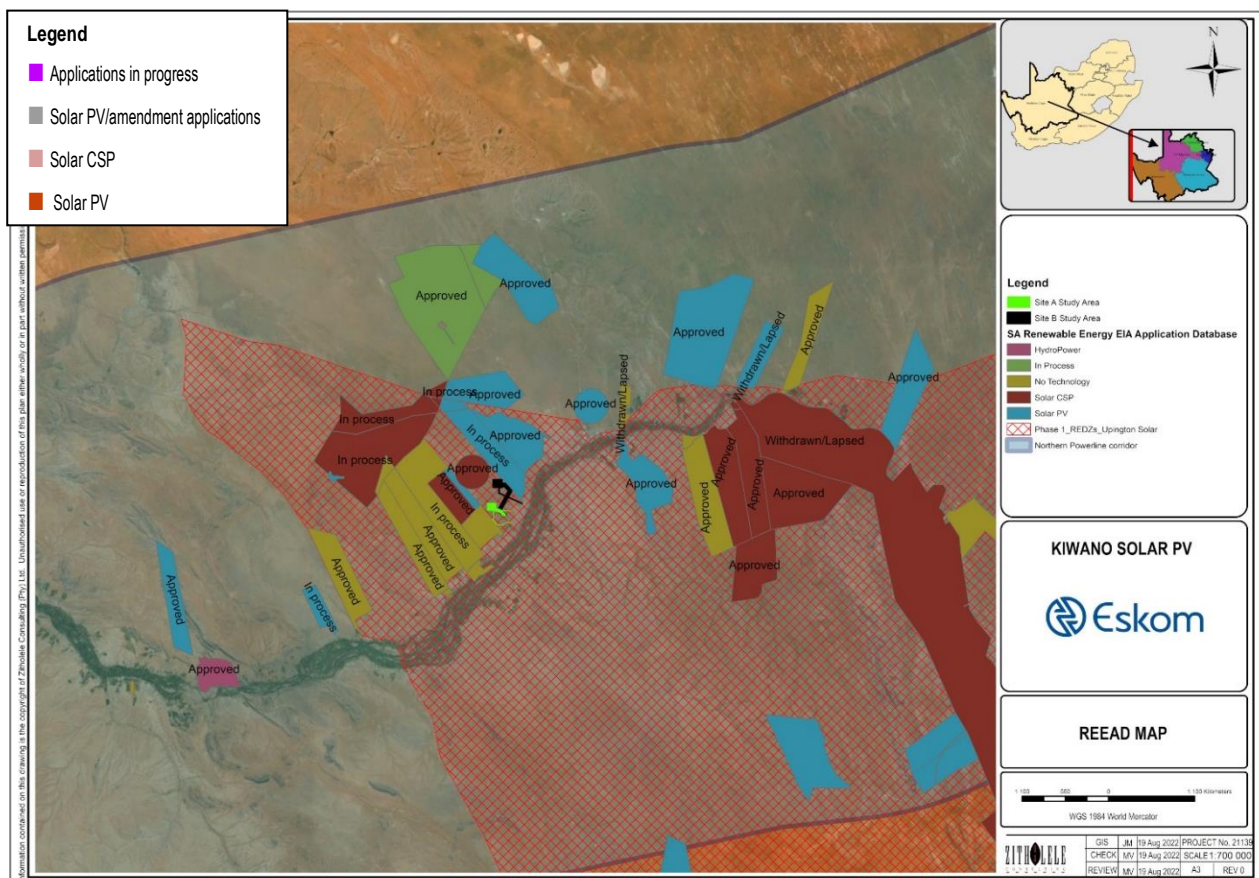


Figure 13: Adjacent renewable energy projects/applications

8.12 Comments received from I&APs

As part of its obligation to ensure the participation of all I&APs, the Applicant appointed Zitholele to undertake a public participation process as part of the BA process. During this process a Draft BA Report was made available to I&APs for review and comment for a 30-days period. Comments received from I&APs during this phase of the project will be addressed and reflected in the final version of the SIA that will be submitted to the DFFE. Key public participation process tasks undertaken during these comment periods included:

- Publication of advertisements in a local newspapers
- Placement of on-site notices detailing the proposed developments, the BA processes and an invitation to register and comment. Notices will be placed at strategic places on site and in the vicinity of the site (along the road, at intersections, etc.) as well as at places within the town of Upington that are frequented by residents and potential I&APs.
- Distribution of a background information letter and comment & registration sheet to I&APs by email and ordinary mail.
- Telephone conversations with I&APs who require further information or clarification.

All contributions received from various I&APs during the public participation process will be recorded in a Comment and Response Register that will included in the BA Report submitted to the DFFE.

9. SOCIO-ECONOMIC IMPACT ASSESSMENT

This section provides a preliminary assessment of key socio-economic issues identified during the study. Identification of the key issues was based on:

- A review of the project description and specialist reports prepared as part of the EA application.
- A review of available impact assessment reports for similar projects in the area.
- Input from interviews with key I&APs and comments received from I&APs during the public participation process will be updated in the final version of the SIA.

This section outlines the following:

- The impact assessment methodology used.
- Assessment of the proposed project's compatibility with the prevailing/relevant policy and planning framework.
- Assessment of socio-economic issues associated with:
 - The construction phase.
 - The operational phase.
 - The decommissioning phase.
- Assessment of the 'no-go' alternative.
- Assessment of cumulative impacts.

9.1 Impact assessment methodology

This section details the method used to determine the significance of potential impacts associated with the proposed project. A description of the findings and potential implications of the findings is provided. Impacts and risks were assessed according to their **extent, duration, intensity/magnitude** and **probability** of occurring. An indication of the degree to which these impacts - (a) can be **reversed**; (b) may cause **irreplaceable loss** of resources; and (c) can be **avoided, managed** or **mitigated** is provided.

To assess the **nature, direction** and **status** of impacts, the ranking scale and scoring methodology in Table 16, Table 17 and Table 18 below was used. In describing the nature of the proposed impact, a description of its cause, what/who will be affected, and how it will be affected will be included. An indication of whether the impact or risk is a **direct; indirect; or cumulative** impact will be provided. The direction of the potential impact is describe, indicating whether it is **positive, negative** or **neutral**.

Table 16: Impact assessment methodology

Value	Description
Nature of impact	
Direct impact	Direct impacts are usually associated directly with a development activity and occur at the same time and place as the activity. These impacts are usually associated with establishment, operations or maintenance activities. They are usually observable and quantifiable.
Indirect impact	Secondary or indirect impacts are caused by primary or direct impacts. They often occur later both in time and geographical distance than primary impact. ¹³¹
Cumulative Impact	Cumulative impacts are those resulting from the added impacts of other past, present or future developments. It considers how the impacts of one project may affect and be affected by other projects and can be seen as the sum of the proposed action plus past and present activity in the same area. ¹³²

¹³¹ DEAT (2006) (note 35 above) 9.

¹³² As above.

Value	Description
Direction of impact	
Positive	The activity will result in beneficial socio-economic consequences.
Negative	The activity will result in adverse socio-economic consequences.
Neutral	The activity is not likely to have any beneficial or adverse socio-economic consequences.
Degree of reversibility	
High reversibility	Impact is highly reversible at end of project life.
Moderate reversibility	Moderate reversibility of impacts.
Low reversibility	Low reversibility of impacts.
Irreversible	The impact is permanent, i.e. this is the least favourable assessment for the environment.
Degree of irreplaceability	
High irreplaceability	The project will destroy unique resources that cannot be replaced, i.e. this is the least favourable assessment for the environment
Moderate irreplaceability	Moderate irreplaceability of resources
Low irreplaceability	Low irreplaceability of resources.
Resources are replaceable	The affected resource is easy to replace/rehabilitate, i.e. this is the most favourable assessment for the environment.
Confidence level	
Low	Specialist has a low-level confidence in assessment due to significant limitations such as unavailability of data or information
Medium	Specialist has a moderate level confidence in assessment due to some limitations such as unavailability of data or information
High	Specialist has high confidence in assessment.

Table 17: Impact assessment ranking and scoring

Value	Definition	Score
Extent of impact footprint		
Site	Impact footprint is site specific	1
Local	Impact footprint extends beyond the boundary of the site to the adjacent surrounding areas	2
Regional	Impact footprint may extend across an entire district municipal and provincial area	3
National	Impact footprint extends across the entire Republic of South Africa	4
Global	The impact has cross-border and/or global implications	5
Duration of impact		
Temporary	The impact endures for less than one year, or only for as long as the construction or decommissioning period of the project. The impact is fully reversible.	1
Short duration	The impact continues to manifest for a period of between 2 and 5 years beyond construction or decommissioning. The impact is reversible.	2

Value	Definition	Score
Medium-term	The impact continues between 6 and 15 years beyond the construction or decommissioning phase. The impact is still reversible with relevant and applicable mitigation and management actions.	3
Long-term	The impact continues for a period in excess of 15 years beyond construction or decommissioning. The impact is only reversible with considerable effort in implementation of rigorous mitigation actions.	4
Permanent	Impact continues post-closure. No mitigation measures will reduce impact	5
Intensity/magnitude of a negative impact		
Low	Negative change with no associated consequences	1
Moderate-low	Nuisance impact	2
Moderate	Substantial alteration and reduction in quality of life, wellbeing, community safety, access to amenities, livelihoods etc	4
Moderate-high	Severe alteration and reduction in quality of life, wellbeing, community safety, access to amenities, livelihoods etc	8
High	Extreme alteration to human health linked to mortality	16
Intensity/magnitude of a positive impact		
Low	Positive change with no other consequences.	1
Moderate-low	Economic development	2
Moderate	Improved socio-economic conditions, livelihoods, etc.	4
Moderate-high	Net improvement in human welfare	8
Likelihood/probability of impact		
Improbable	The probability of the impact occurring is negligible and likely only under exceptional circumstances.	0.1
Very unlikely	The probability of the impact occurring is low, with a less than 30% chance of occurring.	0.2
Unlikely	The impact has a 30% to 50% chance of occurring.	0.5
Likely	The impact has a 51% to 90% chance of occurring.	0.75
Definite	The impact has a >90% chance of occurring regardless of preventative measures.	1

Significance points indicate the extent to which a potential impact could cause a notable alteration of the *status quo*. To determine the significance of an identified impact/risk, the consequence (extent + duration + intensity) is multiplied by probability. Significance weighting based on point allocation is detailed in Table 18.

Significance = (extent + duration + intensity) x probability

Table 18: Significance weighting based on point allocation

Significance score	Implication for decision-making	Rating
< 3	Impacts with little real effect. Will not have an influence on, or require modification of, the project design. Project/activity can be authorised with low risk of adverse socio-economic impacts.	Low
3 - 9	Impact or benefit which requires management, and which could have an influence on the decision unless it is mitigated. Project can be authorised but with conditions and routine inspections. Mitigation measures must be implemented.	Moderate

Significance score	Implication for decision-making	Rating
10 - 20	Impact should influence decision about whether to proceed with the project, regardless of any mitigation. Project can be authorised but with strict conditions and high levels of compliance and enforcement. Monitoring and mitigation are essential.	High
21 - 26	The risk/impact will result in major adverse alteration to the socio-economic environment even with the implementation on the appropriate mitigation measures and will have an influence on decision-making. The project cannot be authorised unless major changes to the engineering design are carried out to reduce the significance rating.	Fatally flawed

9.2 Assessment of compatibility with the policy and planning framework

The findings of the review indicate that the proposed Kiwano BESS and PV project is supported at a national, provincial and local government level. At a national and provincial level, increasing South Africa's renewable energy generation capacity is supported by the NDP, the IRP, the NIP 2040, the Northern Cape Office of the Premier Strategic Plan 2020/25 which consolidates various provincial strategic planning documents, and the Northern Cape PSDF. Renewable energy, and particular solar PV developments is also supported at a district and local level as outlined in the ZF Mgcawu District IDP and Draft IDP. The proposed project is also located within the boundaries of the approved Upington REDZ. It is furthermore aligned with spatial planning for DKLM as outlined in the 2018 SDF. The area has therefore been identified as suitable for the establishment of a facility of this nature.

9.3 Assessment of alternatives

The findings of the SIA indicate that social impacts associated with each of the two project site alternatives are similar. Both alternatives are located on the farm Olyvenhouts Drift Settlement Agricultural Holding 1080 Portion 0, which is owned by the Applicant. Separate assessments have therefore not been undertaken and the significance ratings indicated in this section apply to each of the two site alternatives.

9.4 Construction phase socio-economic impacts

The construction phase will commence after the issuing of an EA and obtaining all required licences and permits. Potential impacts associated with the construction phase of the proposed development are described below along with relevant significance ratings before and after mitigation.

9.4.1 Creation of employment opportunities

It is anticipated that the construction phase will extend over a period of approximately 24 months. According to estimates provided by the Applicant, approximately 120 temporary employment opportunities will be created during the peak construction phase (see 4.7). Construction phase activities include the establishment of a solar PV facility (58 MW); BESS (40 MW / 200 MWh); 132 kV substation with five feeder bays; and all associated infrastructure including access roads, services and the proposed 132 kV overhead powerline that will connect into the existing Upington substation. It is anticipated that approximately 33% (40) of the employment opportunities will be available to unskilled workers (construction labourers, security staff, cleaners, etc.), 25% (30) for semi-skilled workers (drivers, equipment operators etc.); and 17% (20) for skilled personnel (welders, electricians, solar PV installer, etc.). The remaining positions will be filled by professionals (engineers, project managers, etc), senior management and top management. Construction activities will be managed by the Applicant in conjunction with EPC and O&M contractors.

In a recent study undertaken into the effects of renewable energy on communities around Upington, the researcher noted that solar PV has the potential to create employment, at an estimated rate of 0.87 job-years per gigawatt-hour (GWh).¹³³ A job-year is the equivalent of one full-time job for one person for one year. This potential benefit can however only be realised to the extent that appropriate skills are available within the local communities. In this regard, the researcher noted that an estimated 3500 CSP and 2000 solar PV construction jobs were created as part of the Independent Power Producer (IPP) rollout in Upington.¹³⁴ Most of the construction workers who benefitted from these short-term employment opportunities are doorstep community members from Upington and the surrounding settlements.¹³⁵ It can therefore be assumed that there is a local skilled workforce who can be recruited to undertake construction phase activities associated with the proposed project.

Given the high levels of unemployment in DKLM and KGLM outlined in 8.5, the proposed project presents a localised socio-economic benefit with the potential to improve the quality of life for residents of DKLM and the adjacent KGLM. However, in the absence of implementation of recommended enhancements described below, the significance of this positive impact is likely to be **Low (+)** given that the preference may be to use skilled and experienced workers from outside the area rather than to train local community members where skilled workers are not immediately available. With the implementation of the recommended enhancements, the significance of this positive impact is likely to remain **Moderate (+)**, as there is increased probability that local people will be employed during the construction phase.

Enhancements

To enhance the potential positive impact associated with the creation of temporary employment opportunities during the construction phase, the following measures should be implemented:

- To the extent possible, the Applicant and any contractors appointed to undertake construction related activities should prioritise employment of local people from DKLM and KGLM, particularly for semi and unskilled job categories.
- Employment of Coloured and Black African people; women; and youth should be prioritised.
- Before the construction phase commences, the Applicant and its contractors should meet with officials from the ZF Mgawu District as well as DKLM and KGLM to enquire about the possibility and process of hiring people who are registered on district or local skills databases.
- Where feasible, training and on-the-job skills development programmes for temporary employees should be implemented during the construction phase.
- Where feasible, efforts should be made to employ local contractors that are compliant with Broad Based Black Economic Empowerment (BBBEE) criteria.
- Recruitment and employment practises must be aligned with prevailing labour legislation in South Africa.
- Vacancies should be advertised in the local media when they become available.

Assessment of a no-go option

Potential employment and economic benefits associated with the construction phase of the proposed project would be forgone in the event of a no-go decision.

9.4.2 Creation of procurement and business opportunities

Local and regional businesses should be granted opportunities to tender for contracts associated with the provision of goods and services associated with the construction phase.

¹³³ Mabele, MB The effects of renewable energy on communities: the case of Upington in the Northern Cape, South Africa (MDS thesis University of the Free State 2021).

¹³⁴ Mabele (note 133 above) 49.

¹³⁵ As above.

The hospitality sector in DKLM and KGLM is also likely to benefit from provision of accommodation and meals for professionals and other personnel who will be involved in construction phase activities. Other services such transport, retail stores, housing and aviation could also stand to benefit from a short-term increase in economic activity associated with the construction phase.

The significance of this positive impact is likely to improve from **Low (+)** before enhancements to **Moderate (+)** after implementation of recommended enhancements given that the proposed measures may increase the probability that investment in the local economy is maximised to the extent possible. In this manner, both direct and indirect benefits will accrue to local community members.

Enhancements

- The Applicant should engage with the DKLM and KGLM LED and IDP officials as well as representatives of the local business chambers to identify strategies aimed at maximising the potential positive impact on local procurement and short-term business opportunities within the municipalities.
- Procurement planning and decisions should prioritise spend with Coloured, Black African, women and youth owned local companies to the extent possible.

Assessment of a no-go option

Potential procurement and related economic benefits associated with the construction phase of the proposed project would be forgone in the event of a no-go decision.

9.4.3 Increased demand for low-cost housing and municipal services

Housing of temporary employees in the low and semi-skilled income range could be problematic if they are brought in from other areas during the construction phase. As indicated in section 8.8, the municipality is struggling to stay ahead of the demand for low-cost housing and municipal services, particularly in Klippunt which is located within close proximity of the proposed project site. Without mitigation, an additional contingent of temporary construction workers in the area could increase the burden on the local municipalities given that it will increase the demand for services (accommodation, water, sanitation, electricity, etc).

The significance of this impact is likely to be **Low (-)** without mitigation. With implementation of recommended mitigation measures detailed below, the significance of this impact is likely to remain **Low (-)**.

Mitigation measures

- Prioritise employment of local people, particularly people residing within a 50 km radius of the proposed project.
- For temporary employees brought in from other areas, suitable housing and living arrangements must be put in place before commencement of construction activities. This could include establishment of a temporary worker accommodation camp that considers aspects such as access to the construction site, services and materials. Access to all necessary amenities to ensure the health and safety of employees must be provided by the Applicant. Unless the Applicant is the owner of the land on which the proposed accommodation camp is to be established, an agreement with the relevant landowner must be concluded prior to commencement of construction activities.
- The Applicant should take steps to ensure that adequate arrangements for daily transport to and from the construction site are in place before commencement of construction phase activities.
- Where necessary, the Applicant should take steps to ensure that arrangements are in place to enable non-local low and semi-skilled workers to return home when they are not required on site (i.e. weekends, etc.).
- The Applicant should take steps to ensure that all non-local construction workers are transported back to their place of residence within one week of their temporary employment contracts coming to an end.

Assessment of a no-go option

There will be no impact as the *status quo* would be maintained. However, potential positive impacts associated with employment and procurement opportunities would be forgone in the event of a no-go decision.

9.4.4 Strain on community health & safety services

The presence of non-local construction workers could exacerbate existing social pathologies, placing further strain on family structures and social networks. Risks associated with the manner in which construction workers conduct themselves could lead to an increase in levels of the following social pathologies:

- Substance abuse.
- Increase in incidences of crime.
- Disintegration of close relationships with significant others (spouse, fiancé, girlfriend, etc.).
- Prostitution.
- Unplanned pregnancies.
- Communicable diseases (HIV/AIDS, TB, sexually transmitted diseases, etc.).

While the majority of unskilled and semi-skilled work opportunities could be taken up by local community members, the remainder of available positions need to be filled by non-local temporary construction workers. Workers recruited from the local community form part of the local family and social structure. These locally resident workers are not likely to increase the social ills listed above beyond the levels already prevailing in the study area.

The presence of non-local construction workers residing in a local community also serves to emphasise the lack of local skills, leading to discontent, tension and conflict.

Although the risks listed above associated with the presence of a small contingent of non-local temporary construction workers at a community level is low, these impacts are highly significant on an individual level.

In the absence of mitigation, the significance of this impact is likely to be **High (-)**. This is due to the very high intensity/magnitude of the impact (e.g. dealing with an unplanned pregnancy, contracting AIDS or TB, injury or even loss of life due to violent crime) and the high probability of the impact occurring. With mitigation, the significance of this impact is likely to be **Low (-)**, largely due to the lower probability of the impact occurring.

Mitigation measures

- Prioritise employment of local people from the various communities in DKLM and KGLM.
- The Applicant as well as any contractors that are appointed to undertake the construction phase activities should develop and agree a code of conduct which sets standards for acceptable behaviour and outlines behaviour and activities which could constitute grounds for dismissal. Any employee or contractor appointed by the Applicant to undertake construction phase activities that is found to be in breach of the code of conduct should be dismissed after following due process in accordance with prevailing labour legislation. Criminal activities should be reported to SAPS immediately for investigation and further action.
- The Applicant and contractor should agree and implement an HIV/AIDS/TB awareness programme.
- The Applicant should develop and implement an appropriate method of communication with the local community. A community liaison officer should be appointed during the construction phase to engage with local community members regarding any issues, complaints or grievances that they may have.

Assessment of a no-go option

There will be no impact as the *status quo* would be maintained. However, potential positive impacts associated with employment and procurement opportunities would be forgone in the event of a no-go decision.

9.4.5 Influx of jobseekers

In-migration of jobseekers can be anticipated where there is the possibility of large-scale employment creation. As noted in the DKLM and KGLM IDP, the municipalities would struggle to deal with a sharp rise in the number of people moving to the area in search of work. While the proposed project on its own is not likely to be the primary driver of influx in the area, the simultaneous establishment of similar renewable energy facilities could cumulatively encourage people to seek employment and settle in the area.

Negative impacts associated with an influx of jobseekers could include the following:

- Increased demand for affordable housing which is already a challenge in DKLM and KGLM (see 8.8).
- Non-local job seekers are often willing to accept a lower wage for various reasons, creating a situation of unfair competition for scarce jobs.
- An increase in the number of unemployed people in the area places strain on local communities and the municipality.
- Similar health and safety concerns to those described above in section 9.4.4 could materialise.

The impact, when linked directly to the proposed project, is likely to be **Low (-)** both before and after mitigation.

Mitigation measures

While it will not be possible to prevent people coming to the area in search of work, the following could demonstrate the Applicants commitment to being part of the solution to a complex problem within DKLM and KGLM:

- Prioritise employment of local people from the various communities in DKLM and KGLM.
- In consultation with the DKLM and KGLM, investigate the option of establishing a Monitoring Forum to monitor and identify potential influx related problems associated with the proposed project. The Monitoring Forum should include other renewable energy operators in the area.
- Employment for 'walk-in' temporary / casual labourers at the proposed construction site should not be permitted.

Assessment of a no-go option

Not proceeding with the proposed project will have little to no impact on the number of hopeful jobseekers flocking to the area. Potential positive impacts associated with employment and procurement opportunities would be forgone in the event of a no-go decision.

9.4.6 Risk to livestock, crops, houses and farm infrastructure

With many of the adjacent properties, particularly the properties located to the south of the proposed project site being used for livestock grazing and grape cultivation, the presence and movement of construction workers might result in loss or damage to farm infrastructure and livestock as a result of for example, gates being left open; livestock ingesting plastic/litter; and the potential for grass fires.

With the implementation of the recommended mitigation measures, the significance of this impact is likely to be **Low (-)**, as opposed to a **Moderate (-)** significance without mitigation, given that the intensity and probability of the impact occurring can be reduced.

Mitigation measures

Recommended mitigation measures include:

- The construction site should be fenced off prior to commencement of the construction phase. Movement of construction workers should be restricted to the construction site during work hours.
- The Applicant as well as any contractors that are appointed to undertake the construction phase activities should develop and agree a code of conduct which sets standards for acceptable behaviour and outlines behaviour and activities which could constitute grounds for dismissal. Consequences for wilful or negligent damage to private property must be outlined, communicated with all employees and enforced accordingly when alleged infringements are reported.
- Any loss or damage associated with construction phase activities, or the actions of employees or contractors appointed by the Applicant must be compensated according to a value/scale agreed with the affected landowner.
- Movement of people and vehicles associated with construction phase activities should be confined to designated areas or public roads.
- A strict speed limit must be enforced.
- All farm gates must be closed after accessing/exiting a property.
- The Applicant and any contractor appointed to undertake construction related activities should provide daily transport for low and semi-skilled workers to and from site. This will not only benefit workers, but it will also reduce the amount of pedestrians traffic on private property.
- Provision should be made in the Environmental Management Programme (EMPr) to store and manage waste on site. In particular, plastic waste which could be ingested by livestock must be managed appropriately.
- The possibility and practicality of establishing firebreaks around the perimeter of the construction site prior to commencement of construction activities should be investigated.
- Smoking on site must be confined to designated areas.
- Construction related activities that could pose a potential fire risk must be managed in accordance with safety protocols and procedures outlined in the EMPr in compliance with prevailing fire, health and safety legislation.
- No construction phase employees should be permitted on site after work hours, with the exception of security staff.

Assessment of a no-go option

There will be no impact as the *status quo* would be maintained. However, potential positive impacts associated with employment and procurement opportunities would be forgone in the event of a no-go decision.

9.4.7 Impact on tourism

Based on an evaluation of the various tourism clusters located within DKLM and KGLM, it is unlikely that the proposed project will have an impact on tourism activities in the area. The proposed project site is located within an established industrial area on land that is currently being used for livestock grazing. The existing Eskom Uppington MTS is also located on the site. The nearest tourist attraction to the proposed project site is Riva Resort located a distance of approximately 4km from the proposed project site. The impact of the proposed project on local tourism is assessed in the Visual Impact Assessment undertaken as part of the proposed project.¹³⁶ The impact of the proposed Kiwano project on the tourism potential of the area and the broader DKLM and KGLM is likely to be **Low (-)**.

Please see further details regarding this potential Impact in the Visual Impact Assessment.¹³⁷

¹³⁶ Quayle (note 123 above) section 5.2.5.2 and 6.0.

¹³⁷ Quayle (note 123 above).

Assessment of No-Go option

There will be no impact as the *status quo* would be maintained. However, potential positive impacts associated with employment and procurement opportunities would be forgone in the event of a no-go decision.

9.4.8 Loss of farmland

Both the preferred and alternative powerline routes traverse land currently owned by the Applicant and used for the existing Eskom Upington MTS. As indicated in section 8.9, the area is also used for livestock grazing by the previous owner in terms of a 5-year agreement with the Applicant. The establishment of the proposed Kiwano BESS and PV will therefore result in loss of grazing rights for the previous landowner. The grazing agreement currently in force is for a limited duration, while the development site is large enough for livestock to graze on areas not yet affected by the proposed development.

Both before and after mitigation, the significance of this impact is likely to be **moderate** due to the long-term duration of the impact and the high probability of the impact occurring. The potential intensity of the impact is however rated low, given that the property sale transaction was concluded some time ago (2010),¹³⁸ and the existence of the current grazing agreement.

Mitigation measures

Prior to commencement of construction, the Applicant must ensure that all terms and conditions related to the 5-year agreement with the previous landowner are honoured and closed out in accordance with the agreement.

Assessment of No-Go option

There will be no impact as the *status quo* would be maintained. However, potential positive impacts associated with employment and procurement opportunities would be forgone in the event of a no-go decision.

9.5 Operational phase socio-economic impacts

The operational phase will commence after successful conclusion of construction phase activities and issuing of the required environmental permits and licences. During the operational phase a number of potential impacts can be anticipated. These potential impacts are described below along with significance ratings before and after mitigation.

9.5.1 Creation of employment opportunities

It is anticipated that the proposed development will remain in operation for at least **25 years**, which is the minimum design life of the solar PV plant. According to estimates provided by the Applicant, approximately **18** employment opportunities will be created during the operational phase (see 4.7). It is anticipated that most of these positions will be filled by semi-skilled and skilled personnel. The majority of employment opportunities during the operational phase are likely to benefit Coloured or Black African persons from the DKLM or KGLM. Operational phase activities will be managed by the Applicant in conjunction with contractors.

Given the high levels of unemployment in DKLM or KGLM, the proposed project presents a localised socio-economic benefit with the potential to improve the quality of life for residents in these municipalities. However, in the absence of implementation of recommended enhancements described below, the significance of this positive impact is likely to be **Low (+)** given that the preference may be to use skilled and experienced workers from outside the area rather than to train local community members where skilled workers are not immediately available. With the implementation of the recommended enhancements, the significance of this positive impact is likely to remain **Low (+)**, as there the proposed project will only

¹³⁸ As per Windeed report.

employ a limited number of people during the operational life of the facility. As such, the intensity of the potential impact is rated low.

Enhancements

To enhance the potential positive impact associated with the creation of employment opportunities during the operational phase, the following measures should be implemented:

- To the extent possible, the Applicant and any contractors appointed to undertake activities during the operational phase should prioritise employment of local people from DKLM and KGLM, particularly for semi and unskilled job categories.
- Employment of Coloured and Black African people; women; and youth should be prioritised. Compliance with Department of Employment and Labour (DoEL) requirements and the Employment Equity Act 55 of 1998 (EEA) must be prioritised.
- Before the operational phase commences, the Applicant and its contractors should meet with officials from the ZF Mgawu District, DKLM and KGLM to enquire about the possibility and process of hiring people who are registered on the District and Local skills database.
- The Applicant should prioritise skills development by appointing a suitably qualified skills development facilitator; ensuring registration with the appropriate SETA; developing a skills development plan; and compiling the necessary Workplace Skills Plan/Annual Training Report as required in terms of the Skills Development Act 97 of 1998 (SDA).
- Where feasible, efforts should be made to employ local contractors that are compliant with Broad Based Black Economic Empowerment (BBBEE) criteria.
- Recruitment and employment practises must be aligned with prevailing labour legislation in South Africa.
- Vacancies should be advertised in the local media when they become available.

Assessment of a no-go option

Potential employment and economic benefits associated with the operational phase of the proposed project would be forgone in the event of a no-go decision.

9.5.2 Creation of procurement opportunities

Local and regional businesses should be granted opportunities to tender for contracts associated with the operational phase. Throughout the life of the operation, other core and critical services could be outsourced to a number of service providers. In addition, services in the trade, transport, hospitality, business services and banking sector will also stand to benefit from short-term contracts associated with the ongoing operations, as will professional consultants and product representatives associated with the project.

While the significance of this positive impact is likely to be **Low (+)** with and without mitigation, implementation of recommended enhancements detailed below will increase the probability that investment in the local economy is maximised to the extent possible. In this manner, both direct and indirect benefits will accrue to local community members.

Enhancements

- The Applicant should engage with LED and IDP officials as well as representatives of a LED Forum or Business Chamber to identify strategies aimed at maximising the potential positive impact on local procurement within the DKLM and KGLM.
- Procurement spend should prioritise Coloured and Black African; women; and youth owned local companies to the extent possible.

Assessment of a no-go option

Potential procurement and related economic benefits associated with the operational phase of the proposed project would be forgone in the event of a no-go decision.

9.5.3 Strengthening energy supply

As South Africa's population and economy continue to grow, so does the electricity demand and the strain on natural resources. The project will add new generation capacity (58 MW) and augment existing Eskom generation and transmission infrastructure in the Northern Cape. The proposed development will furthermore provide ancillary support in terms of enhanced frequency control of the network, reactive power support and improved quality of supply performance near existing Distributed Generation Renewable Energy plants.¹³⁹ The Battery Storage technology may enable the immediate levels of constraint to be addressed and provide continued access to potential customers to these networks.¹⁴⁰ The battery storage technology will also improve the quality of supply and mitigate voltage related concerns on the networks.¹⁴¹

The proposed development, once approved and operational, will support efforts to increase and stabilise electricity supply, thereby helping to reduce instances of electricity disruptions and associated negative socio-economic impacts. It will allow the realisation of the energy mix as envisaged by the IRP and as such, the significance of this impact is assessed as **Moderate (+)**.

Assessment of No-Go option

The no-go option would represent a lost opportunity for South Africa to supplement its current energy mix.

9.5.4 Strain on community health & safety services

As described in section 9.4.4, the presence of non-local employees residing in informal settlements and low-income communities could exacerbate existing social pathologies, placing further strain on family structures and social networks. Risks associated with the manner in which employees conduct themselves could increase levels of the following social pathologies:

- Substance abuse.
- Increase in incidences of crime.
- Disintegration of close relationships with significant others (spouse, fiancé, girlfriend, etc.).
- Prostitution.
- Unplanned pregnancies.
- Communicable diseases (HIV, TB, sexually transmitted diseases, etc.).

While the majority of unskilled and semi-skilled work opportunities could be taken up by local community members, the remainder of available positions need to be filled by non-local employees. Workers recruited from the local community form part of the local family and social structure. These locally resident workers are not likely to increase the social ills listed above beyond the levels already prevailing in the study area.

The presence of non-local employees residing in a local community also serves to emphasise the lack of local skills, leading to discontent, tension and conflict.

Although the risks listed above associated with the presence of a small contingent of non-local employees at a community level is low, these impacts are highly significant on an individual level.

In the absence of mitigation, the significance of this impact is likely to be **High (-)**. This is due to the very high intensity/magnitude of the impact (e.g. dealing with an unplanned pregnancy, contracting AIDS or TB, injury or even loss of life due to violent crime) and medium probability of the impact occurring. With mitigation, the significance of this impact is likely to be **Low (-)**, largely due to the lower probability of the impact occurring.

¹³⁹ Background Information Document, Basic Assessment for the construction and operation of the Kiwano Solar PV Plant, Battery Energy Storage System, Substation and 132 KV Powerline near Upington, Northern Cape Province (15 March 2022).

¹⁴⁰ As above.

¹⁴¹ As above.

The assessment of a no-go option and proposed mitigation measures are similar to those described for the construction phase impacts in section 9.4.4.

9.5.5 Demand for low-cost housing and municipal services

As described in section 9.4.3, housing of employees in the unskilled and semi-skilled income range could be problematic if they are recruited from other regions during the operational phase. As indicated in section 8.8, the municipality is struggling to stay ahead of the demand for low-cost housing and municipal services, particularly in Klippunt which is located within close proximity of the proposed project site. However, given the low number of unskilled and semi-skilled workers who could be employed during the operational phase of the proposed project, no long-term increase in demand for low-cost housing and municipal services is anticipated as a result of the project. No significant impacts on the local demand for low-cost housing and municipal services in the broader DKLM and KGLM are anticipated during the operational phase of the proposed project.

9.5.6 Biodiversity, water, visual and heritage impacts

Biodiversity, water, visual and heritage impacts related to the proposed project are considered and assessed under the various specialist disciplines and more broadly in the BA report. Mitigation measures proposed in these studies are considered to be realistic, reducing the likelihood of a long-term burden for current or future generations to manage.

9.5.7 Influx of jobseekers

Please see section 9.4.5 for a description of potential impacts related to an influx of hopeful job seekers. This potential impact, although not directly linked or fully attributable to the proposed development, will nonetheless require similar mitigation measures as part of the Applicants contribution to help address the problem.

9.5.8 Impact on tourism

As mentioned in section 9.4.7, the proposed site is located in an area that is currently being used for livestock grazing and the existing Eskom Upington MTS. No significant impacts on the local tourism sector are anticipated during the operational phase of the proposed project.

9.6 Closure and decommissioning

9.6.1 Creation of local employment opportunities

The closure and decommissioning of the proposed Kiwano BESS and PV facility will result in the creation of several temporary employment opportunities for people from the local community. Opportunities for on-job training and skills development will also be created. Most of the people employed to undertake decommissioning phase activities will be involved in the demolition of the solar PV plant and related infrastructure. With the implementation of the proposed enhancements such as those recommended for the construction phase (see 9.4.1), the significance of this positive impact is likely remain **Low (+)** as there is the increased probability that local people will be employed for the proposed decommissioning activities.

9.6.2 Loss of employment

The closure and decommissioning of the proposed solar PV plant will result in the loss of permanent employment opportunities. The significance of this impact is likely to be **Low (-)** with and without the implementation of the recommended mitigation measures.

Mitigation measures

- Prior to a scheduled closure, engage with all relevant stakeholders such as the ZF Mgcawu District, DKLM, KGLM and Labour Unions regarding the proposed closure and decommissioning timeframes and possible socio-economic interventions to ameliorate the impact on individuals and the broader community.

- Provide counselling and guidance to employees who will need to be retrenched.
- Provide assistance with claiming UIF and other state assistance if required.
- Assistance with registering as a jobseeker (with the relevant local and district municipalities, DoEL, employment agencies or other solar PV operators).

9.7 Potential cumulative impacts

9.7.1 *Employment, skills and economic opportunities*

It is anticipated that the proposed development will contribute positively to employment, skills development and creation of economic opportunities for people residing in DKLM and KGLM and the broader ZF Mgcau District. The establishment of the Upington REDZ and other similar proposed solar PV and CSP developments in the region could cumulatively, with the proposed Kiwano BESS and PV project, result in **Moderate (+)** socio-economic benefits for local communities as it relates to short-term employment, skills development and procurement of goods and services. However, these cumulative benefits will depend on the extent to which employment and procurement of local resources is prioritised by the various developers.

Enhancements

- Develop and implement a skills development program with the objective of increasing the number of employment opportunities for local community members.
- The Applicant should engage with LED and IDP officials as well as representatives from local Business Chambers to identify strategies aimed at maximising the potential positive impact on local procurement within the DKLM and KGLM.
- Procurement spend should prioritise Coloured and Black African; women; and youth owned local companies to the extent possible.

Assessment of a no-go option

Potential socio-economic benefits associated with the proposed project would be forgone in the event of a no-go decision.

9.7.2 *Influx, housing and demand for municipal services*

In the event that similar developments to the proposed Kiwano BESS and PV project initiate construction or operational activities within a similar timeframe, potential negative cumulative impacts may occur related to an influx of jobseekers. This potential cumulative impact may be significant, particularly if developers do not prioritise employment of and procurement of services from local people. In particular, if local employment of people in the unskilled and semi-skilled job categories is not prioritised, the cumulative pressure on available low-cost accommodation and municipal services is likely to materialise. Other cumulative impacts associated with an influx of people into the area include strain on road infrastructure due to higher traffic volumes with associated road safety risks; a higher demand for English medium schools; and a sharp increase in the price of property rental and purchase prices.¹⁴² Given that the Applicant is not able to influence the hiring and procurement strategies of other developers, this cumulative impact is assessed as **Low (-)**.

Mitigation measures

In consultation with the DKLM and KGLM, investigate the option of establishing a Monitoring Forum to monitor and identify potential influx related problems associated with the proposed project. The Monitoring Forum should include other renewable energy operators in the area. The Monitoring Forum should engage with the local municipalities regarding collaborative planning and assistance with local infrastructure development needs.

¹⁴² Mabele (note 133 above) 52-55.

Assessment of a no-go option

There would be no impact as the *status quo* would be maintained.

9.7.3 Community health, safety and security

While the local municipality is in a reasonably good position to deal with a potential increase in communicable diseases (see section 8.3), the presence of a largely external workforce employed by various developers could place strain on local health resources. Furthermore, an increase in accidents related to industrial events could place strain on the existing local health infrastructure.

Given that the Applicant has no control over measures to mitigate health and safety risks related to transmission of communicable diseases and industrial accidents that may arise from other developments, this potential cumulative impact is assessed at **Low (-)**.

Mitigation measures

The Applicant should develop and implement an appropriate method of communication with the local community. A community liaison officer should be appointed during the construction phase to engage with local community members regarding any issues, complaints or grievances that they may have.

9.8 Impact assessment rating

A preliminary list of potential social impacts that may result from the proposed project, along with significance ratings before and after mitigation is provided in this section (see Table 19, Table 20 and Table 21).

Table 19: Potential construction phase impacts

Impact Description		Impact type	Extent (E)	Duration (D)	Potential Intensity (P)	Likelihood (L)	Impact Rating & Significance (IR&S)	Mitigation & Management Measures	
Impact	Direct Impact:	Significance without Mitigation						i. Prioritise employment of local people from DKLM and KGLM, particularly for semi and unskilled job categories as far as possible.	
Impact Direction:	Positive	Existing Impact	2	1	1	0.1	0 - LOW	ii. Employment of Coloured and Black African people; women; and youth should be prioritised.	
Aspect:	Social	Project Impact	2	1	2	0.2	1 - LOW	iii. Engage with ZF Mgcawu District, DKLM and KGLM to enquire about any district or local skills databases.	
Potential Impact:		Significance with Mitigation						iv. Implement training and on-the-job skills development programmes for temporary employees where feasible.	
Creation of employment, skills development, procurement and business opportunities		Residual Impact	2	1	2	0.5	3 - MOD	v) Employ local contactors that are compliant with Broad Based Black Economic Empowerment (BBBEE) criteria to the extent possible.	
		Reversibility	High reversibility						vi) Recruitment and employment practises must be in accordance with all labour legislation in South Africa.
		Irreplaceability							viii) Vacancies should be advertised in the local media when they become available.
		Cumulative Impact						Description of Cumulative Impact	
		Cumulative Impact	2	1	2	0.75	4 - MOD	It is anticipated that the proposed development will contribute positively to employment, skills development and creation of economic opportunities for people residing in DKLM and KGLM and the broader ZF Mgcawu District. The establishment of the Uppington REDZ and other similar proposed solar PV and CSP developments in the region could cumulatively, with the proposed Kiwano BESS and PV project, result in socio-economic benefits for local communities as it relates to short-term employment, skills development and procurement of goods and services. However, these cumulative benefits will depend on the extent to which employment and procurement of local resources is prioritised by the various developers.	
Confidence	Medium								

Impact Description		Impact type	E	D	P	L	IR&S	Mitigation & Management Measures
Impact	Indirect Impact:	Significance without Mitigation						i) Prioritise employment of local people. ii) Provide suitable housing and living arrangements if temporary employees are brought in to undertake construction activities. Accommodation provided must not compromise safety of employees and surrounding communities. All applicable land-use agreements must be in place before construction commences. iii) Adequate arrangements for daily transport to and from the construction site must be in place before commencement of construction phase activities. iv) All non-local low and semi-skilled workers should be assisted with transport to return home when they are not required on site (i.e. weekends, etc.). v) All non-local construction workers should be assisted with transport back to their place of residence within one week of their temporary employment contracts coming to an end.
Impact Direction:	Negative	Existing Impact	2	1	2	0.2	1 - LOW	
Aspect:	Social	Project Impact	2	1	2	0.2	1 - LOW	
Potential Impact:		Significance with Mitigation						
Increased demand for low-cost housing and municipal services		Residual Impact	2	1	1	0.2	1 - LOW	
		Reversibility	High reversibility					
		Irreplaceability	Resources are replaceable					
		Cumulative Impact						
		Cumulative Impact	2	1	2	0.2	1 - LOW	
		Confidence	Medium					
		Description of Cumulative Impact						
		In the event that similar developments to the proposed Kiwano BESS and PV project initiate construction or operational activities within a similar timeframe, potential negative cumulative impacts may occur related to an influx of jobseekers. This potential cumulative impact may be significant, particularly if developers do not prioritise employment of and procurement of services from local people. In particular, if local employment of people in the unskilled and semi-skilled job categories is not prioritised, the cumulative pressure on available low-cost accommodation and municipal services is likely to materialise. Other cumulative impacts associated with an influx of people into the area include strain on road infrastructure due to higher traffic volumes with associated road safety risks; a higher demand for English medium schools; and a sharp increase in the price of property rental and purchase prices.						
Impact Description		Impact type	E	D	P	L	IR&S	Mitigation & Management Measures
Impact	Direct Impact:	Significance without Mitigation						i) Prioritise employment of local people from the various communities in DKLM and KGLM. ii) The Applicant as well as any contractors that are appointed to undertake the construction phase activities should develop and agree a code of conduct which sets standards for acceptable behaviour and outlines behaviour and activities which could constitute grounds for dismissal. Any employee or contractor appointed by the Applicant to undertake construction phase activities that is found to be in breach of the code of conduct should be dismissed after following due process in accordance with prevailing labour legislation. Criminal activities should be reported to SAPS immediately for investigation and further action. iii) The Applicant and contractor should agree and implement an HIV/AIDS/TB awareness programme. iv) The Applicant should develop and implement an appropriate method of communication with the local community. A community liaison officer should be appointed during the construction phase to engage with local community members regarding any issues, complaints or grievances that they may have.
Impact Direction:	Negative	Existing Impact	2	4	4	0.5	5 - MOD	
Aspect:	Social	Project Impact	2	4	16	0.5	11 - HIGH	
Potential Impact:		Significance with Mitigation						
Strain on community health & safety services		Residual Impact	2	4	16	0.1	2 - LOW	
		Reversibility	Moderate reversibility					
		Irreplaceability						
		Cumulative Impact						
		Cumulative Impact	2	4	16	0.1	2 - LOW	
		Description of Cumulative Impact						
		While the local municipality is in a reasonably good position to deal with a potential increase in communicable diseases, the presence of a largely external workforce employed by various						

		Confidence	High					developers could place strain on local health resources. Furthermore, an increase in accidents related to industrial events could place strain on the existing local health infrastructure.	
Impact Description		Impact type	E	D	P	L	IR&S	Mitigation & Management Measures	
Impact	Indirect Impact:	Significance without Mitigation						i) Prioritise employment of local people from the various communities in DKLM and KGLM. ii) In consultation with the DKLM and KGLM, investigate the option of establishing a Monitoring Forum to monitor and identify potential influx related problems associated with the proposed project. The Monitoring Forum should include other renewable energy operators in the area. iii) Employment for 'walk-in' temporary / casual labourers at the proposed construction site should not be permitted.	
Impact Direction:	Negative	Existing Impact	2	1	4	0.2	1 - LOW		
Aspect:	Social	Project Impact	2	1	4	0.2	1 - LOW		
Potential Impact:		Significance with Mitigation							
Influx of jobseekers		Residual Impact	2	1	4	0.2	1 - LOW		
		Reversibility	High reversibility						
		Irreplaceability	Moderate irreplaceability						
		Cumulative Impact							
		Cumulative Impact	2	1	2	0.2	1 - LOW		
		Confidence							In the event that similar developments to the proposed Kiwano BESS and PV project initiate construction or operational activities within a similar timeframe, potential negative cumulative impacts may occur related to an influx of jobseekers. This potential cumulative impact may be significant, particularly if developers do not prioritise employment of and procurement of services from local people. In particular, if local employment of people in the unskilled and semi-skilled job categories is not prioritised, the cumulative pressure on available low-cost accommodation and municipal services is likely to materialise. Other cumulative impacts associated with an influx of people into the area include strain on road infrastructure due to higher traffic volumes with associated road safety risks; a higher demand for English medium schools; and a sharp increase in the price of property rental and purchase prices.

Impact Description		Impact type	E	D	P	L	IR&S	Mitigation & Management Measures	
Impact	Direct Impact:	Significance without Mitigation						<p>i) The construction site should be fenced off prior to commencement of the construction phase. Movement of construction workers should be restricted to the construction site during work hours.</p> <p>ii) A code of conduct that sets standards for acceptable behaviour and outlines behaviour and activities which could constitute grounds for dismissal must be in place prior to construction. Consequences for wilful or negligent damage to private property must be outlined, communicated with all employees and enforced accordingly when alleged infringements are reported.</p> <p>iii) Any loss or damage associated with construction phase activities, or the actions of employees or contractors appointed by the Applicant must be compensated according to a value/scale agreed with the affected landowner.</p> <p>iv) Movement of people and vehicles associated with construction phase activities should be confined to designated areas or public roads.</p> <p>v) A strict speed limit must be enforced.</p> <p>vi) All farm gates must be closed after accessing/exiting a property.</p> <p>vii) Daily transport for low and semi-skilled workers to and from site should be provided by the Applicant/EPC.</p> <p>viii) EMPr must details measure to ensure proper storage and management of waste on site. In particular, plastic waste which could be ingested by livestock must be managed appropriately.</p> <p>ix) The possibility and practicality of establishing firebreaks around the perimeter of the construction site prior to commencement of construction activities should be investigated.</p> <p>x) Smoking on site must be confined to designated areas.</p> <p>xi) Construction related activities that could pose a potential fire risk must be managed in accordance with safety protocols and procedures outlined in the EMPr in compliance with prevailing fire, health and safety legislation.</p> <p>xii) No construction phase employees should be permitted on site after work hours, with the exception of security staff.</p>	
Impact Direction:	Negative	Existing Impact	2	1	4	0.5	4 - MOD		
Aspect:	Social	Project Impact	2	1	4	0.5	4 - MOD		
Potential Impact:		Significance with Mitigation							
Risk to livestock, crops, houses and farm infrastructure		Residual Impact	2	1	2	0.2	1 - LOW		
		Reversibility	High reversibility						
		Irreplaceability	Moderate irreplaceability						
		Cumulative Impact							
		Cumulative Impact						N/A	
		Confidence	Medium						
Impact Description		Impact type	E	D	P	L	IR&S	Mitigation & Management Measures	
Impact	Indirect Impact:	Significance without Mitigation						Follow mitigation measures detailed in the Visual Impact Assessment.	
Impact Direction:	Negative	Existing Impact	2	1	1	0.2	1 - LOW		
Aspect:	Social	Project Impact	2	1	1	0.2	1 - LOW		
Potential Impact:		Significance with Mitigation							
Impact on tourism		Residual Impact	2	1	1	0.2	1 - LOW		

		Reversibility	High reversibility					The proposed project is one of a number of solar PV developments in KGLM and DKLM. Based on details outlines in the Visual Impact Assessment, this potential cumulative is not rated as being significant.
		Irreplaceability	Resources are replaceable					
		Cumulative Impact						
		Cumulative Impact	2	1	1	0.2	1 - LOW	
		Confidence	High					
Impact Description		Impact type	E	D	P	L	IR&S	Mitigation & Management Measures
Impact	Direct Impact:	Significance without Mitigation						Both the preferred and alternative powerline routes traverse land currently owned by the Applicant and used for the existing Eskom Upington MTS. The area is also used for livestock grazing by the previous owner in terms of a 5-year agreement. The establishment of the proposed Kiwano BESS and PV will therefore result in loss of grazing rights for the previous landowner and disrupt existing land uses on the proposed project footprint. Prior to commencement of construction, the Applicant must ensure that all terms and conditions related to the 5-year agreement with the previous landowner are honoured and closed out in accordance with the agreement.
Impact Direction:	Negative	Existing Impact	1	4	2	1	7 - MOD	
Aspect:	Social	Project Impact	1	4	2	1	7 - MOD	
Potential Impact:		Significance with Mitigation						
Loss of farmland		Residual Impact	1	4	1	1	6 - MOD	
		Reversibility	Moderate reversibility					
		Irreplaceability	Resources are replaceable					
		Cumulative Impact						Description of Cumulative Impact
		Cumulative Impact						N/A
		Confidence						

Table 20 list potential operational phase social impacts, along with significance ratings before and after mitigation.

Table 20: Potential operational phase impacts

Impact Description		Impact type	Extent (E)	Duration (D)	Potential Intensity (P)	Likelihood (L)	Impact Rating & Significance (IR&S)	Mitigation & Management Measures
Impact	Direct Impact:	Significance without Mitigation						<p>i. Prioritise employment of local people from DKLM and KGLM, particularly for semi and unskilled job categories as far as possible.</p> <p>ii. Employment of Coloured and Black African people; women; and youth should be prioritised.</p> <p>iii. Engage with ZF Mgcawu District, DKLM and KGLM to enquire about any district or local skills databases.</p> <p>iv. Implement training and on-the-job skills development programmes for temporary employees where feasible.</p> <p>v) Employ local contactors that are compliant with Broad Based Black Economic Empowerment (BBBEE) criteria to the extent possible.</p> <p>vi) Recruitment and employment practises must be in accordance with all labour legislation in South Africa.</p> <p>viii) Vacancies should be advertised in the local media when they become available.</p>
Impact Direction:	Positive	Existing Impact	2	1	1	0.1	0 - LOW	
Aspect:	Social	Project Impact	2	1	1	0.5	2 - LOW	
Potential Impact:		Significance with Mitigation						
Creation of employment, skills development, procurement and business opportunities		Residual Impact	2	1	1	0.5	2 - LOW	
		Reversibility	High reversibility					
		Irreplaceability						
		Cumulative Impact						Description of Cumulative Impact
		Cumulative Impact	2	1	2	0.5	3 - MOD	It is anticipated that the proposed development will contribute positively to employment, skills development and creation of economic opportunities for people residing in DKLM and KGLM and the broader ZF Mgcawu District. The establishment of the Uppington REDZ and other similar proposed solar PV and CSP developments in the region could cumulatively, with the proposed Kiwano BESS and PV project, result in socio-economic benefits for local communities as it relates to short-term employment, skills development and procurement of goods and services. However, these cumulative benefits will depend on the extent to which employment and procurement of local resources is prioritised by the various developers.
Confidence	Medium							

Impact Description		Impact type	E	D	P	L	IR&S	Mitigation & Management Measures
Impact	Direct Impact:	Significance without Mitigation						N/A
Impact Direction:	Positive	Existing Impact	4	4	2	0.5	5 - MOD	
Aspect:	Social	Project Impact	4	4	2	0.5	5 - MOD	
Potential Impact:		Significance with Mitigation						
Strengthening energy supply	Residual Impact	4	4	2	0.5	5 - MOD		
	Reversibility	High reversibility						
	Irreplaceability	Resources are replaceable						
	Cumulative Impact							
	Cumulative Impact	4	4	2	0.5	5 - MOD		
	Confidence	High						
		Description of Cumulative Impact						
		The proposed development, once approved and operational, will support efforts to increase and stabilise electricity supply, thereby helping to reduce instances of electricity disruptions and associated negative socio-economic impacts.						
Impact Description		Impact type	E	D	P	L	IR&S	Mitigation & Management Measures
Impact	Direct Impact:	Significance without Mitigation						i) Prioritise employment of local people from the various communities in DKLM and KGLM. ii) The Applicant as well as any contractors that are appointed to undertake the construction phase activities should develop and agree a code of conduct which sets standards for acceptable behaviour and outlines behaviour and activities which could constitute grounds for dismissal. Any employee or contractor appointed by the Applicant to undertake construction phase activities that is found to be in breach of the code of conduct should be dismissed after following due process in accordance with prevailing labour legislation. Criminal activities should be reported to SAPS immediately for investigation and further action. iii) The Applicant and contractor should agree and implement an HIV/AIDS/TB awareness programme. iv) The Applicant should develop and implement an appropriate method of communication with the local community. A community liaison officer should be appointed during the construction phase to engage with local community members regarding any issues, complaints or grievances that they may have.
Impact Direction:	Negative	Existing Impact	2	4	4	0.5	5 - MOD	
Aspect:	Social	Project Impact	2	4	16	0.5	11 - HIGH	
Potential Impact:		Significance with Mitigation						
Strain on community health & safety services	Residual Impact	2	4	16	0.1	2 - LOW		
	Reversibility	Moderate reversibility						
	Irreplaceability							
	Cumulative Impact							
	Cumulative Impact	2	4	16	0.1	2 - LOW		
	Confidence	High						
		Description of Cumulative Impact						
		While the local municipality is in a reasonably good position to deal with a potential increase in communicable diseases, the presence of a largely external workforce employed by various developers could place strain on local health resources. Furthermore, an increase in accidents related to industrial events could place strain on the existing local health infrastructure.						

Table 21 list potential operational phase social impacts, along with significance ratings before and after mitigation.

Table 21: Potential decommissioning phase impacts

Impact Description		Impact type	Extent (E)	Duration (D)	Potential Intensity (P)	Likelihood (L)	Impact Rating & Significance (IR&S)	Mitigation & Management Measures
Impact	Direct Impact:	Significance without Mitigation						See measures outlined in section 9.4.1 above.
Impact Direction:	Positive	Existing Impact						
Aspect:	Social	Project Impact	2	1	1	0.5	2 - LOW	
Potential Impact:		Significance with Mitigation						
Creation of local employment opportunities associated with decommissioning activities	Residual Impact	2	1	1	0.5	2 - LOW		
	Reversibility							
	Irreplaceability							
	Cumulative Impact						Description of Cumulative Impact	
	Cumulative Impact						N/A	
	Confidence							
Impact Description		Impact type	E	D	P	L	IR&S	Mitigation & Management Measures
Impact	Direct Impact:	Significance without Mitigation						i) Prior to a scheduled closure, engage with all relevant stakeholders such as the ZF Mgcawu District, DKLM, KGLM and Labour Unions regarding the proposed closure and decommissioning timeframes and possible socio-economic interventions to ameliorate the impact on individuals and the broader community. ii) Provide counselling and guidance to employees who will need to be retrenched. iii) Provide assistance with claiming UIF and other state assistance if required. iv) Assistance with registering as a jobseeker (with the relevant local and district municipalities, DoEL, employment agencies or other solar PV operators).
Impact Direction:	Negative	Existing Impact	2	1	1	0.5	2 - LOW	
Aspect:	Social	Project Impact	2	1	1	0.5	2 - LOW	
Potential Impact:		Significance with Mitigation						
Loss of employment	Residual Impact	2	1	1	0.5	2 - LOW		
	Reversibility	Low reversibility						
	Irreplaceability	Low irreplaceability						
	Cumulative Impact						Description of Cumulative Impact	
	Cumulative Impact						N/A	
	Confidence							

10. CONCLUSION AND RECOMMENDATIONS

This SIA provides an outline of the policy framework and socio-economic conditions relevant to the proposed Kiwano BESS and PV facility. The SIA identifies potential socio-economic impacts that could result from the proposed project. Appropriate mitigation measures to reduce and, if possible, avoid negative impacts, while enhancing positive impacts are identified.

The findings of the SIA suggest that the proposed project is aligned with the legal, policy and administrative framework as it pertains solar PV developments in South Africa. At a national level, the proposed development is likely to strengthen energy supply. At a regional and local level, it is anticipated to create employment, skills development and procurement opportunities for people in DKLM and KGLM and the broader ZF Mgcau District.

The proposed project is furthermore aligned with the NDP and UN SDGs outlined in section 7.14.

Table 22 provides a summary of the significance of identified impacts associated with the various phases of the proposed project.

Table 22: Summary of potential socio-economic impacts and their significance pre- and post-mitigation/enhancement

Potential impact	Significance (pre-mitigation / enhancement)	Significance (post-mitigation / enhancement)
CONSTRUCTION PHASE		
Creation of employment opportunities	1 - LOW (POSITIVE)	3 - MOD (POSITIVE)
Creation of procurement opportunities	1 - LOW (POSITIVE)	3 - MOD (POSITIVE)
Increased demand for low-cost housing and municipal services	1 - LOW	1 - LOW
Strain on community health & safety services	11 - HIGH	2 - LOW
Influx of jobseekers	1 - LOW	1 - LOW
Risk to livestock, crops, houses and farm infrastructure	4 - MOD	1 - LOW
Impact on tourism	1 - LOW	1 - LOW
Loss of farmland	7 - MOD	6 - MOD
OPERATIONAL PHASE		
Creation of employment opportunities	2 - LOW	2 - LOW
Creation of procurement opportunities	2 - LOW	2 - LOW
Strengthening energy supply	5 - MOD	5 - MOD
Strain on community health & safety services	11 - HIGH	2 - LOW
CLOSURE AND DECOMMISSIONING PHASE		
Creation of temporary employment opportunities	2 - LOW	2 - LOW
Loss of permanent employment		
CUMULATIVE IMPACTS		
Employment, skills and economic opportunities	4 - MOD (POSITIVE)	
Housing and demand for municipal services	2 - LOW	
Community health, safety and security	2 - LOW	

Based on the findings of this SIA, Table 23 summarises recommendations in respect of management outcomes; impact management actions; responsible parties; and monitoring frequency.

Table 23: Recommendations

Management outcome: Contribute towards sustainable socio-economic development in DKLM and KGLM				
Impact Management Actions	Implementation		Monitoring	
	Phase	Responsible Party	Aspect	Frequency
<ul style="list-style-type: none"> The Applicant and any contractors appointed to undertake activities associated with the proposed project should prioritise employment of local people from DKLM and KGLM, particularly for semi and unskilled job categories. Employment of Coloured and Black African people; women; and youth should be prioritised. The Applicant should meet with officials from the ZF Mgcawu District, DKLM and KGLM to enquire about the possibility and process of hiring people who are registered on a District and/or Local skills database. Where feasible, training and on-the-job skills development programmes for temporary employees should be implemented during the construction phase. Where feasible, efforts should be made to employ local contactors that are compliant with BBBEE criteria. Recruitment and employment practises must be aligned with prevailing labour legislation in South Africa. Vacancies should be advertised in the local media when they become available. Employment for 'walk-in' temporary / casual labourers at the proposed construction site should not be permitted. In consultation with the DKLM and KGLM, investigate the option of establishing a Monitoring Forum to monitor and identify potential problems associated with an influx of hopeful jobseekers to the area. The Monitoring Forum should include other solar PV/CSP operators in the area 	Construction/Operational Phase/Closure	Project manager, Human Resource Manager	Employment	Ongoing / during recruitment of temporary and permanent employees
<ul style="list-style-type: none"> The Applicant should engage with the DKLM and KGLM LED and IDP officials as well as representatives of local Business Chambers to identify strategies aimed at maximising the potential positive impact on local procurement within these municipalities. Procurement spend should prioritise Coloured and Black African; women; and youth owned local companies to the extent possible. 	Construction/Operational Phase/Closure	Project manager, Human Resource Manager	Procurement	Ongoing / during process of procuring goods and services
<ul style="list-style-type: none"> In consultation with the DKLM and KGLM, investigate the option of establishing a Monitoring Forum to monitor and identify potential influx related problems associated with the proposed project. The Monitoring Forum should include other solar PV/CSP operators in the area. The Monitoring Forum should be established during the construction phase. 	Construction/Operational Phase/Closure	Project manager, Human Resource Manager	Influx (demand for housing / services)	As agreed once Forum established
<ul style="list-style-type: none"> The Applicant as well as any contractors that are appointed to undertake the construction phase activities should develop and agree a code of conduct which sets standards for acceptable behaviour and outlines behaviour and activities which could constitute grounds for dismissal. Any employee or contractor appointed by the Applicant to undertake construction phase activities that is found to be in breach of the code of conduct should be dismissed after following due process in accordance with prevailing labour legislation. Criminal activities should be reported to SAPS immediately for investigation and further action. 	Construction/Operational Phase/Closure	Project manager, Human Resource Manager	Community health, safety & security	Ongoing / during recruitment and after termination of employment of all temporary and permanent employees

Management outcome: Contribute towards sustainable socio-economic development in DKLM and KGLM				
Impact Management Actions	Implementation		Monitoring	
	Phase	Responsible Party	Aspect	Frequency
<ul style="list-style-type: none"> For temporary employees brought in from other areas, suitable housing and living arrangements must be put in place before commencement of construction activities. This could include establishment of a temporary worker accommodation camp that considers aspects such as access to the construction site, services and materials. Access to all necessary amenities to ensure the health and safety of employees must be provided by the Applicant. Unless the Applicant is the owner of the land on which the proposed accommodation camp is to be established, an agreement with the relevant landowner must be concluded prior to commencement of construction activities. The Applicant should take steps to ensure that adequate arrangements for daily transport to and from the construction site are in place before commencement of construction phase activities. Where necessary, the Applicant should take steps to ensure that arrangements are in place to enable non-local unskilled and semi-skilled workers to return home when they are not required on site (i.e. weekends, etc.). The Applicant should take steps to ensure that all non-local construction workers are transported back to their place of residence within one week of their temporary employment contracts coming to an end. The Applicant and contractor should agree and implement an HIV/AIDS/TB awareness programme. 				
<ul style="list-style-type: none"> The Applicant should develop and implement an appropriate method of communication with the local community. A community liaison officer should be appointed during the construction phase to engage with local community members regarding any issues, complaints or grievances that they may have. 	Construction/Operational Phase/Closure	Project manager, Community Liaison Officer	Grievance redress and communication system	Ongoing
<ul style="list-style-type: none"> Movement of people and vehicles associated with construction phase activities should be confined to designated areas. A strict speed limit must be enforced. All farm gates must be closed after accessing/exiting a property. The Applicant and any contractor appointed to undertake construction related activities should provide daily transport for unskilled and semi-skilled workers to and from site. This will not only benefit workers, but it will also reduce the amount of pedestrians traffic on private property. Provision should be made in the approved EMPr to store and manage waste on site. In particular, plastic waste which could be ingested by livestock must be managed appropriately. The possibility and practicality of establishing firebreaks around the perimeter of the construction site prior to commencement of construction activities should be investigated. Smoking on site must be confined to designated areas. Construction related activities that could pose a potential fire risk must be managed in accordance with safety protocols and procedures outlined in the EMPr in compliance with prevailing fire, health and safety legislation. No construction phase employees should be permitted on site after work hours, with the exception of security staff. 	Construction/Operational Phase/Closure	Project manager, Environmental Officer	Risk to livestock, crops, houses and farm infrastructure	Ongoing

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ANNEXURE 1

SPECIALIST CV

ANNEXURE 2

SPECIALIST DECLARATION

ANNEXURE 3

Consideration of need and desirability as required in the NEMA Need and Desirability Guideline, 2017.

Table 24: Consideration of need and desirability

Question		Reference to relevant section in SIA
2.1.	What is the socio-economic context of the area, based on, amongst other considerations, the following considerations?:	
2.1.1.	The IDP (and its sector plans' vision, objectives, strategies, indicators and targets) and any other strategic plans, frameworks of policies applicable to the area,	Sections 7.7-7.12 and 9.2
2.1.2.	Spatial priorities and desired spatial patterns (e.g. need for integrated of segregated communities, need to upgrade informal settlements, need for densification, etc.),	Section 5.3, 7.12 and 9.2
2.1.3.	Spatial characteristics (e.g. existing land uses, planned land uses, cultural landscapes, etc.), and	Section 8.9 and 8.11
2.1.4.	Municipal Economic Development Strategy (LED Strategy).	Section 7.12
2.2.	Considering the socio-economic context, what will the socio-economic impacts be of the development (and its separate elements/aspects), and specifically also on the socio-economic objectives of the area?	
2.2.1.	Will the development complement the local socio-economic initiatives (such as local economic development (LED) initiatives), or skills development programs)?	Section 5.3, 7.12 and 9.2
2.3.	How will this development address the specific physical, psychological, developmental, cultural and social needs and interests of the relevant communities?	Section 9.4.1, 9.4.2, 9.5.3, 9.5.1, 9.5.2 and 9.6.1
2.4.	Will the development result in equitable (intra- and inter-generational) impact distribution, in the short- and long-term? Will the impact be socially and economically sustainable in the short- and long-term?	See recommendations in Air, Noise, Visual and Cultural Heritage Impact Assessments.
2.5.	In terms of location, describe how the placement of the proposed development will:	
2.5.1.	result in the creation of residential and employment opportunities in close proximity to or integrated with each other,	Sections 9.4.1, 9.4.2, 9.5.3, 9.5.1, 9.5.2 and 9.6.1
2.5.2.	reduce the need for transport of people and goods,	N/A
2.5.3.	result in access to public transport or enable non-motorised and pedestrian transport (e.g. will the development result in densification and the achievement of thresholds in terms public transport),	N/A
2.5.4.	compliment other uses in the area,	Section 5.3, 7.12, and 9.2
2.5.5.	be in line with the planning for the area,	Section 5.3, 7.12 8.9 and 9.2
2.5.6.	for urban related development, make use of underutilised land available with the urban edge,	N/A
2.5.8.	opportunity costs in terms of bulk infrastructure expansions in non-priority areas (e.g. not aligned with the bulk infrastructure planning for the settlement that reflects the spatial reconstruction priorities of the settlement),	N/A
2.5.9.	discourage 'urban sprawl' and contribute to compaction/densification,	N/A

Question		Reference to relevant section in SIA
2.5.10.	contribute to the correction of the historically distorted spatial patterns of settlements and to the optimum use of existing infrastructure in excess of current needs,	N/A
2.5.11.	encourage environmentally sustainable land development practices and processes,	See recommendations in the Biodiversity, Wetland and Land Use & Agriculture Potential Impact Assessments.
2.5.12.	take into account special locational factors that might favour the specific location (e.g. the location of a strategic mineral resource, access to the port, access to rail, etc.),	Section 5.3, 7.12 and 9.2
2.5.13.	the investment in the settlement or area in question will generate the highest socio-economic returns (i.e. an area with high economic potential),	Sections 9.4.1, 9.4.2, 9.5.3, 9.5.1, 9.5.2 and 9.6.1
2.5.14.	impact on the sense of history, sense of place and heritage of the area and the socio-cultural and cultural-historic characteristics and sensitivities of the area, and	See recommendations in Visual and Cultural Heritage Impact Assessments.
2.5.15.	in terms of the nature, scale and location of the development promote or act as a catalyst to create a more integrated settlement?	N/A
2.6.	How were a risk-averse and cautious approach applied in terms of socio-economic impacts?:	
2.6.1.	What are the limits of current knowledge (note: the gaps, uncertainties and assumptions must be clearly stated)?	Section 6.8
2.6.2.	What is the level of risk (note: related to inequality, social fabric, livelihoods, vulnerable communities, critical resources, economic vulnerability and sustainability) associated with the limits of current knowledge?	Sections 6.8, 9.4.3, 9.4.4, 9.4.5, 9.4.6, 9.4.7, 9.4.8, 9.5.3, 9.5.4, 9.5.6, 9.5.7 and 9.5.8.
2.6.3.	Based on the limits of knowledge and the level of risk, how and to what extent was a risk-averse and cautious approach applied to the development?	Section 6.8. Also see recommendations in MHI report.
2.7.	How will the socio-economic impacts resulting from this development impact on people's environmental right in terms following:	
2.7.1.	Negative impacts: e.g. health (e.g. HIV-Aids), safety, social ills, etc. What measures were taken to firstly avoid negative impacts, but if avoidance is not possible, to minimise, manage and remedy negative impacts?	Sections 6.8, 9.4.4, 9.4.5, 9.4.6, 9.4.7, 9.4.8, 9.5.3, 9.5.4, 9.5.6, 9.5.7, 9.5.6 and 9.5.8
2.7.2.	Positive impacts. What measures were taken to enhance positive impacts?	Section 9.4.1, 9.4.2, 9.5.3, 9.5.1 and 9.5.2.
2.8.	Considering the linkages and dependencies between human wellbeing, livelihoods and ecosystem services, describe the linkages and dependencies applicable to the area in question and how the	Sections 9.4.3 and 9.4.8.

Question		Reference to relevant section in SIA
	development's socio-economic impacts will result in ecological impacts (e.g. over utilisation of natural resources, etc.)?	
2.9.	What measures were taken to pursue the selection of the 'best practicable environmental option' in terms of socio-economic considerations?	Section 4.1, 4.2, 4.3, 8.9
2.10.	What measures were taken to pursue environmental justice so that adverse environmental impacts shall not be distributed in such a manner as to unfairly discriminate against any person, particularly vulnerable and disadvantaged persons (who are the beneficiaries and is the development located appropriately)? Considering the need for social equity and justice, do the alternatives identified, allow the 'best practicable environmental option' to be selected, or is there a need for other alternatives to be considered?	Procedural: Section 8.12 and Public Participation section of EIA Report. Substantive: Biodiversity, Wetland and Land Use & Agriculture Potential Impact Assessments.
2.11.	What measures were taken to pursue equitable access to environmental resources, benefits and services to meet basic human needs and ensure human wellbeing, and what special measures were taken to ensure access thereto by categories of persons disadvantaged by unfair discrimination?	Section 9.4.1, 9.4.2, 9.4.8, 9.5.3, 9.5.1 and 9.5.2.
2.12.	What measures were taken to ensure that the responsibility for the environmental health and safety consequences of the development has been addressed throughout the development's life cycle?	See Biodiversity, Wetland, Air Quality, Noise, MHI and Land Use & Agriculture Potential Impact Assessments.
2.13.	What measures were taken to:	
2.13.1.	Ensure the participation of all interested and affected parties,	Section 8.12
2.13.2.	Provide all people with an opportunity to develop the understanding, skills and capacity necessary for achieving equitable and effective participation,	Section 8.12
2.13.3.	ensure participation by vulnerable and disadvantaged persons,	Section 8.12
2.13.4.	promote community wellbeing and empowerment through environmental education, the raising of environmental awareness, the sharing of knowledge and experience and other appropriate means,	Section 8.12
2.13.5.	ensure openness and transparency, and access to information in terms of the process,	Section 8.12
2.13.6.	ensure that the interests, needs and values of all interested and affected parties were taken into account, and that adequate recognition were given to all forms of knowledge, including traditional and ordinary knowledge, and	Section 8.12
2.13.7.	ensure that the vital role of women and youth in environmental management and development were recognised and their full participation therein were be promoted?	Section 8.12

Question		Reference to relevant section in SIA
2.14.	Considering the interests, needs and values of all the interested and affected parties, describe how the development will allow for opportunities for all the segments of the community (e.g.. a mixture of low-, middle-, and high-income housing opportunities) that is consistent with the priority needs of the local area (or that is proportional to the needs of an area)?	Section 7.12.
2.15.	What measures have been taken to ensure that current and/or future workers will be informed of work that potentially might be harmful to human health or the environment or of dangers associated with the work, and what measures have been taken to ensure that the right of workers to refuse such work will be respected and protected?	Section 4.7
2.16.	Describe how the development will impact on job creation in terms of, amongst other aspects:	
2.16.1.	The number of temporary versus permanent jobs that will be created,	Section 4.7
2.16.2.	Whether the labour available in the area will be able to take up the job opportunities (i.e. do the required skills match the skills available in the area),	Section 4.7 and 9.4.1
2.16.3.	The distance from where labourers will have to travel,	Section 4.7, 5.2 and 9.4.1
2.16.4.	The location of jobs opportunities versus the location of impacts (i.e. equitable distribution of costs and benefits), and	Section 4.7, 5.2 and 9.4.1
2.16.5.	The opportunity costs in terms of job creation (e.g. a mine might create 100 jobs, but impact on 1000 agricultural jobs, etc.).	Section 4.7 and 9.4.8
2.17.	What measures were taken to ensure:	
2.17.1.	That there were intergovernmental coordination and harmonisation of policies, legislation and actions relating to the environment, and	N/A
2.17.2.	That actual or potential conflicts of interest between organs of state were resolved through conflict resolution procedures?	N/A
2.18.	What measures were taken to ensure that the environment will be held in public trust for the people, that the beneficial use of environmental resources will serve the public interest, and that the environment will be protected as the people's common heritage?	Section 7 read with the Biodiversity & Wetland Impact Assessment.
2.19.	Are the mitigation measures proposed realistic and what long-term environmental legacy and managed burden will be left?	Section 9.5.6.
2.20.	What measures were taken to ensure that the costs of remedying pollution, environmental degradation and consequent adverse health effects and of preventing, controlling or minimising further pollution, environmental damage or adverse health effects will be paid for by those responsible for harming the environment?	See measures proposed in the Wetland, Biodiversity, Visual and Cultural Heritage Studies.
2.21.	Considering the need to secure ecological integrity and a healthy bio-physical environment, describe how the alternatives identified (in terms of all the different elements of the development and all the different impacts being proposed), resulted in the selection of the best practicable environmental option in terms of socio-economic considerations?	Section 9.3.
2.22.	Describe the positive and negative cumulative socio-economic impacts bearing in mind the size, scale, scope and nature of the project in relation to its location and other planned developments in the area?	Section 9.7.