

**SOCIAL IMPACT ASSESSMENT
FOR
GRID CONNECTION
FOR
PIXELY PARK PV SEF CLUSTER
NORTHERN CAPE PROVINCE**

SEPTEMBER 2022

Prepared for

SAVANNAH ENVIRONMENTAL

By

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EXECUTIVE SUMMARY

INTRODUCTION AND LOCATION

The Pixley Park Photovoltaic (PV) Solar Energy Facility (SEF) Cluster is located approximately 10 km east of the town of De Aar in the Northern Cape Province. The project site is situated within the Emthanjeni Local Municipality (ELM), which is located within the Pixley Ka Seme District Municipality (PKSDM). The Cluster entails the development of four (4) solar energy facilities, namely:

- Rietfontein PV SEF.
- Wagt PV SEF.
- Fountain PV SEF.
- Carolus PV SEF.

The grid infrastructure associated with the Cluster forms the focus of the Basic Assessment (BA). Tony Barbour was appointed to undertake a specialist Social Impact Assessment (SIA) as part of the Basic Assessment (BA) process.

SUMMARY OF KEY FINDINGS

The assessment section is divided into:

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

The grid connection corridor for the 132 kV overhead powerline is common to all four PV SEFs associated with the Pixley Park PV Cluster. The social impacts associated with the 132 kV overhead line are therefore common to all four PV SEFs. The findings of the SIA are therefore applicable to each of the four PV SEFs associated with the Pixley Park PV Cluster. The findings of the SIA also indicate that the potential social impacts associated with the MTS are negligible. The focus of the SIA is therefore on the 132 kV overhead powerline.

POLICY AND PLANNING ISSUES

The development of renewable energy is strongly supported at a national, provincial, and local level. The development of and investment in renewable energy is supported by the National Development Plan (NDP), New Growth Path Framework and National Infrastructure Plan, which all refer to and support renewable energy. The PKSDM SDF and IDP and ELM IDP also support the development of renewable energy. The development of the proposed Pixley Park PV Cluster and associated grid connections is therefore supported by key policy and planning documents.

CONSTRUCTION PHASE

The key social issues associated with the construction phase include:

Potential positive impacts

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

The construction phase will extend over a period of approximately 3-6 months and create in the region of 23-40 employment opportunities. The total wage bill will be in the region of R 1.5-2 million (2022 Rand values). Most of the low and semi-skilled employment opportunities are likely to benefit residents from De Aar. Most the beneficiaries are likely to be historically disadvantaged (HD) members of the community. This would represent a short term positive social benefit in an area with limited employment opportunities. A percentage of the wage bill will be spent in the local economy which will also create opportunities for local businesses in KHM.

The capital expenditure associated with the construction of power line will be ~50 million (2022 Rand values) and will create opportunities for the local and regional and local economy. The sector of the local economy most likely to benefit from the proposed development is the local service industry. The potential opportunities for the local service sector would be linked to accommodation, catering, cleaning, transport, and security, etc. associated with the construction workers on the site. However, given the relatively small scale of the development and short construction period the benefits will be limited.

Potential negative impacts

- Impacts associated with the presence of construction workers on local communities.
- Noise, dust, and safety impacts of construction related activities and vehicles.
- Risk of veld fires.
- Risks posed to farming activities by construction workers.

The findings of the SIA indicate that the significance of the potential negative impacts is likely to be negligible. With mitigation they are rated as **Low Negative**. The potential negative impacts associated with the proposed construction of the power line can therefore be effectively mitigated if the recommended mitigation measures are implemented.

Table 1 summarises the significance of the impacts associated with the construction phase.

Table 1: Summary of social impacts during construction phase

Impact	Significance No Mitigation / Enhancement	Significance With Mitigation / Enhancement
Creation of employment and business opportunities	Low (Positive)	Low (Positive)
Presence of construction workers and potential impacts on family structures and social networks	Low (Negative)	Low (Negative)
Impact of construction activities and vehicles	Low (Negative)	Low (Negative)
Risk of veld fires	Moderate Negative)	Low (Negative)
Safety risk, stock theft and damage to farm infrastructure associated with presence of construction workers	Moderate Negative)	Low (Negative)

OPERATION PHASE

The benefits associated with the Pixley Park PV SEF Cluster are dependent upon being able to connect to the national grid. The key social issues associated with the operational phase include:

Potential positive impacts

- Improve energy security and establishment of energy infrastructure.
- Creation of employment, skills development, and business opportunities.
- Generate income for landowners.

Potential negative impacts

- The visual impacts and associated impact on sense of place.
- Impact on farming operations
- Risks posed to farming activities by maintenance workers.

The findings of the SIA indicate that the significance of the potential negative impacts is likely be **Low Negative** if the required mitigation measures are effectively implemented.

The significance of the impacts associated with the operational phase are summarised in Table 2.

Table 2: Summary of social impacts during operational phase

Impact	Significance No Mitigation / Enhancement	Significance With Mitigation / Enhancement
Improve energy security and establishment of energy infrastructure	Moderate (Negative) ¹	Moderate (Positive) ²
Creation of employment, skills development, and business opportunities during maintenance	Low (Positive)	Moderate (Positive)
Generate income for landowners	Low (Positive)	Moderate (Positive)
Visual impact and impact on sense of place	Low-Moderate (Negative)	Low-Moderate (Negative)
Impact on farming operations	Moderate (Negative)	Low (Negative)
Safety risk, stock theft and damage to farm infrastructure associated with presence of maintenance workers	Moderate (Negative)	Low (Negative)

CUMULATIVE IMPACT ON SENSE OF PLACE

The findings of the VIA (Logis, July 2022) note the construction of the grid connection infrastructure may increase the cumulative visual impact of industrial type infrastructure within the region. The anticipated cumulative visual impact of the proposed grid connection infrastructure is expected to be of **moderate** significance. This is considered to be acceptable from a visual impact perspective.

NO-DEVELOPMENT OPTION

The No-Development option would represent a lost opportunity for South Africa to improve energy security and supplement its current energy needs with flexible and cleaner (compared to coal) energy. Given South Africa's current energy security challenges and its position as one of the highest per capita producers of carbon emissions in the world, this would represent a negative social cost.

CONCLUSION AND RECOMMENDATIONS

The energy security benefits associated with the proposed Pixley Park PV SEF Cluster are dependent upon it being able to connect to the national grid via the establishment of grid connection infrastructure. The findings of the SIA indicate that the significance of the potential negative social impacts for both the construction and operational phase of the proposed grid infrastructure are **Low Negative** with mitigation. The potential negative impacts can therefore be effectively mitigated if the recommended mitigation measures are implemented. The establishment of proposed grid infrastructure for the Pixley Park PV SEF Cluster is therefore supported by the findings of the SIA.

¹ Assumes grid infrastructure is not developed

² Assumes grid infrastructure is developed

CONTENTS OF THE SPECIALIST REPORT – CHECKLIST

Regulation GNR 326 of 4 December 2014, as amended 7 April 2017, Appendix 6	Section of Report
(a) details of the specialist who prepared the report; and the expertise of that specialist to compile a specialist report including a <i>curriculum vitae</i> ;	Section 1.5, Annexure A
(b) a declaration that the specialist is independent in a form as may be specified by the competent authority;	Section 1.6, Annexure B
(c) an indication of the scope of, and the purpose for which, the report was prepared;	Section 1.1, Section 1.2
(cA) an indication of the quality and age of base data used for the specialist report;	Section 1.2, Section 3,
(cB) a description of existing impacts on the site, cumulative impacts of the proposed development and levels of acceptable change;	Section 4
(d) the duration, date and season of the site investigation and the relevance of the season to the outcome of the assessment;	Interviews in 2021 (Annexure A)
(e) a description of the methodology adopted in preparing the report or carrying out the specialised process inclusive of equipment and modelling used;	Section 1.2, Annexure B
(f) details of an assessment of the specific identified sensitivity of the site related to the proposed activity or activities and its associated structures and infrastructure, inclusive of a site plan identifying site alternatives;	Section 4, Section 5,
(g) an identification of any areas to be avoided, including buffers;	Section 4
(h) a map superimposing the activity including the associated structures and infrastructure on the environmental sensitivities of the site including areas to be avoided, including buffers;	Refer to Visual Impact Assessment (VIA)
(i) a description of any assumptions made and any uncertainties or gaps in knowledge;	Section 1.4,
(j) a description of the findings and potential implications of such findings on the impact of the proposed activity, including identified alternatives on the environment, or activities;	Section 4, Section 5
(k) any mitigation measures for inclusion in the EMPr;	Section 4
(l) any conditions for inclusion in the environmental authorisation;	Section 4, Section 5
(m) any monitoring requirements for inclusion in the EMPr or environmental authorisation;	N/A
(n) a reasoned opinion— i. as to whether the proposed activity, activities or portions thereof should be authorised; iA. Regarding the acceptability of the proposed activity or activities; and ii. if the opinion is that the proposed activity, activities or portions thereof should be authorised, any avoidance, management and mitigation measures that should be included in the EMPr or Environmental Authorization, and where applicable, the closure plan;	Section 5.3
(o) a description of any consultation process that was undertaken during the course of preparing the specialist report	Annexure A, lists key stakeholders interviewed
(p) a summary and copies of any comments received during any consultation process and where applicable all responses thereto; and	Annexure A, lists key stakeholders interviewed
(q) any other information requested by the competent authority	N/A

Where a government notice gazetted by the Minister provides for any protocol or minimum information requirement to be applied to a specialist report, the requirements as indicated in such notice will apply.	Comply with the Assessment Protocols that were published on 20 March 2020, in Government Gazette 43110, GN 320. This specifically includes Part A, which provides the Site Sensitivity Verification Requirements where a Specialist Assessment is required but no Specific Assessment Protocol has been prescribed. As at September 2020, there are no sensitivity layers on the Screening Tool for Socio-economic-features. Part A has therefore not been compiled for this assessment.
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ACRONYMS

DEA	Department of Environmental Affairs
DEA&DP	Department of Environmental Affairs and Development Planning
DM	District Municipality
EIA	Environmental Impact Assessment
ELM	Emthanjeni Local Municipality
HD	Historically Disadvantaged
IDP	Integrated Development Plan
IPP	Independent Power Producer
kV	Kilovolts
LED	Local Economic Development
LM	Local Municipality
MW	Megawatt
NC	Northern Cape
NCPPGDS	Northern Cape Province Provincial Growth and Development Strategy
NCSDF	Northern Cape Spatial Development Framework
SEF	Solar Energy Facility
PGDS	Provincial Growth and Development Strategy
PKSDM	Pixley Ka Seme District Municipality
SDF	Spatial Development Framework
SIA	Social Impact Assessment

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SECTION 1: INTRODUCTION

1.1 INTRODUCTION

The Pixley Park Photovoltaic (PV) Solar Energy Facility (SEF) Cluster is located approximately 10 km east of the town of De Aar in the Northern Cape Province. The project site is situated within the Emthanjeni Local Municipality (ELM), which is located within the Pixley Ka Seme District Municipality (PKSDM) (Figure 1.1). The Cluster entails the development of four (4) solar energy facilities, namely:

- Rietfontein PV SEF.
- Wagt PV SEF.
- Fountain PV SEF.
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The grid infrastructure associated with the Cluster forms the focus of the Basic Assessment (BA). Tony Barbour was appointed to undertake a specialist Social Impact Assessment (SIA) as part of the Basic Assessment (BA) process.

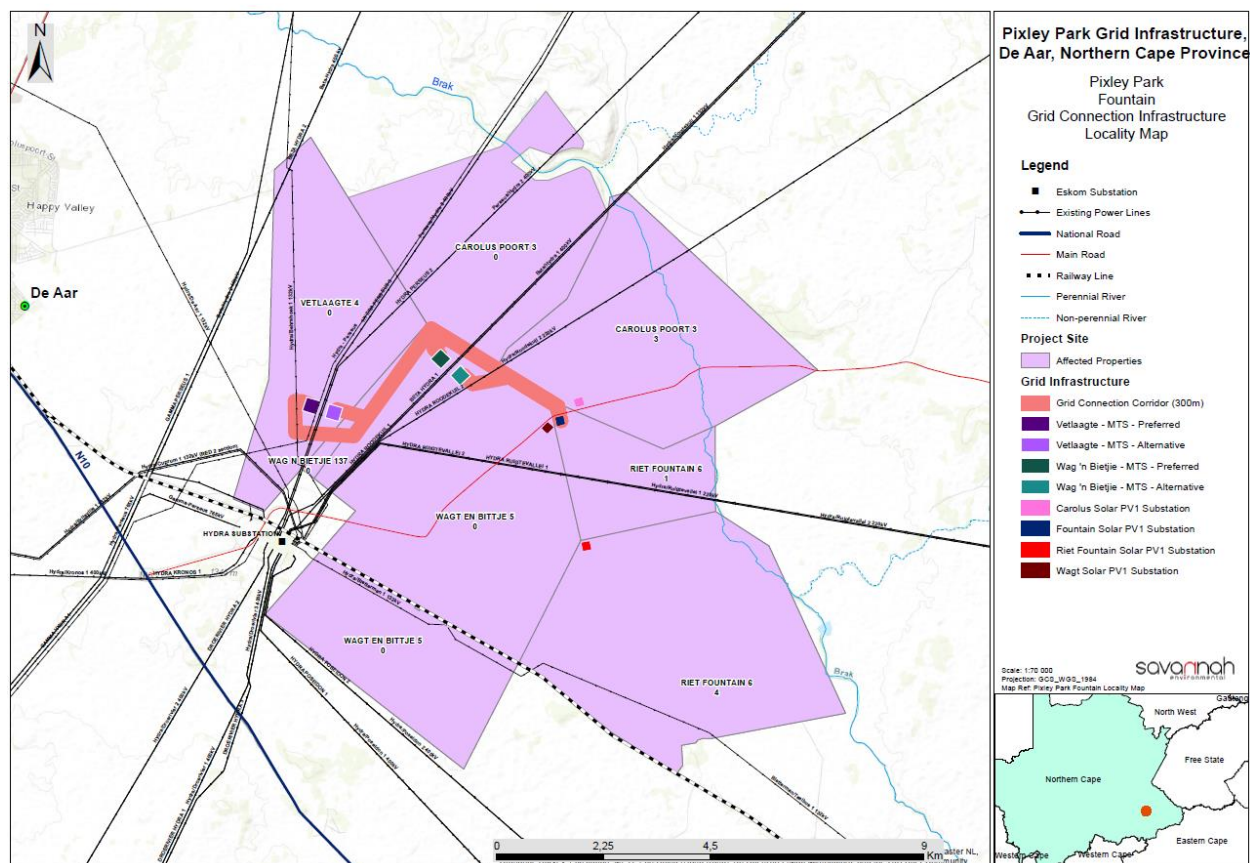


Figure 1.1: Location grid connection infrastructure

1.2 TERMS OF REFERENCE AND APPROACH TO STUDY

The terms of reference for the SIA require:

- A description of the environment that may be affected by the activity and the manner in which the environment may be affected by the proposed facility.
- A description and assessment of the potential social issues associated with the proposed facility.
- Identification of enhancement and mitigation aimed at maximising opportunities and avoiding and or reducing negative impacts.

The approach to the SIA is based on the Western Cape Department of Environmental Affairs and Development Planning (DEA&DP) Guidelines for Social Impact Assessment (DEA&DP, 2007). The key activities in undertaken as part of the SIA process as embodied in the guidelines included:

- Describing and obtaining an understanding of the proposed intervention (type, scale, and location), the settlements, and communities likely to be affected by the proposed project.
- Collecting baseline data on the current social and economic environment.
- Identifying the key potential social issues associated with the proposed project.
- Site visit.
- Semi-structured interviews with key stakeholders and affected individuals and communities.
- Assessing and documenting the significance of social impacts associated with the proposed intervention.
- Consideration of other renewable energy projects that may pose cumulative impacts; and
- Identification of enhancement and mitigation measures aimed at maximizing opportunities and avoiding and or reducing negative impacts.

The identification of potential social issues associated with the proposed project is based on observations during the project site visit, review of relevant documentation, experience with similar projects and the general area. Annexure A contains a list of the secondary information reviewed and interviews conducted. Annexure B summarises the assessment methodology used to assign significance ratings to the assessment process.

1.3 PROJECT DESCRIPTION

The grid connection infrastructure associated with each of the four PV SEFs will include a 132 kV IPP Substation and a powerline with a capacity up to 132 kV which is being assessed within a 300m wide and between 2.5 km and 8.5km long corridor connecting to either the new proposed Vetlaagte MTS or the new proposed Wag-'n-Bietjie MTS, which will respectively be located on the farm Vetlaagte (RE/4) or Wagt en Bittje (RE/5).

The Vetlaagte MTS will Loop into the Hydra-Perseus 2 or Hydra-Perseus 3 line (400 kV). Substations on either end of the line: Hydra and Perseus. The Wag-'n-Bietjie MTS will loop into the Hydra-Beta 1 line (400 kV). Substations on either end of the line: Hydra and Beta. These sites are currently under a separate BAR process.

The grid connection corridor will consist of:

- Onsite 132kV IPP Substation including the HV Stepup transformer, MV Interconnection building (footprint up to 100m x 100m located within the 300m wide corridor).
- Onsite 132kV Eskom switching station - 100m x 100m and 30m height, metering, relay & control buildings, laydown area, ablutions with conservancy tanks and water storage tanks, and access roads which is handed back to Eskom (Separate EA).
- 132kV Overhead Power Line (OHPL) – 30m height from the switching station to the Main Transmission Substation (MTS) located on either Vetlaagte (RE/4) or Wag en Bittje (RE/5) farms which will be handed back to Eskom (within 300m wide corridor and a 31m wide servitude).
- Access roads to substation sites (up to 8 m wide) and service tracks (up to 6 m wide) where no existing roads are available.

As indicated in Figure 1.1 the grid connection corridor for the 132 kV overhead powerline is common to all four PV SEFs associated with the Pixley Park PV Cluster. The corridor starts at the Fountain MTS on the Farm Riet Fountain 6 and runs in a north westerly direction for approximately 4 km before swinging south for ~4 km and linking up with the Vetlaagte MTS alternatives. The social impacts associated with the 132 kV overhead line are therefore common to all four PV SEFs.

1.4 ASSUMPTIONS AND LIMITATIONS

1.4.1 Assumptions

Assessment of social impacts

The social impacts associated with the 132 kV overhead line are common to all four PV SEFs. Separate assessments have therefore not been undertaken.

Technical suitability

It is assumed that the development site represents a technically suitable site for the establishment of a solar energy facility and associated grid infrastructure.

Strategic importance of the project

The strategic importance of promoting renewable energy and the associated grid infrastructure is supported by the national and provincial energy policies. However, this does not mean that site related issues can be ignored or overlooked.

Fit with planning and policy requirements

Legislation and policies reflect societal norms and values. The legislative and policy context therefore plays an important role in identifying and assessing the potential social impacts associated with a proposed development. In this regard a key component of the SIA process is to assess the proposed development in terms of its fit with key planning and policy documents. As such, if the findings of the study indicate that the proposed development in its current format does not conform to the spatial principles and guidelines contained in the relevant legislation and planning documents, and there are no significant or unique opportunities created by the development, the development cannot be supported. However, the study recognises the strategic importance of solar energy and the technical, spatial and land use constraints required for solar energy facilities.

1.4.2 Limitations

Demographic data

The information contained in some key policy and land use planning documents, such as Integrated Development Plans etc., may not contain data from Community Household Survey if 2016. However, this will not have a material impact on the findings of the study.

1.5 SPECIALIST DETAILS

Tony Barbour, the lead author of this report is an independent specialist with 28 years' experience in the field of environmental management. In terms of SIA experience Tony Barbour has undertaken in the region of 260 SIAs and is the author of the Guidelines for Social Impact Assessments for EIA's adopted by the Department of Environmental Affairs and Development Planning (DEA&DP) in the Western Cape in 2007. Tony Barbour has also undertaken the specialist SIA studies for ~ 100 renewable energy projects, including SEFs. A Copy of Tony Barbour's CV is contained in Annexure C.

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

1.6 DECLARATION OF INDEPENDENCE

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

1.7 REPORT STRUCTURE

The report is divided into five sections, namely:

- Section 1: Introduction.
- Section 2: Policy and planning context.
- Section 3: Overview of study area.
- Section 4: Identification and assessment of key issues.
- Section 5: Key Findings and recommendations.

SECTION 2: POLICY AND PLANNING CONTEXT

2.1 INTRODUCTION

Legislation and policy embody and reflect key societal norms, values, and developmental goals. The legislative and policy context therefore plays an important role in identifying, assessing, and evaluating the significance of potential social impacts associated with any given proposed development. An assessment of the “policy and planning fit³” of the proposed development therefore constitutes a key aspect of the Social Impact Assessment (SIA). In this regard, assessment of “planning fit” conforms to international best practice for conducting SIAs. Furthermore, it also constitutes a key reporting requirement in terms of the applicable Western Cape Department of Environmental Affairs and Development Planning’s *Guidelines for Social Impact Assessment* (2007).

2.2 POLICY AND PLANNING ENVIRONMENT

For the purposes of the meeting the objectives of the SIA the following national, provincial, and local level policy and planning documents were reviewed:

- National Development Plan (2011).
- New Growth Path Framework (2010).
- National Infrastructure Plan (2012).
- Integrated Energy Plan (2019).
- Northern Cape Provincial Growth and Development Strategy (2004-2014).
- Northern Cape Spatial Development Framework (2012).
- Pixley ka Seme District Municipality Integrated Development Plan (2019-2020).
- Pixley ka Seme District Municipality Spatial Development Framework (2017).
- Emathanjani Local Municipality Integrated Development Plan (2021-2022).

2.3 NATIONAL POLICY ENVIRONMENT

2.1.1 National Development Plan

The National Development Plan aims to eliminate poverty and reduce inequality by 2030. The NDP identifies a number of enabling milestones. Of relevance to the proposed development the NDP refers to the need to produce sufficient energy to support industry at competitive prices and ensure access for poor households, while reducing carbon emissions per unit of power by about one-third. In this regard the infrastructure is not just essential for faster economic growth and higher employment. It also promotes inclusive growth, providing citizens with the means to improve their own lives and boost their incomes. Infrastructure is essential to development.

³ Planning fit” can simply be described as the extent to which any relevant development satisfies the core criteria of appropriateness, need, and desirability, as defined or circumscribed by the relevant applicable legislation and policy documents at a given time.

Chapter 3, Economy and Employment, identifies some of the structural challenges specific to South Africa, including an energy constraint that will act as a cap on growth and on options for industrialisation. The NDP notes that from an environmental perspective South Africa faces several related challenges. The reduction of greenhouse gas emissions and shift to a green, low-carbon economy, is one of these challenges.

In terms of implementation the NDP identifies three phases. The first two are of specific relevance to the proposed project. The first phase (2012–2017) notes that ensuring the supply of energy and water is reliable and sufficient for a growing economy. The second phase (2018–2023) involves building on the first phase to lay the foundations for more intensive improvements in productivity. The provision of affordable and reliable energy is a key requirement for this to take place.

Chapter 4, Economic infrastructure, notes that economic infrastructure provides the foundation for social and economic development. In this regard South Africa must invest in a strong network of economic infrastructure designed to support the country's medium- and long-term economic and social objectives. The plan envisages that, by 2030, South Africa will have an energy sector that promotes:

- Economic growth and development through adequate investment in energy infrastructure. The sector should provide reliable and efficient energy service at competitive rates, while supporting economic growth through job creation.
- Environmental sustainability through efforts to reduce pollution and mitigate the effects of climate change. More specifically, South Africa should have adequate supply security in electricity and in liquid fuels, such that economic activity, transport, and welfare are not disrupted.

The plan sets out steps that aim to ensure that, in 20 years, South Africa's energy system looks very different to the current situation. In this regard coal will contribute proportionately less to primary-energy needs, while gas and renewable energy resources, will play a much larger role.

2.1.2 The New Growth Path Framework

Government released the New Economic Growth Path Framework on 23 November 2010. The aim of the framework is to enhance growth, employment creation and equity. The policy's principal target is to create five million jobs over the next 10 years and reflects government's commitment to prioritising employment creation in all economic policies. The framework identifies strategies that will enable South Africa to grow in a more equitable and inclusive manner while attaining South Africa's developmental agenda. Central to the New Growth Path is a massive investment in infrastructure as a critical driver of jobs across the economy. In this regard the framework identifies investments in five key areas namely: **energy**, transport, communication, water, and housing.

2.1.3 National Infrastructure Plan

The South African Government adopted a National Infrastructure Plan in 2012. The aim of the plan is to transform the economic landscape while simultaneously creating significant numbers of new jobs and strengthen the delivery of basic services. The plan also supports the integration of African economies. In terms of the plan Government will invest R827 billion over the next three years to build new and upgrade existing infrastructure. The aim of the investments is to improve access by South Africans to healthcare facilities, schools, water,

sanitation, housing, and electrification. The plan also notes that investment in the construction of ports, roads, railway systems, **electricity plants**, hospitals, schools, and dams will contribute to improved economic growth.

As part of the National Infrastructure Plan, Cabinet established the Presidential Infrastructure Coordinating Committee (PICC). The Committee identified and developed 18 strategic integrated projects (SIPs). The SIPs cover social and economic infrastructure across all nine provinces (with an emphasis on lagging regions) and consist of:

- Five geographically-focussed SIPs.
- Three spatial SIPs.
- Three energy SIPs;
- Three social infrastructure SIPs.
- Two knowledge SIPs.
- One regional integration SIP.
- One water and sanitation SIP.

The three energy SIPs are SIP 8, 9 and 10.

SIP 8: Green energy in support of the South African economy

- Support sustainable green energy initiatives on a national scale through a diverse range of clean energy options as envisaged in the Integrated Resource Plan (IRP 2010).
- Support bio-fuel production facilities.

SIP 9: Electricity generation to support socio-economic development

- Accelerate the construction of new electricity generation capacity in accordance with the IRP 2010 to meet the needs of the economy and address historical imbalances.
- Monitor implementation of major projects such as new power stations: Medupi, Kusile and Ingula.

SIP 10: Electricity transmission and distribution for all

- Expand the transmission and distribution network to address historical imbalances, provide access to electricity for all and support economic development.
- Align the 10-year transmission plan, the services backlog, the national broadband roll-out and the freight rail line development to leverage off regulatory approvals, supply chain and project development capacity.

2.4 PROVINCIAL POLICY AND PLANNING ENVIRONMENT

2.4.1 Northern Cape Provincial Growth and Development Strategy

The Northern Cape Provincial Growth and Development Strategy (NCPGDS) identifies poverty reduction as the most significant challenge facing the government and its partners. All other societal challenges that the province faces emanate predominantly from the effects of poverty. The NCPGDS notes that the only effective way to reduce poverty is through long-term sustainable economic growth and development. The sectors where economic growth and development can be promoted include:

- Agriculture and Agro-processing.
- Fishing and Mariculture.
- Mining and mineral processing.
- Transport.

- Manufacturing.
- Tourism.

However, the NCPGDS also notes that economic development in these sectors also requires:

- Creating opportunities for lifelong learning.
- Improving the skills of the labour force to increase productivity.
- Increasing accessibility to knowledge and information.

The achievement of these primary development objectives depends on the achievement of a number of related objectives that, at a macro-level, describe necessary conditions for growth and development. These are:

- Developing requisite levels of human and social capital.
- Improving the efficiency and effectiveness of governance and other development institutions.
- Enhancing infrastructure for economic growth and social development.

Of specific relevance to the SIA the NCPGDS makes reference to the need to ensure the availability of inexpensive energy. The section notes that in order to promote economic growth in the Northern Cape the availability of electricity to key industrial users at critical localities at rates that enhance the competitiveness of their industries must be ensured. At the same time, the development of new sources of energy through the promotion of the adoption of energy applications that display a synergy with the province's natural resource endowments must be encouraged. In this regard the NCPGDS notes "the development of energy sources such as solar energy, the natural gas fields, bio-fuels, etc., could be some of the means by which new economic opportunity and activity is generated in the Northern Cape". The NCPGDS also highlights the importance of close co-operation between the public and private sectors in order for the economic development potential of the Northern Cape to be realised.

The NCPGDS also highlights the importance of enterprise development and notes that the current level of private sector development and investment in the Northern Cape are low. In addition, the province also lags in the key policy priority areas of SMME Development and Black Economic Empowerment. The proposed solar energy facility therefore has the potential to create opportunities to promote private sector investment and the development of SMMEs in the Northern Cape Province.

In this regard, care will need to be taken to ensure that the proposed development and associated renewable energy facilities do not negatively impact on the regions natural environment. In this regard, the NCPGDS notes that the sustainable utilisation of the natural resource base on which agriculture depends is critical in the Northern Cape with its fragile eco-systems and vulnerability to climatic variation. The document also indicates that due to the provinces exceptional natural and cultural attributes, it has the potential to become the preferred adventure and ecotourism destination in South Africa.

2.4.2 Northern Cape Provincial Spatial Development Framework

Northern Cape Provincial Spatial Development Framework (NCSDF) (2012) lists a number of sectoral strategies and plans that are to be read and treated as key components of the PSDF. Of these there are a number that are relevant to the proposed STPs. These include:

- Sectoral Strategy 1: Provincial Growth and Development Strategy of the Provincial Government.
- Sectoral Strategy 2: Comprehensive Growth and Development Programme of the Department of Agriculture, Land Reform and Rural Development.
- Sectoral Strategy 5: Local Economic Development (LED) Strategy of the Department of Economic Development and Tourism.
- Sectoral Strategy 11: Small Micro Medium Enterprises (SMME) Development Strategy of the Department of Economic Development and Tourism.
- Sectoral Strategy 12: Tourism Strategy of the Department of Economic Development and Tourism.
- Sectoral Strategy 19: Provincial renewable energy strategy (to be facilitated by the Department of Economic Development and Tourism).

Section C8.2.3, Energy Objectives, sets out the energy objectives for the Northern Cape Province. The section makes specific reference to renewable energy. Of relevance the objectives include:

- Promote the development of renewable energy supply schemes. Large-scale renewable energy supply schemes are strategically important for increasing the diversity of domestic energy supplies and avoiding energy imports while minimizing detrimental environmental impacts.
- Develop and institute innovative new energy technologies to improve access to reliable, sustainable, and affordable energy services with the objective to realize sustainable economic growth and development. The goals of securing supply, providing energy services, tackling climate change, avoiding air pollution, and reaching sustainable development in the province offer both opportunities and synergies which require joint planning between local and provincial government as well as the private sector.
- Develop and institute energy supply schemes with the aim to contribute to the achievement of the targets set by the White Paper on Renewable Energy (2003). This target relates to the delivery of 10 000 GWh of energy from renewable energy sources (mainly biomass, wind, solar, and small-scale hydro) by 2013.

Section C8.3.3, Energy Policy, sets out the policy guidelines for the development of the energy sector, with specific reference to the renewable energy sector.

- The construction of telecommunication infrastructure must be strictly regulated in terms of the spatial plans and guidelines put forward in the PSDF. They must be carefully placed to avoid visual impacts on landscapes of significant symbolic, aesthetic, cultural or historic value and should blend in with the surrounding environment to the extent possible.
- EIAs undertaken for such construction must assess the impacts of such activities against the directives listed in (a) above.
- Renewable energy sources such as wind, solar, thermal, biomass and domestic hydroelectricity are to constitute 25% of the province's energy generation capacity by 2020.
 - The following key policy principles for renewable energy apply.
 - Full cost accounting: Pricing policies will be based on an assessment of the full economic, social, and environmental costs and benefits of energy production and utilisation.
 - Equity: There should be equitable access to basic services to meet human needs and ensure human well-being. Each generation has a duty to avoid impairing the ability of future generations to ensure their own well-being.

- Global and international cooperation and responsibilities: Government recognises its shared responsibility for global and regional issues and act with due regard to the principles contained in relevant policies and applicable regional and international agreements.
- Allocation of functions: Government will allocate functions within the framework of the Constitution to competent institutions and spheres of government that can most effectively achieve the objectives of the energy policy.
- The implementation of sustainable renewable energy is to be promoted through appropriate financial and fiscal instruments.
- An effective legislative system to promote the implementation of renewable energy is to be developed, implemented, and continuously improved.
- Public awareness of the benefits and opportunities of renewable energy must be promoted.
- The development of renewable energy systems is to be harnessed as a mechanism for economic development throughout the province in accordance with the Sustainable Development Initiative (SDI) approach (refer to Toolkit D10) or any comparable approach.
- Renewable energy must, first, and foremost, be used to address the needs of the province before being exported.

2.5 LOCAL LEVEL POLICY AND PLANNING

2.5.1 Pixley ka Seme District Municipality Integrated Development Plan

The vision for the PKSDM is “Developed and Sustainable District for Future Generations”

To mission statement that underpins the vision is:

- Supporting our local municipalities to create a home for all in our towns, settlements and rural areas to render dedicated services.
- Providing political and administrative leadership and direction in the development planning process.
- Promoting economic growth that is shared across and within communities.
- Promoting and enhancing integrated development planning in the operations of our municipalities.
- Aligning development initiatives in the district to the National Development Plan.

The Strategic Objectives to address the vision that are relevant to the project includes the promotion of economic growth in the district and enhance service delivery. Chapter 4, Development of Strategies, highlights the key strategies of the PKSDM. The promotion of economic development is the most relevant strategy for the project. The IDP also notes that the growth and development context in the district has also changed radically since 2013 (after it had been stagnant for decades) owing mainly to private and public investments in the area as a hub for renewable energy generation and astronomy.

The IDP notes that the economy in the Pixley ka Seme municipal area is characterized by:

- High levels of poverty and low levels of education.
- Low levels of development despite the strategic location in terms of the national transport corridors.
- High rate of unemployment, poverty and social grant dependence.

- Prone to significant environmental changes owing to long-term structural changes (such as climate change, energy crises and other shifts).

Of specific relevance the IDP highlights the potential for renewable energy to help address some of these challenges.

2.5.2 Pixley ka Seme District Municipality Spatial Development Framework

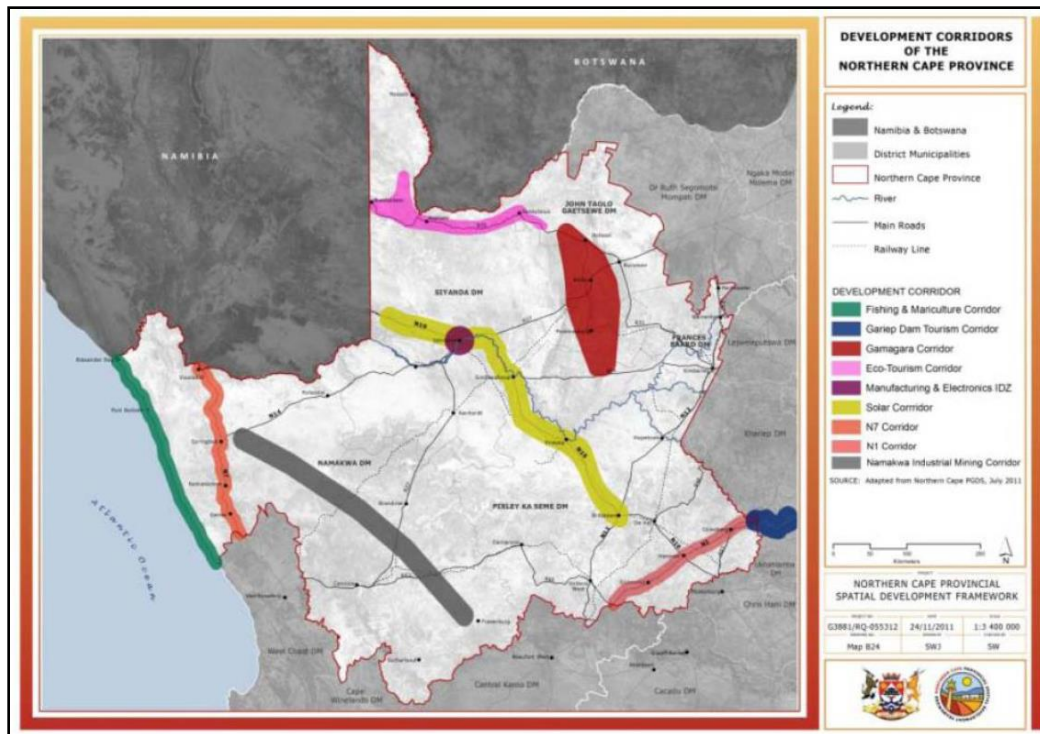
The SDF notes that the vision for the PKSDM is “Pixley Ka Seme DM, pioneers of development, a home and future for all”. The Mission Statement that underpins the vision refers to:

- Effective and efficient service delivery.
- Optimal human and natural resource development.
- Local economic growth and development, job creation and poverty alleviation.
- A vibrant tourism industry.
- To participate in the fight to reduce the infection rate and lessen the impact of HIV/ Aids and other communicable diseases.
- A safe, secure and community friendly environment.

The SDF identifies the opportunities and constraints associated with the district. Of relevance to the project the opportunities include:

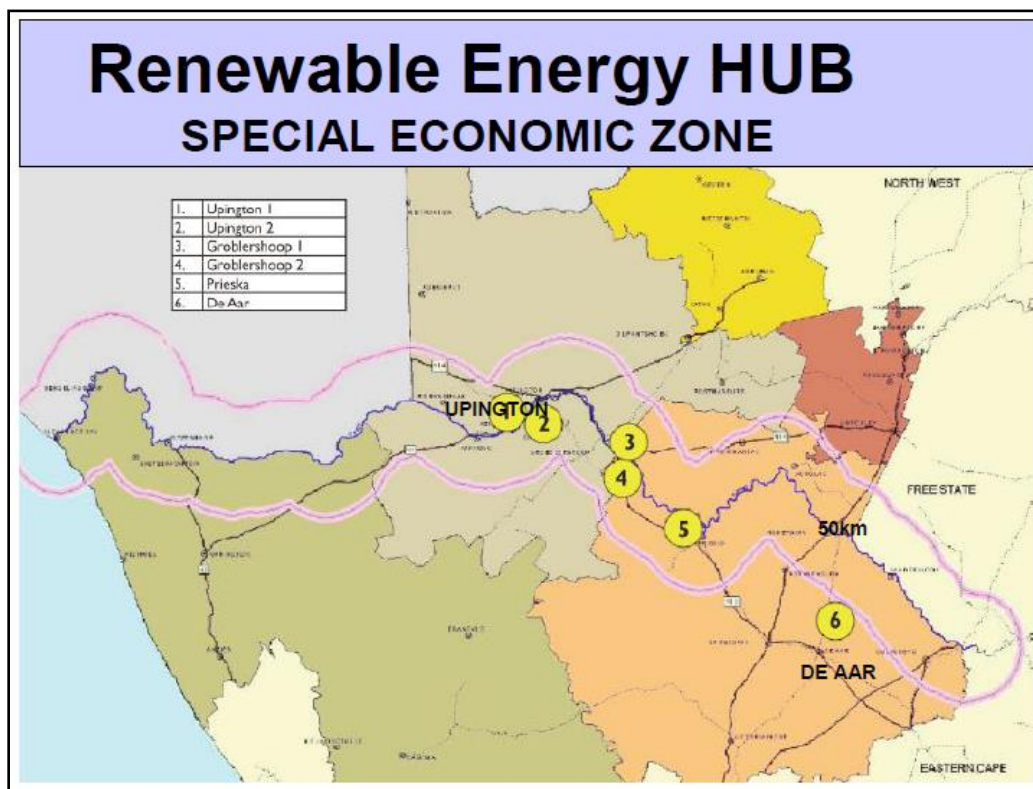
Renewable Energy and the identification of a renewable energy hub in the region. The natural environment and maintenance and conservation of the pristine natural environment to support sustainable farming into the future is also identified as an opportunity. The SDF notes that Pixley Ka Seme District area with its abundance of sunshine and vast tracts of available land has attracted considerable interest from solar energy investors. The high solar index of the area provides many opportunities in terms of the development of renewable energy. This has been acknowledged by the Northern Cape Government with the identification of the Renewable Energy Hub. The areas around the northern and eastern borders of the Pixley Ka Seme District Municipality form part of this hub with the potential to stimulate special economic development zoned within the area that have the potential to stimulate industrial development.

The PKSDM also falls within the Solar Development Corridor as identified in the Northern Cape Provincial Spatial Development Framework. The corridor extends from Kakamas to Upington and down to De Aar in the south-east (Figure 2.2). Section 5.6.1 of the SDF also refers to the establishment of a Renewable Energy Hub proposed for the Northern Cape stretching from the west coast right up to the De Aar region (Figure 2.3). The Hub can accommodate special economic development within the zone as earmarked and entails a 100km wide zone. The proposed project is located within the corridor and proposed hub.



Source: Northern Cape SDF

Figure 2.2: Northern Cape Development Corridors-Solar Corridor (yellow)



Source: Northern PKSDM SDF

Figure 2.3: Northern Cape Renewable Energy Hub

The SDF does however also note that the area is known for its clean air and open skies with limited light pollution. Potential visual impacts are therefore an issue that needs to be considered.

In this regard the SDF notes that the topography of Pixley Ka Seme region is one of its main assets with vast open spaces and unspoilt panoramic visual vistas stretching over great distances. This asset makes for excellent scenic drives throughout the whole of the region from the flat plains to crossing the main rivers of South Africa. Visual vistas, ridges and “koppies” are assets within the region and they must be handled with sensitivity.

The relevant constraints include high levels of poverty and unemployment, backlog in basic services, including electricity and housing in rural areas, the limited supply of water and overall scarcity of water in the region to support economic development.

The development challenges that face the Pixley Ka Seme District Municipality include high unemployment and poverty rates and low income which are placing increasing demand on service delivery because very few people are able to pay for services. Declining population numbers, and alcohol and substance abuse are also key challenges.

In terms of services, inadequate schools in farming areas results in children having to travel long distances to areas where they go to school. There are also insufficient health centres and lack of amenities and recreational services. Where these services do exist, they are often poorly managed and maintained. The level of key services, such as refuse removal, are also low, while many rural and a number of urban households rely on boreholes for their water supply.

Climate change is also identified as a key risk. The SDF notes that the Karoo is predicted to experience more drought periods, coupled with increased evaporation and temperatures and this will negatively impact already restricted water supply. It is likely that the greatest impacts will be on water supply.

2.5.3 Emthajeni Municipality Integrated Development Plan

The Emthanjani Local Municipality (ELM) is a category B municipality consisting of three towns, namely, De Aar, Britstown and Hanover. The vision of the ELM is “Leading sustainable development for inclusive economic growth”. The mission statement linked to the vision is “To create a viable economic development plan that is relevant to the characteristics of the Emthanjani Municipal area, designed to create and maintain a sound and healthy local economy, drawing upon local strengths and resources. This will be achieved through:

- Strategic partnerships and collaboration.
- Effective stakeholder communications.
- Supporting existing businesses and encourage the expansion and repositioning of desirable commercial and industrial uses.
- To increase the number of farms or agricultural land in the community.

The IDP refers to the national economic pillars adopted on the National Framework for Local Economic Development in South Africa which launched in 2014. The pillars are aligned to the main thrusts and opportunities within ELM to ensure an integrated approach for optimal rate of implementation and economic development in the municipality. The five pillars are:

- Pillar 1: Building a Diverse Economic Base.

- Pillar 2: Developing learning and skilful economies.
- Pillar 3: Developing Inclusive Economies.
- Pillar 4: Enterprise Development and Support.
- Pillar 5: Economic Governance and Infrastructure.

Pillars 1, 2, 3 and 4 are relevant to the proposed development.

Pillar 1: Building a Diverse Economic Base

The first pillar focuses on building a diverse economic base and growing the local economy through industrial and sector-specific (e.g., Tourism, Mining, Agriculture, Manufacturing, etc.).

Pillar 2: Developing learning and skilful economies

The IDP notes that addressing the skills gap and improving skills levels is critical to the successful implementation of all the other pillars, as increased skills lead to increased opportunities for stimulating local economies.

Pillar 3: Developing Inclusive Economies

Creating decent work and sustainable livelihoods improves the living standards and ensures a dignified existence for individuals.

Pillar 4: Enterprise Development and Support

The IDP highlights the importance of supporting economic development and creating a diverse economic sector. The need to support SMMEs is also noted.

The development of the project will support these pillars, specifically the SED and ED spend linked to the project. The IDP also lists 7 Key Performance Areas (KPA) of which KPA 1: Basic Services and Infrastructure Development, KPA 5: Local Economic Development and KPA 7: Social Development, are relevant to the project.

The IDP highlights the importance to the renewable energy sector and refers to a number of IPP projects located in the ELM and PKSDM.

SECTION 3: OVERVIEW OF THE STUDY AREA

3.1 INTRODUCTION

Section 3 provides an overview of the:

- The administrative context.
- The socio-economic context.
- The demographic context.
- The site and surrounding land uses.

3.2 ADMINISTRATIVE CONTEXT

The study area is located within the Emthanjeni Local Municipality (ELM), which falls within the Pixley ka Seme District Municipality (PKSDM) in the Northern Cape Province (Figure 3.1). The PKSDM is made up of eight category B local municipalities which include Emthanjeni, Kareeberg, Thembelihle, Siyathemba, Renosterberg, Ubuntu, Siyancuma and Umsobomvu municipalities. De Aar is the administrative seat of the ELM and PKSDM. The site is located within Ward 6 in the ELM.

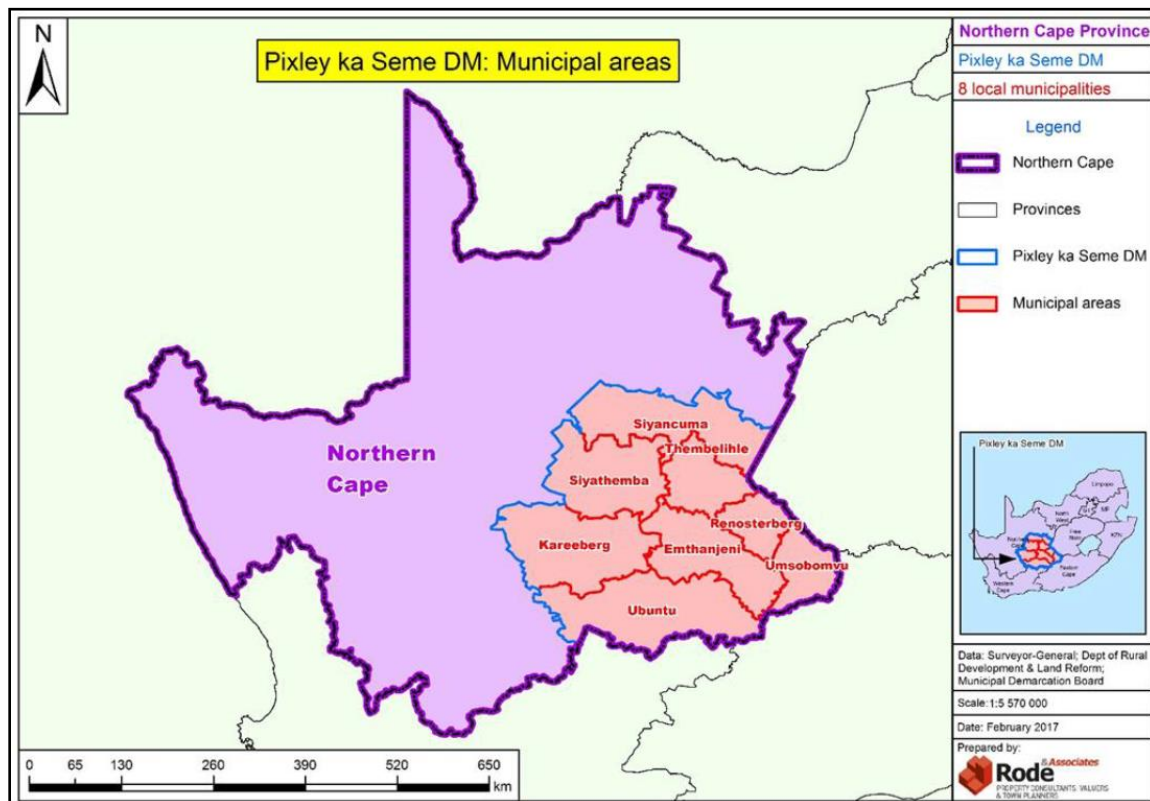


Figure 3.1: Location of the Pixley Ka Seme District Municipality and Emthanjeni Local Municipality and within the Northern Cape Province

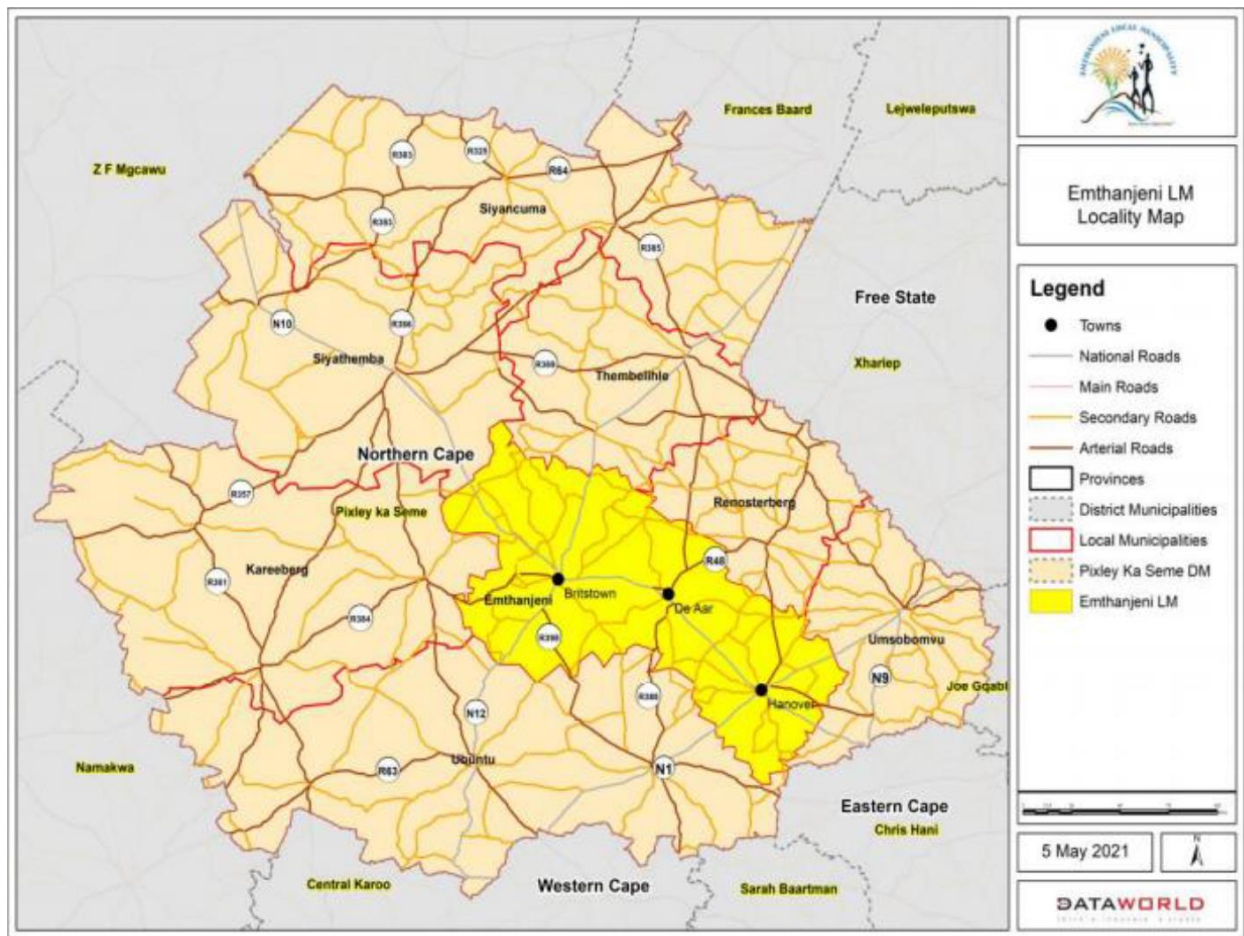


Figure 3.2: Location of Emthanjeni Local Municipality within the Pixley Ka Seme District Municipality

3.3 PROVINCIAL CONTEXT⁴

The proposed site located in the Northern Cape Province, which is the largest province in South Africa and covers an area of 361 830 km² and, constitutes approximately 30% of South Africa. The province is divided into five district municipalities (DM), namely, Frances Baard, Karoo, Namakwa, Pixley Ka Seme and ZF Mgcawu District Municipality (known before 1 July 2013 as Siyanda DM). The site itself is located in the Pixley Ka Seme DM.

Population

Despite having the largest surface area, the Northern Cape has the smallest population of 1 193 780 (Community Household Survey, 2016) or 2.2% of the population of South Africa. Of the five districts, Frances Baard has the largest population (32.5%), followed by ZF Mgcawu District Municipality (21.2%), John Taola Gaetsewe (20.3%), Pixley ka Seme (16.4%) and

⁴ The information in this section is based on the Northern Cape Provincial Growth and Development Strategy 2004-2014. This document does not include 2011 Census Data. Where possible data from the 2011 Census and 2016 Community Household Survey has been used to update the information.

Namakwa (9.7%). The majority of the population in the Northern Cape Province are Black African (48.1%), followed by Coloureds (43.7%) and Whites (7.7%).

In terms of age, 36.5% of the Northern Cape population is between 15 and 34 years old, which is the highest age distribution, followed by 29.2% of those aged 35–64 years, while only 6.6% comprised those aged 65 years and older. Similarly, this pattern is also seen across all districts in the province. The district profile shows that the highest proportions of persons aged 15–34 years were recorded in Pixley Ka Seme, ZF Mgcawu and John Taolo Gaetsewe districts. The figures for these three districts were also above the provincial average of 36.5%. The proportion of persons aged 65 years and older was higher in Namakwa (9.5%) and Frances Baard (8.2%).

Education

Based on the information contained in the NCPSTF the average adult education attainment levels in the Northern Cape are lower than the adult education attainment levels of South Africa as a whole. Approximately 19.7% of the Northern Cape adults have no schooling in comparison to South Africa's 18.1%. The Northern Cape has the second lowest percentage of adult individuals (5.5%) that obtained a tertiary education in South Africa. The LED Strategy for the Northern Cape indicates that Pixley ka Seme has the lowest adult education attainment levels in the Northern Cape with 27.3% of the adult population having no form of schooling, whilst John Taolo Gaetsewe is second with 25.4% having no schooling. The highest number of the adult population with tertiary education (6.4%) is located in Frances Baard.

The Northern Cape also has the smallest portion (11.1%) of highly skilled formal employees in South Africa, while Gauteng has the highest (14.3%). Linked to this the Northern Cape has the second largest portion of semi and unskilled formal employees in the country. A lack of skilled people often results in both the public and the private sector being unable to implement planned growth strategies and achieve the desired productivity, service delivery and service quality (NCSDF, 2012).

Economic development

Over the past 8 years there has been little to no variance in the Human Development Index (HDI) figures for the Northern Cape, indicating no increase or decrease in the overall standard of living⁵. This trend is unlikely to change in the foreseeable future, mainly due to the marginal economic base of the poorer areas, and the consolidation of the economic base in the relatively better-off areas. It is important to note that the HDI for the Northern Cape (0.55) is substantially below the South African figure of 0.72. The HDI of 0.55 displays a pattern of semi-development, and there is a definite inequality between the different population groups, with the Whites having a higher development lifestyle than the African or Coloured groups.

The percentage of Northern Cape people living below the poverty line has decreased from 40% in 1995 to 27% in 2011, while the poverty gap has decreased from 11% in 1995 to 8%

⁵ The Human Development Index (HDI) was developed by the United Nations Development Programme (UNDP) based on the philosophy that the goal of development was to ensure that individuals live long, informed and comfortable lives. The HDI consists of three components: Longevity, which is measured by life expectancy at birth; Educational attainment, which is measured by two education variables, namely adult literacy and combined gross primary, secondary and tertiary enrolment ratio, and; Income, which is measured by gross domestic product (GDP) per capita. Performance in each dimension is expressed as a value between 0 and 1, and the HDI index gives an internationally accepted measure of the wellness (quality of life) of the population of the area under consideration. The closer the HDI is to 1.0, the higher the level of "living condition". For example, Sweden has an index of 0.91 defined as high, South Africa at 0.72 is defined as middle and Lesotho at 0.47 is defined as low.

in 2011 (Figure 3.3). The goal set by the province is to decrease the percentage of people living below the poverty line to 20% by 2015 (NCSD, 2012). The alleviation of poverty is one of the key challenges for economic development. Higher levels of economic growth are a key challenge for poverty eradication. Investment in people is pivotal to the eradication of poverty and inequality. Investment in people is also, to a large extent, about delivering social and economic infrastructure for education, welfare, health, housing, as well as transport and bulk infrastructure.

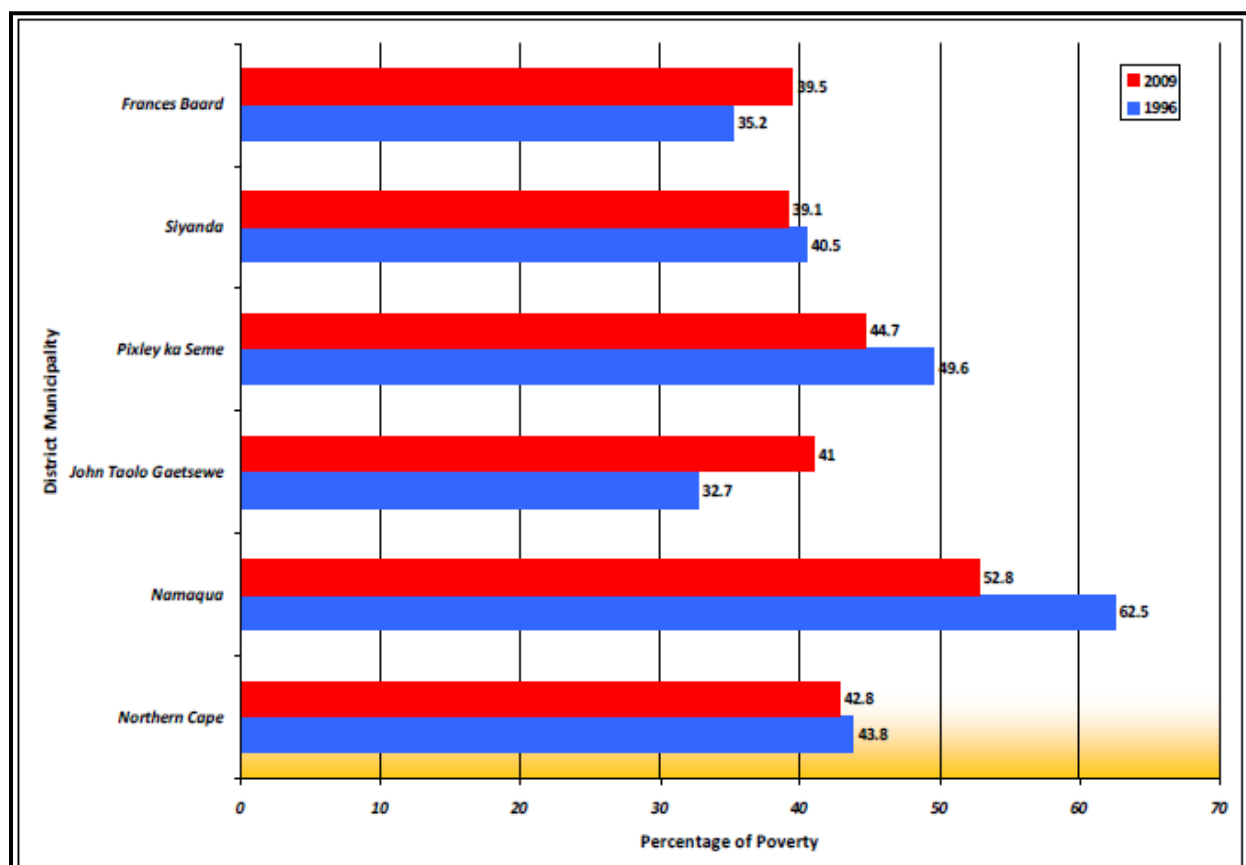


Figure 3.3: Percentage of people living in poverty in the Northern Cape (Source: Global Insight, 2009 as cited in the PGDS, July 2011)⁶.

In terms of per capita income, the Northern Cape Province has the third highest per capita income of all nine provinces, however, income distribution is extremely skewed, with a high percentage of the population living in extreme poverty. The measure used in the PGDS document to measure poverty is the percentage of people living below the poverty line or breadline is used⁷.

⁶ Siyanda DM is now called the ZF Mgcawu DM.

⁷ In terms of the poverty line, a person is considered poor if his or her consumption or income level falls below some minimum level necessary to meet basic needs. The minimum level is usually called the poverty line. In South Africa the poverty income level is set at R800/month for an individual or R 3 200 per month for a household of four.

Economic sectors

The Northern Cape economy has shown significant recovery since 2000/2001 when it had a negative economic growth rate of -1.5% (LED Strategy). The provincial economy reached a peak of 3.7% in 2003/2004 and remained the lowest of all provinces. The Northern Cape is the smallest contributing province to South Africa's economy (only 2% to South Africa GDP per region in 2007).

The mining sector is the largest contributor to the provincial GDP, contributing 28.9% to the GDP in 2002 and 27.6% in 2008. The mining sector is also important at a national level. In this regard, the Northern Cape produces approximately 37% of South Africa's diamond output, 44% of its zinc, 70% of its silver, 84% of its iron-ore, 93% of its lead and 99% of its manganese.

Agriculture and agri-processing sector are also key economic sectors. Approximately 2% of the province is used for crop farming, mainly under irrigation in the Orange River Valley and Vaalharts Irrigation Scheme. Approximately 96% of the land is used for stock farming, including beef cattle and sheep or goats, as well as game farming. The agricultural sector contributed 5.8% to the Northern Cape GDP per region in 2007 which was approximately R1.3 billion, and it employs approximately 19.5% of the total formally employed individuals (NCSD, 2012). The sector is experiencing significant growth in value-added activities, including game-farming. Food production and processing for the local and export market is also growing significantly.

The main agricultural produce of the Northern Cape include:

- High-value horticultural products such as table grapes, sultanas and wine grapes, dates, nuts, cotton, fodder, and cereal crops are grown along the Orange River.
- Wheat, fruit, groundnuts, maize and cotton in the Vaalharts irrigation scheme in the vicinity of Hartswater and Jan Kempdorp.
- Vegetables and cereal crops at the confluence of the Vaal River and the Orange Rivers in the vicinity of Douglas.
- Wool, mohair, karakul, Karoo lamb, ostrich meat and leather, and venison throughout most of the province.

Economic development in the Northern Cape is hampered by the vastness of the area and the remoteness of its communities in rural areas. Development is also hampered by the low education and skills levels in the province. As a result, unemployment in the Northern Cape presents a major challenge.

Employment

According to Statistics South Africa Labour (2012) the community and social services sector is the largest employer in the province at 29%, followed by the agricultural sector (16%), wholesale and retail trade (14%), finance (8%) manufacturing (6%) and mining (6%), etc. (Figure 3.4).

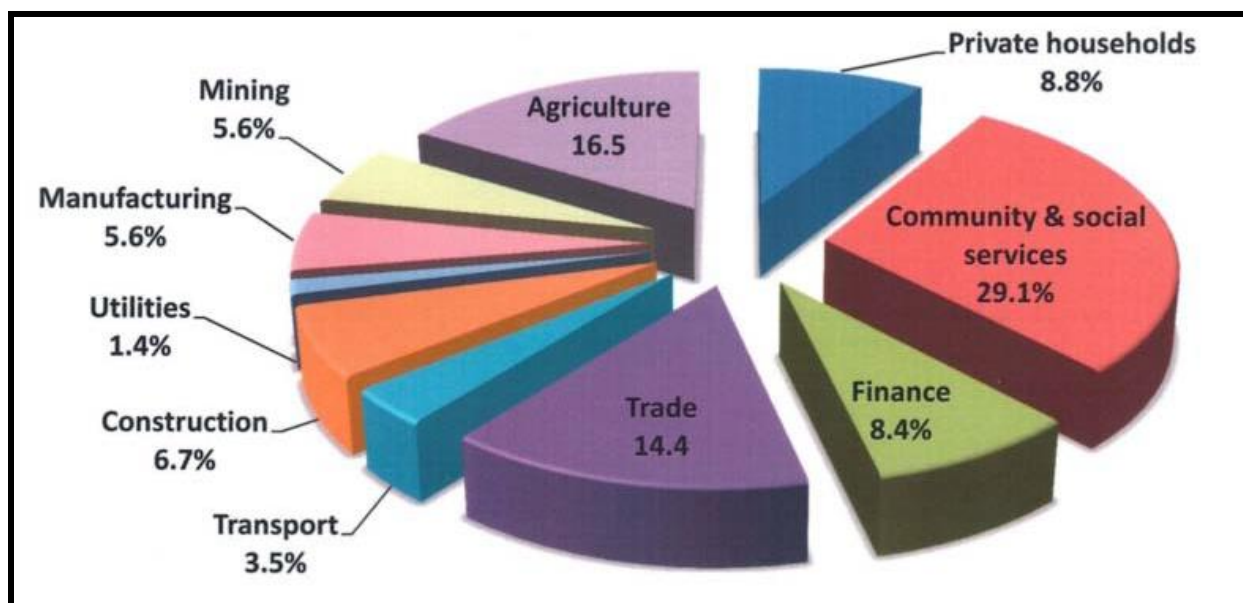


Figure 3.4: Employment by Economic Sector and Industry (Source: Statistics South Africa 2012).

3.4 MUNICIPAL OVERVIEW

Population

The population of the ELM in 2016 was 45 404. Of this total, 36.4% were under the age of 18, 57.9% were between 18 and 64, and the remaining 5.8% were 65 and older. The ELM therefore has a relatively large young population. This creates challenges in terms of creating employment opportunities. In terms of race groups, Coloureds made up 60.9% of the population, followed by Black Africans (32%) and Whites (6.9%). The main first language spoken in the ELM was Afrikaans (69.6%), followed by IsiXhosa (26.5%) and English (0.9%).

The population of Ward 6 in 2011 was 5 784. Of this total, 36.3% were under the age of 18, 58% were between 18 and 64, and the remaining 5.7% were 65 and older. Like the ELM, Ward 6 also had a relatively large young population. In terms of race groups, Coloureds made up 46.4% of the population, followed by Black Africans (45.2%) and Whites (7.3%). The main first language spoken in the Ward 6 was Afrikaans (56.2%), followed by IsiXhosa (32.3%) and English (2.1%).

The high percentage of young people in both the ELM and Ward 6 means that a large percentage of the population is dependent on a smaller productive sector. The dependency ratio is the ratio of non-economically active dependents (usually people younger than 15 or older than 64) to the working age population group (15-64). The higher the dependency ratio the larger the percentage of the population dependent on the economically active age group. This in turn translates reduced revenue for local authorities to meet the growing demand for services. The national dependency ratio in 2011 was 52.7%, similar to that of the Northern Cape Province (55.7%). The dependency ratio for the ELM (2011) was 60.4%. The traditional approach is based people younger than 15 or older than 64. The 2016 information provides information for the age group under 18. The total number of people falling within this age group will therefore be higher than the 0-15 age group. However, most people between the age of 15 and 17 are not economically active (i.e., they are likely to be at school).

Using information on people under the age of 18 is therefore likely to represent a more accurate reflection of the dependency ratio. Based on these figures, the dependency ratio for the ELM in 2016 and Ward 6 (2011) was 72.8% and 72.4% respectively. This figure is significantly higher than the national and provincial levels in 2011 (52.7% and 55.7% respectively). The higher dependency ratio reflects the limited employment opportunities in the area and represent a significant risk to the district and local municipality. The high dependency ratio also highlights the importance to maximising local employment opportunities and the key role played by training and skills development programmes.

Households and house types

Based on the information from the 2016 Community Survey there were a total of 11 992 households in the ELM and 1 687 in Ward 6. Most of the households reside in formal houses (74.2% ELM and 88.1% Ward 6). The figure for the ELM is similar to the District (78.1%) and Provincial (74.4%) figures. Approximately 17% of the households in the ELM reside in backyard flats and a further 4.2% in informal shacks. For Ward 6 only 1.2% lived in shacks.

Based on the information from the 2016 Community Household Survey 39.8% of the households in the ELM are headed by females compared to 31.1% for Ward 6 (2011). The figure for ELM was similar to the District and Provincial figures of 37% and 39% respectively. The high number of female-headed households at the local municipal and ward level reflects the lack on formal employment and economic opportunities in the ELM. As a result, job seekers from the ELM need to leave the areas to seek work in the larger centres. As indicated above, this highlights the importance to maximising local employment opportunities and the key role played by training and skills development programmes.

The majority of the job seekers are likely to be males. This is due to traditional rural patriarchal societies where the role of the women is usually linked to maintaining the house and raising the children, while the men tend to be the ones that migrate to other areas in search of employment.

Household income

Based on the data from the 2011 Census, 9.1% of the population of the ELM had no formal income, 3.3% earned less than R 4 800, 4.9% earned between R 5 000 and R 10 000 per annum, 18.2% between R 10 000 and R 20 000 per annum and 22.4% between R 20 000 and 40 000 per annum (2011). The figures for Ward 6 were 7.7%, 3.3%, 5.2%, 21% and 22.6%. The poverty gap indicator produced by the World Bank Development Research Group measures poverty using information from household per capita income/consumption. This indicator illustrates the average shortfall of the total population from the poverty line. This measurement is used to reflect the intensity of poverty, which is based on living on less than R3 200 per month for an average sized household (~ 40 000 per annum). Based on this measure, in the region of 57.9% of the households in the ELM and 59.8% in Ward 6 live close to or below the poverty line. While this figure is lower than the provincial level of 62.9%, the low-income levels reflect the limited employment opportunities in the area and dependence on the agricultural sector. This is also reflected in the high unemployment rates. As indicated above, this highlights the importance to maximising local employment opportunities and the key role played by training and skills development programmes.

The low-income levels are a major concern given that an increasing number of individuals and households are likely to be dependent on social grants. The low-income levels also result in reduced spending in the local economy and less tax and rates revenue for the ELM. This in turn impacts on the ability of the ELM to maintain and provide services.

The Integrated Development Plan (IDP) for the ELM indicates that the total number of indigent households within the municipal area increased from 2 726 households as of 30 June 2014 to 2 874 as at April 2017 and about 3 594 households during January 2016/17. The COVID-19 pandemic is likely to have resulted in an increase in the number of indigent households in 2020 and 2021.

Employment

The official unemployment figure in 2011 for the ELM was 14.5%. The figures also indicate that the majority of the population are not economically active, namely 43.7%. These figures are similar to the official unemployment rate for the Northern Cape Province (14.5%) and Pixley ka Seme District (14.8%). This reflects the limited employment opportunities in the area, which in turn are reflected in the low income and high poverty levels. Given the impact of COVID-19 pandemic, the unemployment levels are likely to be higher in 2021. The figures for Ward 6 were 11.7% (unemployed) and 44% of the economically active population being employed.

Education

In terms of education levels, the percentage of the population over 20 years of age in the ELM with no schooling was 17.4% in 2011, compared to 7.9% for the Northern Cape Province and 11.9% for the District. The percentage of the population over the age of 20 with matric was 28.3%, compared to 29.1% for the Province and 25.3% for the District. Only 1.5% and 1.4% of the population over the age of 20 years in the ELM had an undergraduate and postgraduate qualification, respectively. The relatively poor education levels in the ELM pose a potential challenge to the implementation of an effective training and skills development programme for local community members. The figures for Ward 6 (2011) were 16.4% with no schooling, 18.6% with matric and 1.9% and 1.3% with an undergraduate and postgraduate degree respectively.

3.5 MUNICIPAL SERVICES

Access to electricity

Based on the information from the 2016 Community Survey 96.6% of households had access to electricity. Of this total 88.4% had inhouse prepaid meters. No data was available for Ward 6.

Access to water

Based on the information from the 2016 Community Survey 96.7% of households were supplied by a regional or local service provider. However, only 53.2% of the households had piped water inside their houses, while 44.3% relied on piped water inside the yard. The figures for the District were 45.8% and 44.4% respectively. Only 45.3% of households in the Northern Cape Province have piped water inside their homes. For Ward 6 77.5% of households were supplied by the local service provider and 19.2% relied on boreholes, which reflects the rural nature of Ward 6.

Sanitation

Based on the information from the 2016 Community Survey, 95.3% of households have access to flush toilets, 2.1% rely on pit latrines, 1.5% use bucket toilets, while 0.5% had no access to toilet facilities. The figures in terms of access to flush toilets are higher than provincial (71.4%) and District (82.8%) figures. For Ward 6 72.7% of households had access to flush toilets and 7.2% had no access to toilets. 16 % relied on pit latrines.

Refuse collection

Based on the information from the 2016 Community Survey, 79.8% of households have their refuse collected on a regular basis by a local authority or private company, 4.6% use their own dumps, and 8.7% are not serviced. For Ward 6, 59.8% were provided with a regular service while 20% relied on their own dump.

3.6 HEALTH AND COMMUNITY FACILITIES

The PKSDM is served by 3 District Hospitals, 8 Community Health Centres, 28 Primary Health Care Clinics, 4 satellite clinics and 1 mobile clinic, distributed over the district. The ELM has 1 District Hospital and 6 Primary Health Care clinics. There are no community health centres within ELM that provide a 24-hour service. A new hospital was built in De Aar and was opened in 2017. The Central Karoo Hospital serves as the referral hospital for the district. Minor operations are performed at the facility. Specialists visit the district on a monthly basis from Kimberley Hospital Complex. In terms of education the ELM has 16 schools of which 13 are no-fee schools. The ELM also has libraries.

3.7 ECONOMIC OVERVIEW

Agriculture

Agriculture is the key economic sector in the PKSDM and ELM. Many of the towns within the district municipal area function mainly as agricultural service centres, with the level of services provided at the centres to a large extent reliable on the intensity of the farming practices in the surrounding area. Despite the largely semi-arid and arid environment in the district, the fertile land that lies alongside the Orange, Vaal and Riet Rivers supports the production of some of the country's finest quality agricultural products, including grapes and vegetables. The main livestock farming in the region includes cattle, sheep, and goat farming. Game breeding has also been identified as one of the opportunities which could be linked with the tourism sector for Game reserves and hunting activities. However, despite the key role played by agriculture there is limited value added to the farming products within the district and the area is prone to droughts and climate change.

Mining

The main deposits in Pixley ka Seme include alluvial diamond mining along the Orange River and various semi-precious stones, such as tiger-eye and zinc deposits. The region also has various saltpans for the potential of salt production. Uranium deposits also occur in the district.

Tourism

The tourism sector in the district contributes 15.6% to the provincial gross value added (GVA). The municipalities Emthanjeni, Kareeberg, Umsobomvu and Siyancuma municipalities are the biggest contributors to the provincial gross value added (GVA). The PKSDM IDP notes that the tourism opportunities in the district will increase due to the Karoo Array Telescope (KAT), a project being driven at a national level. Of relevance, the PKSDM notes that care needs to be taken with developments that have the potential to negatively impact on the Karoo landscapes.

Renewable energy

Of key relevance the PKSDM IDP identifies renewable energy as a key economic sector and refers to the substantial socio-economic development (SED) and enterprise development (ED)

contributions leveraged by the IPPPP commitments. The IDP notes that the towns of Prieska and Carnarvon have in recent years changed character from small rural towns to potentially regional hubs as a result of investments in renewable energy generation and the Square Kilometre Array (SKA) radio telescope project, respectively.

3.8 OVERVIEW OF STUDY AREA

The Pixely Park PV cluster is located approximately 10 km to the west of De Aar. The southern boundary of the site borders onto the railway line to Nouport to the south west which then links up with Port Elizabeth to the south. The N10 which links De Aar to Port Elizabeth is located ~ 3km to the south of the site. The large, Eskom Hydra substation is located immediately to the west of the site. Other towns in the area are Philipstown, 35km to the north east, Britstown, 58km to the west and Hanover, 47km to the south of the site (Figure 3.5).

De Aar, which means “the artery”, was founded in 1904, and is the second most important railway junction in the country. Rail lines linking Gauteng, Cape Town, Port Elizabeth and Namibia all pass through the town. The decline of the railway sector over the last 20 years has impacted negatively on the towns economy. De Aar also has the largest abattoir in the Southern Hemisphere and supplies all the major centres throughout the entire country with the famous “Karoo” lamb and mutton. Apart from meat production, the sheep farms around De Aar are also major suppliers of wool. The town is total dependant on boreholes for its water supply. The landscape associated with the site is a typical Karoo landscape consisting of dolerite koppies and ridges separated by valley bottoms. The land uses are linked to livestock farming, specifically sheep farming.



Figure 3.5: Location of Pixely Park PV cluster (Red Arrow)

The Visual Impact Assessment (VIA) (Logis, July 2022) notes that the study area occurs on land that ranges in elevation from approximately 1 230m above sea level (along the Brak River to the north-west) to 1 560m at the top of the hill north west of the properties. The terrain surrounding the proposed properties is generally flat, sloping gently to the north and south-west towards the Brak River, which bisects the north-eastern part of the properties. Some prominent hills and ridges occur in the study area - a small range of hills lies along the north-western border of the properties (Photograph 3.1). The study area is sparsely populated outside of the De Aar urban area with populations concentrations associated with isolated, farm homesteads.



Photograph 3.1: Typical topography and grass veld vegetation

The N10 national road traverses the study area from the N1 national road (near Hanover) to De Aar. The areas sense of place is also impacted by rail infrastructure, with De Aar representing the second most important railway junction in South Africa. Railway lines run from the north, west, south and the south east, converging in the town. These lines include both freight and passenger lines.

Other industrial infrastructure within the study area includes the Hydra (to the west of the proposed Pixley Park properties) and Bletterman Substations (Photograph 3.2). The Hydra Substation Road provides access to the Pixley Park properties from the N10 national road.

There are a large number of overhead transmission lines associated the substations. These include:

- Hydra/Perseus 2 and 3 400kV.
- Beta/Hydra 1 400kV.
- Hydra/Ndhlovu 1 132kV.
- Hydra/Roodekuil 1 132kV.
- Hydra/Roodekuil 2 220kV.
- Hydra/Ruigtevallei 1 and 2 220kV.
- Bletterman/Taaibos 1 132kV.
- Hydra/Poseidon 1 and 2 400kV.



Photograph 3.2: Hydra Substation

Despite the impact of the substations and associated transmission on the area in the vicinity of De Aar, the sense of place and landscape character of the study area is characterised by wide-open spaces and very limited development. The VIA does however note that there are however a number of authorised (and current) renewable energy applications within the study area and the greater region, that may change the landscape to some degree in the future.

SECTION 4: ASSESSMENT OF SOCIAL ISSUES

4.1 INTRODUCTION

Section 4 provides an assessment of the key social issues identified during the study. The identification of key issues was based on:

- Review of project related information, including other specialist studies.
- Interviews with key interested and affected parties.
- Experience/ familiarity of the author with the area and local conditions.
- Experience with similar projects.

The assessment section is divided into the following sections:

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

The grid connection corridor for the 132 kV overhead powerline is common to all four PV SEFs associated with the Pixley Park PV Cluster. The social impacts associated with the 132 kV overhead line are therefore common to all four PV SEFs. The findings of the SIA are therefore applicable to each of the four PV SEFs associated with the Pixley Park PV Cluster. The findings of the SIA also indicate that the potential social impacts associated with the MTS are negligible. The focus of the SIA is therefore on the 132 kV overhead powerline.

4.2 ASSESMENT OF POLICY AND PLANNING FIT

The development of renewable energy is strongly supported at a national, provincial, and local level. The development of and investment in renewable energy is supported by the National Development Plan (NDP), New Growth Path Framework and National Infrastructure Plan, which all refer to and support renewable energy. The PKSDM SDF and IDP and ELM IDP also support the development of renewable energy. The development of the proposed Pixley Park PV Cluster and associated grid connections is therefore supported by key policy and planning documents.

4.3 CONSTRUCTION PHASE SOCIAL IMPACTS

The key social issues associated with the construction phase include:

Potential positive impacts

- Creation of employment and business opportunities.

Potential negative impacts

- Impacts associated with the presence of construction workers on local communities.
- Impact on local farmers and farming operations.
- Noise, dust, and safety impacts of construction related activities and vehicles.
- Increased risk of grass fires associated with construction related activities.
- Noise, dust, and safety impacts associated with construction related activities and vehicles.
- Impact on productive farmland.

4.3.1 Creation of local employment, training, and business opportunities

Based on similar projects the construction phase of for the grid connection will extend over a period of approximately 3-6 months and create in the region of 30-40 employment opportunities. Approximately 80% of the jobs will be low-skilled, 15% semi-skilled and 5% skilled. Most of the low and semi-skilled employment opportunities would benefit community members from De Aar. A percentage of the high skilled positions may also benefit the local community. Most of the employment opportunities are also likely to accrue to Historically Disadvantaged (HD) members from these local communities. Given high local unemployment levels and limited job opportunities in the area, this will represent a localised, social benefit. The remainder of the skilled employment opportunities are likely to be associated with the contactors appointed to construct the grid infrastructure. However, in the absence of specific commitments from the developer to maximise local employment targets the potential opportunities for local employment will be limited. The proponent should therefore commit to employing as many local community members as possible.

The total wage bill will be in the region of R 1.5-2 million (2022 Rand values). A percentage of the wage bill will be spent in the local economy which will also create opportunities for local businesses in ELM. The capital expenditure associated with the construction of grid infrastructure will be ~ R 50 million and will create opportunities for local companies and the regional and local economy. Implementing the enhancement measures listed below can enhance these opportunities. The sector of the local economy that is most likely to benefit from the proposed development is the local service industry. The potential opportunities for the local service sector would be linked to accommodation, catering, cleaning, transport, and security, etc. associated with the construction workers on the site. However, given the relatively small scale of the project and short duration of the construction phase these benefits will be limited.

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

Nature: Creation of employment and business opportunities during the construction phase		
	Without Enhancement	With Enhancement
Extent	Local-Regional (2)	Local – Regional (2)
Duration	Short term (2)	Short term (2)
Magnitude	Low (4)	Low (4)
Probability	Probable (3)	Highly probable (4)
Significance	Low (24)	Medium (32)
Status	Positive	Positive
Reversibility	N/A	N/A
Irreplaceable loss of resources?	N/A	N/A
Can impact be enhanced?	Yes	
Enhancement: See below		
Residual impacts: Improved pool of skills and experience in the local area.		

Assessment of No-Go option

There is no impact, as the current status quo will be maintained.

Recommended enhancement measures

In order to enhance local employment and business opportunities associated with the construction phase the following measures should be implemented:

Employment

- Preparation and implementation of a Stakeholder Engagement Plan (SEP) prior to and during the construction phase.
- Where reasonable and practical, the proponent should appoint local contractors and implement a 'locals first' policy, especially for semi and low-skilled job categories. However, due to the low skills levels in the area, the majority of skilled posts are likely to be filled by people from outside the area.
- Where feasible, efforts should be made to employ local contractors that are compliant with Broad Based Black Economic Empowerment (BBBEE) criteria.
- Before the construction phase commences the proponent should meet with representatives from the ELM to establish the existence of a skills database for the area. If such a database exists, it should be made available to the contractors appointed for the construction phase.
- The local authorities, community representatives, and organisations on the interested and affected party database should be informed of the final decision regarding the project and the potential job opportunities for locals and the employment procedures that the proponent intends following for the construction phase of the project.
- Where feasible, training and skills development programmes for locals should be initiated prior to the initiation of the construction phase.

- The recruitment selection process should seek to promote gender equality and the employment of women wherever possible.

Business

- The proponent should liaise with the ELM with regards the establishment of a database of local companies, specifically BBBEE companies, which qualify as potential service providers (e.g. construction companies, catering companies, waste collection companies, security companies etc.) prior to the commencement of the tender process for construction contractors. These companies should be notified of the tender process and invited to bid for project-related work.
- Where possible, the proponent should assist local BBBEE companies to complete and submit the required tender forms and associated information.
- The ELM, in conjunction with the local business sector and representatives from the local hospitality industry, should identify strategies aimed at maximising the potential benefits associated with the project.

Note that while preference to local employees and companies is recommended, it is recognised that a competitive tender process may not guarantee the employment of local labour for the construction phase.

4.3.2 Impact of construction workers on local communities

The presence of construction workers can pose a potential risk to family structures and social networks. While the presence of construction workers does not in itself constitute a social impact, the manner in which construction workers conduct themselves can impact on local communities. The most significant negative impact is associated with the disruption of existing family structures and social networks. This risk is linked to potentially risky behaviour, mainly of male construction workers, including:

- An increase in alcohol and drug use.
- An increase in crime levels.
- The loss of girlfriends and/or wives to construction workers.
- An increase in teenage and unwanted pregnancies.
- An increase in prostitution.
- An increase in sexually transmitted diseases (STDs), including HIV.

Given the relatively small number of construction workers, namely ~ 30-40, the potential impact on the local community is likely to be negligible.

Table 4.2: Assessment of impact of the presence of construction workers in the area on local communities

Nature: Potential impacts on family structures and social networks associated with the presence of construction workers		
	Without Mitigation	With Mitigation
Extent	Local (2)	Local (1)
Duration	Short term (2)	Short term (2)
Magnitude	Minor (2)	Minor (2)
Probability	Highly Probable (4)	Highly Probable (4)
Significance	Low (24)	Low (20)
Status	Negative	Negative
Reversibility	No in case of HIV and AIDS	No in case of HIV and AIDS
Irreplaceable loss of resources?	Yes, if people contract HIV/AIDS. Human capital plays a critical role in communities that rely on farming for their livelihoods	Yes, if people contract HIV/AIDS. Human capital plays a critical role in communities that rely on farming for their livelihoods
Can impact be mitigated?	Yes, to some degree. However, the risk cannot be eliminated	
Mitigation: See below		
Residual impacts: Impacts on family and community relations that may, in some cases, persist for a long period of time. Also, in cases where unplanned / unwanted pregnancies occur or members of the community are infected by an STD, specifically HIV and or AIDS, the impacts may be permanent and have long term to permanent cumulative impacts on the affected individuals and/or their families and the community.		

Assessment of No-Go option

There is no impact as the current status quo would be maintained.

Recommended mitigation measures

The potential risks associated with construction workers can be mitigated. The detailed mitigation measures should be outlined in the Environmental Management Plan (EMP) for the Construction Phase. Aspects that should be covered include:

- Preparation and implementation of a Stakeholder Engagement Plan (SEP) prior to and during the construction phase.
- Preparation and implementation of a Community Health, Safety and Security Plan (CHSSP) prior to and during the construction phase.
- The SEP and CHSSP should include a Grievance Mechanism that enables stakeholders to report resolve incidents.
- Where possible, the proponent should make it a requirement for contractors to implement a 'locals first' policy for construction jobs, specifically for semi and low-skilled job categories.
- The proponent should consider the option of establishing a Monitoring Forum (MF) in order to monitor the construction phase and the implementation of the recommended mitigation

measures. The MF should be established before the construction phase commences, and should include key stakeholders, including representatives from local communities, local ELM Councillor, farmers, and the contractor(s). The MF should also be briefed on the potential risks to the local community associated with construction workers.

- The proponent and the contractor(s) should, in consultation with representatives from the MF, develop a code of conduct for the construction phase. The code should identify which types of behaviour and activities are not acceptable. Construction workers in breach of the code should be dismissed. All dismissals must comply with the South African labour legislation.
- The proponent and the contractor should implement an HIV/AIDS and COVID-19 awareness programme for all construction workers at the outset of the construction phase.
- The construction area should be fenced off before construction commences and no workers should be permitted to leave the fenced off area.
- The contractor should provide transport for workers to and from the site on a daily basis. This will enable the contractor to effectively manage and monitor the movement of construction workers on and off the site.
- Where necessary, the contractors should make the necessary arrangements to enable low and semi-skilled workers from outside the area to return home over weekends and/ or on a regular basis. This would reduce the risk posed to local family structures and social networks.
- The contractor must ensure that all construction workers from outside the area are transported back to their place of residence within 2 days for their contract coming to an end.
- It is recommended that no construction workers, with the exception of security personnel, should be permitted to stay over-night on the site.

4.3.3 Risk to safety, livestock, and farm infrastructure

The presence on and movement of construction workers on and off the site poses a potential safety threat to local farmers and farm workers in the vicinity of the site. In addition, farm infrastructure, such as fences and gates, may be damaged and stock losses may also result from gates being left open and/or fences being damaged. Stock theft linked directly or indirectly to the presence of construction workers on the site also poses a risk to farming activities.

The presence of construction workers on the site increases the exposure of farming operations and livestock to the outside world, which, in turn, increased the potential risk of stock theft and crime. The potential risks (safety, livestock, and farm infrastructure) can be effectively mitigated by careful planning and managing the movement of construction on the site workers during the construction phase. Mitigation measures to address these risks are outlined below.

Table 4.3: Assessment of risk to safety, livestock, and damage to farm infrastructure

Nature: Potential risk to safety of farmers and farm workers, livestock and damage to farm infrastructure associated with the presence of construction workers on site		
	Without Mitigation	With Mitigation
Extent	Local (3)	Local (2)
Duration	Short term (2)	Short term (2)
Magnitude	Medium (6)	Low (4)
Probability	Probable (3)	Probable (3)
Significance	Medium (33)	Low (24)
Status	Negative	Negative
Reversibility	Yes, compensation paid for stock losses and damage to farm infrastructure etc.	Yes, compensation paid for stock losses and damage to farm infrastructure etc.
Irreplaceable loss of resources?	No	No
Can impact be mitigated?	Yes	
Mitigation: See below		
Residual impacts: No, provided losses are compensated for.		

Assessment of No-Go option

There is no impact as it maintains the current status quo.

Recommended mitigation measures

- Preparation and implementation of a Stakeholder Engagement Plan (SEP) prior to and during the construction phase.
- Preparation and implementation of a Community Health, Safety and Security Plan (CHSSP) prior to and during the construction phase.
- The construction area should be fenced off prior to the commencement of the construction phase. The movement of construction workers on the site should be confined to the fenced off area.
- The proponent should enter into an agreement with the local farmers in the area whereby damages to farm property etc. during the construction phase will be compensated for. The agreement should be signed before the construction phase commences.
- Traffic and activities should be strictly contained within designated areas.
- Strict traffic speed limits must be enforced on the farm.
- All farm gates must be closed after passing through.
- Contractors appointed by the proponent should provide daily transport for low and semi-skilled workers to and from the site. This would reduce the potential risk of trespassing on the remainder of the farm and adjacent properties.
- The proponent should consider the option of establishing a MF (see above) that includes local farmers and develop a Code of Conduct for construction workers. This committee

should be established prior to commencement of the construction phase. The Code of Conduct should be signed by the proponent and the contractors before the contractors move onto site.

- The proponent should hold contractors liable for compensating farmers and communities in full for any stock losses and/or damage to farm infrastructure that can be linked to construction workers. This should be contained in the Code of Conduct to be signed between the proponent, the contractors', and neighbouring landowners. The agreement should also cover losses and costs associated with fires caused by construction workers or construction related activities (see below).
- The Environmental Management Plan (EMP) must outline procedures for managing and storing waste on site, specifically plastic waste that poses a threat to livestock if ingested.
- Contractors appointed by the proponent must ensure that all workers are informed at the outset of the construction phase of the conditions contained on the Code of Conduct, specifically consequences of stock theft and trespassing on adjacent farms.
- Contractors appointed by the proponent must ensure that construction workers who are found guilty of stealing livestock and/or damaging farm infrastructure are dismissed and charged. This should be contained in the Code of Conduct. All dismissals must be in accordance with South African labour legislation.
- It is recommended that no construction workers, with the exception of security personnel, should be permitted to stay over-night on the site.

4.3.4 Increased risk of grass fires

The presence of construction workers and construction-related activities on the site poses an increased fire risk, which could, in turn, pose a threat grazing and livestock. Due to the climate and sparseness of vegetation, the study area is not considered veld fire prone. However, all the farming operations depend on grazing and any fires would have the potential to have a significant impact on the already stressed farming operations. The potential fire risk of grass fires is highest during the dry winter months (April-October). This period also coincides with dry, windy conditions in the area.

Table 4.4: Assessment of impact of increased risk of grass fires

Nature: Potential loss of livestock, crops and houses, damage to farm infrastructure and threat to human life associated with increased incidence of grass fires		
	Without Mitigation	With Mitigation
Extent	Local (4)	Local (2)
Duration	Short term (2)	short term (2)
Magnitude	Moderate due to reliance on agriculture for maintaining livelihoods (6)	Low (4)
Probability	Probable (3)	Probable (3)
Significance	Medium (36)	Low (24)
Status	Negative	Negative
Reversibility	Yes, compensation paid for stock and crop losses etc.	Yes, compensation paid for stock and crop losses etc.

Irreplaceable loss of resources?	No	No
Can impact be mitigated?	Yes	
Mitigation: See below		
Residual impacts: No, provided losses are compensated for.		

Assessment of No-Go option

There is no impact as it maintains the current status quo.

Recommended mitigation measures

The mitigation measures include:

- The proponent should prepare a Community Health, Safety and Security Plan (CHSSP) prior to commencement of the construction phase.
- The proponent should enter into an agreement with the local farmers in the area whereby damages to farm property etc., during the construction phase will be compensated for. The agreement should be signed before the construction phase commences.
- Contractor should ensure that open fires on the site for cooking or heating are not allowed except in designated areas.
- Smoking on site should be confined to designated areas.
- Contractor to ensure that construction related activities that pose a potential fire risk, such as welding, are effectively managed and are confined to areas where the risk of fires has been reduced. Measures to reduce the risk of fires include avoiding working in high wind conditions when the risk of fires is greater. In this regard special care should be taken during the high-risk dry, windy winter months.
- Contractor should provide adequate fire-fighting equipment on-site, including a fire fighting vehicle.
- Contractor to provide fire-fighting training to selected construction staff. No construction staff, with the exception of security staff, to be accommodated on site overnight.
- As per the conditions of the Code of Conduct, in the advent of a fire being caused by construction workers and or construction activities, the appointed contractors must compensate farmers for any damage caused to their farms. The contractor should also compensate the fire-fighting costs borne by farmers and local authorities.

4.3.5 Impacts associated with construction related activities

Construction activities on the site, including the movement of heavy construction vehicles, have the potential to create noise, dust, and safety impacts and damage roads, specifically unsurfaced roads. Experience from other projects also indicates that the transportation of construction workers to and from the site can result in the generation of waste along the route (packaging and bottles etc. thrown out of windows etc.). The preparation of the site and associated levelling and clearing of vegetation will expose the soil to wind and result in dust. The dust impacts will be exacerbated during windy periods.

The project components are also likely to be transported to the site via the N10 which is a key transport route linking Gauteng and the Eastern Cape. The transport of components to the site therefore has the potential to impact on other road users travelling along these roads, including tourists. Measures will need to be taken to ensure that the potential impacts on motorists using the N10 are minimised. The potential impacts on travelers and tourists can

be effectively mitigated by restricting construction traffic movements to weekdays, and, where possible, limiting activities during over holiday periods, specifically Christmas and Easter holiday periods and other long weekends. The movement of heavy construction vehicles will also damage internal farm roads and other unsurfaced public roads that may be used to access the site. The damage will need to be repaired after the completion of the construction phase.

Table 4.5: Assessment of the impacts associated with construction activities

Nature: Potential noise, dust and safety impacts associated with construction activities and movement of traffic to and from the site		
	Without Mitigation	With Mitigation
Extent	Local (2)	Local (1)
Duration	Short Term (2)	Short Term (2)
Magnitude	Low (4)	Minor (2)
Probability	Probable (3)	Probable (3)
Significance	Low (24)	Low (15)
Status	Negative	Negative
Reversibility	Yes	Yes
Irreplaceable loss of resources?	No	No
Can impact be mitigated?	Yes	
Mitigation: See below		
Residual impacts: If damage to local farm roads is not repaired then this will affect the farming activities in the area and result in higher maintenance costs for vehicles of local farmers and other road users. The costs will be borne by road users who were not responsible for the damage.		

Assessment of No-Go option

There is no impact as it maintains the current status quo.

Recommended mitigation measures

The potential impacts associated with heavy vehicles can be effectively mitigated. The mitigation measures include:

- The proponent should prepare a Community Health, Safety and Security Plan (CHSSP) prior to commencement of the construction phase.
- As far as possible, the transport of components to the site along the N1, N12 and R61 should be planned to avoid weekends and holiday periods.
- The contractor should inform local farmers and representatives from the ELM and relevant provincial road authorities of dates and times when abnormal loads will be undertaken.
- The contractor must ensure that damage caused by construction related traffic to the gravel public roads and local, internal farm roads is repaired on a regular basis throughout the construction phase. The costs associated with the repair must be borne by the contractor.

- Dust suppression measures must be implemented for heavy vehicles such as wetting of gravel roads on a regular basis⁸, adhering to speed limits and ensuring that vehicles used to transport sand and building materials are fitted with tarpaulins or covers.
- All vehicles must be roadworthy, and drivers must be qualified and made aware of the potential road safety issues and need for strict speed limits.
- The Contractor should ensure that workers are informed that no waste can be thrown out of the windows while being transported to and from the site. Workers who throw waste out windows should be fined.
- The Contractor should be required to collect waste along access roads on a weekly basis.
- Waste generated during the construction phase should be transported to the local permitted landfill site.
- EMPr measures (and penalties) should be implemented to ensure farm gates are closed at all times.
- EMPr measures (and penalties) should be implemented to ensure speed limits are adhered to at all times.

4.4 OPERATIONAL PHASE SOCIAL IMPACTS

The key social issues associated with the operational phase include:

Potential positive impacts

- Improved energy security and establishment of energy infrastructure.
- Creation of employment, skills development, and business opportunities.
- Generate income for landowners.

Potential negative impacts

- The visual impacts and associated impact on sense of place.
- Loss of farm land and impact on farming operations.
- Impact of maintenance activities on farming activities and operations.

4.4.1 Improved energy security and development of energy infrastructure

The proposed power line is essential to enable the development and operation of Pixley Park PV SEF Cluster. The primary goal of the Cluster is to improve energy security in South Africa by generating renewable energy. The proposed power line should therefore be viewed within the context of the South Africa's current power supply constraints and the reliance on coal powered energy to meet most of its energy needs.

South Africa's energy crisis, which started in 2007 and is ongoing, has resulted in widespread rolling blackouts (referred to as load shedding) due to supply shortfalls. The load shedding has had a significant impact on all sectors of the economy and on investor confidence. The mining and manufacturing sector have been severely impacted and will continue to be impacted until such time as there is a reliable supply to energy. Load shedding in the first six months of 2015 was estimated to have cost South African businesses R13.72 billion in lost revenue with an additional R716 million was spent by businesses on backup generators⁹. A survey of 3 984 small business owners found that 44% said that they had been severely

⁸ Treated effluent (non-potable) water should be used for wetting of roads and construction areas

⁹ Goldberg, Ariel (9 November 2015). "The economic impact of load shedding: The case of South African retailers" (PDF). Gordon Institute of Business Science. p. 109

affected by load shedding with 85% stating that it had reduced their revenue, with 40% of small businesses losing 20% or more of revenue during due to load shedding period¹⁰.

Table 4.6: Improve energy security and develop energy infrastructure

Nature: Development of infrastructure to generate clean, renewable energy		
	Without Enhancement	With Enhancement
Extent	Local, Regional and National (3)	Local, Regional and National (3)
Duration	Long term (4)	Long term (4)
Magnitude	Moderate (6)	Moderate (6)
Probability	Highly Probable (4)	Definite (5)
Significance	Medium (52)	High (65)
Status	Positive	Positive
Reversibility	Yes	
Irreplaceable loss of resources?	N/A	N/A
Can impact be mitigated?	Yes	
Enhancement: See below		
Residual impacts: Overall reduction in CO ₂ emission, reduction in water consumption for energy generation, contribution to establishing an economically viable commercial renewables generation sector in the Northern Cape and South Africa.		

Assessment of No-Go option

The No-Development option would represent a lost opportunity for South Africa to supplement its current energy needs with clean, renewable energy.

Recommended mitigation measures

Should the project be approved, the proponent should:

- Implement a skills development and training programme aimed at maximising the number of employment opportunities for local community members.
- Maximise opportunities for local content, procurement, and community shareholding.

4.4.2 Creation of employment and business opportunities

The potential employment opportunities associated with the power line will be limited and largely confined to periodic maintenance and repairs. The potential socio-economic benefits will therefore be limited.

¹⁰ "How does load shedding affect small business in SA?". *The Yoco Small Business Pulse (3: Q1 2019)*:

Table 4.7: Impact assessment of employment and business creation opportunities

Nature: Creation of employment and business opportunities associated with the operational phase		
	Without Enhancement	With Enhancement
Extent	Local and Regional (1)	Local and Regional (1)
Duration	Long term (4)	Long term (4)
Magnitude	Minor (2)	Minor (2)
Probability	Probable (3)	Highly Probable (4)
Significance	Low (21)	Medium (32)
Status	Positive	Positive
Reversibility	N/A	N/A
Irreplaceable loss of resources?	No	No
Can impact be enhanced?	Yes	
Enhancement: See below		
Residual impacts: Creation of permanent employment and skills and development opportunities for members from the local community and creation of additional business and economic opportunities in the area		

Assessment of No-Go option

There is no impact as it maintains the current status quo. However, the potential opportunity costs in terms of the loss of employment and skills and development training would be lost.

Recommended enhancement measures

The enhancement measures listed in Section 4.3.1, i.e. to enhance local employment and business opportunities during the construction phase, also apply to the operational phase.

4.4.3 Generate income for affected landowner

The proponent will be required to either purchase the land or enter into a rental agreement with the affected landowners for the use of the land for the establishment of the proposed grid infrastructure. Based on the findings of the SIA the area is prone to droughts and farming operations can be challenging. Any additional source of income therefore represents a significant benefit for the affected landowner(s). The additional income would assist to reduce the risks to their livelihoods posed by droughts and fluctuating market prices for sheep and farming inputs, such as fuel, feed etc. The additional income would improve economic security of farming operations, which in turn would improve job security of farm workers and benefit the local economy.

Table 4.8: Assessment of benefits associated with income generated for the affected farmer

Nature: The generation of additional income represents a significant benefit for the local affected farmer(s) and reduces the risks to their livelihoods posed by droughts and fluctuating market prices for sheep and farming inputs, such as feed etc.		
	Without Enhancement	With Enhancement
Extent	Local (1)	Local (1)
Duration	Long term (4)	Long term (4)
Magnitude	Minor (2)	Low (4)
Probability	Probable (3)	Highly Probable (4)
Significance	Low (21)	Medium (36)
Status	Positive	Positive
Reversibility	N/A	N/A
Irreplaceable loss of resources?	No	No
Can impact be enhanced?	Yes	
Enhancement: See below		
Residual impacts: Support for local agricultural sector and farming		

Assessment of No-Go option

There is no impact as it maintains the current status quo.

Recommended enhancement measures

Implement agreements with affected landowner.

4.4.4 Visual impact and impact on sense of place

The proposed grid connection infrastructure has the potential to impact on the areas existing rural sense of place. The findings of the VIA (Logis, July 2022) note that the construction and operation of the proposed grid connection infrastructure for the Pixley Park PV Cluster may have a visual impact on the study area, especially within a 0.5km radius (and potentially up to a radius of 3km) of the power line structure and substation. The visual impact will differ amongst places, depending on the distance from the infrastructure.

The VIA also notes that within the study area there are numerous existing power lines that all congregate at the Hydra Substation. The visual amenity along this infrastructure corridor has already been compromised to a large degree. While the frequency of visual exposure to power lines is expected to increase, it is still preferable to consolidate the linear infrastructure as much as possible. To this end, the cumulative visual impact associated with the proposed grid connection infrastructure is considered to be within acceptable limits. Overall, the significance of the visual impacts is expected to range from **moderate** to **low** as a result of the generally undeveloped character of the landscape. No visual impacts of a high significance are expected to occur.

The development of the proposed grid connection is therefore supported from a visual perspective, subject to the implementation of the suggested best practice mitigation measures listed in the VIA.

Table 4.9: Visual impact and impact on sense of place

Nature: Visual impact associated with the proposed grid infrastructure and the potential impact on the area’s rural sense of place and adjacent land uses.		
	Without Mitigation	With Mitigation
Extent	Local (1)	Local (1)
Duration	Long term (4)	Long term (4)
Magnitude	Moderate-Low (6-4)	Moderate-Low (6-4)
Probability	Probable (3)	Probable (3)
Significance	Medium-Low (33-27)	Medium-Low (33-27)
Status	Negative	Negative
Reversibility	Yes, grid can be removed.	
Irreplaceable loss of resources?	No	No
Can impact be mitigated?	Yes	
Mitigation: See below		
Residual impacts: Impact on rural sense of place		

Assessment of No-Go option

There is no impact as it maintains the current status quo.

Recommended mitigation measures

The recommendations contained in the Final VIA should also be implemented.

4.4.5 Impact on farming operations

Based on the findings of interviews with affected landowners the footprint impacts associated with the 132 kV powerline and substation sites are limited. All the substation sites would affect small portions of large properties. The potential impact on farming operations would therefore be limited.

Table 4.10: Impact on farming operations

Nature: Potential risk to farming operations and livestock associated with presence of maintenance workers on the site		
	Without Mitigation	With Mitigation
Extent	Local (2)	Local (1)
Duration	Short term (2)	Short term (2)
Magnitude	Moderate (6)	Low (4)
Probability	Probable (3)	Probable (3)
Significance	Medium (30)	Low (21)
Status	Negative	Negative
Reversibility	Yes, solar facility can be removed.	
Irreplaceable loss of resources?	No	No
Can impact be mitigated?	Yes	
Mitigation: See below		
Residual impacts: No, provided losses are compensated for.		

Assessment of No-Go option

There is no impact as the current status quo would be maintained.

Recommended mitigation measures

- Option A is the preferred transmission line alignment

4.4.6 Impact of maintenance on farming operations¹¹

The impacts associated with presence maintenance workers are related to stock losses as result of farm gates being left open and or damaged and damage to fences. The presence of maintenance workers on the site also increases the exposure of their farming operations and livestock to the outside world, which, in turn, increased the potential risk of stock theft and crime. Based on experience with maintenance of the existing Eskom power lines this is an issue that will need to be addressed. The comments from the directly affected land owners on these issues are summarized below

The potential risks (safety, livestock, and farm infrastructure) can be mitigated by ensuring the maintenance teams take care to ensure that gates are kept closed and affected property owners are kept informed about timing of maintenance operations. Mitigation measures to address these risks are outlined below.

¹¹ The impacts are similar to the impacts associated with construction phase.

Table 4.11: Assessment of risk of maintenance to farming operations

Nature: Potential risk to farming operations and livestock associated with presence of maintenance workers on the site		
	Without Mitigation	With Mitigation
Extent	Local (2)	Local (1)
Duration	Short term (2)	Short term (2)
Magnitude	Moderate (6)	Low (4)
Probability	Probable (3)	Probable (3)
Significance	Medium (30)	Low (21)
Status	Negative	Negative
Reversibility	Yes, solar facility can be removed.	
Irreplaceable loss of resources?	No	No
Can impact be mitigated?	Yes	
Mitigation: See below		
Residual impacts: No, provided losses are compensated for.		

Assessment of No-Go option

There is no impact as the current status quo would be maintained.

Recommended mitigation measures

- Affected property owners should be notified in advance of the timing and duration of maintenance activities.
- Maintenance teams must ensure that all farm gates must be closed after passing through.
- Property owners should be compensated for damage to farm property and or loss of livestock or game associated maintenance related activities.
- Movement of traffic and maintenance related activities should be strictly contained within designated areas associated with transmission lines and substations.
- Strict traffic speed limits must be enforced on the farm.
- No maintenance workers should be allowed to stay over-night on the affected properties.

4.5 CUMULATIVE IMPACT ON SENSE OF PLACE

The findings of the VIA (Logis, July 2022) note the construction of the grid connection infrastructure may increase the cumulative visual impact of industrial type infrastructure within the region. The anticipated cumulative visual impact of the proposed grid connection infrastructure is expected to be of **moderate** significance. This is considered to be acceptable from a visual impact perspective.

The VIA also notes that within the study area there are numerous existing power lines that all congregate at the Hydra Substation. The addition of the proposed powerline will contribute to the overall occurrence of industrial type infrastructure within the region. However, the low incidence of visual receptors within this environment and the relatively remote location of the proposed powerline reduces the probability of this impact occurring.

Table 4.12: Cumulative impacts on sense of place and the landscape

Nature: Visual impacts associated with the establishment of more than one transmission line and the potential impact on the area's rural sense of place and character of the landscape.		
	Overall impact of the proposed project considered in isolation	Cumulative impact of the project and other projects in the area
Extent	Local (1)	Local and regional (2)
Duration	Long term (4)	Long term (4)
Magnitude	Low (4)	Low (4)
Probability	Probable (3)	Probable (3)
Significance	Low (27)	Medium (30)
Status (positive/negative)	Negative	Negative
Reversibility	Yes. Grid infrastructure can be removed.	
Loss of resources?	No	No
Can impacts be mitigated?	Yes	
Confidence in findings: High.		
Mitigation: See below		

Assessment of No-Go option

There is no impact as it maintains the current status quo.

Recommended mitigation measures

The recommendations of the VIA should be implemented.

4.6 ASSESSMENT OF NO-DEVELOPMENT OPTION

The proposed grid infrastructure is essential to enable the proposed Pixley Park PV SEF Cluster to connect to the national electricity grid to address the current energy supply constraints and reduce South Africa's reliance on coal generated energy. As indicated above, energy supply constraints and associated load shedding have had a significant impact on the economic development of the South African economy. South Africa also relies on coal-powered energy to meet more than 90% of its energy needs. South Africa is therefore one of the highest per

capita producers of carbon emissions in the world and Eskom, as an energy utility, has been identified as the world's second largest producer of carbon emissions.

The No-Development option would represent a lost opportunity for South Africa to improve energy security and supplement its current energy needs with renewable energy. Given South Africa's current energy security challenges and its position as one of the highest per capita producers of carbon emissions in the world, this would represent a negative social cost.

Table 4.13: Assessment of no-development option

Nature: The no-development option would result in the lost opportunity for South Africa to supplement is current energy needs with clean, renewable energy		
	Without Mitigation	With Mitigation¹²
Extent	Local-International (4)	Local-International (4)
Duration	Long term (4)	Long term (4)
Magnitude	Moderate (6)	Moderate (6)
Probability	Highly Probable (4)	Highly Probable (4)
Significance	Moderate (56)	Moderate (56)
Status	Negative	Positive
Reversibility	Yes	
Irreplaceable loss of resources?	N/A	N/A
Can impact be mitigated?	Yes	
Enhancement: See below		
Residual impacts: Reduce carbon emissions via the use of renewable energy and associated benefits in terms of global warming and climate change.		

Recommended enhancement measures

The proposed grid connection for the Pixley Park PV SEF Cluster facility should be developed, and the mitigation and enhancement measures identified in the SIA and other specialist studies should be implemented. However, the impact of large solar facilities on the sense of place and landscape are issues that need to be addressed in the location, design, and layout of the proposed facility.

¹² Assumes establishment of a Community Trust

SECTION 5: KEY FINDINGS AND RECOMMENDATIONS

5.1 INTRODUCTION

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

- A review of the issues identified during the Scoping Process.
- A review of key planning and policy documents pertaining to the area.
- Site visit and semi-structured interviews with interested and affected parties.
- A review of social and economic issues associated with similar developments.
- The experience of the authors with other solar energy projects in South Africa.

5.2 SUMMARY OF KEY FINDINGS

The key findings of the study are summarised under the following sections:

- Fit with policy and planning.
- Construction phase impacts.
- Operational phase impacts.
- Cumulative Impacts.
- Decommissioning phase impacts.
- No-development option.

The grid connection corridor for the 132 kV overhead powerline is common to all four PV SEFs associated with the Pixley Park PV Cluster. The social impacts associated with the 132 kV overhead line are therefore common to all four PV SEFs. The findings of the SIA are therefore applicable to each of the four PV SEFs associated with the Pixley Park PV Cluster. The findings of the SIA also indicate that the potential social impacts associated with the MTS are negligible. The focus of the SIA is therefore on the 132 kV overhead powerline.

5.2.1 Policy and planning issues

The development of renewable energy is strongly supported at a national, provincial, and local level. The development of and investment in renewable energy is supported by the National Development Plan (NDP), New Growth Path Framework and National Infrastructure Plan, which all refer to and support renewable energy. The PKSDM SDF and IDP and ELM IDP also support the development of renewable energy. The development of the proposed Pixley Park PV Cluster and associated grid connections is therefore supported by key policy and planning documents.

5.2.2 Construction phase

The key social issues associated with the construction phase include:

Potential positive impacts

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

The construction phase will extend over a period of approximately 3-6 months and create in the region of 23-40 employment opportunities. The total wage bill will be in the region of R 1.5-2 million (2022 Rand values). Most of the low and semi-skilled employment opportunities are likely to benefit residents from De Aar. Most the beneficiaries are likely to be historically disadvantaged (HD) members of the community. This would represent a short term positive social benefit in an area with limited employment opportunities. A percentage of the wage bill will be spent in the local economy which will also create opportunities for local businesses in KHM.

The capital expenditure associated with the construction of power line will be ~50 million (2022 Rand values) and will create opportunities for the local and regional and local economy. The sector of the local economy most likely to benefit from the proposed development is the local service industry. The potential opportunities for the local service sector would be linked to accommodation, catering, cleaning, transport, and security, etc. associated with the construction workers on the site. However, given the relatively small scale of the development and short construction period the benefits will be limited.

Potential negative impacts

- Impacts associated with the presence of construction workers on local communities.
- Noise, dust, and safety impacts of construction related activities and vehicles.
- Risk of veld fires.
- Risks posed to farming activities by construction workers.

The findings of the SIA indicate that the significance of the potential negative impacts is likely to be negligible. With mitigation they are rated as **Low Negative**. The potential negative impacts associated with the proposed construction of the power line can therefore be effectively mitigated if the recommended mitigation measures are implemented.

Table 5.1 summarises the significance of the impacts associated with the construction phase.

Table 5.1: Summary of social impacts during construction phase

Impact	Significance No Mitigation / Enhancement	Significance With Mitigation / Enhancement
Creation of employment and business opportunities	Low (Positive)	Low (Positive)
Presence of construction workers and potential impacts on family structures and social networks	Low (Negative)	Low (Negative)
Impact of construction activities and vehicles	Low (Negative)	Low (Negative)
Risk of veld fires	Moderate Negative)	Low (Negative)
Safety risk, stock theft and damage to farm infrastructure associated with presence of construction workers	Moderate Negative)	Low (Negative)

5.2.3 Operational phase impacts

The benefits associated with the Pixley Park PV SEF Cluster are dependent upon being able to connect to the national grid. The key social issues associated with the operational phase include:

Potential positive impacts

- Improve energy security and establishment of energy infrastructure.
- Creation of employment, skills development, and business opportunities.
- Generate income for landowners.

Potential negative impacts

- The visual impacts and associated impact on sense of place.
- Impact on farming operations
- Risks posed to farming activities by maintenance workers.

The findings of the SIA indicate that the significance of the potential negative impacts is likely be **Low Negative** if the required mitigation measures are effectively implemented.

The significance of the impacts associated with the operational phase are summarised in Table 5.2.

Table 5.2: Summary of social impacts during operational phase

Impact	Significance No Mitigation / Enhancement	Significance With Mitigation / Enhancement
Improve energy security and establishment of energy infrastructure	Moderate (Negative) ¹³	Moderate (Positive) ¹⁴
Creation of employment, skills development, and business opportunities during maintenance	Low (Positive)	Moderate (Positive)
Generate income for landowners	Low (Positive)	Moderate (Positive)
Visual impact and impact on sense of place	Low-Moderate (Negative)	Low-Moderate (Negative)
Impact on farming operations	Moderate (Negative)	Low (Negative)
Safety risk, stock theft and damage to farm infrastructure associated with presence of maintenance workers	Moderate (Negative)	Low (Negative)

5.2.4 Cumulative impact on sense of place

The findings of the VIA (Logis, July 2022) note the construction of the grid connection infrastructure may increase the cumulative visual impact of industrial type infrastructure within the region. The anticipated cumulative visual impact of the proposed grid connection

¹³ Assumes grid infrastructure is not developed

¹⁴ Assumes grid infrastructure is developed

infrastructure is expected to be of **moderate** significance. This is considered to be acceptable from a visual impact perspective.

5.2.5 Assessment of no-development option

The No-Development option would represent a lost opportunity for South Africa to improve energy security and supplement its current energy needs with renewable energy. Given South Africa's current energy security challenges and its position as one of the highest per capita producers of carbon emissions in the world, this would represent a negative social cost.

5.3 CONCLUSION AND RECOMMENDATIONS

The energy security benefits associated with the proposed Pixley Park PV SEF Cluster are dependent upon it being able to connect to the national grid via the establishment of grid connection infrastructure.

The findings of the SIA indicate that the significance of the potential negative social impacts for both the construction and operational phase of the proposed grid infrastructure are **Low Negative** with mitigation. The potential negative impacts can therefore be effectively mitigated if the recommended mitigation measures are implemented. The establishment of proposed grid infrastructure for the Pixley Park PV SEF Cluster is therefore supported by the findings of the SIA.

ANNEXURE A

INTERVIEWS

- Albertyn, Mr Diederik (telephonic 2022-06-09). Cyfferkuil 7/7.
- Du Toit, Mr Pieter (telephonic 2022-06-09). Riet Fountain 6/RE, 6/2, 6/4, Roode Kraal 28, Bloemhof 145/1.
- Pienaar, Mr Dupie (telephonic 2022-06-09). Carolus Poort 3/RE, 3/3, 3/4, 3/12, Vetlaagte 4, Riet Fountain 6/1.
- Van der Merwe, Mr Barend (telephonic 2022-06-09). Wag en Bittje 5/RE.

REFERENCES

- The National Energy Act (2008).
- The White Paper on the Energy Policy of the Republic of South Africa (December 1998).
- The White Paper on Renewable Energy (November 2003).
- Integrated Resource Plan (IRP) for South Africa (2010-2030).
- The National Development Plan (2011).
- Northern Cape Provincial Growth and Development Strategy (2004-2014).
- Northern Cape Climate Change Response Strategy.
- Northern Cape Spatial Development Framework (2012).
- Northern Cape Province Green Document (2017/2018).
- Pixley Ka Seme Integrated Development Plan (2019-2020).
- Pixley Ka Seme Spatial Development Framework (2017).
- Emathanjeni Integrated Development Plan (2021-2022).
- Green Jobs Study (2011), IDC, DBSA Ltd and TIPS.
- Independent Power Producers Procurement Programme (IPPPP): An Overview (2017), Department of Energy, National Treasury and DBSA.
- Powering the Future: Renewable Energy Roll-out in South Africa (2013), Greenpeace South Africa.

INTERNET

- <https://www.steenbokkie.co.za> (Steenbokkie PNR).

ANNEXURE B

METHODOLOGY FOR THE ASSESSMENT OF POTENTIAL IMPACTS

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

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

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

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

S = Significance weighting

E = Extent

D = Duration

M = Magnitude
P = Probability

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

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

ANNEXURE C

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Tony Barbour's has 28 years' experience as an environmental consultant, including ten years as a consultant in the private sector followed by four years at the University of Cape Town's Environmental Evaluation Unit. He has worked as an independent consultant since 2004, with a key focus on Social Impact Assessment. His other areas of interest include Strategic Environmental Assessment and review work.

EDUCATION

- BSc (Geology and Economics) Rhodes (1984);
- B Economics (Honours) Rhodes (1985);
- MSc (Environmental Science), University of Cape Town (1992)

EMPLOYMENT RECORD

- Independent Consultant: November 2004 – current;
- University of Cape Town: August 1996-October 2004: Environmental Evaluation Unit (EEU), University of Cape Town. Senior Environmental Consultant and Researcher;
- Private sector: 1991-August 2000: 1991-1996: Ninham Shand Consulting (Now Aurecon, Cape Town). Senior Environmental Scientist; 1996-August 2000: Steffen, Robertson and Kirsten (SRK Consulting) – Associate Director, Manager Environmental Section, SRK Cape Town.

LECTURING

- University of Cape Town: Resource Economics; SEA and EIA (1991-2004);
- University of Cape Town: Social Impact Assessment (2004-current);
- Cape Technikon: Resource Economics and Waste Management (1994-1998);
- Peninsula Technikon: Resource Economics and Waste Management (1996-1998).

RELEVANT EXPERIENCE AND EXPERTISE

Tony Barbour has undertaken in the region of 260 SIA's, including SIA's for infrastructure projects, dams, pipelines, and roads. All of the SIAs include interacting with and liaising with affected communities. In addition he is the author of the Guidelines for undertaking SIA's as part of the EIA process commissioned by the Western Cape Provincial Environmental Authorities in 2007. These guidelines have been used throughout South Africa.

Tony was also the project manager for a study commissioned in 2005 by the then South African Department of Water Affairs and Forestry for the development of a Social Assessment and Development Framework. The aim of the framework was to enable the Department of Water Affairs and Forestry to identify, assess and manage social impacts associated with large infrastructure projects, such as dams. The study also included the development of guidelines for Social Impact Assessment, Conflict Management, Relocation and Resettlement and Monitoring and Evaluation.

Countries with work experience include South Africa, Namibia, Angola, Botswana, Zambia, Lesotho, Swaziland, Ghana, Mozambique, Mauritius, Kenya, Ethiopia, Oman, South Sudan, Senegal, Sudan and Armenia.

ANNEXURE D

The specialist declaration of independence in terms of the Regulations_

I, Tony Barbour _____, declare that -- General

declaration:

I act as the independent specialist in this application;

I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;

I declare that there are no circumstances that may compromise my objectivity in performing such work;

I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, Regulations and any guidelines that have relevance to the proposed activity;

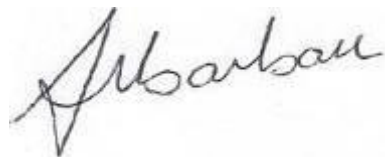
I will comply with the Act, Regulations and all other applicable legislation;

I have no, and will not engage in, conflicting interests in the undertaking of the activity;

I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;

all the particulars furnished by me in this form are true and correct; and

I realise that a false declaration is an offence in terms of regulation 48 and is punishable in terms of section 24F of the Act.



Signature of the specialist:

Tony Barbour Environmental Consulting and Research

Name of company (if applicable):

117 May 2022

Date: