

**SOCIAL STATEMENT  
FOR  
DU PLESSIS DAM PV1  
GRID CONNECTION  
NORTHERN CAPE PROVINCE**

**MARCH 2022**

Prepared for

**LANDSCAPE DYNAMICS**

by

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## **EXECUTIVE SUMMARY**

### **INTRODUCTION AND LOCATION**

Tony Barbour was appointed to prepare undertake a specialist Social Assessment as part of the Basic Assessment (BA) process for the grid connection for the Du Plessis Dam PV1 Solar Energy Facility (SEF) located near the town of De Aar in the Emthanjeni Local Municipality (ELM), Northern Cape Province. The project involves the establishment of a 132 kV overhead power line to connect the PV1 Eskom Switching Station associated with the Du Plessis Dam PV1 Solar Energy Facility (SEF) with the Mulilo Cluster 1 Substation. Two alternative alignments have been identified, namely Alternative 1 and 2.

This report contains the findings of the Social Assessment undertaken as part of the BA process.

### **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.

### **FIT WITH POLICY AND PLANNING**

The development of renewable energy and the associated energy infrastructure is strongly supported at a national, provincial, and local level. The development of and investment in renewable energy and associated energy distribution infrastructure is supported by the National Development Plan (NDP), New Growth Path Framework and National Infrastructure Plan, which all highlight the importance of energy security and investment in energy infrastructure. The development of the proposed power line 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 12-18 months and create in the region of 30 employment opportunities. The total wage bill will be in the region of R 1.8 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 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 the ELM.

The capital expenditure associated with the construction of power line will be ~18 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.
- 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. However, experience with the construction of WEFs in the area is that despite measures being in place, these measures are not being implemented affectively by the contractors working in the area. This will need to be addressed.

Table 1 summarises the significance of the impacts associated with the construction phase. These findings apply to Alternative 1 and 2.

**Table 1: Summary of social impacts during construction phase**

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

## OPERATION 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 12-18 months and create in the region of 30 employment opportunities. The total wage bill will be in the region of R 1.8 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 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 the ELM.

The capital expenditure associated with the construction of power line will be ~18 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.
- 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. However, experience with the construction of WEFs in the area is that despite measures being in place, these measures are not being implemented affectively by the contractors working in the area. This will need to be addressed.

Table 2 summarises the significance of the impacts associated with the construction phase. These findings apply to Alternative 1 and 2.

**Table 2: Summary of social impacts during construction phase**

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

### **CUMULATIVE IMPACT ON SENSE OF PLACE**

There are a number of existing power lines in the area associated with the Hydra substation and SEFs in the area. The potential for cumulative impacts associated with combined visibility (whether two or more power lines will be visible from one location) and sequential visibility (e.g., the effect of seeing two or more power lines along a single journey, e.g., road or walking trail) does therefore exist. However, the cumulative impact on the areas sense of place is likely to be low.

### **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 Du Plessis Dam PV1 SEF 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 132 kV Du Plessis Dam PV1 overhead power line is **Low Negative** with mitigation. The potential negative impacts can therefore be effectively mitigated if the recommended mitigation measures are implemented. This applies to both Alternative 1 (Preferred Alternative) and Alternative 2.

The establishment of proposed 132 kV grid connection for the Du Plessis Dam PV1 SEF is therefore supported by the findings of the SIA.

## CONTENTS OF THE SPECIALIST REPORT – CHECKLIST

<b>Regulation GNR 326 of 4 December 2014, as amended 7 April 2017, Appendix 6</b>	<b>Section of Report</b>
(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;	N/A
(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	Comply with the Assessment Protocols that were

<p>apply.</p>	<p>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.</p>
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## ACRONYMS

DEA	Department of Environmental Affairs
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
SIA	Social Impact Assessment



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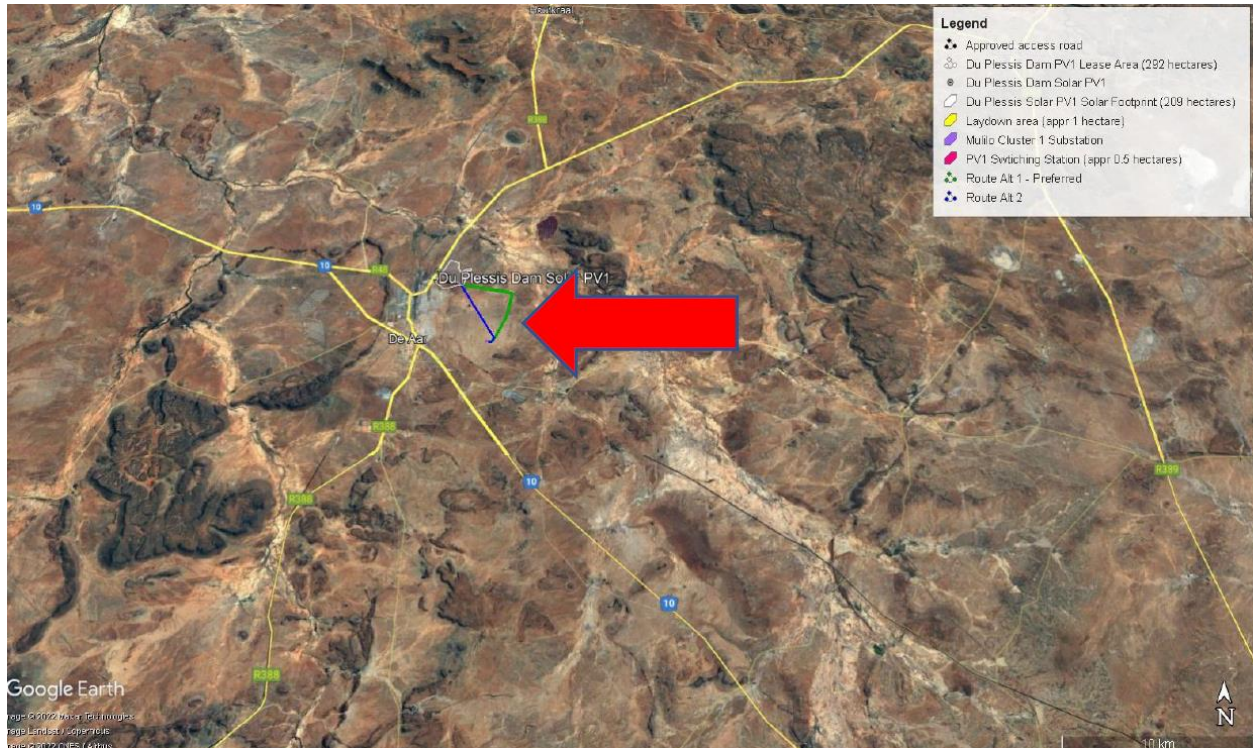
# SECTION 1: INTRODUCTION

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## 1.1 INTRODUCTION

Tony Barbour was appointed to prepare undertake a specialist Social Assessment as part of the Basic Assessment (BA) process for the grid connection for the Du Plessis Dam PV 1 Solar Energy Facility (SEF) located near the town of De Aar in the Emthanjeni Local Municipality, Northern Cape Province (Figure 1.1). The project involves the establishment of a 132 kV overhead power line to connect the PV1 Eskom Switching Station associated with the Du Plessis Dam PV1 Solar Energy Facility (SEF) with the Mulilo Cluster 1 Substation. Two alternative alignments have been identified, namely Alternative 1 and 2.

This report contains the findings of the Social Assessment undertaken as part of the BA process.



**Figure 1.1: Location of grid connection alternatives for Du Plessis Dam PV1 SEF (red arrow)**

## 1.2 APPROACH TO STUDY

The approach to the Social Assessment is based on the Western Cape Department of Environmental Affairs and Development Planning Guidelines for Social Impact Assessment (SIA) (DEADP, 2007). The key activities 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), and the community, land uses and activities that may be affected by the proposed project.
- Collecting baseline data on the current social and economic environment.
- Review of key policy and planning documents that have a bearing on the project.
- Identifying the key potential social issues associated with the proposed project.
- Assessing and assessing the significance of social impacts associated with the proposed project.
- Identification of enhancement and mitigation measures aimed at maximizing opportunities and avoiding and or reducing negative impacts.

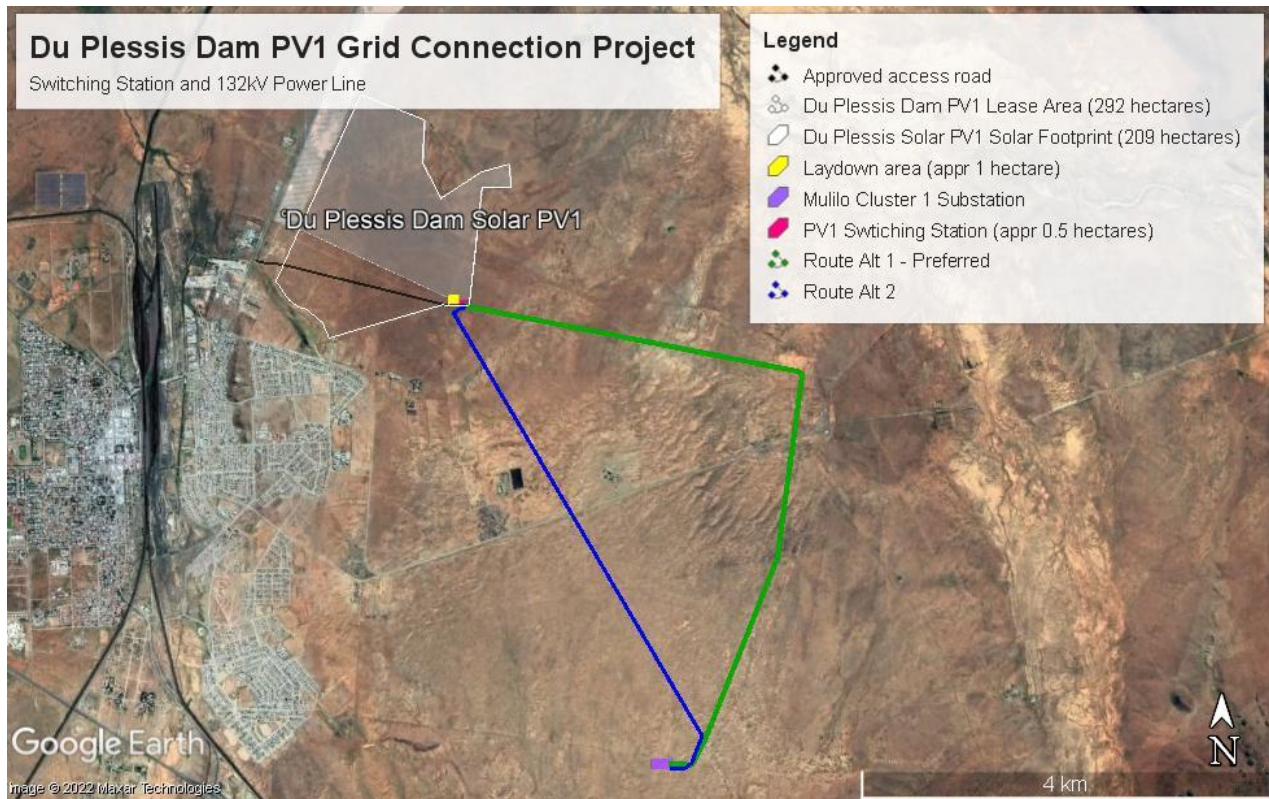
As indicated under the assumptions below, a site visit was not undertaken. However, the consultant is familiar with the study area and has undertaken SIAs for a number of renewable energy projects located in the vicinity of the town of De Aar. Annexure B contains the assessment methodology.

### **1.3 PROJECT DESCRIPTION**

The project involves the establishment of a 132 kV overhead power line to connect the PV1 Eskom Switching Station associated with the Du Plessis Dam PV 1 Solar Energy Facility (SEF) with the Mulilo Cluster 1 Substation (Figure 1.2). The overhead powerline is approximately 8 km in length and is located between 2 and 4 km to the east of the town of De Aar in the Emthanjeni Local Municipality (ELM) in the Northern Cape Province.

Two alternative route options have been identified, namely:

- Alternative 1 (Preferred Alternative), which runs in an easterly direction from the Eskom switching station for ~ 3.4km before swinging south for 4 km and linking up with the Mulilo Cluster 1 substation (Figure 1.2, green line).
- Alternative 2. Run in a south easterly direction from the Eskom switching station for ~ 5 km and links up with the Mulilo Cluster 1 substation (Figure 1.2, blue line).



**Figure 1.2: Location of Alternative 1 (green line) and Alternative 2 (blue line) for Du Plessis Dam PV1 grid connection.**

## 1.4 ASSUMPTIONS AND LIMITATIONS

### 1.4.1 Assumptions

#### Site visit

Given the nature and location of the grid connections the potential social impacts are likely to be negligible. A site visit to the area was therefore not deemed necessary. The consultant is also familiar with the study area.

#### Strategic importance of the project

The strategic importance of promoting renewable energy and associated grid infrastructure is supported by the national and provincial energy policies.

#### 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 and associated grid connections.

### **1.4.2 Limitations**

There are no limitations that have a material bearing on the findings of the study.

## **1.5 SPECIALIST DETAILS**

Tony Barbour is an independent specialist with 30 years' experience in the field of environmental management. In terms of SIA experience Tony Barbour has undertaken in the region of 300 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. Annexure C contains a copy of Tony Barbour's CV.

## **1.6 DECLARATION OF INDEPENDENCE**

This confirms that Tony Barbour, the specialist consultant responsible for undertaking the study and preparing the SIA Report, is independent and does not have any vested or financial interests in the proposed power line being either approved or rejected. Annexure D contains a signed declaration of independence.

## **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: Summary of key findings.

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## **SECTION 2: POLICY AND PLANNING CONTEXT**

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### **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 fit<sup>1</sup>” 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).

The proposed grid connection infrastructure is linked to the proposed Du Plessis Dam PV 1 SEF, which is located with the Emthanjeni Local Municipality (ELM) which falls within the Pixley Ka Seme District Municipality (PKSDM). The review also includes reference to key policy documents that have a bearing on renewable energy.

- National Development Plan (2011).
- New Growth Path Framework (2010).
- National Infrastructure Plan (2012).
- The Western Cape Provincial Spatial Development Framework (2014).
- The Western Cape Infrastructure Framework (2013).
- Northern Cape Provincial Growth and Development Plan (NCPGDP).
- Northern Cape Provincial Spatial Development Framework (2012).
- Pixley Ka Seme Integrated Development Plan (2019-2020).
- Pixley Ka Seme Spatial Development Framework (2017).
- Emathanjeni Integrated Development Plan (2021-2022).

### **2.2 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.

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

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<sup>1</sup> “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.

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.

### **2.3 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.

### **2.4 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 IRP 2010).

**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.

**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.

**2.5 NORTHERN CAPE PROVINCE 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 refers 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 region's 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.

## **2.6 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.

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.

## **2.7 PIXLEY KA SEME DISTRICT MUNICIPALITY INTEGRATED DEVELOPMENT PLAN**

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

The 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.

## **2.8 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.

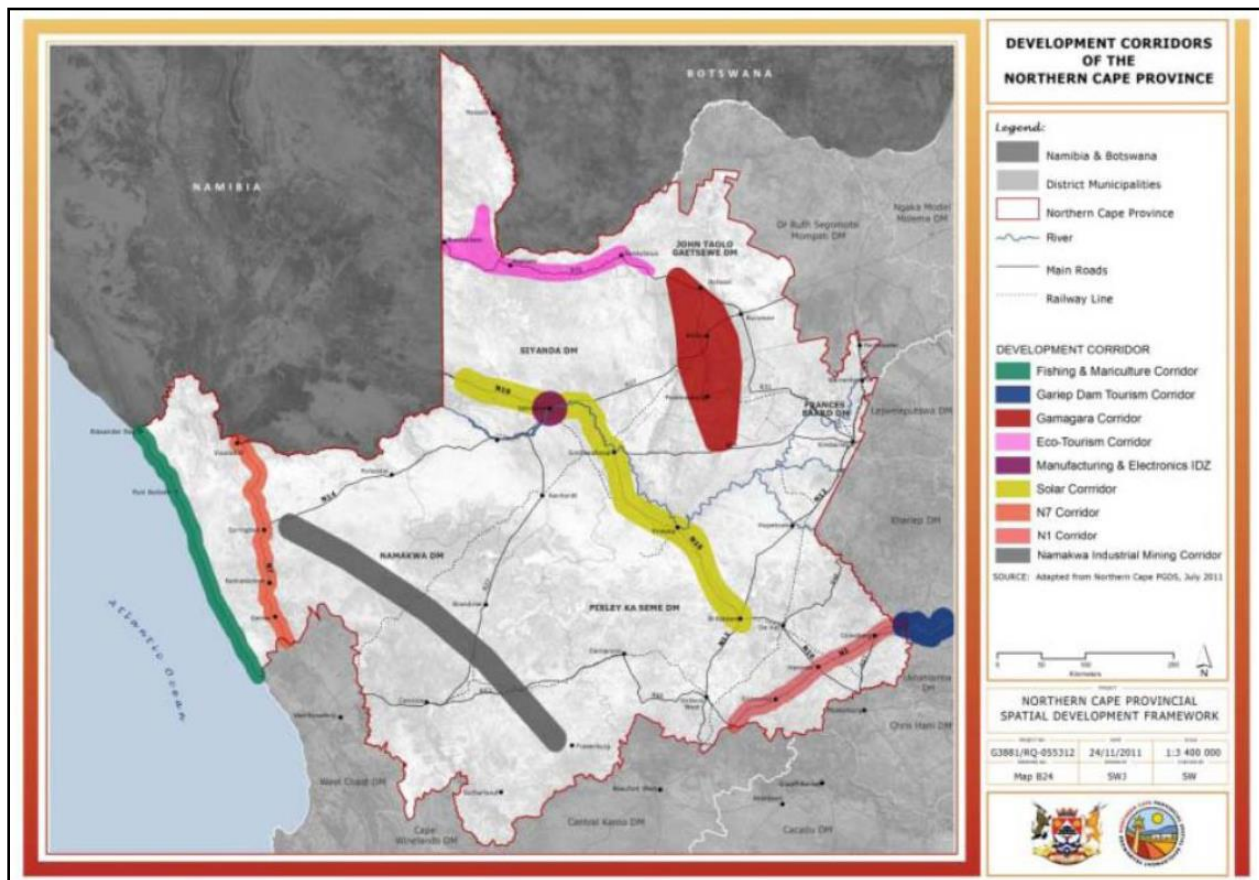
The SDF identifies the opportunities and constraints associated with the district. Of relevance to the project the opportunities include:

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 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.

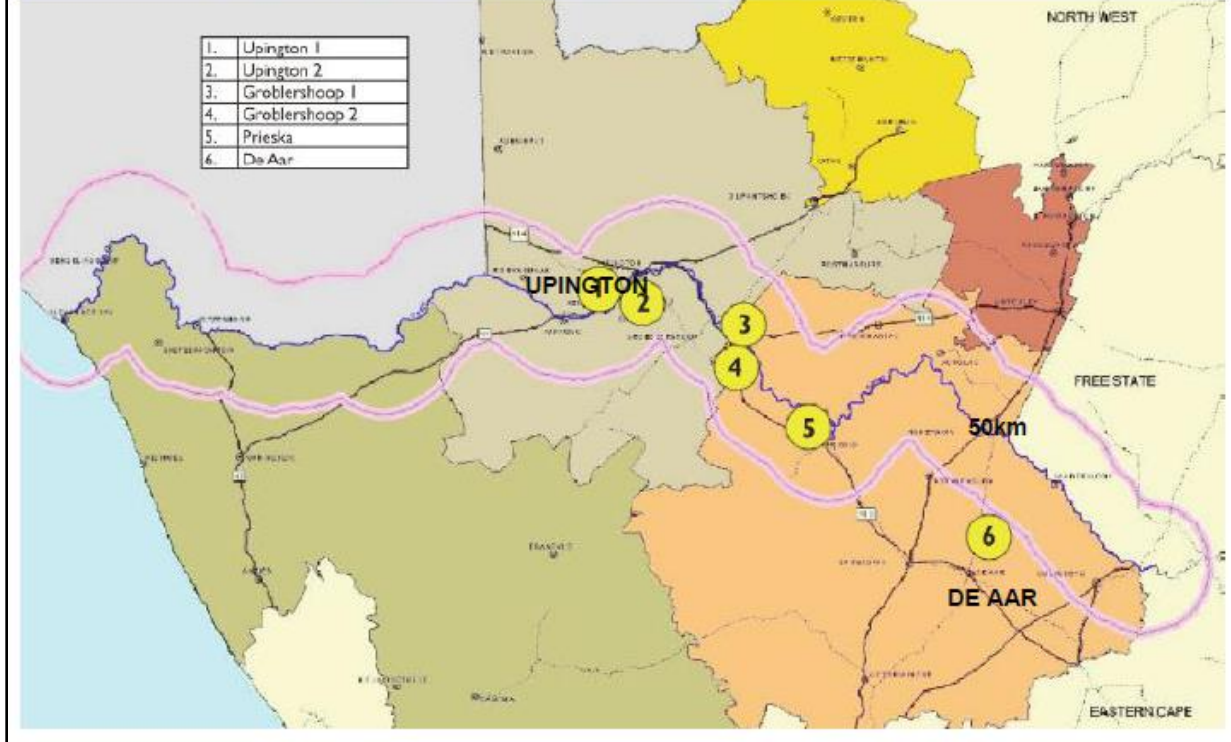
The relevant constraints include high levels of poverty and unemployment, backlog in basic services, including electricity and housing in rural areas, the limited supply of water and overall scarcity of water in the region to support economic development.



Source: Northern Cape SDF

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

# Renewable Energy HUB SPECIAL ECONOMIC ZONE



Source: Northern PKSDM SDF

**Figure 2.3: Northern Cape Renewable Energy Hub**

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.

## 2.9 EMTHANJENI LOCAL MUNICIPALITY INTEGRATED DEVELOPMENT PLAN

The Emthanjeni 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 Emthanjeni 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 (KPAs) 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.





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## SECTION 3: OVERVIEW OF THE STUDY AREA

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### 3.1 INTRODUCTION

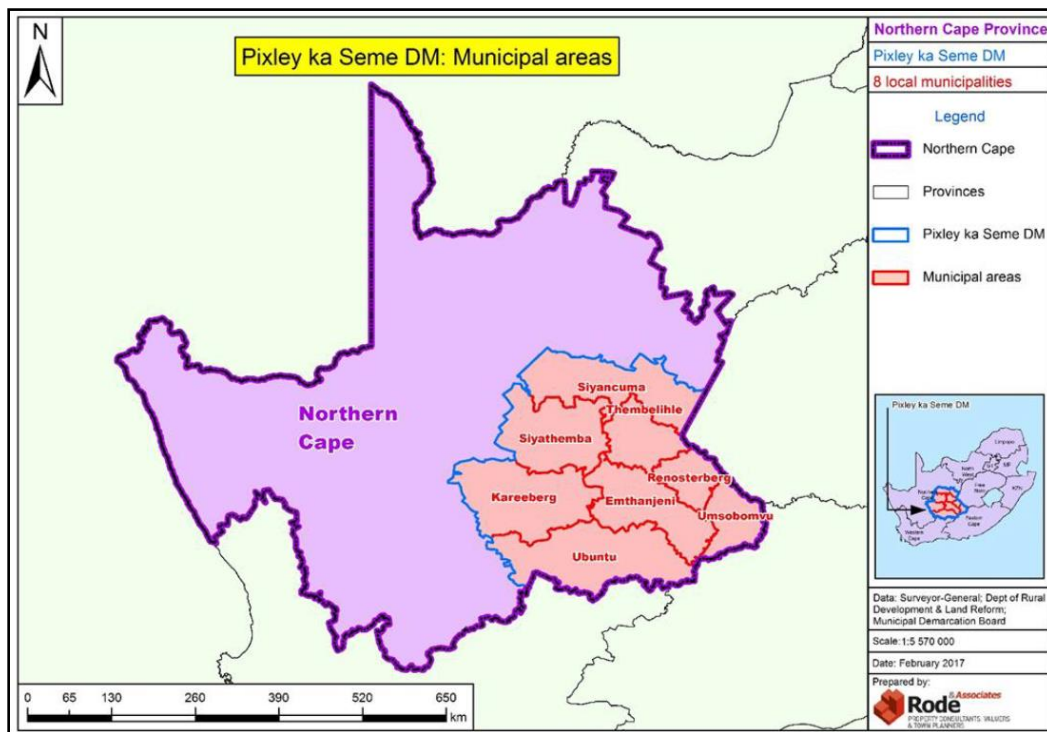
Section 3 provides an overview of the:

Section 3 provides a baseline description of the study area with regard to:

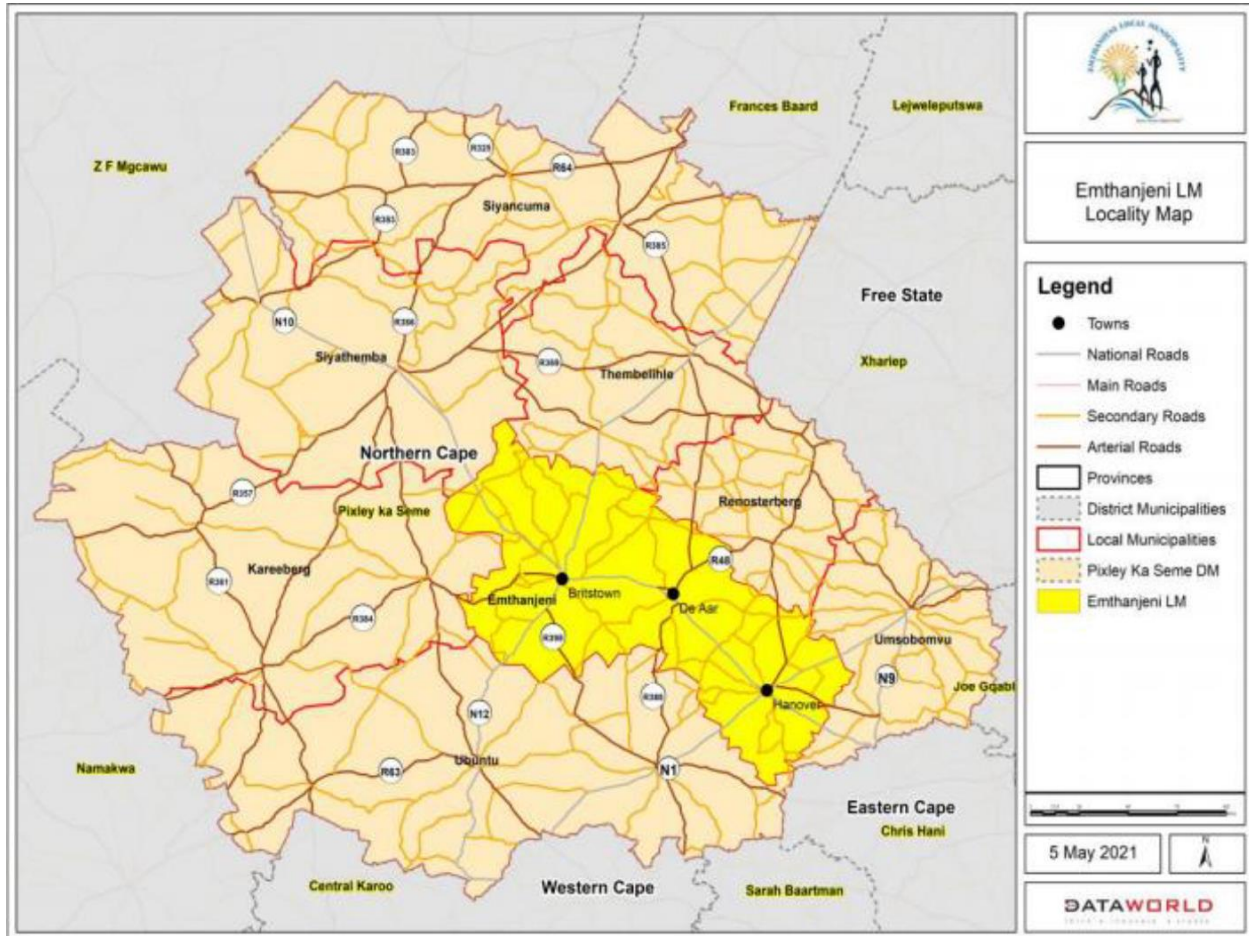
- The administrative context.
- Provincial context.
- Overview of district and local municipalities.
- Site and the surrounding land uses.

### 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 EML 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 CONTEXT<sup>2</sup>

The proposed site located in the Northern Cape Province, which is the largest province in South Africa and covers an area of 361 830 km<sup>2</sup> 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

<sup>2</sup> 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.

Mgcawu District Municipality (21.2%), John Taola Gaetsewe (20.3%), Pixley ka Seme (16.4%) and 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 NCPSTDF 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).

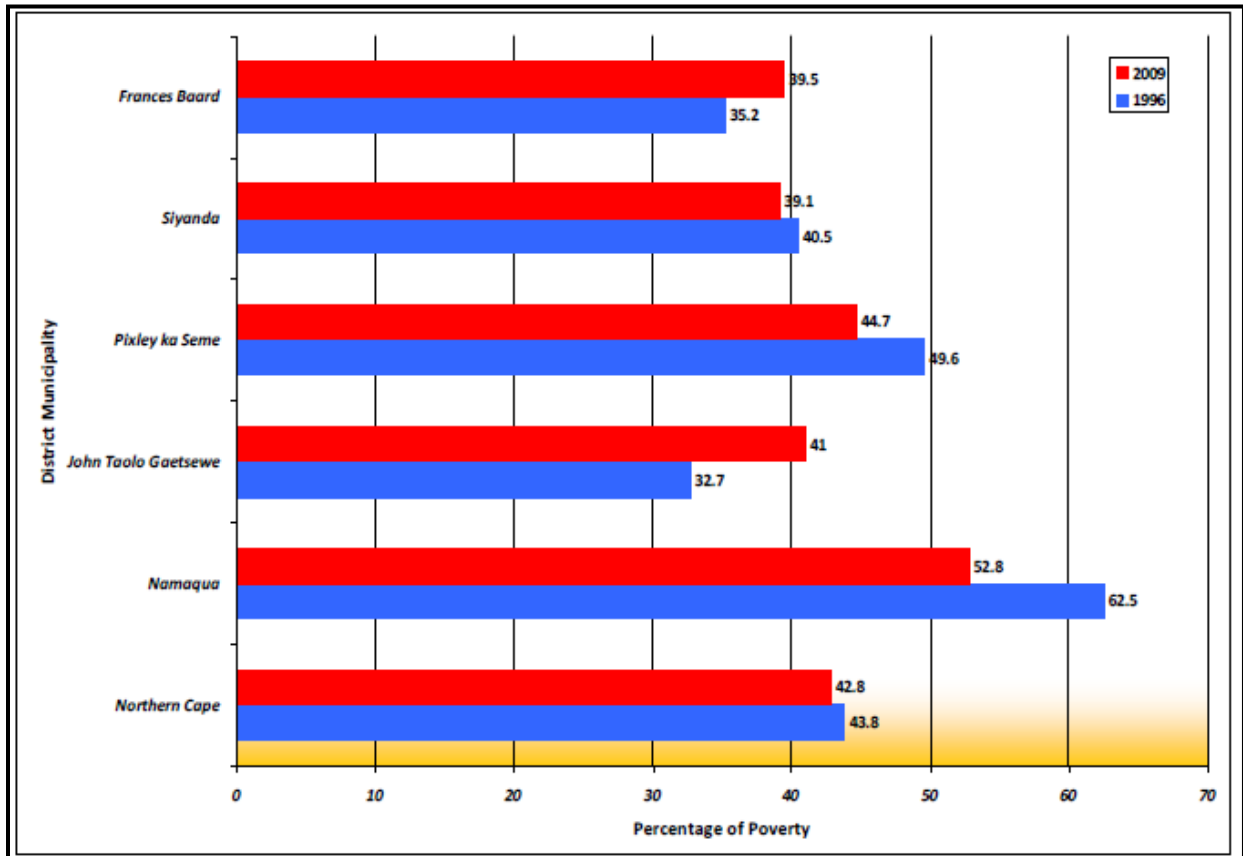
### **Economic development**

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 living<sup>3</sup>. 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.

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<sup>3</sup> 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.

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% 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)<sup>4</sup>.**

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 used<sup>5</sup>.

<sup>4</sup> Siyanda DM is now called the ZF Mgcawu DM.

<sup>5</sup> 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.

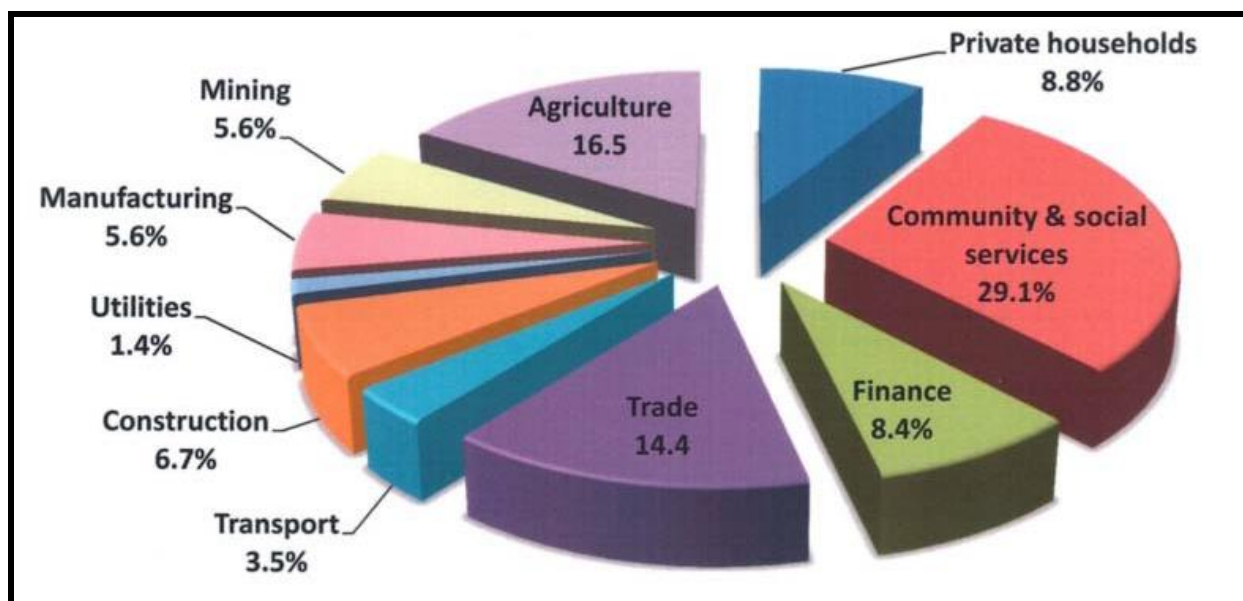
The main agricultural produce of the Northern Cape include:

- 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 24hour 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 include 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 adding 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.

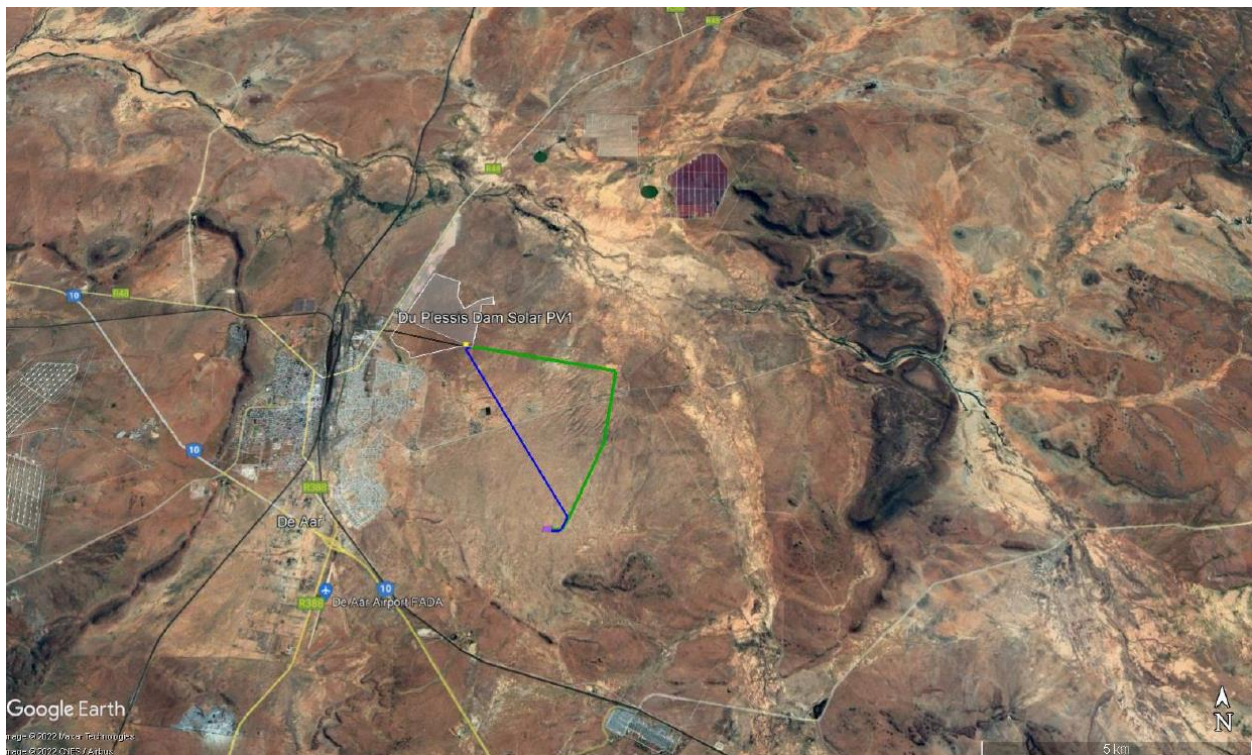
### ***Renewable energy***

Of key relevance the PKSDM IDP identifies renewable energy as 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 grid connection associated with the Du Plessis Dam PV1 SEF is located approximately 2-4 km to the west of De Aar. The N10 which links De Aar to Port Elizabeth, and railway line to Nouport which then links up with Port Elizabeth, are located ~ 3km to the south of the Mulilo Cluster 1 Substation. The large, Eskom Hydra substation is located ~ 4km to the south east of the Mulilo Cluster 1 Substation. 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 Du Plessis Dam PV1 SEF grid infrastructure**

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## **SECTION 4: ASSESSMENT OF KEY SOCIAL ISSUES**

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### **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<sup>6</sup>:

- Review of project related information.
- Review of key policy and planning documents.
- Experience/ familiarity of the authors 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 operation phase.
- Assessment of the “no development” alternative.
- Assessment of cumulative impact on sense of place.

### **4.2 ASSESSMENT OF POLICY AND PLANNING FIT**

The findings of the SIA indicate that investment in renewable energy and the associated energy infrastructure is strongly supported at a national, provincial, and local level. The development of and investment in renewable energy and associated energy distribution infrastructure is supported by the National Development Plan (NDP), New Growth Path Framework and National Infrastructure Plan, which all highlight the importance of energy security and investment in energy infrastructure. The development of the proposed power line is therefore supported by key policy and planning documents.

### **4.3 CONSTRUCTION PHASE SOCIAL IMPACTS**

The findings of the SIA indicate that social impacts associated with the construction of a 5-7 km overhead 132 kV power will be negligible. The findings of the assessment apply to both Alternative 1 and 2.

#### **Potential positive impacts**

- Creation of employment, skills development, and business opportunities.

#### **Potential negative impacts**

- Impacts associated with the presence of construction workers on local communities.
- Impact on local farmers and farming operations.

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<sup>6</sup> As indicated in the assumptions, a site visit to the study area was not deemed to be necessary given the nature and location of the project and the authors experience of the area.

- Noise, dust, and safety impacts of construction related activities and vehicles.

#### 4.3.1 Creation of local employment, skills development, and business opportunities

Based on similar projects the construction phase of for the grid connection will extend over a period of approximately 12-24 months and create in the region of 30 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 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 1.8 million (2022 Rand values). This is based on assumption of R 8 000 per month for low skilled workers, R 12 000 per month for semi-skilled workers and R 25 000 per month for high skilled workers over 12 months. A percentage of the wage bill will be spent in the local economy which will also create opportunities for local businesses in the ELM. The capital expenditure associated with the construction of grid infrastructure will be ~ R 18 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, skills development, and business creation opportunities during the construction phase**

<b>Nature:</b> Creation of employment and business opportunities during the construction phase		
	<b>Without Mitigation</b>	<b>With Enhancement</b>
<b>Extent</b>	Local (2)	Local (3)
<b>Duration</b>	Short term (2)	Short term (2)
<b>Magnitude</b>	Low (2)	Medium (4)
<b>Reversibility</b>	N/A	N/A
<b>Probability</b>	Probable (3)	Highly probable (4)
<b>Significance</b>	Low (18)	Moderate (36)
<b>Status</b>	Positive	Positive
<b>Can impact be enhanced?</b>	Yes	
<b>Enhancement:</b> See below		
<b>Residual impacts:</b> Opportunity to up-grade and improve skills levels in the area.		

### **Assessment of No-Go option**

There is no impact as the current status quo would 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**

- 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 service providers. These companies should be notified of the tender process and invited to bid for project-related work.

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  $\sim 30$ , 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**

<b>Nature:</b> Potential impacts on family structures and social networks associated with the presence of construction workers		
	<b>Without Mitigation</b>	<b>With Mitigation</b>
<b>Extent</b>	Local (2)	Local (1)
<b>Duration</b>	Short term (2)	Short term (2)
<b>Magnitude</b>	Low (2)	Very Low (1)
<b>Reversibility</b>	With rehabilitation/mitigation (3)	With rehabilitation/mitigation (3)
<b>Probability</b>	Low Probability (2)	Low Probability (2)
<b>Significance</b>	Low (18)	Low (14)
<b>Status</b>	Negative	Negative
<b>Can impact be mitigated?</b>	Yes, to some degree. However, the risk cannot be entirely eliminated	
<b>Mitigation:</b> See below		
<b>Residual impacts:</b> 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 residual/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:

- 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 and the contractor(s) should 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 subject to appropriate disciplinary action and/or dismissed. All dismissals must comply with the South African labour legislation.
- The proponent and the contractor should implement an HIV/AIDS awareness programme for all construction workers at the outset of the construction phase.

- 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.
- 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.
- 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. The presence of construction workers on the site also increases the exposure to local farming operations to the outside world, which, in turn, increases the potential risk of stock theft. However, given the proximity of the study area to De Aar, these risks are already likely to exist.

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

<b>Nature:</b> Potential risk to safety of farmers and farm workers, livestock and damage to farm infrastructure associated with the presence of construction workers on site		
	<b>Without Mitigation</b>	<b>With Mitigation</b>
<b>Extent</b>	Local (2)	Local (1)
<b>Duration</b>	Short term (2)	Short term (2)
<b>Magnitude</b>	Medium (3)	Low (2)
<b>Reversibility</b>	Reversible with compensation (3)	Reversible with compensation (3)
<b>Probability</b>	Probable (3)	Low Probability (2)
<b>Significance</b>	Moderate (30)	Low (16)
<b>Status</b>	Negative	Negative
<b>Can impact be mitigated?</b>	Yes	
<b>Mitigation:</b> See below		
<b>Residual impacts:</b> 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**

- 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.
- 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.
- 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 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 in 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 Impacts associated with construction related activities**

The construction activities on site and movement of heavy construction vehicles during the construction phase has the potential to create noise and dust impacts, damage local roads and create safety impacts for other road users. Based on the findings of the SIA the potential dust and noise impacts associated with the construction of the power line are likely to be negligible. The traffic related impacts associated with the transport of materials to the site are also likely to be limited.

**Table 4.4: Assessment of the impacts associated with construction related activities**

<b>Nature:</b> Potential noise, dust and safety impacts associated with movement of construction related activities and movement of traffic to and from the site		
	<b>Without Mitigation</b>	<b>With Mitigation</b>
<b>Extent</b>	Local (2)	Local (1)
<b>Duration</b>	Short term (2)	Short term (2)
<b>Magnitude</b>	Low (2)	Low (2)
<b>Reversibility</b>	Reversible (1)	Reversible (1)
<b>Probability</b>	Probable (3)	Low Probability (2)
<b>Significance</b>	Low (21)	Low (12)
<b>Status</b>	Negative	Negative
<b>Can impact be mitigated?</b>	Yes	
<b>Mitigation:</b> See below		
<b>Residual impacts:</b> If damage to local roads is not repaired then this will affect the other road users and result in higher maintenance costs. The costs will be borne by road users who were no 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:

- As indicated above, the proponent should consider the establishment of a Monitoring Forum (MF) 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 farmers and the contractor(s). The MF should also address issues associated with damage to roads and other construction related impacts.
- Implementation of a road maintenance programme throughout the construction phase to ensure that the affected roads maintained in a good condition and repaired once the construction phase is completed.
- Repair of all affected road portions at the end of construction period where required.
- Dust suppression measures must be implemented on un-surfaced roads, such as wetting on a regular basis and ensuring that vehicles used to transport building materials are fitted with tarpaulins or covers.
- 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.

## 4.4 OPERATIONAL PHASE SOCIAL IMPACTS

The following key social issues are of relevance to the operational phase:

### Potential positive impacts

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

### Potential negative impacts

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

The findings of the assessment apply to both Alternative 1 and 2.

#### 4.4.1 Improved energy security and establishment of energy infrastructure

The proposed power line is essential to enable the development and operation of Du Plessis Dam PV1 SEF. The primary goal of the proposed Du Plessis Dam PV1 SEF 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 generators<sup>7</sup>. A survey of 3 984 small business owners found that 44% said that they had been severely 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 period<sup>8</sup>.

**Table 4.6: Improve energy security, reduce reliance on coal generated power sector**

<b>Nature:</b> Development of infrastructure to improve energy security and reduce reliance on coal		
	<b>Without Mitigation<sup>9</sup></b>	<b>With Mitigation<sup>10</sup></b>
<b>Extent</b>	Local, Regional and National (4)	Local, Regional and National (4)
<b>Duration</b>	Long term (4)	Long term (4)
<b>Magnitude</b>	Medium (3)	Medium (3)

<sup>7</sup> 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

<sup>8</sup> "How does load shedding affect small business in SA?". *The Yoco Small Business Pulse (3: Q1 2019)*:

<sup>9</sup> Assumes power line is not established

<sup>10</sup> Assumes power line is established

<b>Reversibility</b>	N/A	N/A
<b>Probability</b>	Highly Probable (4)	Definite (5)
<b>Significance</b>	Moderate (44)	Moderate (55)
<b>Status</b>	Negative	Positive
<b>Can impact be enhanced?</b>	Yes	
<b>Enhancement:</b> See below		
<b>Residual impacts:</b> Improved energy security and benefit for economic development and investment, reduction in CO <sub>2</sub> emission and reduction in water consumption for energy generation.		

### Assessment of No-Go option

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

### Recommended mitigation measures

Should the proposed grid connection infrastructure be approved the proponent should:

- Maximise the number of employment opportunities for local community members.
- Implement training and skills development programs for members from the local community.
- Maximise opportunities for local content and procurement.

#### 4.4.2 Creation of employment, skills development, and business opportunities

The potential employment, skills development and business related opportunities associated with the power line will be limited and largely confined to periodic maintenance and repairs. The potential socio-economic benefits are therefore likely to be limited. The potential opportunities can however be enhanced if a local service provider is appointed to undertake the work required. This may involve providing training and skills development to enable a locally based service provider to provide the required services.

**Table 4.7: Impact assessment of employment, skills development and business creation opportunities**

<b>Nature:</b> Creation of employment, skills development and business opportunities associated with the operational phase		
	<b>Without Mitigation</b>	<b>With Enhancement</b>
<b>Extent</b>	Local and Regional (1)	Local and Regional (2)
<b>Duration</b>	Long term (4)	Long term (4)
<b>Magnitude</b>	Low (2)	Low (2)
<b>Reversibility</b>	N/A	N/A
<b>Probability</b>	Low Probability (2)	Highly Probable (4)
<b>Significance</b>	Low (14)	Moderate (32)
<b>Status</b>	Positive	Positive
<b>Reversibility</b>	N/A	

<b>Can impact be enhanced?</b>	Yes	
<b>Enhancement:</b> See below		
<b>Residual impacts:</b> 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		

### Recommended enhancement measures

The enhancement measures listed in Section 4.4.1, i.e., to enhance local employment and business opportunities during the construction phase, also apply to the operational phase.

In addition, the proponent should investigate providing training and skills development to enable locally based service providers to provide the required services for the maintenance of the powerline and other aspects for the proposed SEF.

### 4.4.3 Generate income for affected landowners

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 transmission line. 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 affected farmer(s)**

<b>Nature:</b> 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.		
	<b>Without Mitigation</b>	<b>With Enhancement</b>
<b>Extent</b>	Local and Regional (1)	Local and Regional (2)
<b>Duration</b>	Long term (4)	Long term (4)
<b>Magnitude</b>	Low (2)	Medium (3)
<b>Reversibility</b>	N/A	N/A
<b>Probability</b>	Probability (3)	Definite (5)
<b>Significance</b>	Low (21)	Moderate (45)
<b>Status</b>	Positive	Positive
<b>Reversibility</b>	N/A	
<b>Can impact be enhanced?</b>	Yes	
<b>Enhancement:</b> See below		
<b>Residual impacts:</b> 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 landowners.

#### 4.4.4 Visual impact and impact on sense of place

The areas existing sense of place has been altered by existing transmission lines associated with the Hydra substation and the establishment of several SEFs. The potential impact on the broader areas sense of place associated with the proposed grid connection will therefore be low.

**Table 4.9: Visual impact and impact on sense of place**

<b>Nature:</b> Visual impact associated with the proposed grid infrastructure and the potential impact on the area's sense of place.		
	<b>Without Mitigation</b>	<b>With Mitigation<sup>11</sup></b>
<b>Extent</b>	Local (2)	Local (2)
<b>Duration</b>	Long term (4)	Long term (4)
<b>Magnitude</b>	Low (2)	Low (2)
<b>Reversibility</b>	Reversible (1)	Reversible (1)
<b>Probability</b>	Probable (3)	Probable (3)
<b>Significance</b>	Low (27)	Low (27)
<b>Status</b>	Negative	Negative
<b>Can impact be mitigated?</b>	Yes	
<b>Mitigation:</b> See below		
<b>Residual impacts:</b> Potential impact on current rural sense of place		

### Assessment of No-Go option

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

### Recommended mitigation measures

Recommendations of the VIA should be implemented.

#### 4.4.5 Impact on farming operations during maintenance<sup>12</sup>

The presence on and movement of maintenance workers on and off the site poses a potential risk to farming operations. Farm fence and gates may be damaged and stock losses may also result from gates being left open. 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.

<sup>11</sup> Not possible to effectively mitigated visual impacts

<sup>12</sup> The impacts are similar to the impacts associated with construction phase.

Based on experience with maintenance of the existing Eskom power lines in the area this is an issue that will need to be addressed. The potential risks (safety, livestock, and farm infrastructure) can be effectively 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.

**Table 4.10: Assessment of risk to farming operations and damage to farm infrastructure**

<b>Nature:</b> Potential risk to safety to farming operations and livestock associated with the presence of maintenance workers on the site		
	<b>Without Mitigation</b>	<b>With Mitigation</b>
<b>Extent</b>	Local (2)	Local (2)
<b>Duration</b>	Short term (2)	Short term (2)
<b>Magnitude</b>	Medium (3)	Low (2)
<b>Reversibility</b>	Recoverable with compensation paid for stock losses and damage to farm infrastructure etc. (3)	Recoverable with compensation paid for stock losses and damage to farm infrastructure etc. (3)
<b>Probability</b>	Highly Probable (4)	Probable (3)
<b>Significance</b>	Moderate (40)	Low (27)
<b>Status</b>	Negative	Negative
<b>Can impact be mitigated?</b>	Yes	
<b>Mitigation:</b> See below		
<b>Residual impacts:</b> 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 Scottish Natural Heritage (2005) describes a range of potential cumulative landscape impacts associated with wind farms on landscapes. These issues raised in these guidelines as to what defines a cumulative impact are also regarded as pertinent to transmission lines. The relevant issues identified by Scottish Natural Heritage study include:

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

There are a number of existing transmission lines associated with the Hydra substation. Several SEFs are also being constructed and or are proposed in the area. The potential for cumulative impacts associated with combined visibility (whether two or more power lines will be visible from one location) and sequential visibility (e.g., the effect of seeing two or more power lines along a single journey, e.g., road or walking trail) does therefore exist. However, the cumulative impact on the areas sense of place is likely to be low.

**Table 4.11: Cumulative impacts on sense of place and the landscape**

<b>Nature:</b> Visual impacts associated with the establishment of associated grid infrastructure and the potential impact on the area’s rural sense of place and character of the landscape.		
	<b>Overall impact of the proposed project considered in isolation</b>	<b>Cumulative impact of the project and other projects in the area</b>
<b>Extent</b>	Local (2)	Regional (2)
<b>Duration</b>	Long term (4)	Long term (4)
<b>Magnitude</b>	Low (2)	Medium (3)
<b>Reversibility</b>	Reversible (1)	Reversible (1)
<b>Probability</b>	Probable (3)	Highly Probable (4)
<b>Significance</b>	Low (27)	Moderate (40)
<b>Status</b>	Negative	Negative
<b>Can impacts be mitigated?</b>	Limited	
<b>Mitigation:</b> See below		

**Assessment of No-Go option**

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

**Recommended mitigation measures**

No mitigation measures are required.

**4.6 ASSESSMENT OF NO-DEVELOPMENT OPTION**

The proposed power line is essential to enable the proposed Du Plessis Dam PV1 SEF 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 4.12: Assessment of no-development option**

<b>Nature:</b> The no-development option would result in the lost opportunity for South Africa to improve energy security and reduce reliance on coal power.		
	<b>Without Mitigation<sup>13</sup></b>	<b>With Mitigation<sup>14</sup></b>
<b>Extent</b>	Local-National (3)	Local-National (3)
<b>Duration</b>	Long term (4)	Long term (4)
<b>Magnitude</b>	Medium (3)	Medium (3)
<b>Reversibility</b>	Reversible (1)	Reversible (1)
<b>Probability</b>	Highly Probable (4)	Highly Probable (4)
<b>Significance</b>	Moderate (44)	Moderate (44)
<b>Status</b>	Negative	Positive
<b>Can impact be mitigated?</b>	Yes	
<b>Enhancement:</b> See below		
<b>Residual impacts:</b> Improved energy security and benefit for economic development and investment, reduction in CO <sub>2</sub> emission and reduction in water consumption for energy generation.		

**Recommended enhancement measures**

The proposed grid infrastructure should be developed, and the mitigation and enhancement measures identified in the SIA and other specialist studies should be implemented.

<sup>13</sup> Assumes power line is not developed

<sup>14</sup> Assumes power line is developed

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## **SECTION 5: KEY FINDINGS AND RECOMMENDATIONS**

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### **5.1 INTRODUCTION**

Section 5 lists the key findings of the study and recommendations. These findings are based on<sup>15</sup>:

- A review of key planning and policy documents pertaining to the area.
- A review of social and economic issues associated with similar developments.
- A review of relevant literature on social and economic impacts.
- The experience of the authors with other renewable 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.

#### **5.2.1 Policy and planning issues**

The development of renewable energy and the associated energy infrastructure is strongly supported at a national, provincial, and local level. The development of and investment in renewable energy and associated energy distribution infrastructure is supported by the National Development Plan (NDP), New Growth Path Framework and National Infrastructure Plan, which all highlight the importance of energy security and investment in energy infrastructure. The development of the proposed power line is therefore supported by key policy and planning documents.

#### **5.2.2 Construction phase impacts**

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 12-18 months and create in the region of 30 employment opportunities. The total wage bill will be in the region of R 1.8 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 HD

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<sup>15</sup> As indicated in the assumptions, a site visit to the study area was not deemed to be necessary given the nature and location of the project and the authors experience of the area.

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 the ELM.

The capital expenditure associated with the construction of power line will be ~18 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.
- 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. However, experience with the construction of WEFs in the area is that despite measures being in place, these measures are not being implemented affectively by the contractors working in the area. This will need to be addressed.

Table 5.1 summarises the significance of the impacts associated with the construction phase. These findings apply to Alternative 1 and 2.

**Table 5.1: Summary of social impacts during construction phase**

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

**5.2.3 Operational phase impacts**

The benefits associated with the Du Plessis Dam PV1 SEF 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 local procurement opportunities.
- Generate income for landowners.

#### **Potential negative impacts**

- The visual impacts and associated impact on sense of place.
- 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. These findings apply to Alternative 1 and 2.

**Table 5.2: Summary of social impacts during operational phase**

<b>Impact</b>	<b>Significance No Mitigation / Enhancement</b>	<b>Significance With Mitigation / Enhancement</b>
<b>Improve energy security and establishment of energy infrastructure</b>	Moderate (Negative) <sup>16</sup>	Moderate (Positive) <sup>17</sup>
<b>Creation of employment and business opportunities during maintenance</b>	Low (Positive)	Moderate (Positive)
<b>Generate income for landowners</b>	Low (Positive)	Moderate (Positive)
<b>Visual impact and impact on sense of place</b>	Low (Negative)	Low (Negative)
<b>Safety risk, stock theft and damage to farm infrastructure associated with presence of maintenance workers</b>	Moderate (Negative)	Low (Negative)

#### **5.2.4 Cumulative impact on sense of place**

There are a number of existing power lines in the area associated with the Hydra substation and SEFs in the area. The potential for cumulative impacts associated with combined visibility (whether two or more power lines will be visible from one location) and sequential visibility (e.g., the effect of seeing two or more power lines along a single journey, e.g., road or walking trail) does therefore exist. However, the cumulative impact on the areas sense of place is likely to be low.

#### **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.

<sup>16</sup> Assumes power line is not developed

<sup>17</sup> Assumes power line is developed

### 5.3 CONCLUSIONS AND RECOMMENDATIONS

The energy security benefits associated with the proposed Du Plessis Dam PV1 SEF 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 132 kV Du Plessis Dam PV1 overhead power line is **Low Negative** with mitigation. The potential negative impacts can therefore be effectively mitigated if the recommended mitigation measures are implemented. This applies to both Alternative 1 (Preferred Alternative) and Alternative 2. The establishment of proposed 132 kV grid connection for the Du Plessis Dam PV1 SEF is therefore supported by the findings of the SIA.

## **ANNEXURE A**

### **REFERENCES**

- National Development Plan (2011).
- New Growth Path Framework (2010).
- National Infrastructure Plan (2012).
- Northern Cape Provincial Growth and Development Plan (NCPGDP)
- 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).

## ANNEXURE B

### METHODOLOGY FOR THE ASSESSMENT OF POTENTIAL IMPACTS

#### Assessment of Impacts and Mitigation

The assessment of impacts and mitigation evaluates the likely extent and significance of the potential impacts on identified receptors and resources against defined assessment criteria, to develop and describe measures that will be taken to avoid, minimise or compensate for any adverse environmental impacts, to enhance positive impacts, and to report the significance of residual impacts that occur following mitigation.

The key objectives of the risk assessment methodology are to identify any additional potential environmental issues and associated impacts likely to arise from the proposed project, and to propose a significance ranking. Issues / aspects will be reviewed and ranked against a series of significance criteria to identify and record interactions between activities and aspects, and resources and receptors to provide a detailed discussion of impacts. The assessment considers direct<sup>18</sup>, indirect<sup>19</sup>, secondary<sup>20</sup> as well as cumulative<sup>21</sup> impacts.

A standard risk assessment methodology is used for the ranking of the identified environmental impacts pre-and post-mitigation (i.e. residual impact). The significance of environmental aspects is determined and ranked by considering the criteria<sup>22</sup> presented in **Table 0-1**.

**Table 0-1: Impact Assessment Criteria and Scoring System**

CRITERIA	SCORE 1	SCORE 2	SCORE 3	SCORE 4	SCORE 5
<b>Impact Magnitude (M)</b> The degree of alteration of the affected environmental receptor	Very low: No impact on processes	Low: Slight impact on processes	Medium: Processes continue but in a modified way	High: Processes temporarily cease	Very High: Permanent cessation of processes
<b>Impact Extent (E)</b> The geographical extent of the impact on a given environmental receptor	Site: Site only	Local: Inside activity area	Regional: Outside activity area	National: National scope or level	International: Across borders or boundaries
<b>Impact Reversibility (R)</b> The ability of the environmental receptor to rehabilitate or restore after the activity has caused environmental change	Reversible: Recovery without rehabilitation		Recoverable: Recovery with rehabilitation		Irreversible: Not possible despite action
<b>Impact Duration (D)</b> The length of permanence of the impact on the environmental receptor	Immediate: On impact	Short term: 0-5 years	Medium term: 5-15 years	Long term: Project life	Permanent: Indefinite

<sup>18</sup> Impacts that arise directly from activities that form an integral part of the Project.

<sup>19</sup> Impacts that arise indirectly from activities not explicitly forming part of the Project.

<sup>20</sup> Secondary or induced impacts caused by a change in the Project environment.

<sup>21</sup> Impacts are those impacts arising from the combination of multiple impacts from existing projects, the Project and/or future projects.

<sup>22</sup> The definitions given are for guidance only, and not all the definitions will apply to all the environmental receptors and resources being assessed. Impact significance was assessed with and without mitigation measures in place.

<b>CRITERIA</b>	<b>SCORE 1</b>	<b>SCORE 2</b>	<b>SCORE 3</b>	<b>SCORE 4</b>	<b>SCORE 5</b>
<b>Probability of Occurrence (P)</b> The likelihood of an impact occurring in the absence of pertinent environmental management measures or mitigation	Improbable	Low Probability	Probable	Highly Probability	Definite
<b>Significance (S)</b> is determined by combining the above criteria in the following formula:	$[S = (E + D + R + M) \times P]$ $Significance = (Extent + Duration + Reversibility + Magnitude) \times Probability$				
<b>IMPACT SIGNIFICANCE RATING</b>					
<b>Total Score</b>	0 – 30		31 to 60		61 – 100
<b>Environmental Significance Rating (Negative (-))</b>	<b>Low (-)</b>		<b>Moderate (-)</b>		<b>High (-)</b>
<b>Environmental Significance Rating (Positive (+))</b>	<b>Low (+)</b>		<b>Moderate (+)</b>		<b>High (+)</b>



## **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;

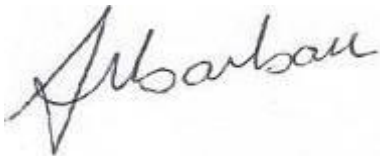
I will comply with the Act, Regulations and all other applicable legislation;

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):

9 March 2022

\_\_\_\_\_  
Date: