

**SOCIAL ASSESSMENT  
FOR  
SCOPING REPORT  
(DRAFT)  
PRIESKA 75 MW SOLAR ENERGY FACILITY  
NORTHERN CAPE PROVINCE**

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**Prepared for**

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## EXECUTIVE SUMMARY

Savannah Environmental (Pty) Ltd (hereafter referred to as Savannah Environmental) was appointed by Jouren Solar (Pty) Ltd as the lead consultant to manage the Environmental Impact Assessment (EIA) process for the establishment of the proposed 75 MW Prieska Solar Energy Facility (SEF) and associated infrastructure. The site is located ~ 30 km north-east of the town of Prieska within the Siyathemba Local Municipality (SLM) in the Northern Cape Province (NCP) of South Africa. The SLM is one of eight local municipalities that make up the Pixley Ka Seme District Municipality (PKSDM).

Tony Barbour Environmental Consulting was appointed by Savannah Environmental (Pty) Ltd to undertake a specialist Social Impact Assessment (SIA) as part of the EIA process. This report contains the findings of the initial scoping level social assessment. The scoping study was based on a review of desktop sources only. These sources included the development proposal, key policy documents, as well as contextual and demographic sources such as the 2001 Census. The scoping level assessment is also informed by the author's experience with SIAs for other solar energy developments in the Northern Cape region and other parts of South Africa.

The main settlements in the SLM are the towns of Prieska, Marydale, Niekerkshoop, Draghoender and Copperton. The town of Prieska, which is the administrative seat of the SLM, is located on the southern bank of the Orange (Gariep) River, approximately 30 km south-west of the proposed SEF site. Prieska is the largest town in the SLM.

Key economic activities in the PKSDM and SLM are related to primary sector activities, mainly agriculture and mining. Little local beneficiation takes place. Tourism and game farming (mainly for hunting) are significant emerging land uses. Livestock farming accounts for ~98.7% of agricultural land use and ~75% of the SLM's agricultural GDP. At least 12 major crop types are cultivated in the Gariep Valley (mainly east of Prieska), the most important of which are maize and wheat, peanuts, lucerne (alfalfa) and table grapes. Stock farming operations are mainly based on small stock (sheep, goats) on spatially extensive commercial farms. Both wool and carcasses are produced. Game farming (hunting) is emerging as a key diversification strategy.

The mining sector historically played a major role in the local economy, with asbestos and copper/ silver (Copperton) mining the key activities. The closure of asbestos mines (mainly to the north of Prieska) as well as the Copperton mine around the early 1990's has had a major lasting negative impact on the SLM economy. Former mining towns (like Copperton) have dwindled to virtual ghost towns.

The total population of the PKSDM was ~ 165 000 in 2001 (Census 2001). Of the total population Coloureds make up ~ 62% of the total, followed by Black Africans (~27%) and Whites (~10%). The demographic composition of the SLM is broadly similar to that of the PKSDM.

Key socio-economic development challenges for the SLM include the following:

- Lack of diversification within the regional economy;
- Attracting and retaining investment in the region;

- Lack of employment opportunities;
- Rising levels of poverty;
- Low skills levels;
- Lack of entrepreneurship, as reflected by the small number of SMME's active in the region;
- Underutilization of the region's natural resources and economic opportunities; and
- Lack of water for expanding irrigation operations.

The identification and assessment of social impacts during the EIA phase will be guided by the Guidelines for specialist SIA input into EIAs adopted by the Department of Environmental Affairs and Development Planning (DEA&DP) in the Western Cape. These guidelines are based on international best practice. The approach will include:

- Review of key baseline socio-economic data;
- Identification of key interested and affected parties;
- Meetings and interviews with interested and affected parties;
- Identification and assessment of key social issues based on feedback from key interested and affected parties.
- Recommendations regarding mitigation/optimization and management measures to be implemented.

The key conclusions of the Scoping level study are the following:

- The establishment of solar energy facilities are supported at national and provincial level by policy and planning documents. At a local level the PKSDM IDP makes reference to need to consider access to electricity or alternative sources of energy for all. The SLM IDP 2010/ 2011 does not specifically refer to commercial renewable energy generation. However, the IDP for the Emthanjeni Local Municipality, which is located immediately to the south-east of the SLM, identifies De Aar as a **Renewable Energy Hub**;
- The proposed SEF appears to be compatible with the economic development vision of the PKSDM and SLM;
- The potential positive impacts associated with the construction phase relate to the creation of employment and skills development opportunities. The potential negative impacts are linked to the presence of construction workers on the site and in the area, the impact on farming activities and crime levels;
- The potential positive impacts associated with the operational phase relate to the creation of employment opportunities, the promotion of clean, renewable energy and benefits associated with the establishment of a Community Trust;
- The potential negative impacts are linked to the impact on the rural sense of place and scenic integrity of the landscape. These impacts can in turn impact on the tourism sector in the area.

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## ACRONYMS

DEA	Department of Environmental Affairs (National)
DEA&DP	Department of Environmental Affairs and Development Planning (WCP)
DM	District Municipality
HD	Historically Disadvantaged
EIA	Environmental Impact Assessment
IDP	Integrated Development Plan
IPP	Independent Power Producer
kV	Kilovolts
LED	Local Economic Development
LM	Local Municipality
MW	Megawatt
NCP	Northern Cape Province
NCPCCRS	Northern Cape Province Climate Change Response Strategy
PGDS	Provincial Growth and Development Strategy 2004-2014 (NCP)
PKSDM	Pixley Ka Seme District Municipality
PSDF	Provincial Spatial Development Framework
SDF	Spatial Development Framework
SEF	Solar Energy Facility
SIA	Social Impact Assessment
SLM	Siyathemba Local Municipality
WCP	Western Cape Province

# SECTION 1: INTRODUCTION

## 1.1 INTRODUCTION

Savannah Environmental (Pty) Ltd (hereafter referred to as Savannah Environmental) was appointed by Jouren Solar (Pty) Ltd as the lead consultant to manage the Environmental Impact Assessment (EIA) process for the establishment of the proposed Prieska Solar Energy Facility (SEF) and associated infrastructure. The proposed site is located within the Siyathemba Local Municipality (SLP) in the Northern Cape Province of South Africa, approximately 30 km north-east of the town of Prieska (Figure 1.1). The SLP is located within the Pixley ka Seme District Municipality (PKSDM) (Figure 1.1).

Tony Barbour was appointed by Savannah Environmental to undertake a specialist Social Impact Assessment (SIA) as part of the EIA process. The terms of reference for the study include a scoping level assessment to identify potential key social issues that would need to be addressed as part of the EIA. This report contains the findings of the initial scoping level social assessment undertaken as part of the EIA process.

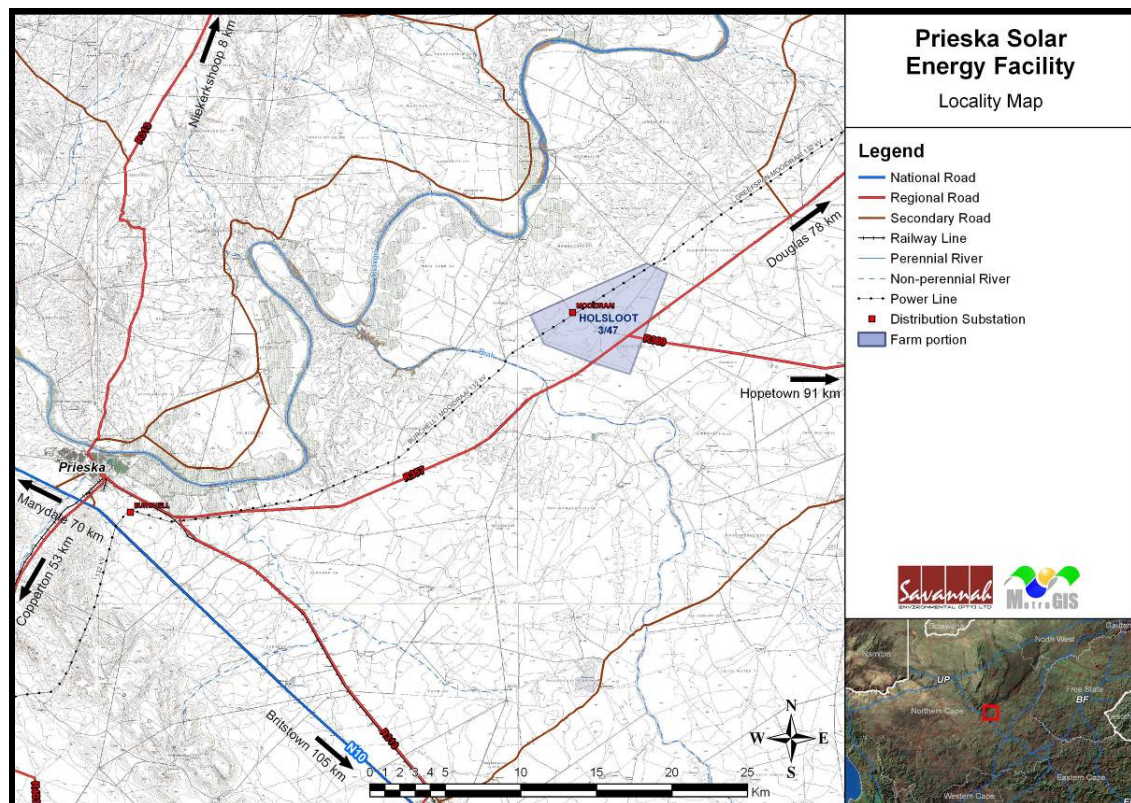


Figure 1.1: Location of the proposed Prieska SEF site

## 1.2 TERMS OF REFERENCE

The terms of reference for the Scoping Report Assessment require:

- A description of the environment that may be affected by the activity and the manner in which the environment may be affected by the proposed facility;
- A description of the potential social issues associated with the proposed facility;
- A description of the approach proposed for assessing the potentially significant issues that will need to be addressed by the SIA study during the EIA phase.

## 1.3 PROJECT DESCRIPTION

Solar energy facilities, such as those using PV panels, use the energy from the sun to generate electricity (the Photovoltaic Effect). This effect refers to photons of light colliding with electrons, and therefore placing the electrons into a higher state of energy to create electricity. A photovoltaic array typically consists of the following components:

### **Photovoltaic Cells**

Silicon wafers which are the building blocks, act as semiconductors and when struck by light produce electricity. Individual photovoltaic cells are linked in circuit and placed behind a protective transparent cover sheet to collectively form a photovoltaic panel/array. Photovoltaic cells are highly sensitive to shading, and the output of an entire circuit can be significantly decreased when even a small portion of a cell, panel, or array is shaded, while the remainder is in sunlight. Dust or dirt can also affect the efficiency, therefore, requiring maintenance, the regularity of which depends on the characteristics of the site (i.e. predominant wind direction and dusty conditions).

### **Support structure**

The photovoltaic panels are fixed to support structures which are either bolted or piled directly into the ground or fixed by means of concrete foundations. The support structure is typically ~ 2 meters off the ground and set at an angle so to receive the maximum amount of solar radiation (Figure 1.2). The angle of the panel is dependent on the latitude of the proposed facility and the angles may be adjusted to optimise for summer or winter solar radiation characteristics.

### **Inverter**

The photovoltaic effect produces electricity in direct current. However, in order to transmit this power within the Eskom grid it must be converted to alternating current which requires an inverter. When the photovoltaic panels are connected as separate strings, each string can be allocated its own inverter thereby ensuring the continued operation of the facility should one or more strings be compromised or require maintenance.

The Prieska SEF is proposed to include several arrays of photovoltaic (PV) solar panels and/or concentrating photovoltaic solar panels (CPV) with a generating capacity of approximately 75 MW (Figure 1.2 and 1.3). The SEF will include the following associated infrastructure:



- Solar panels with a generating capacity of 75 MW;
- An on-site inverter to step up the power and a substation to facilitate the connection between the solar energy facility and the Eskom electricity grid;
- A loop-in and loop out power line to connect into the existing Burchell / Mooidraai 1 132kV power line which traverse the site;
- Internal access roads;
- Workshop area for maintenance and storage.



**Figure 1.2: Stationary solar PV panels.**

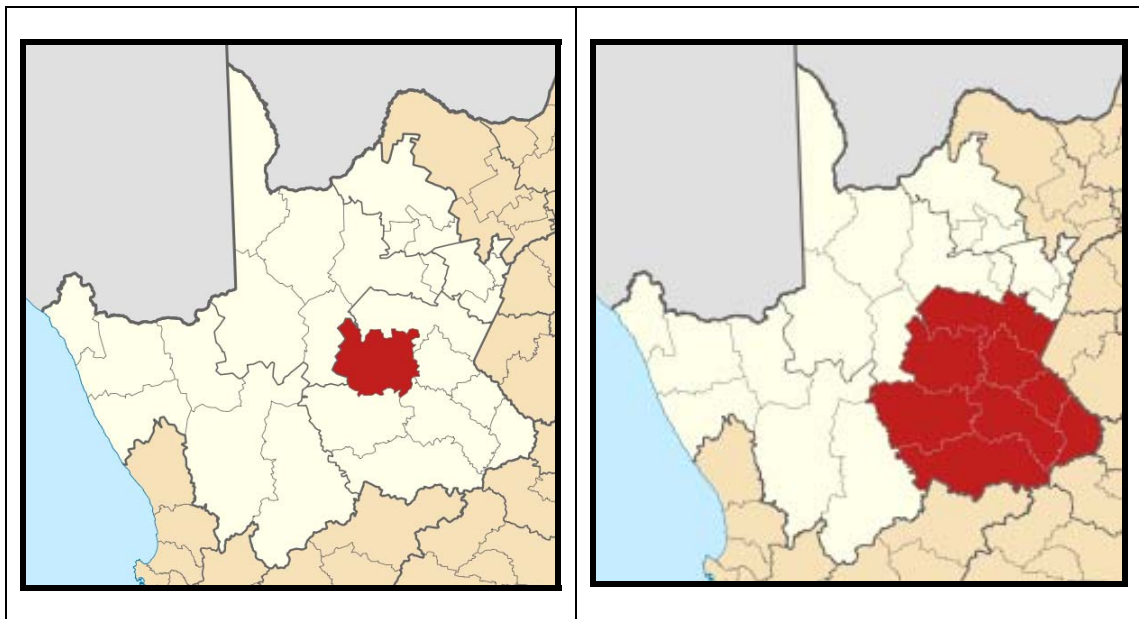


**Figure 1.3: Illustration of a CPV solar energy facility (Courtesy of Amonix™)**



## 1.4 PROJECT LOCATION AND SURROUNDING LAND USES

The proposed Prieska SEF site is located on Portion 3 of the Farm Holsloot 47 in the SLM, which is one of eight local municipalities that make up the PKSDM (NCDC7) in the south-east of the Northern Cape Province (Figure 1.4). The town of Prieska, which functions as the administrative seat of the SLM, is located ~ 30 km south-west of the site. The site is located adjacent to the intersection between the R357 and the R369. The R357 links Prieska to the south-west and Douglas to the north-east. The R369 provides access to Hopetown. The Orange (Gariiep) River is located ~ 5 km west of the site. The main land uses in the study area are linked to extensive agriculture (stock farming), mining and game farming.



Source: Wikipedia

**Figure 1.4: The location of Siyathemba Local Municipality (Left) and Pixley ka Seme District Municipality (Right) within the Northern Cape Province (white).**

## 1.5 ASSUMPTIONS AND LIMITATIONS

### 1.5.1 Assumptions

#### Technical suitability

It is assumed that the development site represents a technically suitable site for the establishment of a SEF.

#### Strategic importance of the project

The strategic importance of promoting renewable energy, including solar, 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 SEFs.

## **Consultation with affected communities**

At this stage in the process there has been no interaction by the SIA Consultants with communities and other affected parties that live in the area. However, the author has worked on other wind energy projects and the issues identified by the affected parties in these projects are, in many instances, likely to be similar to those for the associated with the Prieska SEF site. Detailed consultation will be undertaken during the assessment component of the SIA.

### **1.5.2 Limitations**

#### **Demographic data**

Census, or on sources based projections on the Census 2001 data. The writing of this report coincides with Census 2011 – the first comprehensive community level count undertaken since 2001. An interim Community Survey was undertaken by StatsSA in 2007 (Local Municipal level). However, Census 2001 remains the most recent community/ ward level, actual count data currently available. Final data from Census 2011 will be available in early 2013. Therefore, it should be noted that the 2001 Census data is dated. Where possible this data has been up-dated by projections, derived from Census 2001. While this data does provide useful information on the demographic profile of the affected area, the actual data is dated and should be treated with care.

In addition, there is no longer any access to Census 2001 data at community and Ward level via the Municipal Demarcation Board. As such, the social baseline for the proposed project area is presented at Municipal level only.

## **1.6 APPROACH TO STUDY**

The approach to the SIA study is based on international best practice, as contained in the Western Cape Department of Environmental Affairs and Development Planning (DEA&DP) Guidelines for Social Impact Assessment (February 2007). These guidelines have been endorsed by the national Department of Environmental Affairs (DEA). The scoping level study involved:

- A review of demographic data from the 2001 Census Survey and other available sources;
- A review of relevant planning and policy frameworks for the PKSDM;

- A review of information from similar studies;
- A literature review of social issues associated with solar energy facilities.

The identification of potential social issues associated with the proposed SEF is based on a review of relevant documentation, experience with similar projects, and some familiarity with the study area. Annexe 1 contains a list of the secondary information reviewed.

## **1.7 REPORT STRUCTURE**

The report is divided into four sections, namely:

- Section 1: Introduction;
- Section 2: Policy and planning environment;
- Section 3: Overview of the study area;
- Section 4: Description of the key social issues that need to be assessed during the EIA phase. This section also includes information that will be required from the developer to facilitate the SIA.

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## SECTION 2: POLICY AND PLANNING ENVIRONMENT

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### 2.1 INTRODUCTION

Section 2 of this Social Study Report provides an overview of the most significant policy documents of relevance to the proposed Prieska SEF development. Arranged thematically, these are:

#### **National and Provincial level Renewable Energy Policy**

- National Energy Act (2008);
- National White Paper on Renewable Energy (2003);
- National Integrated Resource Plan for Electricity (2010-2030);
- Northern Cape Climate Change Response Strategy (in progress).

#### **Provincial and local level Spatial Policy and SEF siting criteria**

- Northern Cape Spatial Development Framework, Vol 2 (2011);
- Pixley ka Seme District Municipality Spatial Development Framework (2007).

#### **Provincial and local level Socio-Economic Developmental Policy**

- Northern Cape Provincial Growth and Development Strategy Draft 4 (2011);
- Pixley ka Seme District Municipality Integrated Development Plan (2010/2011 revision);
- Siyathemba Local Municipality Integrated Development Plan (2011 revision).
- Siyathemba Local Municipality Local Economic Development Strategy (2003).

### 2.2 NATIONAL AND PROVINCIAL LEVEL RENEWABLE ENERGY POLICY

#### **2.2.1 National Energy Act (Act 34 of 2008)**

The National Energy Act was promulgated in 2008. One of the objectives of the Act was to promote diversity in energy supply and its sources. In this regard, the objectives of the Act, as stated in the preamble, make direct reference to facilitating the "increased generation and consumption of renewable resources".

#### **2.2.2 The National White Paper on Renewable Energy (2003)**

This White Paper on Renewable Energy (further referred to as the White Paper) supplements the *White Paper on Energy Policy (1998)*, which recognized the significant medium and long-term potential of renewable energy. The 2003 White Paper sets out Government's vision, policy principles, strategic goals and objectives for promoting and implementing renewable energy in South Africa.

As signatory to the Kyoto Protocol, Government is determined to achieve its statement commitment to reducing greenhouse gas emissions. To this purpose, Government has committed itself to the development of a framework in which a national renewable energy framework can be established and operated.

Apart from the reduction of greenhouse gas emissions, the promotion of renewable energy sources is aimed at ensuring energy security through the diversification of supply (in this regard, also refer to the objectives of the National Energy Act).

Government's long-term goal is the establishment of a renewable energy industry producing modern energy carriers that will offer in future years a sustainable, fully non-subsidized alternative to fossil fuels.

The medium-term (10-year) target set in the White Paper is:

*10 000 GWh (0.8 Mtoe) renewable energy contribution to final energy consumption by 2013, to be produced mainly from biomass, **wind**, solar and small-scale hydro. The renewable energy is to be utilized for power generation and non-electric technologies such as solar water heating and bio-fuels. This is approximately 4% (1667 MW) of the projected electricity demand for 2013 (41539 MW) (Executive Summary, ix).*

### **2.2.3 Integrated Resource Plan for Electricity (2010-2030)**

The current iteration of the Integrated Resource Plan (IRP) for South Africa, initiated by the Department of Energy (DoE) after a first round of public participation in June 2010, led to the Revised Balanced Scenario (RBS) that was published in October 2010. The document outlines the proposed generation new build fleet for South Africa for the period 2010 to 2030. This scenario was derived based on the cost-optimal solution for new build options (considering the direct costs of new build power plants), which was then "balanced" in accordance with qualitative measures such as local job creation. In addition to all existing and committed power plants, the RBS included a nuclear fleet of 9,6 GW; 6,3 GW of coal; 11,4 GW of renewables; and 11,0 GW of other generation sources.

A second round of public participation was conducted in November/December 2010, which led to several changes to the IRP model assumptions. The main changes were the disaggregation of renewable energy technologies to explicitly display solar photovoltaic (PV), concentrated solar power (CSP) and wind options; the inclusion of learning rates, which mainly affected renewables; and the adjustment of investment costs for nuclear units, which until then represented the costs of a traditional technology reactor and were too low for a newer technology reactor (a possible increase of 40%).

Additional cost-optimal scenarios were generated based on the changes. The outcomes of these scenarios, in conjunction with the following policy considerations, led to the Policy-Adjusted IRP:

- The installation of renewables (solar PV, CSP and wind) were brought forward in order to accelerate a local industry;
- To account for the uncertainties associated with the costs of renewables and fuels, a nuclear fleet of 9,6 GW was included in the IRP;
- The emission constraint of the RBS (275 million tons of carbon dioxide per year after 2024) was maintained;
- Energy efficiency demand-side management (EEDSM) measures were maintained at the level of the RBS.

The Policy-Adjusted IRP includes the same amount of coal and nuclear new builds as the RBS, while reflecting recent developments with respect to prices for renewables. In addition to all existing and committed power plants (including 10 GW committed coal), the plan includes 9,6 GW of nuclear; 6,3 GW of coal; 17,8 GW of renewables; and 8,9 GW of other generation sources. The Policy-Adjusted IRP has therefore resulted in an increase in the contribution from renewables from 11,4 GW to 17,8 GW.

Table 2.1 indicates the new capacities of the Policy commitment. The dates shown in Table 2.1 indicate the latest that the capacity is required in order to avoid security of supply concerns. The document notes that projects could be concluded earlier than indicated.

	New build options							
	Coal (PF, FBC, imports, own build)	Nuclear	Import hydro	Gas – CCGT	Peak – OCGT	Wind	CSP	Solar PV
	MW	MW	MW	MW	MW	MW	MW	MW
2010	0	0	0	0	0	0	0	0
2011	0	0	0	0	0	0	0	0
2012	0	0	0	0	0	0	0	300
2013	0	0	0	0	0	0	0	300
2014	500 <sup>1</sup>	0	0	0	0	400	0	300
2015	500 <sup>1</sup>	0	0	0	0	400	0	300
2016	0	0	0	0	0	400	100	300
2017	0	0	0	0	0	400	100	300
2018	0	0	0	0	0	400 <sup>4</sup>	100 <sup>4</sup>	300 <sup>4</sup>
2019	250	0	0	237 <sup>3</sup>	0	400 <sup>4</sup>	100 <sup>4</sup>	300 <sup>4</sup>
2020	250	0	0	237 <sup>3</sup>	0	400	100	300
2021	250	0	0	237 <sup>3</sup>	0	400	100	300
2022	250	0	1 143 <sup>2</sup>	0	805	400	100	300
2023	250	1 600	1 183 <sup>2</sup>	0	805	400	100	300
2024	250	1 600	283 <sup>2</sup>	0	0	800	100	300
2025	250	1 600	0	0	805	1 600	100	1 000
2026	1 000	1 600	0	0	0	400	0	500
2027	250	0	0	0	0	1 600	0	500
2028	1 000	1 600	0	474	690	0	0	500
2029	250	1 600	0	237	805	0	0	1 000
2030	1 000	0	0	948	0	0	0	1 000
Total	6 250	9 600	2 609	2 370	3 910	8 400	1 000	8 400

Firm commitment necessary now  
 Final commitment in IRP 2012

1. Built, owned & operated by IPPs 2. Commitment necessary due to required high-voltage infrastructure, which has long lead time 3. Commitment necessary due to required gas infrastructure, which has long lead time 4. Possibly required grid upgrade has long lead time and thus makes commitment to power capacity necessary

Source: Integrated Resource Plan (IRP) for South Africa

**Table 2.1: Commitments before next IRP**

The key recommendations contained in the Policy-Adjusted IRP Final Report (March 2011) that have a bearing on the renewable energy sector include:

**General**

- The dark shaded projects in Table 2.1 need to be decided before the next IRP iteration, with the identified capacities thereafter assumed as “committed” projects;
- The light shaded options should be confirmed in the next IRP iteration; and
- All non-shaded options could be replaced during the next, and subsequent, IRP iterations if IRP assumptions change and thus impact on the quantitative model results.

## PV Solar energy

- Solar PV programme 2012-2015: In order to facilitate the connection of the first solar PV units to the grid in 2012 a firm commitment to this capacity is necessary. Furthermore, to provide the security of investment to ramp up a sustainable local industry cluster, the first four years from 2012 to 2015 require firm commitment; and
- Solar PV 2016 to 2019: Grid upgrades might become necessary for the second round of solar PV installations from 2016 to 2019, depending on their location. To trigger the associated tasks in a timely manner, a firm commitment to these capacities is necessary in the next round of the IRP at the latest. By then, the assumed cost decreases for solar PV will be confirmed.

## Conclusions

The key conclusions that are relevant to the renewable energy sector include:

- An accelerated roll-out of renewable energy options should be allowed in order to derive the benefits of localisation in these technologies; and
- A solar PV programme as envisaged in the Policy-Adjusted IRP should be pursued (including decentralised generation).

### 2.2.4 Northern Cape Climate Change Response Strategy (in progress)

The NCPG appears to be in the process of finalising its Provincial Climate Change Response Strategy (NCPCCRS). In this regard, completion of a Draft document was announced in March 2011, and finalisation of the report anticipated after the 2011 COP17, by the end of 2011. Neither document appears to have been released by this date (i.e. April 2012).

The key aspects of the Draft PCCRS Report are however summarised in the MEC's (NCPG: Environment and Nature Conservation) 2011 budget speech: "The Provincial Climate Change Response Strategy will be underpinned by specific critical sector climate change adaptation and mitigation strategies that include the Water, Agriculture and Human Health sectors as the 3 key Adaptation Sectors, the Industry and Transport alongside the Energy sector as the 3 key Mitigation Sectors with the Disaster Management, Natural Resources and Human Society, livelihoods and Services sectors as 3 remaining key Sectors to ensure proactive long term responses to the frequency and intensity of extreme weather events such as flooding and wild fire, with heightened requirements for effective disaster management".

Key points from MEC Lucas' address include the NCPG's commitment to develop and implement policy in accord with the National Green Paper for the National Climate Change Response Strategy (2010), and an acknowledgement of the NCP's extreme vulnerability to climate-change driven desertification. The development and promotion of a provincial green economy, including green jobs, and environmental learnerships is indented as an important provincial intervention in addressing climate change. The renewable energy sector, including **solar** and wind energy (but also biofuels and energy from waste), is explicitly indicated as an important element of the Provincial Climate Change Response Strategy. The MEC further indicated that the NCP was involved in the processing 7 WEF and 11 SEF EIA applications (March 2011)<sup>1</sup>.

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<sup>1</sup> ([www.info.gov.za/speech/DynamicAction?pageid=461&sid=22143&tid=45200](http://www.info.gov.za/speech/DynamicAction?pageid=461&sid=22143&tid=45200)).



## **2.3 SPATIAL POLICY AND SEF SITE SELECTION CRITERIA**

### **2.3.1 Northern Cape Provincial Spatial Development Framework (2011)**

Dennis Moss Partnership is currently preparing a Provincial Spatial Development Framework (PDSF) for the Northern Cape Province (NCP). The PDSF is a legal requirement in terms of Chapter 4 of the Northern Cape Planning and Development Act 7 of 1998.

Volumes 1 and 2 were finalised in December 2011. Volumes 1 and 2 are essentially introductory, status quo reports. Volume 2 provides a situation analysis of the NCP, mainly with the view of identifying key aspects for policy focus/ intervention. Volumes 3 (Spatial Directives) and 4 (Strategies) are currently in preparation, and no Draft documents are available at this stage.

Volume 2 (Situation Analysis and Key Aspects) indicates that the envisaged Spatial Directives and Strategies reports would be closely aligned to the 2004-2014 Northern Cape Provincial Growth and Development Strategy (PGDS) (currently in Draft 4)<sup>2</sup>. Volume 2 includes an overview of some key relevant aspects of the PGDS Draft 4, including with regard to the roles of renewable energy and tourism in the provincial economy.

#### **Renewable Energy**

The PDSF (Vol 2) notes that, at present, the Eskom Vanderkloof hydro station on the Orange River (240 MW) represents the only large energy-generating facility in the NCP. Most of the energy used in the province is generated by Eskom plants located elsewhere, mainly Mpumalanga Province. The PDSF therefore notes that the NCP's major energy challenges include securing energy supply to meet growing demand, providing everybody with access to energy services and tackling the causes and impacts of climate change (as per PGDS). In this regard, the development of large-scale renewable energy supply schemes is strategically important for increasing the diversity of domestic energy supplies for the NCP, and avoiding energy imports while minimizing the environmental impacts.

The PDSF further notes that renewable energy has been identified in the Draft 4 PGDS (2011) as a mechanism to diversify the economy and thereby promote a green economy in the province. According to the PGDS, greening the economy is characterized by substantially increased investments in economic sectors (NCPG; 2011: F.1.4.1). Vol. 2 of the PDSF indicates that the promotion of job creation in the green jobs industries (e.g. manufacturing of solar water heaters, maintenance of wind generators and solar energy infrastructure) would be promoted in the forthcoming spatial directives and strategies reports (Volumes 3-4).

#### **Tourism**

The PDSF notes that the tourism sector is identified in the Draft 4 PGDS as one of the key sectors with the capacity to 'grow, transform and diversify the provincial economy'. According to the PGDS, the vision for tourism is underpinned by a number of broad, essential and specific drivers. The 'broad drivers' consider the 'big picture'

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<sup>2</sup> Draft 4 (2011) of the PGDS does not appear to have been made public yet.

focusing on tourism's contribution to a larger development purpose, including overall economic growth, addressing social upliftment and poverty alleviation through facilitating job creation, and striving for more equitable ownership and participation in tourism through transformation.

Comparative advantages of the NCP are identified as mainly eco-tourism opportunities, including unique sectoral or nature-based routes; National parks, nature reserves and game reserves, Natural and cultural manifestations, as well as festivals and cultural events (PGNC; 2011b).

### **2.3.2 Pixley ka Seme District Municipality Spatial Development Framework (2007)**

The Pixley ka Seme District Municipality (PkSDM) Spatial Development Framework (SDF) was compiled in 2006 and last reviewed in 2007. A substantial portion of the SDF is devoted to a generic overview of spatial development actions which may impact on the District's natural and built environment. Renewable energy facilities are however not included.

The SDF also includes spatial analyses and development proposals for each of the PkSDM's 8 constituent local municipalities (LMs). Spatial development proposals focus exclusively on urban areas. The former NCDMA07 is not dealt with specifically. With regard to the Siyathemba Local Municipality (SLM) into which the NCDMA07 was incorporated in 2011, the SDF notes the following:

Only two potential development nodes (i.e. areas where local economic growth should be promoted) are identified for the SLM, namely the towns of Prieska and Marydale. Portions of the N10 through these towns are identified as potential development corridors, i.e. areas which could support higher order ribbon-like development.

With regard to areas and settlements which have not been identified as development nodes, the SDF envisages that these should continue to exist as service centres, but should not be the focus of capital investment. The SDF envisages that settlements/ areas without growth potential should be developed with social services in support of those areas where growth will be experience.

Key tourism/ visitor attractions in the SLM are identified as historical sites (pre-Colonial, Anglo-Boer War, etc.), the Orange River, and game farms. Four potential tourism nodes are identified, namely Prieska, Marydale, Niekerkshoop and Kareeberg. Three potential tourism corridors/ scenic routes are identified which could support development focusing on the hospitality and tourism industry, namely the N8, the R357 and the course of the Orange River.

## **2.4 PROVINCIAL AND LOCAL SOCIO-ECONOMIC DEVELOPMENT POLICY**

### **2.4.1 Northern Cape Province Provincial Growth and Development Strategy**

The Provincial Growth and Development Strategy (PGDS) notes that the most significant challenge that the government and its' partners in growth and development are confronted with is the reduction of poverty. All other societal challenges that the province faces emanate predominantly from the effects of poverty. The PGDS 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 PGDS 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 make reference to the need to ensure the availability of inexpensive energy. The section notes that in order to promote economic growth in the Northern Cape the availability of electricity to key industrial users at critical localities at rates that enhance the competitiveness of their industries must be ensured. At the same time, the development of new sources of energy through the promotion of the adoption of energy applications that display a synergy with the province's natural resource endowments must be encouraged. In this regard the NCPGDS notes "the development of energy sources such as solar energy, the natural gas fields, bio-fuels, etc, could be some of the means by which new economic opportunity and activity is generated in the Northern Cape". The NCPGDS also highlights the importance of close co-operation between the public and private sectors in order for the economic development potential of the Northern Cape to be realised.

The NCPGDS also highlights the importance of enterprise development, and notes that the current levels 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 SEF therefore has the potential to create opportunities to promote private sector investment and the development of SMMEs in the NCP.

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

Africa. Care therefore needs to be taken to ensure that the development of large renewable energy projects, such as the proposed SEF, do not affect the tourism potential of the province. The potential impact on heritage sites may also have social implications.

#### **2.4.2 Pixley ka Seme District Municipality Integrated Development Plan 2009-2012**

The vision for the PKSDM as set out in the IDP is to “commit ourselves to be a developmental municipality where the quality of life of all people in the district will be improved”.

The PkSDM IDP (2009-2012) is based on the requirements and guidance of the Municipal Systems Act (Act No. 32 of 2000) which identifies 5 broad strategic priority areas for consideration during the IDP process. These broad strategic priority areas are as follows:

- Infrastructure and Services;
- Social and Economic Development;
- Institutional Transformation;
- Democracy and Governance; and,
- Financial Management/Viability.

More specifically, the 2009-2012 IDP forms the basis for the District to achieve the following:

- Support Government efforts to put the people at the centre of development, not merely as beneficiaries, but as drivers of transformation;
- Move faster and further in providing a better life for all;
- Strive to halve unemployment and poverty by the end of 2014;
- Create job opportunities and fight poverty through infrastructure development and service delivery, procurement and support for SMME's and Broad Based Black Economic Development;
- Speed up the delivery of free basic services;
- Work with National and Provincial Government to improve service delivery and access to basic services;
- Ensure that communities have access to clean water by the end of 2010;
- **Ensure that communities have access to electricity by the end of 2014;**
- Ensure that communities have access to decent sanitation by the end of 2010;
- Ensure that communities have access to decent housing by the end of 2010;
- Utilise distributed land for development and agricultural purposes;
- Provide the skills required for the District's economic development and growth;
- Provide infrastructure to facilitate economic growth and development that will increase capacity to provide basic services and contribute to a safe and healthy environment;
- Ensure community and public participation to allow citizens to identify the problems that their community face and partner in providing solutions;
- Build sustainable human settlements; and
- Ensure that councilors are responsive, accountable and effective and that everybody is involved in local government understands and honours the duty to respect and serve the people.

The guidance of the strategic priorities forms the framework for the District analysis of the status quo across numerous sectors within the District. The District analysis, in

turn, informs the development objectives for the municipality. The IDP development objectives highlighted in the PKSDM IDP include:

- **Objective 1:** *To accelerate the Provision of Water, Sanitation, Roads & Storm Water & Electricity Services in partnership with key stakeholders to meet millennium targets and improve the living conditions for all;*
- **Objective 2:** *To accelerate the Provision of quality Municipal Health Services to all Communities in line with National Department of Health guidelines to ensure effective, affordable and accessible Municipal Health Services to all;*
- **Objective 3:** *To provide a comprehensive Disaster Management, Fire and Emergency Services that will ensure that all communities are safe and can get timely and adequate assistance and responses in time of need;*
- **Objective 4:** *To increase compliance to traffic legislation and licensing services within the Pixley Ka Seme Local Municipality area;*
- **Objective 5:** *To increase capacity of PkSDM to have comprehensive town planning in support of economic growth and development;*
- **Objective 6:** *To facilitate provision of adequate housing services to meet community needs and stimulate economic growth and development;*
- **Objective 7:** *To develop and implement a comprehensive municipal IDP that will meet all the basic service backlogs, infrastructural shortages, institutional arrangement challenges, capacity building, etc. to strengthen public participation through Izimbizo, IDP Forums and other Communication platforms;*
- **Objective 8:** *To increase the capacity of PkSDM promote tourist attraction areas and increase the participation and beneficiation of the previously marginalized communities;*
- **Objective 9:** *To ensure that PkSDM maintains its clean audit record and have good financial management;*
- **Objective 10:** *To facilitate, support provision of comprehensive services to the communities through accelerated service delivery and ensuring that communities can have access to services which are closer to them;*
- **Objective 11:** *To increase the capacity of the PkSDM, to provide efficient and effective support services to its administration and political office bearers;*
- **Objective 12:** *To increase the capacity of PkSDM to have comprehensive Transport Planning in support of economic growth and development;*
- **Objective 13:** *To enhance PkSDM capacity to provide bulk infrastructure, capacitate and support in providing basic services and project Management;*
- **Objective 14:** *To accelerate water provision within PkSD to ensure that all residents have access to clean water; and*
- **Objective 15:** *To facilitate provision of adequate services to meet community needs and stimulate economic growth and development.*

According to the PKSDM strategy plan, a key development objective is to provide access to electricity to all households in the District by 2014. To achieve this, the District Municipality aims to i) Fast track the delivery of free basic electricity and ii) co-ordinate the maintenance and upgrading of the existing electricity infrastructure. While no specific mention is made of the promotion of alternative energy sources, the proposed project would potentially support a number of the development goals and objectives of the PKSDM.

Key developmental challenges, objectives and strategies of relevance to the proposed SEF development include:

### **LED, Tourism and Poverty Alleviation:**

Key identified challenges include high levels of poverty and low skills levels; and a relatively undiversified economy, relying mainly on primary sector activities. Key interventions would include promoting SMMEs; attracting and retaining investors in the region; development of identified development corridors; value-adding to/beneficiation of local produce; and the promotion of tourism development.

Policies/ targets aimed at addressing these challenges include:

- LED1: Promote Local Economic Development in the region;
- LED 2: Increase SMME promotion;
- LED 4: Increased tourism promotion – a Tourism Market Strategy should be compiled to attract investments and tourists;
- LED 6: Reduce employment and poverty by 50% each, respectively in the region by 2014.

### **HIV/ AIDS:**

Key identified challenges include low awareness levels, inadequate health care facilities, including a lack of trained professionals, mobile clinics, a hospice, etc.

- Policy HIV 1 focuses on reducing the level HIV/AIDS infections amongst young men and women in the District.

### **Education, Youth and development:**

Key identified challenges include limited or no access to higher learner institutions; lack of IT skills in the region; poor qualification and skills of the community limiting their entry to institutions of higher learning; very few training facilities in the region; and a lack of funds available to the majority of learners.

- Policy Y1 focuses on improving the well-being of young men and women, including improving access to vocational training (Y1.2).

### **Safety and security:**

Key identified challenges include high endemic levels of family and child abuse; and high levels of alcohol abuse.

- Policy SS1 provides for the promotion of a safe and secure environment in the District.

### **2.4.3 Siyathemba Local Municipality Integrated Development Plan (2010/2011)**

The 2010/2011 Revision appears to be the most recent review of the Siyathemba Local Municipality (SLM) IDP. Key aspects of relevance to the proposed Prieska SEF development are discussed below.

The IDP identifies the following Key Performance Areas (KPAs) as critical to achieving Council's vision:

- Local economic development and job creation;
- Municipal Financial Viability and Management;
- Tourism and marketing;
- Municipal health ;
- Combating HIV/Aids;
- Crime and security, including disaster management.

With regard to local economic development (LED), goals identified in the IDP include:

- The promotion of Agriculture, Tourism, Mining and Infrastructure development;
- The promotion of economic diversification, including Industry based on value-adding to local produce;
- Attracting and retaining capital in the SLM.

Commercial renewable energy generation is not addressed in the IDP.

#### **2.4.4 Siyathemba Local Municipality Local Economic Development Strategy (2004)**

The Siyathemba IDP 2010/2011 Revision document contains a Local Economic Development (LED) Strategy (Chapter 3). The document is undated, but appears to have been prepared around 2004. It is unclear whether the document has been revised since then.

According to the document, the main purpose of the LED was to develop an integrated planning framework, based on KPAs, and that outlines plans, projects and programmes to be implemented in the Municipal area towards 2010 and beyond in order to meet the 2014 national objectives. The ultimate goal of the LED is to improve the standard of living of the local community by identifying opportunities aimed at addressing job creation and economic growth.

With regard to the SLM economic context, the LED notes that the local economy has been in significant decline since the closure of asbestos and copper mines (e.g. Copperton) in the Municipality during the early 1990's.

Key challenges facing economic development in the SLM include:

- Lack of diversification within the regional economy;
- Attracting and retaining investment in the region;
- Lack of employment opportunities;
- Rising levels of poverty;
- Low skills levels;
- Lack of entrepreneurship, as reflected by the small number of SMME's active in the region;
- Underutilization of the region's natural resources and economic opportunities; and
- Lack of water for expanding irrigation operations.

The LED notes that the SLM's economy is largely based on the primary sector (agriculture and mining), with very little local value-adding/ beneficiation.

Siyathemba LM's LED strategy is focused on developing the economic and natural resources of the area. Its goals are to promote agriculture, industries, marketing of the region, and creating a safe environment for business. The agricultural strategy includes providing for the land needs of PDIs, and empowering farm workers to access farmland. Renewable energy resources (wind, insolation) are not addressed in the LED.



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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 study area with regard to:

- The relevant administrative context;
- The provincial socio-economic context; and,
- The municipal-level socio-economic context.

### 3.2 ADMINISTRATIVE AND REGIONAL CONTEXT

The proposed Prieska SEF site is located in the SLM (which is one of eight local municipalities make up the PKSDM (NCDC7), which is located in the south-east of the Northern Cape Province. The other seven local municipalities are Emthanjeni, Kareeberg, Thembelihle, Siyancuma, Renosterberg, Ubuntu and Umsobomvu.

The PKSDM is the second largest of the five DMs comprising the NCP, covers a surface area of 102 766 km<sup>2</sup>, and has an estimated population of 164 603 (PKSDM IDP 2010/ 2011). The PkSDM borders onto three other provinces, namely, the Free State province to the east, the Eastern Cape to the south-east and the Western Cape to the south-west. A total of 24 medium to very small sized towns are located in the DM. De Aar (Emthanjeni LM) is the administrative seat of the PkSDM, and the third largest town in the Northern Cape Province (~45 000).

The PKSDM and SLM are located in the vast, arid (<250 mm/a), sparsely populated Karoo region of inland South Africa. Both the PkSDM and SLM are traversed (east to west) by the Gariep (Orange) river, the country's largest river. The majority of towns and settlements in the area are located along the Gariep. The river also supports significant irrigation agriculture (~75% of the SLM's agricultural GDP). Two of the three largest dams in Southern Africa are located on the Gariep inside the PKSDM area. Outside the narrow confines of the Gariep Valley, the settlement pattern in the DM and SLM is sparse, population densities very low, and commercial extensive stock farming the dominant land use. The SLM area is characterized by relatively flat terrain ("vlaktes") and ephemeral watercourses draining into the Gariep. Natural vegetation is typical Karoo veld (Nama Karoo), dominated by scrub and shrubs, and supporting a low grass element.

As in other parts of the Karoo, the trend in the PKSDM and SLM has been towards the progressive concentration of the population in towns and settlements. This is linked to labour/ tenure shedding on commercial farms and increasing diversification into game farming (mainly for hunting) - which provides fewer employment (and tenure) opportunities. However, opportunities in agri-tourism and eco-tourism have created scope for new and more sophisticated types of employment (UOFS; 2007).

### 3.3 PROVINCIAL SOCIO-ECONOMIC CONTEXT

The proposed SEF is 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, Pixley ka Seme, Namakwa, Siyanda, and John Taolo Gaetsewe DM, and twenty-six Category B (Local) municipalities. As indicated above, the proposed Prieska SEF is located in the SLM, which forms part of the larger PKSDM. The demographic overview provided below is largely based on relatively dated Census 2001 information.

#### Population

Despite having the largest surface area, the Northern Cape is the least populous of the 9 provinces. According to Census 2001, the NCP population was 822 727, or 1.8% of the national population<sup>3</sup>. The population has declined by 2.1% from 1996 (840 321) to 2001 (822 727), resulting in a decrease in the population density, of an already sparsely populated province, from 2.32 to 2.27 persons per km<sup>2</sup>. Of the five districts, Frances Baard has the largest population of 303 239. The other districts and their respective populations are Siyanda (209 889), Pixley ka Seme (164 607), John Taolo Gaetsewe DM (36 881) and Namakwa (108 111).

The NCP population can be classified as a young population with 57.7% of the population being younger than 30 years old. The female proportion makes up approximately 51.2% of the total with males making up the remaining 48.8%. The 2001 Census data indicates a significant shift in the 20 – 24 cohort occurs, which can possibly be attributed to, amongst others, people in this age group moving to other provinces in search of better career and job opportunities and tertiary education.

Research indicates that approximately 36% of the migrants from the Northern Cape moved to the Western Cape, while 19.4% moved to the North West (19.4%), 18.5% to Gauteng and 12.8% to the Free State (12.8%). In addition, there has also been an increase in migration from the rural areas to the larger towns in the province over the last five years. This movement is in response to the improved access to opportunities and services within the larger urban centers. This trend is reflected in the increase in the proportion of people living in urban areas from 75.2% in 1996 to 82.7% in 2001

#### Education

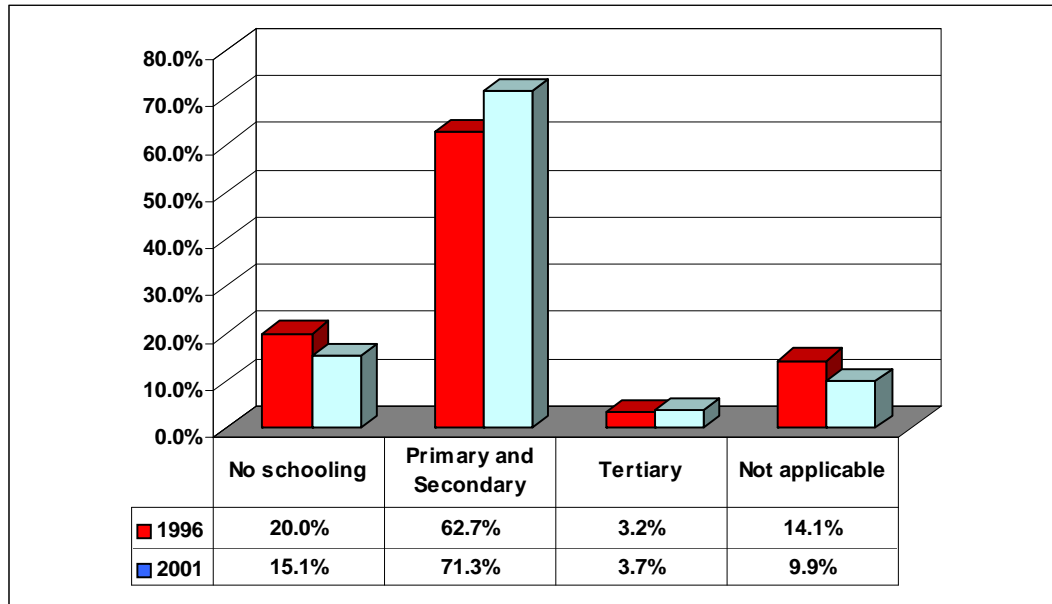
In terms of education levels 15.1% of the population had no education at all, while 71.3% have primary or secondary education (2001). Those with a higher educational qualification accounted for 3.7% of the population (Figure 3.3). These figures indicate an increase in all categories since 1996, except for the no schooling category, which decreased by 4.9% indicating a higher percentage of people attending school.

The information contained in Figure 3.3, indicates that, in general, there has been an improvement in the educational qualifications of the labour force in the Northern Cape. There has also been an increase in the proportion of the labour force that has

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<sup>3</sup> More recent estimates such as StatsSA's 2007 Community Survey indicated a numerical increase (to 1 058060 people), but a proportional decrease (to 6.7% of the SA total).

a secondary and tertiary education. This would appear to be the result of an increase in access to education since 1994, in particular, amongst new entrants to the labour force.



**Figure 3.3: Percentage of people by level of education for 1996 and 2001**  
(Source: Northern Cape Province PGDS)

### Economic development

The Human Development Index<sup>4</sup> (HDI) for the province, which covers four indexed factors – life expectancy, adult literacy, GDP per capita (adjusted for real income) and education attainment, for the Northern Cape as a whole is 0.58, which is substantially below the South African figure of 0.72.

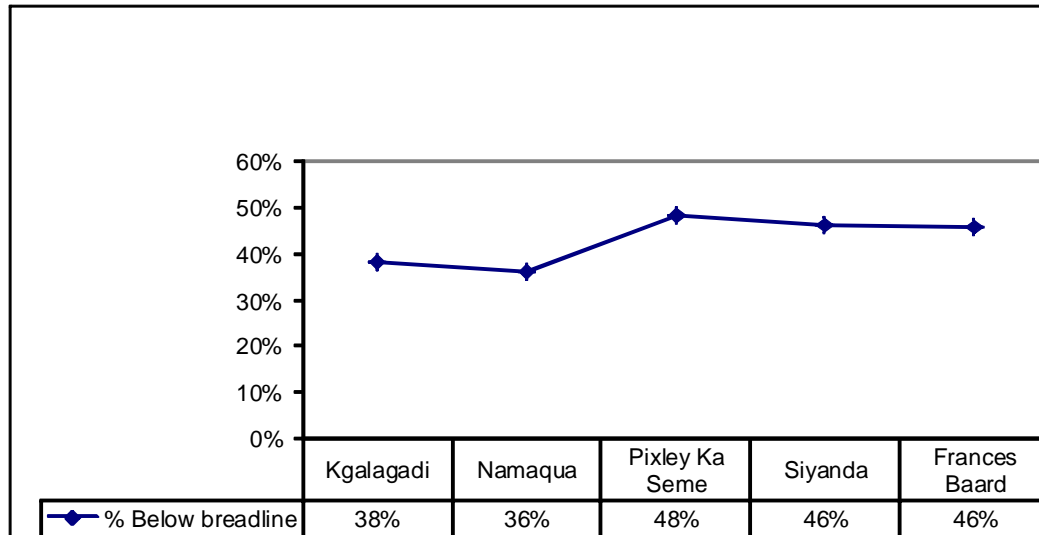
For the Northern Cape, the areas of lowest Human Development Index include the South Eastern region (Noupoort and Richmond) and the hinterland of Kimberley (Griekwastad, Campbell and Douglas) – for these areas the HDI varies between 0.47 and 0.51. Over the past 8 years there has been little to no variance in the HDI figures, indicating no increase or decrease in the overall standard of living. In contrast, the Kimberley and Springbok areas have the highest HDI of 0.63 to 0.62 respectively, primarily due to the broader economic opportunities and access to services such as infrastructure, schools, and health facilities. Similarly, there has been no significant change over the past 8 years.

The above 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.

In terms of per capita income, the Northern Cape Province has the third highest per capita income of all nine Province's. 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

<sup>4</sup> The closer the HDI 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.

living below the poverty line or breadline is used<sup>5</sup>. The poverty line indicates a lack of economic resources to meet basic food needs. Figure 3.4 indicates the percentage of household income below the poverty breadline of R800 in the Northern Cape Province, the highest being Pixley Ka Seme at 48% and the lowest being Namaqua at 36%.



**Figure 3.4: Percentage of household income below the poverty breadline by district**

(Source: Northern Cape PGDS)

### Economic sectors

In terms of economic importance, the Northern Cape's share of the country's Gross Domestic Product (GDP) in 2002 was 2%, the lowest contribution of the nine provinces. However, although the Northern Cape Province has the smallest economy of the nine provinces, Gross Domestic Product of the Region (GDPR) per capita is higher than the national average. In terms of economic activities, the economy of Northern Cape is heavily dependent on the primary sectors of the economy, which in 2002 made up 31.0% of GDPR. The largest sector is mining which has declined in contribution to the GDPR from 25.8% in 1996 to 23.7% in 2002. Agriculture, on the other hand, increased in its contribution from 6.2% to 7.3%. Large scale irrigation agriculture operations are based along the Gariep, Harts and Vaal rivers.

A worrying characteristic of the NCP economy is the limited amount of processing of the primary commodity output in mining and agriculture that takes place in the Northern Cape. This is reflected in the fact that manufacturing contributes only 4.2% towards GDPR. All the industries in the secondary sector have decreased in their contribution to the GDPR, with electricity and water sector showing the greatest decrease of 0.7% and the construction industry making the lowest contribution of 1.9% to the GDPR of the Northern Cape. At the same time the contribution to regional GDPR by industries in the tertiary sector increased, with the exception of the wholesale and retail industry, which decreased by 1.1%.

<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.

## Employment

Census 2001 data indicates that, of the economically active population in the Northern Cape, 55.5% were employed while 26.1% could not find employment. This unemployment figure is lower than the national figure of 29.5%. Significant for this province, however, is that a third of the total population is younger than 15 years old and approximately 45% of the potential labour force is younger than 30 years. At the same time, unemployment is the highest among the youth with unemployment rates of 54% and 47% in the 15 - 19 and 20 – 24 year-old age groups. There has been an increase in the economically active population from 35.9% in 1996 to 38.1% in 2001. The unemployment rate for the same period has increased from 28.3% to 33.4%. In terms of employment there has been a decrease in the number of people that are formally employed from 196 219 in 1996 to 193 980 in 2001. The largest decrease was in the private household sector, showing a loss of 4 859 jobs. The most important sectors in terms of employment in 2002 were agriculture, hunting, forestry and fishing (28.4%), community, social and personal services (19.8%), wholesale and retail trade (12.7%) and private households (11.4%)(Table 3.1).

**Table 3.1: Formal employment by sector** (Source: Northern Cape PGDS)

Sectors	1996	1996 % of persons employed per sector	2001	2001 % of persons employed per sector
<b>Primary</b>				
Agriculture, hunting; forestry and fishing	48646	24.8	55016	28.4
Mining and quarrying	18556	9.5	15493	8.0
<b>Secondary</b>				
Manufacturing	8812	4.5	10598	5.5
Electricity; gas and water supply	2397	1.2	1385	0.7
Construction	10402	5.3	8971	4.6
<b>Tertiary</b>				
Wholesale and retail trade	23099	11.8	24671	12.7
Transport; storage and communication	9963	5.1	6366	3.3
Financial, insurance, real estate and business services	7733	3.9	10989	5.7
Community, social and personal services	39724	20.2	38463	19.8
Private Households	26887	13.7	22028	11.4
<b>Total</b>		<b>196219</b>		<b>193980</b>

### 3.4 MUNICIPAL-LEVEL SOCIO-ECONOMIC OVERVIEW

#### 3.4.1 Pixley ka Seme District Municipality

The PKSDM is located in centrally within South Africa, and benefits from a good road and railway network. In this regard four of the major National Routes pass through the PKSDM. The N1 and N12 routes link the two main economic centres, i.e., the Rand and the Western Cape and both these routes carry thousands of tons of valuable goods and material every day to all parts of the country. The N9 and N10 routes link Namibia and Gauteng with the coastline of Port Elizabeth, which is also the nearest export harbour for the Northern Cape Province.

The railway network around De Aar and Noupoort is one of the largest in South Africa. An average of 1 000 000 tons are conveyed through this station every month and capacity exists to increase this tonnage. On average 9 freight trains between Gauteng and the Western Cape pass through the station at De Aar every day, 4 to Port Elizabeth, 2 to Namibia and 10 from De Aar to Kimberley. The station at De Aar has direct or indirect links to virtually every corner of South Africa. One of Eskom's largest sub-stations – Hydra – is located near De Aar, supplying high voltage power especially to the Western Cape and the rural areas (PKSDM IDP).

As indicated in Section 3.2, the PKSDM is essentially comprised of an arid area (part of the Karoo region), traversed in part by the Gariep River. The Gariep supports a well-developed sector (mainly to the east of Prieska). The district is also home to two of the largest dams in South Africa, the Vanderkloof and Gariep Dams (both on the Gariep River). Outside of the Gariep valley, land use is mainly associated with stock farming operations on extensive commercial properties. Over the past five decades or so, commercial farming operations have tended to become larger, while progressively shedding historical labour and tenure opportunities. This has been accelerated by tenure-related legislation (e.g. the Extension of Security of Tenure Act of 1997), and the growth of the game farming industry. In addition, the national social grant and social housing allocation systems have further contributed to urbanisation of former rural populations in the SLM.

The key strengths of the PKSDM economy are community services, agriculture, transport and tourism. The towns function primarily as agricultural service centres. (UOFS; 2007). Most of the agricultural economy consists of extensive farming (sheep and goats), as well as a growing number of game farming operations. However, there is intensive agriculture along the Orange Riet Canal System, along the upper Orange River (Colesberg-Hopetown area), and along the middle Orange River (Prieska) area. The following areas have been identified by the 2007 *Arid Areas Study* as developmental nodal points: Colesberg, De Aar, the Orange River (mainly irrigation farming and alluvial diamond mining), and the Gariep Dam (inter-provincial tourism marketing of the region). There is a growing trend towards game farming (UOFS; 2007).

The Industries in the area are mostly confined to light industries. Little beneficiation or value-adding of local produce currently takes place. Thus, for example, while the PkSDM is the largest wool producer in the country, most of the beneficiation is currently undertaken in the Eastern Cape (UOFS; 2007).

### 3.4.2 Siyathemba Local Municipality

The main settlements in the SLM<sup>6</sup> are the towns of Prieska, Marydale, Niekerkshoop, Draghoender and Copperton. The town of Prieska, which is the administrative seat of the SLM, is located on the southern bank of the Gariep, approximately 30 km south-west of the proposed SEF site. Prieska is by far the largest town in the SLM, and functions as the leader town in the SLM. The town promotes itself as “the gem of the Northern Cape”, based on its setting at the foot of the Doringberg, within the Gariep valley, and surrounded by large scale irrigation agriculture operations along the Gariep (SLM IDP 2010/2011).

While relatively isolated (>100 km from the nearest medium-sized town), Prieska has good access to the main railway line to Namibia, good tarred road connections to Upington (249 km along the N10), Kimberley (238 km along the R386/ N8) and De Aar (~180 km along the N10), two landing strips for light aircraft, and a number of inexpensive industrial stands some with rail siding facilities (UOFS; 2007 and SLM IDP 2010/ 2011). The Prieska area is known for its high quality semiprecious stones, specifically tiger’s eye<sup>7</sup>. Marydale and Niekerkshoop are second tier towns. Both are small towns. Marydale benefits from its location along the N10 (Upington-De Aar), municipal service centres, schools and other public facilities (SLM IDP 2010/ 2011).

As in the PKSDM, key activities in the SLM are related to primary sector activities, mainly agriculture and mining. Little local beneficiation takes place. Tourism and game farming (mainly for hunting) are significant emerging land uses.

Agricultural activity is by far the spatially most dominant land use in the SLM. While extensive stock farming accounts for ~98.7% of agricultural land use, it accounts for ~75% of the SLM’ agricultural GDP. At least 12 major crop types are extensively cultivated in the Gariep valley (mainly east of Prieska), the most important of which are maize and wheat, peanuts, lucerne (alfalfa) and table grapes. Stock farming operations are mainly based on small stock (sheep, goats) on spatially extensive commercial farms. Both wool and carcasses are produced. Game farming (hunting) is emerging as a key diversification strategy (UOFS; 2007 and SLM IDP 2010/ 2011 Revision).

The mining sector historically played a major role in the local economy, with asbestos and copper/ silver (Copperton) mining the key activities. Currently, mining activities are mainly related to alluvial diamond mining activities along the Gariep River. The closure of asbestos mines (mainly to the north of Prieska) as well as the Copperton mine around the early 1990’s has had a major lasting negative impact on the SLM economy. Former mining towns (like Copperton, which came into full operation in the early 1970’s) have dwindled to virtual ghost towns. With regard to the former NCDMA 07, the bulk of whose population is concentrated in Copperton, an estimated 2166 people remained by 2007 (down from 3126 in 2007, a decrease of ~34%). The Copperton community is very isolated from employment opportunities, amenities, etc. The lack of water poses a significant constraint to development of the Copperton area.

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<sup>6</sup> Prior to the incorporation of the NCDMA07 in 2011, the Siyathemba LM was 8251 km<sup>2</sup> in extent, and consisted of 4 Wards (of which Prieska constituted 2). The current extent and Ward composition is unclear.

<sup>7</sup> Tiger’s eye is formed by the replacement by silica of fibrous blue asbestos. The Prieska area holds some of the largest deposits on the planet.



The SLM tourism industry is in a fledgling stage, and largely based around the Gariep valley, and specifically the town of Prieska. A number of guest accommodation facilities are located in or near (<20 km) Prieska – 13 according to the 2010/ 2010 SLM IDP. Tourism development (mainly focusing on Die Bos resort in Prieska, agro-tourism and game farming) is currently promoted as a key diversification strategy. Other established attractions in the SLM include its succulent/ xerophytic vegetation, interesting geology and semi-precious gemstones, sites of historical interest, and the “Karoo experience” – the sense of wilderness and desolation cherished by many South Africans and visitors alike. The R357 (Van Wyksvlei – Prieska, via Copperton) has been proposed as a scenic drive with touristic potential in the 2006 PKSDM SDF.

### 3.4.3 Demographic overview

The demographic overview provided below is largely based on Census 2001 data, supplemented by Community Survey 2007 data. The overview covers both DM and LM levels. Focus in discussion is on the Siyathemba LM.

#### Population

The total population of the PKSDM is ~ 165 000 (Census 2001). Of the total population Coloureds make up ~ 62% of the total, followed by Black Africans (~27%) and Whites (~10%). For the SLM the figures are ~ 64 % Coloured, 26 % Black African and 8 % Whites. The Siyathemba LM makes up ~ 22 % (36 000) of the total making it the most populated LM in the DM. The demographic makeup of the SLM is similar to that of the region. The population density for the region is 2.1 people per square kilometre. In terms of future growth projections, a negative growth rate is forecast for the rural population and by 2015 the towns are also expected to show a negative growth rate of 1.29% (PKSDM IDP). Table 3.2 provides a breakdown of the total population for each of the LM within the PKSDM.

**Table 3.2: Population breakdown for the PKSDM** (Source: PKSDM IDP 2008/2009)

Municipality	Population	Households	Average household size	% Females
Emthanjeni	35 549 ♦	7 761	4.58	52%
Kareeberg	9 486	2 258	4.20	53%
NCDMA07	3 175	887	3.58	45%
Renosterberg	9 069	2 278	3.98	51%
Siyancuma	35 809 ♦	7 383	4.85	51%
Siyathemba	17 513	4 111	4.26	51%
Thembelihle	13 986	2 988	4.68	51%
Ubuntu	16 376	3 521	4.65	52%
Umsobomvu	23 640 ♦	5 083	4.65	52%
<b>Pixley</b>	<b>164 603</b>	<b>36 270</b>	<b>4.52</b>	<b>51%</b>

The age structure of the PKSDM population is similar to that of the NCP, with ~ 16% of the population between 0-6 years old, while 8% are 60 years old or older. A further 31% are in the school going age group of 7 to 19 years. The economically active age group of 20 to 59 years old accounts for almost half the population

(46%). The implications of this population structure are a higher demand on the provision of social and physical facilities, like schools, primary health care centres, etc. in the district (PKSDM IDP 2008/2009).

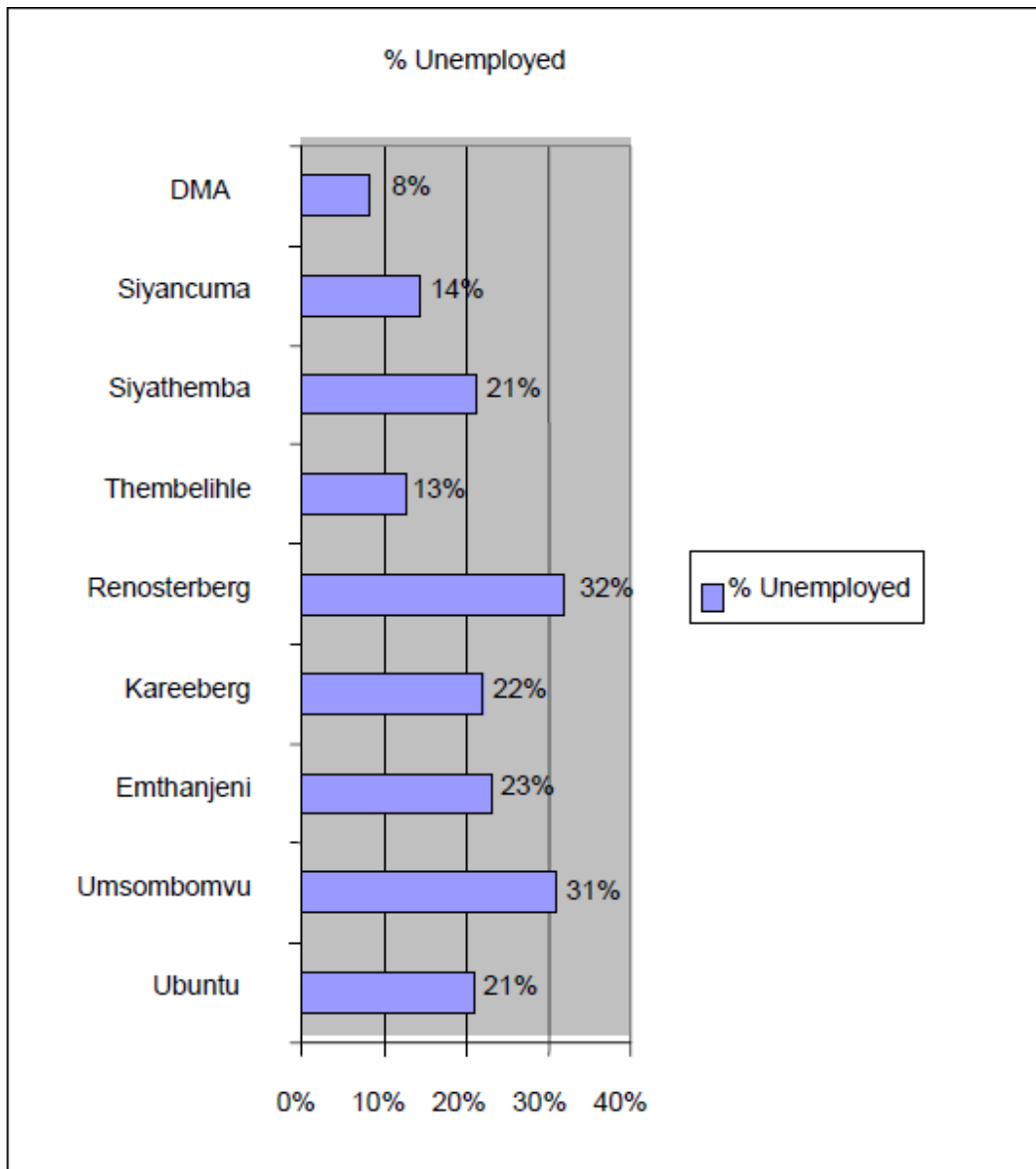
Notwithstanding the low population growth, the prevalence rate of HIV is a major factor in shaping future population estimates. The HIV/AIDS prevalence rate of PKSDM in 2001 was only marginally lower than the Northern Cape average (14.4% compared to 15.85% respectively), and well below the South African prevalence rate of 24.5%. Although not high by comparison to South Africa the PKSDM IDP notes that HIV/AIDS will impact on the growth and welfare of the PkSDM population.

### **Employment**

According to the Census 2001 data the unemployment rate in the PKSDM was 21%<sup>8</sup>. The rate for the SLM was 14%. Figure 3.6 provides information on the unemployment rates in each of the 8 LMs in the PKSDM. In terms of employment the agricultural sector was the most important economic sector in the PKSDM accounting for ~ 39 % of the total working population. The commercial services sector accounted for ~ 23 % of the employment opportunities. These two sectors combined therefore accounted for ~ 62 % of all the employment opportunities in the area.

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<sup>8</sup> A more recent estimate indicated an unemployment rate of 37% (PkSDM IDP 2010/ 2011).

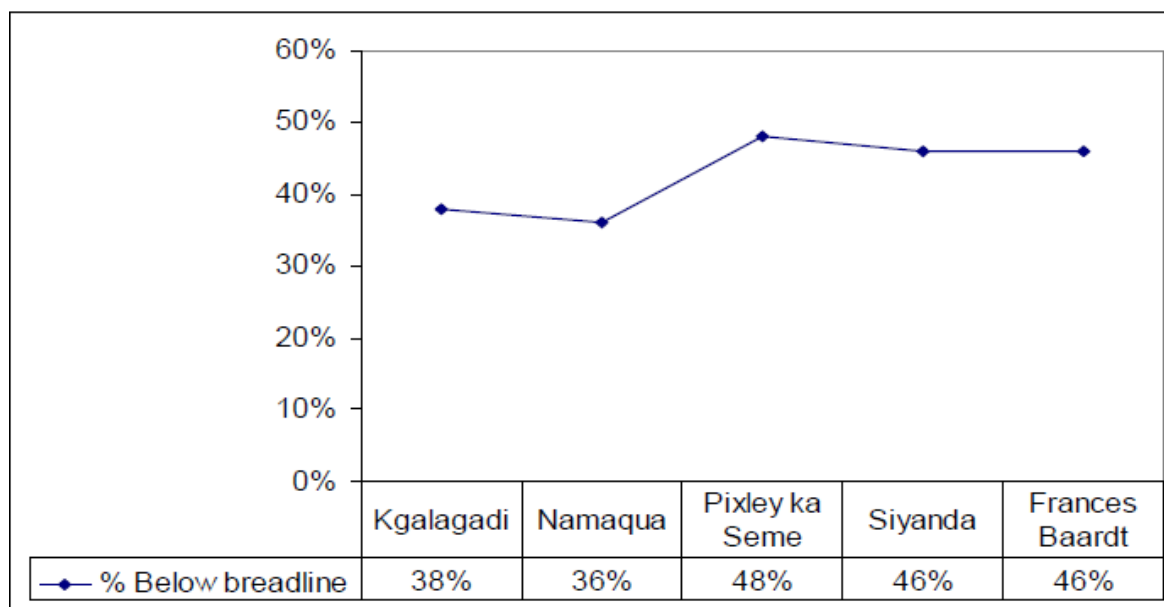


**Figure 3.6: Unemployment rates in the 8 LMAs that make up the PKSDM Household income** (Source: PKSDM IDP 2008/2009)

Although the PKSDM only had an official unemployment rate of ~ 21%, household income levels in the region are low. In this regard ~ 64% of households had an income of R1 000 or less per month compared to the Northern Cape average of 54% of households below this level. The figure for the SLM is ~ 69% (Table 3.3). The PKSDM also has the highest percentage of households (48 %) in the Northern Cape Province that earn less than R 800 per month, which is regarded as the poverty breadline in South Africa (Figure 3.7) (PKSDM IDP 2008/2009).

**Table 3.3: Household income levels in the 8 LMs that make up the PKSDM**  
*Source: PKSDM IDP 2008/2009*

Municipality	R500 and below	R501-1000	R1001-1500	Above R1500
Emthanjeni	37%	17%	13%	34%
Kareeberg	45%	22%	11%	22%
NCDMA07	39%	27%	12%	22%
Renosterberg	49%	20%	10%	21%
Siyancuma	50%	19%	11%	20%
Siyathemba	40%	23%	13%	25%
Thembelihle	41%	22%	12%	25%
Ubuntu	44%	22%	12%	22%
Umsobomvu	53%	18%	11%	18%
<b>PIXLEY</b>	<b>44%</b>	<b>20%</b>	<b>12%</b>	<b>24%</b>
<b>Northern Cape</b>	<b>36%</b>	<b>18%</b>	<b>13%</b>	<b>34%</b>



**Figure 3.7: Percentage of households with an income below the poverty baseline by district within the Northern Cape Province** (*Source: PKSDM IDP 2008/2009*).

In 2005/6, there was a total of 31 726 indigent households in Pixley ka Seme District, which amounted to 42% of all households. This indicates the level of poverty in the district. Nevertheless, the HIV/AIDS prevalence rate is 14.4% in Pixley ka Seme District, well below the South African prevalence rate of 24.5%. (42) (UOFS; 2007).

### Education

Based on Census 2001 data, ~ 25 % of the PkSDM population had no education, while 35% only had primary level of qualifications. Of the total population only 5.0 % had gained a matric qualification and 2.6% had a degree. The figures are essential

the same for the SLM, namely 26% and 35% respectively. The education levels in the region are low and can be attributed to the rural nature of the area together with the substantial number of previously disadvantaged population groups who did not have equal access to education in the past era.

According to the Municipal Profiles of 2002, the primary school population represented 46.3 % of the total population of the district. There are 49 primary schools and 18 secondary schools and combined schools in the district. While the actual number of schools is generally satisfactory there is an acute shortage of schools in the remote areas of the district. As a result children often have to walk long distances to reach schools (PKSDM IDP 2008/2009).

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## SECTION 4: IDENTIFICATION OF KEY ISSUES

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### 4.1 INTRODUCTION

Section 4 identifies the key social issues that will need to be assessed by the SIA specialist study during the EIA phase. In identifying the key issues the following assumptions are made:

- The area identified for the proposed SEF meets the technical criteria (including annual solar insolation) required for such facilities;
- The issues associated with the proposed facility are likely to be similar to the issues associated with other SEFs in the Northern Cape and other parts of South Africa.

### 4.2 IDENTIFICATION OF KEY SOCIAL ISSUES

The identification of key social issues that need to be assessed during the EIA includes:

- The policy and planning related issues;
- Local, site-specific issues.

#### 4.2.1 Policy and planning issues

The review of key national and provincial level energy policy documents indicated that the development of energy from renewable sources is strongly supported at both levels.

At a national level the White Paper on Energy Policy (1998) notes:

- Renewable resources generally operate from an unlimited resource base and, as such, can increasingly contribute towards a long-term sustainable energy future;
- The support for renewable energy policy is guided by a rationale that South Africa has a very attractive range of renewable resources, particularly **solar** and wind and that renewable applications are in fact the least cost energy service in many cases; more so when social and environmental costs are taken into account.

The IRP 2010 also allocates 43% of new energy generation facilities in South Africa to renewables.

At a provincial level the NCPGDS notes that availability of inexpensive energy is a key requirement in order to promote economic growth in the Northern Cape. The NCGDS goes on to indicate that “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”.

At a local level the PKSDM IDP makes reference to need to consider access to electricity or alternative sources of energy for all. The SLM IDP 2010/ 2011 does not specifically refer to commercial renewable energy generation. However, the IDP for

the Emthanjeni Local Municipality, which is located immediately to the south-east of the SLM, identifies De Aar as a **Renewable Energy Hub**.

#### **4.2.2 Local and site specific issues**

Based on review of information relating to solar energy facilities and experience with SIA's undertaken for other solar energy facilities, the most important issues that are likely to be raised and will need to be assessed during the EIA include:

- Impact on rural sense of place (this will be closely linked to the visual impacts). The impact on sense of place is also linked to the associated power lines;
- Impact on tourism, both locally and regionally. This impact will be linked to the visual impacts and impact on the areas sense of place and the landscape. As indicated in the NCPGDP, tourism is one of the key economic sectors in the region;
- Impact on farming activities;
- Impact on property prices;
- Influx of job seekers into the area during the construction phase. The influx of job seekers may result in an increase in sexually transmitted diseases, including HIV/AIDS; increase in prostitution; increase in alcohol and drug related incidents; increase in crime; and creation of tension and conflict in the community;
- Creation of employment and business opportunities during the construction phase;
- Creation of employment and business creation opportunities during the operational phase;
- Creation of potential training and skills development opportunities for local communities and businesses;
- Potential up and down-stream economic opportunities for the local, regional and national economy;
- Benefits associated with the establishment of a Community Trust;
- Provision of clean, renewable energy source for the national grid.

In terms of potential impacts on local farmers in the area the following issues will need to be assessed:

- Potential threat to farm safety due to increased number of people in the area and construction workers;
- Potential stock losses (during the construction and operational phase);
- Potential damage to water and other farm infrastructure (during the construction and operational phase);
- Potential damage to roads by heavy equipment and increased traffic volumes (during the construction and operational phase);
- Potential impact on farming operations and loss of productive land (during the construction and operational phase).

### **4.3 APPROACH TO ASSESSING IMPACTS**

#### **Definition of social impacts**

Social change is recognised as a natural and on-going process, however, it is important to recognize and understand that projects have the potential to influence and alter both the rate and direction of social change. It is, therefore, important to recognize and understand that the development and implementation of projects can

result in specific social changes (both positive and negative) as opposed to merely being aware that development *per se* will be accompanied by social change.

Social impacts can be defined as the consequences to human populations of any public or private actions (these include policies, programs, plans and or projects) that alter the way in which people live, work, play, relate to one another, organize to meet their needs and generally live and cope as members of society. These impacts are felt at various levels, including, individual, family or household, community and organization or society level (Vanclay, 2002)<sup>9</sup>.

### Categories of social impacts

- **People's way of life** – how people live, work, play and relate to other people on a day-to-day basis;
- **Their culture** – shared beliefs, customs, values, and language or dialect;
- **Their community** – its cohesion, stability, character, services and facilities;
- **Their political system** – extent to which people are able to participate in decisions affecting their lives, the level of democratization and the resources available;
- **Their environment** – quality of the natural environment in which people live, including the air and water people use; the availability and quality of the food they eat; the level of hazard or risk, dust and noise they are exposed to; the adequacy of sanitation, their physical safety and their access and control over resources;
- **Their health and well-being** – health is defined as a state of complete physical, mental, social and spiritual well-being and not merely the absence of disease or infirmity;
- **Their personal and property rights** – particularly in cases where people are economically affected, or experience personal disadvantage, which may include a violation of their civil liberties.
- **Their fears and aspirations** – fears and perceptions about their safety and well-being and the future of their community, and their hopes for their future and the future of their children and the community.

The identification and assessment of social impacts will be guided by the Guidelines for specialist SIA input into EIAs adopted by DEA&DP in the Western Cape in 2007. The Guidelines are based on accepted international best practice guidelines, including the Guidelines and Principles for Social Impact Assessment (Inter-organizational Committee on Guidelines and Principles for Social Impact Assessment, 1994). The approach will include:

- Review of existing project information, including the Planning and Scoping Documents;
- Collection and review of reports and baseline socio-economic data on the area (IDPs, Spatial Development Frameworks etc., See Box 1);
- Site visit and interviews with key stakeholders in the area including local land owners and authorities, local community leaders and councillors, local resident associations and residents, local businesses, community workers etc;
- Identification and assessment of the key social issues and opportunities;

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<sup>9</sup> Vanclay, F. 2002. Conceptualising Social Impacts. *Environmental Impact Assessment Review*, 22. 183-221.



- Preparation of Draft Social Impact Assessment (SIA) Report, including identification of mitigation/optimization and management measures to be implemented.
- Finalisation of the SIA Report.

As indicated above, the detailed public consultation process will be undertaken during the EIA phase of the project.

**Box 1: Typical social and economic baseline information**

- Social and economic characteristics of the affected area;
- Demographic profile of the area (population numbers, race, age, gender, income, education and employment levels etc.);
- Policy and planning framework for the site and surrounds (see below);
- Social and economic trends (historic and current) in the affected area;
- Social and economic drivers, both current and historical, in the affected areas, including key economic sectors;
- Social context of how people run their lives and the key factors that affect them on a day-to-day basis (livelihood strategies);
- An understanding of social networks, intra- and inter-household, community and extend support systems affected by the proposed development;
- Institutional arrangements, structures and capacity of the local authorities;
- An understanding of the institutional, local leadership and other power relationships that may be affected by the development;
- Level of services (housing, water, electricity, schools, clinics, policing etc) and current state of infrastructure in the area;
- Social and economic initiatives and opportunities;
- Local, regional and national social and economic policies, programmes, and plans affecting the area;
- Individuals, communities, organisation's and institutions who are likely to be affected by the project/plan/policy, with specific emphasis on vulnerable individuals, communities, organisation's and institutions;
- Land uses and ownership patterns in the area;
- Use and access to natural resources and livelihood strategies, especially in rural areas; and,
- Cultural beliefs and value systems.

The identification and assessment of social impacts will be guided by the Guidelines for specialist SIA input into EIAs adopted by DEA&DP in the Western Cape. These guidelines are based on international best practice for SIA's. This will include:

- Identification of key interested and affected parties, specifically landowners;
- Meetings and interviews with interested and affected parties;
- Identification and assessment of key social issues based on feedback from key interested and affected parties.
- Recommendations regarding mitigation/optimisation and management measures to be implemented.

As indicated above, the detailed public consultation process by the SIA consultant will be undertaken during the EIA phase of the project.

#### **4.4 INFORMATION REQUIREMENTS**

The following typical, generic project information is required in order to inform the Social Impact Assessment.

##### ***Construction phase***

(Including all related infrastructure such as transmission lines, access roads, office and warehouse components)

- Comments received from I&APs during the public participation process, including comments reflected in the Final Scoping Report;
- A draft illustration (plan) of the proposed lay-out(s) of the solar panels (including an indication of the phasing sequence on the site), supporting structures and infrastructure;
- Duration of the construction phase (months);
- Number of people employed during the construction phase;
- Breakdown of number of people employed in terms of low skilled, semi-skilled and skilled;
- Estimate of the total wage bill for the construction phase and breakdown in % as per skills categories;
- Estimate of total capital expenditure for construction phase;
- Indication of where construction workers will be housed (on site or in nearest town?);
- Opportunities for on-site skills development and training;
- Description of the typical activities associated with the construction phase, specifically on-site construction activities. This includes a description of how the components associated with a SEF will be transported to the site and assembled on the site;
- The size of the vehicles needed to transport the components and the routes that will be used to transport the large components to the site, and an estimate of the number of vehicle trips required and duration of each trip;
- Information on the nature of the agreements with the affected landowners, specifically with regard to compensation for damage to land, infrastructure etc.

##### ***Operational phase***

- Operating budget per annum;
- Total number of people employed;
- Breakdown in terms of skills levels (see above);
- Annual wage bill;
- Typical activities associated with the operational phase;
- Information on opportunities for skills development and training;
- Typical lifespan of proposed SEF plant;
- Information on the lease / rental agreements with local landowners and or communities, specifically with regard to issues relating to compensation for damage to infrastructure and loss of livestock etc. This information is required so as to indicate how local landowners and communities stand to benefit from the project.

## ANNEXURE A

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