

**SOCIAL IMPACT ASSESSMENT**  
**FOR**  
**HEUNINGSPRUIT 50MW PV**  
**SOLAR FACILITY**  
**FREE STATE PROVINCE**

**FEBRUARY 2023**

**Prepared for**  
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# **EXECUTIVE SUMMARY**

## **INTRODUCTION**

CRRENEWABLES (Pty) Ltd was appointed by Contrarians Capital Holdings (Pty) Ltd (Hereafter referred to as CCH) as the lead consultant to manage the Basic Assessment (BA) process for the development of a new Heuningspruit 50MW Photovoltaic (PV) Solar Energy Facility (SEF) and associated infrastructure.

The proposed PV site is located in farm Voorspoed 1508 and Verdun 1151. It is near Koppies, within Ngwathe Local Municipality (NLM) Free State Province.

It is important to note that the project was initially proposed at 5MW capacity and was issued with an Environmental Authorisation (EA) in 2014. Unfortunately due to unforeseen circumstances the EA lapsed. This process serves to re-apply for such authorisation and applicable water use authorisations.

As it was mentioned above that EA was issued in 2014, it is also important to note that the Social Impact Assessment (SIA) was also done in 2013. The SIA was conducted in 2013 by Mr Tony Barbour. CRRenewables, as the appointed to manage the current project, appointed Beverley Monametsi Consulting (Pty) Ltd (hereafter referred to as BMC) to re-assess the above mentioned specialist study to check whether is still valid to cover the requirement of this project. This is a revised / or re-assessed Heuningspruit Social Impact Report. CCRenewables and BMC would like to acknowledge the work done previously by Mr Tony Barbour.

## **PROJECT DESCRIPTION**

The components associated with each of the 50MW SEF would include:

- Photovoltaic (PV) panel up to 5m high (fixed or tracking) with a capacity of up to 50MW and a footprint of 30 ha;
- Mounting structures to be either rammed steel piles or piles with pre-manufactured concrete footing to support the PV panels;
- Cabling between the project components, to be lain underground;
- Inverters/Transformer enclosures;
- An on-site switching station up to 88kV in capacity;
- An overhead power line of approximately 250m in length to tie into the existing Heuningspruit Rural-Syferfontien Traction 88kV Eskom power line on site
- Internal access roads;
- Fencing;
- Workshop area for maintenance, storage, offices and small modular water filtration or de-ionisation unit;
- Parking and water storage tanks.

Based on the information from other SEF projects the construction phase for 50 MW SEF is expected to extend over a period of 12-24 months and create approximately 50 employment opportunities. The operational phase will employ approximately 15 people

full time for a period of up to 20 years. The capital expenditure on completion is anticipated to be in the region of R 250 million, approximately, for a 50 MW facilities.

## **APPROACH TO THE STUDY**

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

- Describing and obtaining an understanding of the proposed intervention (type, scale, location), the communities likely to be affected and determining the need and scope of the SIA;
- Collecting baseline data on the current social environment and historical social trends
- Identifying and collecting data on the Social Impact Assessment variables and social change processes related to the proposed intervention. This requires consultation with affected individuals and communities;
- Assessing and documenting the significance of social impacts associated with the proposed intervention; and
- Identifying alternatives and mitigation measures.

In this regard the study involved:

- Review of demographic data for the study area;
- Review of relevant planning and policy frameworks for the area;
- Site specific information collected during the site visit to the area and interviews with key stakeholders;
- Review of information from similar projects; and
- Identification of social issues associated with the proposed project.

The key social issues associated with the construction phase include:

## **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 planning**

The key documents reviewed included:

- The National Development Plan (2030);
- The National Energy Act (2008);

- 
- The White Paper on the Energy Policy of the Republic of South Africa (December 1998);
  - The White Paper on Renewable Energy (November 2003);
  - Integrated Resource Plan (IRP) for South Africa (2019);
  - Free State Provincial Growth and Development Strategy (2013);
  - Ngwathe Local Municipality Integrated Development Plan (2021-2026); and
  - Ngwathe Local Municipality Local Economic Development Strategy (2009).

The findings of the review of the relevant policies and documents pertaining to the energy sector therefore indicate that renewable energy and the establishment of SEF is supported at a national, provincial and local level. It is therefore the opinion of the authors that the establishment of a solar park is supported by national, provincial and local policies and planning guidelines.

In addition, apart from potentially enabling the NLM (a signatory to the 2011 Durban Climate Change Adaptation Charter for Local Governments) to support commercial renewable energy development in its area, the proposed development may also make a modest contribution towards meeting key LED and IDP objectives related to local employment, training and SME development. Based on this it is reasonable to assume that the establishment of the proposed Heuningspruit 50 MW PV SEF is supported.

### **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 for Heuningspruit 50 MW PV SEF is expected to extend over a period of 12 months and create approximately 50 employment opportunities. It is anticipated that approximately 60 % (30) of the employment opportunities will be available to low skilled (construction labourers, security staff etc.), 25% (12) to semi-skilled workers (drivers, equipment operators etc.) and 15% (8) to skilled personnel (engineers, land surveyors, project managers etc.). The majority of the low-skilled employment opportunities associated with construction phase are, therefore, likely to be available to members from the local community. In this regard the majority of the beneficiaries are likely to be historically disadvantaged (HD) members of the local communities. The low education and skills levels in the area may however hamper potential opportunities for local communities. The majority of the skilled and semi-skilled opportunities are likely to be associated with the contactors appointed to construct the facility and associated infrastructure.

The total wage bill for the construction phase will be in the region of R 6 million. The injection of income into the area in the form of wages and rental for accommodation will create opportunities for local businesses in Koppies and Kroonstad. 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 phase. The benefits to the local economy will be confined to the construction period (12 months).

The implementation of the proposed enhancement measures listed in the report would enable the establishment of the proposed solar park to support co-operation between the public and private sectors in order for the economic development potential of the Free State to be realised. In this regard the FSPGDS highlights the importance of enterprise development, and notes that the current levels of private sector development and investment in the province are low. The proposed solar park therefore has the potential to create opportunities to promote private sector investment and the development of SMMEs in the Free State Province.

The capital expenditure on completion is anticipated to be in the region of more than R 250 million 50 MW facility. However, given the technical nature of the project and high import content associated with solar energy projects the potential opportunities for the NLM economy will be limited. However, opportunities are likely to exist for local contractors and engineering companies in Kroonstad and Koppies.

**Potential negative impacts**

- Influx of construction workers employed on the project;
- Increased risk of stock theft, poaching and damage to farm infrastructure associated with construction workers;
- Increased risk of veld fires associated with construction related activities;
- Impact of heavy vehicles, including damage to roads, safety, noise and dust;
- Loss of agricultural land associated with construction related activities.

The significance of the potential negative impacts with mitigation was assessed to be of Low significance. The majority of the potential negative impacts can therefore be effectively mitigated if the recommended mitigation measures are implemented. However, the impact on individuals who are directly impacted on by construction workers and or job seekers (i.e. contract HIV/ AIDS) was assessed to be of Medium-High negative significance. In addition, due to the low population density of the area and the relatively small size of the labour force (50) associated with the construction of Heuningspruit PV 1 and PV 2 the potential risk to local family structures and social networks is regarded as low. Table 1 summarises the significance of the impacts associated with the construction phase.

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

<b>Impact</b>	<b>Significance No Mitigation</b>	<b>Significance With Mitigation</b>
<b>Creation of employment and business opportunities</b>	Low (Positive impact)	Medium (Positive impact)

<b>Presence of construction workers and potential impacts on family structures and social networks</b>	Low (Negative impact for community as a whole) Medium-High (Negative impact of individuals)	Low (Negative impact for community as a whole) Medium-High (Negative impact of individuals)
<b>Risk of stock theft, poaching and damage to farm infrastructure</b>	Medium (Negative impact)	Low (Negative impact)
<b>Risk of veld fires</b>	Medium (Negative impact)	Low (Negative impact)
<b>Impact of heavy vehicles and construction activities</b>	Low (Negative impact)	Low (Negative impact)
<b>Loss of farmland</b>	Medium (Negative impact)	Low (Negative impact)

### **Operational phase**

The key social issues affecting the operational phase include:

#### **Potential positive impacts**

- Creation of employment and business opportunities. The operational phase will also create opportunities for skills development and training;
- Benefits associated with the establishment of a community trust.
- The establishment of infrastructure to generate renewable energy.

The total number of permanent employment opportunities is estimated to be in the region of 15 (Heuningspruit 50 MW PV SEF). Of this total approximately 80% will be low and medium-skilled and 20% high skilled positions. The majority of the beneficiaries are therefore likely to be historically disadvantaged (HD) members of the community. Over time it will also be possible to increase the number of local employment opportunities through the implementation of a skills development and training programme linked to the operational phase. Such a programme would support the strategic goals of promoting local employment and skills development contained in the NLM IDP and the FSPGDP.

The establishment of a Community Trust also creates an opportunity to support local economic development in the area. Community Trusts provide an opportunity to generate a steady revenue stream that is guaranteed for a 20 year period. The revenue from the proposed solar plant can be used to support a number of social and economic initiatives in the area, including:

- Creation of jobs;
- Education;
- Support for and provision of basic services;
- School feeding schemes;
- Training and skills development;
- Support for SMME's.

The long term duration of the revenue stream associated with a solar plant linked Community Trust also enables local municipalities and communities to undertake long term planning for the area. Experience has however also shown that Community Trusts can be mismanaged. This issue will need to be addressed in order to maximise the potential benefits associated with the establishment of a Community Trust.

The proposed development also represents an investment in infrastructure for the generation of clean, renewable energy, which, given the challenges created by climate change, represents a positive social benefit for society as a whole.

**Potential negative impacts**

- The visual impacts and associated impact on sense of place and the landscape;
- Impact on tourism.

The visual impacts on landscape character associated with large renewable energy facilities, such as solar thermal plants, are highlighted in the research undertaken by Warren and Birnie (2009). In the South African context, the majority of South Africans have a strong connection with and affinity for the large, undisturbed open spaces that are characteristic of the South African landscape. The impact of solar energy plants on the landscape is therefore likely to be a key issue in South Africa, specifically given South African’s strong attachment to the land and the growing number of solar energy applications. The visual impacts associated with the proposed Heuningspruit 50 MW PV SEF are, however, likely to be low due to the existing power lines in the area and the relatively small size of the facility. The significance of the impacts associated with the operational phase are summarised in Table 2.

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

<b>Impact</b>	<b>Significance No Mitigation</b>	<b>Significance With Mitigation</b>
<b>Creation of employment and business opportunities</b>	Low (Positive impact)	Medium (Positive impact)
<b>Benefits associated with the establishment of a community trust</b>	Medium (Positive impact)	Medium (Positive impact)
<b>Establishment of infrastructure for the generation of renewable energy</b>	Medium (Positive impact)	Medium (Positive impact)
<b>Visual impact and impact on sense of place</b>	Medium (Negative impact)	Low (Negative impact)
<b>Impact on tourism</b>	Low (Positive and Negative)	Low (Positive and Negative)

**Cumulative Impacts**

The cumulative impacts associated with solar energy facilities, such as the proposed Heuningspruit SEF, are largely linked to the impact on sense of place and visual impacts. In the case of the proposed Heuningspruit SEF the visual character of the area has been impacted by the Johannesburg railway line, Heuningspruit Station, a large silo-complex, two existing power lines across Voorspoed, and the Heuningspruit substation. The significance of the potential cumulative social impacts, specifically the impact on the landscape, was rated to be low.

However, it is recommended that the environmental authorities consider the overall cumulative impact on the rural character and the areas sense of place before a final decision is taken with regard to the optimal number of solar energy facilities in the area. In addition, the siting and number of individual components of the plant should be informed by findings of the relevant VIAs, specifically with respect to the visual impact on farmsteads and important roads in the area.

### **Transmission lines**

The findings of the SIA indicate that the impacts associated with the proposed overhead power line will be low.

### **No-Development Option**

The No-Development option would represent a lost opportunity for South Africa to supplement its current energy needs with clean, renewable energy. Given South Africa's position as one of the highest per capita producer of carbon emissions in the world, this would represent a negative social cost. However, the overall contribution in terms of renewable energy is low (50MW).

The no-development option also represents a lost opportunity in terms of the employment and business opportunities (construction and operational phase) associated with the proposed solar park and the benefits associated with the establishment of a Community Trust. This also represents a negative social cost.

### **Decommissioning phase**

Due to the relatively small number of people affected (15) the social impacts associated with the decommissioning of the facility are likely to be low. In addition, the potential impacts can be effectively managed with the implementation of a retrenchment and downscaling programme. With mitigation, the impacts are assessed to be Low (negative).

CCH should also investigate the option of establishing an Environmental Rehabilitation Trust Fund to cover the costs of decommissioning and rehabilitation of disturbed areas. The Trust Fund should be funded by a percentage of the revenue generated from the sale of energy to the national grid over the 20 year operational life of the facility. The rationale for the establishment of a Rehabilitation Trust Fund is linked to the experiences with the mining sector in South Africa and failure of many mining companies to allocate sufficient funds during the operational phase to cover the costs of rehabilitation and closure.



## CONCLUSIONS AND RECOMMENDATIONS

The findings of the SIA indicate that the development of the proposed Heuningspruit 50 MW PV SEF would create employment and business opportunities for locals during both the construction and operational phase of the project. The establishment of a Community Trust funded by revenue generated from the sale of energy will also create an opportunity to support local economic development in the area. This represents a social benefit for an area where there are limited opportunities.

The proposed development also represents an investment in clean, renewable energy infrastructure, which, given the challenges created by climate change, represents a positive social benefit for society as a whole. The establishment of the proposed Heuningspruit 50 MW PV SEF is therefore supported by the findings of the SIA.

## IMPACT STATEMENT

The findings of the SIA undertaken for the proposed Heuningspruit 50 MW PV SEF indicate that the potential social benefits associated with the projects outweigh the potential negative social impacts. The establishment of a Community Trust also creates an opportunity to support local economic development in the area. The proposed development also represents an investment in clean, renewable energy infrastructure, which, given the challenges created by climate change, represents a positive social benefit for society as a whole.

It is therefore recommended that the Heuningspruit 50 MW PV SEF as proposed be supported, subject to the implementation of the recommended mitigation measures and management actions contained in the report.

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## ACRONYMS

DEA&DP	Department of Environmental Affairs and Development Planning (Western Cape)
DM	District Municipality
DoE	Department of Energy
EIA	Environmental Impact Assessment
FDDM	Fezile Dabi District Municipality
FSPGDS	Free State Provincial Growth and Development Strategy
GDPR	Gross Domestic Product of the Region
HDI	Human Development Index
IDC	Industrial Development Corporation of South Africa
IDP	Integrated Development Plan
IPP	Independent Power Producer
IRP	Integrated Resource Plan
kV	Kilovolts
LED	Local Economic Development
LM	Local Municipality
MW	Megawatt
NLM	Ngwathe Local Municipality
PGDS	Provincial Growth and Development Strategy
PV	Photovoltaic
SEF	Photovoltaic solar energy facility
RBS	Revised Balanced Scenario
SDF	Spatial Development Framework
SIA	Social Impact Assessment

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## **SECTION 1: INTRODUCTION**

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### **1.1 INTRODUCTION**

CRRenewables (Pty) Ltd was appointed by Contrarians Capital Holdings (Pty) Ltd (Hereafter referred to as CCH) as the lead consultant to manage the Basic Assessment (BA) process for the development of a new Heuningspruit 50MW Photovoltaic (PV) Solar Energy Facility (SEF) and associated infrastructure.

The proposed PV site is located in farm Voorspoed 1508 and Verdun 1151. It is near Koppies, within Ngwathe Local Municipality (NLM) Free State Province.

It is important to note that the project was initially proposed at 5MW capacity and was issued with an Environmental Authorisation (EA) in 2014. Unfortunately due to unforeseen circumstances the EA lapsed. This process serves to re-apply for such authorisation and applicable water use authorisations.

As it was mentioned above that EA was issued in 2014, it is also important to note that the Social Impact Assessment (SIA) was also done in 2013. The SIA was conducted by Tony Barbour and he compiled a specialist report. CRRenewables, as the appointed to manage the current project, appointed Beverley Monametsi Consulting (Pty) Ltd (hereafter referred to as BMC) to review the mentioned specialist report. This is a reviewed Heuningspruit Social Impact Report. CRRenewables and BMC would like to acknowledge the work done by Tony Barbour and for the compilation of the report.



**Figure 1.1: Regional location of proposed 50 MW PV SEF**

## **1.2 TERMS OF REFERENCE**

The terms of reference for the SIA require:

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

## **1.3 PROJECT LOCATION AND CURRENT LAND USES**

The Heuningspruit study area is located in the Ngwathe Local Municipality (NLM) in the north of the Free State Province. The seat of the NLM is Parys, approximately 60 km to the north. Kroonstad (Moghaka municipality), the third largest town in the Free State Province (FSP), is the nearest large town.

The Heuningspruit 50 MW PV SEF project is proposed on Farm Voorspoed 1508 and Farm Verdun RE/ 1511, located immediately to the west of the small rural railway settlement of Heuningspruit. The location of the site is illustrated in Figure 1.2.



**Figure 1.2: Location of proposed 50MW PV Solar Facility**

The context is rural, with extensive agriculture the key land use activity. As for much of the northern Free State Province, mixed livestock and dryland/ centre pivot irrigation operations are typical. The study area falls within one of the country’s most productive agricultural regions, and the land in the general area is consequently extensively disturbed (by ploughing). The landscape is generally flat and featureless, dotted by large clusters of mature *Eucalyptus* groves generally indicating historic farmsteads (Photograph 1.1). The study area settlement pattern is sparse and typically concentrated on a few large farms, with other farms serving as grazing or cropping posts mainly. Labourers typically live in large clusters on the few primary farms (Photograph 1.2).



**Photograph 1.1: Typical landscape in the study area**



**Photograph 1.2: Labourers' housing on Katbos Farm, ~2 km south of the PV site**

Heuningspruit Station is located approximately midway (30 km) between the towns of Kroonstad (south) and Koppies (north) along the Johannesburg line. The R82 (Kroonstad-Koppies) runs parallel to the east of the railway line, ~500 m to the east of the PV site). Heuningspruit consists of the station building and approximately 20 other buildings on either side of the railway line. Senwes Grainlink's Heuningspruit large silocomplex is located ~700 m south of the station (Photograph 1.3). Apart from the silo complex, the station itself, an SAPS station and approximately 4 permanently inhabited dwellings, Heuningspruit Station is largely a ghost settlement, and most of the buildings are vacant or derelict. Kroonstad serves in the retail, services, social and other needs of the Heuningspruit area.





**Photograph 1.3: View across the PV site from the north-west with grain silos in the background**

The subject properties belong to Ms. Annette Wege, who also owns a number of other farms in the area, including adjacent to the west and north of the sites, as well as to the east of Heuningspruit Station. The PV site is currently used exclusively for grazing. The nearest adjacent landowners to the proposed site are located >5 to the north, ~4 km to the west (Mr. Kloppers, Mr. Marius Keeve), and ~2.5 km to the south (Mr. Pietie Keeve). To the east, potential receptors are associated with the Heuningspruit settlement. These include the property of Mr du Plessis, located ~130 m north-east of the PV1 site. Mr du Plessis resides on the property, and currently makes use of a portion of Voorspoed, including the PV site, for sheep grazing (by arrangement with Ms Wege).

Eskom's 88/11 kV Heuningspruit substation is located on a portion of Voorspoed, directly north of the PV site, west of the Heuningspruit Station (Photograph 1.4). Voorspoed is currently traversed by 88 a kV line, near to, and parallel with its boundary with Verdun. An 11 kV line is also located on the portion of Voorspoed immediately to the south of the Heuningspruit-N1 gravel road.



**Photograph 1.4: View across PV site from the north with Heuningspruit substation on the left**

The site is easily accessible from both the N1 to the west (~6 km link) and the R82 Kroonstad-Koppies road. The link from the N1 is untarred. The R82 Kroonstad-Koppies road is currently promoted as an (Anglo-Boer War) Battlefield Route.

The nearest Boer War sites are located near Rooiwal station, just to the south of Koppies (~20 km north of Heuningspruit), and consequently not of relevance to the study. No other significant tourism uses (game farms, lodges, water sport, heritage, etc) are located in meaningful proximity of the subject sites. See Sections 2.4. and 2.5. for a more detailed overview of study area communities, land uses and potential receptors.

#### **1.4 PROJECT DESCRIPTION**

The proposed Heuningspruit PV SEF would have an installed capacity of 50 MW. The exact number and placement of photovoltaic cells associated with the SEF would be investigated in more detail during the EIA phase of the study. The energy would be evacuated into the Eskom. The project is therefore an Independent Power Producer (IPP) project.

Photovoltaic technology uses the energy from the sun to generate electricity through a process known as the Photovoltaic Effect. Simply speaking, this refers to light knocking electrons into a higher state of energy to create electricity, best illustrated by the small photovoltaic cell on hand held solar calculators. A photovoltaic array typically consists of the following components (Figure 1.3 and 1.4). Figure 1.4 illustrates an example of tracking PV technology.

### **Photovoltaic Cells**

A photovoltaic (PV) cell can consist of a thin film technology or polycrystalline silicone cell which acts as a semiconductor used to produce the photovoltaic effect. Individual PV cells are linked and placed behind a protective glass sheet to form a photovoltaic panel. Other technologies that can be used include thin film.

### **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.

### **Support Structure**

The PV panels will be attached to a support structure approximately 3.4 meters off the ground set at an angle so to receive the maximum amount of solar radiation. 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.

The PV panels are designed to operate continuously for more than 20 years, unattended and with low maintenance.



**Figure 1.3: Stationary solar PV panels.**



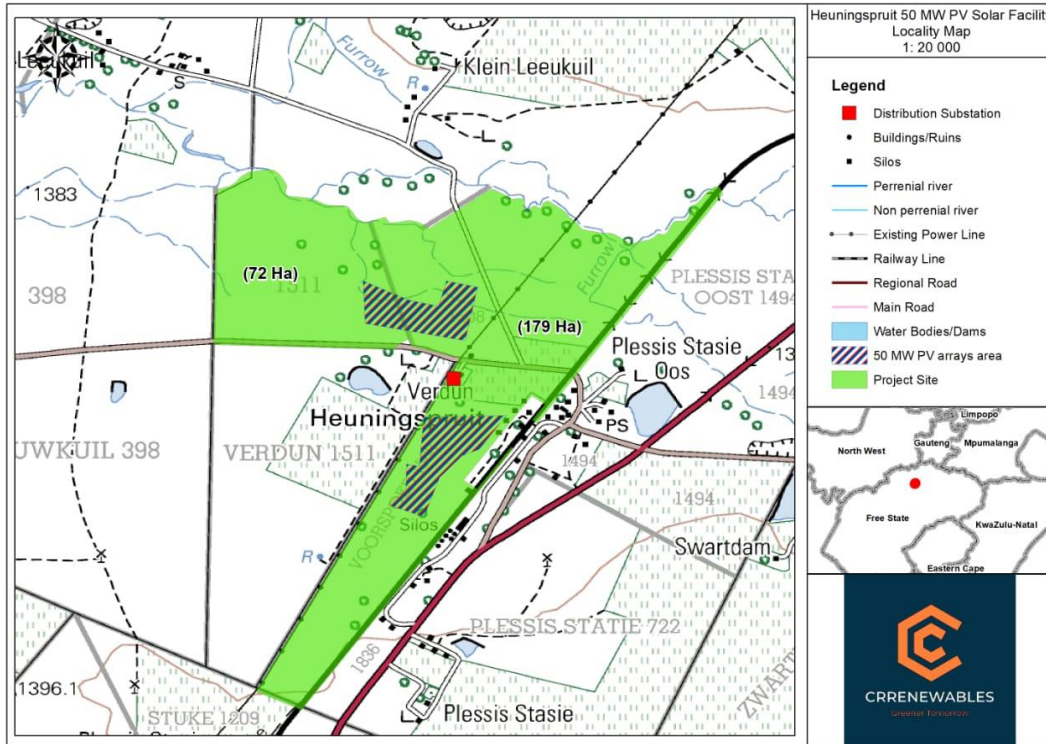
**Figure 1.4: Illustration of a tracking solar energy facility (Courtesy of Amonix™)**

The location of PV on the site is illustrated in Figure 1.5

The components associated with Heuningspruit 50 MW PV SEF would include:

- Photovoltaic (PV) panels up to 5m high (fixed or tracking) with a capacity of up to 50MW;
- Mounting structures to be either rammed steel piles or piles with pre-manufactured concrete footing to support the PV panels;
- Cabling between the project components, to be lain underground;
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- An on-site switching station up to 88kV in capacity;
- An overhead power line of approximately 250m in length to tie into the existing Heuningspruit Rural-Syferfontien Traction 88kV Eskom power line on site;
- Internal access roads;
- Fencing;
- Workshop area for maintenance, storage, offices and small modular water filtration or de-ionisation unit;
- Parking and water storage tanks.

Based on the information from other SEF projects the construction phase for 50 MW SEF is expected to extend over a period of 12-36 months and create approximately 15-20 employment opportunities approximately. The operational phase will employ approximately 15 people full time for a period of up to 20 years (see IDC and others, 2009).



**Figure 1.5: Location of Heuningspruit PV1 SEF site**

## 1.5 APPROACH TO STUDY

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

- Describing and obtaining an understanding of the proposed intervention (type, scale, location), the settlements and communities likely to be affected by the proposed project;
- Collecting baseline data on the current social and economic environment;
- Identifying the key potential social issues associated with the proposed project. This involved a site visit to the area and consultation with affected individuals and communities;
- Assessing and documenting the significance of social impacts associated with the proposed intervention;
- Identifying alternatives and mitigation measures;

In this regard the study involved:

- Review of demographic data from the Census Survey;
- Review of relevant planning and policy frameworks for the area;
- Review of information from similar studies, including the EIAs undertaken for other renewable energy projects, including wind energy facilities;
- Site visit and interviews with key stakeholders;
- Identification and assessment of the social issues associated with the proposed project.

Annex A contains a list of stakeholders interviewed and secondary information reviewed. Annex B summarises the assessment methodology used to assign significance ratings to the assessment process.

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

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

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

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

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

### **1.5.2 Timing of social impacts**

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

## **1.6 ASSUMPTIONS AND LIMITATIONS**

The key social issues associated with the construction phase include:

### **1.6.1 Assumptions**

#### **Strategic importance of the project and no-go option**

It is assumed that the strategic importance of promoting renewable energy, including solar energy, is supported by the national and provincial energy policies.

#### **Technical suitability**

It is assumed that the development site identified represents a technically suitable site for the establishment of a solar energy plant.

#### **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 such facilities.

### **1.6.2 Limitations**

#### **Demographic data**

The Census 2011 information presented below is at local municipal level as opposed to Ward level. The StatsSA Municipal Fact Sheet (2013) was used as key reference.

## **1.7 SPECIALIST DETAILS**

The lead author of this report is an independent specialist with 15 years' experience in the field of environmental management. Her qualifications include a BSc, B Sc (Hons) and an MSc in Water Resource Management. In terms of SIA experience, Beverley Monametsi has 5 years' experience in the field of Environmental Impact Assessment.

## **1.8 DECLARATION OF INDEPENDENCE**

This confirms that Beverley Monametsi, the specialist consultant responsible for reviewing the study and the Draft SIA Report, is independent and do not have vested or financial interests in proposed SEF being either approved or rejected.

## **1.9 REPORT STRUCTURE**

The report is divided into five sections, namely:

- Section 1: Introduction
- Section 2: Overview of the study area
- Section 3: Summary of key policy and planning documents relating to solar energy and the area in question
- Section 4: Identification and assessment of key social issues
- Section 5: Summary of key findings and recommendations



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## SECTION 2: OVERVIEW OF STUDY AREA

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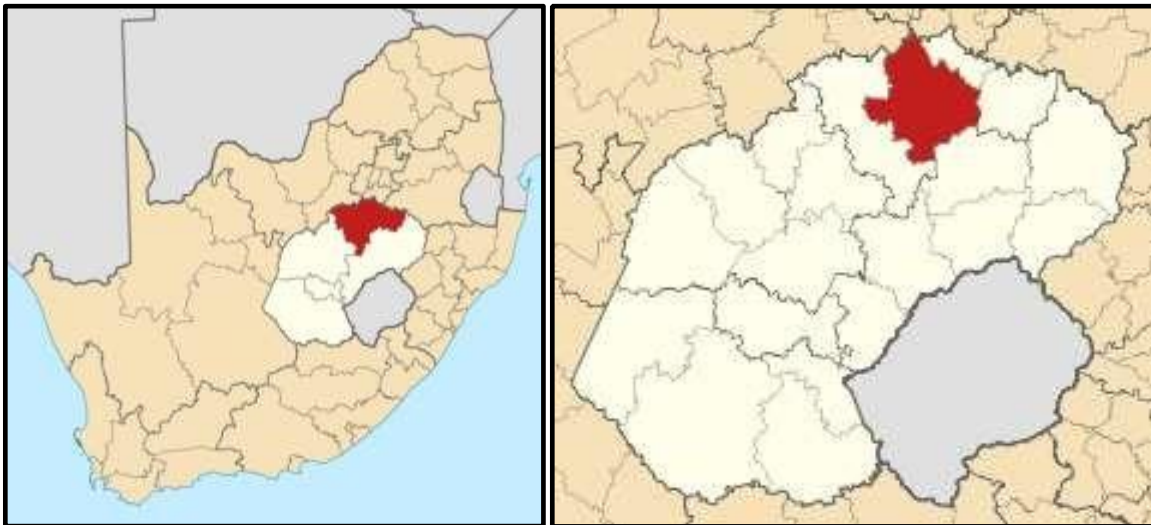
### 2.1 INTRODUCTION

Section 3 provides an overview of the study area with regard to:

- The relevant administrative context;
- Road access to the study area;
- The study area communities;
- Key potential receptors;
- The municipal socio-economic context.

### 2.2 ADMINISTRATIVE CONTEXT

The Heuningspruit study area is located in Ward 20 of the Ngwathe Local Municipality (FS203) in the northern part of the Fezile Dabi District Municipality (FDDM) in the northern Free State Province (FSP) (Figure 2.1). The seat of the NLM is Parys, located along the Vaal River, approximately 60 km (linear) to the north of the Heuningspruit PV sites. Kroonstad (Moghaka LM), the third largest town in the Free State Province (FSP), also located in the FDDM, is the nearest large town in the study area.



**Figure 2.1: The location of FDDM (left) and Ngwathe LM (right) within the FSP**  
(Source: Wikipedia)

The NLM is 7 055.0277 km<sup>2</sup> in extent, and largely rural in nature. The key towns in the NLM are Parys, Heilbron, Koppies, Vredefort, and Edenville. The N1 national road traverses the NLM from north to south. The Vaal River forms the northern boundary of the NLM, which also serves as the boundary between the FSP, Gauteng and the North

West Province. The NLM is further drained by the Renoster River, which is impounded in a series of dams (Weltevrede, Rooipoort and Koppies Dams) near Koppies.

The NLM's key economic sectors are agriculture, manufacturing and commercial activities. Parys has a strong commercial component and provides a wide range of services regarding health, education and professional services to the FDDM. Agriculture is the undisputed backbone of the NLM economy, with the region one of the country's foremost maize and sunflower producing areas. Key tourism attractions in the NLM include the Vredefort Dome (a UNESCO World Heritage Site), the Vaal River and dams (recreation), and Anglo-Boer battlefield sites. Proximity to Gauteng has seen the NLM grow in importance as weekend tourism destination over the past decade, including with regard to the development of game farms and lodges (none in meaningful proximity to PV site)<sup>1</sup>.

### **2.3 ROAD ACCESS & LOCAL TOURISM**

The Heuningspruit study area is easily accessible off both the N1 to the west (~6 km link) and the R82 Kroonstad-Koppies road (directly to the east of Heuningspruit station). The link from the N1 is untarred. The R82 Kroonstad-Koppies road is currently promoted as an (Anglo-Boer War) Battlefield Route, but the route is not well developed, and not the entire road is in a good state.

The nearest Boer War sites along the R82 are located near Rooiwal station, just to the south of Koppies (~20 km north of Heuningspruit), and consequently not of relevance to this study. No other significant tourism uses (game farms, lodges, water sport, heritage, etc) are located in meaningful proximity to the subject sites. Potential impacts on tourism activities are, therefore, not an area of concern with regard to the proposed development.

### **2.4 STUDY AREA COMMUNITIES AND LAND USE CONTEXT**

#### **2.4.1 Heuningspruit station**

Heuningspruit Station is located approximately midway (30 km) between the towns of Kroonstad (south) and Koppies (north) along the Johannesburg line (Photograph 2.1). The station is located to the west of the railway line. The station master lives on site.

<sup>1</sup> [www.localgovernment.co.za/locals/view/42/ngwathe-local-municipality](http://www.localgovernment.co.za/locals/view/42/ngwathe-local-municipality);  
[www.ngwathe.fs.gov.za/#tab1](http://www.ngwathe.fs.gov.za/#tab1)



**Photograph 2.1: View of Heuningspruit Station.**

Heuningspruit consists of the station building and approximately 20 other buildings on either side of the railway line. Senwes Grainlink's Heuningspruit large silo-complex is located ~700 m south of the station. The silos serve the local maize growing area as far east as Edenville, and represent the key economic activity in the settlement. The manager lives on site.

As recently as a decade or two ago, the settlement had a general store, a butcher, post office and school, in addition to a number of families living around the station (du Plessis; Wege – pers. comm). Today, apart from the silo complex, the station itself, an SAPS station (~300 m east of the railway line) and approximately 4 permanently inhabited dwellings, Heuningspruit settlement is largely a ghost town. Apart from the station master's house, only two further properties to the west of the railway line (i.e. same side as proposed PV projects) are inhabited. These include the property of Mr. Pieter du Plessis, whose family originally owned Heuningspruit and adjacent farms.

### **2.4.2 Rural Heuningspruit**

The Heuningspruit rural area is characterized by extensive agriculture, as typical of the northern FSP maize producing areas. Mixed livestock and dryland/ centre pivot irrigation cropping operations are typical. The landscape is generally flat and featureless, dotted by large clusters of mature *Eucalyptus* groves generally indicating historic farmsteads.

The study area settlement pattern is sparse and typically concentrated on a few large farms, with other farms serving as grazing or cropping posts mainly. Labourers typically live in large clusters on a few primary farms, and are transported to secondary farms on an as-needed basis.

### **2.4.3 Koppies**

Koppies is the nearest large town in the NLM to the Heuningspruit study area. Koppies was established in 1924 along the Cape-Johannesburg railway line, on the banks of the Renoster River. The town is located ~70 km south of Sasolburg, 61 km north of Kroonstad and 280 km north of Bloemfontein. Large industrial area in the Vaal Triangle (Vereeniging, Vanderbijlpark) in Gauteng are all within 90 km range.

Koppies is essentially an agricultural service centre for the surrounding rural area. Key agricultural products from its hinterland are maize, wheat, sorghum, sunflowers, and beef cattle. Three large irrigation schemes provide water to agricultural activities in the Koppies area. The town's strategic location between the larger centers of Kroonstad and Sasolburg have adversely influenced growth and development, specifically by contributing to the relatively low level of economic activity in the area. A large number of the town's inhabitants are employed in the Sasolburg area, and the town may be described as essentially a satellite/ dormitory town for the surrounding industrial areas (Ngwathe IDP, 2012).

Proposed Bentonite and coal mining operations in the vicinity of the town hold significant future growth potential ([www.ngwathe.fs.gov.za/#tab1](http://www.ngwathe.fs.gov.za/#tab1)). Koppies is becoming known for its tourist attractions. These are currently mainly anchored by recreational activities at the Koppies dam. Boer War sites are also located in the Koppies area, e.g. Rooiwal station.

### **2.4.4 Kroonstad**

Kroonstad is the nearest large town to the Heuningspruit study area, and serves in most of the study area's retail, services and social needs. Kroonstad (population of ~98 000 in 2011) was established in 1855 by the Irish pioneer Joseph Orpen and was the first town founded after the independence of the Orange Free State Republic (of which it was also briefly the capital in 1900). Kroonstad is the third-largest town in the Free State Province. The town is situated on the banks of the Vals River, a tributary of the Vaal, roughly two hours' drive from Johannesburg, halfway to Bloemfontein, and often used as a stop-over.

The town is the seat of the Moqhaka LM. It is the second largest urban centre in the Northern Free State (after Sasolburg) and an important railway junction on the main line from Cape Town to Johannesburg. The town is at the centre of a rich agricultural district, producing maize, wheat, dairy and meat products and wool. The town serves as regional

retail, educational, healthcare and economic centre. The Bloemhoek Dam lies just east of the city and supplies much of its water needs<sup>1</sup>.

## 2.5 KEY POTENTIAL RECEPTORS

As indicated in Section 1, Voorspoed and Verdun Farms belong to Ms. Annette Wege, who also owns a number of other farms in the Heuningspruit area, in addition to farms in the Viljoenskroon and Kroonstad areas and elsewhere (more than 251ha in total).

Farms belonging to Ms. Wege in proximity to the PV sites are Klein Leeukuil, Geluk, Leeukuil and Japan to the north and west of the sites. Ms. Wege is based on Pandam, one of two farms she owns east of Heuningspruit.

Ms. Wege is a widow, and farms the properties herself. She grew up in the Heuningspruit area. Core operations consist of beef cattle. A herd of around 500 cattle are based on the Heuningspruit properties. Verdun and Voorspoed are exclusively used for grazing (rotational regime). Crops were grown in a few patches on Voorspoed and Verdun a few decades ago, but the soils are very high ion clay, and considered marginal. No dwellings, barns or sheds are located on the properties. Cattle grazed on the properties are typically worked (dipped, etc) on Leeukuil. The area is said to be safe, with stock losses at the Wege operation virtually unheard of (Wege – pers. comm).

Eskom's 88/11 kV Heuningspruit substation is located on a portion of Voorspoed, directly north of the PV1 site, west of the Heuningspruit station. Voorspoed is currently traversed by Eskom's 88 a kV line, near to, and parallel with its boundary with Verdun. An 11 kV line is also located on the portion of Voorspoed immediately to the south of the Heuningspruit-N1 gravel road.

Adjacent landowners to Ms. Wege to the north and west are located > 5 km from the proposed PV sites, and are not considered in significant proximity. Properties within a 5 km range of the sites to the south-west and south (west of the railway line and R82) essentially belong to Mr Marius Keeve (Verblyding) and Pietie Keeve (Katbos), the former the latter's son. The owners reside on the properties with their families. Operations are mixed beef cattle and extensive cropping activities (annuals) (Figure 2.2).

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<sup>1</sup> [www.en.wikipedia.org/wiki/Kroonstad](http://www.en.wikipedia.org/wiki/Kroonstad)



**Figure 2.4: Farms located within a 5 km radius of the PV SEF site.**

Katbos farmstead and labour housing complex are located ~2-2.5 km from the proposed PV1 site. The sense of place is peri-rural due to the nearby presence of the existing and old alignments of the railway line and the R82. The Senwes silos are prominently visible in a flat landscape. Both owners have indicated that they currently have no issues with regard to the proposed PV developments (Keeve, M; Keeve, P – pers. comm).

In as far as could be established, only three properties at Heuningspruit settlement west of the railway line are lived upon. These include the station master's house, and another Transnet house. Café 1835 is located at the north-western extremity of Heuningspruit settlement west of the line. The property is accessed off the N1-Heuningspruit gravel road. Café 1835, essentially a rural smallholding, belongs to Mr Pieter du Plessis. Mr. Du Plessis's family has been in the Heuningspruit area since 1836 (Photograph 2.2). Mr du Plessis and his son and his son's family live on the property.



**Photograph 2.2: Du Plessis property, viewed from Voorspoed east of Eskom substation.**

The property partially overlooks the PV1 site. The Eskom Heuningspruit substation is located ~380m directly to the west of the property. Mr du Plessis resides on the property, and currently makes use of a portion of Voorspoed, including the PV1 site, for small-stock grazing (sheep). The current flock is around 30, and provides employment to one worker. Mr. Du Plessis has been making use of Voorspoed rent-free for a number of years, based on a gentleman's agreement with Mr. Wege's late husband. Mr. Du Plessis indicated that he was not aware of the proposed PV developments, and raised concerns regarding continued access to grazing on Voorspoed, and potential impacts on views associated with PV infrastructure (du Plessis – pers. comm).

## **2.6 SOCIO-ECONOMIC OVERVIEW**

The Census 2011 information presented below is at local municipal level. The StatsSA Municipal Fact Sheet (2013) was used as key reference.

### 3.1.1 Demographic information

As indicated in Table 2.1, demographic indices the Ngwathe LM population have largely remained quite stable over the 10 year period since the 2001 Census. The population has grown somewhat (average of 1.4% growth per year), and the number of households has also increased (15.6% over 10 year period). Indices for age, gender and household size and structure have remained more or less the same. Of note is the large percentage of female-headed households (41.8%).

**Table 2.1. Overview of key demographic indicators for the Ngwathe LM**

ASPECT	2001	2011	CHANGE
<b>Population</b>	118 810	120 520	+1.4% p.a.
<b>Households</b>	32 108	37 102	+ 15.6%
<b>Household size (average)</b>	3.6	3.2	- 0.4
<b>% Female headed households</b>	42.2	41.8	- 0.4
<b>Sex Ratio (males per 100 females)</b>	90.7	91	+ 0.3
<b>Dependency ratio per 100 (15-64)</b>	60.5	60.2	+ 0.3
<b>% Population &lt;15 years</b>	30.6	30.1	- 0.5
<b>% Population 15-64</b>	62.3	62.4	+ 0.1
<b>% Population 65+</b>	7.1	7.5	+ 0.4
<b>Unemployment rate (official) - % of economically active population</b>	47.1	35.2	- 11.9
<b>Youth unemployment rate (official) - % of economically active population 1534</b>	59.4	45.1	- 14.3
<b>No schooling - % of population 20+</b>	17.5	8.5	- 7
<b>Higher Education - % of population 20+</b>	5.3	6.4	+ 1.1
<b>Matric - % of population 20+</b>	16.3	25.8	+ 9.5

*Source: Compiled from StatsSA Census 2011 Municipal Fact Sheet*



Relatively large positive changes are however observable with regard to education and employment. In this regard, while the current unemployment figure remains high (35.2%), both the official and youth unemployment rates have declined significantly, namely by 11.9% and 14.3%, respectively.

With regard to education levels, the portion of the population older than 20 years without formal education has declined by 7% to 8.5%. At the same time, while the percentages of the adult population with tertiary (+1.1%) and secondary (+9.5%) qualifications have increased, only 32.2% of the adult population has a secondary or higher qualification.

### 3.1.2 Access to municipal services

As indicated in Table 2.2, with the exception of a small decrease in the % of properties wholly or partially owned by households (2.1%), all other indicators show significant improvement in service levels over the 10 year period. Access to piped water inside the dwelling however remains low, at 44.7%.

**Table 2.2. Overview of access to basic services in the Ngwathe LM**

	2001	2011	Change (%)
<b>Formal dwellings % of total</b>	70.1	81.3	+ 11.2
<b>% dwellings owned by occupant</b>	68.2	66.3	- 1.9
<b>% households with access to flush toilet</b>	51	74.5	+23.5
<b>% households with weekly municipal refuse removal</b>	58	81.9	+ 23.9
<b>% households with piped water inside dwelling</b>	23.5	44.7	+ 21.2
<b>% households which uses electricity for lighting</b>	83.9	92	+ 8.1

*Source: Compiled from StatsSA Census 2011 Municipal Fact Sheet*

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## **SECTION 3: POLICY AND PLANNING CONTEXT**

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### **3 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>2</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.

Section 2 provides an overview of the policy and planning environment affecting the proposed Heuningspruit SEF. For the purposes of the meeting the objectives of the SIA the following policy and planning documents were reviewed, namely:

- The National Development Plan (2030);
- The National Energy Act (2008);
- The White Paper on the Energy Policy of the Republic of South Africa (December 1998);
- The White Paper on Renewable Energy (November 2003);
- Integrated Resource Plan (IRP) for South Africa (2019);
- Free State Provincial Growth and Development Strategy (2013);
- Ngwathe Local Municipality Integrated Development Plan (2021-2026); and
- Ngwathe Local Municipality Local Economic Development Strategy (2009).

### **3.1 NATIONAL LEVEL POLICY**

#### **3.1.1 National Development Plan**

The National Development Plan aims to eliminate poverty and reduce inequality by 2030. South Africa can realise these goals by drawing on the energies of its people, growing an inclusive economy, building capabilities, enhancing the capacity of the state, and promoting leadership and partnerships throughout society

While the Plan aims to address poverty and exclusion on the one hand, it simultaneously attempts to nurture economic growth by creating a virtuous cycle of expanding opportunities, building capabilities, poverty reduction, involving communities in their own development, all leading to rising living standards.

The NDP identifies 9 key challenges and associated remedial plans. While all nine challenges/ plans are envisaged as part of integrated whole, the highest priorities are

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<sup>2</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.

□

regarded employment creation and improving the quality of national education. Managing the transition towards a low carbon national economy is identified as one of the 9 key national challenges. Expansion and acceleration of commercial renewable energy is identified as a key intervention strategy.

The nine primary challenges are:

1. Too few people work
2. The quality of school education for black people is poor
3. Infrastructure is poorly located, inadequate and under-maintained
4. Spatial divides hobble inclusive development
5. The economy is unsustainably resource intensive
6. The public health system cannot meet demand or sustain quality
7. Public services are uneven and often of poor quality
8. Corruption levels are high
9. South Africa remains a divided society.

### **3.1.2 National Energy Act (Act No 34 of 2008)**

The National Energy Act was promulgated in 2008 (Act No 34 of 2008). One of the objectives of the Act was to promote diversity of supply of energy and its sources. In this regard, the preamble makes direct reference to renewable resources, including solar:

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

### **3.1.3 White Paper on the Energy Policy of the Republic of South Africa**

Investment in renewable energy initiatives, such as the proposed Solar Park, is supported by the White Paper on Energy Policy for South Africa (December 1998). In this regard the document notes:

“Government policy is based on an understanding that renewables are energy sources in their own right, are not limited to small-scale and remote applications, and have significant medium and long-term commercial potential”.

“Renewable resources generally operate from an unlimited resource base and, as such, can increasingly contribute towards a long-term sustainable energy future”.

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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.

Government policy on renewable energy is thus concerned with meeting the following challenges:

- Ensuring that economically feasible technologies and applications are implemented;
- Ensuring that an equitable level of national resources is invested in renewable technologies, given their potential and compared to investments in other energy supply options; and,
- Addressing constraints on the development of the renewable industry.

The White Paper also acknowledges that South Africa has neglected the development and implementation of renewable energy applications, despite the fact that the country's renewable energy resource base is extensive and many appropriate applications exist.

The White Paper also notes that renewable energy applications have specific characteristics that need to be considered. Advantages include:

- Minimal environmental impacts in operation in comparison with traditional supply technologies; and
- Generally lower running costs, and high labour intensities.

Disadvantages include:

- Higher capital costs in some cases;
- Lower energy densities; and
- Lower levels of availability, depending on specific conditions, especially with sun and wind based systems.

### **3.1.4 White Paper on Renewable Energy**

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

The White Paper notes that while South Africa is well-endowed with renewable energy resources that have the potential to become sustainable alternatives to fossil fuels, these have thus far remained largely untapped. As signatory to the Kyoto Protocol<sup>4</sup>, Government is determined to make good the country's 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 operate.

South Africa is also a signatory of the Copenhagen Accord, a document that delegates at the 15th session of the Conference of Parties (COP 15) to the United Nations Framework

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Convention on Climate Change agreed to "take note of" at the final plenary on 18 December 2009. The accord endorses the continuation of the Kyoto Protocol and confirms that climate change is one of the greatest challenges facing the world. In terms of the accord South Africa committed itself to a reduction target of 34% compared to business as usual.

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*

<sup>4</sup> The **Kyoto Protocol** is a protocol to the United Nations Framework Convention on Climate Change (UNFCCC), aimed at fighting global warming. The Protocol was initially adopted on 11 December 1997 in Kyoto, Japan and entered into force on 16 February 2005. As of November 2009, 187 states have signed and ratified the protocol (Wikipedia) *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).*

### **3.1.5 National Integrated Resource Plan for Electricity (2019)**

South Africa's National Development Plan (NDP) 2030 offers a long-term plan for the country. It defines a desired destination where inequality and unemployment are reduced and poverty is eliminated so that all South Africans can attain a decent standard of living. Electricity is one of the core elements of a decent standard of living. The NDP envisages that, by 2030, South Africa will have an energy sector that provides reliable and efficient energy service at competitive rates; that is socially equitable through expanded access to energy at affordable tariffs; and that is environmentally sustainable through reduced emissions and pollution. In formulating its vision for the energy sector, the NDP took as a point of departure the Integrated Resource Plan (IRP) 2010–2030 promulgated in March 2011.

The promulgated IRP 2010–2030 identified the preferred generation technology required to meet expected demand growth up to 2030. It incorporated government objectives such as affordable electricity, reduced greenhouse gas (GHG) emissions, reduced water consumption, diversified electricity generation sources, localisation and regional development

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Following the promulgation of the IRP 2010–2030, implementation followed in line with Ministerial Determinations issued under Section 34 of the Electricity Regulation (Act No. 4) of 2006. The Ministerial Determinations give effect to planned infrastructure by facilitating the procurement of the required electricity capacity. Since the promulgated IRP 2010–2030, the capacity developments have taken place

Besides capacity additions, a number of assumptions have changed since the promulgation of IRP 2010–2030. Key assumptions that changed include the electricity demand projection, Eskom’s existing plant performance, as well as new technology costs. These changes necessitated the review and update of the IRP which resulted in the Table 2.1 below:

**Table 2.1 Proposed Updated Plan for the Period Ending 2030**

	Coal	Nuclear	Hydro	Storage (Pumped Storage)	PV	Wind	CSP	Gas / Diesel	Other (CoGen, Biomass, Landfill)	Embedded Generation
2018	39 126	1 860	2 196	2 912	1 474	1 980	300	3 830	499	Unknown
2019	2 155					244	300			200
2020	1 433				114	300				200
2021	1 433				300	818				200
2022	711				400					200
2023	500									200
2024	500									200
2025					670	200				200
2026					1 000	1 500		2 250		200
2027					1 000	1 600		1 200		200
2028					1 000	1 600		1 800		200
2029					1 000	1 600		2 850		200
2030			2 500		1 000	1 600				200
<b>TOTAL INSTALLED</b>	<b>33 847</b>	<b>1 860</b>	<b>4 696</b>	<b>2 912</b>	<b>7 958</b>	<b>11 442</b>	<b>600</b>	<b>11 930</b>	<b>499</b>	<b>2 600</b>
Installed Capacity Mix (%)	44.6	2.5	6.2	3.8	10.5	15.1	0.9	15.7	0.7	
<p> <span style="display: inline-block; width: 15px; height: 10px; background-color: #cccccc; border: 1px solid black;"></span> Installed Capacity  <span style="display: inline-block; width: 15px; height: 10px; background-color: #ffff00; border: 1px solid black;"></span> Committed / Already Contracted Capacity  <span style="display: inline-block; width: 15px; height: 10px; background-color: #90ee90; border: 1px solid black;"></span> New Additional Capacity (IRP Update)         </p>										

**Source: Integrated Resource Plan (IRP) for South Africa (2019)**

The following must be noted with regard to the plan in Table 2.1 above:

- Coal Installed Capacity is less the 12 000 MW capacity to be decommissioned between years 2020 and 2030
- Existing and committed Coal, Nuclear, Hydro and Pumped Storage Capacity is less auxiliary power. Stated numbers are therefore based on sent out capacity not rated capacity.
- Two additional units at Medupi have since been commissioned earlier than previously assumed.

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- Distributed generation for own use installed base is unknown as these installations were exempted from holding a generation license or were not required to be registered
- The timing of new additional capacity as indicated in Table 2.1 above can change (move back or forward) depending on what happens with the projected electricity demand and or Eskom's existing plant performance

## **3.2 PROVINCIAL AND LOCAL LEVEL POLICY AND PLANNING**

### **3.2.1 Free State Province Provincial Growth and Development Strategy**

The FSGDS puts forward a daring inclusive growth and development agenda for the Free State province. It unravels the provincial growth and development challenges, needs and opportunities towards 2030. Underlying the FSGDS are thus the success, challenges and opportunities that simultaneously continue to characterise the evolving provincial development landscape amid a wave of rapidly changing domestic and global events.

The FSGDS is an important instrument to shape and coordinate the allocation of resources across a wide government and societal spectrum based on the provincial development needs and priorities. It impels both the provincial government and social partners to be focused and decisive; weigh up trade-offs and make choices in the face of competing demands; develop and implement consistent strategies and programmes; and ensure that their plans reflect a shared vision by all. The objectives of the FSGDS are thus the following:

- To serve an overarching planning instrument articulating the development agenda and providing strategic direction for the province.
- To build uniformity of application of planning processes and methodologies.
- To formulate development plans and priorities for the province.
- To ensure inclusivity of planning processes
- To make effective use of scarce resources within the province by searching for more costeffective and sustainable solutions, whilst addressing the real causes of development challenges instead of merely the symptoms.
- To facilitate the speedy delivery of government programmes and plans.
- To identify opportunities for investment and provide an environment of certainty and predictability critical for investment.
- To provide a common vision and act as the basis for common action amongst all social partners, both inside and outside government in a province.
- To serve as a framework for budgets, implementation, and performance management.
- To serve as a framework for provincial spatial development.
- To monitor the implementation of plans and evaluate the impact thereof against the government's developmental priorities

Underlying the FSGDS is the Free State Vision 2030 which conjures the future the people of the province want in 2030. The Free State Vision 2030 invokes the need for drastic transformation, collective responsibility, convergence and a profound sense of ownership in the inclusive growth and development landscape of the Free State towards 2030.

The implementation of the FSGDS is informed by its vision 2030 which is: *By 2030, the Free State shall have a resilient, thriving and competitive economy that is inclusive, with*

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*immense prospects for human development anchored on the principles of unity, dignity, diversity, equality and prosperity for all. A critical goal in achieving these ideals is the creation of decent work.* Decent work is the most powerful way in which the dignity of the majority of the people can be restored and the benefits of economic growth and development can be shared.

Impelled by this Vision, the Free State of 2030 will be characterised by an economy that encourages the development of new growth sectors with emphasis on the knowledge based industries and the green economy.

The ultimate goal of economic success in 2030 will be to improve the living conditions of the people of the province, whilst at the same time addressing the legacy of apartheid and colonialism.

In our quest for inclusive economic growth and development, the environment will be protected for future generations. Lasting responses to climate change will be part of the landscape of the province. Steeped in democratic principles, government will be accountable, transparent, effective, efficient, and responsive to people's needs and corruption will be eliminated. Multiculturalism and non-racialism will be celebrated.

The following are pillars and high level targets that are meant to give practical meaning to the ideals contained in the Free State Vision 2030. Only targets that the Author thinks are relevant to the proposed Solar Park are identified below:

- Economic Restructuring, Growth and Employment Creation
  - Increase the provincial growth rate from 2.5% in 2011 to 7% in 2030; Increase the provincial contribution to the South African economy from 5% in 2010 to 15% in 2030; Reduce unemployment rate from 32% in 2012 (third quarter) to 6% by 2030
- Improved Quality of Life
  - Increase the proportion of households with access to electricity from 89.9% in 2011 to 100% in 2030; Reduce the housing informal settlement backlog from 23.4% in 2010 to 0% in 2030; Reduce the number of people living in poverty from 44.7% in 2010 to 0% in 2030
- Sustainable Rural Development
  - Increase the provision of quality basic services and invest in education, healthcare and public transport ; Improve access to markets for small-scale farmers and rural co-operatives

The FSGDS will, as a first step, priorities efforts to support employment creation in the following key sectors:

- Infrastructure;
- The agricultural value chain;
- The mining value chain;
- The green economy;
- Manufacturing sectors, which are included in IPAP 2; and
- Tourism and certain high-level services."



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SMME development: The FSPGDS acknowledges the key role played by SMMEs in terms of economic development and job creation. To bolster economic growth and create employment opportunities, SMME development is high on the agenda of government.

Tourism: The emphasis in respect of tourism is to optimise its benefits. More specifically, the weekend tourism market for the north and north-eastern parts of the Province should be explicitly marketed. Emphasis is on nature tourism and heritage tourism. Events tourism should be focused on in the larger urban areas of Bloemfontein and Welkom.

Human resource development and economic growth: Providing the skills for a growing economy will be done by means of the learnerships, providing skills through the FET sector and internships.

PV solar energy, therefore provides the Free State with an opportunity to diversify its economy in a way that is not affected by natural constraints such as low rainfall and limited water supplies.

### **3.2.2 Ngwathe Local Municipality (NLM) Integrated Development Plan (IDP) (2021-2026)**

An Integrated Development Plan (IDP) is required in terms Chapter 5 of the Municipal Systems Act (2000) of all South African municipalities. The IDP is the principal strategic planning instrument which guides and informs all planning, budgeting, management and decision-making processes in a municipality.

The document will serve as the basic developmental framework and the basis for annual reviews of municipal performance for the period of five years. Reviews will be based on an assessment against Objectives identified for the various key performance areas (KPA's).

The IDP framework is explicitly aligned with the principles and objectives of key national and provincial socio-economic development policy frameworks. These include the 2010 Lekgotla outcomes, the Medium Term Strategy 2009-2014, the National Spatial Development Perspective (2005), and the FSPGDS.

The Municipal Vision is to be a viable municipality with inclusive economy, sustainable development and quality services for all. The Municipal Mission is to provide affordable and quality municipal services and address triple challenges of poverty, unemployment and inequality, and promote sustainable development through cooperative, strategic partnerships and innovation.

Like many municipalities across the country, Ngwathe Local Municipality is faced with many challenges. Many of the challenges have been compounded by steep economic decline in the country leading to high rates of unemployment and poverty which directly impact the municipality's ability to collect revenue and in turn be able to respond to the huge developmental and service delivery challenges. Needless to say, Covid 19 has had an added impact on the economic, unemployment, poverty and service delivery challenges.

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The challenges are as follows:

- Service Delivery Challenges
- Community Services Challenges
- Finance Challenges
- Institutional and Organisational Challenge

In line with the IDP Framework Guide, Ngwathe has adopted the 5 Areas of Local Government Strategic Agenda as outlined in the Municipal Performance Regulations for Municipal Manager and Managers Accountable to the Municipal Manager of 2006 as own KPAs as outlined below:

KPA1: Basic Service Delivery and Infrastructure Investment;

KPA2: Local Economic Development;

KPA3: Financial Viability and Financial Management;

KPA4: Municipal Transformation and Institutional Development;

KPA5: Good Governance and Community Participation

Objectives and targets are defined for various KPAs. Of these, the following are of relevance to the proposed Heuningspruit developments:

Local Economic Development (LED)

- *Objective* : To create an enabling environment that stimulates economic growth and creates jobs.
- *Strategies* include: Support SMMEs including through Re in - fencing projects through the Municipal SCM; Develop a business regulatory framework for local businesses; Development of a Tourism and Marketing Strategy/Plan; Extend free WIFI to communities/ SMMEs; Promote and support local tourism. Promote and support of township economy.

The construction and operation of the proposed Heuningspruit SEFs, could assist the NLM in meeting some of these priorities, specifically the promotion of local economic development.

The NLM is a signatory to the 2011 Durban Climate Change Adaptation Charter for Local Governments, and supports the development of renewable energy. The envisaged Ngwathe State of the Environment Report will, amongst others focus on climate change and the use of renewable energy sources to combat such (Ngwathe IDP, 2012).

### **3.2.3 Ngwathe Local Municipality Local Economic Development Strategy (2009)**

The 2011/2012 Ngwathe IDP includes a useful overview of the Ngwathe Local Economic Development (LED) Strategy. The LED document was adopted in 2009, and will be reviewed in due course.

Key LED objectives identified for the NLM include the following:

- Growing the local economy, distributing wealth and reducing unemployment;
- Arresting decline in critical sectors, diversifying the economy and stimulating emerging sectors;

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- Creating conditions that stimulate economic growth and attract investors;
- Positioning the area to become a centre that attracts tourists.

Key identified strategic interventions include:

- Creating jobs through infrastructure development initiatives;
- Broadening participation of the disadvantaged communities in the economy;
- Building investor confidence by providing an attractive and conducive environment for business;
- Investing in tourism and heritage development;
- Contributing to capacity building and skills development; and
- Promoting the emerging business sector and SMEs.

Economic drivers at local and district municipal level are identified as Manufacturing; Mining; Construction; Tourism; Agriculture and SMME Development. The LED document notes that the NLM, like the rest of the Fezile Dabi District experienced a dramatic increase in the tourism industry regarding weekend tourism destinations, specifically with regard to game ranches and guesthouses on farms. The recent listing of the Vredefort Dome as a UNESCO World Heritage Site is anticipated to stimulate tourism and other economic development in the Parys-Vredefort area.

The LED further notes that Koppies is an established and popular leisure tourism destination, and also benefits from proximity to the R82 Battlefield Route. Koppies' potential is expected to increase with proposed upgrades to the Koppies Dam Nature Reserve and further development of the R82 Battlefield Route (~ 350m east of the Heuningspruit sites). The development of the tourism potential of Koppies in particular the Koppies Dam and the R82 Battlefield Route should be supported. Current bentonite exploitation near Koppies and the current initiative for coal mining in the vicinity of Koppies are envisaged to provide significant future growth potential (Ngwathe IDP, 2012).

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

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### **4.1 INTRODUCTION**

Section 4 identifies the key social issues identified during the SIA study. The identification of social issues was based on:

- Review of project related information, including other specialist studies;
- Experience with renewable energy projects, including solar energy projects

In identifying the key issues the following assumption is made:

- The area identified for the proposed solar energy plant meets the technical criteria required for such facilities.

### **4.2 IDENTIFICATION OF KEY SOCIAL ISSUES**

The key social issues identified during the SIA can be divided into:

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

The local site-specific issues can in turn be divided into construction and operational related issues. These issues are discussed and assessed below. The potential impacts associated with the associated infrastructure (access road, pipeline and power line routes are also assessed.

### **4.3 POLICY AND PLANNING ISSUES**

As indicated in Section 1.4, legislative and policy context 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.

The review of the relevant planning and policy documents has been undertaken as a part of the assessment. The key documents reviewed included:

- The National Development Plan (2030);
- The National Energy Act (2008);
- The White Paper on the Energy Policy of the Republic of South Africa (1998);
- The White Paper on Renewable Energy (November 2003);
- Integrated Resource Plan (IRP) for South Africa (2019);
- Free State Provincial Growth and Development Strategy (2013);
- Ngwathe Local Municipality Integrated Development Plan (2021-2026); and

- Ngwathe Local Municipality Local Economic Development Strategy (2009).

The findings of the review indicated that wind energy development is strongly supported at a national level.

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 FSPGDS does not specifically make reference to renewable energy. However, there are a number of key provincial priorities that are relevant to the proposed SEF. These include economic development, employment, and investment. The FSPGDS also emphasises the importance of SMME development and the provision of economic infrastructure, which would include energy related infrastructure.

The FSPGDS also identifies a number of natural constraints to economic growth and development. These include, low rainfall coupled with the limited soil potential and the impact of this on agriculture, limited water availability and depletion of mineral resources. What is of interest is that none of the natural constraints impact on the renewable energy sector, specifically the solar energy sector. Solar energy, specifically PV solar energy, therefore provides the Free State with an opportunity to diversify its economy in a way that is not affected by natural constraints such as low rainfall and limited water supplies.

At a provincial level the Free State Development Corporation (FDC) has identified the potential for solar energy projects in the larger XDM (including the KLM) due to the excellent solar radiation rate in southern XDM (only surpassed by that of Upington) and the availability of land for such developments. In addition, the XDM IDP 2010/11 states that one of its key opportunities is, *"diversifying production of energy from renewable sources such as biomass and rivers and **solar** to ensure both the price competitiveness of agriculture and help meet South Africa's CO<sub>2</sub> reduction targets."*

The NLM is a signatory to the 2011 Durban Climate Change Adaptation Charter for Local Governments, and supports the development of renewable energy. Renewable energy and solar PV area not specifically addressed in key NLM policy and planning documents, but the 2012-2017 IDP indicates that these issues would be addressed within an envisaged Ngwathe State of the Environment Report.

The findings of the review of the relevant policies and documents pertaining to the energy sector therefore indicate that renewable energy and the establishment of SEF is supported at a national, provincial and local level. It is therefore the opinion of the authors that the establishment of a solar park is supported by national, provincial and local policies and planning guidelines. In addition, Apart from potentially enabling the NLM to support commercial renewable energy development in its area, the proposed

development may also make a modest contribution towards key LED and IDP objectives related to local employment, training and SME development.

#### **4.4 SOCIAL IMPACTS ASSOCIATED WITH THE CONSTRUCTION PHASE**

The key social issues associated with the construction phase include:

##### **Potential positive impacts**

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

##### **Potential negative impacts**

- Impacts associated with the presence of construction workers on site;
- Increased risk of stock theft, poaching and damage to farm infrastructure associated with presence of construction workers on the site;
- Increased risk of veld fires associated with construction-related activities;
- Threat to safety and security of farmers associated with the presence of construction workers on site;
- Impact of heavy vehicles, including damage to roads, safety, noise and dust;
- Potential loss of grazing land associated with construction-related activities.

##### **4.4.1 Creation of employment and business opportunities**

Based on the information from other SEF, the construction phase for Heuningspruit 50 MW PV Solar Energy Facility development is expected to extend over a period of ~ 12 months and create approximately 50 employment opportunities, depending on the final design. The work associated with the construction phase will be undertaken by contractors and will include the establishment of the Heuningspruit SEF and the associated components, including, access roads, services and power line. Based on other renewable energy projects it is anticipated that approximately 60% (30) of the employment opportunities would be available to low (construction labourers, security staff etc.), ~ 25% (12) to semi-skilled workers (drivers, equipment operators etc.) and 15% (8) to skilled personnel (engineers, land surveyors, project managers etc.).

The total wage bill for the construction phase is estimated to be in the region of R 6 million. This is based on the assumption that the average monthly salary for low skilled, semi-skilled and skilled workers is R 5 000, R 8 000 and R 30 000 respectively for a period of 16 months. A percentage of the wage bill will be spent in the local economy and will create opportunities for local businesses in the nearby towns of Kroonstad, Koppies and Edenville. 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. The benefits to the local economy will however be confined to the construction period (12 months).

The majority of the low-skilled employment opportunities associated with the project are likely to benefit members from the local Koppies and Kroonstad communities. In this regard the majority of the beneficiaries are likely to be historically disadvantaged (HD)

members of the community. The low education and skills levels in the area may however hamper potential opportunities for local communities.

The majority of the skilled and semi-skilled opportunities are likely to be associated with the contractors appointed to construct the proposed SEF and the associated infrastructure. In this regard the majority of contractors tend to use their own staff and this will limit the potential for direct employment opportunities for locals during the construction phase. In terms of training, the contractors are likely to provide on-site training and skills development opportunities. However, the majority of benefits are likely to accrue to personnel employed by the relevant contractors. In the absence of specific commitments from the developer to employ local contractors the potential for meaningful skills development and training for members from the local communities are likely to be limited.

The capital expenditure on completion is anticipated to be in the region of R 250 million for a 10 MW facility. In terms of business opportunities for local companies, the expenditure of these sums during the construction phase will create business opportunities for the regional and local economy. However, given the technical nature of the project and high import content associated with solar plants the opportunities for the NLM economy are likely to be limited. However, opportunities are likely to exist for local contractors and engineering companies in Kroonstad, Koppies, Parys, etc. Implementing the enhancement measures listed below can enhance these opportunities.

The implementation of the proposed enhancement measures listed below would enable the establishment of the proposed PV developments to support co-operation between the public and private sectors in order for the economic development potential of the Free State to be realised. In this regard the FSPGDS highlights the importance of enterprise development, and notes that the current levels of private sector development and investment in the province are low. The proposed solar park therefore has the potential to create opportunities to promote private sector investment and the development of SMMEs in the Free State Province. However, due to the relatively small scale of the project (50 MW total) these opportunities are likely to be limited.

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. The majority of construction workers are likely to be accommodated in Bloemfontein, which is the closest town to the site. In addition, a proportion of the total wage bill earned by construction workers over the 12 month construction phase would likely be spent in the regional and local economy. The hospitality industry in the area, including guest farms and B&Bs, are also likely to benefit from the provision of accommodation and meals for professionals (engineers, quantity surveyors, project managers, product representatives etc.) and other (non-construction) personnel involved on the project. Experience from other construction projects indicates that the potential opportunities are not limited to on-site construction workers but also to consultants and product representatives associated with the project.

**Table 4.1: Impact assessment of employment 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 – Regional (2)	Local – Regional (3)
<b>Duration</b>	Very Short Term (1)	Very Short Term (1)
<b>Magnitude</b>	Low (4)	Low (4)
<b>Probability</b>	Probable (3)	Highly probable (4)
<b>Significance</b>	Low (21)	Medium (32)
<b>Status</b>	Positive	Positive
<b>Reversibility</b>	N/A	N/A
<b>Irreplaceable loss of resources?</b>	N/A	N/A
<b>Can impact be enhanced?</b>	Yes	
<b>Enhancement :</b> See below		
<b>Cumulative impacts:</b> Opportunity to up-grade and improve skills levels in the area. However, due to relatively small number of local employment opportunities this benefit is likely to be limited.		
<b>Residual impacts:</b> Improved pool of skills and experience in the local area. However, due to relatively small number of local employment opportunities this benefit is likely to be limited.		

**Assessment of No-Go option**

There is no impact as it maintains the current status quo. The potential employment and economic benefits associated with the proposed solar park would therefore be forgone. The potential opportunity costs in terms of the capital expenditure, employment, skills development, and opportunities for local business are therefore regarded as a negative.

**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, CCH 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 contactors that are compliant with Black Economic Empowerment (BEE) criteria;
- Before the construction phase commences Sun Mechanics should meet with representatives from the NLM 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 Sun Mechanics 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**

- CCH should seek to develop a database of local companies, specifically BEE companies, which qualify as potential service providers (e.g. construction companies, catering companies, waste collection companies, security companies etc.) prior to the commencement of the tender process for construction contractors. These companies should be notified of the tender process and invited to bid for project-related work;
- Where possible, Sun Mechanics should assist local BEE companies to complete and submit the required tender forms and associated information.
- The NLM, in conjunction with the local Chamber of Commerce and representatives from the local hospitality industry, should identify strategies aimed at maximising the potential benefits associated with the project.

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

#### **4.4.2 Presence of construction workers in the area**

The presence of construction workers poses a potential risk to family structures, social networks and the safety and security of local farmers in the area. In addition there are a number of potentially vulnerable farming activities, such as livestock farming. The potential threat to farming activities is discussed below.

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 the local community. In this regard the most significant negative impact is associated with the disruption of existing family structures and social networks. This risk is linked to the potential behaviour of male construction workers, including:

- An increase in alcohol and drug use;
- An increase in crime levels;
- An increase in teenage and unwanted pregnancies;
- An increase in prostitution;
- An increase in sexually transmitted diseases (STDs).

As indicated above, the majority of construction workers are likely to be from the local area. The potential risk posed by these workers to local communities will therefore be low. These workers will be from the local community and form part of the local family and social network and, as such, the potential impact will be low. The use of local residents to fill the low and semi-skilled job categories will also reduce the need to house construction workers on the site. However, due to the potential mismatch of skills and low education levels, the potential employment opportunities for the members from these local communities may be low.

The potential security and safety risk to local farmers can be effectively mitigated by ensuring that construction workers are not accommodated on site and are transported to and from the site on a daily basis.

**Table 4.2: Assessment of impact of construction workers on local communities and farmers**

<b>Nature:</b> Potential impacts on family structures, social networks and safety of farmers associated with the presence of construction workers		
	<b>Without Mitigation</b>	<b>With Mitigation</b>
<b>Extent</b>	Local (3)	Local (1)
<b>Duration</b>	Very Short Term for community and farmers as a whole (1) Long term-permanent for individuals who may be affected by STD's etc. (5)	Very Short Term for community and farmers as a whole (1) Long term-permanent for individuals who may be affected by STD's etc. (5)
<b>Magnitude</b>	Low for the community and local farmers as a whole (4) High-Very High for specific individuals who may be affected by STD's etc. (10)	Low for community and local farmers as a whole (4) High-Very High for specific individuals who may be affected by STD's etc. (10)
<b>Probability</b>	Probable (3)	Probable (3)
<b>Significance</b>	Low for the community and farmers as a whole (24) Moderate-High for specific individuals who may be affected by STD's etc. (51)	Low for the community and farmers as a whole (18) Moderate-High for specific individuals who may be affected by STD's etc. (48)
<b>Status</b>	Negative	Negative
<b>Reversibility</b>	No in case of HIV and AIDS	No in case of HIV and AIDS
<b>Irreplaceable loss of resources?</b>	Yes, if people contract HIV/AIDS. Human capital plays a critical role in communities that rely on farming for their livelihoods	

<b>Can impact be mitigated?</b>	Yes, to some degree. However, the risk cannot be eliminated	
<b>Mitigation:</b> See below		
<b>Cumulative 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 cumulative impacts on the affected individuals and/or their families and the community.		
<b>Residual impacts:</b> See cumulative impacts.		

### Assessment of No-Go option

There is no impact as it maintains the current status quo. The potential positive impacts on the local economy associated with the additional spending by construction workers in the local economy will also be lost.

### Recommended mitigation measures

The potential risks associated with construction workers can be mitigated. The aspects that should be covered include:

- Where possible, CCH should make it a requirement for contractors to implement a 'locals first' policy for construction jobs, specifically semi and low-skilled job categories. This will reduce the potential impact that this category of worker could have on local family and social networks;
- CCH should consider the need to establish a Monitoring Forum (MF) for the construction phase which should be established before the construction phase commences and should include key stakeholders, including representatives from the local community, local councillors, farmers, and the contractor. The role of the MF would be to monitor the construction phase and the implementation of the recommended mitigation measures. The MF should also be briefed on the potential risks to the local community associated with construction workers;
- CCH and the contractor should, in consultation with representatives from the MF, develop a Code of conduct for the construction phase. The code should identify what types of behaviour and activities by construction workers are not permitted. Construction workers that breach the code of good conduct should be dismissed. All dismissals must comply with the South African labour legislation;
- CCH and the contractor should implement an HIV/AIDS awareness programme for all construction workers at the outset of the construction phase;
- The movement of construction workers on and off the site should be closely managed and monitored by the contractors. In this regard the contractors should be responsible for making the necessary arrangements for transporting workers to and from site on a daily basis;
- The contractor should make the necessary arrangements for allowing workers from outside the area to return home over weekends and or on a regular basis during the 16 month construction phase. This would reduce the risk posed by construction workers to local family structures and social networks;
- It is recommended that no construction workers, with the exception of security personnel, should be permitted to stay overnight on the site. This will make it possible to manage the potential impacts effectively.

#### 4.4.3 Increased risk of stock theft, poaching and damage to farm infrastructure

The presence of construction workers on the site increases the potential risk of stock theft and poaching. The movement of construction workers on and off the site also poses a potential threat to farm infrastructure, such as fences and gates, which may be damaged. Stock and game losses may also result from gates being left open and/or fences being damaged.

As was indicated in Section 2.5.2, a flock of sheep belonging to Mr du Plessis currently grazes on Voorspoed. Experience elsewhere in South Africa indicates that small-stock, and especially sheep, are very vulnerable to stock theft. Mr du Plessis's sheep are potentially at risk due to the presence of construction workers on the site. However, as indicated above, current use is based on a gentleman's agreement between the owner of Voorspoed and Mr du Plessis. It falls outside the scope of this report to address agreements between private landowners. However, it is recommended that Ms. Wege discuss the potential impacts with Mr. Du Plessis and the potential need to come to an alternative arrangement that suits both parties.

**Table 4.3: Assessment of impact of stock theft and damage to farm infrastructure**

<b>Nature:</b> Potential loss of livestock, poaching 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 (3) (Rated as 4 due to potential severity of impact on local farmers)	Local (2)
<b>Duration</b>	Very Short Term (1)	Very Short Term (1)
<b>Magnitude</b>	Low (4)	Low (4)
<b>Probability</b>	Probable (3)	Probable (3)
<b>Significance</b>	Medium (32)	Low (21)
<b>Status</b>	Negative	Negative
<b>Reversibility</b>	Yes, compensation paid for stock losses etc.	Yes, compensation paid for stock losses etc.
<b>Irreplaceable loss of resources?</b>	No	No
<b>Can impact be mitigated?</b>	Yes	Yes
<b>Mitigation:</b> See below		
<b>Cumulative impacts:</b> No, provided losses are compensated for		

**Residual impacts:** See cumulative impacts.

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

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

### **Recommended mitigation measures**

The mitigation measures that can be considered to address the potential impact on livestock, game, and farm infrastructure include:

- CCH should enter into an agreement with the affected landowner/s whereby the company will compensate for damages to farm property and disruptions to farming activities. This includes losses associated with stock theft and damage to property etc.;
- CCH should investigate the option of establishing a MF (see above) that includes local farmers and develop a Code of Conduct for construction workers. Should such a MF be required it should be established prior to commencement of the construction phase. The Code of Conduct should be signed by Sun Mechanics and the contractors before the contractors move onto site;
- CCH 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 Sun Mechanics, the contractors and neighbouring landowners. The agreement should also cover losses and costs associated with fires caused by construction workers or construction related activities (see below);
- The 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 Sun Mechanics should ensure that all workers are informed at the outset of the construction phase of the conditions contained on the Code of Conduct, specifically consequences of stock theft and trespassing on adjacent farms.
- Contractors appointed by Sun Mechanics should ensure that construction workers who are found guilty of stealing livestock, poaching 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;
- The housing of construction workers on the site should be limited to security personnel.

#### **4.4.4 Increased risk of veld fires**

The presence of construction workers and construction-related activities on the site poses an increased risk of veld fires that in turn pose a threat to the livestock, wildlife, and farmsteads in the area. In the process, farm infrastructure may also be damaged or destroyed and human lives threatened. The farms in the area are dependent on grazing and any loss of grazing due to a fire would therefore impact negatively on the livelihoods of the affected farmers. The potential risk of veld fires is likely to be higher during the dry, winter months.

**Table 4.4: Assessment of impact of increased risk of veld fires**

<b>Nature:</b> Potential loss of livestock, crops and houses, damage to farm infrastructure and threat to human life associated with increased incidence of veld fires		
	<b>Without Mitigation</b>	<b>With Mitigation</b>
<b>Extent</b>	Local (3) (Rated as 3 due to potential severity of impact on local farmers)	Local (2)
<b>Duration</b>	Very Short Term (1)	Very Short Term (1)
<b>Magnitude</b>	Moderate (6) Due to reliance on livestock for maintaining livelihoods	Low (4)
<b>Probability</b>	Probable (3)	Probable (3)
<b>Significance</b>	Medium (30)	Low (21)
<b>Status</b>	Negative	Negative
<b>Reversibility</b>	Yes, compensation paid for stock and crop losses etc.	
<b>Irreplaceable loss of resources?</b>	No	No
<b>Can impact be mitigated?</b>	Yes	
<b>Mitigation:</b> See below		
<b>Cumulative impacts:</b> No, provided losses are compensated for.		
<b>Residual impacts:</b> See cumulative impacts.		

**Assessment of No-Go option**

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

**Recommended mitigation measures**

CCH should enter into an agreement with the affected landowners whereby the company will compensate for damages. This includes losses associated veld fires. In addition, the potential increased risk of veld fires can be effectively mitigated. The detailed mitigation measures are outlined in the EMP for the construction and operation phases. The aspects that should be covered include:

- Contractor to ensure that open fires on the site for cooking or heating are not allowed except in designated areas;

- Contractor to ensure that construction related activities that pose a potential fire risk, such as welding, are properly managed and are confined to areas where the risk of fires has been reduced. Measures to reduce the risk of fires include clearing working areas and avoiding working in high wind conditions when the risk of fires is greater. In this regard special care should be taken during the high risk dry, windy winter months;
- Contractor to provide adequate fire fighting equipment on-site;
- Contractor to provide fire-fighting training to selected construction staff;
- As per the conditions of the Code of Conduct, in the advent of a fire being caused by construction workers and or construction activities, the appointed contractors must compensate farmers for any damage caused to their farms. The contractor should also compensate the fire fighting costs borne by farmers and local authorities.

In addition the landowner should ensure that they join the local fire protection agency.

#### 4.4.5 Impact of construction vehicles

The movement of heavy construction vehicles during the construction phase has the potential to damage roads and create noise, dust, and safety impacts for other road users and local communities in the area. Access to the site is likely to be via the Heningspruit-N1 gravel road which links with the N1 to the west to the R82 east of Heuningspruit station. The impacts associated with heavy vehicle trips are likely to be low due to the relatively small size of the SEF. The social impacts associated with the movement of construction related traffic are therefore likely to be low. The impact on the Heuningspruit-N1 link road is also likely to be low due to the relatively small scale of the project.

**Table 4.5: Assessment of the impacts associated with construction vehicles**

<b>Nature:</b> Potential noise, dust and safety impacts associated with movement of construction related traffic to and from the site		
	<b>Without Mitigation</b>	<b>With Mitigation</b>
<b>Extent</b>	Local (2)	Local (1)
<b>Duration</b>	Very Short Term (1)	Very Short Term (1)
<b>Magnitude</b>	Low (4)	Minor (2)
<b>Probability</b>	Probable (3)	Probable (3)
<b>Significance</b>	Low (21)	Low (12)
<b>Status</b>	Negative	Negative
<b>Reversibility</b>	Yes	

<b>Irreplaceable loss of resources?</b>	No	No
<b>Can impact be mitigated?</b>	Yes	
<b>Mitigation:</b> See below		
<b>Cumulative impacts:</b> If damage to roads is not repaired then this will affect the farming activities in the area and result in higher maintenance costs for vehicles of local farmers and other road users. The costs will be borne by road users who were no responsible for the damage.		
<b>Residual impacts:</b> See cumulative impacts		

### Assessment of No-Go option

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

### Recommended mitigation measures

CCH should enter into an agreement with the affected landowners whereby the company will compensate for damages. This includes losses associated with damage to local internal farm roads that are affected by the site. In addition, the potential impacts associated with heavy vehicles and dust can be effectively mitigated. The aspects that should be covered include:

- The contractor must ensure that damage caused to roads by the construction related activities, including heavy vehicles, is repaired before the completion of the construction phase. The costs associated with the repair must be borne by the contractor;
- Dust suppression measures must be implemented for heavy vehicles such as wetting of gravel roads on a regular basis and ensuring that vehicles used to transport sand and building materials are fitted with tarpaulins or covers;
- All vehicles must be road-worthy and drivers must be qualified and made aware of the potential road safety issues and need for strict speed limits.

#### 4.4.6 Damage to and loss of farmland

The activities associated with the construction phase have the potential to damage farmlands and result in a loss of land available for grazing. The significance of the impacts is mitigated by the fact that the farming activities on the sites are confined to grazing by the owner's cattle, and grazing by sheep (Voorspoed) by and adjacent landowner, according to a gentleman's agreement. Apart from fences and a small cement dam, no significant infrastructure, dwellings, sheds or stores are located on the subject properties. In addition, small portions of land would be required relative to the landowner's large (8 000 ha) landholdings. As indicated above, it falls outside the scope of this report to assess private arrangements between Ms. Wege and Mr. du Plessis regarding grazing arrangements.

In addition, it is standard practice for the affected landowner/s is to enter into a lease agreement that includes monthly rental. The loss of productive farmland would therefore be offset by such an agreement. It may also be possible for livestock and game to graze between the PV panels. The final disturbance footprint can also be reduced by careful



site design and placement of components. In addition, the footprint associated with a 50 MW solar facility (Heuningspruit) is likely to be relatively small (less than 20 ha). The impact on farmland associated with the construction phase can therefore be mitigated by minimising the footprint of the construction related activities and ensuring that disturbed areas are fully rehabilitated on completion of the construction phase. Recommended mitigation measures are outlined below. This finding applies to Heuningspruit PV 1 and 2.

**Table 4.6: Assessment of impact on farmland due to construction related activities**

<b>Nature:</b> The activities associated with the construction phase, such as establishment of access roads and the construction camp, movement of heavy vehicles and preparation of foundations for the SEF and power lines will damage farmlands and result in a loss of farmlands for future farming activities.		
	<b>Without Mitigation</b>	<b>With Mitigation</b>
<b>Extent</b>	Local (2)	Local (1)
<b>Duration</b>	Long term-permanent if disturbed areas are not effectively rehabilitated (5)	Very Short Term if damaged areas are rehabilitated (1)
<b>Magnitude</b>	Moderate, due to importance of farming in terms of local livelihoods (4)	Minor (2)
<b>Probability</b>	Definite (5)	Highly Probable (4)
<b>Significance</b>	Medium (55)	Low (16)
<b>Status</b>	Negative	Negative
<b>Reversibility</b>	No, in case of footprint associated with solar plant	No, in case of footprint associated with solar plant
<b>Irreplaceable loss of resources?</b>	Yes, loss of farmland. However, disturbed areas can be rehabilitated	Yes, loss of farmland. However, disturbed areas can be rehabilitated
<b>Can impact be mitigated?</b>	Yes, however, loss of farmland cannot be avoided	Yes, however, loss of farmland cannot be avoided
<b>Mitigation:</b> See below		
<b>Cumulative impacts:</b> Overall loss of farmland could affect the livelihoods of the affected farmers, their families, and the workers on the farms and their families. However, disturbed areas can be rehabilitated.		
<b>Residual impacts:</b> See cumulative impacts.		

**Assessment of No-Go option**

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

### **Recommended mitigation measures**

The potential impacts associated with damage to and loss of farmland can be effectively mitigated. The aspects that should be covered include:

- The footprint associated with the construction related activities (access roads, construction platforms, workshop etc.) should be minimised;
- An Environmental Control Officer (ECO) should be appointed to monitor the establishment phase of the construction phase;
- All areas disturbed by construction related activities, such as access roads on the site, construction platforms, workshop area etc., should be rehabilitated at the end of the construction phase;
- The implementation of a rehabilitation programme should be included in the terms of reference for the contractor/s appointed. The specifications for the rehabilitation programme should be drawn up the Environmental Consultants appointed to undertake the EIA;
- The implementation of the Rehabilitation Programme should be monitored by the ECO.

## **4.5 SOCIAL IMPACTS ASSOCIATED WITH THE OPERATIONAL PHASE**

The key social issues affecting the operational phase include:

### **Potential positive impacts**

- Creation of employment and business opportunities. The operational phase will also create opportunities for skills development and training;
- Benefits associated with the establishment of a Community Trust;
- The establishment of renewable energy infrastructure.

### **Potential negative impacts**

- The visual impacts and associated impact on sense of place;
- Potential impact on tourism.

#### **4.5.1 Creation of employment and business opportunities**

Based on information from other solar energy projects the proposed solar park is likely to employ approximately 15 full time employees over a 20 year period. Based on information from other renewable projects approximately 10% of the posts will skilled positions and the remaining 90% semi and low skilled positions. The majority of the lowsemi-skilled employment opportunities are likely to be taken up by members from the local community. The majority of these opportunities are also likely to benefit Historically Disadvantaged members of the community. It will also be possible to increase the number of local employment opportunities through the implementation of a skills development and training programme linked to the operational phase. Such a programme would support the strategic goals of promoting local employment and skills development contained in the NLM IDP.

Given the location of the proposed facility the majority of permanent staff is likely to reside in Kroonstad or Koppies. In addition, vacant houses may also be rented at Heuningspruit station. In terms of accommodation options, a percentage of the

permanent employees may purchase houses in these towns, while others may decide to rent. Both options would represent a positive economic benefit for the region. In addition, a percentage of the monthly wage bill earned by permanent staff would be spent in the regional and local economy, which will benefit local businesses in these towns. The benefits to the local economy will extend over the 20-year operational lifespan of the project.

The local hospitality industry in the area is also likely to benefit from the operational phase. These benefits are associated with site visits by company staff members and other professionals (engineers, technicians etc.) who are involved in the company and the project but who are not linked to the day-to-day operations.

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

<b>Nature:</b> Creation of employment 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 (1)
<b>Duration</b>	Long term (4)	Long term (4)
<b>Magnitude</b>	Low (4)	Low (4)
<b>Probability</b>	Probable (3)	Highly Probable (4)
<b>Significance</b>	Low (27)	Medium (36)
<b>Status</b>	Positive	Positive
<b>Reversibility</b>	N/A	
<b>Irreplaceable loss of resources?</b>	No	
<b>Can impact be enhanced?</b>	Yes	
<b>Enhancement:</b> See below		
<b>Cumulative 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		
<b>Residual impacts:</b> See cumulative impacts		

**Assessment of No-Go option**

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

### **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:

- CCH should implement a training and skills development programme for locals during the first 5 years of the operational phase. The aim of the programme should be to maximise the number of South African's and locals employed during the operational phase of the project.

### **4.5.2 Benefits associated with the establishment of a community trust**

In terms of the Request for Proposal document prepared by the Department of Energy all bidders for operating licences for renewable energy projects must demonstrate how the proposed development will benefit the local community. This can be achieved by establishing a Community Trust which is funded by revenue generated from the sale for energy.

Community Trusts provide an opportunity to generate a steady revenue stream that is guaranteed for a 20 year period. This revenue can be used to fund development initiatives in the area and support the local community. The long term duration of the revenue stream also allows local municipalities and communities to undertake long term planning for the area. The revenue from the proposed solar park can be used to support a number of social and economic initiatives in the area, including:

- Creation of jobs;
- Education;
- Support for and provision of basic services;
- School feeding schemes;
- Training and skills development;
- Support for SMME's.

The objective of the Trust is to make a tangible difference to the lives of the people in the Local Community for not only the 20 year life of the project but beyond. The development priorities for the trust should be linked to the objectives and projects listed in the local IDP. Each Municipality is required under the terms of the Municipal Systems Act 2000 to develop and publish an Integrated Development Plan (IDP) and to review this plan on an annual basis. This plan essentially maps out a five (5) year development plan for the municipal area. It is a requirement of the IDP process that public consultation and stakeholder engagement take place, specifically including Local Communities, to arrive at a consensus with respect to the broader development priorities of the Municipal area. The comprehensive and inclusive nature of the IDP stakeholder engagement process employed by the Municipality makes the IDP the ideal mechanism for determining the socio-economic development priorities for the Trust.

In addition, the establishment of a SEF is unlikely to have a significant impact on the current agricultural land uses that underpin the local economic activities in the area. The loss of this relatively small area will not impact on the current and future farming activities. Experience has however also shown that Community Trusts can be mismanaged. This issue will need to be addressed in order to maximise the potential benefits associated with the establishment of a Community Trust.

**Table 4.8: Assessment of benefits associated with establishment of a community trust**

<b>Nature:</b> Establishment of a community trust funded by revenue generated from the sale of energy. The revenue can be used to fund local community development		
	<b>Without Mitigation</b>	<b>With Enhancement<sup>3</sup></b>
<b>Extent</b>	Local (2)	Local and Regional (3)
<b>Duration</b>	Long term (4)	Long term (4)
<b>Magnitude</b>	Low (4)	Low (4)
<b>Probability</b>	Probable (3)	Definite (5)
<b>Significance</b>	Medium (30)	Medium (55)
<b>Status</b>	Positive	Positive
<b>Reversibility</b>	N/A	
<b>Irreplaceable loss of resources?</b>	No	
<b>Can impact be enhanced?</b>	Yes	
<b>Enhancement:</b> See below		
<b>Cumulative impacts:</b> Promotion of social and economic development and improvement in the overall well-being of the community		
<b>Residual impacts:</b> See cumulative impacts		

**Assessment of No-Go option**

There is no impact as it maintains the current status quo. However, the potential opportunity costs in terms of the supporting the social and economic development in the area would be lost. This would also represent a negative impact.

**Recommended enhancement measures**

In order to maximise the benefits and minimise the potential for corruption and misappropriation of funds the following measures should be implemented:

- Clear criteria for identifying and funding community projects and initiatives in the area should be identified. The criteria should be aimed at maximising the benefits for the community as a whole and not individuals within the community;
- Strict financial management controls, including annual audits, should be instituted to manage the funds generated for the community trust from the solar park.

<sup>3</sup> Enhancement assumes effective management of the Community Trust

### 4.5.3 Development of clean, renewable energy infrastructure

South Africa currently relies on coal-powered energy to meet more than 90% of its energy needs. As a result South Africa is 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 carbon emissions. The establishment of a clean, renewable energy facility will therefore reduce, albeit minimally, South Africa's reliance on coal-generated energy and the generation of carbon emissions into the atmosphere.

However, the overall contribution of the proposed Heuningspruit SEF development to South Africa's total energy requirements would be small (50 MW). In addition, the current application is not unique. In this regard, a significant number of solar energy projects are currently proposed in other parts of South Africa. The potential contribution of the proposed Heuningspruit SEF should therefore be regarded as valuable, but should not be overestimated.

**Table 4.9: Development of clean, renewable energy infrastructure**

<b>Nature:</b> Promotion of clean, renewable energy		
	<b>Without Mitigation</b>	<b>With Mitigation</b> (The provision of renewable energy infrastructure is in itself a mitigation measure)
<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>	Minor (2)	Low (4)
<b>Probability</b>	Highly Probable (4)	Highly Probable (4)
<b>Significance</b>	Medium (40)	Medium (48)
<b>Status</b>	Positive	Positive
<b>Reversibility</b>	Yes	
<b>Irreplaceable loss of resources?</b>	Yes, impact of climate change on ecosystems	
<b>Can impact be mitigated?</b>	Yes	
<b>Enhancement:</b> See below		
<b>Cumulative impacts:</b> Reduce carbon emissions via the use of renewable energy and associated benefits in terms of global warming and climate change.		
<b>Residual impacts:</b> See cumulative impacts		

### Assessment of No-Go option

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

### Recommended mitigation measures

The establishment of the proposed facility is a mitigation measure in itself. In order to maximize the benefits of the proposed project CCH should:

- Implement a training and skills development programme for locals during the first 5 years of the operational phase. The aim of the programme should be to maximise the number of South African's employed during the operational phase of the project.

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

The components associated with the proposed facility will have a visual impact and, in so doing, impact on the landscape and rural sense of the place of the area. Care therefore needs to be taken to ensure that the development of large renewable energy projects not impact on visual character and sense of place of the landscape.

In the case of the proposed Heuningspruit 50 MW PV Solar Energy Facility the visual character of the area has been impacted by two existing power lines, the Heuningspruit substation, railway line and grain silos. In addition, the proposed Heuningspruit SEF is relatively small (50 MW). The potential visual impact on the landscape character of the area is likely to be limited.

However, as was indicated, Mr. du Plessis had raised concerns with regard to potential impacts on views towards the south-west of his property. This could potentially be addressed by planting screening. This would also serve to block any potential reflection from the PV site.

**Table 4.10: Visual impact and impact on sense of place**

<b>Nature:</b> Visual impact associated with the proposed solar facility and the potential impact on the areas rural sense of place.		
	<b>Without Mitigation</b>	<b>With Mitigation</b>
<b>Extent</b>	Local (2)	Local (1)
<b>Duration</b>	Long term (4)	Long term (4)
<b>Magnitude</b>	Medium (4)	Minor (2)
<b>Probability</b>	Probable (3)	Probable (3)
<b>Significance</b>	Moderate (30)	Low (21)
<b>Status</b>	Negative	Negative
<b>Reversibility</b>	Yes, solar facility can be removed.	

<b>Irreplaceable loss of resources?</b>	No	
<b>Can impact be mitigated?</b>	Yes	
<b>Enhancement:</b> See below		
<b>Cumulative impacts:</b> Potential impact on current rural sense of place		
<b>Residual impacts:</b> See cumulative impacts		

### Assessment of No-Go option

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

### Recommended mitigation measures

The recommendations contained in the VIA should be implemented.

### 4.5.5 Impact on tourism

The FSPGDP identifies tourism as an important economic sector. However, based on the findings of the SIA and the VIA the proposed facility is not likely to impact on the tourism sector in the area or the Province. This is due to the relatively small scale of the project and the site's location. The significance of this issue is therefore rated as low negative. In some instances the plant may also attract tourists to the area. However, the significance of this potential benefit is also rated as low positive.

**Table 4.11: Impact on tourism**

<b>Nature:</b> Potential impact of the solar thermal plant on local tourism		
	<b>Without Mitigation</b>	<b>With Enhancement / Mitigation</b>
<b>Extent</b>	Local (2)	Local (3)
<b>Duration</b>	Long term (4)	Long term (4)
<b>Magnitude</b>	Low (2)	Low (2)
<b>Probability</b>	Probable (3)	Probable (3)
<b>Significance</b>	Low (24) (Applies to both - and +)	Low (27) (Applies to both - and +)
<b>Status</b>	Negative (Potential to distract from the tourist experience of the area) Positive (Potential to attract people to the area)	Negative (Potential to distract from the tourist experience of the area) Positive (Potential to attract people to the area)
<b>Reversibility</b>	Yes	



<b>Irreplaceable loss of resources?</b>	No	
<b>Can impact be enhanced?</b>	Yes	
<b>Enhancement:</b> See below		
<b>Cumulative impacts:</b> Potential negative and or positive impact on tourism in the Ngwathe Municipality Area.		
<b>Residual impacts:</b> See cumulative impacts		

### Assessment of No-Go option

The No-Development option would represent a lost opportunity to create a facility that has the potential to attract visitors to the area. This would represent a negative opportunity cost.

### Recommended enhancement measures

In terms of mitigating the visual impacts, it is virtually impossible to hide the facility. The impact on the sense of place of the area cannot therefore be effectively mitigated. In terms of efforts to enhance the proposed benefits to tourism:

- CCH should liaise with representatives from the NLM and local tourism representatives to raise awareness of the proposed facility;
- CCH should investigate the option of establishing a renewable energy interpretation centre at entrance to the site. The centre should include a viewing area where passing visitors can stop and view the site;

## 4.6 ASSESSMENT OF POWER LINE OPTIONS

The energy would be fed into the Eskom Heuningspruit 88/ 11 kV substation ~220 m directly north of the PV sites. Small portions of the subject properties only would need to be traversed. The findings of the SIA therefore indicate that the impacts associated with the proposed overhead power line will be low.

**Table 4.12: Assessment of transmission line options**

<b>Nature:</b> Potential visual impact and impact on sense of place associated with power lines		
	<b>Without Mitigation</b>	<b>With Mitigation</b>
<b>Extent</b>	Local (2)	Local (1)
<b>Duration</b>	Long term (4)	Long term (4)
<b>Magnitude</b>	Minor (2)	Minor (2)
<b>Probability</b>	Probable (3)	Probable (3)

<b>Significance</b>	Low (24)	Low (21)
<b>Status</b>	Negative	Negative
<b>Reversibility</b>	Yes	
<b>Irreplaceable loss of resources?</b>	No	
<b>Can impact be mitigated?</b>	Yes	
<b>Enhancement:</b> See below		
<b>Cumulative impacts:</b> Limited visual and impact on sense of place		
<b>Residual impacts:</b> See cumulative impacts		

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

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

### **Recommended mitigation measures**

The recommendations contained in the VIA should be implemented. The measures listed above to address the potential impacts associated with the construction phase also apply to the construction of the power line.

## **4.7 ASSESSMENT OF NO-DEVELOPMENT OPTION**

As indicated above, South Africa currently relies on coal-powered energy to meet more than 90% of its energy needs. As a result South Africa is 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 carbon emissions.

The No-Development option would represent a lost opportunity for South Africa to supplement its current energy needs with clean, renewable energy. Given South Africa's position as one of the highest per capita producer of carbon emissions in the world, this would represent a negative social cost. However, as indicated above, the overall contribution of Heuningspruit SEF to South Africa's total energy requirements will be small (50 MW). In addition, the current application is not unique. The potential contribution of the proposed Heuningspruit SEF should therefore be regarded as valuable, but should not be overestimated.

The No-Development option would also result in a loss in employment opportunities associated with both the construction and operational phase. In addition, the benefits associated with the establishment of a Community Trust funded by revenue generated from the sale of energy from the solar park would be forfeited. The revenue from the proposed plant can be used to support a number of social and economic initiatives in the area. These benefits would be forgone if the proposed plant is not developed. Given the limited economic opportunities in the area this would represent a negative social cost for the local community.

**Table 4.13: Assessment of no-development option**

<b>Nature:</b> The no-development option would result in the lost opportunity for South Africa to supplement its current energy needs with clean, renewable energy. The No-Development option would also result in the loss of the benefits to the local community and economy associated with the creation of employment opportunities and the establishment of a Community Trust.		
	<b>Without Mitigation</b>	<b>With Enhancement<sup>4</sup></b>
<b>Extent</b>	Local-International (3)	Local-International (4)
<b>Duration</b>	Long term (4)	Long term (4)
<b>Magnitude</b>	Low (4)	Low (4)
<b>Probability</b>	Probable (3)	Probable (3)
<b>Significance</b>	Moderate (33)	Moderate (36)
<b>Status</b>	Negative	Positive
<b>Reversibility</b>	Yes	
<b>Irreplaceable loss of resources?</b>	Yes, impact of climate change on ecosystems	
<b>Can impact be mitigated?</b>	Yes	
<b>Enhancement:</b> See below		
<b>Cumulative impacts:</b> Reduce carbon emissions via the use of renewable energy and associated benefits in terms of global warming and climate change.		
<b>Residual impacts:</b> See cumulative impacts		

**Recommended enhancement measures**

The proposed facility should be developed and the mitigation and enhancement measures identified in the SIA and other specialist studies should be implemented. However, the impact of large solar facilities on the sense of place and landscape are issues need to be addressed in the location, design and layout of the proposed plant.

<sup>4</sup> Enhancement assumes development of the proposed PVSEF

## 4.8 ASSESSMENT OF CUMULATIVE IMPACTS

Although there appear to be no guidelines for solar facilities, the Australian Wind Farm Development Guidelines (Draft, July 2010) indicate that the cumulative impact of multiple wind farm facilities is likely to become an increasingly important issue for wind farm developments in Australia. This finding is also likely to apply to solar energy plants and is also likely to be the case in South Africa. The key concerns in terms of cumulative impacts are, as in the case of wind farms, also likely to be linked to visual impacts and the impact on rural, undeveloped landscapes.

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 solar facilities, specifically given that the key issue of concern is likely to relate to the impact on rural, undeveloped landscapes. The relevant issues raised in the by Scottish Natural Heritage include:

- Combined visibility (whether two or more wind farms (solar facilities) will be visible from one location);
- Sequential visibility (e.g. the effect of seeing two or more wind farms (solar facilities) along a single journey, e.g. road or walking trail);
- The visual compatibility of different wind farms (solar facilities) 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.

The guidelines also note that cumulative impacts need to be considered in relation to dynamic as well as static viewpoints. The experience of driving along a tourist road, for example, needs to be considered as a dynamic sequence of views and visual impacts, not just as the cumulative impact of several developments on one location. The viewer may only see one wind farm (solar facility) at a time, but if each successive stretch of the road is dominated by views of a wind farm (solar facility), then that can be argued to be a cumulative visual impact (National Wind Farm Development Guidelines, DRAFT - July 2010). It is reasonable to assume that these issues will also apply to solar facilities.

Research on wind farms undertaken by Warren and Birnie (2009) also highlights the visual and cumulative impacts on landscape character. The paper notes that given that aesthetic perceptions are a key determinant of people's attitudes, and that these perceptions are subjective, deeply felt and diametrically contrasting, it is not hard to understand why the arguments become so heated. Because landscapes are often an important part of people's sense of place, identity and heritage, perceived threats to familiar vistas have been fiercely resisted for centuries. The paper also identifies two factors that important in shaping people's perceptions of wind farms' landscape impacts. The first of these is the cumulative impact of increasing numbers of wind farms (Campbell, 2008). The research found that if people regard a region as having 'enough' wind farms already, then they may oppose new proposals. The second factor is the cultural context. This relates to people's perception and relationship with the landscape. In the South African context, the majority of South Africans have a strong connection with and affinity for the large, undisturbed open spaces that are characteristic of the South African landscape. The concerns raised with regard to wind farms and the impact on landscapes are also likely to apply to solar facilities.

The impact of solar facilities on the landscape is therefore likely to be a key issue in South Africa, specifically given South African's strong attachment to the land and the growing number of solar plant applications. With regard to the area, there do not appear to any other SEFs proposed in the immediate vicinity of the site. The potential for significant cumulative impacts is therefore likely to be low. However, the relevant environmental authorities should be aware of the potential cumulative impacts associated with the establishment of renewable energy facilities in the area when evaluating applications.

**Table 4.14: Cumulative impacts on sense of place and the landscape**

<b>Nature:</b> Visual impacts associated with the establishment of more than one solar plant and the potential impact on the areas rural sense of place and character of the landscape.		
	<b>Without Mitigation</b>	<b>With Mitigation</b>
<b>Extent</b>	Local and regional (2)	Local and regional (2)
<b>Duration</b>	Long term (4)	Long term (4)
<b>Magnitude</b>	Minor (2)	Minor (2)
<b>Probability</b>	Probable (3)	Probable (3)
<b>Significance</b>	Low (24)	Low (24)
<b>Status</b>	Negative	Negative
<b>Reversibility</b>	Yes. Solar energy plant components and other infrastructure can be removed.	
<b>Irreplaceable loss of resources?</b>	No	
<b>Can impact be mitigated?</b>	Yes	
<b>Enhancement:</b> See below		
<b>Cumulative impacts:</b> Impact on other activities whose existence is linked to linked to rural sense of place and character of the area, such as tourism, bird watching, and hunting.		
<b>Residual impacts:</b> See cumulative impacts		

### Assessment of No-Go option

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

### Recommended mitigation measures

The establishment of a number of large renewable energy facilities in the area does have the potential to have a negative cumulative impact on the areas sense of place and the landscape. The environmental authorities should consider the overall cumulative impact on the rural character and the areas sense of place before a final decision is taken with regard to the optimal number of such plants in an area.

## **4.9 ASSESSMENT OF DECOMMISSIONING PHASE**

Typically, the major social impacts associated with the decommissioning phase are linked to the loss of jobs and associated income. This has implications for the households who are directly affected, the communities within which they live, and the relevant local authorities. However, in the case of the proposed facility the decommissioning phase is likely to involve the disassembly and replacement of the existing components with more modern technology. This is likely to take place in the 20 years post commissioning. The decommissioning phase is therefore likely to create additional, construction type jobs, as opposed to the jobs losses typically associated with decommissioning.

In addition, the social impacts associated with final decommissioned are likely to be limited due to the relatively small number of permanent employees 15 affected. The potential impacts associated with the decommissioning phase can also be effectively managed with the implementation of a retrenchment and downscaling programme. With mitigation, the impacts are assessed to be Low (negative).

### **Recommended mitigation measures**

The following mitigation measures are recommended:

- CCH should ensure that retrenchment packages are provided for all staff who stand to lose their jobs when the plant is decommissioned;
- All structures and infrastructure associated with the proposed facility should be dismantled and transported off-site on decommissioning;
- CCH should investigate the option of establishing an Environmental Rehabilitation Trust Fund to cover the costs of decommissioning and rehabilitation of disturbed areas. The Trust Fund should be funded by a percentage of the revenue generated from the sale of energy to the national grid over the 20 year operational life of the facility. The rationale for the establishment of a Rehabilitation Trust Fund is linked to the experiences with the mining sector in South Africa and failure of many mining companies to allocate sufficient funds during the operational phase to cover the costs of rehabilitation and closure.

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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:

- 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 key documents reviewed included:

- The National Development Plan (2030);
- The National Energy Act (2008);
- The White Paper on the Energy Policy of the Republic of South Africa (December 1998);
- The White Paper on Renewable Energy (November 2003);
- Integrated Resource Plan (IRP) for South Africa (2019);
- Free State Provincial Growth and Development Strategy (2013);
- Ngwathe Local Municipality Integrated Development Plan (2021-2026); and
- Ngwathe Local Municipality Local Economic Development Strategy (2009).

The findings of the review of the relevant policies and documents pertaining to the energy sector therefore indicate that renewable energy and the establishment of SEF is supported at a national, provincial and local level. It is therefore the opinion of the authors that the establishment of a solar park is supported by national, provincial and local policies and planning guidelines.

In addition, apart from potentially enabling the NLM (a signatory to the 2011 Durban Climate Change Adaptation Charter for Local Governments) to support commercial renewable energy development in its area, the proposed development may also make a

modest contribution towards meeting key LED and IDP objectives related to local employment, training and SME development.

### **5.2.2 Construction phase**

The key social issues associated with the construction phase include:

#### **Potential positive impacts**

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

The construction phase for Heuningspruit 50 MW PV Solar Energy Facility is expected to extend over a period of 12 months and create approximately 50 employment opportunities. It is anticipated that approximately 60 % (30) of the employment opportunities will be available to low skilled (construction labourers, security staff etc.), 25% (12) to semi-skilled workers (drivers, equipment operators etc.) and 15% (8) to skilled personnel (engineers, land surveyors, project managers etc.). The majority of the low-skilled employment opportunities associated with construction phase are, therefore, likely to be available to members from the local community. In this regard the majority of the beneficiaries are likely to be historically disadvantaged (HD) members of the local communities. The low education and skills levels in the area may however hamper potential opportunities for local communities. The majority of the skilled and semi-skilled opportunities are likely to be associated with the contactors appointed to construct the facility and associated infrastructure.

The total wage bill for the construction phase will be in the region of R 6 million. The injection of income into the area in the form of wages and rental for accommodation will create opportunities for local businesses in Koppies and Kroonstad. 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 phase. The benefits to the local economy will be confined to the construction period (12 months).

The implementation of the proposed enhancement measures listed in the report would enable the establishment of the proposed solar park to support co-operation between the public and private sectors in order for the economic development potential of the Free State to be realised. In this regard the FSPGDS highlights the importance of enterprise development, and notes that the current levels of private sector development and investment in the province are low. The proposed solar park therefore has the potential to create opportunities to promote private sector investment and the development of SMMEs in the Free State Province. However, due to the relatively small scale of the project these opportunities are likely to be limited.

The capital expenditure on completion is anticipated to be in the region of R 250 million for a 50 MW facility. However, given the technical nature of the project and high import content associated with solar energy projects the potential opportunities for the NLM economy will be limited. However, opportunities are likely to exist for local contractors and engineering companies in Kroonstad and Koppies.



**Potential negative impacts**

- Influx of construction workers employed on the project;
- Increased risk of stock theft, poaching and damage to farm infrastructure associated with construction workers;
- Increased risk of veld fires associated with construction related activities;
- Impact of heavy vehicles, including damage to roads, safety, noise and dust;
- Loss of agricultural land associated with construction related activities.

The significance of the potential negative impacts with mitigation was assessed to be of Low significance. The majority of the potential negative impacts can therefore be effectively mitigated if the recommended mitigation measures are implemented. However, the impact on individuals who are directly impacted on by construction workers and or job seekers (i.e. contract HIV/ AIDS) was assessed to be of Medium-High negative significance. In addition, due to the low population density of the area and the relatively small size of the labour force (50) associated with the construction of Heuningspruit 50 MW PV Solar Energy Facility the potential risk to local family structures and social networks is regarded as low. Table 5.1 summarises the significance of the impacts associated with the construction phase.

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

<b>Impact</b>	<b>Significance No Mitigation</b>	<b>Significance With Mitigation</b>
<b>Creation of employment and business opportunities</b>	Low (Positive impact)	Medium (Positive impact)
<b>Presence of construction workers and potential impacts on family structures and social networks</b>	Low (Negative impact for community as a whole) Medium-High (Negative impact of individuals)	Low (Negative impact for community as a whole) Medium-High (Negative impact of individuals)
<b>Risk of stock theft, poaching and damage to farm infrastructure</b>	Medium (Negative impact)	Low (Negative impact)
<b>Risk of veld fires</b>	Medium (Negative impact)	Low (Negative impact)
<b>Impact of heavy vehicles and construction activities</b>	Low (Negative impact)	Low (Negative impact)
<b>Loss of farmland</b>	Medium (Negative impact)	Low (Negative impact)

### 5.2.3 Operational phase

The key social issues affecting the operational phase include:

#### **Potential positive impacts**

- Creation of employment and business opportunities. The operational phase will also create opportunities for skills development and training;
- Benefits associated with the establishment of a community trust.
- The establishment of infrastructure to generate renewable energy.

The total number of permanent employment opportunities is estimated to be in the region of 15. Of this total approximately 80% will be low and medium-skilled and 20% high skilled positions. The majority of the beneficiaries are therefore likely to be historically disadvantaged (HD) members of the community. Over time it will also be possible to increase the number of local employment opportunities through the implementation of a skills development and training programme linked to the operational phase. Such a programme would support the strategic goals of promoting local employment and skills development contained in the NLM IDP and the FSPGDP.

The establishment of a Community Trust also creates an opportunity to support local economic development in the area. Community Trusts provide an opportunity to generate a steady revenue stream that is guaranteed for a 20 year period. The revenue from the proposed solar plant can be used to support a number of social and economic initiatives in the area, including:

- Creation of jobs;
- Education;
- Support for and provision of basic services;
- School feeding schemes;
- Training and skills development;
- Support for SMME's.

The long term duration of the revenue stream associated with a solar plant linked Community Trust also enables local municipalities and communities to undertake long term planning for the area. Experience has however also shown that Community Trusts can be mismanaged. This issue will need to be addressed in order to maximise the potential benefits associated with the establishment of a Community Trust.

The proposed development also represents an investment in infrastructure for the generation of clean, renewable energy, which, given the challenges created by climate change, represents a positive social benefit for society as a whole.

#### **Potential negative impacts**

- The visual impacts and associated impact on sense of place and the landscape;
- Impact on tourism.

The visual impacts on landscape character associated with large renewable energy facilities, such as solar thermal plants, are highlighted in the research undertaken by Warren and Birnie (2009). In the South African context, the majority of South Africans have a strong connection with and affinity for the large, undisturbed open spaces that are characteristic of the South African landscape. The impact of solar energy plants on the landscape is therefore likely to be a key issue in South Africa, specifically given

South African’s strong attachment to the land and the growing number of solar energy applications. The visual impacts associated with the proposed Heuningspruit SEF are, however, likely to be low due to the existing power lines in the area and the relatively small size of the facility. The significance of the impacts associated with the operational phase are summarised in Table 5.2.

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

<b>Impact</b>	<b>Significance No Mitigation</b>	<b>Significance With Mitigation</b>
<b>Creation of employment and business opportunities</b>	Low (Positive impact)	Medium (Positive impact)
<b>Benefits associated with the establishment of a community trust</b>	Medium (Positive impact)	Medium (Positive impact)
<b>Establishment of infrastructure for the generation of renewable energy</b>	Medium (Positive impact)	Medium (Positive impact)
<b>Visual impact and impact on sense of place</b>	Medium (Negative impact)	Low (Negative impact)
<b>Impact on tourism</b>	Low (Positive and Negative)	Low (Positive and Negative)

#### **5.2.4 Assessment of cumulative impacts**

The cumulative impacts associated with solar energy facilities, such as the proposed Heuningspruit SEF, are largely linked to the impact on sense of place and visual impacts. In the case of the proposed Heuningspruit SEF the visual character of the area has been impacted by the Johannesburg railway line, Heuningspruit Station, a large silo-complex, two existing power lines across Voorspoed, and the Heuningspruit substation. The significance of the potential cumulative social impacts, specifically the impact on the landscape, was rated to be low.

However, it is recommended that the environmental authorities consider the overall cumulative impact on the rural character and the areas sense of place before a final decision is taken with regard to the optimal number of solar energy facilities in the area. In addition, the siting and number of individual components of the plant should be informed by findings of the relevant VIAs, specifically with respect to the visual impact on farmsteads and important roads in the area.

#### **5.2.5 Transmission line options**

The findings of the SIA indicate that the impacts associated with the proposed overhead power line will be low.

### **5.2.6 Assessment of no-development option**

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

The no-development option also represents a lost opportunity in terms of the employment and business opportunities (construction and operational phase) associated with the proposed solar park and the benefits associated with the establishment of a Community Trust. This also represents a negative social cost.

### **5.2.7 Decommissioning phase**

Due to the relatively small number of people affected (~15) the social impacts associated with the decommissioning of the facility are likely to be low. In addition, the potential impacts can be effectively managed with the implementation of a retrenchment and downscaling programme. With mitigation, the impacts are assessed to be Low (negative).

CCH should also investigate the option of establishing an Environmental Rehabilitation Trust Fund to cover the costs of decommissioning and rehabilitation of disturbed areas. The Trust Fund should be funded by a percentage of the revenue generated from the sale of energy to the national grid over the 20 year operational life of the facility. The rationale for the establishment of a Rehabilitation Trust Fund is linked to the experiences with the mining sector in South Africa and failure of many mining companies to allocate sufficient funds during the operational phase to cover the costs of rehabilitation and closure.

## **5.3 CONCLUSIONS AND RECOMMENDATIONS**

The findings of the SIA indicate that the development of the proposed Heuningspruit 50 MW PV Solar Energy Facility would create employment and business opportunities for locals during both the construction and operational phase of the project. The establishment of a Community Trust funded by revenue generated from the sale of energy will also create an opportunity to support local economic development in the area. This represents a social benefit for an area where there are limited opportunities.

The proposed development also represents an investment in clean, renewable energy infrastructure, which, given the challenges created by climate change, represents a positive social benefit for society as a whole. The establishment of the proposed Heuningspruit 50 MW PV Solar Energy Facility is therefore supported by the findings of the SIA.

## **5.4 IMPACT STATEMENT**

The findings of the SIA undertaken for the proposed Heuningspruit 50 MW PV Solar Energy Facility indicate that the potential social benefits associated with the projects

outweigh the potential negative social impacts. The establishment of a Community Trust also creates an opportunity to support local economic development in the area. The proposed development also represents an investment in clean, renewable energy infrastructure, which, given the challenges created by climate change, represents a positive social benefit for society as a whole.

It is therefore recommended that the Heuningspruit 50 MW PV Solar Energy Facility as proposed be supported, subject to the implementation of the recommended mitigation measures and management actions contained in the report.

## **ANNEXURE A**

### **Interviews**

- Du Plessis, Mr. Pieter (06-11-13). Owner: Café 1835, Heuningspruit.
- Keeve, Mr. Marius (06-11-13). Owner: Verblyding Farm, Heuningspruit.
- Keeve, Mr. Pietie (06-11-13). Owner: Katbos Farm, Heuningspruit.
- Wege, Ms. Annette (06-11-13). Owner: Verdun and Voorspoed Farms, Heuningspruit.
- X, Mr. Joseph (06-11-13). Station master (Transnet): Heuningspruit station.

### **References**

- Erasmus, BPJ (1995). *Oppad in Suid-Afrika*. Jonathan Ball, Johannesburg.
- IDC of SA, DBSA, TIP (2011). *Green Jobs. An Estimate of the Direct Employment Potential of a Greening South African Economy*;
- Free State Provincial Growth and Development Strategy (2013);
- Integrated Resource Plan (IRP) for South Africa (2019);
- Ngwathe Local Municipality Integrated Development Plan (2021-2026)
- Ngwathe Local Municipality Integrated Development Plan 2011/ 2012 Review;
- The National Energy Act, 2008;
- The White Paper on Renewable Energy, November 2003;
- The White Paper on the Energy Policy of the Republic of South Africa, December 1998;
- Savannah Environmental (April 2013). Background Information Document: *Proposed Heuningspruit PV1 and PV2 Solar Facilities (5 MW each), Free State Province*.

### **Internet sources**

- [www.demarcation.org.za](http://www.demarcation.org.za) (Census 2001 data); □ Google Earth 2013.
- [www.localgovernment.co.za/locals/view/42/ngwathe-local-municipality](http://www.localgovernment.co.za/locals/view/42/ngwathe-local-municipality);
- [www.ngwathe.fs.gov.za/#tab1](http://www.ngwathe.fs.gov.za/#tab1)

## **ANNEXURE B**

## METHODOLOGY FOR THE ASSESSMENT OF POTENTIAL IMPACTS

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

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

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

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

S = Significance weighting

E = Extent

D = Duration

M = Magnitude

P = Probability

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

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

## ANNEXURE C

### ENVIRONMENTAL MANAGEMENT PROGRAMME: SIA

#### CONSTRUCTION PHASE

##### Creation of employment and business opportunities

**OBJECTIVE: Maximise local employment and business opportunities associated with the construction phase.**

Project component/s Potential Impact	Construction and establishment activities associated with the establishment of the PV facility, including infrastructure etc. The opportunities and benefits associated with the creation of local employment and business should be maximised.	
Activity/risk source	The employment of outside contractors to undertake the work and who make use of their own labour will reduce the employment and business opportunities for locals. Employment of local labour will maximise local employment opportunities.	
Mitigation: Target/Objective	CCH, in discussions with the NLM, should aim to employ a minimum of 80% of the low-skilled workers from the local area. This should also be made a requirement for all contractors. CCH should also develop a database of local BEE service providers	
Mitigation: Action/control	Responsibility	Timeframe



<ul style="list-style-type: none"> <li>• Attempt to employ a minimum of 80% of the lowskilled workers are sourced from the local area;</li> <li>• Where required, implement appropriate training and skills development programmes prior to the initiation of the construction phase to ensure that 80% target is met.</li> <li>• Skills audit to be undertaken to determine training and skills development requirements;</li> <li>• Develop a database of local BEE service providers and ensure that they are informed of tenders and job opportunities;</li> <li>• Identify potential opportunities for local businesses</li> </ul>	<ul style="list-style-type: none"> <li>• CCH &amp; contractors</li> <li>• CCH</li> <li>• CCH</li> <li>• CCH</li> </ul>	<ul style="list-style-type: none"> <li>• Employment and business policy document that sets out local employment targets to be in place before construction phase commences.</li> <li>• Where required, training and skills development programmes to be initiated prior to the initiation of the construction phase.</li> <li>• Skills audit to determine need for training and skills development programme undertaken within 1 month of commencement of construction phase commences.</li> <li>• Database of potential local BEE services providers to be completed before construction phase commences.</li> </ul>
	<ul style="list-style-type: none"> <li>• CCH</li> </ul>	
<b>Performance Indicator</b>	<ul style="list-style-type: none"> <li>• Employment and business policy document that sets out local employment and targets completed before construction phase commences; <ul style="list-style-type: none"> <li><input type="checkbox"/> 80% of semi and unskilled labour locally sourced.</li> <li><input type="checkbox"/> Database of potential local BEE services providers in place before construction phase commences.</li> <li><input type="checkbox"/> Skills audit to determine need for training and skills development programme undertaken within 1 month of commencement of construction phase.</li> </ul> </li> </ul>	
<b>Monitoring</b>	<ul style="list-style-type: none"> <li><input type="checkbox"/> CCH and or appointed ECO must monitor indicators listed above to ensure that they have been met for the construction phase.</li> </ul>	

### Impact associated with presence of construction workers

**OBJECTIVE: Avoid the potential impacts on family structures and social networks associated with presence of construction workers from outside the area**

<b>Project component/s</b>	Construction and establishment activities associated with the establishment of the PV facility, including infrastructure etc.	
<b>Potential Impact</b>	The presence of construction workers who live outside the area and who are housed in local towns can affect family structures and social networks.	
<b>Activity/risk source</b>	The presence of construction workers can affect negatively on family structures and social networks, especially in small, rural communities.	
<b>Mitigation: Target/Objective</b>	To avoid and or minimise the potential impact of construction workers on the local community. This can be achieved by maximising the number of locals employed during the construction phase and minimising the number of workers housed on the site.	
<b>Mitigation: Action/control</b>	<b>Responsibility</b>	<b>Timeframe</b>
<ul style="list-style-type: none"> <li>Attempt to ensure that a minimum of 80% of the lowskilled workers are sourced from the local area. This should be included in the tender documents. Construction workers should be recruited from the local area in and around the Bloemfontein.</li> <li>Local construction workers should be able to provide</li> </ul>	<input type="checkbox"/> CCH	<ul style="list-style-type: none"> <li>Identify suitable local contractors prior to the tender process for the construction phase.</li> <li>Tender documents for contractors include conditions set out in SIA, including transport of workers home over weekends, transportation of workers home on</li> </ul>

<ul style="list-style-type: none"> <li><input type="checkbox"/> proof of having lived in the area for five years or longer. Identify local contractors who are qualified to</li> <li><input type="checkbox"/> undertaken the required work. Develop a Code of Conduct to cover the activities of the</li> <li><input type="checkbox"/> construction workers housed on the site. Ensure that construction workers housed attend a brief session before they commence activities. The aim of the briefing session is to inform them of the rules and regulations governing</li> <li><input type="checkbox"/> activities on the site as set out in the Code of Conduct. Ensure that all workers are informed at the outset of the construction phase of the</li> <li><input type="checkbox"/> conditions contained on the Code of Conduct. Ensure that construction workers who are found guilty of breaching the Code of Conduct are dismissed. All dismissals must be in</li> <li><input type="checkbox"/> accordance with South African labour legislation. Provide opportunities for workers to go home over weekends. The cost of transporting workers home over weekends and back to</li> <li><input type="checkbox"/> the site should be borne by the contractors. On completion of the construction phase all construction workers must be transported back to their place of origin within two days of their contract ending. The costs of transportation must be borne by the contractor.</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> CCH</li> <li><input type="checkbox"/> CCH</li> <li><input type="checkbox"/> CCH</li> <li><input type="checkbox"/> CCH and contractors</li> <li><input type="checkbox"/> CCH contractors</li> <li><input type="checkbox"/> Contractors</li> <li><input type="checkbox"/> Contractors</li> <li><input type="checkbox"/> Contractors</li> <li><input type="checkbox"/></li> </ul>	<p>completion of construction phase, establishment of MF etc.,</p> <p>MF established before construction phase commences.</p> <p>Code of Conduct drafted before construction phase commences.</p> <p>Briefing session for construction workers held before they commence work on site.</p>
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Performance Indicator	<input type="checkbox"/> Employment policy and tender documents that sets out local employment and targets completed before construction phase commences; <input type="checkbox"/> 80% of semi and unskilled labour locally sourced; <input type="checkbox"/> Local construction workers employed have proof that they have lived in the area for five years or longer; <input type="checkbox"/> Tender documents for contractors include recommendations for construction camp; <input type="checkbox"/> MF set up prior to implementation of construction phase; <input type="checkbox"/> Code of Conduct drafted before commencement of construction phase; <input type="checkbox"/> Briefing session with construction workers held at outset of construction phase;
Monitoring	<input type="checkbox"/> CCH and or appointed ECO must monitor indicators listed above to ensure that they have been met for the construction phase.

### Safety, poaching, stock theft and damage to farm infrastructure

**OBJECTIVE: To avoid and or minimise the potential impact of the activities during the construction on the safety of local communities and the potential loss of stock and damage to farm infrastructure.**

Project component/s	Construction and establishment activities associated with the establishment of the PV facility, including infrastructure etc.	
Potential Impact	Impact on safety of farmers and communities (increased crime etc.) and potential loss of livestock due to stock theft by construction workers and also damage to farm infrastructure, such as gates and fences.	
Activity/risk source	The presence of construction workers on the site can pose a potential safety risk to local farmers and communities and may result in stock thefts. The activities of construction workers may also result in damage to farm infrastructure.	
Mitigation: Target/Objective	To avoid and or minimise the potential impact on local communities and their livelihoods.	
Mitigation: Action/control	Responsibility	Timeframe

<ul style="list-style-type: none"> <li>• Consider establishing a MF with the adjacent farmers and develop a Code of Conduct for construction workers.</li> <li>• Inform all workers of the conditions contained in the Code of Conduct.</li> <li>• Dismiss all workers that do not adhere to the code of conduct for workers. All dismissals must be in accordance with South African labour legislation.</li> </ul>	<p>CCH and contractors</p> <ul style="list-style-type: none"> <li>• CCH</li> <li>• CCH</li> </ul>	<ul style="list-style-type: none"> <li>• Establish MF before construction phase commences.</li> <li>• Develop Code of Conduct prior to commencement of construction phase. The Code of Conduct should be signed by Sun Mechanics and the contractors before the contractors move onto site;</li> <li>• Inform all construction workers of Code of Conduct requirements before construction phase commences.</li> </ul>
<p><input type="checkbox"/> Compensate farmers / community members at full market related replacement cost for any losses, such as livestock, damage to infrastructure etc.</p>	<p>contractor</p> <p><input type="checkbox"/> Contractors</p>	<p><input type="checkbox"/> Compensate farmers / community members within 1 month of claim being verified by Sun Mechanics and or Contractor/s.</p>
<p><b>Performance Indicator</b></p>	<ul style="list-style-type: none"> <li>• Community MF in place before construction phase commences.</li> <li>• Code of Conduct developed and approved prior to commencement of construction phase.</li> <li>• All construction workers made aware of Code of Conduct within first week of being employed.</li> <li>• Compensation claims settled within 1 month of claim being verified by Community MF.</li> </ul>	
<p><b>Monitoring</b></p>	<p><input type="checkbox"/> CCH and or appointed ECO must monitor indicators listed above to ensure that they have been met for the construction phase.</p>	

**Increase risk of veld fires**

**OBJECTIVE: To avoid and or minimise the potential risk of increased veld fires during the construction phase.**

<p><b>Project component/s</b></p>	<p>Construction and establishment activities associated with the establishment of PV facility, including infrastructure etc.</p>
<p><b>Potential Impact</b></p>	<p>Veld fires can pose a personal safety risk to local farmers and communities, and their homes, crops, livestock and farm infrastructure, such as gates and fences.</p>
<p><b>Activity/risk source</b></p>	<p>The presence of construction workers and their activities on the site can increase the risk of veld fires.</p>

<b>Mitigation: Target/Objective</b>	To avoid and or minimise the potential risk of veld fires on local communities and their livelihoods.	
<b>Mitigation: Action/control</b>	<b>Responsibility</b>	<b>Timeframe</b>
<ul style="list-style-type: none"> <li>• Ensure that open fires on the site for cooking or heating are not allowed except in designated areas.</li> <li>• Provide adequate fire fighting equipment onsite.</li> <li>• Provide fire-fighting training to selected construction staff.</li> <li>• Compensate farmers / community members at full market related replacement cost for any losses, such as livestock, damage to infrastructure etc.</li> <li>• Join Fire Protection Agency</li> </ul>	<ul style="list-style-type: none"> <li>• CCH and contractors</li> <li>• CCH and contractors</li> <li>• Contractors</li> </ul>	<ul style="list-style-type: none"> <li>• Ensure that these conditions are included in the Construction Phase EMP.</li> <li>• Ensure that designated areas for fires are identified on site at the outset of the construction phase.</li> <li>• Ensure that fire fighting equipment and training is provided before the construction phase commences.</li> <li>• Compensate Farmers within 1 month of claim being verified by MF.</li> </ul>
	<input type="checkbox"/> Contractors	
<b>Performance Indicator</b>	<input type="checkbox"/> Conditions contained in the Construction EMP. <input type="checkbox"/> Designated areas for fires identified on site at the outset of the construction phase. <input type="checkbox"/> Fire fighting equipment and training provided before the construction phase commences. <input type="checkbox"/> Compensation claims settled within 1 month of claim being verified by Community MF.	
<b>Monitoring</b>	<input type="checkbox"/> CCH and or appointed ECO must monitor indicators listed above to ensure that they have been met for the construction phase.	

### Impact of dust and noise due to heavy vehicles and damage to roads

**OBJECTIVE: To avoid and or minimise the potential impacts of safety, noise and dust and damage to roads caused by construction vehicles during the construction phase.**

<b>Project component/s</b>	Construction and establishment activities associated with the establishment of the PV facility, including infrastructure etc.	
<b>Potential Impact</b>	Heavy vehicles can generate noise and dust impacts. Movement of heavy vehicles can also damage roads.	
<b>Activity/risk source</b>	The movement of heavy vehicles and their activities on the site can result in noise and dust impacts and damage roads.	
<b>Mitigation: Target/Objective</b>	To avoid and or minimise the potential noise and dust impacts associated with heavy vehicles, and minimise damage to roads.	
<b>Mitigation: Action/control</b>	<b>Responsibility</b>	<b>Timeframe</b>

<ul style="list-style-type: none"> <li>• Implement dust suppression measures for heavy vehicles such as wetting roads on a regular basis and ensuring that vehicles used to transport sand and building materials are fitted with tarpaulins or covers.</li> <li>• Ensure that all vehicles are road-worthy; drivers are qualified and are made aware of the potential noise, dust and safety issues.</li> <li>• Ensure that drivers adhere to speed limits. Vehicles should be fitted with recorders to record when vehicles exceed the speed limit.</li> <li>• Ensure that damage to roads is repaired before completion of construction phase;</li> </ul>	<ul style="list-style-type: none"> <li>• Contractors</li> <li>• Contractors</li> <li>• Contractors</li> <li>• Contractors</li> </ul>	<ul style="list-style-type: none"> <li>• Ensure that these conditions are included in the Construction Phase EMP.</li> <li>• Ensure that dust suppression measures are implemented for all heavy vehicles that require such measures during the construction phase commences.</li> <li>• Ensure that drivers are made aware of the potential safety issues and enforcement of strict speed limits when they are employed.</li> <li>• Fit all heavy vehicles with speed monitors before they are used in the construction phase.</li> <li>• Assess road worthy status of heavy vehicles at the outset of the construction phase and on a monthly basis thereafter;</li> </ul>
		<input type="checkbox"/> Ensure that damage to roads is repaired before completion of construction phase.
<b>Performance Indicator</b>	<input type="checkbox"/> Conditions included in the Construction Phase EMP. <input type="checkbox"/> Dust suppression measures implemented for all heavy vehicles that require such measures during the construction phase commences. <input type="checkbox"/> Drivers made aware of the potential safety issues and enforcement of strict speed limits when they are employed. <input type="checkbox"/> All heavy vehicles equipped with speed monitors before they are used in the construction phase. <input type="checkbox"/> Road worthy certificates in place for all heavy vehicles at outset of construction phase and up-dated on a monthly basis.	
<b>Monitoring</b>	<input type="checkbox"/> CCH and or appointed ECO must monitor indicators listed above to ensure that they have been met for the construction phase.	

### Impact on farming activities

**OBJECTIVE: To avoid and or minimise the potential impact on current and future farming activities during the construction phase.**

<b>Project component/s</b>	Construction phase activities associated with the establishment of the PV facility and associated infrastructure.
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Potential Impact	The footprint of the solar energy plant and associated infrastructure will result in a loss of land that will impact on farming activities on the site.	
Activity/risk source	The footprint taken up by the solar energy plant and associated infrastructure.	
Mitigation: Target/Objective	To minimise the loss of land taken up by the PV facility and associated infrastructure and to enable farming activities to continue where possible, specifically grazing.	
Mitigation: Action/control	Responsibility	Timeframe
<ul style="list-style-type: none"> <li>Minimise the footprint of the PV facility and the associated infrastructure.</li> <li>Rehabilitate disturbed areas on completion of the construction phase. Details of the rehabilitation programme should be contained in the EMP.</li> </ul>	<ul style="list-style-type: none"> <li>Contractor and Sun Mechanics</li> <li>ECO and Contractors</li> </ul>	<ul style="list-style-type: none"> <li>Footprint for PV facility should be defined in the Construction EMP before construction phase commences.</li> <li>Rehabilitation should be ongoing and completed within 3 months of the completion of the construction phase.</li> <li>Meeting/s with local farmers to discuss lease options should take place during the construction phase.</li> </ul>
Performance Indicator	<ul style="list-style-type: none"> <li>Footprint of PV facility included in the Construction Phase EMP.</li> <li>Meeting/s held with farmers during construction phase.</li> </ul>	
Monitoring	<ul style="list-style-type: none"> <li>ECO must monitor indicators listed above to ensure that they have been met for the construction phase.</li> </ul>	



# OPERATIONAL PHASE

## Creation of employment and business opportunities

**OBJECTIVE: Maximise local employment and business opportunities associated with the operational phase.**

Project components	Day to day operational activities associated with the including maintenance etc.		
Potential Impact	The opportunities and benefits associated with the creation of local employment and business should be maximised		
Activity/risk source	The operational phase of the PV facility will create approximately 10-15 full time employment opportunities.		
Mitigation:	In the medium to long term employ as many locals as possible to fill the full time employment opportunities.		
Target/Objective			
Mitigation: Action/control	Responsibility	Timeframe	
<ul style="list-style-type: none"> <li>The workforce of 10-15 development training and permanent staff is likely to programme during the Sun Mechanics should commit to implementing a 5- Identify local members of the year training and skills community who are suitably development and training qualified or who have the programme. The initial local potential to be employed full content target is 30%; time during the construction however, after 5 years the phase. objective is to have all the employment opportunities taken up by locals.</li> <li>Identify local members of the community who are Sun suitably qualified or who</li> </ul>	Sun Mechanics	Develop 5 year skills be based in Bloemfontein. construction phase	

# DECOMMISSIONING PHASE

## Impact of decommissioning

**OBJECTIVE: To avoid and or minimise the potential impacts associated with the decommissioning phase.**

Project component/s	Decommissioning phase of the PV facility		
	Mechanics have the potential to be employed full time.		

Potential Impact	Decommissioning will result in job losses, which in turn can result in a number of social impacts, such as reduced quality of life, stress, depression etc. However, the number of people affected ( ) 10-15 is relatively small. Decommissioning is also similar to the construction phase in that it will also create temporary employment opportunities.		
Activity/risk source	Decommissioning of the PV facility		
Mitigation: Target/Objective	To avoid and or minimise the potential social impacts associated with decommissioning phase of the PV facility.		
Mitigation: Action/control	Responsibility	Timeframe	
<input type="checkbox"/> Retrenchments should comply with South African Labour legislation of the day	<input type="checkbox"/> CCH	<input type="checkbox"/> When PV facility is decommissioned	
Performance Indicator	<input type="checkbox"/> South African Labour legislation relevant at the time		
Monitoring	<ul style="list-style-type: none"> <li>• CCH and Department of Labour</li> <li>• 5 year training and skills development programme developed and designed before construction phase completed.</li> <li>• Potential locals identified before construction phase completed.</li> <li>• CCH must monitor indicators listed above to ensure that they have been met for the operational phase.</li> </ul>		