SOCIAL IMPACT ASSESSMENT FOR THE EIA REPORT

PROPOSED HUMANSRUS SOLAR 3 PV FACILITY, NEAR PRIESKA

NORTHERN CAPE PROVINCE

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EXECUTIVE SUMMARY

Cape EAPrac has been appointed by Humansrus Solar 3 (Pty) Ltd, hereafter referred to as the Applicant, as independent environmental practitioner responsible for facilitating the Scoping and Environmental Reporting (S&EIR) process as part of the Environmental Impact Assessment (EIA) process required in terms of the National Environmental Management Act (NEMA, Act 107 of 1998, as amended) for the proposed Humansrus Solar 3 photovoltaic (PV) Facility, near Prieska, Northern Cape. Humansrus Solar 3 (Pty) Ltd has sub-leased a portion of Farm 147 Humansrus from the landowner, Mrs Christina S. Human, for the purpose of developing the proposed solar energy facility. The project involves the development of a solar energy facility with a total generation capacity of approximately 75MW to be supplied to the national Eskom grid via the existing Kronos Substation, located in close proximity to the site. The project infrastructure covers an area of up to ~220ha. The necessary associated infrastructure, including access roads, overhead electric lines, substation and control building(s) form part of this assessment. The target property, Farm 147 Humansrus, is located in the Pixley ka Seme District of the Northern Cape Province, within the jurisdiction area of the Siyathemba Local Municipality. The property is approximately ~4769ha in extent and is located approximately ~50km south-west of the town of Prieska, and approximately ~10km east of Copperton settlement[1]. The proposed solar development site is situated adjacent to the R357 Provincial Road, approximately ~9km south east of the existing Cuprum Substation and approximately 6km north east of the existing Kronos Substation.

The purpose of this report is to assess the potential social impacts associated with the proposed development and to recommend ways to reduce/avoid the negative social impacts and enhance the positive social impacts associated with the proposed development. The Social Impact Assessment (SIA) was undertaken by Candice Hunter of Savannah Environmental (Pty) Ltd. This report contains the findings of the SIA for the EIA process for the proposed project.

Legislation and Guidelines

The review of the relevant planning and policy documents was undertaken as a part of the SIA process. The key documents reviewed included:

National Policies:

- The Constitution of the Republic of South Africa (Act 108 of 1996)
- The National Environmental Management Act (107 of 1998) (NEMA)
- The National Energy Act (34 of 2008)
- Department of Energy Strategic Plan 2015-2020
- National Development Plan 2030

[1] Copperton was a small mining town when the Copperton Mine was operational. Since the closure of the mine 1991, the land was purchased and is now privately owned. Copperton is now a small settlement on privately owned land with privately owned households that are leased out.

- » National Climate Change Response Green Paper (DEA, 2010)
- » White Paper on Energy Policy of the Republic of South Africa (1998)
- » White Paper on Renewable Energy of the Republic of South Africa (2003)
- » National Integrated Resource Plan South Africa (2010-2030)
- » Strategic Infrastructure Projects (SIPs)

Provincial Policies:

- » Northern Cape Provincial Development and Resource Management Plan / Provincial Spatial Development Framework (PSDF) (2012)
- » Northern Cape Provincial Growth and Development Strategy (PGDS) (2011)
- » Northern Cape Provincial Local Economic Development (LED) Strategy (2009)

Local and District Policies:

- » Pixley ka Seme District Municipality Integrated Development Plan (IDP) (2012-2016)
- » Siyathemba Local Municipality Integrated Development Plan (IDP) (2015-2016)
- » Siyathemba Local Municipality Local Economic Development (LED) Strategy (2012)

Solar Energy Policies:

- » Solar Energy Technology Roadmap (2013)

Summary of the Socio-Economic Profile of the study area

Regional Context:

- » Northern Cape is the largest Province with the smallest population in South Africa.
- » At a Provincial level, the Northern Cape has been identified as the area with the highest potential for solar renewable energy generation, with high solar irradiation levels and the availability of vast tracts of land. There are already a number of solar facilities planned in the region.
- » The Pixley ka Seme District Municipality (PKSDM) is declared as a Renewable Energy Hub seeking to attract foreign direct investments into solar, wind, hydro and biomass projects. The PKSDM and its eight local municipalities are currently promoting a green economy in the district that seeks to promote generated economic activities that preserve and enhance environmental quality while using natural resources more efficiently.

Local Context:

- » The study area is located in the Siyathemba Local Municipality (SLM), Ward 4, which falls within the greater PKSDM in the Northern Cape Province.
- » The situational analysis and statistics presented in the baseline description of the SLM indicate the developmental challenges facing the SLM, such as poverty, unemployment and service delivery backlogs.
- » The proposed development will support the social and economic development within the SLM through enabling skills development and training in order to empower individuals and promote employment creation within the local area. The development would mainly focus on economic benefits to the area and introduce a

new industry into the local economy. Negative dimensions of impacts such as an influx of jobseekers into the area may put pressure on the provision of basic services and poverty levels; this has been assessed in Section 5.

Direct area of influence:

» A project's direct area of influence extends to a 50km radius from the project site.
» The Department of Energy (DoE) indicates that the Renewable Energy Independent Power Producer Procurement (REIPPP) Programme offers great potential for positive socio economic outcomes- listed as job creation, local ownership, socio-economic development and enterprise development. All of which has to take place within 50km of the project site.
» The main urban town within the project's direct area of influence (within 50km radius) is Prieska. Other major towns (outside of its direct area of influence, 50km) in the SLM include Marydale and Niekerkshoop.
» An in-depth community needs analysis (CNA) will need to be carried out by the developer at a later stage to make sure that the real needs of communities are addressed by development programmes (in line with the local government) in order to significantly contribute towards local economic growth, Socio-Economic Development (SED) and Enterprise Development (ED).
» Potential negative impacts within the direct area of influence will be during the construction phase and will be associated with pressure on infrastructure (e.g. health facilities, basic services) and different social/cultural behaviour influences, for example if an external workforce is brought into the local area. Additional negative impacts such as an influx of jobseekers and the added pressure on the provision of basic services may occur. The development would mainly focus on economic benefits including economic growth and development (economic opportunities such as jobs and expenditure in the local area).

Indirect area of influence:

» Road users that use the R357 on a frequent basis as part of their daily or weekly movement patterns (people commuting between Prieska and Van Wyksvlei) are considered to be indirectly influenced. Construction vehicles and trucks will be utilising this road during the construction phase of the development (approximately ~15-20 trips per day), which will increase the traffic and may increase the wear and tear on these roads.
» An important stakeholder outside the direct area of influence is the Square Kilometre Array (SKA) project that is underway.
» Another indirect area of influence will be at a national level with the positive benefits of the generation of renewable energy that will contribute to South Africa's electricity market.

Immediate area of influence:

Site Context:

» The study area is located on privately owned land, within Farm 147 Humansrus.

» The study area is characterised by livestock farming.
» There are no farmsteads or residents living in the study area.
» There are no buildings or significant infrastructure located in the study area. There are no farmsteads or residents living on Farm 147 Humansrus.
» A decommissioned railway line runs along the northern boundary of the study site.
» The site is surrounded by similar agricultural land, used predominantly for sheep farming and the development of renewable energy facilities.

Adjacent landowners:

» Majority of the surrounding study area has a low number of farmsteads/buildings that are sparsely populated.
» The area is located within a livestock farming agricultural region.
» The area is presently used mainly for small livestock (sheep, goats) farming as well as renewable energy facilities. There are currently three developed solar energy facilities and two wind farms that are scheduled to be constructed in 2016 / 2017. There are also a number of farms that have received environmental authorisation for solar energy facilities and farms that are currently in the EIA process for solar developments. This implies that projects of the same nature have been consolidated in one area creating a renewable energy node.
» The settlement of Copperton and infrastructure of the now disused Copperton mine and slime dams also lie to the north-west of the proposed study area.
» There is a network of gravel roads and smaller farm tracks within the area, including servitudes along the existing 132 kV power lines which run across the middle of Farm Platsjambok RE/102, Farm 147 Humansrus and Farm Vogelstruisbult 1/104.

A survey of the adjacent landowners was undertaken to determine the type of activities / land uses surrounding the study area and to determine any sensitive social receptors that may be negatively impacted by the proposed development. All the adjacent landowners were interviewed either in person or telephonically. There were no major issues or concerns raised by the adjacent landowners and they were all very supportive of the proposed projects. The only issue that was raised was the impact from all the renewable developments on the roads (wear and tear) and the dust pollution increasing.

Social Impact Assessment

The environmental assessment framework for the assessment of impacts and the relevant criteria were applied to evaluate the significance of the potential social impacts. A summary of the potential positive and negative impacts identified in the SIA for the construction and operation phase are presented in Tables 1 and 2 below; Table 3 provides an overview the assessment of alternatives and a summary of the cumulative social impacts is also provided in Table 4.

Table 1: Summary of social impacts during construction phase

CONSTRUCTION PHASE				
Impact	**Significance without Mitigation/ enhancement**	**Significance with Mitigation/ enhancement**	**Significance without Mitigation/ enhancement**	**Significance with Mitigation/ enhancement**
	PREFERRED LAYOUT		**ALTERNATIVE LAYOUT**	
Direct employment and skills development	Medium (33) Positive	Medium (44) Positive	Medium (33) Positive	Medium (44) Positive
Economic multiplier effects	Low (27) Positive	Medium (44) Positive	Low (27) Positive	Medium (44) Positive
Influx of jobseekers	Low (24) Negative	Low (18) Negative	Low (24) Negative	Low (18) Negative
Impacts on daily living and movement patterns (traffic & nuisance impacts)	Low (21) Negative	Low (15) Negative	Low (27) Negative	Low (15) Negative
Safety and security risks	Low (14) Negative	Low (10) Negative	Low (14) Negative	Low (10) Negative

Table 2: Summary of social impacts during operation phase

OPERATION PHASE				
Impact	**Significance without Mitigation/ enhancement**	**Significance with Mitigation/ enhancement**	**Significance without Mitigation/ enhancement**	**Significance with Mitigation/ enhancement**
	PREFERRED LAYOUT		**ALTERNATIVE LAYOUT**	
Direct employment and skills development	Low (24) Positive	Medium (32) Positive	Low (24) Positive	Medium (32) Positive
Development of clean, renewable energy infrastructure	Medium (40) Positive	N/A	Medium (40 Positive)	N/A
Benefits associated with REIPPP socio-economic development plans and community trust	Low (30) Positive	Medium (48) Positive	Low (30) Positive	Medium (48) Positive
Impact on the areas sense of	Low (24) Negative	N/A	Low (24) Negative	N/A

place and landscape				
Impacts associated with the loss of agricultural land	Low (28) Negative	N/A	Low (28) Negative	N/A

Table 3: Summary of assessment of alternatives

OPERATION PHASE				
Impact	**Significance without Mitigation**	**Significance with Mitigation**	**Significance without Mitigation**	**Significance with Mitigation**
	Alternative Access Road 1		**Alternative Access Road 2**	
Assessment of the access road alternatives	Low (27) Negative	Low (21) Negative	Low (21) Negative	Low (15) Negative

Table 4: Summary of cumulative social impacts

CUMULATIVE IMPACTS		
Cumulative Impact	**Overall impact of the proposed project considered in isolation**	**Cumulative impact of the project and other projects in the area**
Positive Cumulative Impacts		
Cumulative impacts from employment, skills and business opportunities	Low (27)	Medium (39)
Negative Cumulative Impacts		
Cumulative impacts with large-scale in-migration of people	Low (18)	Medium (33)
Cumulative impacts of nuisance impacts (noise, dust & traffic)	Low (24)	Medium (36)
Cumulative impacts on the sense of place and landscape	Low (24)	Medium (30)

From a social perspective it is concluded that the project is supported, but that mitigation measures should be implemented and adhered to. Positive and negative social impacts have been identified. The assessment of the key issues indicated that there are no negative impacts that can be classified as fatal flaws and which are of such significance that they cannot be successfully mitigated. Positive impacts could be enhanced by implementing appropriate enhancement measures and through careful planning. Based on the social assessment, the following general conclusions and findings have been made:

» The preferred access road option from a social perspective is the preferred access road 2.
» The potential negative social impacts associated with the construction phase are typical of construction related projects and not just focussed on the construction of PV facilities (these relate to influx of non-local workforce and jobseekers, intrusion and disturbance impacts, safety and security) and could be reduced with the implementation of the mitigation measures proposed.
» Employment opportunities will be created in the construction and operation phase and the impact is rated as positive.
» The proposed project could assist the local economy in creating entrepreneurial development, especially if local business could be involved in the provision of general material and services during the construction and operation phases.
» Capacity building and skills training among employees are critical and would be highly beneficial to those involved, especially if they receive portable skills to enable them to also find work elsewhere and in other sectors.
» The proposed development also represents an investment in infrastructure for the generation of clean, renewable energy, which, given the increased awareness of climate change, represents a positive social benefit for society as a whole.

Recommendations

Based on the social assessment, the following recommendations are made:

» It is important to appoint a community liaison officer from the local community to assist with the management of social impacts and to deal with community issues.
» In terms of employment related impacts, it is important to consider that job opportunities for the unskilled and semi-skilled in the study area could create competition among the local unemployed. Introducing an outside workforce will therefore most likely worsen local endeavours to obtain jobs and provoke discontent as well as put pressure on the local services available. It is imperative that local labour be sourced from SLM to ensure that benefits accrue to the local communities. Efforts should be made to involve local businesses during the construction activities where possible. Local procurement of labour and services/products would greatly benefit the community during the construction and operation phases of the project.
» Local procurement of services and equipment (where possible) in order to enhance the multiplier effect. This would serve to mitigate other subsequent negative impacts such as those associated with the inflow of outsiders to the area, the increased pressure on the infrastructure and services in the area, as well as the safety and security concerns.
» Involve the community in the process as far as possible during the construction and operation phase (encourage co-operative decision making and partnerships with local entrepreneurs).
» Implement mitigation measures to reduce and avoid negative impacts.

» Employ mitigation measures to minimise the dust pollution and damage to existing roads.
» Safety and security risks should be taken into account during the planning/construction phase of the proposed project. Access control, security and management should be implemented to limit the risk of crime increasing in the area.
» From a social perspective it is recommended to choose the preferred access road 2 to reduce dust pollution and wear and tear impacts on the gravel roads.
» Renewable energy projects under the REIPPP Programme are obliged to make a real contribution to local economic development in the area. It is required that a certain amount of their generated revenue is spent on SED and ED and share ownership in the project company with local communities. It is important that these requirements are fulfilled and

Overall Conclusion

The proposed Humansrus Solar 3 PV Facility and associated infrastructure is unlikely to result in permanent damaging social impacts. The potential for positive socio-economic benefits can be realised, and this has been proven through the three projects which have already been constructed and are operational in the immediate area. There is also no opposition to the project from local landowners, councillors or community representatives. From a social perspective it is concluded that the project could be developed subject to the implementation of the recommended mitigation measures and management actions contained in the SIA report.

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List of Abbreviations

EA	Environmental Authorisation
CNA	Community Needs Analysis
CSP	Concentrated Solar Power
DEA	Department of Environmental Affairs
DGDS	District Growth and Development Strategy
DM	District Municipality
DoE	Department of Energy
EAP	Economically Active Population
EIA	Environmental Impact Assessment
EMPr	Environmental Management Programme
EMZ	Environmental Management Zone
GDP	Gross Domestic Product
Ha	Hectares
HD	Historically Disadvantaged
HDSA	Historically Disadvantaged South Africans
IDP	Integrated Development Plan
IPP	Independent Power Producer
KPA	Key Performance Area
LED	Local Economic Development
LM	Local Municipality
MW	Megawatt
NC	Northern Cape
NEMA	National Environmental Management Act
NSSD	National Strategy for Sustainable Development
PB	Preferred Bidder
PKSDM	Pixley ka Seme District Municipality
PGDF	Northern Cape Provincial Growth and Development Framework
PSDS	Provincial Spatial Development Strategy
PV	Photovoltaic
SEMP	Strategic Environmental Management Plan
SDF	Spatial Development Framework
SIA	Social Impact Assessment
SLM	Siyathemba Local Municipality
VIA	Visual Impact Assessment

SOCIAL IMPACT ASSESSMENT FOR THE PROPOSED HUMANSRUS SOLAR 3 PV FACILITY, NEAR PRIESKA

1. INTRODUCTION

Cape EAPrac has been appointed by Humansrus Solar 3 (Pty) Ltd, hereafter referred to as the Applicant, as independent environmental practitioner responsible for facilitating the Scoping and Environmental Reporting (S&EIR) process as part of the Environmental Impact Assessment (EIA) process required in terms of the National Environmental Management Act (NEMA, Act 107 of 1998, as amended) for the proposed Humansrus Solar 3 PV Facility, near Prieska, Northern Cape. Humansrus Solar 3 (Pty) Ltd has sub-leased a portion of Farm 147 Humansrus from the landowner, Mrs Christina S. Human, for the purpose of developing the proposed solar energy facility. The project involves the development of a solar energy facility with a total generation capacity of approximately 75MW to be supplied to the national Eskom grid via the existing Kronos Substation, located in close proximity to the site. The project infrastructure covers an area of up to ~220ha. The necessary associated infrastructure, including access roads, overhead electric lines, substation and control building(s) form part of this assessment. The target property, Farm 147 Humansrus, is located in the Pixley ka Seme District of the Northern Cape Province, within the jurisdiction area of the Siyathemba Local Municipality. The property is approximately ~4769ha in extent and is located approximately ~50km south-west of the town of Prieska, and approximately ~10km east of Copperton settlement[2]. The proposed solar development site is situated adjacent to the R357 Provincial Road, approximately ~9km south east of the existing Cuprum Substation and approximately 6km north east of the existing Kronos Substation.

The purpose of this report is to assess the potential social impacts associated with the proposed development and to recommend ways to reduce/avoid the negative social impacts and enhance the positive social impacts associated with the proposed development. The Social Impact Assessment (SIA) was undertaken by Candice Hunter of Savannah Environmental. This report contains the findings of the SIA for the EIA process for the proposed project.

1.1. Social Impact Assessment

Social Impact Assessment (SIA) is described as "the process of assessing or estimating, in advance, the social consequences that are likely to follow from specific policy actions or project developments, particularly in the context of

[2] Copperton was a small mining town when the Copperton Mine was operational. Since the closure of the mine 1991, the land was purchased and is now privately owned. Copperton is now a small settlement on privately owned land with privately owned households that are leased out.

appropriate national, state, or provincial environmental policy legislation" (Becker et al, 2003). Social impacts meaning the consequences to human populations of any public or private actions that alter the ways in which people live, work, play, relate to one another, organise to meet their needs and generally cope as members of society. The term also includes cultural impacts involving changes to the norms, values, and beliefs that guide and rationalise their cognition of themselves and their society (National Maritime Fisheries Service, 1994).

SIA is a methodology or instrument used by social assessment practitioners to determine the social impacts from a project and to provide ways to mitigate and monitor potential impacts (Vanclay, 2003). The SIA is divided into a number of phases however the public consultation is a crucial step in the preparation of an SIA. SIA is concerned with the human dimensions of the environment, this meaning that;

> *"SIA is the process of analysing (predicting, evaluating and reflecting) and managing the intended and unintended consequences on the human environment of planned interventions (policies, programs, plans, projects) and any social change processes invoked by those interventions so as to bring about a more sustainable and equitable biophysical and human environment (Vanclay, 2003: 2)."*

The National Environmental Management Act (NEMA) (Act 107 of 1998) sets out a number of principles which underpin environmental management in South Africa. A number of these principles relate to the social dimension of sustainable development and public process requirements such as transparency, accountability, democracy and environmental justice. The following principle outlines the basis for a SIA:

> *Environmental management must place people and their needs at the forefront of its concern, and serve their physical, psychological, developmental, cultural and social interests equitably.*

More specifically, the social, economic and environmental impacts of activities must be considered and assessed. SIA is a useful planning tool that can assist the project proponent to conceptualise and implement a project in a manner which would see the identified negative social impacts addressed through avoidance or mitigation and the positive impacts realised and optimised. It also allows the community to anticipate, plan for, and deal with the social changes once they come to effect. In this sense then the SIA is an indispensable part of the EIA, the Environmental Management Programme (EMPr) and any participative activity (E.g. community involvement in mitigation and monitoring during planning and implementation). The purpose of an SIA report is to provide baseline information regarding the social environment and to identify possible social impacts that may come about as a result of a project. The report highlights

the most likely associated social impacts to occur from the proposed project and provides methods to aim towards emphasizing positive impacts and avoiding, reducing or mitigating negative identified impacts.

1.2. Terms of Reference

The main aim of the SIA report is to assess the potential social impacts that may arise from the proposed development and to recommend the most suitable mitigation/enhancements measures from a social perspective. The purpose of the study:

» To provide baseline information describing the social environment affected by the proposed development;
» To identify, describe and assess possible social risks/ fatal flaws and social impacts that may come about as a result of the proposed development (in terms of the construction, operation and decommissioning phases of the project); and
» To suggest ways in which these impacts can be mitigated or enhanced, aiming at maximising opportunities and avoiding and or reducing negative social impacts, including cumulative impacts.

1.3. Specialist Details

The SIA report was prepared by Candice Hunter of Savannah Environmental, a SIA specialist with a Master's degree in Environmental Management and an advanced certificate in SIA from the University of Johannesburg. Her expertise lies in field of SIA within the renewable energy field with over 30 projects completed, and two and a half years' experience in social consulting (refer to CV in Appendix A).

1.4. Declaration of Independence

A signed declaration of independence for Candice Hunter of Savannah Environmental is attached in Appendix A.

1.5. Project Overview

Project background and description:

The proposed Humansrus Solar 3 PV Facility is envisaged to make use of PV technology with a maximum total installed capacity of ~75MW. The PV technology will be either fixed-tilt PV, single-tracking/axis PV or double-tracking/axis PV. The infrastructure associated with this PV development will include the following:

» Solar field of PV modules/panel arrays with maximum structure height of no more than 10 metres;

» Maximum of 86 x inverter stations / mini-substations (including MV distribution transformers) at a height of 3m;
» On-site Switching Station / Substation of approx. 10'000 m2 in size (including a switching station, IPP transformer, IPP HV yard, ESKOM HV yard, switch gear and feeder bays);
» Overhead 132kV transmission power line to distribute the generated electricity from the on-site substation to the existing Eskom Kronos Distribution Substation (south east of the site). Transmission line will be a single circuit line, approx. 6km in length, with a maximum height of 25m, within a servitude width of 31m – 40m;
» Auxiliary buildings with a footprint of approximately 1500-2000m2, including:
  - Control Centre (+/- 250m2);
  - Office (+/- 250m2);
  - Warehouses (x2) (+/- 100m2)
  - Canteen & Visitors Centre (+/- 300m2)
  - Staff Lockers & Ablution (250m2); and
  - Gate house / security offices (+/- 50m2),
  - Parking area (+/- 300m2)
» Internal electrical reticulation network (underground cabling);
» Access road and internal road / track network;
» Laydown areas, required for material & equipment (+/- 5ha [50 000m2]);
» Rainwater tanks (+/- twenty 10kl tanks); and
» Perimeter fencing and lighting around the solar facility.

The purpose of the proposed PV facilities will be to evacuate the generated power into the Eskom electricity grid. The project is proposed to be bid into the Department of Energy's (DoE) Renewable Energy Independent Power Producer Procurement (REIPPP) Programme.

Alternatives being assessed:

The following layout alternatives, as well as the no-go option, are considered for the Humansrus Solar 3 PV Facility (refer to Figure 1):

» *Preferred Layout,* proposes a footprint of no more than ~220ha within the ~852ha study area and is concentrated on the eastern side of the R357 on Farm 147 Humansrus.
» *Alternative Layout,* is an area of approximately ~240ha in size and concentrated in the western portion and eastern portion of the R357 within the ~852ha study area.
» *NO-GO / Status-Quo Alternative,* which proposes that the Humansrus Solar 3 PV Facility not go ahead and that the farm remains undeveloped as it is currently.

Access to the site will be along appropriate provincial and local roads. The proposed access roads to the site are from the R357 Prieska/Van Wyksvlei road. The R357 road has a tarred section and a gravel section. Three access road alternatives are considered. All three access road alternatives provide access to the proposed site from the R357 Prieska/ Van Wyksvlei road as illustrated in Figure 1. Each of these access roads are described below.

» *Access Road Alternative 1:*
Alternative site access road 1 provides direct access from the tarred section of the R357 road to the North corner of the proposed preferred site.

» *Access Road Alternative 2 (Preferred):*
Alternative site access road 2 provides direct access from the gravel road R357 (Prieska/Vanwyksvlei road) to the South corner of the proposed preferred site. Note that "Access Road Alternative 2" is the developmental preferred access route.

» *Access Road Alternative 3:*
Alternative site access road 3 provides direct access to the west of the R357 road and to the alternative site layout from the gravel R357 road (Prieska/ Vanwyksvlei) opposite the access road Alternative 2.

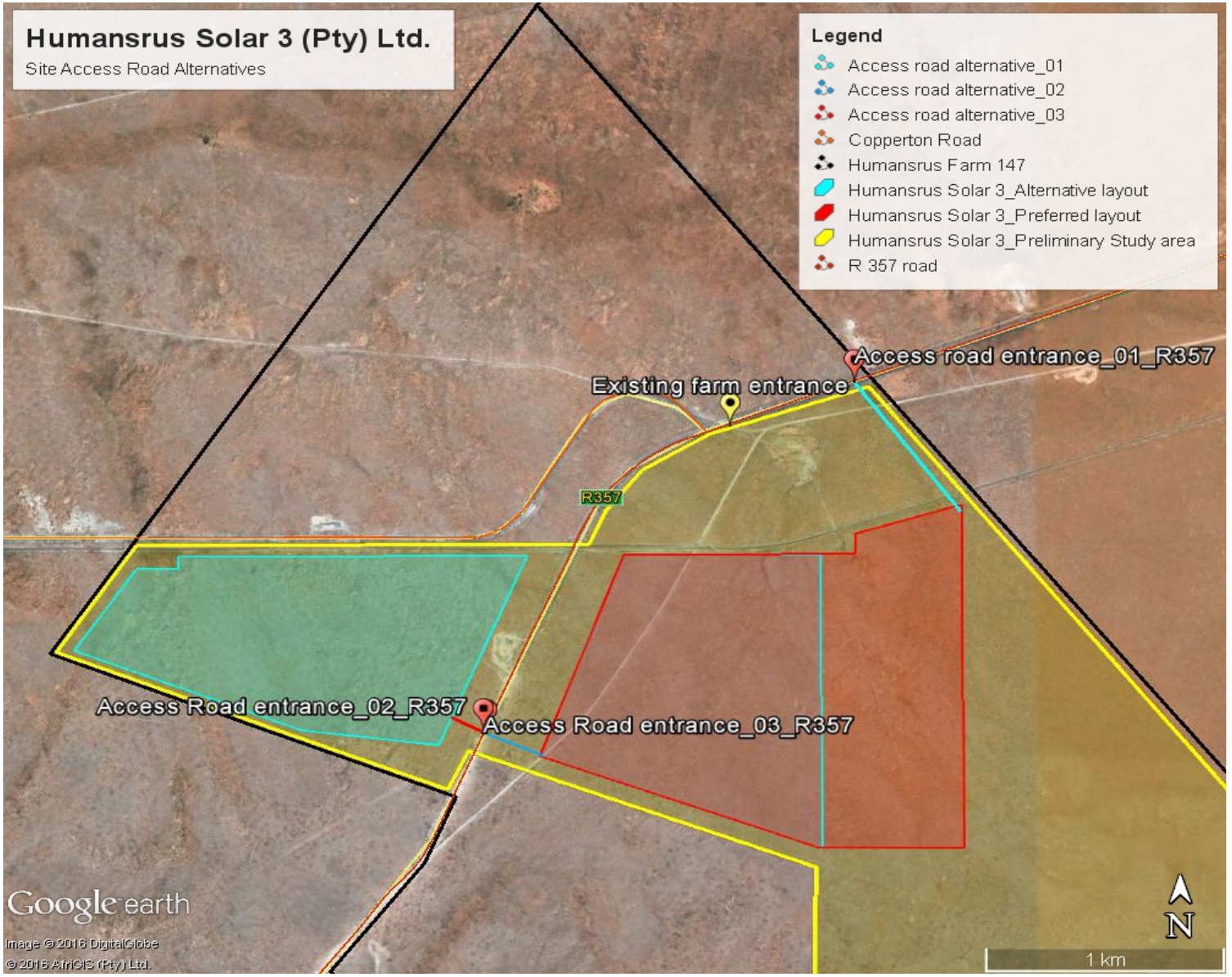

Figure 1: Layout alternatives and site access road alternatives

Locality and size:

The target property, Farm 147 Humansrus, is located in the Pixley ka Seme District of the Northern Cape Province, within the jurisdiction area of the Siyathemba Local Municipality. The proposed site is located approximately 50km south-west of the town of Prieska, and approximately 10km south east of Copperton settlement (refer to Figure 2). Farm 147 Humansrus is approximately ~4769ha in extent, the study area within the farm portion is ~852ha, and the area of land designated for the proposed Humansrus Solar 3 PV Facility is approximately ~220ha in size within the study area. The proposed solar development site is situated adjacent to the R357 Provincial Road, approximately 9km south east of the existing Cuprum Substation and approximately 6km north east of the existing Kronos Substation.

Construction phase:

» *Duration:* It is estimated that the construction of the proposed 75MW solar energy facility and associated infrastructure is expected to extend over a period of 12-18 months.
» *Capital expenditure:* The total construction capital expenditure associated with the establishment of the 75MW solar energy facility is estimated to be in the region of R1.5 billion (2015 Rand value). In terms of business opportunities for local companies, expenditure during the construction phase will create business opportunities for the regional and local economy.
» *Employment opportunities and wages:* The 75MW solar energy facility is likely to create approximately ~300-400 full-time equivalent employment positions, depending on the final design. Of this, approximately 60% of the opportunities will be available to low-skilled workers (construction labourers, security staff etc.), 25% will be available to semi-skilled workers (drivers, equipment operators etc.), and 15% will be available to skilled personnel (engineers, land surveyors, project managers etc.). Majority of low-skilled and semi-skilled opportunities are likely to be sourced from the local community (± 200- approximately 50-60%). The total wage bill for the construction for the 75MW solar energy facility is estimated to be in the region of R50 million (2015 Rand value). Approximately 28% of the wage bill will be allocated towards low-skilled, 19% towards semi-skilled labour and approximately 43% of the wage bill be allocated for skilled labour. The injection of income into the area in the form of wages will represent an opportunity for the local economy and businesses in the area.
» *Skills development and training:* The developer has indicated that there will be opportunities for on-site skills development and training for employees during the construction phase.

» *Labour accommodation:* According to information provided by the developer, no on-site accommodation is envisaged, given the relative proximity of the site to the town Prieska. Staff will be transported to the site by busses from nearby towns. Senior personnel will be located in existing housing facilities in nearby towns (i.e. Prieska town and / or Copperton settlement). Overnight site worker presence will be limited to security staff.
» *Transportation of components and equipment:* Transportation of project components and equipment to the PV facility site would be by vehicular / trucking transport. The national, secondary and proposed internal access roads will be used to transport all components and equipment required during the construction phase of the facilities. Some of the components (i.e. substation transformer) may be defined as abnormal loads in terms of the Road Traffic Act (Act No. 29 of 1989)[3] by virtue of the dimensional limitations. Typical civil engineering construction equipment will need to be brought to the site (e.g. excavators, trucks, graders, compaction equipment, cement trucks, etc.) as well as components required for the mounting of the PV support structures, construction of the substation, and site preparation. The access road will be off the R357 (refer to access road alternatives described above). The R357 and the access roads to the site will be the main roads used for transportation of project components and equipment.

Operation phase:

» *Duration:* PV panels are designed to be operational for at least 20-25 years.
» *Employment and wages*: Full-time operational and maintenance crews would be required for the solar energy facility. Based on information provided by the developer, the 75MW solar energy facility will create approximately ~50-60 full-time equivalent employment positions during the operation phase. The number of low-skilled personal will comprise 70% of the workforce, semi-skilled will comprise 25% and skilled will comprise 5% of the workforce during the operation phase. The annual wage bill for the operation phase is estimated to be approximately R6 million (2015 Rand value). Approximately 50% of the wage bill will be allocated towards low-skilled employees, 29% will be allocated to semi-skilled employees and approximately 21% of the wage bill be allocated for skilled labour. The injection of income into the area in the form of wages will represent an opportunity for the local economy.
» *Skills development and training:* There will be opportunities for on-site skills development and training for the operation phase.
» *On-site presence*: PV panels are designed to operate continuously and with low maintenance. Regular monitoring and maintenance activities would be required to ensure safe and consistent operation for at least 20-25 years of operation (i.e. a mobile team for maintenance such as cleaning of solar

[3] A permit will be required for the transportation of these abnormal loads on public roads.

panels, road and vegetation maintenance, as well as general facility management).

» *Site Access*: the site will be accessed from the R357 provincial road.

Decommissioning phase:

The PV infrastructure is anticipated to have a lifespan of approximately 20-25 years. It is likely that the PV panels will be replaced with more modern technology at the end of their lifespan, but this will depend on the need for the facility at the time. Disassembling and replacement activities will require the transport of abnormal loads to and within the site. Decommissioned components will be removed from the site and reused, recycled or disposed of in accordance with regulatory requirements. According to current legislation, infrastructure will have to be removed and the site rehabilitated once final decommissioning has occurred.

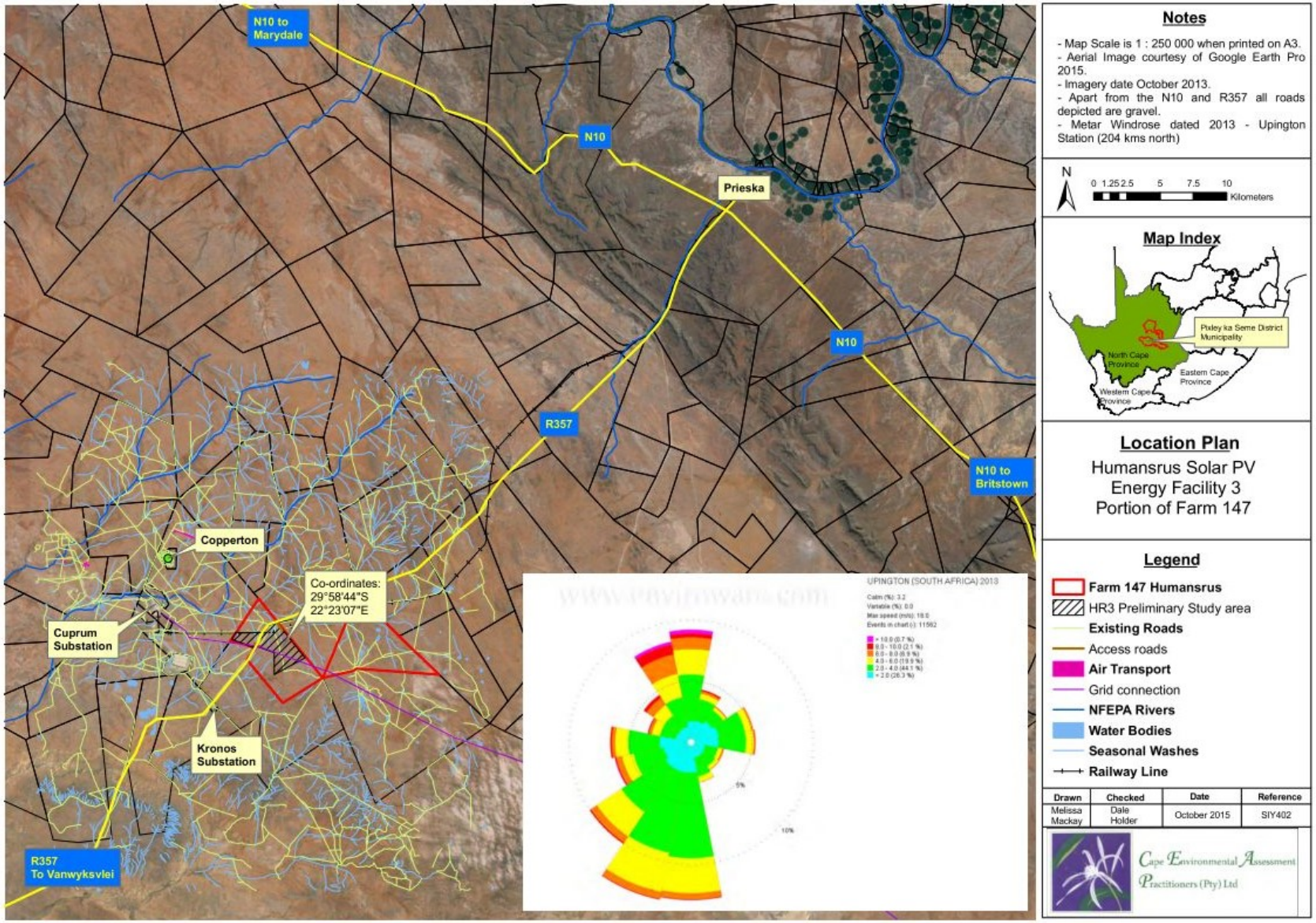

Figure 2: Location of the study area for the proposed Humansrus Solar 3 PV Facility

2. METHODOLOGY AND APPROACH

2.1. Approach to Study

The main aim for the social report is to determine the social impacts that may arise from the proposed development. The approach used for the SIA study is based on the Western Cape Department of Environmental Affairs and Development Planning Guidelines for SIA (February 2007). These guidelines are based on the international best practice. The key objectives in the SIA process include:

- » Describing and obtaining an understanding of the proposed development (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 SIA 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 project;
- » Assessing the project (including any feasible alternatives) and identifying potential mitigation and enhancement measures;
- » Developing an Environmental Management Plan.

2.2. Stakeholder Identification and Analysis

Stakeholders are defined as "any group or organisation which may affect or be affected by the issue under consideration" (UN, 2001: 26). These may be direct or indirect stakeholders and may include organisations, institutions, groups of people or individuals, and can be at any level or position in society, from the international to the national, regional, or household level (Farnke & Guidero, 2012). Stakeholders are those who need to be considered and whose participation and support are crucial to achieving the success of project goals.

Stakeholder analysis involves identifying the key stakeholders in the project. The first step in the process of stakeholder analysis is stakeholder identification; determining who the project stakeholders are, and their key grouping and sub-groupings (IFC, 2007). Identifying stakeholders that are directly and indirectly affected by the project is important to determine who might be affected and in what way. The key stakeholders in the proposed project have been identified, grouped / sub grouped and described (as per Ilse Aucamp SIA methodology & Aucamp et al, 2011) in Figure 3 below. There are immediate, direct and indirect areas of influence to the proposed development. Affected stakeholders are sensitive social receptors that may potentially be affected by the proposed

development; this relates to the locations of sensitive receptors. A sensitive receptor is an area or structure sensitive to a predicted social impact. Potentially sensitive receptors that might be impacted by the proposed development include farming activities, dwellings and other sensitive properties such as schools, hospitals, places of worship and other community facilities.

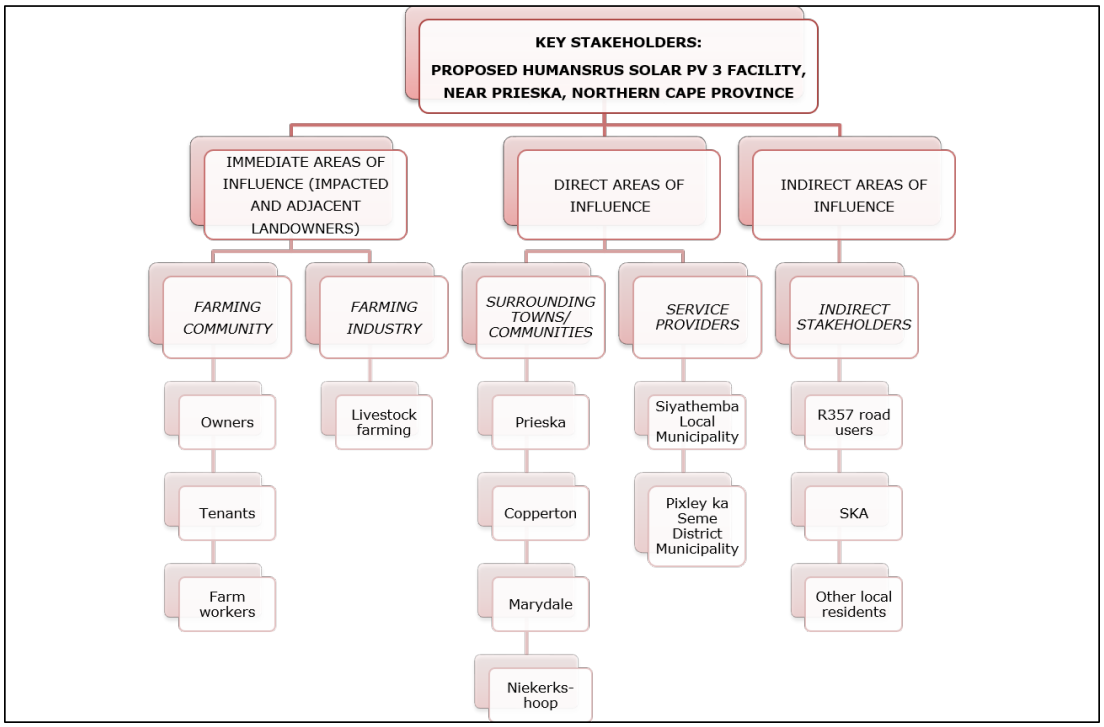

Figure 3: Key stakeholders associated with the proposed development

A description of each of the stakeholders groups in relation to the proposed development is discussed in the section below:

» *Farming community:* the farming community have been grouped into three categories, namely- farm owners, farm tenants and farm workers. Farm owners include farmers who own the land and make a living from their properties. Farm tenants are people who rent the land and work on the land for income. Lastly the farm workers, people who work and may also live on the farms (farm workers and their families). The farming community consists of the larger farms in the study area. Nuisance impacts, in terms of noise dust and increased traffic, may negatively impact the farming community.

» *Farming industry:* There are potentially vulnerable farming activities in the study area. The primary agricultural activity is livestock farming. Impacts that may arise include stock theft and poaching from an increase of in-migrants in the area, as well as dust impacts affecting grazing areas (especially during the construction phase). Direct occupation of land by the proposed solar energy facility has the effect of taking the impacted land out of agricultural production, through the occupation of the of the facility.

» *Surrounding towns / affected communities:* Prieska is the closest town to the proposed site located approximately 50km away. Other towns in the SLM include Marydale and Niekerkshoop (Copperton is not regarded as a town anymore as it is now located on privately owned property. It is referred to as the Copperton settlement where a small number of homes are leased, also refer to Section 4.2.3). Residents in these towns may be positively and/or negatively affected by the proposed development. Employment opportunities will be available with the construction and operation of the proposed development and it is probable that some of the labour will be sourced from the local area; this will be a positive impact for the local community.
» *Service providers:* The major service providers which will be affected by the project include the district and local municipalities and local businesses in the area. The local municipality that will be directly impacted by the proposed development will be Siyathemba Local Municipality (Ward 4). The municipality will absorb a number of social impacts (positive and negative), which may relate to a marginal influx of people coming into the area, since they will be responsible to deliver services to people residing within their municipal area. There are a number of local businesses in the area that could benefit from the proposed development in terms of an increase in demand for goods and services.
» *Stakeholders outside the direct area of influence:* There are a number of stakeholders that reside outside the direct area of influence but who may be marginally affected by the project. These include road users that use the R357 and local gravel roads on a frequent basis as part of their daily or weekly movement patterns. Construction vehicles and trucks will be utilising these roads during the construction phase, which will increase the traffic, create traffic disruptions and may increase the wear and tear on these roads. Other stakeholders located outside the area's direct area of influence include other Independent Power Producers (IPPs) and the SKA project.

2.3. Data Collection

Primary and secondary data sources were utilised to inform the study in aid of the objectives of the study. Effective consultation with stakeholders is important to understand the concerns and requirements of affected communities and ensuring their participation in the formulation and refinement of the project design. Consultations were of critical importance in gaining insights into the key social issues and concerns of communities and other stakeholders, and in aiding the development of potential strategies for addressing these impacts. Primary data sources for the SIA included the following:

» A site visit was undertaken on Thursday 5 May 2016. Observations were made while on site and within the study area.

- » Meetings were arranged and held with key representative stakeholders to collect primary social data (refer to Table 5). Meetings were held with individuals that were both directly and indirectly associated with the proposed project. Data collection was primarily gathered from meetings held with the impacted landowner, adjacent landowners and the local municipality.
- » Consultations with key stakeholders took place on 5 and 6 May 2016. Numerous key stakeholders were visited personally; where face-to-face meetings were not possible, telephonic discussions took place. Key stakeholders in the area were contacted to advise them of the project and/ or to arrange meetings. Stakeholders that were unable to meet were briefed over the phone on the background of the project, an overview of the environmental assessment process was provided and social issues / concerns / questions with the proposed development were discussed.
- » Key stakeholders were contacted and meeting arrangements were made with key stakeholders during the social consultation process (refer to Appendix B).
- » A project specific questionnaire was developed and utilised for the semi-structured meetings (refer to minutes of meetings in Appendix B). These meetings formed the basis of the primary data collection and assisted with the gathering of baseline information as well as establishing the stakeholders' perceptions, interests and concerns on the proposed development.
- » Meetings were held with the following key stakeholders catalogued in Table 5:

Table 5: Stakeholder consultation schedule

Meeting	Details	Venue
Thursday 05 May 2016		
Siyathemba Local Municipality Municipal Manager & Ward 4 Councillor	Date: Thursday 05 May 2016 Time: 10:30-11:00	Meeting Address: 16 Victoria Street, Prieska
Siyathemba Local Municipality Name: Jakob Basson (Local Economic Development & Integrated Development Planning Manager)	Date: Thursday 05 May 2016 Time: 11:00-11:30	Meeting Address: 16 Victoria Street, Prieska
	Date: Thursday 05 May 2016	Meeting Address:

Meeting	Details	Venue
Adjacent Landowner - Farm Platsjambok RE/102 Name: Wynand Jacobus Human	Time: 12:30-13:00	Farm Platsjambok RE/102
Impacted Landowner - Farm 147 Humansrus Name: Christina & Deon Human	Date: Thursday 05 May 2016 Time: 14:00-15:00	Meeting Address:9 Van Riebeecklaan, Prieska
Adjacent Landowner - Farm Bosjesmansberg 1/67 Name: Gerhard Van Wyk	Date: Thursday 05 May 2016 Time: 16:00-16:30	Meeting Address: Farm Bosjesmansberg 1/67 at Guest House
Friday 06 May 2016		
Adjacent Landowner & Power line landowner - Farm Hoek Plaas RE/146 Name: Hendrik Human	Date: Friday 06 May 2016 Time: 08:00-08:30	Meeting Address: Farm Hoek Plaas RE/146
Adjacent Landowner - Farm Nelspoortjie 5/103 & 6/103 Name: Pieter Fourie & Wilhette Fourie	Date: Friday 06 May 2016 Time: 09:30-10:00	Meeting Address: Farm Nelspoortje 5/103 & 6/103- At Guest House
Adjacent Landowner - Farm Drielings Pan 3/101 & 1/101 Name: Kernels De Jager	Date: Friday 06 May 2016 Time: 11:00-11:30	Meeting Address: Farm Drielings Pan
Adjacent Landowner - Farm Vogelstruisbult 1/104 Name: Hester Meyer (Trust)	Date: Friday 06 May 2016 Time: 12:00-12:30	Meeting Address: Copperton
Adjacent Landowner & Substation Landowner - Farm Klipgats Pan 4/117 Name: Kernels De Jager	Date: Friday 06 May 2016 Time: 13:00-13:30	Meeting Address: Farm Klipgats Pan 4/117

Secondary data, mostly collected by means of a desktop study, was gathered and analysed for the purpose of the study. The following documents were examined:

» Project maps;

- » A desktop aerial study of the affected area through the use of the latest version of Google Earth Pro 2016;
- » The scoping report – to ensure that all the issues have been addressed at the EIA stage of the process;
- » The Humansrus Solar 3 PV Facility stakeholder database;
- » The 2011 South African Census Survey and the Local Government Handbook;
- » Planning documentation such as District Municipality (DM) Integrated Development Plans (IDPs), Spatial Development Framework (SDF) as well as the Local Municipality (LM) IDPs and policies;
- » Relevant guidelines, policies and plan frameworks, as outlined in Section 3 of this report;
- » Other similar specialist studies and relevant information where there have been cross-cutting issues, such as the EIAs undertaken for previous solar energy facilities in the Northern Cape Province and other parts of South Africa; and
- » Literature reviews of social issues associated with solar energy facilities.

Information that was relevant to the project was identified and assessed from these sources within the context of the pre-construction, construction, operation and decommissioning phases of the proposed project. The evaluation of the social impacts involved the assessment of both quantitative and qualitative data and the use of professional judgement. Quantitative data collected through national sources or local level interviews is assessed and analysed with sociological techniques (refer to Figure 4). However, qualitative data collected using the same methodology is more open to interpretation. In addition, what is a major impact to one person, one household or one community may be a minor impact to another according to specific personal circumstances. Hence, the results do not lend themselves easily to being ranked or assessed in exactly the same way as environmental data.

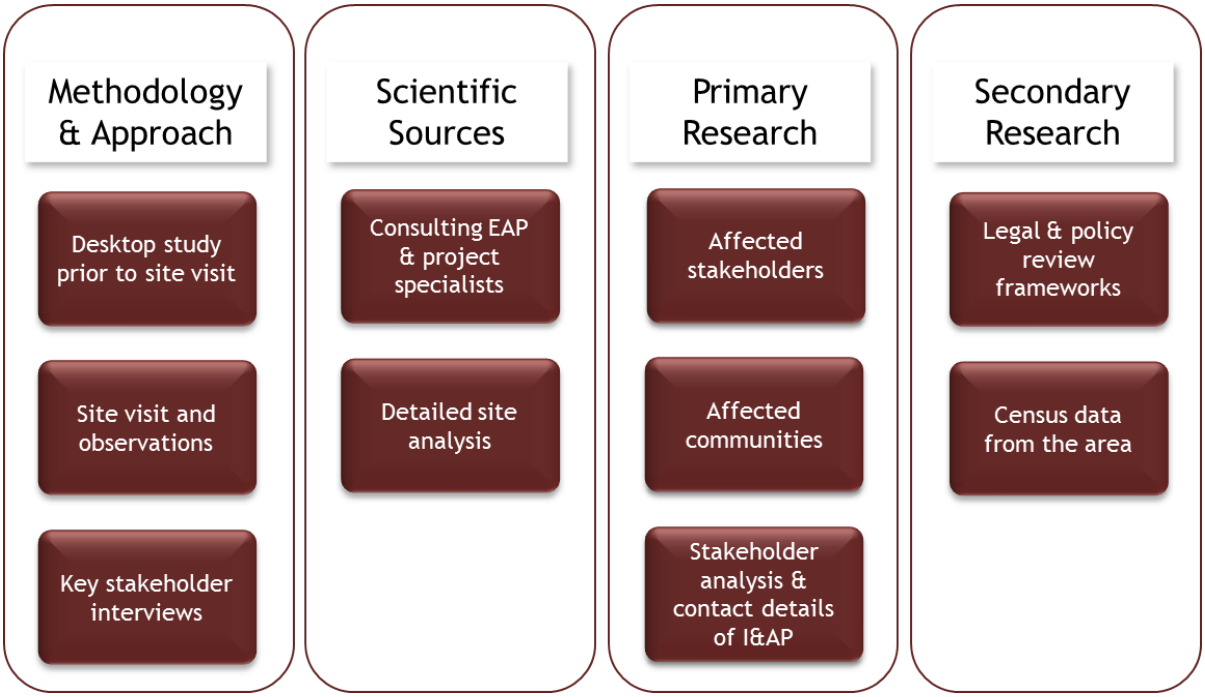

Figure 4: Research methodology and sources diagram

2.4. Public Participation Process

The Public Participation Process (PPP) is an important part in the EIA process. The process of stakeholder disclosure consultation is an ongoing overarching requirement that applies to the entire SIA process. Relevant stakeholders are informed about the proposed project and thereafter are able to register and participate in the EIA process. The communications during the PPP and written submission of comments have been reviewed and issues raised through this process have been incorporated into the SIA, where relevant. The PPP involves raising awareness of the proposed development by providing information about the proposed project to all interested and affected parties and providing an opportunity for these parties to raise any issues and/or concerns regarding the project.

2.5. Impact Evaluation Method

This section provides an overview of the method used to identify and evaluate the social impacts for the construction and operation phase of the solar energy facility. The main objective is to determine the social risks and opportunities, and positive and adverse impacts of the solar energy facility. The methodology below allows for the evaluation of the overall effect of a proposed activity on the social environment. This includes an assessment of the significant direct, indirect, and cumulative impacts. The significance of social impacts is to be assessed by means of the criteria of extent (scale), duration, magnitude (severity), probability

(certainty) and direction (negative, neutral or positive). A scoring system was utilised to allow the assessment to be subjective.

The **nature** of the impact refers to the causes of the effect, what will be affected and how it will be affected.

Extent (E) of impact
Local (site or surroundings) to Regional (provincial)
Rating = 1 (low) to 5 (high).

Duration (D) rating is awarded as follows:
Whether the life-time of the impact will be:

» Very short term – up to 1 year: Rating = 1
» Short term – >1 – 5 years: Rating = 2
» Moderate term - >5 – 15 years: Rating = 3
» Long term – >15 years: Rating = 4
  » The impact will occur during the operational life of the activity, and recovery may occur with mitigation (restoration and rehabilitation).
» Permanent – Rating = 5
  » The impact will destroy the ecosystem functioning and mitigation (restoration and rehabilitation) will not contribute in such a way or in such a time span that the impact can be considered transient.

Magnitude (M) (severity):
A rating is awarded to each impact as follows:

» Small impact – the ecosystem pattern, process and functioning are not affected.
  Rating = 0
» Minor impact - a minor impact on the environment and processes will occur.
  Rating = 2
» Low impact - slight impact on ecosystem pattern, process and functioning.
  Rating = 4
» Moderate intensity – valued, important, sensitive or vulnerable systems or communities are negatively affected, but ecosystem pattern, process and functions can continue albeit in a slightly modified way.
  Rating = 6
» High intensity – environment affected to the extent that the ecosystem pattern, process and functions are altered and may even temporarily cease. Valued, important, sensitive or vulnerable systems or communities are substantially affected.
  Rating = 8
» Very high intensity – environment affected to the extent that the ecosystem pattern, process and functions are completely destroyed and may permanently cease.

Rating = 10

Probability (P) (certainty) describes the probability or likelihood of the impact actually occurring, and is rated as follows:

» Very improbable – where the impact will not occur, because of either design or historic experience.
Rating = 1
» Improbable – where the impact is unlikely to occur (some possibility), either because of design or historic experience.
Rating = 2
» Probable - there is a distinct probability that the impact will occur (<50% chance of occurring).
Rating = 3
» Highly probable - most likely that the impact will occur (50 – 90% chance of occurring).
Rating = 4
» Definite – the impact will occur regardless of any prevention or mitigating measures (>90% chance of occurring).
Rating = 5

Significance (S) - Rating of low, medium or high. Significance is determined through a synthesis of the characteristics described above where:
S = (E+D+M)*P

The **significance weighting** should influence the development project as follows:

» Low significance (significance weighting: <30 points)
If the negative impacts have little real effects, it should not have an influence on the decision to proceed with the project. In such circumstances, there is a significant capacity of the environmental resources in the area to respond to change and withstand stress and they will be able to return to their pre-impacted state within the short-term.

» Medium significance (significance weighting: 30 – 60 points)
If the impact is negative, it implies that the impact is real and sufficiently important to require mitigation and management measures before the proposed project can be approved. In such circumstances, there is a reduction in the capacity of the environmental resources in the area to withstand stress and to return to their pre-impacted state within the medium to long-term.
» High significance (significance weighting: >60 points)
The environmental resources will be destroyed in the area leading to the collapse of the ecosystem pattern, process and functioning. The impact strongly influences the decision whether or not to proceed with the project. If

mitigation cannot be effectively implemented, the proposed activity should be terminated.

2.6. Limitations and Assumptions

The following assumptions and limitations were relevant:

» The 2011 Census is the most recent source of official statistics and this has been used for generating a lot of the information provided in the baseline profile of the study area. In addition to this, the latest District and Local Municipality policies and plans were utilised in generating information. While the data does provide useful information, it should be noted that this data may now be out of date to some degree and may no longer accurately reflect the current socio-economic profile;
» This study was done with the information available to the specialist at the time of executing the study, within the available timeframes. The sources consulted are not exhaustive, and additional information which might strengthen arguments, contradict information in this report, and/or identify additional information might exist. The specialist did try to take an evidence-based approach in the compilation of this report and did not intentionally exclude scientific information relevant to the assessment;
» A limited amount of finalised project details from the project developer means that some of the actual project projections may be higher or lower than estimated in this report;
» It was assumed that the motivation for, planning and feasibility study of the project were undertaken by the developer with integrity, and that information provided to date by the project developer, the independent environmental assessment practitioner and the public participation consultant was accurate.

3. LEGISLATION AND GUIDELINES

A review of the policy environment provides valuable insight into the government's priorities and plans. The review of the relevant planning and policy documents was undertaken as a part of the SIA process. The key documents reviewed included:

National Policies:

- The Constitution of the Republic of South Africa (Act 108 of 1996)
- The National Environmental Management Act (107 of 1998) (NEMA)
- The National Energy Act (34 of 2008)
- Department of Energy Strategic Plan 2015-2020
- National Development Plan 2030
- National Climate Change Response Green Paper (DEA, 2010)
- White Paper on Energy Policy of the Republic of South Africa (1998)
- White Paper on Renewable Energy of the Republic of South Africa (2003)
- National Integrated Resource Plan South Africa (2010-2030)
- Strategic Infrastructure Projects (SIPs)

Provincial Policies:

- Northern Cape Provincial Development and Resource Management Plan / Provincial Spatial Development Framework (PSDF) (2012)
- Northern Cape Provincial Growth and Development Strategy (PGDS) (2011)
- Northern Cape Provincial Local Economic Development (LED) Strategy (2009)

Local and District Policies:

- Pixley ka Seme District Municipality Integrated Development Plan (IDP) (2012-2016)
- Siyathemba Local Municipality Integrated Development Plan (IDP) (2015-2016)
- Siyathemba Local Municipality Local Economic Development (LED) Strategy (2012)

Solar Energy Policies:

- Solar Energy Technology Roadmap (2013)

The legislative and policy context plays an important role in identifying and assessing the potential social impacts associated with a proposed development. A key component of the SIA process is to assess the proposed development in terms of its suitability with regards to the key planning and policy documents. A brief overview of the most relevant policies, plans and guidelines, in relation to the proposed solar energy facility, are discussed in this section below.

3.1. National Policies

Any project contributing to the objectives mentioned within the national policies, discussed briefly below, could be considered strategically important for the nation. The review of the policy environment suggests that utilisation of renewable energy sources in the country is considered to be an integral means of reducing the carbon footprint of South Africa, diversifying the national economy, and reducing poverty. As the project would contribute a renewable energy supply to provincial and national targets set out and supported within these national policies, it is considered that the proposed development fits within the national policy framework. A brief review of the most relevant national policies is provided below.

3.1.1. The Constitution of the Republic of South Africa (Act 108 of 1996)

The Constitution of the Republic of South Africa (Act 108 of 1996) has been adopted as the supreme law of the country and forms the foundations for a democratic society in which fundamental human rights are protected. In terms of the environment, Chapter 2 Section 24 states that everyone has a right:

(a) "To an environment that is not harmful to their health or well-being; and
(b) To have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that:

i. prevent pollution and ecological degradation;
ii. promote conservation; and
iii. secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development."

Chapter 7 defines the role of local government in its community. Five objectives of local government are described in Chapter 7 Section 152:

- to provide democratic and accountable government for local communities;
- to ensure the provision of services to communities in a sustainable manner;
- to promote social and economic development;
- to promote a safe and healthy environment; and
- to encourage the involvement of communities and community organisations in the matter of local government.

The Constitution outlines the need to promote social and economic development. An SIA is a requirement for sustainable development as it assesses the social impacts associated with development and aims towards safeguarding people's future well-being. The proposed solar energy facility aims to increase the economic opportunities of the area by providing more job opportunities for the

local community. The development will also aid in promoting a healthy environment through the provision of clean, renewable energy.

3.1.2. The National Environmental Management Act (107 of 1998) (NEMA)

NEMA is the legislation setting out the framework for environmental management in South Africa. The Act promotes cooperative environmental governance and establishes principles for decision making on matters affecting the environment. An overarching principle in Chapter 1 emphasises that development must be socially, environmentally and economically sustainable.

The EIA Regulations (Government Notices R982-985 of December 2014) define an EIA as 'the process of collecting, organising, analysing, interpreting and communicating information that is relevant to the consideration of that application'. The SIA aims to fulfil these requirements by providing all social information relevant to the consideration of the project. This SIA report is compliant with Appendix 6 of the National Environmental Management Act, 1998 (ACT NO. 107 OF 1998), Environmental Impact Assessment Regulations, 2014.

3.1.3. The National Energy Act (34 of 2008)

One of the objectives of the National Energy Act is 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)."*

The Act provides the legal framework which supports the development of renewable energy facilities for the greater environmental and social good.

3.1.4. Department of Energy Strategic Plan 2015-2020

The Department of Energy (DoE) is mandated to ensure secure and sustainable provision of energy for socio-economic development. This is achieved by developing an Integrated Resource Plan (IRP) for the entire energy sector and promoting investment in accordance with the IRP which focuses on energy. The DoE envisions the pursuance of the aforementioned mandate through the following strategic statements:

» *Aim*: Formulate energy policies, regulatory frameworks and legislation, and oversee their implementation to ensure energy security, promotion of environmentally-friendly energy carriers and access to affordable and reliable energy for all South Africans.
» *Vision*: Improving our energy mix by having 30% clean energy by 2025. The vision of the DoE will be realised by the following factors as depicted in Figure 5 below.
» *Mission*: To regulate and transform the energy sector for the provision of secure, sustainable and affordable energy.

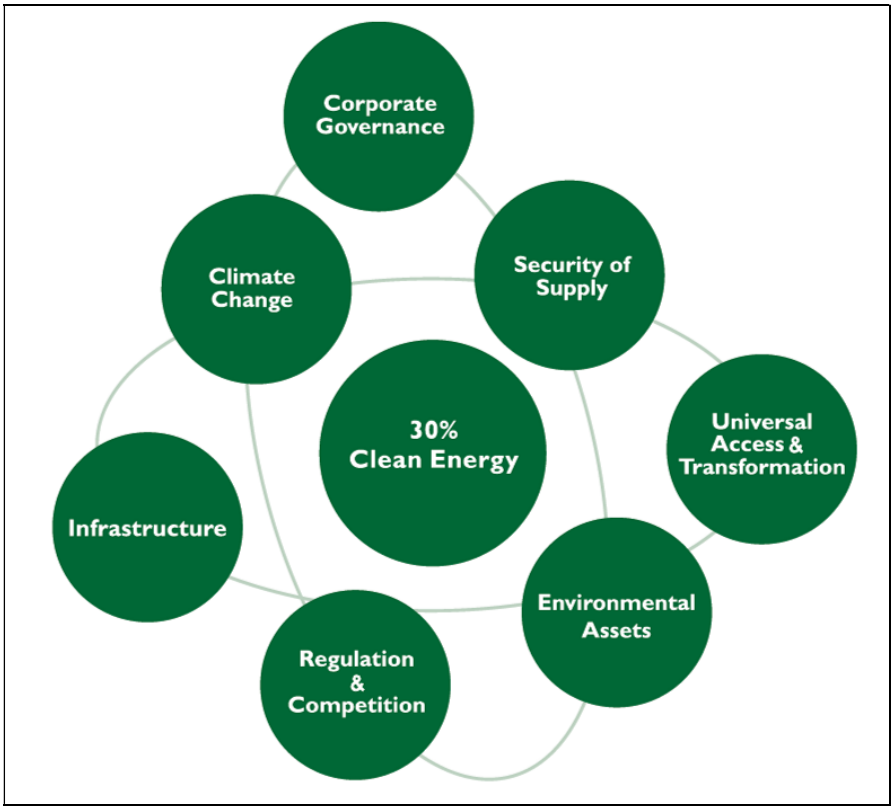

Figure 5: Factors affecting the DoE's 2025 vision of 30% clean energy by 2025

The DoE Strategic Plan 2015-2020 Programme 6 on Clean Energy focusses on managing and facilitating the development and implementation of clean and renewable energy initiatives as well as Energy Efficiency Demand-Side Management (EEDSM). Sub-programmes within Programme 6 include: energy efficiency, renewable energy, climate change and designated national authority. The proposed solar energy facility will contribute towards the DoE target of implementing 30% clean energy by 2025.

3.1.5. National Development Plan 2030

The National Development Plan aims to eliminate poverty and reduce inequality by 2030. Given the complexity of national development, the plan sets out a number of interlinked priorities, some of which include:

- » Bringing about faster economic growth, higher investment and greater labour absorption.
- » Focusing on key capabilities of people and the state.
- » Building a capable and developmental state.

Enabling milestones include:

- » Increased employment from 13 million in 2010 to 24 million in 2030.
- » Establish a competitive base of infrastructure, human resources and regulatory frameworks.
- » Ensure that skilled, technical, professional and managerial posts better reflect the country's racial gender and disability makeup.
- » Increase the quality of education.
- » Provide affordable access to quality health care.
- » Establish effective, safe and affordable public transport.
- » Produce sufficient energy to support the industry at competitive prices, ensuring access for poor households, while reducing carbon emissions per unit of power by about one-third.
- » Ensure that all South Africans have access to clean running water in their homes.
- » Make high-speed broadband internet universally available at competitive prices.
- » Realise a food trade surplus, with one-third produced by small-scale farmers or households.

The National Development Plan aims to provide a supportive environment for growth and development, while promoting a more labour-absorbing economy. The proposed solar energy facility will assist in reducing carbon emissions targets and creating jobs in the local area, as well as assist in creating a competitive infrastructure based on terms of energy contribution to the national grid.

3.1.6. National Climate Change Response White Paper (2011)

South Africa's response to climate change has two objectives: 1) to effectively manage the inevitable climate change impacts through interventions that build and sustain South Africa's social, economic and environmental resilience and emergency response capacity; and 2) to make a fair contribution to the global efforts to stabilise greenhouse gas (GHG) concentrations in the atmosphere at a level that avoids dangerous anthropogenic interference with the climate system within a timeframe that enabled economic, social and environmental development to proceed in a sustainable manner. The paper proposes a number of approaches

dealing with climate change impacts with respect to selected sectors. Energy, in this context, is considered to be one of the key sectors that provides for possible mitigations to address climate changes. The White Paper provides support for the proposed development of a renewable energy facility which will contribute to managing climate change impacts, supporting the emergency response capacity, as well as assist in reducing GHG emissions in a sustainable manner.

3.1.7. White Paper on the Energy Policy of the Republic of South Africa (1998)

The White Paper on Energy Policy states the need to improve the energy security in the country by means of expanding the energy supply options. This implies the increase in the use of renewable energy and encouraging new entries into the generation market. The support for the 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 are 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 policy states that the advantages of renewable energy include minimal environmental impacts during operation in comparison with traditional supply technologies, 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. Nonetheless, renewable resources generally operate from an unlimited resource base and, as such, can increasingly contribute towards a long-term sustainable energy future. Therefore the policy supports the advancement of renewable energy sources at ensuring energy security through the diversification of supply, which is in line with the proposed PV facility.

3.1.8. White Paper on the Renewable Energy Policy of the Republic of South Africa (2003)

The White Paper on Renewable Energy Policy supplements the Government's overarching policy on energy as set out in its White Paper on the Energy Policy of the republic of South Africa (DME, 1998). The White Paper on Renewable Energy

Policy recognises the significance of the medium and long-term potential of renewable energy. The main aim of the policy is to create the conditions for the development and commercial implementation of renewable technologies. The position of the White Paper on Renewable Energy is based on the integrated resource planning criterion of:

> *"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."*

The White Paper on Renewable Energy sets out the Government's vision, policy principles, strategic goals and objectives for promoting and implementing renewable energy in South Africa. South Africa relies heavily on coal to meet its energy needs because it is well-endowed with coal resources in particular. However South Africa is endowed with renewable energy resources that can be sustainable alternatives to fossil fuels, but which have so far remained largely untapped. This White Paper fosters the uptake of renewable energy in the economy and has a number of objectives that include: ensuring that equitable resources are invested in renewable technologies; directing public resources for implementation of renewable energy technologies; introducing suitable fiscal incentives for renewable energy and; creating an investment climate for the development of renewable energy sector. The White Paper on Renewable Energy of 2003 set a target of 10 000GWh to be generated from renewable energy by 2013. The target was reviewed during the renewable energy summit of 2009 held in Pretoria. The summit raised the issue over the slow implementation of renewable energy projects and the risks to the South African economy of committing national investments in the energy infrastructure to coal technologies. Other matters that were raised include potential large scale roll out of solar water heaters and enlistment of Independent Power Producers to contribute to the diversification of the energy mix. The objectives of the White Paper on Renewable Energy are considered in six focal areas, namely: financial instruments, legal instruments, technology development, awareness raising, capacity building and education, and market based instruments and regulatory instruments. The policy supports the investment in renewable energy facilities as they contribute towards ensuring energy security through the diversification of energy supply, reducing GHG emissions and the promotion of renewable energy sources.

3.1.9. National Integrated Resource Plan for South Africa (2010-2030)

The primary objective of the Integrated Resource Plan (IRP) is to determine the long term electricity demand and detail how this demand should be met in terms of generating capacity, type, timing and cost. However, the IRP also serves as input to other planning functions, *inter alia* economic development, and funding,

and environmental and social policy formulation. The accuracy of the IRP is to be improved by regular reviews and updates. The National Integrated Resource Plan 2010 projected that an additional capacity of up to 56 539MW of generation capacity will be required to support the country's economic development and ensure adequate reserves over the next twenty years. The required expansion is more than two times the size of the existing capacity of the system. A significant component of the plan, amongst others, is the expansion of the use of renewable energy sources to reduce carbon emissions involved in generating electricity. In this regard, the IRP supports the development of 17GW of renewable energy generation by 2030. The proposed solar energy facility contributes to the targets in this policy.

3.1.10. Strategic Infrastructure Projects (SIPs)

The Presidential Infrastructure Coordinating Committee (PICC) are integrating and phasing investment plans across 18 Strategic Infrastructure Projects (SIPs) which have five core functions: to unlock opportunity, transform the economic landscape, create new jobs, strengthen the delivery of basic services, and support the integration of African economies. A balanced approach is being fostered through greening of the economy, boosting energy security, promoting integrated municipal infrastructure investment, facilitating integrated urban development, accelerating skills development, investing in rural development, and enabling regional integration.

The proposed PV facility is a potential SIP 8 Project - it would become a SIP 8 project if selected as a preferred bidder project by the Department of Energy. SIP 8 is described as follows:

» *SIP 8: Green energy in support of the South African economy:*
Support sustainable green energy initiatives on a national scale through a diverse range of clean energy options as envisaged in the Integrated Resource Plan (IRP 2010) and supports bio-fuel production facilities.

3.2. Provincial Policies

A brief review of the most relevant provincial policies is provided below. The proposed development is considered to align with the aims of these policies, even if contributions to achieving the goals therein are only minor.

3.2.1. Northern Cape Provincial Development and Resource Management Plan / Provincial Spatial Development Framework (PSDF) (2012)

As part of the development planning process that underlies the formulation of the Northern Cape PSDF. The PSDF not only gives effect to national spatial

development priorities but it also sets out a series of provincial, district and local development priorities for the space economy of the Northern Cape.

The Northern Cape PSDF is premised upon and gives effect to the following five strategic objectives of the National Strategy for Sustainable Development (NSSD 2011-2014):

» Enhancing systems for integrated planning and implementation
» Sustaining our ecosystems and using natural resources efficiently
» Towards green economy
» Building sustainable communities
» Responding effectively to climate change

The PSDF makes reference to the need to ensure the availability of energy. Under the economic development profile of the Northern Cape PSDF, the White Paper on Renewable Energy Policy (2003) discussed a target of 10 000GWh of energy to be produced from renewable energy sources. It was also stated that the total area of high radiation in South Africa amounts to approximately 194 000km^2, of which the majority falls within the Northern Cape. It is estimated that, if the electricity production per km^2 of mirror surface in solar thermal power stations were 30.2MW and only 1% of the area of high radiation were available for solar generation, then generation potential would equate to approximately 64GW. A mere 1.25% of the area of high radiation could thus meet projected South African electricity demand in 2025 (80GW). It was also stated in the Northern Cape PSDF that the implementation of large solar power plants has been proposed as one of the main contributors to reducing greenhouse gas emission in South Africa. The Northern Cape PSDF also discusses economic development and that it typically responds to the availability of environmental capital (e.g. water, suitable agricultural soil, mining resources, etc.) and infrastructural capital (e.g. roads, electricity, bulk engineering services etc.); over time this has resulted in the distinct development regions and corridors. The development corridors of the Northern Cape are demonstrated in Figure 6 below, with the Solar Corridor situated in the Northern Cape represented in yellow. One of the policies in the Northern Cape PSDF is for renewable energy sources (e.g. Wind, solar, biomass, and domestic hydro-electricity generation) to comprise 25% of the province's energy capacity by 2020; thereby the proposed development will assist in contributing to the Province's renewable energy capacity.

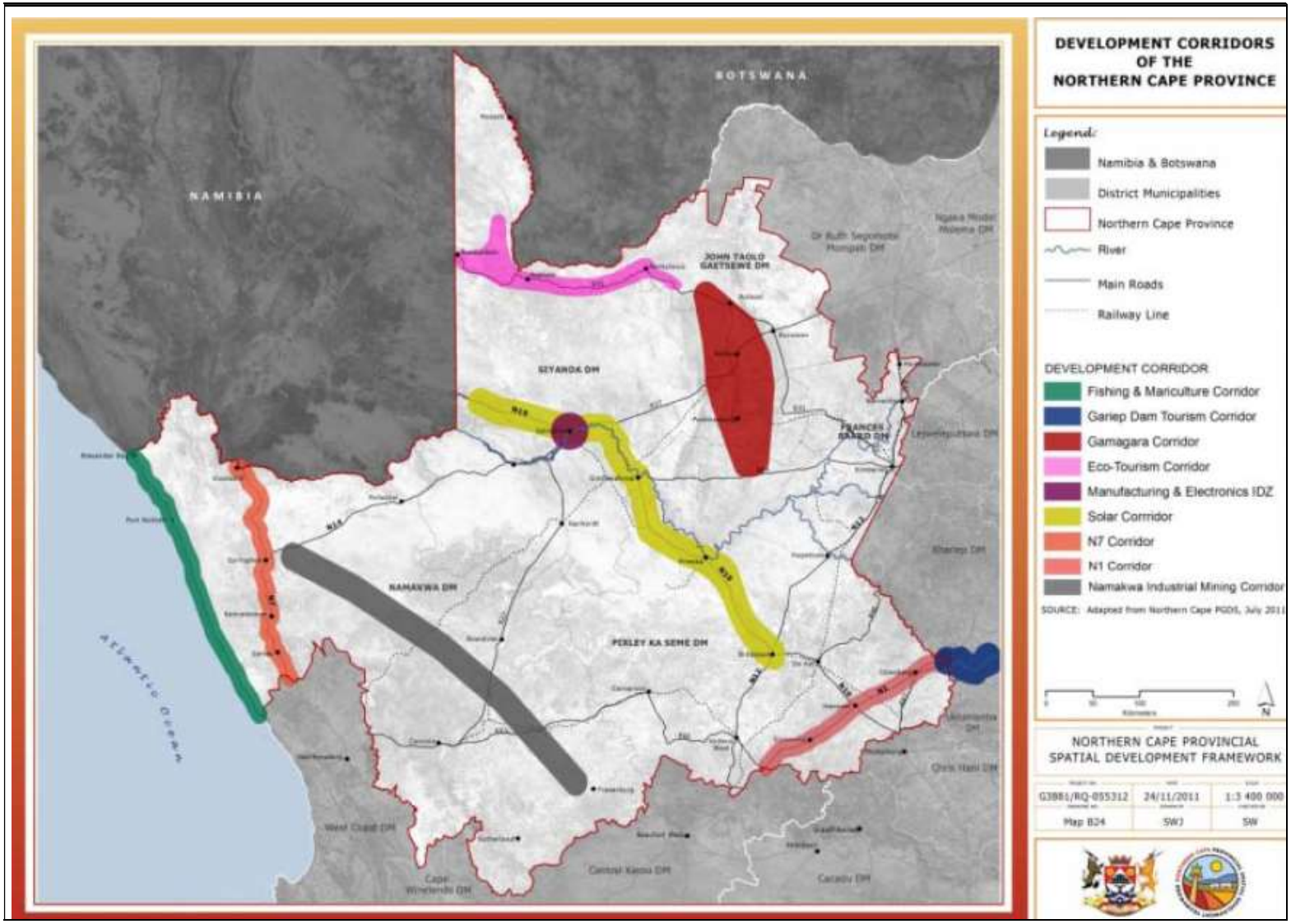

Figure 6: Development regions and corridors of the Northern Cape (Source: Northern Cape PSDF 2012)

3.2.2. Northern Cape Provincial Growth and Development Strategy (PGDS) (2011)

The Northern Cape Provincial Growth and Development Strategy (PGDS) sets the tone for development planning and outlines the strategic planning direction in the Province. Planning for the promotion of economic growth and social development lies at the core of the Government's responsibility to provide a better life for the nation. It is essential to ensure that planning is integrated across disciplines, coordinated within and between different planning jurisdictions and aligned with the budgeting processes of national, provincial and local government. The core purpose of the Northern Cape PGDS is to enable stakeholders from public and private sectors, together with labour and civil society, to determine a plan for sustainable growth and development of the Northern Cape. The main objectives set by the Northern Cape PGDS for development planning in the Province are as follows:

» Promoting growth, diversification and transformation of the provincial economy
» Poverty reduction through social development
» Developing requisite levels of human and social capital
» Improving the efficiency and effectiveness of governance and other development institutions
» Enhancing infrastructure for economic growth and social development

The Northern Cape PGDS aims at building a prosperous, sustainable, growing provincial economy to eradicate poverty and improve social development. The proposed solar energy facility will contribute to growth and development of the Province by expanding the economic base, diversifying the economy and creating employment opportunities, which will contribute towards reducing poverty.

3.2.3. Northern Cape Provincial Local Economic Development (LED) Strategy (2009)

The Northern Cape Local Economic Development (LED) strategy is intended to build a shared understanding of LED in the Province and put into context the role of local economies in the provincial economy. It seeks to mobilise local people and local resources in an effort to fight poverty. The Northern Cape LED strategy investigated the options and opportunities available to broaden the local economic base of the Province in order to promote the creation of employment opportunities and the resultant spin-off effects throughout the local economy. Areas of opportunity include:

» Livestock products
» Game farming
» Horticulture
» Agriculture

» Ago-related industries
» Tourism
» Manganese and iron Ore
» Beneficiation of minerals
» Renewable energy

The purpose of the LED is to build up the economic capacity of a local area to improve its economic future and quality of life for all. The LED provides local municipalities with leadership and direction in policy making, in order to administer policy, programmes and projects, and to be the main initiator of economic development programmes through public spending. It is noted in the LED that renewable energy is an area of opportunity to broaden the local economic base and promote the creation of employment opportunities as well as local economy spin-off effects.

3.3. District and Local Municipalities Policies

These strategic policies at the district and local level have similar objectives for the respective areas, namely to accelerate economic growth, create jobs, uplift communities and alleviate poverty. The proposed project is considered to align with the aims of these policies, even if contributions to achieving the goals therein are only minor.

3.3.1. Pixley ka Seme District Municipality Integrated Development Plan (IDP) (2012-2016)

The vision for the PKSDM as set out in the IDP is to commit to "commit to be developed municipality where the quality of life for all people in the district will be improved." In terms of the mission statement, the PKSDM sets out to achieve:
» Efficient service delivery
» Optimal human and natural resource development
» Local economic growth and development, job creation and poverty alleviation
» A vibrant tourism industry and
» A safe, secure and community friendly environment

Key development challenges identified for the PKSDM most likely to have a fundamental effect on the long-term economic viability of the district include:
» Optimizing on the opportunities presented by the regions geo-political location between Cape Town, Bloemfontein, Johannesburg and Pretoria, which are among the most important cities in South Africa;
» Optimizing on the opportunities presented by the N1, N12, N9 and N10 corridors, which already transport many tourists, good and services throughout the year through the region;
» The potential opportunities of the proposed renewable energy hub in the

region;
» The HIV/AIDS pandemic and its impact on regional demographics;
» Management of investor risk, and where necessary, direct intervention in order to attract international capital;
» The maintenance and preservation of pristine environment; and
» High levels of unemployment and poverty (PKSDM; 2012: 110).

Key objectives and strategies of relevance to the proposed project include:

LED, Tourism and Poverty Alleviation:

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

» LED 1: Promote Local Economic Development (LED) in the region;
» LED 2: Increase SMME promotion;
» LED 4: Increased tourism promotion – a Tourism Market Strategy should be compiled to attract investments and tourists;
» LED 6: Reduce employment and poverty by 50% each, respectively in the region by 2014.

HIV/ AIDS:

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

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

Education, Youth and development:

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

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

Safety and security:

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

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

Renewable Energy Hub:

The PKSDM convened a conference on investment and renewable energy which was held from the 14th to the 16th of September 2010. The intention of the conference was to provide insight around new opportunities that could be exploited in key sectors of the district economy, namely: mining, tourism, manufacturing, retail, agriculture and agro-processing and also in the renewable energy sector, namely: solar, wind, hydro, biomass, bio-digestion and geo-thermal development. The investment and renewable conference took resolutions on matters including infrastructure development and rural industrialization and development zones. The PKSDM is currently actively promoting itself as renewable energy hub, and hopes to become the national solar hub. It is hoped that the development of multiple solar energy facilities in the PKSDM would create sufficient critical mass to support the development of local solar-related manufacturing and servicing industry, and potentially even the establishment of a renewables related vocational training centre. As such, the PKSDM has identified renewable developments - and solar in particular – as a key local economic growth and development strategy, with potential spinoffs in terms of direct long term employment creation, and major potential cumulative downstream benefits in terms of local investment, manufacturing and spending, as well as local tertiary vocational training. Spatially, the concentration of renewable facilities is envisaged in the De Aar area, but also including Prieska, Hanover and Noupoort. Unlike the Gariep/ Orange River valley located to the north (mooted as "Karoo riviera"), the relevant area is not considered visually/ tourist sensitive.

3.3.2. Siyathemba Local Municipality Integrated Development Plan (IDP) (2015-2016)

Siyathemba Local Municipality (SLM) has numerous challenges including matters like poverty, unemployment, HIV/AIDS, crime, teenage pregnancies and education. These challenges require commitment and discipline from all and an integrated government approach. The SLM mission is to improve the standard of living of its entire community by delivering visible and affordable services. Strategic objectives have been identified for the SLM which are based on the local priorities and national outcomes. The key performance indicators are as follows:

» *Service delivery and infrastructure development:* The strategic objective is to eradicate backlogs in order to improve access to services and ensure proper operations and maintenance. The intended outcome is to have sustainable delivery of improved services and households.
» *Public participation and good governance:* The strategic objective is to promote a culture of participation and good governance. The intended outcome is to have an entrenched culture of accountability and clean governance.

- *Institutional development and transformation:* The strategic outcome is to improve organisational cohesion and effectiveness. The intended outcome is to have improved organisational stability and sustainability.
- *Financial viability:* the strategic objective is to improve overall financial management in the municipality by developing and implementing appropriate Financial Management Policies, Procedures and Systems. The intended outcome is to have improved financial management and accountability.
- *Local economic development:* the strategic objective is to create an environment that promotes the development of the local economy and facilitate job creation. The intended outcome is to have improved municipal economic viability.

The SLM believes that additional and large projects like the international SKA, the Renewable Energy boom (including the CEF's Solar Park and IPP's initiatives), a potential Industrial Zone Development and new Secondary Industry Development projects will have a major boost on the economy. Interest in renewable energy development is shown by Independent Power Producers (IPPs) between the Prieska and Copperton areas on private land to the extent of 1.18GW. Mulilo was the first company who was allocated 19.5MW during the first bidding phase. Currently in the local area (near Copperton) there is approximately ~400MW that has been awarded over all the preferred bidder rounds. Regular consultation at Council and Ward Committee meetings are taking place to inform and prepare the communities about these developments. Discussions and negotiations around the required Solar Development Trusts are underway. The SLM can only negotiate the compulsory social and labour arrangements as well as the employment and SMME opportunities with the IPP's.

The following are pressing challenges in pursuit of the SLM developmental goals;

- Non-disclosure of bidding information by IPP contractors
- Lack of regulations in relation to leases and wages
- Absence of a single coherent approach to the question of community benefit (Community Trusts)
- Slow Eskom grid development can delay the implementation of national targets
- Historical infrastructural backlog
- Ailing electricity network
- Two thirds of household electricity supply serviced by Eskom in Municipal areas
- Skills shortages and low literacy levels
- Absence of disaster management unit
- Huge housing backlog
- High unemployment
- HIV / AIDS and TB
- Asbestoses

» Sanitation with water distribution challenges
» Limited Municipal resources
» Absence of strategic planning
» Engineering Surveys and Strategic Planning Capacity

Opportunities for the SLM include:
» Renewable Energy Development
» A Single and all-encompassing Trust for all IPP Contractors
» A Siyathemba Gateway to SKA opportunities
» Underutilised prime agricultural land and Agro processing
» Sufficient water with rights and water extraction abilities
» Untapped Mining Development and Value adding
» Secondary Industry Development opportunities
» Aquaculture
» Sufficient land for multi Industry development
» Enterprise Development
» Tourism Development
» Sound economic development plan
» Enhance local community economic development benefit
» Planning capacity development
» Infrastructure Development
» Training - The Siyathemba Municipality have appointed a service provider to pursue and implement its Siyathemba Integrated Education and Skills Development Initiative (SIESDi).

The IDP mentions Renewable Energy Industry within the identified opportunities in the SLM including solar energy projects that will aid local economic growth and social development, which is directly related to the proposed project.

3.3.3. Siyathemba Local Municipality Local Economic Development Strategy (2012)

Local Economic Development (LED) is an approach to sustainable economic development that encourages residents of local communities to work together to stimulate local economic activity that will result in, inter alia, an improvement in the quality of life for all in the local community. The main objectives of the LED are as follows:

» To facilitate and promote employment creation and poverty alleviation among local communities.
» To promote internal and external investment into the local economy that would promote the growth of existing businesses, as well as the establishment of new businesses.

- To ensure that local entrepreneurs and SMMEs are provided with the necessary support to establish and grow their businesses.
- To implement strategies, programmes and projects that would create an environment conducive to investment and business growth.
- To engage and interact with potential private sector investors.
- To actively promote and market the local area to internal and external investors, in terms of local investment opportunities, planned infrastructure developments by the Municipality and development by other private investors.
- To investigate approaches for lowering the cost of doing business in the area, as well as possible investment incentives aimed at strategic locations and economic sectors (such as Agriculture & Tourism).
- To plan for, evaluate, manage and implement LED programmes as a coordinated effort between the Directorates of the Municipality and other role players.
- To spearhead and drive community interaction, participation and buy-in of LED initiatives in local communities.
- To act as the guardian of local people by ensuring that LED initiatives benefit them and that LED implementation occurs in such a way that labour intensive methods are applied.
- To facilitate local access to and taking full advantage of LED and other development support programmes and funding sources provided by government, the private sector and other institutions (such as DTI & IDC programmes and venture capital).

The integrated approach for stimulating economic growth and development within SLM economy is based on four main Strategic Development Pillars. These Development Pillars are based on the situation experienced within the SLM local economy and aim to utilise existing strengths and opportunities by transforming these into workable programmes and actions that will assist in reducing threats and alleviate weaknesses in the local economic environment. SLM LED four main Strategic Development Pillars are as follows:

- **Pillar 1:** Agriculture and Rural Development (Agro-processing and emerging farmer support)
    - Agribusiness may be defined as all market and private business–oriented entities involved in the production, storage, processing and distribution of agro–based products, in the supply of production inputs and in the provision of services. Agribusiness is an integral component of rural development and forms part of the strategy to improve regional and local economic development and ensure food security.
- **Pillar 2:** Enterprise Development (Investment, promotion and development, SMME and Entrepreneurial support)
    - Enterprise support systems are a critically important aspect of local economic development due to this sectors employment creation

characteristics. This Development Pillar's main focus is to establish and expand Enterprise Development in SLM.

» **Pillar 3:** Tourism Development (Improving the tourism profile)
» **Pillar 4:** Infrastructure and Industrial Development (Industrial diversification and infrastructure development)
    - The concept of Infrastructure and Industrial Development Promotion, in the case of Siyathemba, refers to the expansion of current business and industrial activities, improved local networking and optimising the use of local resources and assets, such as industrial areas and serviced business properties. Broadly, this implies the attraction of new investment to SLM, retaining existing businesses and industries and encouraging local capital to invest locally.

The strategy focusses on economic development and investment in the local area. The proposed project will contribute towards boosting the local economy through employment opportunities and business opportunities. The proposed project will also contribute towards stimulating the local area through socio-economic and enterprise development as well as reducing the poverty levels in the SLM.

3.4. Solar Energy Policies

3.4.1. Solar Energy Technology Roadmap 2013

Diffusion of renewable energy, generally, and solar technology, specifically, in South Africa aims to address the government's desire to aggressively integrate renewable energy technologies into the national energy mix to reduce the country's carbon emissions levels, to help address its growing electricity generation needs, and its industrial heat needs (DEA draft integrated Energy planning report, 2012). The use of solar radiation for power generation is considered a non-consumptive use of natural resources which produces zero greenhouse gas emissions during its operation. The generation of renewable energy will contribute to South Africa's electricity market which has, to date, been heavily dominated by coal-based power generation. The advancement of renewable energy is a priority for South Africa as the government has set a goal of generating 17GW renewable electricity by 2030, as part of the IRP 2010. Furthermore, recent policy highlights the desirability of clean, green energy and solar generated energy will play a significant role in reaching these quotas.

3.5. Conclusion

The findings of the review of the relevant policies and documents pertaining to the energy sector indicate that solar energy and the establishment of solar energy facilities, such as the one proposed, are supported at a national,

provincial, and local level, and that the proposed facility will contribute towards the various targets and policy aims.

4. SOCIO-ECONOMIC PROFILE

The proposed site for the Humansrus Solar 3 PV Facility is located in the Siyathemba Local Municipality (SLM) and within the greater jurisdiction of the Pixley ka Seme District Municipality (PKSDM) in the Northern Cape Province. The proposed site lies approximately 50km south-west of the town of Prieska and approximately 10km south-east of Copperton settlement. This section will provide a strategic understanding of the socio-economic profile of the Northern Cape Province, SLM and PKSDM, in order to develop a better understanding of the socio-economic performance as a background to the development of the proposed project. The data presented in this section has been largely derived from the IDPs, the most recent (2011) Census, as well as the local government handbook 2012. Overall, this section will provide a brief overview of the study area from a regional context, local context (which includes the baseline description of the local social environment), site context and surrounding land use context (which includes the land use character of the immediate area of influence).

4.1. Regional Context

4.1.1. Northern Cape Province

The vast and arid Northern Cape is by far the largest Province in South Africa, taking up nearly a third of South Africa's land area. The area covers 372 899km^2, which is 30.5% of South Africa's total area (refer to Figure 7). However, the Northern Cape has the country's smallest population with a little over 1 million people (population 1 145 861), which is 2.2% of South Africa's population, and an extremely low population density of three people per square kilometre. Just over half of the population speak Afrikaans (53.8%), with other languages being Setswana (33.1%), isiXhosa and English. The capital of the Northern Cape is Kimberley, located on the Province's eastern border. Other important towns are Upington, the centre of the karakul sheep and dried fruit industries, and the most northerly wine-making region of South Africa; Springbok, located in the heart of the Namaqualand spring flower country; and De Aar, the hub of the South African railway network.

Portions of the Northern Cape Province that border the Gariep River and Namibia have the highest solar radiation intensity in the world (State of the Environment Report (SOER), 2005, cited in the Northern Cape PSDF, 2012: 31). This represents a huge comparative economic advantage. At a provincial level, the Northern Cape has been identified as the area with highest potential for solar renewable energy generation, with high solar radiation levels and the availability of vast tracts of land. There are already a number of solar PV and "Concentrated Solar Power" (CSP) facilities planned and developed in the region.

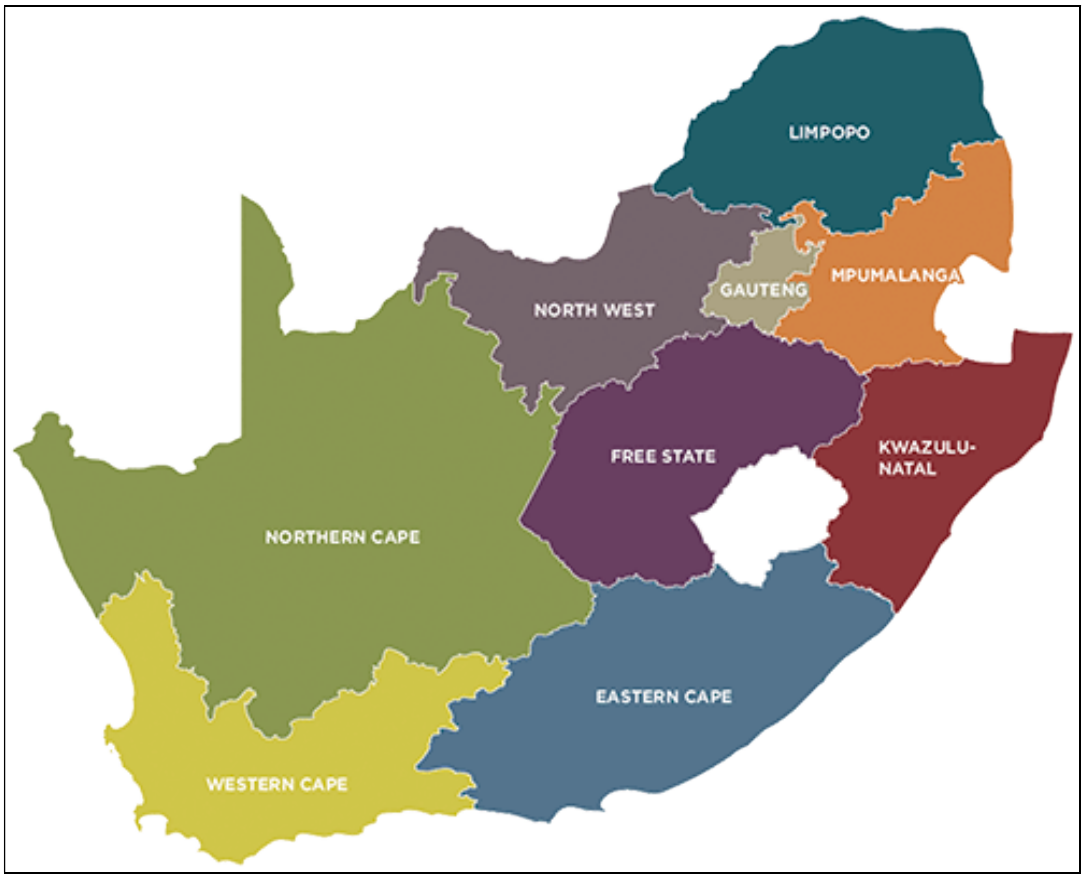

Figure 7: Location of the Northern Cape Province in South Africa (Source: Local Government Handbook, 2012)

4.1.2. Pixley ka Seme District Municipality (PKSDM)

The PKSDM lies in the south-east of the Northern Cape Province and shares its borders with three other provinces, namely the Free State Province to the east, the Eastern Cape Province to the south-east and the Western Cape Province to the south-west (refer to Figure 8). It is comprised of eight local municipalities, namely: Ubuntu, Umsobomvu, Emthanjeni, Kareeberg, Renosterberg, Thembelihle, Siyathemba and Siyancuma. The main town in the District is De Aar. PKSDM is one of the five district municipalities in the Province and is the second-largest. Two of the major dams in South Africa, the Vanderkloof and Gariep Dams, are situated on the borders of the district municipality. The major cities/towns in the PKSDM include Britstown, Burgerville, Campbell, Carnarvon, Colesberg, De Aar, Douglas, Griekwastad, Griesenkraal, Hanover, Hopetown, Hutchinson, Loxton, Marydale, Niekerkshoop, Norvalspont, Noupoort, Petrusville, Philipstown, Prieska, Richmond, Riet River, Schmidtsdrif, Strydenburg, Van der Kloof, Vanwyksvlei, Victoria West, Vosburg. The main economic sectors in the PKSDM are as follows; Finance and business services (22.5%), manufacturing (17.4%), trade and accommodation (15.4%), government services (12.9%), transport and communication (11.3%), mining (6.8%), community and social services (5.6%), construction (3.3%) and agriculture (2.7%). Renewable energy

projects in the different local municipalities are key projects for the PKSDM. Other key investment opportunities include mining (uranium and diamond deposits) and rail revitalisation.

According to the PKSDM IDP 2015-2016, the PKSDM proactively took bold steps towards diversification of the District economy from one that relies on mining and agriculture. The PKSDM 2010 Investment and Renewable Energy Conference was an important milestone aimed at 'Setting the District on a Growth Path' through innovative local economic development initiatives. The PKSDM is declared as a Renewable Energy Hub seeking to attract foreign direct investments into solar, wind, hydro and biomass projects. The PKSDM and its eight local municipalities are currently promoting a green economy in the district that seeks to promote generated economic activities that preserve and enhance environmental quality while using natural resources more efficiently.

Figure 8: Location of the Pixley ka Seme District municipality in the Northern Cape Province (Source: Local Government Handbook, 2012)

4.2. Local Context

4.2.1. Siyathemba Local Municipality (SLM)

The SLM is located within the central eastern parts of the Northern Cape Province bordering the Gariep River, and falls within the boundaries of the PKSDM (refer to Figure 9). The municipal area encompasses a geographic area of approximately 14 725km², which implies that the SLM accounts for 7% of the total district surface area and approximately 25% of the Provincial area. The Municipality is divided into 4 Wards and the proposed site is located within Ward 4 (refer to Table 6 below).

Table 6: Local Municipality Structure

Ward	Area
Ward 1	e'Thembeni in Prieska
Ward 2	Prieska
Ward 3	Section in Prieska, farms and Marydale town
Ward 4	Section in Prieska, Copperton, farms and Niekerkshoop

The SLM was initially made up of three entities, namely, Prieska, Marydale and Niekerkshoop. After demarcation the area was extended (in 2001) to include not only the towns and surrounding suburbs of Marydale, Niekerkshoop and Prieska but also Copperton. Copperton is an old mining settlement that was sold to a private owner after the closing of the Mine. The settlement is currently on a long term lease by the Request Trust. Some of the houses were initially demolished and after the lease agreement was signed with the Request Trust, an agreement was reached that the rest of the houses could be retained. An agreement was reached between the Lessee and Alkantpan (Armscor) for the delivery of water, sanitation, and electricity services. Armscor also maintained one of the main roads.

In the SLM municipal boundary it is evident that the municipal area includes the following main towns:

» Prieska (the seat of the Local Municipality)
» Marydale
» Niekerkshoop

The local economy is mainly agriculture based and highly dependent on the Orange River, which flows through the area.

Figure 9: Location of the Siyathemba Local Municipality within the Pixley ka Seme District Municipality (Source: Local Government Handbook, 2012)

4.2.2. Baseline Description of the Social Environment in the SLM

The purpose of the section is to provide an overview of the current socio-economic situation within the proposed project area. This section will provide a strategic understanding of the socio-economic profile of the study area, in order to develop a better understanding of the socio-economic performance as a background to the development of the project. The data presented in this section has been largely derived from the SLM IDP 2015/2016, PKSDM IDP 2015-2016, the most recent Census (2011), as well as the local government handbook 2012.

Population

The SLM has a geographical area of 14 725km^2 which is approximately 7% of the total PKSDM area. The SLM has a population of 21 591 and a population density of 1.5/km^2 (refer to Table 7). A portion of 8.6% of the PKSDM population resides in the SLM. This indicates that the communities within the SLM are dispersed.

Table 7: Population statistics (Source: Census 2011)

	Area (km^2)	**Population total**	**Population density /km^2**
Northern Cape	372 889	1 145 861	3.1

PKSDM	103 410	186 351	1.8
SLM	14 725	21 591	1.5

Prieska is the closest town to the study area within the SLM which is located approximately ~50km north-east from the proposed site. Prieska is a small town that covers an area of 195.52km^2 and consists of a population of 14 246 people, with a density of 73 people per square kilometre (Census, 2011).

Population groups

According to Census 2011, SLM has a total population of 14 725 people, of whom the most dominant population group is the Coloured ethnic group which comprise 71.9% of the local population and 18.8% form part of the Black African ethnic group (refer to Table 8). Afrikaans is the most prominent spoken language in the SLM.

Table 8: Population groups within the SLM (Source: Census 2011)

Group	**SLM**
Black African	18.8%
Coloured	71.9%
Indian/Asian	0.5%
White	8.5%
Other	0.3%

Age composition

The age structure of a population is extremely important for planning purposes. Table 9 indicates the age and gender profile of citizens living in the SLM.

Table 9: Age distribution in the SLM (Source: Local Government Handbook, 2012)

Age Structure	**Percentage**
0-14	30.8%
15-64	63.2%
65+	6%

The dependency ratio indicates the amount of individuals that are below the age of 15 and over the age of 64, that are dependent on the Economically Active Population (EAP) (Individuals that are aged 15-64 that are either employed or actively seeking employment). As indicated in the table above:

» 36.8% of the SLM population are dependent of the EAP

The dependency ratios could be higher as not every individual in the EAP is employed (i.e. Some could be studying full-time into their 20s, some could be retrenched, some may be housewives, etc.). The working age demographic (age 15-65) in the SLM is made up of 63.2% of the population.

The high proportion of the EAP implies that there is a large human resource base for development projects to involve the local population.

Education levels

Education plays a pivotal role in community development. It provides a set of basic skills for development, creativity and innovative abilities. The level of education influences growth and economic productivity of a region. There is a positive correlation between a higher level of education and the level of development and standard of living. Education levels in any given population will influence economic and human development. It is clear that low education levels lead to low skills base in an area, while high education levels have the opposite effect producing a skilled or highly skilled population. Household and personal income levels are also either positively or adversely affected by education levels. Table 10 indicates the adult education levels (individuals aged 20 years and older) of citizens residing in the SLM.

Table 10: Education levels (Source: Local Government Handbook, 2012)

Census 2011	SLM
No Schooling	11.5%
Matric	18%
Higher Education	5%
Other (some education, either some primary or secondary)	65.5%

The majority of the adult population in the SLM have some education but have not completed secondary education (Matric). This means that the majority of the population have a low-skill level and would either need job employment opportunities in low-skill sectors, or better education opportunities in order to improve the skills level of the area, and therefore income levels.

Employment

The employment profile of the study area is an important indicator of human development. The quality of labour is reflected, among other things, by the educational profile of the economically active population and the availability of training facilities in the region. The term labour force refers to those people who are available for employment in a certain area. According to Statistics South Africa, the definitions of the following employment indicators are:

» Economically active person: "A person of working age (between 15 and 65 years inclusive) who is available for work, and is either employed, or is unemployed but has taken active steps to find work in the reference period."
» Employed: "Those who performed work for pay, profit or family gain for at least one hour in the seven days prior to the interview or who were absent from work during these seven days, but did have some form of paid work to return to."
» Official and expanded definition of unemployment: "The unemployed are those people within the economically active population who: (a) did not work during the seven days prior to the interview, (b) want to work and are available to start work within two weeks of the interview, and (c) have taken active steps to look for work or start some form of self-employment in the four weeks prior to the interview."
» Labour force: "All employed and unemployed persons of working age".
» Unemployment rate: "The percentage of the economically active population that is unemployed."

The employment profile of the study area is an important indicator of human development, but also of the level of disposable income and subsequently the expenditure capital of the residing population. Poverty and unemployment are closely correlated. The proposed development is expected to generate employment opportunities in the construction and operation phases.

Table 11: Employment status (Source: Census 2011, Stats SA)

Employment Status	SLM
Employed	5 371
Unemployed	1 728
Discouraged work seeker	767
Not economically active	5 787

In the SLM there is an unemployment rate of 24.3%. This implies that there is human capital available for work in the SLM, but also there is space for training and developing young and economically active people in occupations in the relevant fields needed. This could increase the employment level of the area.

Income levels

In order to determine the population's standard of living as well as their ability to pay for basic services, the income levels of the employed population has been analysed. Household income levels are one avenue for determining poverty levels in a community. Households that have either no income or low income fall within the poverty level (R0- R38 200 per annum); indicating the difficulty to meet basic need requirements. A middle-income is classified as earning R38 201-R307 600, and a high income is classified as earning R307 601 or more per

annum. Table 12 indicates the household income levels of the residents in the SLM.

Table 12: Average household income (Source: Census 2011)

Income	% SLM	Classification
No income	7.8%	Low Income (Poverty Level)
R1 – R4 800	2.9%	
R4 801 – R9 600	5%	
R9 601 – R19 600	23.9%	
R19 601 – R38 200	26%	
R38 201 – R76 400	16.4%	Middle Income
R76 401 – R153 800	8.8%	
R153 801 – R307 600	5.5%	
R307 601 – R614 400	2.8%	High Income
R614 401 – R1 228 800	0.5%	
R1 228 801 – R2 457 600	0.2%	
R2 457 601 +	0.2%	

The average household incomes of the SLM are as follows:

- » Within the SLM, 65.6% of household income falls within the poverty level;
- » 30.7% of the SLM households earn a middle income salary;
- » 3.7% of the SLM households earn a high income.

A high percentage of the local municipality household income falls within the poverty level. The high poverty level has social consequences such as not being able to pay for basic needs and services. However skill levels are less likely to improve unless education levels improve which will lead to more skilled people which will in turn lead to the opportunity to earn higher income levels.

Health (HIV/AIDS prevalence)

According to the SLM LED 2012, the prevalence rate for HIV/AIDS in South Africa, the study area and the region is described in this section. During 2010, the HIV/AIDS prevalence rate of the SLM population was 6.0% compared to the District rate of 6.5%. These rates compared well to the Northern Cape (7.6%) and South African (12.6%) averages in the same year.

Since 2000, the number of people living with HIV/AIDS in the SLM more than doubled from about 400 to just over 1,200 people in 2010. This means that while the local population compares well with South African averages (in terms of HIV/AIDS), the prevalence rate is expanding faster in the SLM (at 11.2% p.a.) when compared with South Africa (at 5.5% on average per annum since 2000).

Households and access to services

In the SLM there are 5 831 households, with an average household size of 3.6 persons per household. Majority of the SLM comprises urban areas of 87.2% and the 12.8% comprises farming areas (Stats SA, 2011). Table 13 indicates the levels of access to services found in the SLM.

Table 13: Access to services (Source: Census 2011)

2011	**% SLM**
Water Access	
Regional/local water scheme (operated by municipal or other water services provider)	77.9%
Borehole	13.2%
Other	9%
Energy Access	
Electricity	73.6%
Gas	1.9%
Wood	17.1%
Other	5.4%
None	2%
Sanitation Access	
Flush toilet (connected to sewage system)	64.9%
Flush Toilet (with septic tank)	6.4%
Other	20.6%
None	7.5%
Refuse Disposal Access	
Removed by local authority/private company at least once a week	73.9%
Own refuse disposal	18.3%
Other	3.8%
None	4.1%

In terms of basic services within the SLM, 64.9% of the municipality have a flush toilet connected to the sewage system, 73.9% have weekly refuse removal, 77.9% have piped water inside their dwelling, and 73.6% have electricity.

Economic profile

According to the SLM LED 2012, it is evident that the economy is highly unbalanced and dominated by the Government Services sector, which contributed R124 million (or 28.9%) to the local economy in 2010. This sector was followed by the Financial Services (23.8%) and Agriculture sectors (16.4%). Agricultural activity is by far the most dominant land use in the SLM (predominantly livestock grazing) and the local economy is mainly agriculture based and highly dependent on the Orange River, which flows through the area.

Summary and key challenges of the local area:

The greatest social problems in the SLM are illiteracy and poverty. There is also a close correlation between poverty and health. Most of the residents of the SLM

population live in less favourable conditions. Poor households are due to a lack of or limited income, either as a result of unemployment or of low-paying jobs, and they typically rely on multiple sources of income. Access to basic services such as electricity, toilets and piped water is also closely correlated with poverty.

4.2.3. Direct area of influence impacted by the proposed project

The local municipality will be directly impacted by the proposed development. The proposed development has the potential to contribute towards positive and negative socio-economic impacts within the local area in the SLM.

According to WWF (2015), renewable energy projects under the Renewable Energy Independent Power Producer Procurement (REIPPP) Programme are obliged to make a real contribution to local economic development in the area. These requirements have to be fulfilled within a 50km radius of the project site and renewable energy companies are obliged to engage with the development opportunities and needs of communities around the project site. Awarded projects are required to spend a certain amount of their generated revenue on Socio-Economic Development (SED) and Enterprise Development (ED) and share ownership in the project company with local communities. These criteria, as well as the creation of a specific number of jobs, are incentivised through awarding higher scoring to projects that realise such criteria within a 50km radius to the project site during the evaluation process of bids within the REIPPPP. Additionally, projects add value to the local economy through targeted procurement from local businesses. Job creation requirements target national and local citizens. Between 12% and 20% of the people employed on each project have to be residents of local communities located within 50km of the project site. Only "in the event that there are no residential areas or villages within 50km from the project site (are project developers allowed to source workers) in the nearest residential areas or villages to the project site" (DoE 2011). The DoE indicates that the programme (REIPPP) offers great potential to realise positive socio economic outcomes - such as job creation, local ownership, socio-economic development and enterprise development. The project's direct area of influence will extend to a 50km radius from the proposed site. The closest town to the proposed site within the project's direct area of influence (within 50km radius) is Prieksa (refer to Figure 10):

- Prieska town (located approxiamately~50km north-east of the proposed site) is the main town in the SLM, it covers an area of 195.52km^2 and has a total population of approximately 14 246 people (Census, 2011). Approximately 67.4% of the Prieska population are coloured and Afrikaans is the primary language spoken. The main economic sector in Prieska is agriculture, sustained by irrigation from the Gariep River. Prieska's infrastructure is as follows: it has Eskom power; an abundant water supply from the Gariep River, with the Gariep and the Vanderkloof Dams on the

upstream side of the river; easy access to the main railway line to Namibia; good tarred road linkage with Kimberley, Upington and De Aar; and two landing strips for light aircraft. Industrial activities include: grain silos; a cotton mill; a bakery; manufacture of furniture, built-in cupboards; cattle fodder pellets; and a tiger's eye processing plant.

» Copperton settlement (located ~10km north-west of the proposed site) was an old mining settlement that was sold to a private owner after the closing of the mine in 1991. Copperton is now located on privately owned land on Farm Vogelstruis Bult 104. Copperton is currently on a long term lease by the Request Trust. Some of the houses were initially demolished and after the lease agreement was signed with the Request Trust, an agreement was reached that the rest of the houses could be retained. The remaining houses are now rented out to people wanting to reside in the area. Approximately ~60-80 inhabitants currently reside in Copperton. An agreement was reached between the Request Trust and Alkantpan (Armscor) for the delivery of water, sanitation, and electricity services. Armscor also maintain one of the main roads.

The other two towns located in the SLM, outside the 50km radius include:

» Marydale (located ~70km north-west of the proposed site): The population of the town consists of approximately ~2 623 people and covers an area of 63.3km^2 (Census, 2011). On the north-west side of Marydale is a rich underground water source and the main means of water supply is via borehole and wind pumps. The town depends mainly on sheep farming (Local Government Handbook, 2012).

» Niekerkshoop (located ~80km north-east of the proposed site) is a small village with gravel roads on the R313 between Prieska and Griquatown. The population consists of approximately ~1 830 people and the village covers an area of 31km^2 (Census, 2011). There is no domestic water supply but irrigation water is supplied by a spring to the north of the town (Local Government Handbook, 2012).

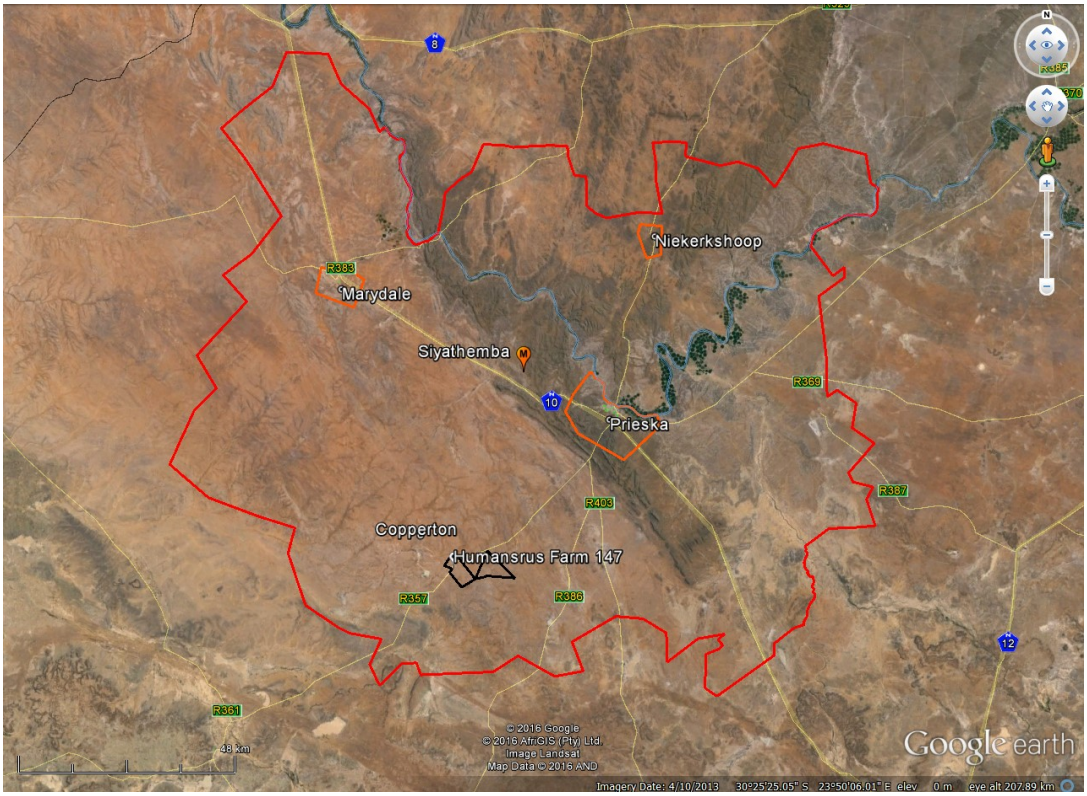

Figure 10: Proximity of towns located near to the proposed site

The major service providers which will be affected by the project include the local municipality (SLM) and local businesses in the area. The positive social impacts associated with the proposed development for the surrounding area includes economic growth and development (economic opportunities such as jobs and expenditure in the local area). The situational analysis and statistics presented in the baseline description of the SLM indicate that the developmental challenges facing the SLM, are poverty, unemployment and service delivery backlogs. Potential negative impacts on SLM will be during the construction phase and will be associated with pressure on infrastructure (e.g. health facilities and basic services) and different social/cultural behaviour influences, for example if an external workforce is brought into the local area (this will increase social conflicts, HIV, pregnancies and drug/alcohol abuse). The municipality will have to absorb a number of social impacts, especially impacts related to an influx of people (i.e. jobseekers), since they will be responsible to deliver services to people residing within their municipal area.

Consultations with key local authorities from the SLM and ward 4 councillor took place in order to determine the key problems and needs of the local area. A few issues were raised from past experiences with the renewable energy developments in the SLM. Mr Jakob Basson, the Technology Manager, and Mr Staahouer, the Municipal Manager of the SLM, stated the following issues (also refer to the minutes of meetings in Appendix B):

- This is a new industry and there were a lot of problems in the beginning. One of the issues was with regard to labour. External people were coming into the area to work on the projects while [the Municipality] were promised that [the developers] will use local people. Some of these [external] people are still living [in Prieska], which puts pressure on the Municipality.
- Strikes took place. Workers were striking and rioting because the labour forces were not organised properly and remuneration varied between solar projects. They were blocking the R357, rioting and causing major problems. From a service provider's perspective, only certain service providers were utilised and others were not (for example, service providers in the transport industry). The latest project that was developed was more fair and equal between service providers in the local area and that should be the same with the future projects. [The Municipality] recommends that the developers use the Municipality as an entry-point and consult with us throughout the whole process.
- There are three towns in the SLM; Prieska, Niekerkshoop and Marydale. The projects are now falling within Ward 4 which will change to Ward 3 soon. According to the criteria, developers are required to employ people within 50km radius. It will create political problems if people are only employed from Prieska. Prieska is approximately 50km away from the site, Marydale is 70km and Niekerkshoop is 80km. It is important to consider employing people from Niekerkshoop and Marydale as well. The last two solar projects that were developed transported people from all three towns with busses every day. If employment creation is spread evenly amongst the towns this will reduce the risk of social conflicts.
- With all projects coming into the area, social problems have increased such as pregnancy rates, more babies are born, and suddenly [there is also] a drug problem.
- The tarred road (R357) leading from Prieska to Copperton belongs to the Provincial Government but there is no maintenance on this road. However, the road is currently in good condition but all these projects coming into the area will increase the wear and tear on the road (R357).
- The developer should consider that a lot of the people in Prieska are now being trained in the renewable field. Instead of bringing semi-skilled people from outside, there are people in the Municipality that are capable of doing the work. Townships become overcrowded very quickly and people should not be brought in, local people should be used.
- The municipality is supportive of these developments. These projects bring in a lot of positive benefits in the local economy. It is important that there is more communication between the developer and the municipality regarding employment, including the appointment of the Community Liaison Officer (CLO), SED and ED plans.

There has been a rapid growth in solar energy developments in the area, with three projects already developed and two projects scheduled to start construction this year. In summary, the key issues that the relevant authorities are facing include external workforces being brought into the area, labour issues, social responsibilities not being met properly, and a lack of communication with the relevant local authorities. The solar energy developments are supported by the local authorities and it was noted that these developments have the potential to bring in more positive than negative impacts to the local area, however, the negative issues raised need to be addressed by new developments proposed. Socio-economic spin-offs from the proposed development could contribute to better infrastructure provision and investment in the local areas. However, an in-depth community needs analysis (CNA) will need to be carried out by the developer at a later stage to make sure that the real needs of communities are addressed (in line with the local government) by development programmes (under the REIPPP programme) in order to significantly contribute towards local economic growth, SED and ED.

4.2.4. Indirect areas of influence impacted by the proposed project

The indirect area of influence extends to all areas that will be indirectly affected by the proposed development. There are a number of stakeholders that reside outside the direct area of influence (i.e. outside of the 50km radius) but who may be affected by the proposed development. These include road users that use the R357 on a frequent basis, from Prieska to Van Wyksvlei. Construction vehicles and trucks will be utilising this road during the construction phase of the development, which will increase the traffic and may increase the wear and tear on these roads. The number of heavy vehicle trips per day would be approximately ~15 - 20 trips for the duration of the construction phase (~12-18 months). Also the low and semi-skilled workers will likely be transported to site with busses from the nearest towns. The development will also have an indirect effect on these towns' local residents, with an influx of in-migrants and growth in the local economy.

An important stakeholder outside the direct area of influence is the Square Kilometre Array (SKA) project that is underway. The world's largest and most sensitive radio telescope will be constructed in the Northern Cape Province, approximately ~90km outside the small Northern Cape town of Carnarvon (refer to Figure 11). The SKA project is of international significance and is important to scientific research (SKA, 2014) that is governed by the "Astronomy Geographic Advantage Act" (AGA). The SKA project is sensitive to any electromagnetic (EM) and radio frequency (RF) interference; therefore, it needs to be outside areas of influence of man-made electronics or machines that emit radio waves that will interfere with the faint radio signals coming from the distant Universe. No major developments which have the potential to interfere with the EM & RF of SKA are

permitted within a defined core field or astronomy reserve area According to the SLM IDP 2015-2016, the Siyathemba municipal area falls just outside this SKA core area, and offers the ideal platform for business opportunities. The SLM has also identified the possible economic spin-offs from being strategically positioned just outside the demarcated area of the SKA Area. Prieska will therefore be in a position to benefit from major industrial and economic activity which will not be allowed or possible within the SKA demarcated area for no or low industrial activity and communication (SLM IDP 2015-2016). There is a high risk buffer area outside of the core area. Approval is required from SKA to ensure that the proposed development does not interfere with SKA's operations. All facilities that fall into this high risk area have to do a risk assessment to determine the interference levels. Mitigations can be implemented to minimise this risk and have to be approved by SKA. The Humansrus Solar 3 PV Facility has undertaken such a risk assessment.

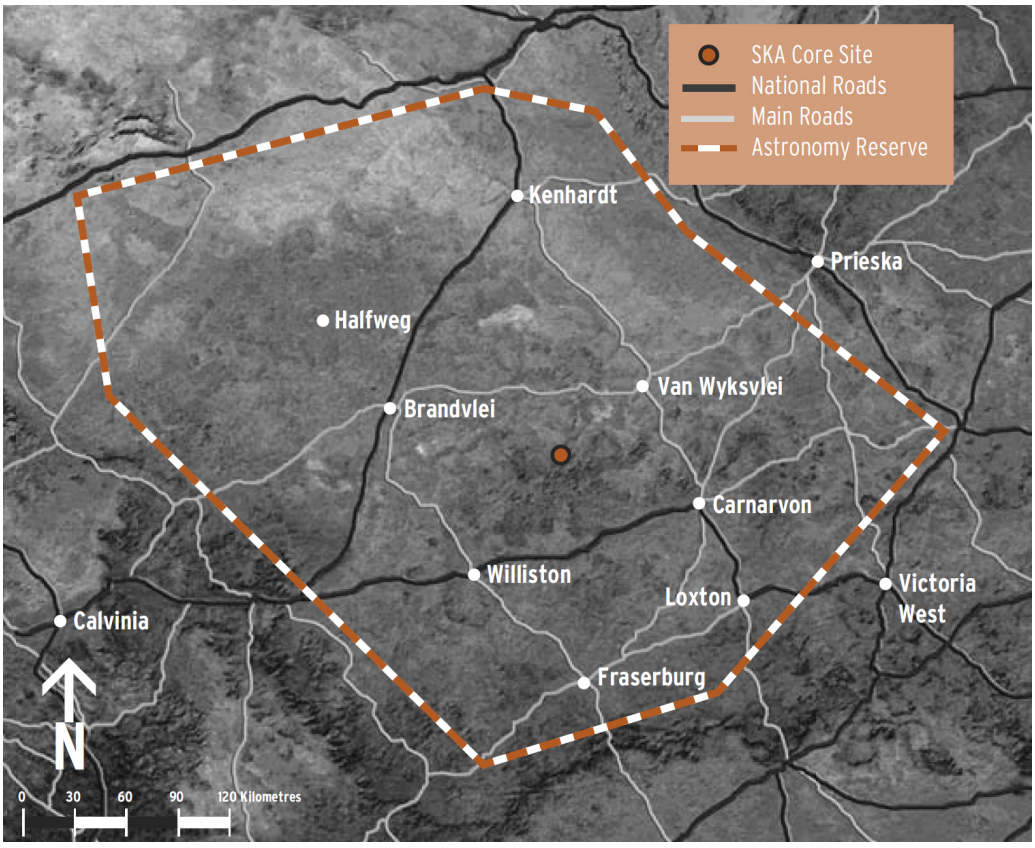

Figure 11: The SKA core site and astronomy reserve (Source: SKA South Africa)

Another indirect area of influence will be at a national level with the positive benefits of the generation of renewable energy that will contribute to South Africa's electricity market. The energy-intensive sectors of the economy emit carbon emissions that are higher than those of most developed economies. The development of a solar facility could add to the stability of the economy, and even

though this project is small scale in comparison to the overall potential of the sector, it could contribute to the local economy. The overall contribution of the proposed PV facility to South Africa's total energy requirements is small; however, the 75MW facility will help contribute to offset the total carbon emissions associated with energy generation in South Africa.

4.3. Immediate area of influence impacted by the proposed project

The immediate area of influence includes the site area and adjacent landowners, in order to include any immediate social receptors that may be impacted by the proposed activities. Sensitive social receptors to the proposed project may include farmers residing on their farms, workers living on the farms and tenants residing in farmhouses on the farms. There are potentially vulnerable farming activities in the study area (livestock farming). The most sensitive farming community/ activities are those that are located within the study area and directly adjacent to the study area.

4.3.1. Site Context

This section will describe the land use character of the impacted site area. The study area is located on privately owned land, within Farm 147 Humansrus. The site is located within a livestock farming agricultural region. A semi-structured interview was held with the impacted landowner of Farm 147 Humansrus (Christina S. Human). Key socio-economic characteristics within the study area include (refer to Figure 12):

- The landowner currently leases out Farm 147 Humansrus to a tenant who utilises the land for low density livestock farming (primarily sheep farming).
- Humansrus Solar 3 (Pty) Ltd has sub-leased a portion of Farm 147 Humansrus from the landowner, Christina S. Human, for the purpose of developing the proposed solar PV facility.
- The Humansrus Solar 1 PV Facility and Humansrus 2 PV Facility have both received environmental authorisation on Farm 147 Humansrus; located near the proposed Humansrus Solar 3 PV Facility.
- The property is fenced for small livestock farming. The landowner noted that the rest of the Farm 147 Humansrus will continue to be leased to farmers for livestock grazing. Thereby it is important that the solar facility development area(s) and access road is fenced off so that no interference takes place with the livestock farming operations.
- There are no buildings or significant infrastructure located in the study area. There are no farmsteads or residents living on Farm 147 Humansrus. The landowners reside in Prieska and there is an old vacant farmhouse located along the southern boundary of Farm 147 Humansrus (in the eastern triangular portion of the farm).

- » A decommissioned railway line runs along the northern boundary of the study site.
- » The R357 and the Copperton road traverses the northern section of Farm 147 Humansrus (see Figure 12). The R357 is a tarred road from Prieska up until approximately ~1.5km after the Copperton turn. Thereafter the R357 to Van Wyksvlei is a gravel road.
- » The existing Cuprum-Hydra 132kV power line traverses the centre of Farm 147 Humansrus from a north-west to south-east direction (refer to Figure 12).
- » The study area is surrounded by similar agricultural land, used predominantly for sheep farming and other renewable energy facilities.
- » Table 14 below provides an overview of the impacted farmland.

Table 14: Overview of impacted Farm 147 Humansrus

Farm	Landowner	Any residents living on farm (i.e. farm workers, tenants, landowner)	Number of Homesteads Buildings	Activities taking place on farm	Issues or concerns with proposed PV facility
Humansrus 147	Christina S. Human	None. Landowner resides in Prieska.	1 old farmhouse is located on eastern (Triangular) side of Farm 147 Humansrus (not occupied)	The farm is currently leased to a farmer who utilises the farm for livestock farming (sheep)	Ensure that the PV project areas and access roads are fenced off so that grazing can continue around PV facility areas

4.3.2. Adjacent Landowners

Majority of the surrounding study area has a low number of farmsteads/buildings that are sparsely populated. The area is located within a livestock farming agricultural region, and the immediate area is presently used mainly for small livestock (sheep, goats) farming as well as renewable energy facilities. There are currently three developed solar energy facilities and two wind farms that are scheduled to be constructed in 2016 / 2017. There are also a number of farms that have received environmental authorisation for solar energy facilities and farms that are currently in the EIA process for solar developments. This implies that projects of the same nature have been consolidated in one area creating a renewable energy node. The settlement of Copperton and infrastructure of the now disused Copperton mine and slime dams also lie to the north-west of the proposed site. There is a network of gravel roads and smaller farm tracks within the area, including servitudes along the existing 132 kV power lines which run across the middle of Farm Platsjambok RE/102, Farm 147 Humansrus and Farm

Vogelstruisbult 1/104. Figure 12 illustrates the adjacent landowner's locations relative to the study area and prominent features in the area. A survey of the adjacent landowners was undertaken to determine the type of activities/ land uses surrounding the study area and to determine any sensitive social receptors that may be negatively impacted by the proposed development. All the adjacent landowners were interviewed either in person or telephonically. There were no major issues or concerns raised by the adjacent landowners and they were all very supportive of the proposed project. The only issue that was raised was the impact from all the renewable developments on the roads (wear and tear) and dust pollution increasing. Table 15 provides an overview of the adjacent landowners' land-uses, characteristics and issues raised during stakeholder consultations.

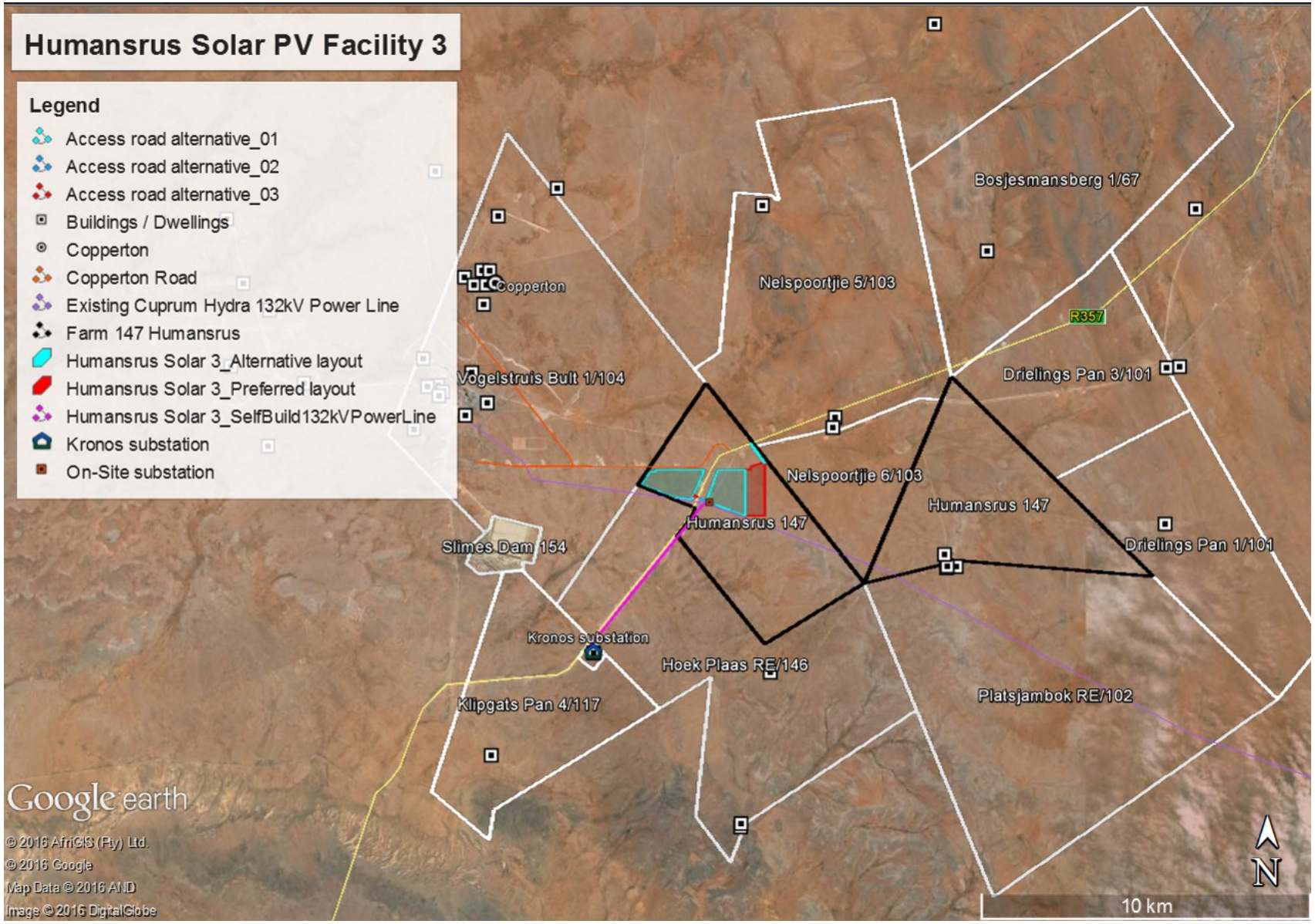

Figure 12: Impacted and adjacent landowners map

Table 15: Current land uses and characteristics of the adjacent farmlands

Farm Name & Portion	**Location**	**Landowner Names**	**Any residents living on farm (i.e. farm workers, tenants, landowners)**	**Homesteads / Buildings on farm**	**Current activities taking place on the farm (sheep farming etc.) and any prominent features.**	**Any issues or concerns with proposed PV facility and associated infrastructure**
Farm Platsjambok RE/102	Adjacent to the south	Wynand Jacobus Human	Landowners reside on farm.	Main farmhouse (occupied by landowners) and few other buildings (vacant).	Livestock farming, primarily sheep farming	No issues or concerns with proposed PV facility and associated infrastructure.
Farm Hoek Plaas RE/146 (The proposed self-build 132kV power line is proposed to traverse the northern section of this farm)	Adjacent farm to the south west	Hendrik G & Maria J Human	None. Landowners reside in Prieska.	Farmhouse and a few buildings on farm (vacant).	The farm is primarily utilised for livestock farming. There is also an operating 75MW PV solar energy facility located on the farm, called, Mulilo Sonnedix Prieska PV facility.	No issues or concerns with proposed PV facility and associated infrastructure.
Farm Nelspoortje 5/103	Adjacent to the north	Pieter Fourie & Wilhette Fourie	Landowners reside on farm.	Main farmhouse (occupied by landowners) and operational guesthouse buildings.	The landowner runs a guesthouse on the farm called the Nelspoortjie Karoo Guest Farm (3 star). The farm is also used for livestock farming (mainly sheep). There are also four authorised PV facilities (Kronos PV facilities) on the property. The projects are to be bid into the DoE REIPPPP.	Wear and tear on roads with all the projects in the area and dust impacts.
Farm Nelspoortje 6/103	Adjacent to the north	Pieter Fourie & Wilhette Fourie	None. Landowners reside on Farm Nelsporrtjie 5/103.	None.	The farm is currently used for livestock farming (mainly sheep). The construction of the Garob Wind Farm (PB	Wear and tear on roads with all the projects in the area

Farm Name & Portion	Location	Landowner Names	Any residents living on farm (i.e. farm workers, tenants, landowners)	Homesteads / Buildings on farm	Current activities taking place on the farm (sheep farming etc.) and any prominent features.	Any issues or concerns with proposed PV facility and associated infrastructure
					round 4.5) is scheduled to start in second quarter of 2016 on this farm.	and dust impacts.
Farm Vogelstruis Bult 1/104	Adjacent to the North west	Hester Meyer	Copperton settlement. (see Section 4.3.2)	Copperton settlement (see Section 4.3.2).	The settlement of Copperton and infrastructure of the now disused Copperton mine and slime dams are located on the farm. The existing Cuprum-Hydra 132kV power line and the tarred Copperton road traverses the farm. There is also an operating 19.5MW PV solar energy facility located on the farm, called, Mulilo Renewable Energy Solar PV Prieska. Portions of the farm are also utilised for livestock farming (mainly sheep).	No issues or concerns with proposed PV facility and associated infrastructure.
Farm Drielings Pan 3/101 & 1/101	Adjacent to the east	Kerneels De Jager	None. Landowners reside in Prieska.	None.	The farm is currently used for livestock farming (mainly sheep).	No issues or concerns with proposed PV facility and associated infrastructure.
Farm Bosjesmansberg 1/67	Adjacent to the north east	Gerhard Van Wyk	Landowners reside on farm.	Main farmhouse (occupied by landowners), and operational guesthouse buildings.	The landowner runs a guesthouse on the farm called the Boesmansberg Guest Farm. The farm is also used for livestock farming (mainly sheep). There are also four authorised PV facilities (Bosjesmansberg PV facilities) on the property. The projects are to be bid into the DoE REIPPPP.	No issues or concerns with proposed PV facility and associated infrastructure.
Klipgats Pan 4/117	Adjacent to the	Jemima Bernard	None.	Kronos substation	The farm is currently used for livestock farming (mainly sheep).	No issues or concerns with proposed PV

Farm Name & Portion	**Location**	**Landowner Names**	**Any residents living on farm (i.e. farm workers, tenants, landowners)**	**Homesteads / Buildings on farm**	**Current activities taking place on the farm (sheep farming etc.) and any prominent features.**	**Any issues or concerns with proposed PV facility and associated infrastructure**
(Kronos substation is located in north east corner of this farm)	south west				There is also an operating 75MW PV solar energy facility located on the farm, called, Mulilo Prieska PV facility.	facility and associated infrastructure.

5. SOCIAL IMPACT ASSESSMENT

This section provides a detailed description and assessment of the potential social impacts associated with the construction, operation and decommissioning phases of the proposed Humansrus Solar 3 PV Facility and associated infrastructure (132kV power line to connect to the Kronos substation).

5.1. Construction Phase

Impacts associated with the construction phase of a project are usually of a short duration (approximately 12-18 months) and temporary in nature, but could have long-term effects on the surrounding social environment if not managed appropriately.

5.1.1. Direct employment and skills development

The construction of the proposed project will require a workforce and therefore direct employment will be generated. The proposed development will create employment opportunities for the local community. The nearest town to the study area within the SLM is Prieska, located approximately ~50km away. The other two in the SLM are Marydale and Niekerkshoop, located approximately ~70-80km away from the proposed site. The Municipal Manager and Technology Manager from the SLM elaborated on the importance of hiring people from all three towns in the SLM and not only from Prieska to avoid any social conflicts among locals. There is a large economically active population in search of employment opportunities in the impacted local municipality. It is estimated that during the construction phase (for the period of ~12-18 months) approximately ~300-400 full-time equivalent employment positions will be generated for the Humansrus Solar 3 PV Facility. In terms of skills requirements, it is common that highly skilled or skilled labour such as engineers, technical staff and project managers will constitute about 15% of the work force; skilled staff would typically be required to operate machinery and will constitute about 25% of employees, while unskilled staff such as construction and security workers will constitute about 60% of the work force. Majority of low-skilled and semi-skilled opportunities are likely to be sourced from the local community (± 200-approximately 50-60% of the workforce). Employment opportunities for the proposed development will peak during the construction phase and significantly decline during the operation phase. The estimated salary and wage bill will equate to approximately R50 million (2015 Rand value).

The SLM is characterised by high levels of unemployment and poverty. The unemployment rate is at 24.3% which is significantly high in relation to the provincial unemployment level at 27.4%. There will be significant job opportunities available for low skilled (construction, security and maintenance

workers) and semi-skilled workers, which can be sourced from the local area. Construction workers could be sourced from the local towns in the SLM, such as Prieska, Marydale and Niekerkshoop. It could be expected that some of the workers from outside the local area would form part of the construction team. Local labour should be sourced from within the local municipality first (SLM) and if need be, extend the search to the district municipality. Adverse impacts could occur if a large in-migrant workforce is employed and brought in during the construction phase (culturally different migrants would also contribute to social conflicts).

The developer will need to demonstrate a commitment to local employment targets in order to maximise the opportunities and benefits for members of the local community. It is likely that an Engineering, Procurement and Construction (EPC) contractor will be appointed by the developer who will hire the necessary employees. The applicant has indicated that training will also be provided to employees with the proposed development. Specific skills training for local communities have the opportunity to develop local employee potential. This is crucial to long-term development of skills and education in the area. This will accelerate the positive benefits and impacts of the development on the economy.

There is no difference between either of the layout options having an impact on the positive economic opportunities. Either of the layout options will provide the same positive opportunities in terms of employment creation and skills development.

Table 16: Impact assessment on direct employment opportunities and skills development

Construction Phase				
Nature: The creation of employment opportunities and skills development opportunities during the construction phase for the country and local economy				
	PREFERRED LAYOUT		**ALTERNATIVE LAYOUT**	
	Without enhancement	**With enhancement**	**Without enhancement**	**With enhancement**
Extent	Local- Regional (3)	Local- Regional (3)	Local- Regional (3)	Local- Regional (3)
Duration	Short term (2)	Short term (2)	Short term (2)	Short term (2)
Magnitude	Moderate (6)	Moderate (6)	Moderate (6)	Moderate (6)
Probability	Probable (3)	Highly probable (4)	Probable (3)	Highly probable (4)
Significance	**Medium (33)**	**Medium (44)**	**Medium (33)**	**Medium (44)**
Status (positive or negative)	Positive	Positive	Positive	Positive
Reversibility	N/A			
Irreplaceable	N/A			

loss of resources	
Can impacts be enhanced	Yes
Enhancement measures: » If possible, efforts should be made to employ local contractors that are compliant with Broad Based Black Economic Empowerment (BBBEE) criteria » It is recommended that local employment policy is adopted to maximise the opportunities made available to the local labour force (sourced from Prieska, Marydale and Niekerkshoop within the SLM). » The recruitment selection process should seek to promote gender equality and the employment of women wherever possible. » Where feasible, training and skills development programmes should be initiated prior to the commencement of the construction phase. » A Community Liaison Officer should be appointed from the local community. A method of communication should be implemented whereby procedures to lodge complaints are set out in order for the local community to express any complaints or grievances with the construction process.	
Residual impacts » Improved pool of skills and experience in the local area » Economic growth for small-scale entrepreneurs » Temporary employment during the construction phase will result in jobs losses and struggles for construction workers to find new employment opportunities	

The impact is assessed to be positive, local and regional in extent, temporary in duration, of moderate intensity, and highly probable with enhancement measures implemented. The impact is assessed to be of medium significance.

5.1.2. Economic multiplier effects

There are likely to be opportunities for local businesses to provide services and materials for the construction phase of the development. The local service sector will also benefit from the proposed development. Identified past experiences with the developments of other renewable energy facilities in the local area, there were issues with people rioting, which stemmed from the perception that only selected service providers were provided an opportunity to participate in the projects. From a service provider's perspective, only certain service providers were utilised and others weren't (i.e. in the transport industry). It is important that a fair and equal opportunity is provided when allowing local service providers to tender for work, and that the municipality is involved throughout the process.

The site is located approximately 50km south west of Prieska, as the closest town. Given the relative proximity of the site to Prieska, no on-site accommodation is envisaged. Off-site accommodation in the nearest towns would be required for contract workers and certain employees. The economic multiplier effects from the use of local goods and services opportunities will include, but is

not limited to, construction materials and equipment and workforce essentials such as services, safety equipment, ablution, accommodation, transportation and other goods.

The total construction capital expenditure associated with the establishment of the 75MW solar energy facility and associated infrastructure is estimated to be in the region of R1.5 billion (2015 Rand value). Between 50% and 60% of the capital expenditure will be spent on local goods and services required for the development of the solar energy facility. In terms of business opportunities for local companies, expenditure during the construction phase will create business opportunities for the regional and local economy. The increase in demand for new materials and services in the nearby area may stimulate local business and local economic development (however locally sourced materials and services may be limited due to availability). There is likely to be a direct increase in industry and indirect increase in secondary businesses.

Also the injection of income into the area in the form of wages will represent an opportunity for the local economy and businesses in the area. Through the stimulation of employment and income, creation of new demand within the local and regional economies is expected. With increased income comes additional income for expenditure on goods and services supplied. The intention is to maximise local labour employment opportunities, which is likely to have a positive impact on local communities and have downstream impacts on household income, education and other social aspects. The implementation of the enhancement measures below can increase the opportunities for local area.

There is no difference between either of the layout options having an impact on the positive economic opportunities. Either of the layout options will provide the same positive opportunities in terms of economic multiplier effects.

Table 17: Economic multiplier effects impact assessment

Construction Phase				
Nature: Significance of the impact from the economic multiplier effects from the use of local goods and services				
	PREFERRED LAYOUT		**ALTERNATIVE LAYOUT**	
	Without enhancement	**With enhancement**	**Without enhancement**	**With enhancement**
Extent	Local- Regional (3)	Local- Regional (3)	Local- Regional (3)	Local- Regional (3)
Duration	Short term (2)	Short term (2)	Short term (2)	Short term (2)
Magnitude	Low (4)	Moderate (6)	Low (4)	Moderate (6)
Probability	Probable (3)	Highly probable (4)	Probable (3)	Highly probable (4)
Significance	**Low (27)**	**Medium (44)**	**Low (27)**	**Medium (44)**

Status (positive or negative)	Positive	Positive	Positive	Positive
Reversibility	N/A			
Irreplaceable loss of resources	N/A			
Can impacts be enhanced	Yes			
Enhancement » It is recommended that a local procurement policy is adopted by the developer and EPC contractor to maximise the benefit to the local economy. » Where feasible, the developer should develop a database of local companies, specifically Historically Disadvantaged (HD) which qualify as potential service providers (e.g. construction 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 applicable. » It is recommended that goods and services are sourced from the local area as much as possible; engage with local authorities and business organisations to investigate the possibility of procurement of construction materials, goods and products from local suppliers where feasible.				
Residual impacts Improved local service sector, growth in local business				

The impact is assessed to be positive; local to regional in extent; temporary in duration; moderate intensity; and highly probable. The impact is assessed to be of medium significance.

5.1.3. In-migration of people (non-local workforce and jobseekers)

The in-migration of people to the area as either non-local workforce of construction workers and/or jobseekers could result in pressure on economic and social infrastructure on the local population (rise in social conflicts). Influx of people into the area, especially by job seekers, could further lead to a temporary increase in the level of crime, cause social disruption and put pressure on basic services. An influx of people looking for economic opportunities could result in pressure on the local population such as rise in social conflicts and change in social dynamics, increase in HIV, pregnancies and drug abuse. Adverse impacts could occur if a large in-migrant workforce, culturally different from the local indigenous group, is brought in during construction. The high unemployment rate (24.3%) and expectations of job creation is already a source of competition among locals and could be exacerbated through outsiders coming into the area resulting in conflict. Such influx could also result in increased pressure on social infrastructure such as existing community infrastructure, social services, municipal services, accommodation, health facilities, transport facilities, basic

services and so forth. The SLM availability of basic services to meet the current needs of the local population is strained due to a lack of infrastructure required. This places tremendous strain on the environment and the local municipality.

The Municipal Manager and Technology Manager have stated that from experience of past projects, external workforces brought into the area created numerous social problems. Townships become overcrowded and people remained in the municipality after the project completed, adding to the poverty and unemployment issues. They have also indicated that there is an available workforce in the SLM. This is due to the rise in the renewable industry in the area, local people have been trained or are in the process of being trained in the renewable field. Therefore, it is not considered to be necessary to bring in additional low-skilled and semi-skilled people from outside, as the SLM population could fulfil the majority of the lower and semi-skilled employment opportunities that arise.

The degree to which societies are disrupted largely depends on the level of local employment achievable and in the case of this project a significant portion of the workforce is expected to be sourced locally (approximately ~50-60% of the workforce will be sourced from the SLM) and the overall number of outsiders would not be significant to cause great disruption to the area.

There is no difference between either of the layout options having a more significant impact on the influx of in-migrants. Either of the layout options are acceptable.

Table 18: Assessment of impacts from influx of in-migrants

Construction Phase				
Nature: Added pressure on economic and social infrastructure and increase in social conflicts during construction as a result of in-migration of people				
	PREFERRED LAYOUT		**ALTERNATIVE LAYOUT**	
	Without mitigation	**With mitigation**	**Without mitigation**	**With mitigation**
Extent	Local (2)	Local (2)	Local (2)	Local (2)
Duration	Short-term (2)	Short-term (2)	Short-term (2)	Short-term (2)
Magnitude	Low (4)	Minor (2)	Low (4)	Minor (2)
Probability	Probable (3)	Probable (3)	Probable (3)	Probable (3)
Significance	**Low (24)**	**Low (18)**	**Low (24)**	**Low (18)**
Status (positive or negative)	Negative	Negative	Negative	Negative
Reversibility	Yes			
Irreplaceable loss of resources	No			

Can impacts be mitigated	Yes
Mitigation » A 'locals first' policy should be advertised for construction employment opportunities, especially for semi and low-skilled job categories. Enhance employment opportunities for the immediate local area; Prieska, Marydale and Niekerkshoop. » It is recommended that local employment policy is adopted to maximize the opportunities made available to the local labour force. » Tender document should stipulate the use of local labour as far as possible. » Recruitment of temporary workers at the gates of the development should not be allowed. A recruitment office with a Community Liaison officer (that's been appointed from the local community) should be established in a nearby town to deal with jobseekers. » A security company is to be appointed and appropriate security procedures to be implemented. » Implement procedures for the control and removal of loiters at the construction site. » A Community Liaison Officer should be appointed from the local community. A method of communication should be implemented whereby procedures to lodge complaints are set out in order for the local community to express any complaints or grievances with the construction process.	
Residual impacts Possibility of outside workers remaining in the area after construction is completed and subsequent pressures on local infrastructure and services.	

The impact is assessed to be negative; local in extent; temporary in duration; minor intensity; and probable with mitigation measures. The impact is assessed to be of low significance with mitigation.

5.1.4. Impacts on daily living and movement patterns (traffic impacts & nuisance impacts)

An increase in traffic due to construction vehicles and heavy vehicles could create short-term disruptions and safety hazards for current road users. Transportation of project components and equipment to the proposed site will be by vehicular / trucking transport. The access road will be located off the R357 located approximately 50km south-west of Prieska. The primary roads that will be used for transportation of project components and equipment will be the provincial road, R357. Increased traffic due to construction vehicles and heavy vehicles could cause disruptions to road users and increase safety hazards. The use of local roads and transport systems may cause road deterioration and congestion, especially on the main road that will be utilised - the R357. The Municipal Manager stated the following concern: "The tarred road (R357) leading from Prieska to Copperton belongs to the Provincial Government but no one is doing maintenance on this road. However, the road is currently in good condition but projects coming into the area will increase the wear and tear on the road (R357)." An increase of traffic from the rise in construction vehicles is a safety concern for

other road users and local communities in the area. The R357 has a low frequency use and is primarily utilised by local people residing in the area and people commuting between Prieska and Van Wyksvlei.

The developer has indicated that the number of construction vehicle trips per day would be in the region of ~15-20 trips. There will be an increase in the movement of people during the construction phase. Low and semi-skilled workers will likely be transported to site with busses every day. Noise, vibrations, dust and visual pollution from construction vehicles and heavy vehicle traffic during the construction phase could cause temporary disruptions in daily living, movement patterns and quality of life for local community members. There are only a few and sparsely populated homesteads or residents living in the nearby area, which reduces this impact. In terms of provincial roads involved, the expectation is that the proponent should consult with the relevant roads agency to ensure that they do not contribute to the deterioration of roads without taking some responsibility for repairing the impact that their construction vehicles may have on the road during construction phase.

Impacts associated with construction related activities include noise, dust and disruption or damage to adjacent properties is a potential issue. Experience from construction of other solar energy facilities and power lines in the area indicate that site clearing does increase the risk of dust and noise being generated, which can in turn impact on the use of the adjacent properties. The primary sources of noise during construction would be from the construction equipment and other sources of noise include vehicle/truck traffic. Noise levels can be audible over a large distance however are generally short in duration. Generation of dust would come from construction activities as well as trucks/ vehicles driving on gravel roads. This impact will negatively impact social sensitive receptors, which will mainly be the local guest house located on Farm Nelspoortjie 6/103 (located ~2.5km east from the proposed site). The potential impacts can be addressed by implementing effective mitigation measures. The immediate local area is sparsely populated with few homesteads near the proposed site and the area is primarily utilised for livestock farming. The significance of impacts on social sensitive receptors is low.

These issues above were the main key issues raised by key stakeholders during the consultation process; that the proposed project will add to the impacts on the roads, R357 (wear and tear), and dust pollution increasing in the area (refer to minutes of meeting in Appendix B).

Table 19: Assessment of impacts on daily living and movement patterns (traffic impacts)

Construction Phase
Nature: Temporary increase in traffic disruptions and movement patterns during the

construction phase				
	PREFERRED LAYOUT		**ALTERNATIVE LAYOUT**	
	Without mitigation	**With mitigation**	**Without mitigation**	**With mitigation**
Extent	Local (1)	Local (1)	Local (1)	Local (1)
Duration	Short term (2)	Short term (2)	Short term (2)	Short term (2)
Magnitude	Low (4)	Minor (2)	Moderate (6)	Low (4)
Probability	Probable (3)	Improbable (3)	Probable (3)	Probable (3)
Significance	**Low (21)**	**Low (15)**	**Low (27)**	**Low (21)**
Status (positive or negative)	Negative	Negative	Negative	Negative
Reversibility	Yes			
Irreplaceable loss of resources	No			
Can impacts be mitigated	Yes			

Mitigation

» 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 when travelling on roads.
» All vehicles must be road worthy and drivers must be qualified, obey traffic rules, follow speed limits and be made aware of the potential dust, noise and safety issues.
» Heavy vehicles should be inspected regularly to ensure their road safety worthiness.
» Provision of adequate and strategically placed traffic warning signs and control measures along the R357 to warn road users of the construction activities taking place for the duration of the construction phase. Warning signs must be visible at all times.
» Implement penalties for reckless driving for the drivers of heavy vehicles as a way to enforce compliance to traffic rules.
» The developer and engineering, procurement and construction (EPC) contractors must ensure that there is a dedicated safe entrance to the site, and an access control point at the entrance gate off the R357 on Farm 147 Humansrus.
» The developer and engineering, procurement and construction (EPC) contractors must ensure that the fencing or entrance gates along the access road must either be maintained in the present condition, or repaired if disturbed due to project activities.
» The developer and engineering, procurement and construction (EPC) contractor's responsibility is to ensure roads utilised are either maintained in the present condition or upgraded if disturbed due to project activities.
» A comprehensive employee induction programme must be implemented to cover land access protocols and road safety.
» A Community Liaison Officer should be appointed from the local community. A method of communication should be implemented whereby procedures to lodge complaints are set out in order for the local community to express any complaints or grievances with the construction process.

Residual impacts

None anticipated

The impact is assessed to be negative; local in extent; temporary in duration; minor intensity and probable with mitigation measures. The impact is assessed to be of low significance after mitigation. The preferred site layout is the most adequate as it can be accessed from the tarred section of the R357.

5.1.5. Safety and security impacts

The perceived decline of security during the construction phase of the proposed project due to the influx of workers and/ or outsiders to the area (as influx of newcomers or jobseekers are usually associated with an increase in crime), may have indirect effects, such as increased safety and security risk for neighbouring properties and damage to property, increased risk of veld fire, stock theft, crime and so forth. The perception exists that construction related activities (influx of jobseekers, and construction workers and so forth) is a contributor to increased criminal activities in an area. Safety and security impacts are a reality in South Africa, which need to be addressed through appropriate mitigation and management measures. There are no farmsteads or residents living in the study area or in close proximity to the proposed site, therefore there are low safety and security risks on any residential properties/assets. The majority of the adjacent farm owners utilise their farms for sheep farming and renewable energy development. All the adjacent landowners were interviewed and no issues regarding safety and security were raised during the stakeholder consultation process.

There is no difference between either of the layout options having a more significant impact on safety and security. Either of the layout options are acceptable.

Table 20: Assessment of safety and security impacts

Construction Phase				
Nature: Temporary increase in safety and security concerns associated with the influx of people during the construction phase				
	PREFERRED LAYOUT		**ALTERNATIVE LAYOUT**	
	Without mitigation	**With mitigation**	**Without mitigation**	**With mitigation**
Extent	Local (1)	Local (1)	Local (1)	Local (1)
Duration	Short term (2)	Short term (2)	Short term (2)	Short term (2)
Magnitude	Low (4)	Minor (2)	Low (4)	Minor (2)
Probability	Improbable (2)	Improbable (2)	Improbable (2)	Improbable (2)
Significance	**Low (14)**	**Low (10)**	**Low (14)**	**Low (10)**
Status (positive or negative)	Negative	Negative	Negative	Negative

Reversibility	Yes
Irreplaceable loss of resources	No
Can impacts be mitigated	Yes

Mitigation

» Working hours should be kept within daylight hours during the construction phase, and/or as any deviation that is approved by the surrounding landowners.
» The perimeter of the construction site should be appropriately secured to prevent any unauthorised access to the site; the fencing of the site should be maintained throughout the construction periods.
» The appointed EPC contractor must appoint a security company and appropriate security procedures and measures are to be implemented.
» Access in and out of the site should be strictly controlled by a security company.
» The contractor should provide workers with identity tags and prohibit the access of unauthorized people to the construction site.
» The contractor must ensure that open fires on the site for heating, smoking or cooking are not allowed except in designated areas.
» Contractor must provide adequate firefighting equipment on site and provide firefighting training to selected construction staff.
» A comprehensive employee induction programme must be held, covering land access protocols, fire management and road safety. This must be addressed in the construction EMPr as the best practice.
» All vehicles must be road worthy and drivers must be qualified and made aware of the potential road safety issues and follow the speed limits.
» The contractor should have personnel trained in first aid on site to deal with smaller incidents that require medical attention.
» A Community Liaison Officer should be appointed from the local community as a grievance channel. A method of communication should be implemented whereby procedures to lodge complaints are set out in order for the local community to express any complaints or grievances with the construction process

Residual impacts
None anticipated

The impact is assessed to be negative; local in extent; temporary in duration; minor intensity and improbable with mitigation measures. The impact is assessed to be of low significance with mitigation.

5.2. Operation Phase

The solar energy facility is designed to be operational for at least ~20-25 years. The potential positive and negative social impacts which could arise as a result of the operation of the proposed project include the following:

5.2.1. Direct employment and skills development

The operation phase of the project will require a workforce and therefore direct employment will be generated. Although the exact number of permanent workers is not confirmed at this stage, it is estimated that approximately ~50-60 full-time equivalent employment positions will be generated for the lifetime of the project (approximately ~20-25 years). Given that solar energy facilities are relatively new in South Africa, a number of highly skilled personnel may need to be recruited from outside the local area. These employees would include skilled engineers, specialising in both electrical and mechanical engineering. Employees that can be sourced from the local municipal pool include the less skilled such as safety and security staff and maintenance crew. Routine activities would include operation of the solar facility to produce power, and regular monitoring and maintenance activities to ensure safe and consistent operation. Maintenance will be carried out throughout the lifespan of the solar energy facility and associated infrastructure. Typical activities during maintenance include washing solar panels routinely and vegetation control and maintenance around the solar energy facility and along the power line route. Employment opportunities will be created during the operation phase and this is rated as positive impact although limited. The applicant has indicated that training will also be provided to employees. On-the-job training is a key element of staff development and many of the required skills during the operation phase will be taught to the staff through day-to-day operations. This is crucial to long-term development of skills and education in the area. This will accelerate the positive benefits and impacts of the development on the economy.

There is no difference between either of the layout options having an impact on the positive economic opportunities. Either of the layout options will provide the same positive opportunities in terms of employment creation and skills development during the operation phase.

Table 21: Employment opportunities and skills development

Operation Phase				
Nature: The creation of employment opportunities and skills development opportunities during the operation phase for the country and local economy				
	PREFERRED LAYOUT		**ALTERNATIVE LAYOUT**	
	Without enhancement	With enhancement	Without enhancement	With enhancement
Extent	Local- Regional (2)	Local-Regional (2)	Local-Regional (2)	Local- Regional (2)
Duration	Long term (4)	Long term (4)	Long term (4)	Long term (4)
Magnitude	Minor (2)	Minor (2)	Minor (2)	Minor (2)
Probability	Probable (3)	Highly probable (4)	Probable (3)	Highly probable (4)

Significance	**Low (24)**	**Medium (32)**	**Low (24)**	**Medium (32)**
Status (positive or negative)	Positive	Positive	Positive	Positive
Reversibility	N/A			
Irreplaceable loss of resources	N/A			
Can impacts be enhanced	Yes			
Enhancement » It is recommended that a local employment policy is adopted to maximise the opportunities made available to the local community. » The recruitment selection process should seek to promote gender equality and the employment of women wherever possible. » Vocational training programs for employees should be established to promote the development of skills.				
Residual impacts Improved pool of skills and experience in the local area				

The impact is assessed to be positive; local to regional in extent; long-term; minor intensity and probable. The impact is assessed to be of medium significance with enhancement.

5.2.2. Development of clean, renewable energy infrastructure

Energy production has been and still is one of the main pivots of the social and economic development of South Africa. South Africa currently relies on coal-generated energy to meet its energy needs. Almost 72% of South Africa's primary energy is from coal, over half used to generate electricity and a quarter used for synfuels production. South Africa's carbon emissions are higher than those of most developed countries partly because of the energy-intensive sectors which rely heavily on low quality coal. Use of low quality coals is the main contributor to GHG emission. South Africa's emissions per capita are high, at 8.23 tons of CO2 (tCO2) per capita, much higher than Africa's average of 0.94 tCO2 and four times higher than the non-OECD value of 2.24 tCO2 (Mwakasonda, 2007). The use of solar irradiation for power generation is considered a non-consumptive use of a natural resource which produces zero GHG emissions. The generation of renewable energy will contribute to South Africa's electricity market. The advancement of renewable energy is a priority for South Africa. The government considers the use of renewable energy as a contribution to sustainable development (White Paper on Renewable Energy). As most of the sources are local and naturally available, its use will strengthen energy security as it will not be subjected to disruption by international crisis e.g. oil. Furthermore, recent policy highlights that clean, green energy and solar generated energy will play a significant role in reaching these quotas (Energy Research Centre UCT, 2004). Given South Africa's reliance on Eskom as a power

utility, the benefits associated with an Independent Power Producer based on renewable energy are regarded as an important contribution.

Increasing the contribution of the renewable energy sector to the local economy may contribute to the diversification of the local economy and provide greater economic stability. The growth in the solar energy sector could introduce skills and development into the area. The development of a solar energy facility could therefore add to the stability of the economy, and even though this project is small scale in comparison to the overall potential of the sector, it could contribute to the local economy. The overall contribution to South Africa's total energy requirements of the proposed solar energy facility plant is small; however, the 75MW facility will help contribute to offset the total carbon emissions associated with energy generation in South Africa.

There is no difference between the layout options. Either of the layout options will provide the same positive benefits in terms of developing of clean, renewable energy infrastructure.

Table 22: Assessment of the development of clean, renewable energy infrastructure

Operation Phase				
Nature: Development of clean, renewable energy infrastructure				
	PREFERRED LAYOUT		**ALTERNATIVE LAYOUT**	
	Without enhancement	**With enhancement**	**Without enhancement**	**With enhancement**
Extent	Local- Regional- National (4)	N/A	Local- Regional- National (4)	N/A
Duration	Long term (4)	N/A	Long term (4)	N/A
Magnitude	Minor (2)	N/A	Minor (2)	N/A
Probability	Highly probable (4)	N/A	Highly probable (4)	N/A
Significance	**Medium (40)**	N/A	**Medium (40)**	N/A
Status (positive or negative)	Positive	N/A	Positive	N/A
Reversibility	Yes			
Irreplaceable loss of resources	Yes (impact of climate change)			
Can impacts be enhanced	No			
Enhancement None anticipated				
Residual impacts » Reduce carbon emissions through the use of renewable energy and contribute to				

addressing climate change » Contribution towards security of electricity supply

The impact is assessed to be positive; local to national in extent; long term; minor intensity; and highly probable. The impact is assessed to be of medium positive significance.

5.2.3. Benefits associated with REIPPP socio-economic development plans and community trust

According the Department of Energy (DoE), renewable energy projects under the Renewable Energy Independent Power Producer Procurement (REIPPP) Programme are obliged to make a real contribution to local economic development in the area. Awarded projects are required to spend a certain amount of their generated revenue on Socio-Economic Development (SED) and Enterprise Development (ED) and share ownership in the project company with local communities (DoE, 2011).

The developer is required establish a community trust funded by revenue generated from the sale of energy. The community trust will generate a reliable and steady income stream over a 20-25 year period. The trust will be used to fund development initiatives in the area and support local economic and community development. As the community trust will run for the entire operation phase of 20-25 years, it allows the local municipality and communities to undertake long term planning. This provides opportunities for positive benefits to the local area. However, these benefits can be enhanced. Consultations took place with key local authorities from the SLM and the Ward Councillor for Ward 4. A few issues were raised from past experiences with the solar energy developments coming into the area. The key issues that the relevant authorities are facing include external workforces being brought into the area, labour issues, social responsibilities not being met properly and a lack of communication with the relevant local authorities throughout the process. It is important for the developers to engage and communicate with the local municipality so that the municipality can provide guidance on what is required in the local area for socio-economic development plans. Socio-economic spin-offs from the proposed development could contribute to better infrastructure provision and investment in the local areas.

An in-depth community needs analysis (CNA) will need to be carried out at a later stage to make sure that the real needs of communities are addressed (in line with the local government) and the correct representatives of the community are appointed to run the community trust; in order for development programmes to significantly contribute towards local economic growth, SED and ED.

Table 23: Assessment of the benefits associated with REIPPPP - SED and ED programmes and community trust

Operation Phase				
Nature: Benefits to the local area from SED/ ED programmes and community trust from REIPPPP social responsibilities				
	PREFERRED LAYOUT		**ALTERNATIVE LAYOUT**	
	Without enhancement	**With enhancement**	**Without enhancement**	**With enhancement**
Extent	Local (2)	Local (2)	Local (2)	Local (2)
Duration	Long term (4)	Long term (4)	Long term (4)	Long term (4)
Magnitude	Low (4)	Moderate (6)	Low (4)	Moderate (6)
Probability	Probable (3)	Highly probable (4)	Probable (3)	Highly probable (4)
Significance	**Low (30)**	**Medium (48)**	**Low (30)**	**Medium (48)**
Status (positive or negative)	Positive	Positive	Positive	Positive
Reversibility	Yes			
Irreplaceable loss of resources	No			
Can impacts be enhanced	No			
Enhancement » An in-depth community needs analysis (CNA) will need to be carried out to make sure that the real needs of communities are addressed (in line with the local government) and the correct representatives of the community are appointed to run the community trust. » Engagement and involvement of the local municipality (SLM) and ward councillor with social responsibility plans.				
Residual impacts Improvements in local communities through socio-economic and enterprise development.				

The impact is assessed to be positive; local in extent; long term; moderate intensity; and highly probable. The impact is assessed to be of medium positive significance.

5.2.4. Impact on the areas sense of place and landscape

The sense of place is developed over time as the community embraces the surrounding environment, becomes familiar with its physical properties, and creates its own history. The sense of place is created through the interaction of various characteristics of the environment, including atmosphere, visual resources, aesthetics, climate, lifestyle, culture and heritage. Importantly though, it is a subjective matter and is dependent on community perceptions.

An impact on the sense of place is one that alters the visual landscape to such an extent that the user experiences the environment differently, and more specifically, in a less appealing or less positive light. The social impacts associated with the impact on sense of place relate to the change in the landscape character from the proposed solar energy facility and associated infrastructure (power line).

It is envisaged that farmers residing adjacent to the proposed site and commuters travelling on the R357 will predominantly be impacted in terms of the areas' sense of place by the proposed PV facility. There is some infrastructural character within the area. The proposed PV facility would not create a significant impact on the area's sense of place due to the following prominent features surrounding the proposed site which include:

- The old un-used Copperton Mine and Slime Dams are located adjacent to the impacted Farm 147 Humansrus;
- The impacted farm is traversed by the R357, Copperton road, the existing Cupdrum Hydra 132kV power line, and the old decommissioned railway line;
- The Kronos Substation is located approximately 6km from the proposed site;
- The existing Mulilo Sonnedix 75MW PV facility located on the adjacent farm to the south west;
- The existing Mulilo Renewable Energy Solar 20MW PV facility located adjacent to the impacted farm to the north west, next to the old Copperton Mine; and
- The existing Mulilo Prieska 75MW PV facility located next to the Kronos Substation.

The area around Copperton has become a node for renewable energy facilities. In addition, the provincial government has identified a Solar Corridor within this area within which solar development is planned in terms of the Provincial SDF area where the proposed site is located. The adjacent landowners are farmers that utilise the adjacent land primarily for livestock farming activities and recently for renewable energy developments under the REIPPP programme. The immediate local area is sparsely populated with few homesteads near the proposed site and the area. The key stakeholders who were interviewed indicated that they have no issues or concerns regarding the PV facility impacting the area's sense of place. There are also no tourist attractions located adjacent to or near the site. Therefore the anticipated impact on the area's sense of place from a social perspective is expected to be low and there is no mitigation that is applicable.

Table 24: Impacts on the areas sense of place assessment

Operation Phase

Nature: Sense of place impacts associated with the operation phase of the solar energy facility and associated infrastructure				
	PREFERRED LAYOUT		**ALTERNATIVE LAYOUT**	
	Without mitigation	**With mitigation**	**Without mitigation**	**With mitigation**
Extent	Local (2)	N/A	Local (2)	N/A
Duration	Long term (4)	N/A	Long term (4)	N/A
Magnitude	Minor (2)	N/A	Minor (2)	N/A
Probability	Probable (3)	N/A	Probable (3)	N/A
Significance	**Low (24)**	N/A	**Low (24)**	N/A
Status (positive or negative)	Negative	Negative	Negative	Negative
Reversibility	Yes			
Irreplaceable loss of resources	No			
Can impacts be mitigated	Not applicable			
Mitigation None anticipated.				
Residual impacts None anticipated if the PV facility will be removed after decommissioning, provided the site is rehabilitated to its original (current) status.				

The impact is assessed to be negative; local in extent; long term; low intensity; and probable. The impact is assessed to be of low significance, however review of the Visual Impact Assessment (VIA) should be acknowledged and recommendations implemented.

5.2.5. Impacts associated with the loss of agricultural land for livestock grazing

Direct occupation of land by the proposed solar energy facility has the effect of taking the impacted land out of agricultural production, through the occupation of the facility (approximately ~220ha). The study area is located within an agricultural area mainly utilised for livestock grazing. Currently the site and surrounding study area has limited potential for cultivation as a result of the climatic conditions, the nature of the soils and limited water availability. The proposed PV facility is proposed to generate up to 75MW in capacity and will be constructed over an area of approximately ~220ha in extent within the broader property of ~4769ha. The activities associated with the operation phase will result in a loss of farmland (~220ha) available for grazing for the operation period of 20-25 years. However, the impacted landowner has noted that the grazing activities will still take place on the rest of the farmland that is not occupied by the solar energy facility. Therefore the solar energy development will

not interfere with long-term livestock farming operations, and thereby the impact is assessed to be of low significance.

Table 25: Impact assessment of the loss of agricultural land for livestock grazing

Operation Phase				
Nature: Impacts associated with loss of farmland available for livestock grazing due to occupation of land by the solar energy facility				
	PREFERRED LAYOUT		**ALTERNATIVE LAYOUT**	
	Without mitigation	**With mitigation**	**Without mitigation**	**With mitigation**
Extent	Local (1)	N/A	Local (1)	N/A
Duration	Long-term (4)	N/A	Long-term (4)	N/A
Magnitude	Minor (2)	N/A	Minor (2)	N/A
Probability	Highly probable (4)	N/A	Highly probable (4)	N/A
Significance	**Low (28)**	N/A	**Low (28)**	N/A
Status (positive or negative)	Negative	N/A	Negative	N/A
Reversibility	Yes			
Irreplaceable loss of resources	No			
Can impacts be mitigated	No			
Mitigation None required				
Residual impacts Overall loss of farmland				

The impact is assessed to be negative; local in extent; long-term; minor intensity; and highly probable. The impact is assessed to be of low significance.

5.3. Assessment of Alternatives

5.3.1. Assessment of the site layout alternatives

The preferred layout, proposes a footprint of no more than ~220ha within the 852ha study area and is concentrated in the eastern side of R357 on Farm 147 Humansrus. The Alternative site layout covers an area of approximately ~240ha (including exclusionary areas sensitive features) in size and is located on the western portion and eastern portion of the R357 on Farm 147 Humansrus in the ~852ha study area. From a social impact perspective there is not much of a difference in terms of the site layouts. Both the site layouts are similar in size and in terms of the land use both the site layouts are compatible.

Both the site layout options are acceptable. The preferred site would be the preferred site layout option because it is concentrated on one side of Farm 147 Humansrus and is not split over the R357 like the alternative site layout option.

5.3.2. Assessment of the access road alternatives

There are two alternative access road options for the preferred site layout (alternative access road 1 and alternative access road 2). For the alternative site layout there is one access route option (alternative access route 3). Both the alternative access road 2 and the alternative access road 3 will be required in order to access both sides of the proposed alternative site off the R357. Therefore the assessment of the access road alternatives below refer to only the access road alternative 1 and access road alternative 2 to access the preferred site layout.

The two access road alternatives to reach the preferred site layout that are described as follows:

» The alternative site access road 1 provides direct access from the tarred section of the R357 road to the north corner of the proposed preferred site (see Figure 1). The alternative site access road 1 will be approximately 750m long from the R357 to the preferred site layout.
» The alternative site access road 2 provides direct access from the gravel road section of the R357 (Prieska/Vanwyksvlei road) to the South corner of the proposed preferred site. The alternative site access road 2 will be approximately 250m long (gravel road) from the R357 to the preferred site layout. The alternative access road 2 is located off the gravel section of the R357. Construction and heavy vehicles travelling from Prieska would need to travel approximately ~300m on the gravel section of the R357 to reach the access road entrance. The internal access road on Farm 147 Humansrus will be approximately ~250m gravel road.

The dust and increased use of the local roads are expected to be negative impacts. Gravel roads are more prone to erosion and wear and tear. The movement of heavy construction vehicles along the gravel roads will generate dust pollution and increase the wear and tear. Construction vehicles and trucks travelling on the alternative access road 2 option will travel a shorter distance on gravel roads (R357 gravel road 300m + 250m internal gravel access road= 550m) versus the alternative site access 1 which will cover a distance of 750m on gravel roads and is located on the boundary of farm Nelspoortjie 103. A shorter distance of gravel roads will be travelled on by construction vehicles therefore reducing the dust pollution impacts and have less of an impact on adjacent farming areas. The preferred access road is the alternative access road 2 for the following reasons:

» This access road is not located along the boundary of the farm (next to the adjacent farm Nelspoortjie 103), reducing dust pollution on grazing areas near the access road.
» It is located further away from the Nelspoortjie Karoo Guest House (reducing nuisance impacts on the guesthouse).
» The access road follows the linear infrastructure of the Cupdrum-Hydra 132kV power line route traversing the Farm 147 Humansrus.
» The alternative access road 2 will also be the same access road utilised to access the authorised Humansrus Solar 2 PV Facility. Shared use of access roads is preferred to limit the number of accesses along the R357.
» The laydown area and office area is also planned to be located in closed proximity to the on-site substation which is located on the South West corner of the preferred layout area and closer to the alternative access road 2.

Table 26: Assessment of impacts for the access road alternatives relating to the preferred layout

Construction Phase				
Nature: Point of access off the R357 and nuisance impacts in terms of temporary increase in dust and the wear and tear on roads				
	Alternative Access Road 1		**Alternative Access Road 2**	
	Without mitigation	**With mitigation**	**Without mitigation**	**With mitigation**
Extent	Local (1)	Local (1)	Local (1)	Local (1)
Duration	Short-term (2)	Short-term (2)	Short-term (2)	Short-term (2)
Magnitude	Moderate (6)	Low (4)	Low (4)	Minor (2)
Probability	Probable (3)	Probable (3)	Probable (3)	Probable (3)
Significance	**Low (27)**	**Low (21)**	**Low (21)**	**Low (15)**
Status (positive or negative)	Negative	Negative	Negative	Negative
Reversibility	Yes			
Irreplaceable loss of resources	No			
Can impacts be mitigated	Yes			
Mitigation » Dust suppression measures must be implemented on a regular basis along the gravel roads utilised. » The contractor must ensure that damage / wear and tear caused by construction related traffic to roads are repaired before the completion of the construction phase.				

» Ensure that vehicles used to transport sand and building materials are fitted with tarpaulins or covers. » Ensure all vehicles are road worthy, drivers are qualified and are made aware of the potential dust issues. » A Community Liaison Officer should be appointed from the local community. A method of communication should be implemented whereby procedures to lodge complaints are set out in order for the local community to express any complaints or grievances with the construction process.
Residual impacts Damage to roads that are not fixed could affect road users

The impact for alternative site access road 1 is assessed to be negative; local in extent; temporary in duration; low in intensity and probable. The impact is assessed to be of low significance after mitigation.

The impact for alternative site access road 2 is assessed to be negative; local in extent; temporary in duration; minor in intensity and improbable. The impact is assessed to be of low significance. The alternative access road 2 is the preferred access road.

6. CUMULATIVE IMPACTS

Cumulative impacts have been considered as part of the SIA and identified where relevant. The cumulative impacts of the project are related to the construction and operation phases. The site for the proposed development is located within less than 30km from numerous other renewable energy facilities. The impact of solar facilities on the landscape is considered to be a key issue in certain parts of South Africa where there is a growing number of solar energy facility applications. Portions of the Northern Cape are earmarked as potential solar energy hubs, and the area between Upington and De Aar is flagged in the Northern Cape Provincial PSDF as a Solar Corridor (Northern Cape PSDF 2012). There are a number of projects proposed and authorised projects in the vicinity of the Humansrus Solar 3 PV Facility, within the Siyathemba Local Municipality.

The Humansrus Solar 3 PV Facility is proposed on Farm 147 Humansrus, situated approximately 50km south west of the town of Prieska and approximately 10km south east of the Copperton settlement in Northern Cape. Table 27 below lists the known solar projects in the broader area, also refer to Figure 13 below (the shaded colour areas represent Preferred Bidder projects).

Table 27: The other projects/ developments within 30km from the Humansrus Solar 3 PV Facility study area

Project Name	Location	Approximate distance from	Project Status

		the PV Facility development site	
Garob Wind Farm 140MW	Portion 5 of Farm Nelspoortjie 103	Adjacent farm to the north east	Preferred Bidder (PB) Round 4.5: Construction to start in second quarter of 2016
Copperton Wind Farm 102MW	Portion 5 and portion 7 of Farm Nelspoortjie 103	Adjacent farm to the north	PB Round 4: Construction to start in 2016
Mulilo Renewable Energy Solar PV Facility 19.5MW	Farm Vogelstruis Bult 104	Adjacent farm to the north west	PB Round 1: in operation
Mulilo Sonnedix 75MW PV facility	The remaining extent of Farm Hoek Plaas 146	Adjacent farm to the south west	PB Round 3: in operation
Mulilo Prieska 75MW PV facility	Portion 4 of Farm Klipgats Pan 117	8.5km to south west	PB Round 3: in operation
Helena Solar 3 PV Facility 75MW	Portion 3 of Farm Klipgats Pan 117	13km to south west	Received Environmental Authorisation (EA)
Platsjambok West PV Facility	Portion 1 of Farm Kaffirs Kolk 118	9.5km to south west	Received EA
Platsjambok PV Facility	Remaining Extent of Farm Kaffirs Kolk 118	11.5km to south	Received EA
Platsjambok PV Facility	Portion 3 of Farm Kaffirs Kolk 118	9.5km to south	Received EA
Platsjambok East PV Facility	Remaining Extent of Farm Platsjambok 102	10km to south east	Received EA
Bosjesmansberg PV facilities X4	Portion 1 of Farm Bosjesmansberg 67	Adjacent farm to the north east	Received EA's
Kronos PV facilities X4	Portion 6 of Farm Nelspoortjie 103	Adjacent farm to east	Received EA's
Humansrus Solar 1 and 2 PV facilities	Farm 147 Humansrus	On impacted farm	Received EA's
Proposed Humansrus Solar 4 PV Facility	Farm 147 Humansrus	On impacted farm	In process
Moiblox 75MW PV Facility	Remaining extent of Farm Bosjesmansberg 67	17km to the north east	In process
Renewable Energy Farm on Farm Doenies Pan (NK	Portion 5 of Farm Doenies Pan 106	25km to the north east	In process

Energie (Pty) Ltd)			
Renewable Energy Solar Energy Facility on Farm Hedley Plains 64 (NK Energie (Pty) Ltd)	Portion 3 of farm Hedley Plains 64	30km to the north east	In process

It is clear from the above that there is a concentration of solar facilities in the broader area around Copperton. The potential for significant cumulative impacts is therefore likely to be high. This could result in positive permanent impacts on the economy, business development, employment and education in the area and the Province. It may also result in some negative impacts such as an influx of jobseekers and change of the landscape and the area's sense of place. The Humansrus Solar 3 PV Facility falls within the identified geographical area most suitable for the rollout of the development of solar energy projects within the Northern Cape Province as identified by the provincial SDF. This implies that projects of the same nature will be consolidated in one area creating a node, and ultimately aiming to reduce the potential for cumulative impacts associated with such developments when spatially fragmented. It is also important to note that it is unlikely that all proposed renewable energy facilities located in the region will be built, due to capacity constraints on the Eskom grid and the limits placed on renewable energy targets. However, the cumulative social impacts from the proposed Humansrus Solar 3 PV Facility have been assessed to be acceptable (as detailed below). In Figure 13 below, the black outline demonstrates where the Farm 147 Humansrus is located, the shaded colour areas represent the awarded preferred bidder (PB) projects and the other outlined coloured areas either represent areas were environmental authorisation (EA) have been received for renewable energy facilities or where EIA processes are being undertaken.

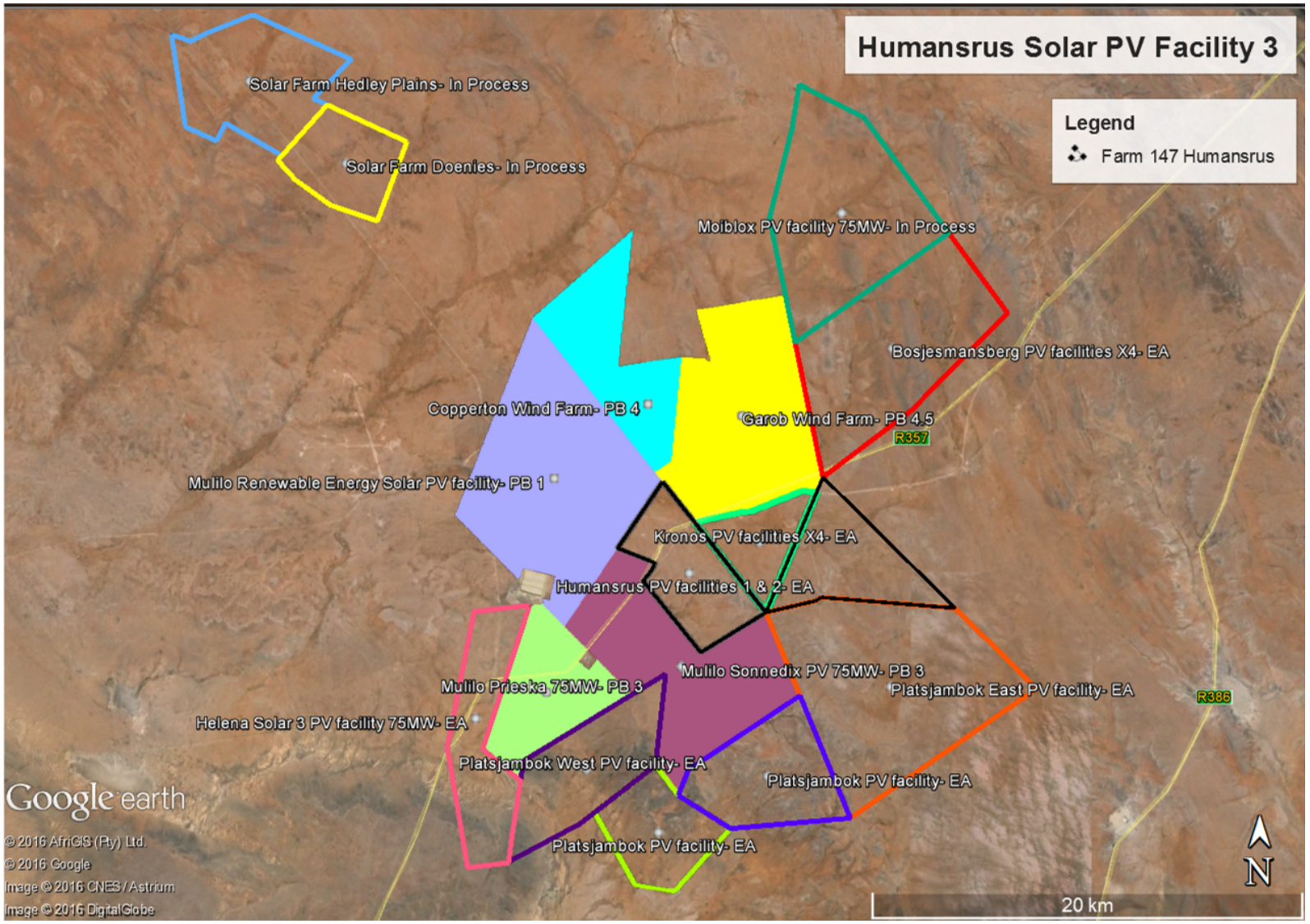

Figure 13: Farm 147 Humansrus in relation to other renewable energy projects in the area

6.1.1. Cumulative impacts from employment, skills and business opportunities

The proposed PV facility and the establishment of other solar energy facilities has the potential to result in significant positive cumulative impacts, specifically with the creation of a number of socio-economic opportunities for the local municipality, which in turn, will result in a positive social benefit to district and provincial levels. The positive cumulative impacts include creation of employment, skills development and training opportunities, and downstream business opportunities. Benefits to the local, regional and national economy through employment and procurement of services could be substantial should many renewable energy facilities proceed. This benefit will increase significantly should critical mass be reached that allows local companies to develop the necessary skills to support construction and maintenance activities and that allows for components of the renewable energy facilities to be manufactured in South Africa. Furthermore at municipal level, the cumulative impact could be positive and could incentivize operation and maintenance companies to centralise and expand their activities towards education and training more closely to the projects. Cumulative impacts on local entrepreneurs will be positive and assist in developing their businesses further. Also renewable energy projects under the REIPPP Programme are obliged to make a real contribution to local economic development in the area. Awarded projects are required to spend a certain amount of their generated revenue on Socio-Economic Development (SED) and Enterprise Development (ED) and share ownership in the project company with local communities. The cumulative impacts are likely to have significant positive impact on the local economy.

With the growth in the renewable industry, secondary industries in the nearby towns may also begin to grow, more individuals will move to the area to fill these secondary positions.

Table 28: Cumulative impacts of employment opportunities, business opportunities and skills development

Nature: An increase in employment opportunities, skills development, SED and business opportunities with the establishment of more than one solar energy facility		
	Overall impact of the proposed project considered in isolation	**Cumulative impact of the project and other projects in the area**
Extent	Local- Regional (3)	Local- regional (3)
Duration	Long term (4)	Long term (4)
Magnitude	Minor (2)	Moderate (6)
Probability	Probable (3)	Probable (3)
Significance	**Low (27)**	**Medium (39)**

Status (positive or negative)	Positive	Positive
Reversibility	N/A	
Irreplaceable loss of resources	N/A	
Can impacts be enhanced	Yes	
Confidence in findings	High	
Enhancement The establishment of a number of solar energy facilities in the area does have the potential to have a positive cumulative impact on the area in the form of employment opportunities, skills development, business opportunities and SED. The positive benefits will be enhanced if local employment policies are adopted and local services providers are utilised by the developers to maximise the project opportunities available to the local community.		

The impact is assessed to be positive; local to regional in extent; long-term; moderate intensity and probable. The overall impact is likely to have a medium positive significance to the local area.

6.1.2. Cumulative impacts with large scale in-migration of people

The development of large-scale solar projects in the local area will likely draw a large number of labour and jobseekers to the area. If the local labour force cannot be sourced locally or the local labour pool is inadequate for the solar energy projects, outside labour will likely move to the area to fill the gap. The area may experience an influx of new residents who may move to the area looking for job opportunities; which will have effects on the existing population during the construction periods that could entail problems of housing, sanitation, water usage and solid waste disposal. Employment at a solar energy facility peaks during construction and significantly declines during operation; since solar energy facilities need relatively few workers while in operation, solar facilities will not create long-term boomtowns. Though there may be an influx of workers during construction, these workers are largely temporary. Rapid population growth is a common experience in rural towns near new large development projects. Towns with larger populations (greater than 1 000 individuals) and with developed services will likely experience greater rates of population growth than areas without developed services. In relation to the area, the towns that are sensitive receptors will be Prieska, Marydale and Niekerkshoop. The impact of this on services and resources is likely to impact the current communities and increase the pressure on local municipalities to meet the basic needs of these potential new communities. The poor communities are likely to be the most vulnerable to loss of service provision and suffer the negative impact of large scale in-migration. There is potential for the influx of migrants to significantly change the local receiving environment and this is likely to have a permanent impact in the region. Due to there being three projects that have already been developed in the area, there is a local workforce available. Therefore developers wouldn't necessarily need to bring in a large workforce. Also, not all the projects in the area will be developed at the same time or on the same timeframe, which

will reduce this impact. However, it is very difficult to control an influx of people into an area (particularly jobseekers), especially in a country where unemployment rates are high.

Table 29: Cumulative impacts with in-migration of people

Construction & Operation Phase		
Nature: Negative impacts and change to the local economy with an in-migration of labourers and jobseekers to the area.		
	Overall impact of the proposed project considered in isolation	**Cumulative impact of the project and other projects in the area**
Extent	Local (3)	Local (3)
Duration	Long term (4)	Long term (4)
Magnitude	Minor (2)	Low (4)
Probability	Improbable (2)	Probable (3)
Significance	**Low (18)**	**Medium (33)**
Status (positive or negative)	Negative	Negative
Reversibility	Yes	
Irreplaceable loss of resources	No	
Can impacts be mitigated	Yes	
Confidence in findings	High	
Mitigation » Develop a recruitment policy/ process (to be implemented by contractors), which will source labour locally, where feasible. » Working together with government agencies to ensure service provision is in line with the development needs of the local area. » Forming joint ventures with community organisations, through Trusts, which can provide local communities with benefits, such as employment opportunities and services.		

The impact is assessed to be negative; local to regional in extent; long-term; moderate intensity and probable. The overall impact is likely to have a medium negative significance to the local area.

6.1.3. Cumulative impact of nuisance impacts (noise, dust & traffic)

Impacts associated with the construction activities of other solar energy facilities being constructed in the area include noise, dust and increased traffic is a potential issue. The cumulative impact of other solar energy projects in the area could increase the nuisance impacts for the surrounding landowners and negatively impact farming activities. Experience from other solar energy facilities indicate that site clearing does increase dust pollution and noise being generated, which in turn impacts the adjacent farming areas. The movement of heavy construction vehicles and construction activities have the potential to create noise

and dust on local roads. The primary sources of noise during construction phases would be from the construction equipment and other sources of noise include vehicle traffic. Short-term increases in the use of local roads would occur during the construction periods. The main road that would be used to access all the renewable energy facilities in the area would be the R357. Increased traffic due to construction vehicles could cause disruptions to the local community and increase safety hazards. The use of local roads and transport systems may cause road deterioration, congestion and wear and tear on the R357. The combined nuisance impacts with several other solar developments in the area in relation to noise, dust and traffic impacts will affect sensitive social receptors in the local area. Especially if more than one development is constructed at any one time, the nuisance impacts will have more of an impact on the local area.

Table 30: Cumulative impacts associated with nuisance impacts (noise, dust and traffic)

Construction Phase		
Nature: Increase in traffic disruptions and increase in noise and dust with other solar energy facility developments		
	Overall impact of the proposed project considered in isolation	**Cumulative impact of the project and other projects in the area**
Extent	Local (2)	Local (2)
Duration	Short term (2)	Long term (4)
Magnitude	Low (4)	Moderate (6)
Probability	Probable (3)	Probable (3)
Significance	**Low (24)**	**Medium (36)**
Status (positive or negative)	Negative	Negative
Reversibility	Yes	
Irreplaceable loss of resources	No	
Can impacts be mitigated	Yes	
Confidence in findings	High	
Mitigation » Dust suppression measures must be implemented on a regular basis. » Vehicles used to transport sand and building materials are fitted with tarpaulins or covers when travelling on roads. » Speed limits must be imposed on internal roads to limit dust generation » Ensure all vehicles are roadworthy, drivers are qualified, obey traffic rules, follow speed limits and are made aware of the potential noise, dust and road safety issues. » Working hours to be appropriately arranged during the construction phase, and/or as any deviation that is approved by the surrounding landowners. » Heavy vehicles should be inspected regularly to ensure their road safety worthiness. » Provision of adequate and strategically placed traffic warning signs and control measures along the R357 to warn road users of the construction activities taking place. Warning signs must be visible at all times. » Implement penalties for reckless driving for the drivers of heavy vehicles as a way to		

enforce compliance to traffic rules.

» The developer and engineering, procurement and construction (EPC) contractors must ensure that any damage / wear and tear to the roads caused by construction related traffic/ project activities is repaired.

» A method of communication should be implemented whereby procedures to lodge complaints are set out in order for the local community to express any complaints or grievances with the construction process. The EPC contractor should appoint a designated staff member to implement grievance procedures and address issues and complaints. A Public Complaints register must be maintained, by the Contractor and monitored by the ECO, to record all complaints and queries relating to the project and the action taken to resolve the issue.

The impact is assessed to be negative; local in extent; temporary in duration; low intensity and probable with mitigation measures. The impact is assessed to be of low significance to the decision making process.

6.1.4. Cumulative impacts on the sense of place and landscape

An impact on the sense of place is one that alters the visual landscape to such an extent that the user experiences the environment differently, and more specifically, in a less appealing or less positive light. The social impacts associated with the impact on sense of place relate to the change in the landscape character from the cumulative impact of other solar energy projects in the area, altering the nature of the visual landscape and the areas sense of place. The local area has already been changed by existing solar developments and the old Copperton Mine and Slime Dams. There are a growing number of solar energy facility applications in the area and in the Northern Cape Province. There are a number of proposed solar energy facilities in the nearby area, which will have an impact on the area's sense of place. The adjacent landowners are farmers that utilise the adjacent land primarily for livestock farming activities and recently for renewable energy developments under the REIPPP programme. The immediate local area is sparsely populated with few homesteads in the area. The Environmental Authorities in the Province should be aware of the potential cumulative impacts when evaluating applications.

Table 31: Cumulative impact on the areas sense of place assessment

Operation Phase		
Nature: Change in the sense of place associated with the establishment of more than one solar energy facility in the area		
	Overall impact of the proposed project considered in isolation	**Cumulative impact of the project and other projects in the area**
Extent	Local (2)	Local (2)
Duration	Long term (4)	Long term (4)
Magnitude	Minor (2)	Low (4)

Probability	Probable (3)	Probable (3)
Significance	**Low (24)**	**Medium (30)**
Status (positive or negative)	Negative	Negative
Reversibility	Yes	
Irreplaceable loss of resources	No	
Can impacts be mitigated	No	
Confidence in findings	High	
Mitigation » None anticipated from a social perspective.		

The impact is assessed to be negative; local to regional in extent; long-term; low intensity and probable. The overall impact is likely to have a medium negative significance to the local area.

7. 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 20 - 25 years post commissioning. The decommissioning phase is therefore likely to create additional, construction type jobs, as opposed to the job losses typically associated with decommissioning however for a limited period of time.

Given the relatively small number of people employed during the operation phase (~50-60), the social impacts at a community level associated with decommissioning are likely to be limited. In addition, potential impacts associated with the decommissioning phase can be effectively managed with the implementation of a retrenchment and downscaling programme.

Table 32: Social impacts associated with decommissioning

Nature: Social impacts associated with retrenchment including loss of jobs and source of income		
	Without Mitigation	**With Mitigation**
Extent	Local (2)	Local (2)
Duration	Short term (1)	Short Term (1)
Magnitude	Moderate (6)	Low (4)
Probability	Highly Probable (4)	Highly Probable (4)

Significance	**Medium (36)**	**Low (28)**
Status	Negative	Negative
Reversibility	No	
Irreplaceable loss of resources?	No	
Can impact be mitigated?	Yes	
Mitigation » Implementation of a retrenchment and downscaling programme » All structures and infrastructure associated with the proposed facility should be dismantled, removed and transported off-site on decommissioning, and the landscape rehabilitated/ re-vegetated.		
Cumulative impacts Loss of jobs and associated loss of income etc. can impact on the local economy and other businesses. However, decommissioning can also create short term, temporary employment opportunities associated with dismantling etc.		
Residual impacts Loss of jobs and associated loss of income, can impact on local economy and other businesses.		

The impact is assessed to be negative; local in extent; short term; low intensity; and highly probable. The impact is assessed to be of low significance to the decision-making process.

8. COMPARATIVE ANALYSIS OF ALTERNATIVES

The selection of the study area was based on a detailed pre-feasibility study, which considered climatic conditions in the area, extent of the site, topographic conditions, availability of land, road access and proximity to a grid connection. No study area alternatives are proposed for this project. A summary of the comparative analysis of alternatives that were assessed are as follows:

» Regarding the two site layout options being considered that are located within the identified study area, it can be concluded that:
  - From a social perspective there is not much of a difference regarding which site layout is chosen.
  - The preferred site would be the preferred site layout option because it is concentrated on one side of Farm 147 Humansrus.

» Based on the analysis of the access road options that were assessed, it can be concluded that:
  - The preferred access road option from a social perspective is the preferred access road 2 as it the shortest distance of gravel road, reducing the dust pollution and impacts with wear and tear on gravel

roads. It is located further away from the Nelspoortjie Karoo Guest House (reducing nuisance impacts on the guesthouse). The access road follows the linear infrastructure of the Cupdrum-Hydra 132kV power line route traversing the Farm 147 Humansrus. The alternative access road 2 will also be the same access road utilised to access the authorised Humansrus Solar 2 PV Facility. Shared use of access roads is preferred to limit the number of accesses along the R357. As well as the laydown area and office area is also planned to be located in closed proximity to the on-site substation which is located on the South West corner of the preferred layout area and closer to the alternative access road 2.

9. ASSESSMENT OF IMPACTS FOR THE NO-GO OPTION:

The impacts of pursuing the No-go Option are both positive and negative as follows:

» The benefits would be that there is no disruption from, nuisance impacts (noise and dust during construction), visual impacts and traffic impacts. The impact is therefore neutral.
» There would be an opportunity loss in terms of job creation, skills development and associated economic business opportunities for the local economy.

Foregoing the proposed solar energy development would not necessarily compromise the development of renewable energy facilities in South Africa, however, the socio-economic benefits for local communities would be forfeited.

10. CONCLUSION AND RECOMMENDATIONS

The SIA has primarily focused on the collection of primary data to identify and assess social issues and potential social impacts. Secondary data was collected and presented in a literature review and primary data was collected through consultations with key stakeholder and the public participation process. The environmental assessment framework for the assessment of impacts and the relevant criteria were applied to evaluate the significance of the potential impacts. A summary of the potential positive and negative impacts identified in the SIA for the construction and operation phase are presented in Tables 33 and 34 below; Table 35 provides an overview the assessment of alternatives and a summary of the cumulative social impacts is also provided in Table 36.

Table 33: Summary of social impacts during construction phase

CONSTRUCTION PHASE				
Impact	**Significance without Mitigation/ enhancement**	**Significance with Mitigation/ enhancement**	**Significance without Mitigation/ enhancement**	**Significance with Mitigation/ enhancement**
	PREFERRED LAYOUT		**ALTERNATIVE LAYOUT**	
Direct employment and skills development	Medium (33) Positive	Medium (44) Positive	Medium (33) Positive	Medium (44) Positive
Economic multiplier effects	Low (27) Positive	Medium (44) Positive	Low (27) Positive	Medium (44) Positive
Influx of jobseekers	Low (24) Negative	Low (18) Negative	Low (24) Negative	Low (18) Negative
Impacts on daily living and movement patterns (traffic & nuisance impacts)	Low (21) Negative	Low (15) Negative	Low (27) Negative	Low (15) Negative
Safety and security risks	Low (14) Negative	Low (10) Negative	Low (14) Negative	Low (10) Negative

Table 34: Summary of social impacts during operation phase

OPERATION PHASE				
Impact	**Significance without Mitigation/ enhancement**	**Significance with Mitigation/ enhancement**	**Significance without Mitigation/ enhancement**	**Significance with Mitigation/ enhancement**
	PREFERRED LAYOUT		**ALTERNATIVE LAYOUT**	
Direct employment and	Low (24) Positive	Medium (32) Positive	Low (24) Positive	Medium (32) Positive

skills development				
Development of clean, renewable energy infrastructure	Medium (40) Positive	N/A	Medium (40 Positive)	N/A
Benefits associated with REIPPP socio-economic development plans and community trust	Low (30) Positive	Medium (48) Positive	Low (30) Positive	Medium (48) Positive
Impact on the areas sense of place and landscape	Low (24) Negative	N/A	Low (24) Negative	N/A
Impacts associated with the loss of agricultural land	Low (28) Negative	N/A	Low (28) Negative	N/A

Table 35: Summary of assessment of alternatives

OPERATION PHASE				
Impact	**Significance without Mitigation**	**Significance with Mitigation**	**Significance without Mitigation**	**Significance with Mitigation**
	Alternative Access Road 1		**Alternative Access Road 2**	
Assessment of the access road alternatives	Low (27) Negative	Low (21) Negative	Low (21) Negative	Low (15) Negative

Table 36: Summary of cumulative social impacts

CUMULATIVE IMPACTS		
Cumulative Impact	**Overall impact of the proposed project considered in isolation**	**Cumulative impact of the project and other projects in the area**
Positive Cumulative Impacts		
Cumulative impacts from employment, skills and business opportunities	Low (27)	Medium (39)
Negative Cumulative Impacts		
Cumulative impacts with large-scale in-migration of people	Low (18)	Medium (33)

Cumulative impacts of nuisance impacts (noise, dust & traffic)	Low (24)	Medium (36)
Cumulative impacts on the sense of place and landscape	Low (24)	Medium (30)

Key findings

From a social perspective it is concluded that the project is supported, but that mitigation measures should be implemented and adhered to. Positive and negative social impacts have been identified. The assessment of the key issues indicated that there are no negative impacts that can be classified as fatal flaws and which are of such significance that they cannot be successfully mitigated. Positive impacts could be enhanced by implementing appropriate enhancement measures and through careful planning. Based on the social assessment, the following general conclusions and findings have been made:

» The preferred access road option from a social perspective is the preferred access road 2.
» The potential negative social impacts associated with the construction phase are typical of construction related projects and not just focussed on the construction of PV facilities (these relate to influx of non-local workforce and jobseekers, intrusion and disturbance impacts, safety and security) and could be reduced with the implementation of the mitigation measures proposed.
» Employment opportunities will be created in the construction and operation phase and the impact is rated as positive even if only a small number of individuals benefit in this regard.
» The proposed project could assist the local economy in creating entrepreneurial development, especially if local business could be involved in the provision of general material and services during the construction and operation phases.
» Capacity building and skills training among employees are critical and would be highly beneficial to those involved, especially if they receive portable skills to enable them to also find work elsewhere and in other sectors.
» The proposed development also represents an investment in infrastructure for the generation of clean, renewable energy, which, given the increased awareness of climate change, represents a positive social benefit for society as a whole.

Recommendations

The following recommendations are made on the basis of the SIA and a thorough review of the concerns and suggestions raised by stakeholders and interested and affected parties during the stakeholder engagement process. The proposed mitigation measures should be implemented to limit the negative impacts and

enhance the positive impacts. Based on the social assessment, the following recommendations are made:

» It is important to appoint a community liaison officer from the local community to assist with the management of social impacts and to deal with community issues.
» In terms of employment related impacts, it is important to consider that job opportunities for the unskilled and semi-skilled in the study area could create competition among the local unemployed. Introducing an outside workforce will therefore most likely worsen local endeavours to obtain jobs and provoke discontent as well as put pressure on the local services available. It is imperative that local labour be sourced from SLM to ensure that benefits accrue to the local communities. Efforts should be made to involve local businesses during the construction activities where possible. Local procurement of labour and services/products would greatly benefit the community during the construction and operation phases of the project.
» Local procurement of services and equipment (where possible) in order to enhance the multiplier effect. This would serve to mitigate other subsequent negative impacts such as those associated with the inflow of outsiders to the area, the increased pressure on the infrastructure and services in the area, as well as the safety and security concerns.
» Involve the community in the process as far as possible during the construction and operation phase (encourage co-operative decision making and partnerships with local entrepreneurs).
» Implement mitigation measures to reduce and avoid negative impacts.
» Employ mitigation measures to minimise the dust pollution and damage to existing roads.
» Safety and security risks should be taken into account during the planning/construction phase of the proposed project. Access control, security and management should be implemented to limit the risk of crime increasing in the area.
» From a social perspective it is recommended to choose the preferred access road 1 to reduce dust pollution and impacts from wear and tear on R357.

Overall Conclusion

The proposed Humansrus Solar 3 PV Facility and associated infrastructure is unlikely to result in permanent damaging social impacts. The potential for positive socio-economic benefits can be realised, and this has been proven through the three projects which have already been constructed and are operational in the immediate area. There is also no opposition to the project from local landowners, councillors or community representatives. From a social perspective it is concluded that the project could be developed subject to the

implementation of the recommended mitigation measures and management actions contained in the SIA report.

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Northern Cape Provincial Growth and Development Strategy (PGDS) (2011)

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Pixley ka Seme District Municipality Integrated Development Plan (IDP) (2012-2016)

Siyathemba Local Municipality Integrated Development Plan (IDP) (2015-2016)

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Strategic Infrastructure Projects (SIPs)

The Constitution Act of South Africa108 of 1996

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United Nations Economic and Social Commission for Asia and the Pacific (UN). 2001. Guidelines for Stakeholders: Participation in Strategic Environmental Management. New York, NY: United Nations.

Vanclay, F. (2003). Conceptual and methodological advances in Social Impact Assessment. In Vanclay, F. & Becker, H.A. 2003. The International Handbook for Social Impact Assessment. Cheltenham: Edward Elgar Publishing Limited.

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APPENDIX A: DECLARATION OF INDEPENDENCE AND CV

environmental affairs
Department:
Environmental Affairs
REPUBLIC OF SOUTH AFRICA

DETAILS OF SPECIALIST AND DECLARATION OF INTEREST

	(For official use only)
File Reference Number:	
NEAS Reference Number:	DEAT/EIA/
Date Received:	

Application for authorisation in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended and the Environmental Impact Assessment Regulations, 2014:

PROJECT TITLE

Proposed Humansrus Solar 3 (Pty) Ltd. PV Facility, near Prieska, Northern Cape Province

Specialist:	Candice Hunter		
Contact person:	Candice Hunter		
Postal address:	PO Box 148, Sunninghill		
Postal code:	2157	Cell:	
Telephone:	*(011) 656 3237*	Fax:	*086 684 0547*
E-mail:	candice@savannahsa.com		
Professional affiliation(s) (if any)			

Project Consultant:	Savannah Environmental (Pty) Ltd		
Contact person:	Jo-Anne Thomas / Karen Jodas		
Postal address:	PO Box 148, Sunninghill		
Postal code:	2157	Cell:	
Telephone:	*(011) 656 3237*	Fax:	*086 684 0547*
E-mail:	Joanne@savannahsa.com / Karen@savannahsa.com		

4.2 The specialist appointed in terms of the Regulations_

I, Candice Hunter , declare that --

General declaration:

- I act as the independent specialists in this application
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the Act, regulations and all other applicable legislation;
- I have no, and will not engage in, conflicting interests in the undertaking of the activity;
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
- **all the particulars furnished by me in this form are true and correct; and**
- **I realise that a false declaration is an offence in terms of Regulation 71 and is punishable in terms of section 24F of the Act.**

Signature of the specialist:

Savannah Environmental (Pty) Ltd

Name of company (if applicable):

17 May 2016

Date:

SIA SPECIALIST CV:

CURRICULUM VITAE
CANDICE HUNTER

Profession	:	Social Consultant
Specialisation	:	Social Impact Assessments (SIA)
Years' experience	:	2 years and 5 months

KEY RESPONSIBILITIES

Specific responsibilities as a Social Consultant involve conducting field research; socio-economic surveys; the management and analysis of data; undertaking stakeholder engagement and communication processes; socio-economic baseline data analyses and conducting general social research for a variety of projects. This includes managing and coordinating the Social Impact Assessment (SIA) processes and compiling SIA reports in line with the countries guidelines and legislation.

SKILLS BASE AND CORE COMPETENCIES

» Social Impact Assessments (SIA)
» EIA Legislation
» Data gathering and analysis
» Qualitative and quantitative social research
» Field research and socio-economic surveys
» Baseline socio-economic data analyses
» Stakeholder engagement
» Public participation process
» Communication and community facilitation
» Report writing and review
» Project administration

EDUCATION AND PROFESSIONAL STATUS

Degrees:

M. A. Environmental Management: University of Johannesburg (2013)

B.A. Honours Tourism Development (Cum Laude): University of Johannesburg (2010)

Courses:

Advanced Certificate in Social Impact Assessment (SIA) (Cum Laude): University of Johannesburg (2013)

Certificate in Global Reporting Initiative (GRI), Sustainability Reporting Process: Environmental & Sustainable Solutions CC (2012)

Publications:

Hunter, C. & Mearns, K. (2015). Assessing the sustainability reporting of selected tourism companies listed on the Johannesburg Stock Exchange (JSE). *African Journal of Hospitality, Tourism and Leisure, 4(1): 1-18.* Publication URL: http://www.ajhtl.com/uploads/7/1/6/3/7163688/article_51_vol.4__1__2015.pdf

EMPLOYMENT

January 2014 – Current:
Savannah Environmental (Pty) Ltd: Social Consultant

February 2011 – January 2013:
University of Johannesburg: Department of Geography, Environmental and Energy Studies & School of Tourism and Hospitality (STH): Student and Research Assistant.

PROJECT EXPERIENCE

Social Impact Assessment Reports:
January 2014: Specialist SIA study for the proposed Gihon Solar Energy Facility & Associated Infrastructure Located near Bela-Bela, Limpopo Province (for Networx SA)
March 2014: Specialist social scoping study for the proposed Exheredo Photovoltaic (PV) Solar Energy Facility and associated infrastructure located near Kenhardt, Northern Cape Province (for Kotulo Tsatsi Energy (Pty) Ltd)
May 2014: Specialist social scoping study for the proposed Wolmaransstad Municipality Solar Energy Facility and associated infrastructure near Wolmaransstad, North West Province (for Bluewave Capital (Pty) Ltd)
July 2014: Specialist SIA study for the proposed Newcastle Solar Energy Facility near Newcastle, KwaZulu Natal (for Building Energy SpA)
July 2014: Specialist SIA study for the proposed Pongola Solar Energy Facility near Pongola, KwaZulu Natal (for Building Energy SpA)
July 2014: Specialist SIA study for the proposed Senekal 1 Solar Energy Facility near Mkuze, KwaZulu Natal (for Building Energy SpA)
July 2014: Specialist SIA study for the proposed Senekal 2 Solar Energy Facility near Mkuze, KwaZulu Natal (for Building Energy SpA)
October 2014: Specialist SIA study for the proposed Kotulo Tsatsi Energy Concentrated Solar Power (CSP) Tower Plant 3 facility and associated infrastructure located near Kenhardt, Northern Cape Province (for Kotulo Tsatsi Energy (Pty) Ltd)
November 2014: Specialist social scoping study for the proposed Lethabo Solar Energy Facility and associated infrastructure near Sasolburg, Free State Province (for Eskom Holdings (SOC) Limited)
November 2014: Specialist social scoping study for the proposed Majuba Solar Energy Facility and associated infrastructure near Amesforort, Mpumalanga Province (for Eskom Holdings (SOC) Limited)
November 2014: Specialist social scoping study for the proposed Tutuka Solar Energy Facility and associated infrastructure near Standerton, Mpumalanga Province (for Eskom Holdings (SOC) Limited)
December 2014: Specialist social scoping study for the proposed 120MW CPV Facility and associated infrastructure near Upington, Northern Cape Province (for Lambrius Energy (Pty) Ltd)

Social Impact Assessment Reports:

February 2015: Specialist SIA study for the proposed realignment of the N10 to facilitate access to the Ilanga CSP Facility site, east of Upington, Northern Cape Province (for SANRL)
March 2015: Specialist social scoping study for the proposed Beaufort West Solar Power Plant 1 near Beaufort West, Western Cape Province (for Beaufort West Solar Company 1 (Pty) Ltd)
March 2015: Specialist social scoping study for the proposed Beaufort West Solar Power Plant 2 near Beaufort West, Western Cape Province (for Beaufort West Solar Company 2 (Pty) Ltd)
March 2015: Specialist social scoping study for the proposed Beaufort West Solar Power Plant 3 near Beaufort West, Western Cape Province (for Beaufort West Solar Company 3 (Pty) Ltd)
June 2015: Specialist social scoping report for the proposed Buffels Solar 1 and Solar 2 Solar Energy Facilities, near Orkney, North West Province (for Kabi Solar (Pty) Ltd)
July 2015: Specialist SIA study for the proposed Lethabo Solar Energy Facility and associated infrastructure near Sasolburg, Free State Province (for Eskom Holdings (SOC) Limited)
July 2015: Specialist SIA study for the proposed Majuba Solar Energy Facility and associated infrastructure near Amesforort, Mpumalanga Province (for Eskom Holdings (SOC) Limited)
July 2015: Specialist SIA study for the proposed Tutuka Solar Energy Facility and associated infrastructure near Standerton, Mpumalanga Province (for Eskom Holdings (SOC) Limited)
August 2015: Specialist social scoping report for the proposed Paulputs CSP Tower Facility and associated infrastructure, near Pofadder, Northern Cape Province (for Abengoa Solar Power South Africa (Pty) Ltd)
September 2015: Specialist SIA study for the proposed AEP Bloemsmond Solar 1 and Solar 2 PV Facilities, near Upington, Northern Cape Province (for AEP Bloemsmond Solar 1 (Pty) Ltd)
October 2015: Specialist social scoping report for the proposed Woodhouse Solar 1 and Woodhouse Solar 2 PV Facilities, near Vryburg, North West Province (for Genesis Woodhouse Solar 1 (Pty) Ltd and Genesis Woodhouse Solar 2 (Pty) Ltd)
October 2015: Specialist social scoping report for the proposed Saldanha Bay Netwrok Strengthening Project, Western Cape Province (for Eskom Holdings SOC Limited)
October 2015: Specialist social scoping report for the proposed Karoshoek Solar Valley Park- Additional CSP Facilities, near Upington, Northern Cape Province (for FG Emvelo (Pty) Ltd)
November 2015: Specialist social scoping report for the proposed Sol Invictus Solar Development and associated infrastructure near Aggeneys, Northern Cape Province (for Building Energy (Pty) Ltd)
November 2015: Specialist social scoping report for the proposed Orkney Solar Development and associated infrastructure near Orkney, North West Province (for Genesis Orkney Solar (Pty) Ltd)
November 2015: Specialist social scoping report for the proposed Gas to Power Plant on a site withnin the Richards Bay Industrial Development Zone, KwaZulu Natal Province (for Richards Bay Gas to Power 2 (Pty) Ltd)

December 2015: Specialist social scoping report for the proposed Noupoort Concentrated Solar Power (CSP) Project and associated infrastructure near Noupoort, Northern Cape Province (for Cresco Energy (Pty) Ltd)
December 2015: Specialist social scoping study for the proposed Beaufort West PV 1 and PV 2 and associated infrastructure near Beaufort West, Western Cape Province (for Turquoise Hive Solar (Pty) Ltd)
December 2015: Specialist social scoping study for the proposed Metals Industrial Cluster and associated infrastructure near Kuruman, Northern Cape Province (for the Northern Cape Department of Economic Development and Tourism)
December 2015: Specialist social scoping study for the proposed Karoshoek Solar Valley Development- Additional CSP Tower Plant, near Upington, Northern Cape Province (for FG Emvelo (Pty) Ltd)
December 2015: Specialist social scoping study for the proposed Karoshoek Solar Valley Development- Additional CSP Trough Plant, near Upington, Northern Cape Province (for FG Emvelo (Pty) Ltd)
December 2015: Specialist social scoping study for the proposed Ilanga CSP 7 and 8 facilities and associated infrastructure within the Karoshoek Solar Valley Development, near Upington, Northern Cape Province (for Emvelo Eco Projects (Pty) Ltd)
December 2015: Specialist social scoping study for the proposed Ilanga CSP 9 facility and associated infrastructure within the Karoshoek Solar Valley Development, near Upington, Northern Cape Province (for Emvelo Eco Projects (Pty) Ltd)
January 2016: Specialist social scoping study for the proposed Semonkong Wind Farm near Semonkong, Lesotho (for Sun Clean Energy Technologies (Pty) Ltd)

Other Projects:
June 2014: Screening and pre-feasibility report- Site assessment for the proposed Wind Energy Facility near Van Reenen, KwaZulu Natal and Free State Provinces (for 4Green Development SA)
October 2015: Environmental, Social and Governance (ESG) Due Diligence- Development of the Hilton Garden Inn by United African Group, Windhoek, Namibia (for Vantage Capital)
September 2015 - February 2016: Preparation, Development and Gazetting of the Environmental Implementation Plan (EIP) 2015-2020. (for Gauteng Department of Agriculture and Rural Development)

APPENDIX B: MINUTES OF MEETINGS DURING SIA STAKEHOLDER CONSULTATION PROCESS

Below are the minutes of the meetings that were undertaken during the social stakeholder consultation process.

Note: There are two projects that are currently in the EIA process that are to be located on Farm 147 Humansrus. The two projects are called Humansrus Solar 3 PV Facility and Humansrus Solar 4 PV Facility. The proposed Humansrus Solar 3 PV Facility and associated infrastructure as well as other proposed PV facility were discussed in the SIA stakeholder meetings, and so reference to both facilities may be made in the notes

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ENVIRONMENTAL IMPACT ASSESSMENT PROCESS

PROPOSED HUMANSRUS SOLAR 3 & 4 PV FACILITIES

SOCIAL IMPACT ASSESSMENT (SIA) PROCESS

NOTES OF THE MEETING SIYATHEMBA LOCAL MUNICIPALITY- MUNICIPAL MANAGER, TECHNOLOGY MANAGER AND WARD 4 COUNCILLOR

HELD ON
THURSDAY 05 MAY 2016 AT 10:30

VENUE
16 VICTORIA STREET, PRIESKA

Savannah Environmental (Pty) Ltd
Contact: **Candice Hunter**
Address: PO Box 148
Sunninghill, 2157
Tel: 011 656 3237
Fax: 086 684 0547
E-mail: candice@savannahsa.com

Notes for the Record prepared by:
Savannah Environmental
Please address any comments to Candice Hunter at the above address.

MEETING:

PROPOSED HUMANSRUS SOLAR 3 & 4 PV FACILITIES

Venue: 16 Victoria Street, Prieska
Date: Thursday 05 May 2016
Time: 10:30

WELCOME AND INTRODUCTION

Candice Hunter of Savannah Environmental welcomed all in attendance and introduced herself as the Social Consultant from Savannah Environmental. She noted *Cape EAPrac* has been appointed by Humansrus Solar 3 (Pty) Ltd and Humansrus Solar 4 (Pty) Ltd (hereafter referred to as the Applicant), as independent environmental practitioner responsible for facilitating the Scoping & Environmental Reporting (S&EIR) process as part of the EIA process required in terms of the National Environmental Management Act (NEMA, Act 107 of 1998, as amended) for the proposed Humansrus Solar 3 PV Facility and the proposed Humansrus Solar 4 PV Facility, near Prieska, Northern Cape. She noted that the applicant has sub-leased portions of Farm 147 Humansrus from the landowner, for the purposes of developing the proposed solar energy facilities. The generating capacity for each solar energy facility will be 75MW of renewable electricity to be supplied to the national Eskom grid via the existing Kronos Substation, adjacent to the site.

Candice Hunter thanked all in attendance for the opportunity to brief them about the proposed project. She noted that the purpose of the meeting was to present the background of the project, provide an overview of the environmental assessment process and discuss any potential social issues and concerns with the proposed developments.

MEETING ATTENDEES

Name	Organisation & Position
R. Staahouer (RS)	Siyathemba Local Municipality – Municipal Manager
J. Basson (JB)	Siyathemba Local Municipality – Technology Manager
E. Martin (EM)	Siyathemba Local Municipality – Ward Councillor Ward 4
Candice Hunter (CH)	Savannah Environmental –Social Consultant

APOLOGIES

None

BACKGROUND & TECHNICAL ASPECTS REGARDING THE PROPOSED PROJECT

Candice Hunter discussed the background and introduction to the project and the EIA process. A map including the location of the proposed developments was presented.

DISCUSSION SESSION

Question / Comment	Response
RS: How many employment opportunities will be created?	*CH:* Each proposed solar energy facility is likely to create approximately 300-400 employment opportunities during the construction period (approximately 12-18 months). Majority of these employment opportunities will be available to unskilled/ semi-skilled workers that will be sourced from the local communities. There will be other economic benefits for the local area in terms of community shareholding in the projects, there is potential local economic upliftment from job creation as well the project is obliged to spend a certain percentage of the revenue from the project on economic development in the local area throughout its operation phase (approximately 20-25 years).
RS: What percentage of employment opportunities will be sourced from the local area?	*CH:* 50-60% which will be approximately ~200 people.
CH: What kind of social issues have you come across with the other renewable projects in the area?	*RS:* This is a new industry and there were a lot of problems in the beginning. One of the issues was labour issues. It is important that the developers are more prepared when starting with the process. External people were coming into the area to work on the projects while we were promised that they will use local people. Some of these people are still here. It is very important that someone in the company can deal with labour issues. Another problem was the strikes that were taking place. Workers were

Question / Comment	Response
	striking and rioting because the labour forces were not organised properly and remuneration varied between solar projects. They were blocking the R357, rioting and causing major problems. *JB:* Before the current projects were constructed, there was the 20MW project. Therefore the locals had background knowledge on what rates they should be paid and the how these projects are supposed to invest locally. The locals started to monitor the projects on their own and monitored which service providers were used, who they were buying materials from and who they were employing. From a service provider's perspective, only certain service providers were utilised and others weren't (i.e. transport industry). The latest project that was developed was more fair and equal and that should be the same with the future projects. For example, the taxi association for instance has 15 members, so you have to come up with an agreement so that it's fair. From the labourer's perspective, the rates that were paid to employees were also an issue. *RS:* The issue with the rates were that one developer would pay a different amount than the other developer. Regarding the community beneficiation, it should be done in a more organised manner. Different companies try to get involved in different ways to show that they are involved in the communities. They should do it through the municipality, then you can have a more organised way of doing SED and ED. Instead of giving school clothes to children, we can do it on a bigger scale and invest on what's actually needed in the area. The positive

Question / Comment	Response
	impact will then be much bigger than what it has been previously. *JB:* To add, the Community Liaison Officers (CLO's) that were appointed were not in touch with the local community and could not deal with the issues. It is very important that the CLO is from the local area and knows how to deal with community issues. *EM:* It is important to consult with the local municipality and the ward councillor before the CLO is appointed, as they know the community and can assist with the process.
JB: We recommend that the developers use the municipality as an entry-point and consult with us throughout the whole process.	*CH:* Noted.
JB: With all projects coming into the area social problems have increased such as, pregnancy rates, more babies are born and suddenly we also have a drug problem.	*CH:* Noted.
JB: We have three towns in the SLM; Prieska, Niekerkshoop and Marydale. The projects are now falling within Ward 4 which will change to Ward 3 soon. According to the criteria, you are supposed to employ people within 50km radius. It will create political problems if people are only employed from Prieska. . Prieska is approximately 50km away, Marydale is 70km and Niekerkshoop is 80km. It is important to consider employing people from Niekerkshoop and Marydale as well. The last two solar projects that were developed transported people from all three towns with busses every day. If employment creation is spread	*CH:* Noted.

Question / Comment	Response
evenly amongst the towns this will reduce the risk of social conflicts and riots from happening.	
JB: What will be the MW capacity be of the two projects? And how many hectares will they cover?	*CH:* Each will be 75MW PV facilities and each PV facility will not exceed 220ha.
CH: Do you have any other questions or social concerns with the proposed developments?	*JB:* We have given consent to Humansrus Solar 3 (Pty) Ltd and Humansrus Solar 4 (Pty) Ltd, that these two PV projects can use municipal water via the Armscor facilities. But the challenge is that the pipeline feeding those reservoirs in the Copperton area are older than 40 years and we have a slight concern with the condition of the pipeline. At some point all the developers and the municipality should put their resources together to upgrade the pipeline. *JB:* Another issue is the tarred road leading from Prieska to Copperton. This road belongs to the Provincial Government but the problem is that no one is doing maintenance on this road. However the road is currently in good condition, all these projects in the area will increase the wear and tear on the road. *JB:* My last issue is that the developer should consider that a lot of the people in Prieska are now being trained in the renewable field. Instead of bringing semi-skilled people from outside, we have people here that are capable of doing the work. Townships become overcrowded very quickly and people should not be brought in, local people should be used. *JB:* It is important that the developers engage with the municipality and the councillors. We should be involved in the entire process so that there aren't any labour issues, the right representatives of the

Question / Comment	Response
	community are appointed and so that these projects have a positive impact on SED. There needs to be a relationship between the municipality and the developers throughout the process.
RS: The municipality is supportive of these developments. These projects bring in a lot of positive benefits in the local economy. It is important that there is more communication between the developer and the municipality regarding employment, the CLO, SED and ED plans.	*CH:* Noted.

WAY FORWARD AND CLOSURE

In closing Candice noted that the EIA Report will be made available for public review in the next few weeks and that Interested and Affected Parties could submit their written comments on the EIA process and proposed project to *Cape EAPrac (Pty) Ltd*. She noted that the comments received would be included in the EIA Report that will be submitted to the Department of Environmental Affairs. She thanked all in attendance for availing themselves for the meeting. The meeting was closed at 12:00.

ENVIRONMENTAL IMPACT ASSESSMENT PROCESS

PROPOSED HUMANSRUS SOLAR 3 & 4 PV FACILITIES

SOCIAL IMPACT ASSESSMENT (SIA) PROCESS

NOTES OF THE MEETING ADJACENT LANDOWNER- WYNAND HUMAN (FARM PLATSJAMBOK RE/102)

HELD ON
THURSDAY 05 MAY 2016 AT 12:30

VENUE
FARM PLATSJAMBOK RE/102

Savannah Environmental (Pty) Ltd
Contact: **Candice Hunter**
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Sunninghill, 2157
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E-mail: candice@savannahsa.com

Notes for the Record prepared by:
Savannah Environmental
Please address any comments to Candice Hunter at the above address.

MEETING:

PROPOSED HUMANSRUS SOLAR 3 & 4 PV FACILITIES

Venue: Farm Platsjambok Re/102
Date: Thursday 05 May 2016
Time: 12:30

WELCOME AND INTRODUCTION

Candice Hunter of Savannah Environmental welcomed all in attendance and introduced herself as the Social Consultant from Savannah Environmental. She noted *Cape EAPrac* has been appointed by Humansrus Solar 3 (Pty) Ltd and Humansrus Solar 4 (Pty) Ltd (hereafter referred to as the Applicant), as independent environmental practitioner responsible for facilitating the Scoping & Environmental Reporting (S&EIR) process as part of the EIA process required in terms of the National Environmental Management Act (NEMA, Act 107 of 1998, as amended) for the proposed Humansrus Solar 3 PV Facility and the proposed Humansrus Solar 4 PV Facility, near Prieska, Northern Cape. She noted that the applicant has sub-leased portions of Farm 147 Humansrus from the landowner, for the purposes of developing the proposed solar energy facilities. The generating capacity for each solar energy facility will be 75MW of renewable electricity to be supplied to the national Eskom grid via the existing Kronos Substation, adjacent to the site.

Candice Hunter thanked Mr W. Human for the opportunity to brief him about the proposed project. She noted that the purpose of the meeting was to present the background of the project, provide an overview of the environmental assessment process and discuss any potential social issues and concerns with the proposed developments.

MEETING ATTENDEES

Name	Organisation & Position
W. Human (WH)	Adjacent Landowner – Farm Platsjambok Re/102
Candice Hunter (CH)	Savannah Environmental –Social Consultant

APOLOGIES

None

BACKGROUND & TECHNICAL ASPECTS REGARDING THE PROPOSED PROJECT

Candice Hunter discussed the background and introduction to the project and the EIA process. A map including the location of the proposed developments was presented.

DISCUSSION SESSION

Question / Comment	Response
CH: What activities are currently taking place on your farm?	*WH:* Livestock farming (sheep).
CH: Do you live on this Farm? Are there any other homesteads or building on your farm?	*WH:* Yes, we live on the farm. There is only the main farmhouse. There is another house located next to ours that's the Humansrus Farm House, however no one lives there (they live in Prieska). We access the farmhouse via the farm road that goes through the eastern portion of Farm 147 Humansrus. We have owned the farm since 1990 (26 years). We are the third generation living on this farm.
CH: I see that there is a solar project proposed on your farm and has already received Environmental Authorisation. Is this correct? Where are they in the process? Who is the developer?	*WH:* Yes, this is correct. The project received Environmental Authorisation in 2011. They are planning to bid to project into the DoE REIPPP programme. The developer is Mainstream.
CH: Do have any concerns with the proposed solar developments on Farm 147 Humansrus, in terms of safety & security, noise, dust, traffic and / or visually?	*WH:* No. The only issue that may arise is if these projects were located too close to your farm house. Then there are safety issues during the construction phase with people coming in and out of the area. However these proposed projects are located on the other side of Farm 147 Humansrus so we won't be impacted at all. *CH:* How is crime in this area in general? *WH:* Very low. Hardly ever any incidents.

Question / Comment	Response
CH: Do you have any other questions or concerns with the proposed developments?	*WH:* None.

WAY FORWARD AND CLOSURE

In closing Candice noted that the EIA Report will be made available for public review in the next few weeks and that Interested and Affected Parties could submit their written comments on the EIA process and proposed project to *Cape EAPrac (Pty) Ltd*. She noted that the comments received would be included in the EIA Report that will be submitted to the Department of Environmental Affairs. She thanked all in attendance for availing themselves for the meeting. The meeting was closed at 13:00.

ENVIRONMENTAL IMPACT ASSESSMENT PROCESS

PROPOSED HUMANSRUS SOLAR 3 & 4 PV FACILITIES

SOCIAL IMPACT ASSESSMENT (SIA) PROCESS

NOTES OF THE MEETING
IMPACTED LANDOWNER – C.S. HUMAN

HELD ON
THURSDAY 05 MAY 2016 AT 14:00

VENUE
PRIESKA

Savannah Environmental (Pty) Ltd
Contact: **Candice Hunter**
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Notes for the Record prepared by:
Savannah Environmental
Please address any comments to Candice Hunter at the above address.

MEETING:

PROPOSED HUMANSRUS SOLAR 3 & 4 PV FACILITIES

Venue: Prieska
Date: Thursday 05 May 2016
Time: 14:00

WELCOME AND INTRODUCTION

Candice Hunter of Savannah Environmental welcomed all in attendance and introduced herself as the Social Consultant from Savannah Environmental. She noted *Cape EAPrac* has been appointed by Humansrus Solar 3 (Pty) Ltd and Humansrus Solar 4 (Pty) Ltd (hereafter referred to as the Applicant), as independent environmental practitioner responsible for facilitating the Scoping & Environmental Reporting (S&EIR) process as part of the EIA process required in terms of the National Environmental Management Act (NEMA, Act 107 of 1998, as amended) for the proposed Humansrus Solar 3 PV Facility and the proposed Humansrus Solar 4 PV Facility, near Prieska, Northern Cape. She noted that the applicant has sub-leased portions of Farm 147 Humansrus from the landowner, for the purposes of developing the proposed solar energy facilities. The generating capacity for each solar energy facility will be 75MW of renewable electricity to be supplied to the national Eskom grid via the existing Kronos Substation, adjacent to the site.

Candice Hunter thanked C.S. Human for the opportunity to brief her about the proposed project. She noted that the purpose of the meeting was to present the background of the project, provide an overview of the environmental assessment process and discuss any potential social issues and concerns with the proposed developments.

MEETING ATTENDEES

Name	Organisation & Position
C.S. Human (CSH)	Impacted Landowner
Candice Hunter (CH)	Savannah Environmental –Social Consultant

APOLOGIES

None

BACKGROUND & TECHNICAL ASPECTS REGARDING THE PROPOSED PROJECT

Candice Hunter discussed the background and introduction to the project and the EIA process. A map including the location of the proposed developments was presented.

DISCUSSION SESSION

Question / Comment	Response
CH: What activities are currently taking place on your farm?	*CSH:* Livestock farming (sheep). I currently lease the land to a farmer who uses the farm for livestock grazing.
CH: What will happen with the livestock farming activities when they start developing the solar plants?	*CSH:* I will continue to lease out the rest of the farm for livestock farming. All the sheep will be moved from the area where the proposed developments are located. The developer will have to fence around the project area and along the road so that grazing can continue around the PV facilities on the rest of the farm.
CH: Do you live on the farm? Is there anyone who lives on the farm? Any tenants?	*CSH:* No, we live in Prieska. No, no one lives on the farm. There is an old farmhouse on the eastern (triangular) side of the farm.
CH: What do you use the homestead on your farm for?	CSH: It is vacant, no one lives there.
CH: Do have any concerns with the proposed solar developments on Farm 147 Humansrus, in terms of safety & security, noise, dust, traffic and / or visually?	CSH: Will there be security? *CH:* Yes, a security company will be appointed. There will probably be a gate and security guard. The security details will be finalised at a later stage.
CH: Do you mind which of the access roads they use? Do you prefer a certain one?	*CSH:* No, any one is fine. As long as the access roads are fenced off to the site so that the sheep can continue to graze on the farm.
CSH: How many hectares will the projects be?	*CH:* Approximately 220ha for each PV facility.
CH: Do you have any other questions or concerns with the proposed developments?	*CSH:* No, just want to make sure the project areas will be fenced off so that the livestock will be safe.

WAY FORWARD AND CLOSURE

In closing Candice noted that the EIA Report will be made available for public review in the next few weeks and that Interested and Affected Parties could submit their written comments on the EIA process and proposed project to *Cape EAPrac (Pty) Ltd*. She noted that the comments received would be included in the EIA Report that will be submitted to the Department of Environmental Affairs. She thanked all in attendance for availing themselves for the meeting. The meeting was closed at 14:30.

ENVIRONMENTAL IMPACT ASSESSMENT PROCESS

PROPOSED HUMANSRUS SOLAR 3 & 4 PV FACILITIES

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SOCIAL IMPACT ASSESSMENT (SIA) PROCESS

NOTES OF THE MEETING: ADJACENT LANDOWNER – FARM BOSJESMANSBERG 1/67

Held on:
THURSDAY 05 MAY 2016 AT 16:00

Venue:
FARM BOSJESMANSBERG 1/67

Notes for the Record prepared by:
Savannah Environmental
Please address any comments to Candice Hunter at the above address.

MEETING:
PROPOSED HUMANSRUS SOLAR 3 & 4 PV FACILITIES

Venue: Farm Bosjesmansberg 1/67
Date: Thursday 05 May 2016
Time: 16:00

WELCOME AND INTRODUCTION

Candice Hunter of Savannah Environmental welcomed all in attendance and introduced herself as the Social Consultant from Savannah Environmental. She noted *Cape EAPrac* has been appointed by Humansrus Solar 3 (Pty) Ltd and Humansrus Solar 4 (Pty) Ltd (hereafter referred to as the Applicant), as independent environmental practitioner responsible for facilitating the Scoping & Environmental Reporting (S&EIR) process as part of the EIA process required in terms of the National Environmental Management Act (NEMA, Act 107 of 1998, as amended) for the proposed Humansrus Solar 3 PV Facility and the proposed Humansrus Solar 4 PV Facility, near Prieska, Northern Cape. She noted that the applicant has sub-leased portions of Farm 147 Humansrus from the landowner, for the purposes of developing the proposed solar energy facilities. The generating capacity for each solar energy facility will be 75MW of renewable electricity to be supplied to the national Eskom grid via the existing Kronos Substation, adjacent to the site.

Candice Hunter thanked Mr van Wyk for the opportunity to brief him about the proposed project. She noted that the purpose of the meeting was to present the background of the project, provide an overview of the environmental assessment process and discuss any potential social issues and concerns with the proposed developments.

MEETING ATTENDEES

Name	Organisation & Position
G.M. van Wyk (GvW)	Adjacent Landowner – Farm Bosjesmansberg 1/67
Candice Hunter (CH)	Savannah Environmental – Social Consultant

APOLOGIES

None

BACKGROUND & TECHNICAL ASPECTS REGARDING THE PROPOSED PROJECT

Candice Hunter presented the background and introduction to the project and the EIA process. She presented a map including the location of the proposed development.

DISCUSSION SESSION

Question / Comment	Response
CH: What activities are currently taking place on your farms:	GvW: We run a guesthouse on the farm called the Boesmansberg Guest Farm. The farm is also used for livestock farming (mainly sheep). There are also four authorised PV facilities (Bosjesmansberg PV facilities). The projects are to be bid into the DoE REIPPPP.
CH: Do you live on any of the Farm?	GvW: Yes
CH: Are there any homesteads or building on any of the farms?	GvW: Yes, the guesthouses and farmhouse.
CH: Do have any concerns with the proposed solar developments on Farm 147 Humansrus, in terms of safety & security, noise, dust, traffic and / or visually?	GvW: No. I don't have any issues.
GvW: Are both projects located on Humansrus?	*CH:* Yes.
GvW: Are there only two projects?	*CH:* There are four PV facilities that are proposed on Farm 147 Humansrus. Humansrus Solar PV Facility 1 and 2 have received environmental authorisation. Humansrus Solar 3 & 4 PV Facilities are currently in the EIA process.
GvW: There are four projects on my farm that have received environmental authorization but the cumulative map is only showing one.	*CH:* Noted.
GvW: When will these projects commence?	*CH:* It depends. The projects first needs to be bid into the DoE's REIPPP Programme. If they get awarded preferred

Question / Comment	Response
	bidder status, then the construction will commence thereafter.
CH: Do you have any other questions or concerns with the proposed developments?	*GvW:* No.

WAY FORWARD AND CLOSURE

In closing Candice noted that the EIA Report will be made available for public review in the next few weeks and that Interested and Affected Parties could submit their written comments on the EIA process and proposed project to *Cape EAPrac (Pty) Ltd*. She noted that the comments received would be included in the EIA Report that will be submitted to the Department of Environmental Affairs. She thanked all in attendance for availing themselves for the meeting. The meeting was closed at 16:30.

ENVIRONMENTAL IMPACT ASSESSMENT PROCESS

PROPOSED HUMANSRUS SOLAR 3 & 4 PV FACILITIES

SOCIAL IMPACT ASSESSMENT (SIA) PROCESS

NOTES OF THE MEETING: ADJACENT LANDOWNER – HENDRIK GIDEON HUMAN (FARM HOEK PLAAS RE/146)

Held on:
FRIDAY 06 MAY 2016 AT 08:00

Venue:
FARM HOEK PLAAS RE/146

Savannah Environmental (Pty) Ltd
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Notes for the Record prepared by:
Savannah Environmental
Please address any comments to Candice Hunter at the above address.

MEETING:
PROPOSED HUMANSRUS SOLAR 3 & 4 PV FACILITIES

Venue: Farm Hoek Plaas Re/146
Date: Friday 06 May 2016
Time: 08:00

WELCOME AND INTRODUCTION

Candice Hunter of Savannah Environmental welcomed all in attendance and introduced herself as the Social Consultant from Savannah Environmental. She noted *Cape EAPrac* has been appointed by Humansrus Solar 3 (Pty) Ltd and Humansrus Solar 4 (Pty) Ltd (hereafter referred to as the Applicant), as independent environmental practitioner responsible for facilitating the Scoping & Environmental Reporting (S&EIR) process as part of the EIA process required in terms of the National Environmental Management Act (NEMA, Act 107 of 1998, as amended) for the proposed Humansrus Solar 3 PV Facility and the proposed Humansrus Solar 4 PV Facility, near Prieska, Northern Cape. She noted that the applicant has sub-leased portions of Farm 147 Humansrus from the landowner, for the purposes of developing the proposed solar energy facilities. The generating capacity for each solar energy facility will be 75MW of renewable electricity to be supplied to the national Eskom grid via the existing Kronos Substation, adjacent to the site.

Candice Hunter thanked Mr Human for the opportunity to brief him about the proposed project. She noted that the purpose of the meeting was to present the background of the project, provide an overview of the environmental assessment process and discuss any potential social issues and concerns with the proposed developments.

MEETING ATTENDEES

Name	Organisation & Position
Hendrik Gideon Human (HH)	Adjacent Landowner – Farm Hoek Plaas Re/146
Candice Hunter (CH)	Savannah Environmental – Social Consultant

APOLOGIES

None

BACKGROUND & TECHNICAL ASPECTS REGARDING THE PROPOSED PROJECT

Candice Hunter presented the background and introduction to the project and the EIA process. She presented a map including the location of the proposed development.

DISCUSSION SESSION

Question / Comment	Response
CH: What activities are currently taking place on your farm?	*HH:* The farm is primarily utilised for livestock farming. There is also an operating 75MW PV solar energy facility located on the farm, called, Mulilo Sonnedix Prieska PV facility.
CH: Do you live on the Farm?	*HH:* No, we live in Prieska.
CH: Are there any tenants and/or any farm workers residing on any of the Farms?	*HH:* No.
CH: The proposed self-build 132kV power line is proposed to traverse the northern section of this farm. *CH:* Do have any concerns with the proposed solar developments on Farm 147 Humansrus or the power line, in terms of safety & security, noise, dust, traffic and / or visually?	*HH:* No, I don't have any issues or concerns with the proposed developments and associated infrastructure.
CH: Do you have any other questions or concerns with the proposed developments?	*HH:* None.

WAY FORWARD AND CLOSURE

In closing Candice noted that the EIA Report will be made available for public review in the next few weeks and that Interested and Affected Parties could submit their written comments on the EIA process and proposed project to *Cape EAPrac (Pty) Ltd*. She noted that the comments received would be included in the EIA Report that will be submitted to the Department of Environmental Affairs. She thanked all in attendance for availing themselves for the meeting. The meeting was closed at 08:30.

ENVIRONMENTAL IMPACT ASSESSMENT PROCESS

PROPOSED HUMANSRUS SOLAR 3 & 4 PV FACILITIES

SOCIAL IMPACT ASSESSMENT (SIA) PROCESS

NOTES OF THE MEETING: ADJACENT LANDOWNER – FARM NELSPOORTJIE 5/103 AND 6/103

Held on:
FRIDAY 06 MAY 2016 AT 09:30

Venue:
HEERDE LAAN, PRIESKA

Savannah Environmental (Pty) Ltd
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Notes for the Record prepared by:
Savannah Environmental
Please address any comments to Candice Hunter at the above address.

MEETING:

PROPOSED HUMANSRUS SOLAR 3 & 4 PV FACILITIES

Venue: Heerde Laan, Prieska
Date: Friday 06 May 2016
Time: 10:00

WELCOME AND INTRODUCTION

Candice Hunter of Savannah Environmental welcomed all in attendance and introduced herself as the Social Consultant from Savannah Environmental. She noted *Cape EAPrac* has been appointed by Humansrus Solar 3 (Pty) Ltd and Humansrus Solar 4 (Pty) Ltd (hereafter referred to as the Applicant), as independent environmental practitioner responsible for facilitating the Scoping & Environmental Reporting (S&EIR) process as part of the EIA process required in terms of the National Environmental Management Act (NEMA, Act 107 of 1998, as amended) for the proposed Humansrus Solar 3 PV Facility and the proposed Humansrus Solar 4 PV Facility, near Prieska, Northern Cape. She noted that the applicant has sub-leased portions of Farm 147 Humansrus from the landowner, for the purposes of developing the proposed solar energy facilities. The generating capacity for each solar energy facility will be 75MW of renewable electricity to be supplied to the national Eskom grid via the existing Kronos Substation, adjacent to the site.

Candice Hunter thanked all in attendance for the opportunity to brief them about the proposed project. She noted that the purpose of the meeting was to present the background of the project, provide an overview of the environmental assessment process and discuss any potential social issues and concerns with the proposed developments.

MEETING ATTENDEES

Name	Organisation & Position
Pieter Fourie (PF)	Adjacent Landowner – Nelspoortjie 5/103 and 6/103
Wilhette Fourie (WF)	Adjacent Landowner – Nelspoortjie 5/103 and 6/103
Candice Hunter (CH)	Savannah Environmental – Social Consultant

APOLOGIES

None

BACKGROUND & TECHNICAL ASPECTS REGARDING THE PROPOSED PROJECT

Candice Hunter presented the background and introduction to the project and the EIA process. She presented a map including the location of the proposed development.

DISCUSSION SESSION

Question / Comment	Response
CH: What activities are currently taking place on your farms?	*PF:* On portion 5 of Farm Nelspoortjie 103, we run a guesthouse on the farm called the Nelspoortjie Karoo Guest Farm (3 star). The farm is also used for livestock farming (mainly sheep). There are also four authorised PV facilities (Kronos PV facilities). The projects are to be bid into the DoE REIPPPP. On portion 6 of Farm Nelspoortjie 103, the farm is currently used for livestock farming (mainly sheep). The construction of the Garob Wind Farm (PB round 4.5) is scheduled to start in second quarter of 2016 on this farm. Where the wind farm is proposed, we'll continue with sheep farming around the turbines. And we will also continue running the guest house.
CH: Do you live on any of the Farms?	Yes, we reside on Portion 5 of Farm Nelspoortjie 103, next door to the guesthouse.
PF: They are planning to build three solar facilities (Kronos PV 1, 2 and 3) at the bottom of our Farm on portion 5 of Farm Nelspoortjie 103. They have all received Environmental Authorisation. They want to tender for the whole 300MW. They are 3 x 75MW facilities. The projects are to be bid into the DoE REIPPPP.	*CH:* Noted.
CH: Do have any concerns with the	*PF:* One of my biggest concerns is the

Question / Comment	Response
proposed solar developments and associated infrastructure on Farm 147 Humansrus, in terms of safety & security, noise, dust, traffic and / or visually?	roads accommodating all these projects. Especially, the gravel road as it is more prone to wear and tear and is not in a very good condition. The roads will need regular maintenance. Dust was another problem with the other projects.
PF: There have been issues with employees and local people rioting on the R357 from the previous projects. The issue is when there is more than one project being constructed at the same time and the labour agreements are not the same; in terms of remuneration or employment- then this causes issues. All the companies should work together to decide what the salaries will be, also the housing and transport etc., so that they are all the same. All these projects needs to be managed correctly and the different companies need to work together to avoid any issues with the local community. The developers will need to make provision on how to deal with these kind of issues.	*CH:* Noted.
CH: Do you have any other questions or concerns with the proposed developments?	*PF:* None.

WAY FORWARD AND CLOSURE

In closing Candice noted that the EIA Report will be made available for public review in the next few weeks and that Interested and Affected Parties could submit their written comments on the EIA process and proposed project to *Cape EAPrac (Pty) Ltd*. She noted that the comments received would be included in the EIA Report that will be submitted to the Department of Environmental Affairs. She thanked all in attendance for availing themselves for the meeting. The meeting was closed at 10:30.

ENVIRONMENTAL IMPACT ASSESSMENT PROCESS

PROPOSED HUMANSRUS SOLAR 3 & 4 PV FACILITIES

SOCIAL IMPACT ASSESSMENT (SIA) PROCESS

NOTES OF THE MEETING: ADJACENT LANDOWNER – HESTER MEYER (FARM VOGELSTRUIS BULT 1/104)

Held on:
FRIDAY 06 MAY 2016 AT 12:00

Venue:
FARM VOGELSTRUIS BULT 1/104

Savannah Environmental (Pty) Ltd
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Notes for the Record prepared by:
Savannah Environmental
Please address any comments to Candice Hunter at the above address.

MEETING:
PROPOSED HUMANSRUS SOLAR 3 & 4 PV FACILITIES

Venue: Farm Vogelstruis Bult 1/104
Date: Friday 06 May 2016
Time: 12:00

WELCOME AND INTRODUCTION

Candice Hunter of Savannah Environmental welcomed all in attendance and introduced herself as the Social Consultant from Savannah Environmental. She noted *Cape EAPrac* has been appointed by Humansrus Solar 3 (Pty) Ltd and Humansrus Solar 4 (Pty) Ltd (hereafter referred to as the Applicant), as independent environmental practitioner responsible for facilitating the Scoping & Environmental Reporting (S&EIR) process as part of the EIA process required in terms of the National Environmental Management Act (NEMA, Act 107 of 1998, as amended) for the proposed Humansrus Solar 3 PV Facility and the proposed Humansrus Solar 4 PV Facility, near Prieska, Northern Cape. She noted that the applicant has sub-leased portions of Farm 147 Humansrus from the landowner, for the purposes of developing the proposed solar energy facilities. The generating capacity for each solar energy facility will be 75MW of renewable electricity to be supplied to the national Eskom grid via the existing Kronos Substation, adjacent to the site.

Candice Hunter thanked Hester Meyer for the opportunity to brief her about the proposed project. She noted that the purpose of the meeting was to present the background of the project, provide an overview of the environmental assessment process and discuss any potential social issues and concerns with the proposed developments.

MEETING ATTENDEES

Name	Organisation & Position
Hester Meyer (HM)	Adjacent Landowner – Farm Vogelstruis Bult 1/104
Candice Hunter (CH)	Savannah Environmental –Social Consultant

APOLOGIES

None

BACKGROUND & TECHNICAL ASPECTS REGARDING THE PROPOSED PROJECT

Candice Hunter discussed the background and introduction to the project and the EIA process. A map including the location of the proposed developments was presented.

DISCUSSION SESSION

Question / Comment	Response
CH: What activities are currently taking place on your farm?	*HM:* We bought the farm in 2001. The mine area, slime dames and Copperton settlement (all the houses) were included with the farm. The settlement of Copperton currently has approximately 100 people renting the houses. Infrastructure of the now disused Copperton mine and slime dams are still located on the farm. The mine closed down in 1991 and will never re-open because of the SKA project. There is also a constructed and operating 20MW PV solar energy facility located on the farm, called, Mulilo Renewable Energy Solar PV Prieska. More solar projects are planned on this farm which will be bid to the DoE as part of the REIPPP programme. Portions of the farm are also utilised for livestock farming (mainly sheep). The existing Cupdrum Hydra 132kV power line and the tarred Copperton road also traverses the farm.
CH: CH: Do have any concerns with the proposed solar developments and associated infrastructure on Farm 147 Humansrus, in terms of safety & security, noise, dust, traffic and / or visually?	*HM:* These developments are very good for the area. I do not have any issues or concerns with those proposed projects.
CH: Do you have any other questions or concerns with the proposed developments?	HM: None.

WAY FORWARD AND CLOSURE

In closing Candice noted that the EIA Report will be made available for public review in the next few weeks and that Interested and Affected Parties could submit their written

comments on the EIA process and proposed project to *Cape EAPrac (Pty) Ltd*. She noted that the comments received would be included in the EIA Report that will be submitted to the Department of Environmental Affairs. She thanked all in attendance for availing themselves for the meeting. The meeting was closed at 12:30.

RECORD OF TELEPHONE DISCUSSION

To: K. De Jager **Date:** 05/05/2016

From: Candice Hunter

Project: Humansrus Solar 3 and 4 PV Facilities

Subject: Adjacent Landowner Meeting- Farm Drielings Pan 3/101 & 1/101

Candice Hunter of Savannah Environmental contacted Mrs De Jager to confirm that she is the owner farm Klipgats Pan 4/117.

Ms Hunter called Mrs De Jager and explained that *Cape EAPrac* has been appointed by Humansrus Solar 3 (Pty) Ltd and Humansrus Solar 4 (Pty) Ltd to undertake the EIA for the proposed Humansrus Solar 3 PV Facility and the proposed Humansrus Solar 4 PV Facility, near Prieska, Northern Cape. She noted that she is setting up one-on-one meetings with all the neighbouring landowners to provide background information regarding the project and to determine if Mrs Barnard has any issues or concerns regarding the projects.

Mrs De Jager notified Ms Hunter that she lives in Prieska but is away at the moment and is unable to meet. She also noted that she has no issues or concerns regarding the proposed projects and associated infrastructure.

RECORD OF TELEPHONE DISCUSSION

To: Jamima Josina Bernard **Date:** 05/05/2016

From: Candice Hunter

Project: Humansrus Solar 3 and 4 PV Facilities

Subject: Adjacent Landowner Meeting- Farm Klipgats Pan 4/117

Candice Hunter of Savannah Environmental contacted Mrs Jamima Bernard to confirm that she is the owner farm Klipgats Pan 4/117.

Ms Hunter called Mrs Bernard and explained that *Cape EAPrac* has been appointed by Humansrus Solar 3 (Pty) Ltd and Humansrus Solar 4 (Pty) Ltd to undertake the EIA for the proposed Humansrus Solar 3 PV Facility and the proposed Humansrus Solar 4 PV Facility, near Prieska, Northern Cape. She noted that she is setting up one-on-one meetings with all the neighbouring landowners to provide background information regarding the project and to determine if Mrs Barnard has any issues or concerns regarding the projects.

Mr Bernard notified Ms Hunter that she is aware of the projects and that she has no issues or concerns regarding the proposed projects and associated infrastructure.

APPENDIX C: SIA ENVIRONMENTAL MANAGEMENT PROGRAMME (EMPR)

Construction Phase

Direct employment and skills development

OBJECTIVE: Maximise opportunities for local employment and skills development associated with the construction phase

Project component/s	PV facility and associated infrastructure
Potential Impact	The opportunities and benefits associated with the creation of local employment and skills development to be maximised.
Activity/risk source	» Construction procurement practice employed by the EPC contractor » Developers investment plan
Enhancement: Target/Objective	The developer should aim to employ as many low-skilled and semi-skilled workers from the local area as possible. This should also be made a requirement for all contractors.

Enhancement: Action/control	**Responsibility**	**Timeframe**
Employ local contractors that are compliant with Broad Based Black Economic Empowerment (BBBEE) criteria	The Developer & EPC Contractor	Pre-construction & construction phase
Ensure that local employment policy is adopted to maximise the opportunities made available to the local labour force (sourced from towns within the SLM; Prieska, Niekerkshoop and Marydale).	The Developer & EPC Contractor	Pre-construction & construction phase
The recruitment selection process is to promote gender equality and the employment of women wherever possible	EPC Contractor	Pre-construction & construction phase
Training and skills development programmes are to be initiated prior to the commencement of the construction phase	The Developer	Pre-construction & construction phase
A Community Liaison Officer is to be appointed from the local community. A method of communication is to be implemented whereby procedures to lodge complaints are set out in order for the local community to express any complaints or grievances with the construction process.	EPC Contractor	Pre-construction & construction phase

Performance Indicator	» Employment policy document that sets out local employment and targets completed before construction phase commences; » Employ as many local semi and low-skilled labour as possible. » Training and skills development programme undertaken prior to the commencement of construction phase.
Monitoring	» The developer and EPC contractor must keep a record of local

	recruitments and information on local labour to be shared with the ECO for reporting purposes.

Economic multiplier effects

OBJECTIVE: Maximise the local economic multiplier effect during construction phase

Project component/s	PV facility and associated infrastructure
Potential Impact	Potential local economic benefits
Activity/risk source	Developers procurement plan
Enhancement: Target/Objective	Increase the procurement of goods and services especially within the local economy

Enhancement: Action/control	**Responsibility**	**Timeframe**
Ensure a local procurement policy is adopted to maximise the benefits to the local economy	The Developer & EPC Contractor	Pre-construction & construction phase
Develop a database of local companies, specifically Historically Disadvantaged (HD) which qualify as potential service providers (e.g. construction companies, security companies, catering companies, waste collection companies, transportation companies etc.) prior to the tender process and invite them to bid for project-related work	The Developer& EPC Contractor	Pre-construction & construction phase
Source as much goods and services as possible from the local area. Engage with local authorities and business organisations to investigate the possibility of procurement of construction materials, goods and products from local suppliers	The Developer	Pre-construction & construction phase

Performance Indicator	» Local procurement policy is adopted » Local goods and services are purchased from local suppliers where feasible
Monitoring	» The developer must monitor indicators listed above to ensure that they have been met for the construction phase

Pressure on economic and social infrastructure impacts from an in migration of people

OBJECTIVE: Reduce the pressure on economic and social infrastructure and social conflicts from an influx of a non-local workforce and jobseekers during the construction phase

Project component/s	PV facility and associated infrastructure

Potential Impact	Decline on local economic and social infrastructure and services as well as a rise in social conflicts from an influx of a non-local workforce and jobseekers
Activity/risk source	Influx of migrant workers and jobseekers
Mitigation: Target/Objective	To avoid or minimise the potential impact on local infrastructure, services and communities and their livelihoods

Mitigation: Action/control	**Responsibility**	**Timeframe**
A 'locals first' policy is to be advertised for construction employment opportunities, especially for semi and low-skilled job categories. Enhance employment opportunities for the immediate local area in Prieska, Marydale and Niekerkshoop.	The Developer & EPC contractor	Pre-construction & construction phase
A local employment policy is to be adopted to maximize the opportunities made available to the local labour force.	The Developer & EPC contractor	Pre-construction & construction phase
Tender document is to stipulate the use of local labour as far as possible.	The Developer & EPC contractor	Pre-construction & construction phase
Recruitment of temporary workers at the gates of the development is not to be allowed. A recruitment office with a Community Liaison officer (that's been appointed from the local community) is to be established in a nearby town to deal with jobseekers.	EPC contractor	Construction phase
A security company is to be appointed and appropriate security procedures to be implemented.	EPC contractor	Construction phase
Implement procedures for the control and removal of loiters at the construction site needs to be established.	EPC contractor	Construction phase
A Community Liaison Officer is to be appointed from the local community. A method of communication is to be implemented whereby procedures to lodge complaints are set out in order for the local community to express any complaints or grievances with the construction process.	EPC contractor	Pre-construction & construction phase

Performance Indicator	» Ensure 'locals first' policy is adopted/advertised » Ensure no recruitment takes place on site » Control/removal of loiters
Monitoring	» The developer and EPC contractor must monitor the indicators listed above to ensure that they have been met for the construction phase

Impacts on daily living and movement patterns (traffic impacts & nuisance impacts)

OBJECTIVE: To reduce impacts from traffic disruptions, noise and dust pollution on the local community during the construction phase

Project component/s	PV facility and associated infrastructure
Potential Impact	Increase in traffic disruptions, heavy vehicles and construction activities can generate noise and dust impacts.
Activity/risk source	Construction activities increasing traffic and creating noise and dust impacts
Mitigation: Target/Objective	To avoid or minimise the potential traffic impacts on local communities and minimise the potential noise and dust impacts associated with construction activities

Mitigation: Action/control	Responsibility	Timeframe
Implement appropriate dust suppression measures on a regular basis along the gravel access road and on the proposed site.	EPC Contractor	Construction phase
Vehicles used to transport sand and building materials must be fitted with tarpaulins or covers when travelling on roads.	EPC Contractor	Construction phase
All vehicles must be road worthy and drivers must be qualified, obey traffic rules, follow speed limits and made aware of the potential noise, dust and road safety issues.	EPC contractor	Construction phase
Heavy vehicles are to be inspected regularly to ensure their road safety worthiness.	EPC contractor	Construction phase
Provision of adequate and strategically placed traffic warning signs and control measures along the R357 to warn road users of the construction activities taking place for the duration of the construction phase. Warning signs must be visible at all times.	EPC contractor	Construction phase
Implement penalties for reckless driving for the drivers of heavy vehicles as a way to enforce compliance to traffic rules.	EPC contractor	Construction phase
The developer and engineering, procurement and construction (EPC) contractors must ensure that there is a dedicated access and an access control point at the entrance gate off the R357 on Farm 147 Humansrus.	EPC contractor	Construction phase
Infrastructure such as fencing and/or gates along access route must be maintained in the present condition or repaired if disturbed due to project activities	EPC contractor	Construction phase
Ensure roads utilised are either maintained in the present condition or upgraded if disturbed due to project activities.	The Developer & EPC contractor	Construction phase
Provide a comprehensive employee induction programme to cover land access protocols and road safety.	EPC contractor	Construction phase

Mitigation: Action/control	Responsibility	Timeframe
A Community Liaison Officer is to be appointed from the local community. A method of communication is to be implemented whereby procedures to lodge complaints are set out in order for the local community to express any complaints or grievances with the construction process.	EPC contractor	Construction phase

Performance Indicator	» Dust suppression measures implemented for all heavy vehicles and construction vehicles that require such measures during the construction phase » Vehicles are roadworthy, inspected regularly and speed limits are adhered to » Provision of traffic warning signs on R357
Monitoring	» The developer and EPC contractor must monitor the indicators listed above to ensure that they have been met for the construction phase

Safety and security impacts

OBJECTIVE: To reduce the possibility of the increase in crime and safety and security issues during the construction phase

Project component/s	PV facility and associated infrastructure
Potential Impact	Increase in crime due to influx of non-local workforce and job seekers into the area
Activity/risk source	Safety and security risks associated with construction activities
Mitigation: Target/Objective	To avoid or minimise the potential impact on local communities and their livelihoods

Mitigation: Action/control	Responsibility	Timeframe
Working hours should be kept to daylight hours during the construction phase, and/or as any deviation that is approved by the adjacent landowners.	EPC contractor	Construction phase
The perimeter of the construction site is to be appropriately secured to prevent any unauthorised access to the site; the fencing of the site should be maintained throughout the construction period.	EPC contractor	Construction phase
Access in and out of the site is to be strictly controlled by a security company.	EPC contractor	Construction phase
A security company is to be appointed and appropriate security procedures are to be implemented.	EPC contractor	Construction phase
Provide workers with identity tags and prohibit the access of unauthorized people to the construction site.	EPC contractor	Construction phase
Open fires on the site for heating, smoking or cooking	EPC contractor	Construction

Mitigation: Action/control	Responsibility	Timeframe
are not allowed, except in designated areas.		phase
Provide adequate firefighting equipment on site and provide firefighting training to selected construction staff.	EPC contractor	Construction phase
A comprehensive employee induction programme to be developed and utilised to cover land access protocols, fire management and road safety	The Developer & EPC contractor	Pre-construction & construction phase
Have a personnel trained in first aid on site to deal with smaller incidents that require medical attention	EPC contractor	Construction phase
A Community Liaison Officer is to be appointed from the local community as a grievance channel. A method of communication is to be implemented whereby procedures to lodge complaints are set out in order for the local community to express any complaints or grievances with the construction process	EPC contractor	Construction phase

Performance Indicator	» The construction site is appropriately secured with a controlled access system » Ensure a security company is appointed and appropriate security procedures and measures are implemented
Monitoring	» The developer and EPC contractor must monitor the indicators listed above to ensure that they have been met for the construction phase

Assessment of the access roads alternatives

OBJECTIVE: To minimise the temporary increase in dust and the wear and tear on gravel roads to access the preferred site layout

Project component/s	PV facility and associated infrastructure
Potential Impact	Heavy vehicles and construction activities can generate dust pollution and increase wear and tear on roads.
Activity/risk source	Construction activities
Mitigation: Target/Objective	To avoid and or minimise the potential dust impacts and wear on gravel roads associated with construction activities

Mitigation: Action/control	Responsibility	Timeframe
Dust suppression measures must be implemented on a regular basis along the gravel roads utilised.	EPC Contractor	Construction phase
Ensure that damage / wear and tear caused by construction related traffic to the gravel roads are repaired before the completion of the construction phase.	EPC Contractor	Construction phase
Ensure all vehicles are road worthy, drivers are	EPC Contractor	Construction phase

Mitigation: Action/control	Responsibility	Timeframe
qualified and are made aware of the potential noise and dust issues		
A Community Liaison Officer is to be appointed from the local community. A method of communication is to be implemented whereby procedures to lodge complaints are set out in order for the local community to express any complaints or grievances with the construction process	EPC Contractor	Pre-construction & construction phase

Performance Indicator	» Dust suppression measures implemented for all heavy vehicles and construction vehicles that require such measures during the construction phase » Grievance mechanism and communication channel procedures
Monitoring	» The EPC contractor must monitor the indicators to ensure that they have been met for the construction phase

Operation Phase:

Direct employment and skills development during operation phase

OBJECTIVE: Maximise opportunities for local employment and skills opportunities associated with the operation phase

Project component/s	PV facility and associated infrastructure
Potential Impact	Loss of opportunities to stimulate production and employment of the local economy
Activity/risk source	Labour practices employed during operations
Mitigation: Target/Objective	Maximise local community employment benefits in the local economy

Mitigation: Action/control	Responsibility	Timeframe
A local employment policy is to be adopted to maximise the opportunities made available to the local community.	The Developer & EPC contractor	Operation phase
The recruitment selection process is to promote gender equality and the employment of women wherever possible	The Developer & EPC contractor	Operation phase
Establish vocational training programs for the local labour force to promote the development of skills	The Developer	Operation phase

Performance Indicator	» Percentage of workers that were employed from local communities

	» Number of people attending vocational training on an annual basis
Monitoring	» The developer must keep a record of local recruitments and information on local labour to be shared with the ECO for reporting purposes

Benefits associated with REIPPP socio-economic development plans and community trust

OBJECTIVE: Maximise benefits for local communities associated with socio-economic development plans and community trust

Project component/s	PV facility and associated infrastructure
Potential Impact	Loss of socio-economic opportunities for local area
Activity/risk source	Operation of the solar energy facility and associated infrastructure
Mitigation: Target/Objective	Maximise local community benefits in the local economy

Mitigation: Action/control	**Responsibility**	**Timeframe**
An in-depth community needs analysis (CNA) will need to be carried out to make sure that the real needs of communities are addressed (in line with the local government) and the correct representatives of the community are appointed to run the community trust	The Developer	Pre-Operation phase
Engagement and involvement of the local municipality with regards to social responsibility plans is to take place	The Developer	Pre-Operation phase

Performance Indicator	» Community needs analysis » Engage and involvement of the local municipality in SED & ED process
Monitoring	» The developer must keep a record of key stakeholders consultations that took place with the local municipality and key community members