

SOCIAL IMPACT ASSESSMENT
EIA REPORT

PROPOSED PAULPUTS 200MW
CONCENTRATED SOLAR POWER (CSP)
TOWER FACILITY AND ASSOCIATED
INFRASTRUCTURE NEAR POFADDER,
NORTHERN CAPE PROVINCE

APRIL 2016

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EXECUTIVE SUMMARY

Savannah Environmental (Pty) Ltd has been appointed by Paulputs CSP RF (Pty) Ltd, to undertake an Environmental Impact Assessment (EIA) for the establishment of the proposed development of a Concentrated Solar Power (CSP) tower facility and associated infrastructure. The project is referred to as Paulputs CSP facility and is proposed to be developed on Portion 4 of the Farm Scuit-klip 92, located approximately 40km north-east of Pofadder in the Northern Cape Province. The proposed Paulputs CSP facility will have a generating capacity of up to 200MW. The development footprint of the CSP facility and associated infrastructure will be approximately ~900ha in extent. Grid connection will be via a 132 kV power line up to 2.5km in length to connect to Eskom's existing Paulputs substation. The location of the proposed project falls within Ward 1 of the jurisdiction of the Khai-Ma Local Municipality, which forms part of the Namakwa District Municipality.

The Social Impact Assessment (SIA) was undertaken by Candice Hunter of Savannah Environmental. The purpose of the report is to assess the potential social impacts associated with the proposed development and to recommend management measures to reduce / avoid the negative social impacts and enhance the positive social impacts associated with the proposed development. 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 Act 108 of 1996
- » National Environmental Management Act 107 of 1998 (NEMA)
- » National Energy Act (2008)
- » 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 (NCPGDS) (2011)
- » Northern Cape Provincial Local Economic Development Strategy (LED) (2009)

Local and District Policies:

- » Namakwa District Municipality Environmental Management Framework (EMF) and Strategic Environmental Management Plan (SEMP) (2011)
- » Namakwa District Municipality Integrated Development Plan (2013-2014/2012-2016)
- » Namakwa District Municipality Local Economic Development Strategy (LED) (2009)
- » Khai-Ma Local Municipality Integrated Development Plan (IDP) (2012-2017) (Review 2015-2016)

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. Namakwa District Municipality (NDM) is geographically the biggest District Municipality in the Northern Cape.
- » 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 facilities (PV and CSP facilities) planned in the region.
- » The renewable energy industry, in that wind, solar, wave and nuclear power have all been identified as potentially successful in the NDM.
- » Two main economic sectors in the district include agriculture and tourism.

Local Context:

- » The two emerging sectors in the Khai-Ma Local Municipality (KMLM) are renewable energy and conservation and ecological restoration.
- » Currently the main economic sectors in the KMLM include agriculture, tourism, community, social and personal services, renewable energy.
- » From the baseline description of the local area, in summary, the area was found to have the following general characteristics and challenges (KMLM IDP 2012-2017):
 - Poverty levels are high, due to high levels of unemployment, and increasing rates of illness (HIV/AIDS and TB)
 - Communal farming on municipal peri-urban land is creating environmental challenges
 - A large proportion of income is derived from social grants, with social consequences that are not fully understood and no proactive plans are put in place.
 - Local economies of small towns in the municipal area are characterized by weak multipliers, because a great deal of purchasing power is spent in the larger centres, or metropolitan areas situated outside these areas

- Due to the arid nature of the area, surface and underground water supplies are insufficient to provide higher levels of infrastructure (such as waterborne sanitation)
- The conditions of life of remote settlements of farm workers tend to be poor, with low mobility, and difficult access to health, education, recreation and shopping amenities
- HIV/AIDS levels are reputed to be high, particularly on national transport routes, and mortality rates are reflecting this
- There is an out-migration of skilled people, due to a lack of local economic opportunities.
- Increasing aridity, due to global warming, may lead to rising unemployment, declining underground water levels, and greater difficulties for commonage farmers.
- The socio-economic conditions of the municipal area are poor. More 56% of the municipal population earns less than R38 400.00 per annum (or less than R3200.00 per month) consequently receiving payment for municipal services can be challenging. This in turn has a negative effect on the sustainability of infrastructure and the delivery of services overall.
- Generally the population can be regarded as having a high dependency ratio; with 7.39% of the population over the age of 65 and 25% are under 15 years. The latter youth group will be demanding education, housing and jobs in the near future.
- » The Department of Energy (DoE) indicates that the Renewable Energy Independent Power Producer Programme (REIPPP) 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 happen within 50 km of the project site. The settlements within the project's direct area of influence (within 50km radius) include; Onseepkans, Pofadder and Pella.
- » The situational analysis and statistics presented in the baseline description of the KMLM indicate the developmental challenges facing the municipality, such as poverty, unemployment, and service delivery backlogs. Socio-economic spin-offs from the proposed development could contribute to better infrastructure provision and educational investment in the local areas. The proposed development has the potential to contribute towards positive socio-economic improvements within the local area.
- » Potential negative impacts on these towns 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; if an external workforce being brought into the local area.
- » The development would mainly focus on economic benefits including economic growth and development (economic opportunities such as jobs and expenditure in the local area). Negative dimensions of impacts such as influx of jobseekers and pressure on the provision of basic.

Site Context:

The proposed development may have social impacts on the impacted and surrounding landowners. There are sensitive social receptors, namely the impacted and adjacent farms, farm where the CSP site will be located and the impacted farms where the pipeline route will be located. There are a small number of farmsteads that are sparsely scattered in the study region. Impacts that may arise for the farming community (either farm owners, tenants or farm workers) include impacts as a result of stock theft, damage to farm infrastructure (fencing and gates), increased crime, additional traffic and impacts on road safety, noise and dust pollution impacts and effects on the area's sense of place. There are potentially vulnerable farming activities in the study area. The primary farming activity is livestock farming and grape cultivation activities in the study area. Highly sensitive social receptors include farmlands where livestock farming and grape cultivation occurs in terms of dust pollution that can have an impact on farming productions. The proposed project, together with other planned and approved developments in the area could change the character of the existing landscape.

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 social impacts identified in the SIA for the construction and operation phase of the proposed development are presented in Table 1 and Table 2 below. Table 3 presents the cumulative impacts associated with the proposed development.

Table 1: Summary of social impacts during construction phase

CONSTRUCTION PHASE		
Impact	Significance Without Mitigation/ enhancement	Significance With Mitigation/ enhancement
Positive Impacts		
<i>Direct employment and skills development</i>	Medium (36)	Medium (44)
<i>Economic multiplier effects</i>	Low (27)	Medium (33)
Negative Impacts		
<i>Population change</i>	Medium (30)	Low (24)
<i>Influx of jobseekers</i>	Low (24)	Low (18)
<i>Nuisance impacts (noise, dust and traffic)</i>	Medium (30)	Low (24)
<i>Safety and security risks</i>	Low (16)	Low (12)

Impacts associated with the critical staff accommodation on site	Low (21)		Low (14)	
<i>Impacts on 'sense of place'</i>	Low (21)		Low (15)	
Assessment of impacts associated with the Access Road Options	<i>Access Road 1</i>	<i>Access Road 2</i>	<i>Access Road 1</i>	<i>Access Road 2</i>
	Low (15)	Medium (33)	Low (10)	Low (27)
Assessment of the water pipeline impacts	Medium (30)		Low (24)	

Table 2: Summary of social impacts during operation phase

OPERATION PHASE		
Impact	Significance Without Mitigation/ enhancement	Significance With Mitigation/ enhancement
Positive Impacts		
<i>Direct employment and skills development</i>	Medium (33)	Medium (44)
<i>Benefits associated with REIPPP socio-economic development plans and community trust</i>	Low (24)	Medium (30)
<i>Development of clean, renewable energy infrastructure</i>	Medium (40)	Medium (40)
Negative Impacts		
<i>Visual and sense of place impacts</i>	Medium (36)	Medium (36)

Table 3: 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		
<i>Cumulative impact from employment, skills and business opportunities</i>	Low (27)	Medium (39)
Negative Cumulative Impacts		
<i>Cumulative impact with large-scale in-migration of people</i>	Low (14)	Low (22)

<i>Cumulative impact of nuisance impacts (noise, dust & traffic)</i>	Low (24)	Medium (30)
<i>Cumulative impacts on the sense of place and landscape</i>	Medium (36)	Medium (48)

From a social perspective it is concluded that the project is supported, but that mitigation and enhancement 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 access road option 1. This is the preferred access road option to access the proposed Paulputs CSP facility taking into account the matter of protecting the vineyards and grazing areas from dust pollution impacts along the gravel route of 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 CSP facility. These relate to influx of non-local workforce and jobseekers, intrusion and disturbance impacts (noise and dust, wear and tear on roads) and safety and security risks, and could be reduced with the implementation of the mitigation measures proposed. Although this will impact the local farming community, the impacts can be mitigated.
- » The development will introduce a significant number of employment opportunities during the construction phase (temporary employment) and a limited number of permanent employment opportunities during the operation phase.
- » Capacity building and skills training among employees are critical and would be highly beneficial to those involved, especially if they receive skills to enable them to also find work elsewhere and in other sectors.
- » The proposed project could assist the local economy in creating entrepreneurial growth and opportunities, especially if local business is involved in the provision of general material, goods and services during the construction and operational phases.
- » The proposed development also represents an investment in infrastructure for the generation of clean, renewable energy, which, given the challenges created by climate change, represents a positive social benefit for society as a whole.
- » The most significant negative social impacts expected to be associated with the proposed development will result from the nuisance impacts and an influx of people into the local area.
- » The proposed project does not result in an unacceptable increase in cumulative impacts. However, when considering the proposed CSP facility, it is also important to consider the cumulative social impacts that may arise with other proposed solar energy facilities in the area.

Recommendations

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

- » If feasible, a community liaison officer must be appointed 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 low-skilled 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, wherever possible, 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 operational phases of the project.
- » Local procurement of services and equipment should be undertaken 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 construction and operation phase of the project as far as possible (encourage co-operative decision making and partnerships with local entrepreneurs).
- » Implement recommended 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 and construction phases of the proposed project. Access control, security and management should be implemented to limit the risk of crime increasing in the area as a result of the proposed project.
- » From a social perspective it is recommended that access road 1 option is selected as the preferred alternative. This is the preferred access road option to access the proposed Paulputs CSP facility taking into account the matter of protecting the vineyards and grazing areas from dust pollution impacts along the gravel route of access road option 2.

Overall Conclusion

The proposed Paulputs CSP facility and associated infrastructure is unlikely to result in permanent damaging social impacts and no fatal flaws have been identified. From a social perspective it is therefore concluded that the project could be developed subject to the implementation of the recommended mitigation and enhancement measures and management actions contained in the report.

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List of Abbreviations

CNA	Community Needs Analysis
CSP	Concentrated Solar Power
DoE	Department of Energy
DEA	Department of Environmental Affairs
DGDS	District Growth and Development Strategy
DM	District Municipality
EAP	Economically Active Population
ED	Enterprise Development
EIA	Environmental Impact Assessment
EMF	Environmental management Framework
EMPr	Environmental Management Programme
EMZ	Environmental Management Zone
EPC	Engineering, Procurement and Construction
GDP	Gross Domestic Product
HA	Hectares
HD	Historically Disadvantaged
HDSA	Historically Disadvantaged South Africans
IDP	Integrated Development Plan
IPP	Independent Power Producer
KMLM	Khai-Ma Local Municipality
KPA	Key Performance Area
kV	Kilovolts
LED	Local Economic Development
LM	Local Municipality
MW	Megawatt
NDM	Namakwa District Municipality
NEMA	National Environmental Management Act
NSSD	National Strategy for Sustainable Development
PV	Photovoltaic
PSDF	Provincial Spatial Development Framework
PGDS	Provincial Growth and Development Strategy
SED	Socio-Economic Development
SEMP	Strategic Environmental Management Plan
SDF	Spatial Development Framework
SIA	Social Impact Assessment
SIPs	Strategic Infrastructure Projects
VIA	Visual Impact Assessment
WWF	World Wide Fund

1. INTRODUCTION

Savannah Environmental (Pty) Ltd has been appointed by Paulputs CSP RF (Pty) Ltd, to undertake an Environmental Impact Assessment (EIA) for the establishment of the proposed development of a Concentrated Solar Power (CSP) tower facility and associated infrastructure. The project is referred to as Paulputs CSP facility. The Paulputs CSP facility is proposed to be developed on Portion 4 of the Farm Scuit-klip 92, located approximately 40km north-east of Pofadder in the Northern Cape Province. The site falls within ward 1 of the jurisdiction of the Khai-Ma Local Municipality, which forms part of the Namakwa District Municipality.

The proposed Paulputs CSP facility will have a generating capacity of up to 200MW. The development footprint of the CSP facility and associated infrastructure will be approximately ~900ha in extent. Grid connection will be via a 132 kV power line up to 2.5km in length to connect to Eskom's existing Paulputs substation. Water will be sourced from the Gariep River. The water pipeline is planned to run along the R357 Onseepkans Road from the proposed CSP site to the Gariep River and will be approximately 30km in length. The pipeline will run parallel to the existing KaXu Solar One pipeline within the servitude of the existing R357 Onseepkans road until it reaches the abstraction point. The abstraction point on the Gariep River will be located on the remaining extent of the farm Vrugbaar 422 adjacent to the existing abstraction point which is utilised by commercial fruit farming activities.

The Social Impact Assessment (SIA) was undertaken by Candice Hunter of Savannah Environmental as part of the EIA process. This report contains the findings of the SIA for the EIA process.

1.1. SOCIAL IMPACT ASSESSMENT (SIA)

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 appropriate national, state, or provincial environmental policy legislation" (Becker et al, 2003). By 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/enhancement 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, operational 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 Social Impact Assessment (SIA) from the University of Johannesburg. The SIA report has been reviewed by Dr Neville Bews, an independent external SIA specialist who has consulted in the SIA field for over 10 years and has a Ph.D in Sociology (see Appendix D).

1.4. DECLARATION OF INDEPENDENCE

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

1.5. PROJECT OVERVIEW

Project background and description:

Paulputs CSP RF (Pty) Ltd proposes the construction of a Concentrated Solar Power (CSP) tower facility and associated infrastructure on Portion 4 of the Farm Scuit-klip 92, located approximately 40km north-east of Pofadder in the Northern Cape Province.

Solar generating facilities use the energy from the sun to generate electricity. CSP goes one step further by collecting the incoming solar radiation and concentrating it (focusing or combining it) on a single point, thereby increasing the potential electricity generation. The proposed Paulputs CSP facility will utilise molten salt tower technology with a generation capacity of up to 200MW. Infrastructure associated with the Paulputs CSP facility includes:

- » Molten salt tower up to 300m in height with surrounding heliostat field

- » Power island including salt storage tanks, steam turbine generator, heat exchangers, and dry cooled condenser
- » On-site project substation, and short 132 kV power line to Eskom's existing Paulputs Transmission Substation
- » Water supply abstraction point located at the Gariep River close to Onseepkans
- » Filter and booster station at abstraction point
- » Water supply pipeline along R357 Onseepkans Road to the site
- » On-site lined ground water storage reservoir and various steel water tanks
- » Lined evaporation ponds
- » Packaged water treatment plant and associated chemical store
- » Auxiliary wet cooled chiller plant
- » Control room and office building
- » Heliostat assembly building and workshop.

The CSP facility is intended to be bid to the Department of Energy (DoE) under the Renewable Energy Independent Power Producer Programme (REIPP). Ultimately, the power generated from the CSP Facility will be sold to Eskom and will feed into the national electricity grid. Ultimately, the project is intended to be a part of the renewable energy projects portfolio for South Africa.

Alternatives being assessed:

A pre-feasibility analysis and site identification process was undertaken by Paulputs CSP RF (Pty) Ltd. By undertaking a technical feasibility study which considered favourable climatic conditions (solar renewable energy facilities are directly reliant on average solar radiation values for a particular area), access and capacity of the electricity grid, accessibility of the study site, and local site topography, an ideal site has been identified for the establishment of the solar energy facility by the project proponent. No alternative sites were identified for the assessment.

There are two access road alternatives for the proposed development (see Figure 1):

- » Alternative access road 1: Access to site from the N14 national road via the existing R357 Onseepkans road used to access the farm, and the CSP facilities on this farm. This road is to the east of the farm portion. The access point to the site is 17km from the N14, with a formal entrance to the existing CSP facilities off of this public road. This section of the R357 is a tarred road.
- » Alternative access road 2: Access to site from the N14 national road via the existing R358 and minor road M357. This road is to the west of the

farm portion. The access point to the site is 30km from the R358. The distance of the gravel R358 road to the R357 turn is approximately 45km

Locality and size:

The Paulputs CSP facility is proposed to be developed on Portion 4 of the Farm Scuit-klip 92, located approximately 40km north-east of Pofadder in the Northern Cape Province. The land is owned by Abengoa Solar South Africa (Pty) Ltd and the land use is zoned as Special Solar. The proposed Paulputs CSP facility will have a generating capacity of up to 200MW. The development footprint of the CSP facility and associated infrastructure will be approximately ~900ha in extent. Grid connection will be via a 132 kV power line up to 2.5km in length to connect to Eskom's existing Paulputs substation. The location of the proposed project falls within the jurisdiction of Khai-Ma Local Municipality, which forms part of the Namakwa District Municipality (see Figure 1 the locality map).

Construction phase:

- » *Duration:* It is estimated that the construction of the proposed 200MW Paulputs CSP facility is expected to extend over a period of approximately 27-30 months.
- » *Capital expenditure:* The total construction capital expenditure associated with the establishment of the Paulputs CSP Facility is estimated to be in the region of R8 – R10 billion. In terms of business opportunities for local companies, expenditure during the construction phase will create business opportunities for the regional and local economy. Approximately 45% of the capital expenditure will be spent on local goods and services.
- » *Employment opportunities and wages:* The proposed Paulputs CSP Facility is likely to create approximately 600 -1400 employment opportunities, however not all of these employment opportunities will be fulfilled for the entire duration of the construction phase. On average there will be approximately 600 employment opportunities (however the size of the workforce will vary during the different phases of construction. For example during the second year of construction the number of employees will peak to 1400 people). Therefore not all of these employment opportunities will be fulfilled for the entire duration of the construction phase, it will fluctuate between 600-1400 employees over a period of 27-30 months. Approximately 30% of the workforce will be sourced from the local area. The injection of income into the area in the form of wages will represent an opportunity for the local economy and businesses in the local area. Approximately 90% the labour force will be available to low-skilled/ semi-skilled workers (construction labourers, security staff), 10% will be available to skilled personnel (electricians, site managers, drivers, equipment operators etc.) and highly skilled individuals (engineers, project managers, site managers etc.).

- » *Skills development and training:* The proponent has indicated that there will be opportunities for on-site skills development and training during the construction phase. Various sub-contractors will train individuals to perform required tasks specific to the construction.
- » *Labour accommodation:* According to information provided by the proponent only critical staff will be staying on-site, approximately 40-60 people during construction phase and the remainder will be housed in nearby towns (Pofadder and Kakamas, employees would be bussed to and from the site on a daily basis).
- » *Access road:* The access road is located off the R357, Onseepkans road.
- » *Transportation of components and equipment:* Transportation of project components and equipment to the proposed site would be transported using vehicular / trucking transport. The access road will be off the R357 (Onseepkans road). The R357 will be the primary road used for transportation of project components and equipment. Once the required equipment has been transported to site, a dedicated construction camp, equipment and material storage area will be established. The construction camp serves to confine activities and storage of equipment to one designated area. The suite will be serviced with mobile water supply and ablution facility.

Operational phase:

- » *Duration:* It is estimated that the operation period of the proposed 200MW Paulputs CSP facility is expected to extend over a period of approximately 20-25 years.
- » *Employment:* Full-time operational and maintenance teams would be required for the Paulputs CSP Facility. Based on information provided from the proponent, the CSP Central Receiver Tower plant will create long-term employment opportunities, this would be approximately ~60-70 employment opportunities for the lifespan of the solar plant. Maintenance of the plant and optimisation of the performance of the solar facility is performed on a regular basis. Majority of the labour force during the operation phase will either be skilled or highly skilled personal. Approximately 30% of the workforce will be sourced from the local area. The injection of income into the area in the form of wages will represent an opportunity for the local economy and businesses in the local area. Approximately 30% the labour force will be available to low-skilled/ semi-skilled workers (construction labourers, security staff), 70% will be available to skilled personnel (electricians, site managers, drivers, equipment operators etc.) and highly skilled individuals (engineers, project managers, site managers etc.).
- » *Skills development and training:* There will be opportunities for on-site skills development and training for the operation phase.

- » *On-site presence:* CSP facilities are designed to operate continuously, unattended and with low maintenance. Regular monitoring and maintenance activities would be required to ensure safe and consistent operation.

Decommissioning phase:

The CSP infrastructure is anticipated to have a lifespan of approximately 20-25 years. 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. The decommissioning activities are expected to take approximately two (2) years.

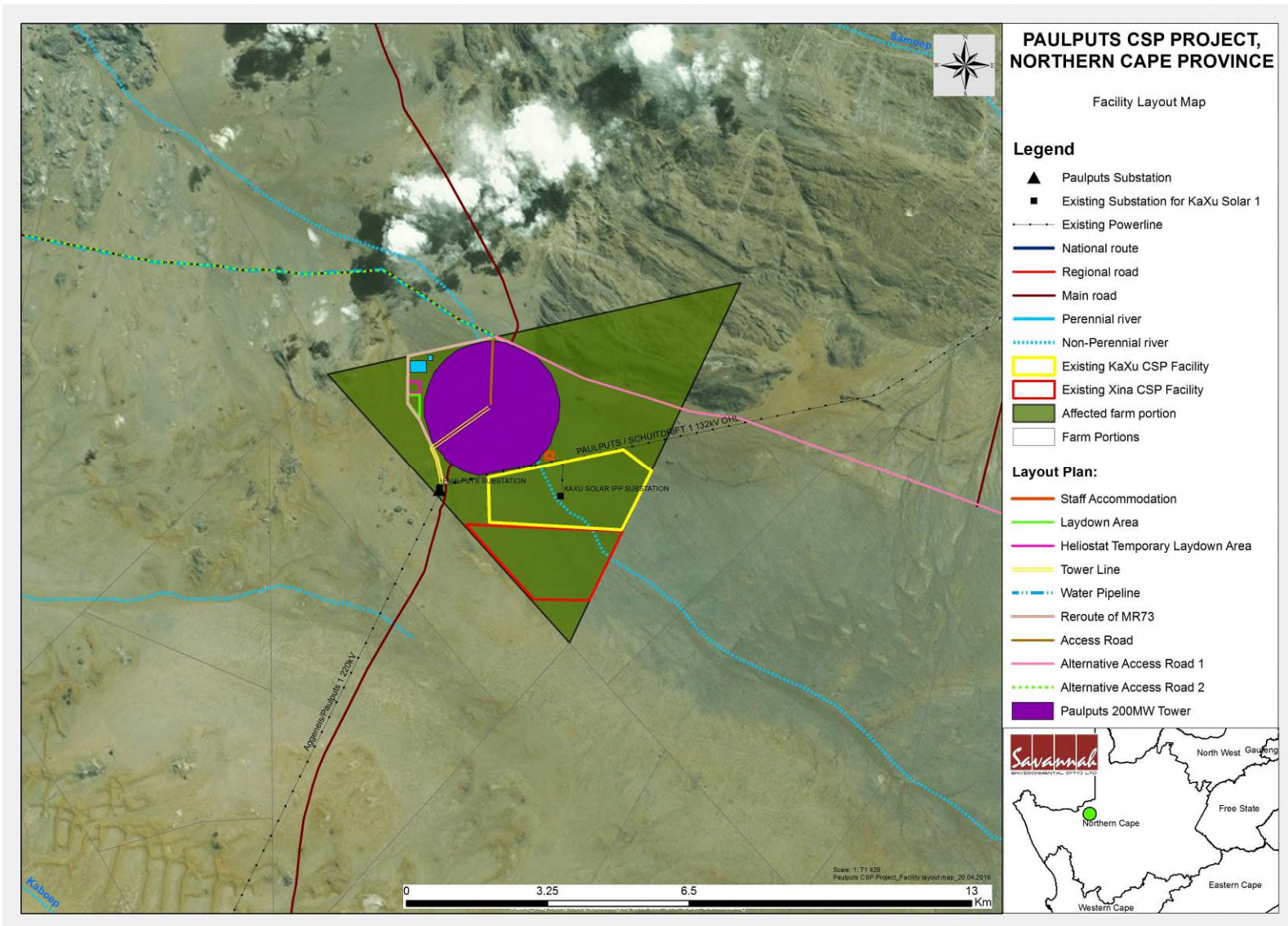


Figure 1: Location of the proposed Paulputs CSP facility and associated infrastructure

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 Social Impact Assessment (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 Social Impact Assessment variables and social change processes related to the proposed intervention. This requires consultation with affected individuals and communities;
- » Assessing and documenting the significance of social impacts associated with the proposed project;
- » Assessing the project (including any feasible alternatives) and identifying potential mitigation and enhancement measures;
- » Developing an Environmental Management Plan.

2.2. DATA COLLECTION

Primary and secondary data sources were utilised to inform the study in aid of the objectives of the study. Primary data sources for the SIA were retrieved from the Public Participation process, meetings were arranged and held with key representative stakeholders to collect primary social data (see Appendix B). Meetings were held with individuals that were both directly and indirectly associated with the proposed development. Data collection was primarily gathered from meetings held with the impacted landowner, adjacent landowners, and the local municipality.

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 2015;
- » The scoping report – to ensure that all the issues have been addressed at the EIA stage of the process;
- » The background information document (BID);

- » The Paulputs CSP Tower 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) and Environmental Management Framework (EMF) 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;
- » 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, operational 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 (see Figure 2). 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.

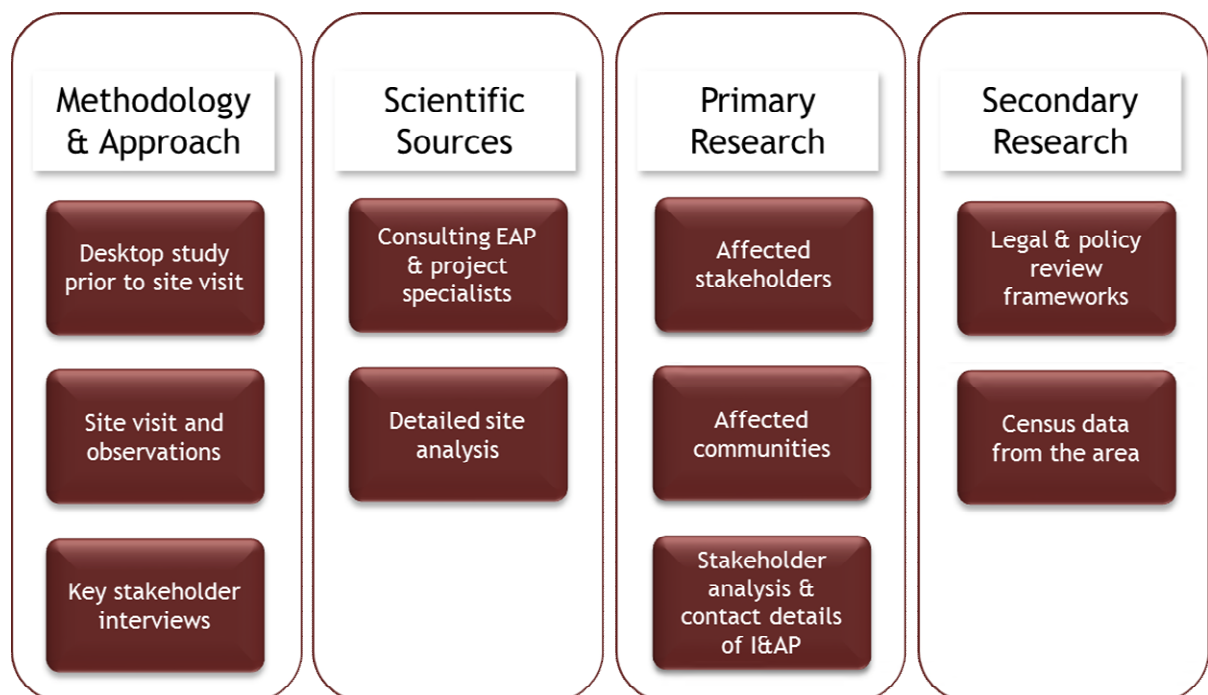


Figure 2: Research methodology and sources diagram

2.3. PUBLIC PARTICIPATION PROCESS

The Public Participation Process (PPP) played 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, and where possible, the PPP and SIA processes have been integrated. 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. Relevant stakeholders are informed about the proposed project and thereafter are able to register and participate in the environmental impact assessment 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. Consultations were of critical importance in gaining insights into the key environment and social issues and concerns of communities and other stakeholders, and in aiding the development of potential strategies for addressing these impacts.

2.4. 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).

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.

2.5. 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.

Every possible precaution was taken to reduce the effect of the above-mentioned limitations on the data collected for this study.

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 Act 108 of 1996
- » National Environmental Management Act 107 of 1998 (NEMA)
- » National Energy Act (2008)
- » 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 (NCPGDS) (2011)
- » Northern Cape Provincial Local Economic Development Strategy (LED) (2009)

Local and District Policies:

- » Namakwa District Municipality Environmental Management Framework (EMF) and Strategic Environmental Management Plan (SEMP) (2011)
- » Namakwa District Municipality Integrated Development Plan (2013-2014/2012-2016)
- » Namakwa District Municipality Local Economic Development Strategy (LED) (2009)
- » Khai-Ma Local Municipality Integrated Development Plan (IDP) (2012-2017) (Review 2015-2016)

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. In this regards 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 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 facility would contribute towards 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.

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 National Energy Act aims 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 and interactions amongst economic sectors, as well as matters relating to renewable energy. 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 3 below.
- » *Mission:* To regulate and transform the energy sector for the provision of secure, sustainable and affordable energy.

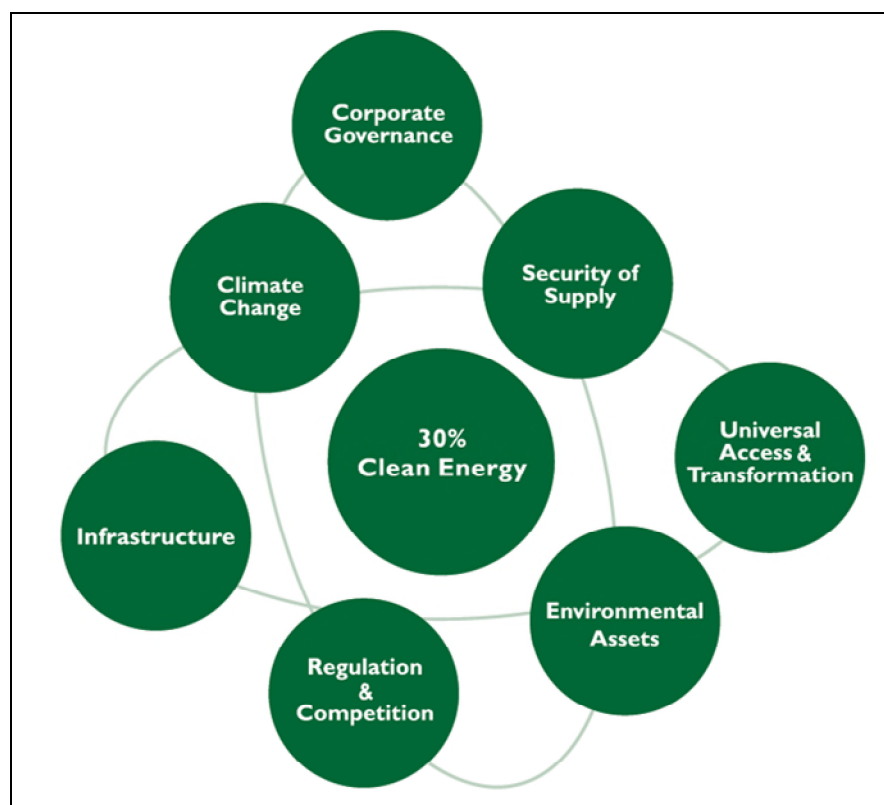


Figure 3: Factors affecting the DoE’s 2025 vision of 30% clean energy by 2025

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 CSP 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:

- » Increase 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 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 solar energy 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 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 CSP 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:*

Supports 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 NC 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 Strategic 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 NC 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.

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

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 NCPGDS is to enable stakeholders from public, private and parastatal sectors together with labour and civil society to determine a plan for sustainable growth and development of the Northern Cape. The NCPGDS sets the tone for development planning and outlines the strategic planning direction in the Province. The main objectives set by the NCPGDS for development planning in the Province are:

- » Promoting the 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 NCPGDS aims at building a prosperous, sustainable growing provincial economy to eradicate poverty and improve social development. The proposed project will contribute towards enhancing infrastructure for economic growth and social development and creating employment opportunities.

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

The NC LED 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 NC 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 development is considered to align with the aims of these policies, even if contributions to achieving the goals therein are only minor.

3.3.1. Namakwa District Municipality Environmental Management Framework (EMF) and Strategic Environmental Management Plan (SEMP) (2011)

The Namakwa Environmental Management Framework (EMF) and Strategic Environmental Management Plan was developed in order to provide a high level

plan for sustainable development in the NDM of the Northern Cape Province. The EMF and SEMP was developed in order to provide a high level plan for sustainable development in the NDM. The management acknowledges the need for social and economic development and provides strategic issues which should be addressed to take advantage of environmental goods and services. The EMF and SEMP does not prohibit development. The focus of the EMF is to restrict development in zones with the greatest sensitivity and allow development in the zones of low sensitivity. The report makes reference to the fact that large portions of land need to be cleared for energy generation projects. These types of projects usually pose a higher threat to the immediate surrounding environments due to the nature of the project. However, the need for sustainable energy is acknowledged in the EMF and it is recommended that energy generation projects be limited to Environmental Management Zone (EMZ) D (medium sensitivity area) – G (very low to not applicable sensitivity) area (see Figure 4 below).

Environmental Management Zone	Conservation	Agriculture	Service Infrastructure	Urban Development	Linear Developments	Energy Generation	Research	Waste related	Heavy Industry	Mining	Natural Resource Activities
A	Yes	No	Possible	No	No	No	Yes	No	No	No	Possible
B	Yes	No	Possible	No	Possible	No	Yes	Possible	No	No	Possible
C	Yes	Possible	Possible	No	Yes	Possible	Yes	Possible	No	Possible	Possible
D	Yes	Yes	Yes	Possible	Yes	Yes	Yes	Yes	Possible	Possible	Yes
E	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Possible	Possible	Yes
F	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
G	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Figure 4: Development Types suitable for each Environmental Management Zones (Source: NDM EMF & SEMP 2011)

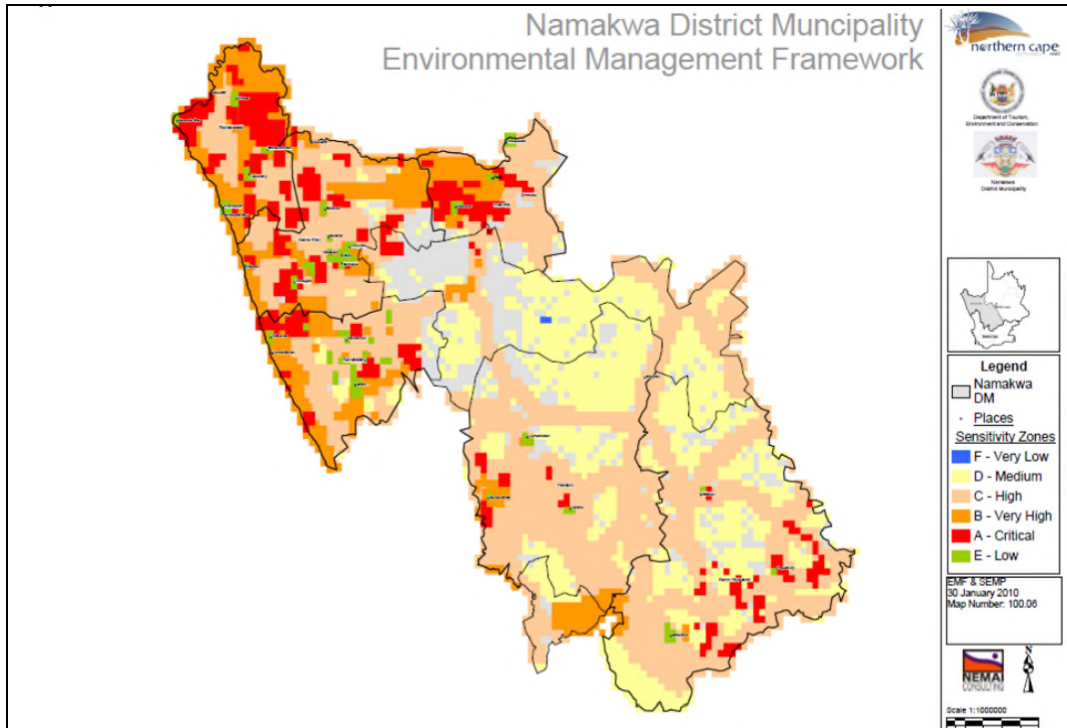


Figure 5: Namakwa District Municipality Environmental Management Zones
(Source: NDM EMF & SEMP 2011)

The proposed site is located approximately 40km north east from Pofadder, near the north east border of the Khai-Ma Local Municipality and the Namakwa District Municipality, near the N14. According to the EMZ map in Figure 5, the proposed site is located in a high sensitivity zone (zone C). The EMF does not prohibit development in any one zone, neither does it give carte blanche for un-restricted development in any zone. Figure 4 demonstrates that energy generation is possible in zone C. The EMF should be used as guidance to the sensitivities of certain areas and tailor development planning and environmental authorisation approaches to the level of sensitivity in each zone.

3.3.2. Namakwa District Municipality Integrated Development Plan (2013 – 2014/ 2012 - 2016)

The vision of the NDM was formulated in 2011 to articulate the priorities, challenged and programmes of action over the next five years. The vision of NDM

is the centre of excellence and the strategic objectives based on vision 2014 are as follows:

- » Ensuring the delivery of basic services which include water, sanitation, electricity and waste management;
- » Creation of a thousand job opportunities by 2014 through the community public works programme, as part of 4.5million Expanded Public Works Programme (EPWP) jobs to be reached by 2014;
- » Transformation of administrative and financial systems of NDM and relevant B Municipalities (local municipalities), which includes supply chain management
- » Ensure the filling of six critical posts (Municipal manager, chief Financial officer, Town Planner, Town Engineer, Human Resource Manager, Communication Manager) in all municipalities in the District
- » Clean audits for all Municipalities by 2014
- » Building municipal capacity to enable municipalities to collect their revenue
- » Ensure sustainable economic and social transformation in the District
- » A society with a renewed sense of identity and confident in their skills and knowledge
- » Bridging the digital divide.

The IDP aims at promoting local economic growth and social development in order to provide a better life for the communities. The proposed development will contribute in assisting the District Municipality in building a sustainable economy through the field of energy.

3.3.3. Namakwa District Municipality Local Economic Development Strategy (LED) (2009)

The NDM LED is intended to build a shared understanding of LED in the District and put into context the role of local economies in the provincial economy. The LED seeks to mobilize local people and local resources in an effort to fight poverty. Various opportunities are identified in this strategy, including:

- » Institutional Development for Investor Readiness (essentially a human capital development and municipal service delivery improvement strategy);
- » SMME Developments;
- » Agricultural Sector Development (enabling public sector interventions and the implementation of new technologies);
- » Mining Sector Development ;

Industrial development (programmes relating to the manufacturing of projects identified and general improvement in living conditions, infrastructure and overall economic growth);

- » Renewable Energy Development (including wind, solar, wave and biogas energy)
- » Space Research and Development Spin-offs (prioritizing the identification of spin-offs and enabling local entrepreneurs to exploit the opportunities);

- » Tourism Development (including the specific projects/SMME business opportunities and enabling public sector inventions);
- » Quality of Life Improvements (specific programmes in the Expanded Public Works Programme aimed at improved infrastructure, overcoming backlogs in service delivery, providing education, health and safety services etc.).

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

3.3.4. Nama Khoi Local Municipality Integrated Development Plan (IDP) (2012-2017)

The Integrated Development Plan (IDP) for the KMLM is the over-arching strategic plan for the municipal area. The plan attempts to guide development within the area in order to achieve long sustainable development.

The KMLM mission is to deliver outstanding service to the community and to stimulate economic development in the region with the focus on the previously disadvantaged. The KMLM has five key performance areas (KPA) which are as follows:

- » Basic Services and Infrastructure (KPA 1)
- » Local Economic Development (KPA 2)
- » Municipal Transformation and Institutional Development (KPA 3)
- » Financial Viability (KPA 4)
- » Good Governance and Community Participation (KPA 5).

The IDP aims at promoting local economic growth and social development in order to provide a better life for the communities. The proposed development will provide employment opportunities and contribute in assisting the local municipality in achieving local economic development and building a sustainable economy through contributing towards a relatively new sector into the local economy.

Khai-Ma Local Municipality Integrated Development Plan (IDP) (2012-2017) (Review 2015-2016)

The Khai-Ma Local Municipality recognizes its developmental role and commits itself to facilitate interventions that are going to ensure the creation of new business enterprises, fostering partnerships with other government entities and private sector. The municipalities has Strategic Objectives and five local governments Key Performance Areas (KPA's). The five KPA's are as follows:

- » Institutional Capacity and Municipal Transformation

- » Basic Service and Infrastructure Development
- » Financial Viability
- » Local Economic Development
- » Public Participation and Good Governance.

The municipality's strategic objectives include:

- » Provision of sustainable services to the inhabitants and maintain existing resources;
- » Develop Khai-Ma Municipality as institution through transformation and capacity building
- » Promotion of local economic development through poverty alleviation, job creation, empowerment of the previous disadvantage people with capacity building in business skills and establishment of a climate for investment.
- » Promote Sound financial management and Viability

The municipality's vision is to improve the living standards and circumstances of residents with its limited resources, to ensure health and safety and to strengthen the local economy by creating an environment conducive to investment. The KMLM IDP 2012-2017 discusses the municipality's Local Economic Development (LED) Plan. The aim of the LED plan is to strategize on how to create employment opportunities for local residents, alleviate poverty and redistribute resources and opportunities to the benefit of all local residents. The LED plan stipulates strategic pillars that include increased accessibility, infrastructure investment, wealth creation (through the economy growing from investment and businesses being introduced into the area), broadening the economic base and attracting visitors and investors. The IDP indicates the potential for eco-tourism that needs to be exploited and managed in a sustainable manner in order to retain the unique setting in the local area. Khai-Ma Municipality also has rich mineral deposits and unexploited tourism potential, which can further contribute to the diversification of the local economy. Mining holds potential due to unexploited mineral deposits especially in the Gamsberg areas. Tourism, while limited at present, is viewed as the main growth point for the region in terms of its economic development. Khai-Ma offers numerous tourism attractions like 4x4 trails, walking routes, mountain climbing, canoeing, the cathedral at Pella, a "Quiver " forest at Onseepkans and cultural heritage. Local Municipality has four main economic sectors: livestock grazing, mining, agriculture and tourism. The two emerging sectors are renewable energy and conservation and ecological restoration. The IDP identifies possible strategies and projects, one which includes determining opportunities for renewable energy development and support.

The renewable energy sector is recognized as a key emerging sector in the municipality. The IDP notes that a number of new opportunities have opened up for the area since the need to facilitate the generation of sustainable energy was

introduced in South Africa by Eskom and the South African government. The renewable energy sector has the opportunity to provide economic benefits to the local area in terms of job creation and investment in the area which is in line with the IDP LED plans, strategic objectives and KPAs. The IDP also stipulates the importance of the tourism industry as a main growth avenue for the region which needs to be taken into consideration. The proposed development is unlikely to compromise the growth of the tourism industry in the area as the proposed site is located in a remote agricultural area with few tourism activities nearby and is located adjacent to two already existing solar energy facilities.

3.4. SOLAR ENERGY TECHNOLOGY ROADMAP 2013

Diffusion of renewable energy, generally, and solar technology, specifically, in South Africa is meant 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 a natural resource 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 17GW of 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 therefore indicate that solar energy and the establishment of solar energy facilities are supported at a national, provincial, and local level, and that the proposed project will contribute towards the various targets and policy aims.

4. SOCIO-ECONOMIC PROFILE

The proposed site for the Paulputs CSP facility is located in the Khai-Ma Local Municipality which falls within the greater Namakwa District Municipality in the Northern Cape Province. The proposed development site lies approximately 40km north-east of Pofadder in the Northern Cape Province on Portion 4 of the Farm Scuit-klip 92. 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 uses (which includes the land use character of the immediate area of influence).

4.1. REGIONAL CONTEXT

4.1.2. 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 899km², which is 30.5% of South Africa's total area (see Figure 6). 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 Noupoot, 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 PSD, 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 CSP facilities planned and developed in the region.

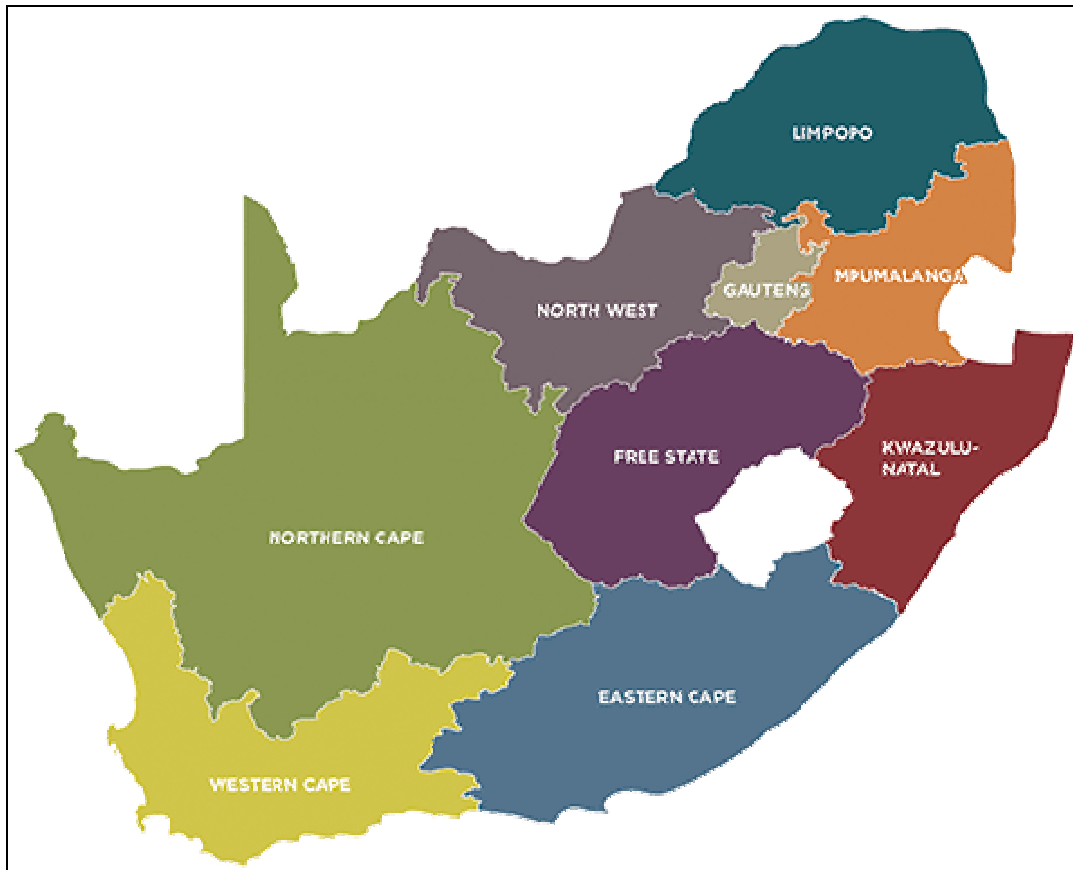


Figure 6: Location of the Northern Cape Province in South Africa (Source: Local Government Handbook, 2012)

4.1.3. Namakwa District Municipality (NDM)

Namakwa District Municipality is one of five districts in the Northern Cape Province and situated in the western part of the province (See Figure 7). Namakwa district municipality is comprised of six local municipalities: Nama khoi, Hantam, Khai-Ma, Kamiesberg, Karoo Hoogland and Richtersveld. It is bordered by the Siyanda (ZF Mgcawu) and Pixley ka Seme Districts of the Northern Cape Province to the North-East and East, respectively, and by the Western Cape Province to the South (the West Coast, Boland and Central Karoo District Municipalities). The Atlantic Ocean forms the Western boundary, while the Gariep River forms the Northern border with Namibia, see Figure 7.



Figure 7: Location of the Namakwa District Municipality in the Northern Cape Province

Geographically, the NDM constitutes a large area of approximately 126 747km², making it the largest District in South Africa. It also has the smallest population of all Districts in South Africa. Thus, the area's population density is extremely low and settlement can be described as dispersed. The Namakwa District is therefore the least populated district in the province with a population of 10.11%. The socio-economic profiling baseline data shows that poverty is widespread throughout the district (Namakwa IDP 2013-2014: 5). The District is characterised by large open semi-arid land, with small towns centred round activities such as mining, tourism and agriculture. The majority of land is unused/vacant, with small pockets of agricultural land (mostly stretching north from the Western Cape along the N7 towards Springbok) and important conservation areas. The North Western portion of the District (along the coast and along the

Gariep River) is also used for mining, mostly of diamonds. The area has significant environmental resources (sensitive species, biomes and flora) and has been identified for tourism growth and conservation activities. The area also has a competitive advantage in the renewable energy industry, in that wind, solar, wave and nuclear power have all been identified as potentially successful in the District (Namakwa LED, 2009: 4-5).

4.2. LOCAL CONTEXT

4.2.1. Khai-Ma Local Municipality (KMLM)

The proposed site falls within the Khai-Ma Local Municipality (KMLM). The main town in the KMLM is Pofadder, which is both an economic hub and the seat of local government. The KMLM is broken up into four wards, with the proposed site falling within Ward 1, near Pofadder. KMLM falls within the Namakwa District Municipality (NDM) of the Northern Cape Province. KMLM lies in the central north region of the NDM, which is the furthest north in terms of the provincial boundaries. The main towns in the KMLM include Pofadder, Aggeneys, Pella, Witbank, and Onseepkans.



Figure 8: Location of the Khai-Ma Local Municipality within the Namakwa District Municipality

The KMLM IDP 2012-2017 indicates the potential for eco-tourism that needs to be exploited and managed in a sustainable manner in order to retain the unique setting in the local area. The Gariiep River and flowering season in Namaqualand attracts tourists from across the country and abroad. KMLM offers numerous tourism attractions like 4x4 trails, walking routes, mountain climbing, canoeing, the cathedral at Pella, a "Quiver " forest at Onseepkans and cultural heritage. The municipality is characterized by vast tracts of land, pristine natural environment, unique mountains and its limited cell phone reception, which can be regarded as a unique attraction by some urban dwellers who wish to escape the rush of the cities.

The KMLM has four main economic sectors: livestock grazing, mining, agriculture and tourism. The two emerging sectors are renewable energy and conservation and ecological restoration. The main economic activities are in Aggeneys, granite works and farming along the Gariep River.

4.2.2. Baseline Description of the Social Environment in the KMLM

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 KMLM, 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 Khai-Ma Local Municipality (KMLM) IDP 2012-2017, Namakwa District Municipality (NDM) IDP, the most recent (2011) Census, as well as the local government handbook 2012.

Population

The population for KMLM is estimated at 12 465 people (Census 2011). The municipality is sparsely populated (+/- 0.7 person/km²); most people are settled in its five towns (Aggeneys, Onseepkans, Pella, Pofadder and Witbank). The KMLM covers a geographical area 8 310km² which is approximately 7% of Namakwa's total (KMLM IDP 2012-2017). The Municipality has a population density of 1.6 people per km². Approximately 10% of Namakwa's population resides in the KMLM (see Table 4).

Table 4: Population statistics in the NDM and KMLM (Source: Census 2011)

Census 2011	Area (km²)	Population total	Population density /km²	Population growth rate % (2001 - 2011)
Northern Cape	372 889	1 145 861	3.1	1.4
NDM	126 836	115 842	0.91	0.7
KMLM	8 310	12 465	0.75	0.7

Pofadder is the main town located near the proposed site in the KMLM which is located approximately 40km south west from the proposed site. Pofadder is a very small town with an important local economic centre in the region that covers an area of 162.09km² and consists of a population of 3 287 people, with a density of 20 people per square kilometre in the town (Census, 2011).

Population groups

According to Census 2011, KMLM has a total population of 12 465, of which the population breakdown consists of 75.1% coloured and 17.6% are black African (see Table 5). Afrikaans is the most prominent spoken language in the KMLM.

Table 5: Population groups within the KMLM (Source: Census 2011)

Group	KMLM
Black African	17.6%
Coloured	75.1%
White	6.0%
Other	0.4%

Age composition and gender differentiation

The age structure of a population is extremely important for planning purposes. Table 6 indicates the age and sex profile of citizens living in the KMLM.

Table 6: Age distribution (Source: Census 2011)

2011	KMLM		
	Male	Female	Total
0-14	13.4%	12.3%	25.9%
15-24	9.7%	8.7%	18.4%
25-64	27%	23.4%	50.4%
65+	2.2%	3.3%	5.5%

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 can see from Table 6 above:

- » 31.4% of the KMLM population are dependent on the EAP

These dependency ratios could be higher as not every individual in the EAP are employed (i.e. Some could be studying full-time into their 20's; some could be retrenched, some may be housewives etc.). The working age demographic (age 15-65):

- » The KMLM has 68.8% of the population within the working age demographic (age 15-65)

The high proportion of potentially economically active persons implies that there is an available 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 7 indicates the adult education levels (individuals aged 20 years and older) of citizens residing in the KMLM.

Table 7: Education levels (Source: Census 2011)

2011	KMLM
No Schooling	2%
Some Primary	43.1%
Completed Primary	7.1%
Some Secondary	34.4%
Completed Secondary	9.8%
Higher Education	1.2%
Not Applicable	2.5%

The majority of the adult population in KMLM have some education but not completed secondary education. Table 7 demonstrates that majority of the population have a low-skill level and would either need job employment 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 project is expected to generate employment opportunities in the construction and operation phases.

Table 8: Employment status (Source: Census 2011)

2011	KMLM
Employed	4600
Unemployed	1304
Discouraged work seeker	322
Not economically active	2327

There is an unemployment rate of 22.1% in the KMLM. There is also a total of 23.6% youth unemployment rate in KMLM. Table 8 demonstrates that there is human capital available for any kind of work in the KMLM, there is also room 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 9 indicates the household income levels of the residents in the KMLM.

Table 9: Average household income (Source: Census 2011)

2011	% KMLM	Classification
No income	8.4%	Low Income (Poverty Level)
R1 – R4 800	2.6%	

R4 801 – R9 600	5%	
R9 601 – R19 600	17.7%	
R19 601 – R38 200	22.3%	
R38 201 – R76 400	18.7%	Middle Income
R76 401 – R153 800	13.4%	
R153 801 – R307 600	7%	
R307 601 – R614 400	4%	High Income
R614 401 – R1 228 800	0.6%	
R1 228 801 – R2 457 600	0.2%	
R2 457 601 +	0.1%	

The average household incomes of the LM are as follows:

- » Within the KMLM 56% of household income falls within the poverty level
- » 39.1% of the KMLM households earn a middle income salary;
- » 4.9% of the KMLM households earn a high income.

A high percentage of the KMLM household income falls within the poverty level (more than half the population). The high poverty level has social consequences such as not being able to pay for basic needs and services. The 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

In terms of health in the NDM, official figures show that 5.1% of the population have HIV/AIDS and this is continually growing as well as the statistics may be higher due to a lack of accessible testing facilities in the municipality, see Figure 9 (NDM, 2011-2012).

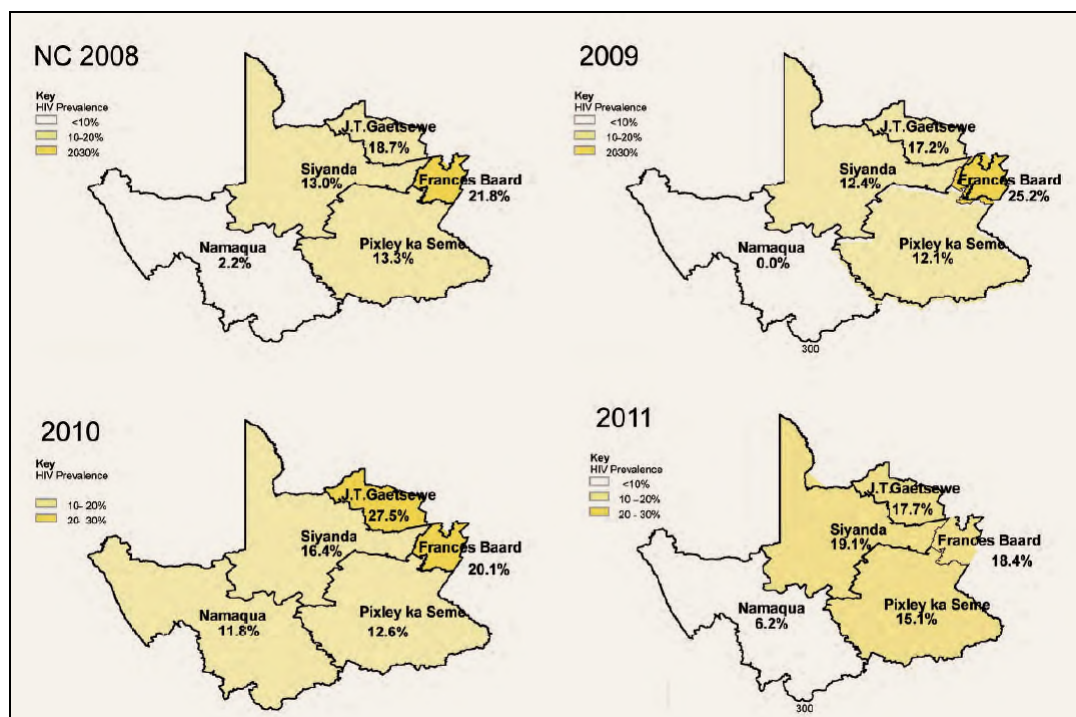


Figure 9: Northern Cape HIV statistics 2008-2011 (Source: The National Antenatal Sentinel HIV and Syphilis Prevalence Survey, South Africa, 2011, National Department of Health)

According to the Department of Health, Namaqua District the satellite facilities are understaffed and only three professional nurses serve all the clinics within the area. The distances between towns also complicate the frequency with which clinic services can be provided. Apart from Aggeneys all of the facilities are in need of upgrading, especially in Witbank (KMLM IDP 2012-2017).

Households and access to services

There are 3 796 households in the KMLM, with an average household size of 3.2 persons per household. Table 10 indicates the level of access to services found in the KMLM.

Table 10: Access to services (Source: Census 2011)

2011	KMLM
Water Access	
Regional/local water scheme (operated by municipal or other water services provider)	69.5%
Borehole	8.4%
Spring	0.1%
Rain water tank	0.2%
Dam/Pool/Stagnant water	2.2%
River/Stream	13.4%
Water Vendor	0.2%
Water Tanker	2.2%

Other	3.6%		
Sanitation Access			
Flush toilet (connected to sewage system)	69%		
Flush Toilet (with septic tank)	7.8%		
Pit toilet with ventilation	11.1%		
Pit toilet without ventilation	4.4%		
Chemical toilet	0.2%		
Bucket toilet	0.8%		
Other	1.1%		
Refuse Removal Access			
Removed by local authority/private company at least once a week	75.6%		
Own refuse disposal	18.9%		
Removed by local authority/private company less often	4.7%		
Communal refuse dump	1.1%		
Own refuse dump	11.7%		
No rubbish disposal	2.6%		
Other	4.4%		
Energy Access			
	Cooking	Heating	Lighting
Electricity	84.3%	50.8%	89.6%
Gas	7.2%	1.1%	0.1%
Paraffin	0.1%	0.2%	0.7%
Solar	0.3%	0.5%	2.2%
Candles	0%	0%	7%
Wood	7.9%	26.3%	0%
Animal Dung	0%	0.1%	0%
None	0.3%	21%	0.4%

According to the KMLM IDP 2012-2017 there is a backlog of basic service delivery and improvement of existing infrastructure is required. The table above provides an indication of a lack of service delivery in the area. Problems include severe water issues in the area and boreholes are unreliable (more needs to be done to secure and save the water sources and increase their capacity so more water is available to the population).

Economic profile

The main economic activities within the NDM are agriculture and mining. Stock farming in the District includes sheep, cattle and goat farming and is the key contributor to the agricultural sector. Ostrich farming is also practiced within the District. Flower bulbs and wool production are also important contributors to the agricultural sector. The Gariiep River plays a key role in the regions agricultural activities and alluvial diamond mining activities. The highest number of individuals in the NDM is employed within the agriculture, hunting, forestry and fishing sector followed by the mining and quarrying sector. Agriculture is the dominant employment sectors within the District and with few employment opportunities within alternative industries.

The KMLM has four main economic sectors: livestock grazing, mining, agriculture and tourism. The two emerging sectors are renewable energy and conservation and ecological restoration. The main economic activities is in Aggeneys, granite works and farming along the Gariep River.

Summary of the baseline description of the local area

The following is a summary of the key baseline findings as a result of the study conducted on the KMLM, in the Northern Cape. In summary, the area was found to have the following general characteristics and challenges within the local area:

- » Poverty levels are high, due to high levels of unemployment, and increasing rates of illness (HIV/AIDS and TB)
- » Communal farming on municipal peri-urban land is creating environmental challenges
- » A large proportion of income is derived from social grants, with social consequences that are not fully understood and no proactive plans is put in place.
- » Local economies of small towns in the municipal area are characterized by weak multipliers, because a great deal of purchasing power is spent in the larger centres, or metropolitan areas situated outside these areas
- » Due to the arid nature of the area, surface and underground water supplies are insufficient to provide higher levels of infrastructure (such as waterborne sanitation)
- » The conditions of life of remote settlements of farm workers tend to be poor, with low mobility, and difficult access to health, education, recreation and shopping amenities
- » HIV/AIDS levels are reputed to be high, particularly on national transport routes, and mortality rates are already reflecting this
- » There is an out-migration of skilled people, due to a lack of local economic opportunities.
- » Increasing aridity, due to global warming, may lead to rising unemployment, declining underground water levels, and greater difficulties for commonage farmers.
- » The socio-economic conditions of the municipal area are poor. More 56% of the municipal population earns less than R38 400.00 per annum (or less than R3200.00 per month) consequently receiving payment for municipal services can be challenging. This in turn can have a negative effect on the sustainability of infrastructure and the delivery of services overall.
- » Generally the population can be regarded as having a high dependency ratio; with 7.39% of the population over the age of 65 and 25% are under 15 years. The latter youth group will be demanding education, housing and jobs in the near future.

The major service providers which will be affected by the project include the local municipality and local businesses in the area. The local municipality that will be directly impacted by the proposed development will be Khai-Ma Local Municipality (ward 1). The municipality will absorb a number of social impacts (positive and negative), especially impacts related to an influx of people, since they will be responsible to deliver services to people residing within their municipal area. Negative dimensions of impacts such as influx of jobseekers into the area putting pressure on the provision of basic services and poverty level will need to be weighed.

The proposed development supports the social and economic development 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. 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 (positive cumulative impacts).

4.2.3. Direct area of influence

The direct area of influence is a project's area of influence that extends to a 50km radius from the project site. Renewable energy projects under the Renewable Energy Independent Power Producer Procurement programme (REIPPP) 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. 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. 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 Department of Energy (DoE) indicates that the programme offers great potential to realise positive socio economic outcomes- such as job creation, local ownership, socio-economic development and enterprise development (WWF, 2015). All of which has to happen within 50 km of the project site. The settlements within the project's direct area of influence include Onseepkans, Pofadder and Pella (see Figure 10).

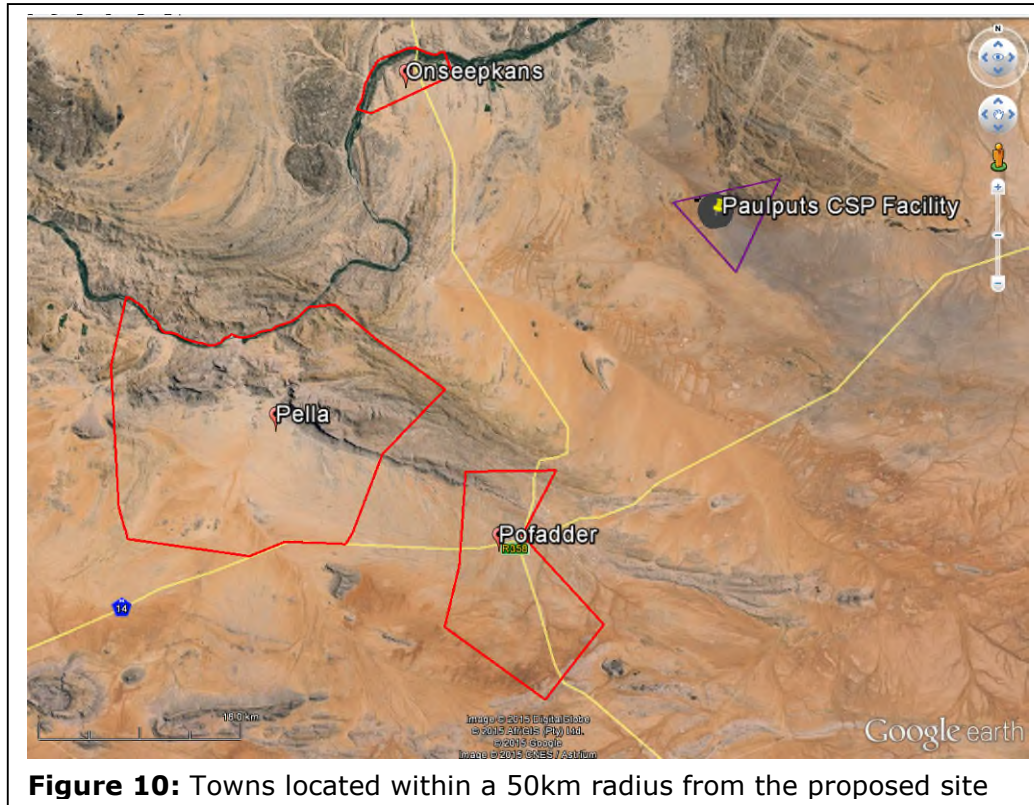


Figure 10: Towns located within a 50km radius from the proposed site

A main town located in close proximity to the proposed development and within the KMLM is Pofadder. Pofadder is the main town in the KMLM and is the economic hub and seat of the local government. The proposed site is located approximately 40km north east from the Pofadder town. Pofadder is a small town and it has developed into an important agricultural service centre. Pofadder has a population of 3 287 people and the town covers an area of 162.09km². Pofadder is situated on the N14 national road from Upington to Springbok. Pofadder accommodates a few businesses and institutions, such as the municipal offices, schools, hospital, clinic, police station and a gravel airstrip (KMLM IDP 2012-2017). The KMLM IDP 2012-2017 identifies projects that are needed within Pofadder, these include; upgrade of water reticulation system, toilets for community hall, street lighting for the N14, licencing and upgrading of landfill sites, upgrading of graveyard, development of a proper sports field and construction of shopping centre.

The proposed site is located in Ward 1 of the KMLM. The main settlement in Ward 1 is Onseepkans. There are other smaller farming settlements within Ward 1 that include: Vrygbaar, Raap-en-Skraap, Pella Brak and Rooiklippe (KMLM IDP 2012-2017). Onseepkans is the closest settlement to the proposed development. Onseepkans is a small settlement located on the banks of the Gariep River. It is a border post with Namibia for traffic between Pofadder in South Africa and Keetmanshoop in Namibia. Onseepkans is a small town however it is the largest town in Ward 1. The total population of Onseepkans is ~2 090 people with approximately 558 households. The area of Onseepkans is 27.65km². Onseepkans settlement is located approximately 30km north west of the proposed site. There were a few projects identified in the KMLM IDP 2012-2017 that Onseepkans requires, these include; an upgrade of their water reticulation system, proper sanitation, access road, licencing and upgrading of dumping sites and electricity for certain housing areas.

Pella is a small settlement located approximately 45km south west from the proposed site. Pella has a population of 2 470 people and the town covers an area of 477.83km². Pella is situated at the base of the stark Great Pella Mountains and although the desert is dry and dusty, the area is known for its gemstones such as malachite, jasper and rose quartz. The KMLM IDP 2012-2017 identifies projects that are needed within the Pella town, these include; proper sanitation, upgrading of sewer system, upgrading of community hall, satellite municipal offices, recycling projects, electricity for all areas, licencing and upgrading of landfill sites and upgrading of Pella sports ground. These towns are surrounded by rugged, sparsely populated, scenic countryside, desert landscapes and unusual granite outcrops.

The situational analysis and statistics presented in the baseline description of the KMLM indicate the developmental challenges facing the municipality, such as poverty, unemployment, and service delivery backlogs. Socio-economic spin-offs from the proposed development could contribute to better infrastructure provision and educational investment in the local areas. However 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) by development programmes in order to significantly contribute towards local economic growth, Socio-Economic Development (SED) and Enterprise Development (ED). The proposed development has the potential to contribute towards positive socio-economic improvements within the local area. Potential negative impacts on these towns 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; from an external workforce being brought into the local area. The positive social impacts associated with the proposed development for the surrounding towns includes

economic growth and development (economic opportunities such as jobs and expenditure in the local area).

4.2.4. Indirect areas of influence

The indirect areas of influence extend 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 but who may be affected by the project. These include road users that use the N14 or R358 on a frequent basis as part of their daily or weekly movement patterns. As well as road users that utilise the secondary access road to access their farms. Construction vehicles and trucks will be utilising these roads during the construction phase of the development, which will increase the traffic and may increase the wear and tear on these roads. The development will also have an indirect effect on the town's local residents; with influx of in-migrants and growth in the local economy.

Another indirect area of influence may be the tourism industry in the local area. The area is developed around sense of place, natural beauty and natural resources. Impacts associated with the tourism industry include visual interferences and negatively impacting the sense of place. There may also be a positive impact on the tourism industry in the construction phase when contractors look for temporary accommodation in the nearby towns. The most significant tourism activities in the nearby area include eco-tourism and heritage sites. Attractions in the nearby area include:

- » The Quiver tree forest near Onseepkans, is one of the natural highlights in the area which is dominated by the stark desert landscape and unusual granite outcrops (DWS, 2016). The Quiver Tree (Kokerboom in Afrikaans) forest lies between Pofadder and Onseepkans and is the largest forest of its type in the Southern hemisphere. It is one of the natural highlights in the area which is dominated by the stark desert landscape and unusual granite outcrops (DWS, 2016). However, this quiver tree forest is not listed as a protected area. It does add to the areas rural sense of place and eco-tourism character. The Quiver Tree forest is located on Farm Copoob, approximately 20km west from the proposed Paulputs CSP site.
- » There is also Ritchie Falls, near Onseepkans along the Gariep River (located approximately 30km from the proposed site), a pristine wilderness area which is the second highest waterfall on the Gariep River; it is only accessible after a two day hike or by rafting down the Gariep River from Onseepkans (Northern Cape, 2015).
- » The proposed site is located within the Riemvasmaak Community Conservancy. Which is a community based conservation area aimed at restoring the local community. According to Green Kalahari 2006, in the 1960s the inhabitants of Riemvasmaak were forcibly removed by the apartheid South African government at the time and the land was used as

a military training facility. Soon after 1994 the current South African government returned the land to the descendants of the original inhabitants. Riemvasmaak is 75 000ha of mountain desert wilderness. Riemvasmaak is being developed as a tourist destination. To attract visitors the community have designed a series of hiking and 4X4 trails, as well as making use of the natural hot springs of the area for which they have built a couple of pools surrounded by 80 metre high granite cliffs. The Riemvasmaak Ecotourism Project is a community-based project, started with the aim to provide work for the locals and to open the area for tourism. The Melkbosrand area, consisting of the farms or areas known as Hartebeesvlak, Blousyfer and Wabrand which covers the northern side of the Augrabies Gorge and the Augrabies Falls National Park; the area is used for community based eco-tourism and conservation. The proposed site is situated within the broader Riemvasmaak Community Conservancy area (see Figure 11), near Pofadder, and is located on privately owned land that is zoned for Special Solar and located adjacent to existing solar energy facilities. The proposed site is also located approximately 85km south west (straight line distance) from the existing Riemvasmaak eco-tourism activities such as the hot springs and 4X4 trails. Therefore it is unlikely that the proposed development will have any impact on eco-tourism activities within the Riemvasmaak Community Conservancy area.

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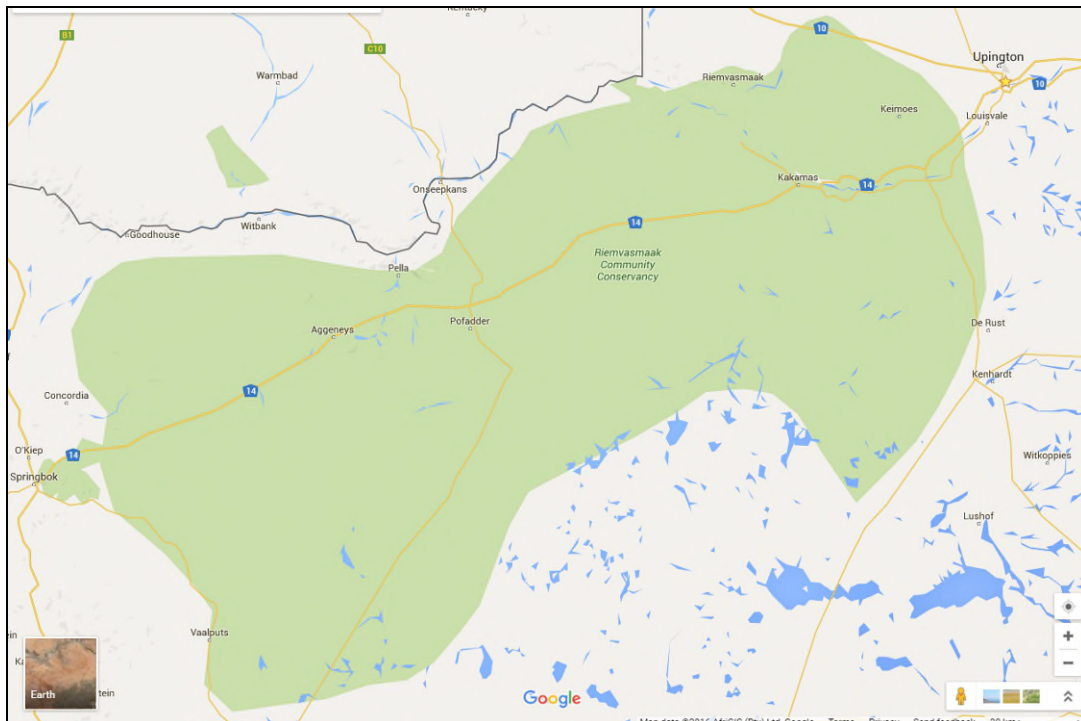


Figure 11: Riemvasmaak Community Conservancy (Source: Google Maps Pro, 2016)

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 CSP 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 to South Africa's total energy requirements of the proposed CSP facility is small; however, the 200MW facility will help contribute to offset the total carbon emissions associated with energy generation in South Africa.

4.3. IMMEDIATE AREA OF INFLUENCE

The immediate area of influence includes the development footprint area, site area and adjacent landowners in order to include any fenced areas and social receptors that may be impacted by the proposed activities.

4.3.1. Site Context

This section will describe the land use character of the impacted site area. The proposed CSP site is located on privately owned land, on Portion 4 of the Farm Scuit-klip 92. The land is owned by Abengoa Solar South Africa (Pty) Ltd and the land use is zoned as Special Solar. The proposed CSP facility will connect to the Paulputs Substation via a proposed ~2km overhead power line (132 kV distribution line) from the facility's substation. This impacted farm portion currently contains two CSP facilities owned by Abengoa Solar South Africa, known as KaXu Solar One (operational) and Xina Solar One (under construction). Prominent features within the proposed study area (Farm Scuit-klip 4/92) include (see Figure 16):

- » KaXu Solar One is a 100MW concentrated solar thermal plant located on Portion 4 of farm Scuit-klip. It covers an area of 1 100 hectares and is currently located south of the proposed site within the same affected farm portion. The project is developed by Abengoa (Pty) Ltd and financed with help from Industrial Development Corporation (IDC) and Community Trust group (see Figure 12). This plant is operational.



Figure 12: KaXu Solar One CSP Plant on Portion 4 of Farm Scuit-Klip 92 (Source: Power- Technology, 2016)

- » Xina Solar One has a total installed capacity of 100MW. The construction of this plant started at the end of 2014, and it is expected that it will start operating in 2017. Xina Solar One is located close to Pofadder, in the Northern Cape Province, next to KaXu Solar One.
- » The Paulputs substation is located approximately 2km south west of the proposed Paulputs CSP facility within portion 4 of Farm Scuit-klip (see Figure 16).
- » The KaXu Solar IPP substation is located south east of the proposed Paulputs CSP facility within portion 4 of farm Scuit-klip.
- » South of the proposed site is an existing power line that traverses portion 4 of farm Scuit-klip.
- » The proposed site is relatively isolated and is located approximately 17km north of the N14 (the N14 connects Pofadder and Kakamas).
- » The site is located approximately 20km east of the R358 (the R358 connects Pofadder and Onseepkans).
- » The triangular shaped site overlaps a four-way intersection of secondary roads on the farm Skuit-Klip (see Figure 16). Two of the secondary roads that

traverse the proposed site are the two alternative access road options being assessed for the Paulputs CSP facility. The two alternative access road options are as follows:

- The road that traverses the western section of the impacted farm is an existing tarred road. This surfaced road runs to the proposed site from the N14 national road via the existing R357 Onseepkans road used to access the farm, and the CSP facilities on this farm. This road is to the east of the farm portion. The access point to the site is 17km from the N14, with a formal entrance to the existing CSP facilities off of this public road. This section of the R357 is a tarred road (see Figure 13). This is the alternative access road 1 option to the proposed CSP facility.



Figure 13: Alternative access road 1, tarred road on the R357, located to the east of the proposed CSP site (Source: Google Earth)

- The road to the west of the intersection is also an existing road to the proposed site from the N14 national road via the existing R358 and minor road R357. This road is unsurfaced and is located to the west of the farm portion. The access point to the site is 30km from the R358 and this road to the west of the proposed site is a gravel road (see Figure 14). The R358 is also a gravel road that is approximately 45km long from the N14. This is the alternative access road 2 option to the

proposed CSP facility. The proposed water pipeline will run within the servitude of the M357 road (west to the proposed site).



Figure 14: Alternative access road 2, gravel road on the R357, located to the west of the proposed CSP site (Source: Google Earth)

- » The gravel road to the south of the intersection traverses the proposed CSP site and connects to the R358. A realignment of the secondary road (called MR73) is proposed where it traverses the Scuitklip farm where the CSP facility is to be located. A separate Basic Assessment will be undertaken for the realignment of the road on Skuitklip farm.
- » The secondary road to north of the intersection (as part of the MR73) is tarred and is utilised by local farmers to access their agricultural farmlands located near the Gariep River.
- » The proposed CSP facility is located approximately 40km north east of the settlement of Pofadder (straight line distance), while the CSP facility is located approximately 33km southeast of the border (South Africa and Namibia) and the settlement of Onseepkans.
- » The topography on the site consists of open plains punctuated by occasional hills and rocky outcrops.

There are seven impacted landowners that are likely to be affected by the construction of the proposed water pipeline. The water pipeline is planned to run along the R357 Onseepkans Road from the proposed CSP site to the Gariep River

and will be approximately 30km in length. The pipeline will run parallel to the existing KaXu Solar One pipeline within the servitude of the existing R357 Onseepkans road until it reaches the abstraction point. The abstraction point on the Gariep River will be located on the remaining extent of the farm Vrugbaar 422 adjacent to the existing abstraction point which is utilised by commercial fruit farming activities. A survey of the impacted pipeline landowners was undertaken to determine the type of activities/ land uses surrounding the pipeline route and to determine any sensitive social receptors, infrastructure or activities that may be negatively impacted by the proposed pipeline. Current land uses and characteristics of the impacted water pipeline farmlands are as follows:

- » **Farm Vaal Koppies RE/80:** The water pipeline servitude traverses the southern corner of the farm. The primary activity on the farm is livestock farming, predominantly sheep. There are homesteads/ buildings located on the farm, the closest being located approximately 2km away from the R357 and proposed water pipeline route. The construction of the pipeline may impact the fencing along the road and the dust from construction activities and movement of construction vehicles along the R357 may impact grazing areas to the north and south of the R357.
- » **Farm Paardeneiland RE/90:** The water pipeline route along the R357 traverses the northern portion of this farm. Predominantly livestock grazing (sheep farming) takes place on the farm. There are two homesteads/ buildings located on the farm approximately 7km south of the R357 and pipeline route. The construction of the pipeline may impact fencing along the farm boundary. The impacted landowner has indicated that the dust from construction activities and movement of construction vehicles on the R357 may impact grazing areas near the R357.
- » **Farm Paardeneiland 1/90:** The proposed water pipeline route along the R357 traverses the northern portion of this farm. Predominantly livestock grazing (sheep farming) takes place on the farm. There are no homesteads/ buildings located on the farm. The construction of the pipeline may impact the fencing along the road, and the dust from construction activities and movement of construction vehicles on the R357 may impact grazing areas to the north and south of the R357.
- » **Farm Astof 2/421:** The proposed water pipeline route along the R357 is located along the north eastern boundary of this farm. Predominantly livestock grazing (sheep farming) takes place on the farm. There are no homesteads/ buildings located on the farm. The construction of the pipeline may impact the fencing along the road, and the dust from construction activities and movement of construction vehicles on the R357 may impact grazing areas to the south of the R357.
- » **Farm Vrugbaar RE/422:** The proposed water pipeline route will predominantly run along the eastern boundary of this farm. Mainly grape cultivation activities take place on the farm. During stakeholder consultations the landowner indicated that he would prefer if the pipeline

route stays as close as possible to the property edge to keep land use vacant for future farming purposes. The increase of dust during the construction phase will also impact the vineyards. The landowner is also concerned that his existing pipeline may be at risk during blasting which will need to be undertaken for the construction of the new pipeline. The construction of the pipeline may impact the fencing along the boundary. The abstraction point of the proposed water pipeline on the Gariep River will be located on the remaining extent of the farm Vrugbaar 422 adjacent to the existing abstraction point which is utilised by commercial fruit farming activities.

- » **Farm Afstof RE/421:** The proposed water pipeline route will predominantly be located along a small portion on the north eastern corner of the Farm Afstof RE/421. The farm is utilised for fruit farming activities, primarily grape cultivation. The dust from the construction phase and the increase in the movement of construction vehicles utilising the R357 and internal roads may negatively impact cultivated areas.
- » **Farm Paardeneiland 1/84:** The proposed water pipeline is located along the western boundary of the farm. There are no homesteads or cultivated areas, however livestock farming occurs in the area. The construction of the pipeline may impact the fencing along the boundary of the farm and dust from the construction phase may impact livestock grazing activities.

4.3.2. Adjacent Landowners

Apart from the area along the banks of the Gariep River where irrigation takes, the Khai-Ma Local Municipal area has a low agricultural potential and is characterised by livestock (sheep and cattle) farming. Majority of the study area has a low number of farmsteads that are sparsely populated. Farmsteads occur within the study area and within the surrounding areas. Figure 16 illustrates the adjacent landowners' location relative to the proposed site. There are five adjacent landowners that are likely to be affected by the proposed CSP facility and associated infrastructure, these include:

- » Remaining portion of Farm Vaal Koppies 80, is located north of the proposed development. Currently a secondary road (M73) traverses the farm and there are approximately ten buildings/dwellings located on the farm. The secondary road to the north of the intersection (as part of the MR73) is tarred and is utilised by local farmers to access their agricultural farmlands located near the Gariep River. The primary activity on the farm is livestock farming, predominantly sheep. There are homesteads/ buildings located on the farm, the closest building being approximately 2km away from the CSP facility.
- » Portion 1 of Farm Scuit-klip, located east of the proposed site. Currently the tarred R357 (Onseepkans road) traverses the farm and there are approximately five buildings/ dwellings located on the farm. The farm is

primarily utilised for livestock farming. The landowner raised the concern of dust caused by construction activities and an increase in traffic and abnormal loads as a serious concern. The surrounding land is used for grazing purposes and his livestock do not eat grass covered in dust. The landowner is also concerned about tremors caused by blasting that took place for the previous projects that have resulted in cracks occurring in the walls of infrastructure on his farm. The adjacent landowner also noted that the upkeep and maintenance of perimeter fencing will be required.

- » Portion 6 of Farm Konkoonsies 91 is located south west of the proposed site and there are approximately four buildings/dwellings located on the farm. Konkoonsies Solar PV plant is located on this farm. The facility is a 10MW photovoltaic solar power generation facility (see figure 15 below).



Figure 15: Konkoonsies Solar PV Plant on Portion 6 of Farm Konkoonsies 91
(Source: <http://www.biothermenergy.com/blog/konkoonsies-solar-pv>)

- » Remaining portion of Farm Paardeneiland 90 is located north west of the proposed site. The R357 (Onseepkans road) traverses the site and there are two buildings/ dwellings on the farm, located approximately 7km south west

of the proposed CSP facility. The adjacent landowner has indicated that dust will be an issue during the construction phase as grazing areas located closest to the facility will be affected and sheep will not eat dust covered grass. The landowner is also concerned with stock theft increasing.

- » Portion 1 of Farm Konkoonsies 91, is located south of the proposed site. There is one building/dwelling on the farm. Konkoonsies II Solar Facility (75MW facility) was awarded preferred Bidder status in Round 4 of the REIPPP programme and is planned to be located on this farm.

Figure 16 provides an overview of the location of these adjacent farms in relation to the site. There is potential for the development to have social impacts on the surrounding landowners/ residents residing on the farms. There are a small number of farmsteads that are sparsely populated in the study region. Impacts that may arise for the farming community (either farm owners, tenants or farm workers) includes impacts on pastureland, crime, personal safety, cultural and social changes, additional traffic and road safety, noise and dust impacts, effects on the areas sense of place and impact on borehole water. There are potentially vulnerable farming activities in the study area. The primary farming activity is livestock farming and grape cultivation near the Gariep River. Impacts that may arise include stock theft from an increase of in-migrants in the area (especially during the construction phase) and dust pollution impacting grazing and cultivated areas. Highly sensitive social receptors include farmlands where livestock farming occurs.

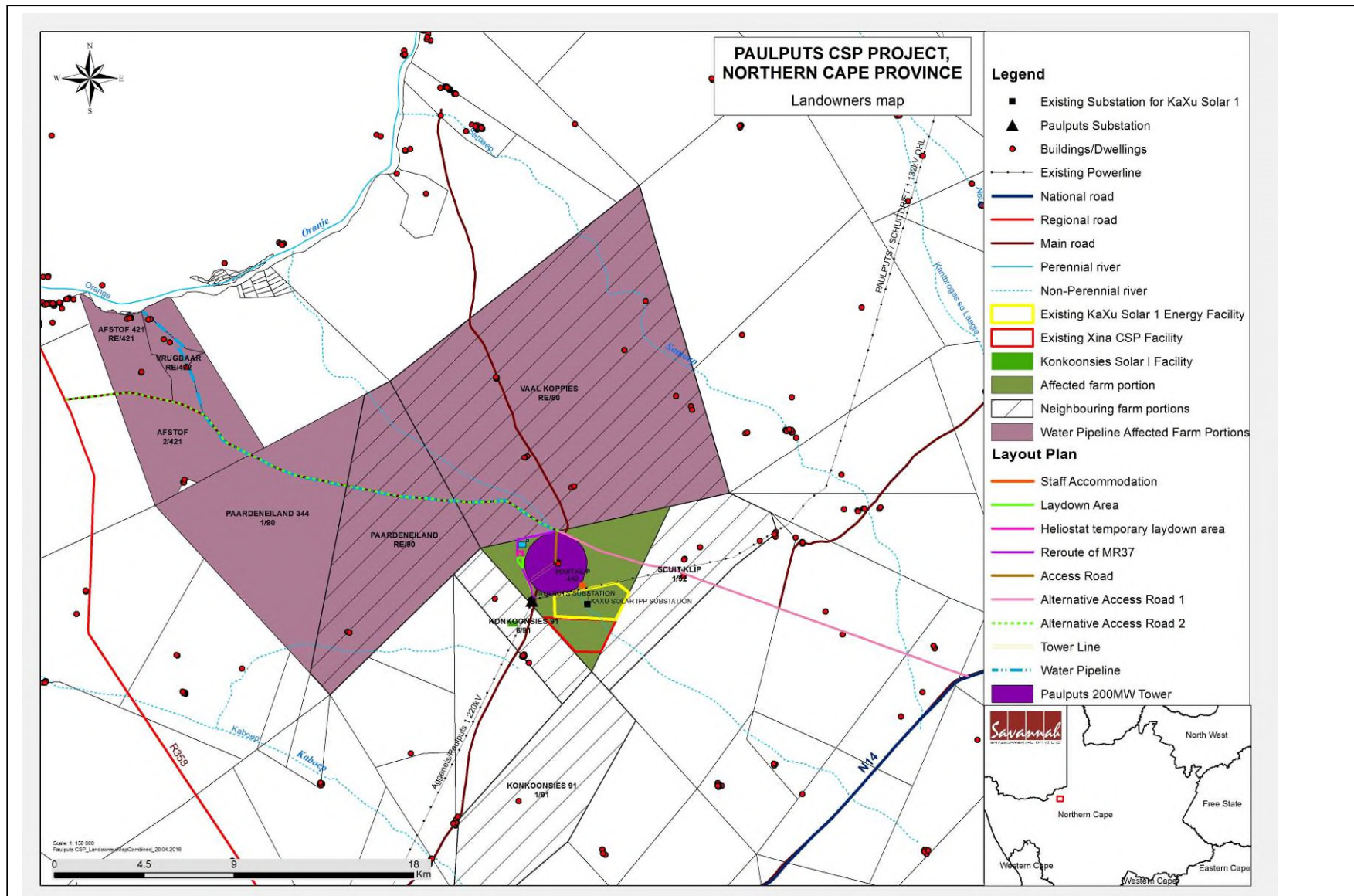


Figure 16: Paulputs CSP facility- landowner’s map

4.4. 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, 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 and grouped / sub grouped (as per Ilse Aucamp SIA methodology & Aucamp et al, 2011) in Figure 17 below. There are immediate, direct and indirectly affected stakeholders to the proposed development. Directly 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 dwellings and other sensitive properties such as schools, hospitals, places of worship and other community facilities.

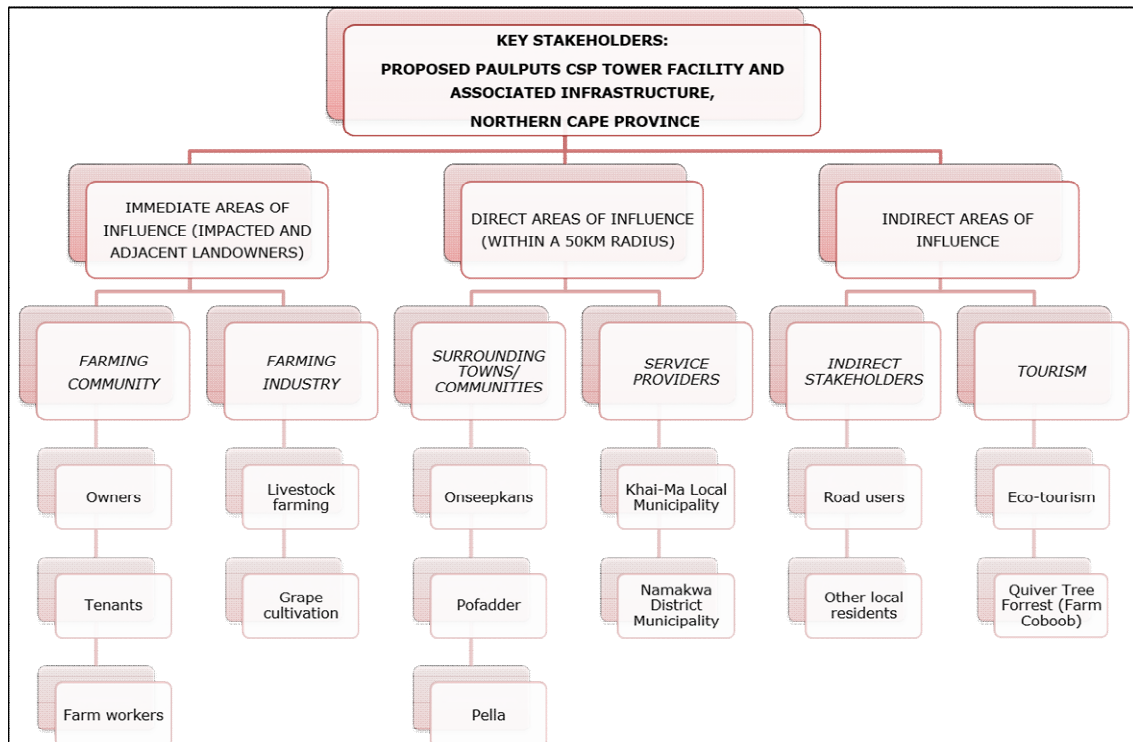


Figure 17: Key stakeholders associated with the proposed development

A description of each of the stakeholders groups in relation to the proposed CSP facility is discussed below:

- » *Farming community:* the farming community has 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 who may be impacted by the proposed CSP facility.
- » *Farming industry:* There are potentially vulnerable farming activities in the study area. There may be livestock agricultural activity and grape cultivation. Impacts that may arise include stock theft and poaching from an increase of in-migrants in the area (especially during the construction phase). Impacts may also include dust pollution on cultivated and grazing areas which may impact farming activities.

- » *Surrounding towns / affected communities:* Onseepkans, Pofadder and Pella are the closest towns to the proposed site. Residents in the towns may be positively and/or negatively affected by the proposed CSP facility (mainly temporarily). Employment opportunities will be available for the proposed CSP facility 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 CSP facility will be KMLM. The municipality will absorb a number of social impacts (positive and negative), impacts 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 CSP facility in terms of an increase in demand for goods and services.
- » *Indirect stakeholders:* There are a number of stakeholders that reside outside the direct area of influence but may be marginally affected by the project. These include road users that use the R358, MR357, N14 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.

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 Paulputs CSP facility and associated infrastructure.

5.1. CONSTRUCTION PHASE

Impacts associated with the construction phase of a project are usually of a short duration (approximately 27-30 months), 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. CSP technology is generally more labour intensive than PV technology; therefore CSP facilities generally employ more people during construction and operation phases. The nearest town to the proposed site is Pofadder (population of 3 287 people) and the nearest settlements are Onseepkans (population of 2 090 people) and Pella (population of 2 470 people). The population of the closest town / settlements are relatively small; however there is a large economically active population in search for employment opportunities in the impacted local municipality and district municipality. This is therefore a positive social impact. The proposed Paulputs CSP Facility is likely to create approximately 600 -1400 employment opportunities, however not all of these employment opportunities will be fulfilled for the entire duration of the constructions phase. On average there will be approximately 600 employment opportunities (however the size of the workforce will vary during the different phases of construction. For example during the second year of construction the number of employees will peak to 1400 people). Therefore not all of these employment opportunities will be fulfilled for the entire duration of the constructions phase, it will fluctuate between 600-1400 employees over a period of 27-30 months. Approximately 30% of the workforce will be sourced from the local area. The injection of income into the area in the form of wages will represent an opportunity for the local economy and businesses in the local area. Approximately 90% the labour force will be available to low-skilled/ semi-skilled workers (construction labourers, security staff), 10% will be available to skilled personnel (electricians, site managers, drivers, equipment operators etc.) and highly skilled individuals (engineers, project managers, site managers etc.).

The KMLM is characterised by low levels of unemployment and poverty and the unemployment rates at 22.10%. 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 nearest local towns / settlements, this being Pofadder, Onseepkans and Pella. However due to the small population sizes of these towns / settlements, the number of employees required and the limited skills available at local level; the required labour may need to be sourced from outside the immediate local area within the KMLM. Therefore 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 towns of Pofadder, Onseepkans and Pella first and if need be extend the search to KMLM. If employees for the construction phase are sourced from other municipalities or provinces this could result in cultural change and social conflicts. Adverse impacts could occur if a large in-migrant workforce, culturally different from the local communities within KMLM, are employed and brought in during the construction phase. While the local labour pool may be qualified for less-skilled jobs, often local hiring will not meet the demands in professional, technical and supervisory areas. A number of specialist contractors would most likely be brought in from other areas.

It should be encouraged that the majority of the labour be sourced from within the local pool and if the relevant skills are not available then these should be sought out from surrounding local municipalities or provincial basis. The proponent 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 to train individuals to perform required tasks specific to construction. 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 regional economies.

Another positive impact is the indirect employment opportunities that will be created. Key personal will be housed on site in temporary staff accommodation. Critical staff of approximately 40-60 people will reside on site for the duration of the construction phase. The remainder of the workforce will be staying in nearby towns (i.e. Pofadder) and will be transported to and from site with buses. These indirect opportunities will be experienced in the industries that will provide services to the construction team where more women can be involved and employed in the process through catering and laundry services that will be needed in the temporary staff accommodation etc. Other indirect employment opportunities that will be created during construction phase will relate to

increased demand for transportation, equipment rental, sanitation and waste removal etc.

Table 11: 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		
	Without enhancement	With enhancement
Extent	Local- Regional (3)	Local- Regional (3)
Duration	Short term (2)	Short term (2)
Magnitude	Low (4)	Moderate (6)
Probability	Highly probable(4)	Highly probable(4)
Significance	Medium (36)	Medium (44)
Status (positive or negative)	Positive	Positive
Reversibility	N/A	
Irreplaceable loss of resources	N/A	
Can impacts be enhanced	Yes	
Enhancement measures:		
<ul style="list-style-type: none"> » 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 nearest towns (Pofadder, Onseepkans and Pella) or within the KMLM). » 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 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. 		
Residual impacts		
<ul style="list-style-type: none"> » Improved pool of skills and experience in the local area. » Economic growth for small-scale entrepreneurs. » Temporarily employment during construction phase will result in jobs losses and struggles for construction workers to find new employment opportunities post construction. 		

The impact is therefore assessed to be positive; local and regional in extent; temporary in duration; moderate intensity and highly probable with enhancement measures implemented. The impact is assessed to be of medium significance to the decision making process.

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. The site is located approximately 40km north-east of Pofadder the main town in the KMLM. Off-site accommodation in the nearest towns (i.e. Pofadder) would also be required for contract workers and certain employees. On-site accommodation would also be required for critical staff, approximately 40-60 people. Staff accommodation will be set up where all the necessities will be provided to 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, catering, safety equipment, accommodation, transportation and other goods. Some accommodation will be made available on site, while the bulk of the workforce will be housed off-site. There would be expenditure on the staff accommodation as it would require temporary/portable housing, ablution and sewage treatment, and catering facilities. In addition, it is expected that labourers who move into the area will need to purchase various consumables and personal items while living and working in the area. The proponent has indicated that an estimate of 45% of the capital expenditure will be spent on local goods and services required for the development of the CSP facility and associated infrastructure.

The capital expenditure associated with the construction of the CSP facility and associated infrastructure (pipeline, power line etc.) is estimated to be in the region of R8-10 billion at current prices. About 45% of the capital expenditure will be spent locally on goods and services required for the development of the CSP 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 will be limited due to availability). There is likely to be a direct increase in industry and indirect increase in secondary businesses. The implementation of the enhancement measures below can enhance the opportunities for locally based companies.

The proponent or contractors should source services needed from the local area as far as possible. These necessities should be sourced from nearby towns and local service providers. Experience from other large renewable energy construction projects indicates that the potential opportunities for local economies, decrease in unemployment and increase in incomes will in turn stimulate further expenditure and sales within the local economies. The impacts

on production and value added experienced during construction will be temporary and will expire once the construction phase is complete.

Direct impacts would include the creation of employment opportunities and the associated income generated by the solar project that would have a positive impact on the local region. 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 is the creation of new demand within the local and regional economies. With increased income comes additional income for expenditure on goods and services supplied. Indirect impacts would occur as a result of the new economic development, and would include new jobs at businesses that support the expanded workforce or provide project materials, and associated income. The intention is to maximise local labour employment opportunities, this is likely to have a positive impact on local communities and have downstream impacts on household income, education and other social aspects.

Table 12: 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		
	Without enhancement	With enhancement
Extent	Local- regional (3)	Local- Regional (3)
Duration	Short term (2)	Short term (2)
Magnitude	Low (4)	Moderate (6)
Probability	Probable (3)	Highly probable (4)
Significance	Low (27)	Medium (33)
Status (positive or negative)	Positive	Positive
Reversibility	N/A	
Irreplaceable loss of resources	N/A	
Can impacts be enhanced	Yes	
Enhancement		
<ul style="list-style-type: none"> » It is recommended that a local procurement policy is adopted by the developer to maximise the benefit to the local economy. » Where feasible, the developer should create 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 good 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 therefore assessed to be positive; local and regional in extent; temporary in duration; moderate intensity; and probable if enhancement measures are implemented. The impact is assessed to be of medium significance to the decision-making process.

5.1.3. Population change

Population change refers to the size, structure, density as well as demographic profile of the local community. There will be approximately 600-1400 employment opportunities, however not all of these employment opportunities will be fulfilled from the local population. There will be temporary in-migration of labourers coming into the area, approximately 30% of the workforce will be sourced from the local area (predominantly low-skilled and semi-skilled labourers). The remainder of the workforce will be brought into the area and would be housed in Pofadder and/or Kakamas and transported to and from site each day via buses for the duration of the construction phase. Also, staff accommodation will be provided to accommodate critical staff on site (approximately 40-60 people), for approximately 27-30 months for the construction of the proposed CSP facility and associated infrastructure. Bringing in construction workers will change the population dynamics in the immediate local area. The nearest town to the proposed site is Pofadder, located approximately 40km away. The influx of construction workers will result in a population increase over the medium-term in the local area, placing pressure on local resources and pressure social networks. This will also put pressure on existing services and infrastructure in the local area. The critical on-site staff accommodation would result in solid waste that will be disposed of off-site at the Pofadder solid waste site. Liquid waste / waste water will be treated by a package plant on site. Electricity for the construction site and staff accommodation would need to be sourced either from Eskom or from an off grid solution. Construction water will be sourced from municipal supply (by truck or via pipeline). The construction of the proposed water pipeline from the Gariep River to the proposed site will occur during the construction phase. Additional consequences of an outside workforce are that they often remain in the area after completion of the project, thereby posing a negative long-term impact on local services and infrastructure. A population increase in the current rural area would have a negative impact in terms of service delivery, pressure on resources and social dynamics.

Table 13: Assessment of impacts from population change in the study area

Construction Phase
Nature: Population changes adding pressure on resources, service delivery, infrastructure maintenance and social dynamics during the construction phase as a result of an influx of

construction workers into the study area		
	Without mitigation	With mitigation
Extent	Local (2)	Local (2)
Duration	Short-term (2)	Short-term (2)
Magnitude	Moderate (6)	Low (4)
Probability	Probable (3)	Probable (3)
Significance	Medium (30)	Low (24)
Status (positive or negative)	Negative	Negative
Reversibility	Yes	
Irreplaceable loss of resources	No	
Can impacts be mitigated	Yes	
Mitigation		
<ul style="list-style-type: none"> » 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. 		
Residual impacts		
Possibility of outside workers remaining in the area after construction is completed and subsequent pressures on local infrastructure, resources and services		

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

5.1.4. Influx of jobseekers

The proposed development will create a range of employment possibilities and thus it will attract jobseekers. An influx of people looking for economic opportunities could result in pressure on economic and social infrastructure on the local population (rise in social conflicts and change in social dynamics). Influx of jobseekers into the area, could lead to a temporary increase in the level of crime, cause social disruption and put pressure on basic services. Influx of jobseekers could potentially create conflict between locals and outsiders mainly due to difference in racial, cultural and ethnic composition. The high unemployment rate and expectations of job creation is already a potential source of competition among locals and could be exacerbated through outsiders coming into the area resulting in conflict. A further negative impact that could result due to an inflow of jobseekers is that local unemployment levels could rise due to an oversupply of an available workforce, particularly with respect to low-skilled and semi-skilled workers.

The small town closest to the proposed site (Pofadder) and small settlements (Pella and Onseepkans) are seen as sensitive social receptors and jobseekers coming into the area could put pressure on social infrastructure; create social problems, tensions and conflicts. The impact associated with in-migration of jobseeker includes pressure on local services and infrastructure. This includes municipal services such as sanitation, electricity, water, waste management, health facilities, transportation and availability of housing. Informal settlements may develop near towns to accommodate jobseekers. It is very difficult to control the influx of people into an area, especially in a country where there's high levels of unemployment. An influx of jobseekers to an area often results in an increase in prostitution activities and temporary sexual relations with locals; this could result in the spreading of HIV/Aids and STDs and unwanted pregnancies. The proposed CSP facility disrupting the societies largely depends on the level of local employment achievable and clearly stipulating a local employment regime to limit outsiders coming into the area. Employment opportunities should be provided to communities from the surrounding local towns/ settlements first, Pofadder, Onseepkans and Pella, and if availability of labour is limited then extend search to KMLM. It is expected that communities within the KMLM population could fulfil the majority of the low and semi-skilled employment opportunities that emerge.

Table 14: Assessment of impacts from influx of jobseekers in the local area

Construction Phase		
Nature: Added pressure on economic and social infrastructure and increase in social conflicts during construction as a result of in-migration of jobseekers		
	Without mitigation	With mitigation
Extent	Local (2)	Local (2)
Duration	Short-term (2)	Short-term (2)
Magnitude	Low (4)	Minor (2)
Probability	Probable (3)	Probable (3)
Significance	Low (24)	Low (18)
Status (positive or negative)	Negative	Negative
Reversibility	Yes	
Irreplaceable loss of resources	No	
Can impacts be mitigated	Yes	
Mitigation		
<ul style="list-style-type: none"> » It is recommended that local employment policy is adopted to maximize the opportunities made available to the local labour force. » This '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; Pofadder, Onseepkans and Pella, and if this is not possible, then the broader focus areas such as KMLM should be considered for sourcing workers. » Tender documents should stipulate the use of local labour as far as possible » Prior to construction commencing representatives from the local community (e.g. ward councillor, surrounding landowners) should be informed of details of the construction 		

<p>schedule and the exact size of the workforce and various skills levels required.</p> <ul style="list-style-type: none"> » Recruitment of temporary workers at the gates of the development should not be allowed. A recruitment office should be established by the contractor in a nearby town to deal with jobseekers. » A security company is to be appointed and appropriate security procedures to be implemented. » Establish procedures for the control and removal of loiterers at the construction site. » 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.
<p>Residual impacts</p> <p>Possibility of outside workers remaining in the area after construction is completed and subsequent pressures on local infrastructure and services</p>

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

5.1.5. Nuisance impacts (noise, dust & traffic)

The construction phase will include the development of the CSP facility and associated infrastructure. The nuisance impacts associated with the pipeline have been assessed separately under Section 5.1.10 and the impacts of the proposed access road alternatives have been assessed in Section 5.1.9. The nuisance impacts assessed in this section primarily focus on the nuisance impacts generated from the construction activities on Farm Scuit-Klip 4/92 (construction of the CSP plant infrastructure and associated infrastructure).

Impacts associated with construction related activities include noise, dust and disruption to adjacent properties. Experience from other solar energy facilities (CSP and PV) projects indicate that site clearing does increase the risk of dust and noise being generated, which can in turn impact on adjacent properties. The potential impacts can be addressed by implementing effective mitigation measures. The primary sources of noise during construction would be from the construction equipment and other sources of noise include vehicle/truck traffic, blasting and ground vibration. 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 from trucks/ vehicles driving on internal roads (see Section 5.1.9 - assessment of the access road alternatives). This impact will negatively impact social sensitive receptors. Adjacent landowners have concerns of dust impacts as the grazing areas located closest to the CSP facility will be

affected as sheep will not eat dust covered grass. The impact of dust on farming areas can only be reduced through mitigation measures and not avoided. The noise, dust and the increased use of the local roads are expected to be negative, mainly impacting the nearby social receptors but are short term impacts.

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 and congestion. An increase of traffic from the rise in construction vehicles is a potential safety concern for road users and local communities in the area. The movement of construction related activities crossing over the N14 does have the potential to increase the risk for road users. Also with wear and tear on roads that are not maintained / repaired; the safety risk also increases. The N14 and the access road would mainly be affected and the use of unroadworthy vehicles and drivers disobeying traffic rules and the will contribute to this potentially negative impact. Noise, vibrations, dust and visual intrusion from heavy vehicle traffic during the construction phase could cause temporary disruptions in daily living, movement patterns and quality of life for local community. A detailed assessment of the impacts associated with the access road alternatives is included in Section 5.1.9 of the SIA report.

Table 15: Assessment of nuisance impacts (noise, dust and traffic)

Construction Phase		
Nature: Temporary increase in traffic disruptions and increase in noise and dust during the construction phase		
	Without mitigation	With mitigation
Extent	Local (2)	Local (2)
Duration	Short term (2)	Short term (2)
Magnitude	Moderate (6)	Low (4)
Probability	Probable (3)	Probable (3)
Significance	Medium (30)	Low (24)
Status (positive or negative)	Negative	Negative
Reversibility	Yes	
Irreplaceable loss of resources	No	
Can impacts be mitigated	Yes	
Mitigation		
<ul style="list-style-type: none"> » Dust suppression measures must be implemented on a regular basis along the internal access roads and on the proposed site. » Vehicles used to transport sand and building materials must be fitted with tarpaulins or covers when travelling on roads. » Speed limits must be imposed on internal roads to limit dust generation » Working hours to be appropriately arranged during the construction phase, and/or that any deviation is approved by the surrounding landowners. » All vehicles must be road worthy and drivers must be qualified, obey traffic rules, follow speed limits and made aware of the potential road 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 N14 and 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 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.

Residual impacts

Only damage to roads that are not fixed could affect road users

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.

5.1.6. Safety and security impacts

An increase in crime is often associated with construction activities. The perceived loss of security during the construction phase of the proposed project due to the influx of workers and/ or outsiders to the area (as in-migration of newcomers, construction workers or jobseekers are usually associated with an increase in crime), may have indirect effects such as increased safety and security issues for neighbouring properties and damage to property, increase risk of veld fire, stock theft, poaching, crime and so forth. Staff accommodation for approximately 40-60 people will be provided on site for the duration of the construction phase for critical staff members. The construction of the proposed CSP facility will require a labour force of approximately 600 -1400 workers, however not all of these labourers will be working for the entire duration of the constructions phase. On average there will be approximately 600 labourers on site (however the size of the workforce will vary during the different phases of construction. For example during the second year of construction the number of employees will peak to 1400 people). The influx of labour over this period could potentially result in increased safety security risks. There will be temporary in-migration of labourers coming into the area, approximately 30% of the workforce will be sourced from the local area (predominantly low-skilled and semi-skilled labourers). The remainder of the workforce will be brought into the area and would be housed in Pofadder and or Kakamas and transported to and from site each day via buses for the duration of the construction phase. It will be mandatory on the project developer to foster and maintain good relationships

with neighbouring land owners and institute adequate grievance control mechanisms.

Apart from construction crew that poses a potential increased risk there may also be an influx of people looking for economic opportunities. Safety and security impacts are a reality in South Africa which needs to be addressed through appropriate security measures. Majority of the adjacent farm owners utilise their farms for sheep farming, there are also grape cultivation activities on nearby farms closer to the Gariep River. During the stakeholder consultation process adjacent landowners mentioned the concern of livestock theft increasing in the area. Adjacent farm owners are thus concerned that criminal activity would increase during the construction phase which poses a potential risk to surrounding farming operations. It is therefore recommended that the appointed EPC contractor takes these points into consideration and it is important that a security company is appointed and appropriate security procedures and measures implemented. The appointed EPC contractor should take these issues into consideration within the stakeholder engagement and management plan.

Table 16: 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		
	Without mitigation	With mitigation
Extent	Local (2)	Local (2)
Duration	Short term (2)	Short term (2)
Magnitude	Low (4)	Minor (2)
Probability	Improbable (2)	Improbable (2)
Significance	Low (16)	Low (12)
Status (positive or negative)	Negative	Negative
Reversibility	Yes	
Irreplaceable loss of resources	No	
Can impacts be mitigated	Yes	
Mitigation		
<ul style="list-style-type: none"> » Working hours should be kept to daylight hours during the construction phase, and/or as any deviation that is approved by the surrounding landowners. » The perimeter of the construction site and staff accommodation should be appropriately secured to prevent any unauthorised access to the site; the fencing of the site should be maintained throughout the construction phase » Access in and out of the construction site should be strictly controlled by a security company » The appointed EPC contractor must appoint a security company and ensure that appropriate security procedures and measures are implemented » The appointed EPC contractor must 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 would cover land access protocols, fire management and road safety. This must be addressed in the construction EMPr as the best practice.
- » The contractor should have personal trained in first aid on site to deal with smaller incidents that require medical attention
- » 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.

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 to the decision making process.

5.1.7. Impacts associated with the critical staff accommodation on site

According to information provided by the proponent, on-site accommodation for the critical construction crew during the construction phase will be provided, which will provide all basic necessities for these staff members, such as sanitation, water, accommodation and catering. The staff accommodation on site will put pressure on existing services and infrastructure in the local area. Solid waste will be disposed of off-site at a solid waste site. Liquid waste / waste water will be treated by a package plant on site. Electricity for the critical staff accommodation on site would need to be sourced either from Eskom or from an off grid solution. Water would either need to be sourced from the Gariep River. .

If the staff accommodation is not managed efficiently this may lead to localised pollution, lack of sanitation, lack of adequate water, litter and lack of solid waste management. This could lead to unhygienic living conditions and could create health issues for workers and the surrounding communities. Other impacts associated with the on-site staff accommodation include degradation of the natural environment, risk of fires, increase risk of crime in the area, security and safety concerns and increased noise levels. Workers living in the staff accommodation on site will be separated from their families and/or place of residence for a significant period of time. This could lead to misbehaviour of construction workers; alcohol abuse, prostitution, temporary sexual relationships with locals that could lead to unwanted pregnancies and the spreading of HIV and other sexually transmitted diseases.

Table 17: Assessment of impacts from on-site staff accommodation

Construction Phase		
Nature: Temporary negative impacts associated with on-site staff accommodation during the construction phase		
	Without mitigation	With mitigation
Extent	Local (1)	Local (1)
Duration	Short term (2)	Short term (2)
Magnitude	Low (4)	Low (4)
Probability	Probable (3)	Improbable (2)
Significance	Low (21)	Low (14)
Status (positive or negative)	Negative	Negative
Reversibility	Yes	
Irreplaceable loss of resources	No	
Can impacts be mitigated	Yes	
Mitigation		
<ul style="list-style-type: none"> » Safety at and around the construction site and staff accommodation area should be ensured by fencing off the construction area to avoid unauthorised access and employing security personnel » The perimeter of the construction site and staff accommodation should be appropriately secured to prevent any unauthorised access to the site; the fencing of the site should be maintained throughout the construction phase. » Access in and out of the staff accommodation area should be strictly controlled by a security company. » Each person entering the project site should be required to present an access cards. » Family members and friends should not to be permitted access into the staff accommodation on site. » Security Company to be appointed and appropriate security procedures to be implemented. » A comprehensive employee induction programme must be implemented and must cover land access protocols, fire management and access controls. This must be addressed in the construction EMPr as the best practice. » Rubble and other solid waste should be appropriately stored on site and disposed of appropriately on a regular basis. » Appropriate sanitation and waste facilities to be provided to eliminate possible pollution problems. These facilities should be cleaned and maintained on a regular basis. No discharge of effluent to the surrounding environment should be allowed. » A comprehensive employee induction programme should address issues such as HIV/AIDS and sexually transmitted diseases as well as alcohol and substance abuse. The induction should also address a code of conduct for employees that would align with community values. » Appoint a Health and Safety Officer. Contact details of this person should be made available to the construction workers and local community and procedures to lodge complaints set out. » 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.
Residual impacts None anticipated

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

5.1.8. Impacts on the sense of place

Intrusion impacts such as aesthetic pollution (building material, construction vehicles), noise and light pollution and impacts on the present rural nature of the area (grazing of livestock, sparsely populated farmsteads) will impact the 'sense of place' for the local community. The construction related activities will negatively change the local 'areas sense' of place. However the impact is assessed to be low due to the already constructed solar energy facilities on the impacted farm (Farm Scuit-Klip 4/92- Kaxu Solar 1 Energy Facility) and adjacent farm (Farm Konkoonsies 6/91- Konkoonsies PV facility).

Table 18: Assessment of impacts on the sense of place

Construction Phase		
Nature: Intrusion impacts from construction activities will have an impact on the area's 'sense of place'		
	Without mitigation	With mitigation
Extent	Local (1)	Local (1)
Duration	Short-term (2)	Short-term (2)
Magnitude	Low (4)	Minor (2)
Probability	Probable (3)	Probable (3)
Significance	Low (21)	Low (15)
Status (positive or negative)	Negative	Negative
Reversibility	Yes	
Irreplaceable loss of resources	No	
Can impacts be mitigated	Yes	
Mitigation		
<ul style="list-style-type: none"> » Limit noise generating activities in close proximity to sensitive receptors to daylight working hours and avoid weekends and public holidays. » Where feasible, the movement of heavy vehicles associated with the construction phase should be timed to avoid weekends, public holidays and holiday periods. » Dust suppression measures must be implemented for heavy vehicles such as implementing appropriate dust suppressant measures on gravel roads on a regular basis and ensuring that vehicles used to transport sand and building materials are fitted with tarpaulins or covers. » All vehicles must be road-worthy and drivers must be qualified and made aware of the potential road safety issues and need for strict speed limits. 		

- » Implement mitigation measures stipulated in the Visual Impact Assessment (VIA).
- » 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.

Residual impacts

None anticipated

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

5.1.9. Assessment of impacts associated with the Access Road Options

Access road option 1:

The access road 1 route would connect to the farm Scuit-Klip 4/92 from the N14 national road via the existing surfaced R357 Onseepkans road that is currently utilised to access the farm and the CSP facilities on this farm. This road is to the east of the farm portion. The access point to the site off this road is 17km from the N14, with a formal entrance to the existing CSP facilities. This section of the R357, to the east of the Farm Scuit-Klip 4/92 is a tarred road (see Figure 16). This is the access road 1 option to the proposed CSP facility. This route is currently utilised by developers (Abengoa Solar Power South Africa (Pty) Ltd) to access their solar energy facilities located on the same impacted farm (Farm Scuit-Klip 4/92). There are currently two solar energy facilities on farm Scuit-Klip 4/92. The first solar energy facility located on the impacted farm is Kaxu Solar 1, which is an existing CSP trough facility that is currently in operation. The second solar energy facility on the same farm portion is Xina Solar One which is currently under construction and the operation phase of the project is due to commence in 2017. The access road that is utilised to access Farm Scuit-Klip 4/92 is the tarred R357 Onseepkans road, located to the east of the farm.

This access road option is deemed feasible and the preferred access road to the proposed site as the construction of the Paulputs CSP Tower facility will only take place after construction of the Xina Solar One facility is completed, and hence no conflict of construction vehicles will occur. It furthermore makes sense from an access management point of view that solar facilities located on the same farm share an access road to limit the number of access roads (provided that construction phases are at different times). This access road option 1 is also deemed to be highly feasible as construction vehicles travelling along the tarred section of the R357 will reduce the impacts of dust pollution on neighbouring

farms from the movement of vehicles and trucks on gravel roads. Many of the neighbouring landowners have raised the issue of dust pollution being a problem created from construction vehicles travelling on gravel roads as dust pollution has a negative impact on grazing and cultivated farmlands. The access road option 1 will reduce the impacts of dust pollution from the movement of construction vehicles for the construction and operation phase of the development as this access road option 1 is already a tarred route. The only minor impact will be the increased wear and tear on the road with the number of heavy vehicles increasing during the construction phase that may affect road users.

Access road option 2:

The access road 2 route would connect to the farm Scuit-Klip 4/92 from the N14 national road via the existing R358 and via the minor road R357. This road is to the west of the impacted farm portion, where the CSP facility and associated infrastructure is proposed. The access point to the site is 45km from N14 along the R358 gravel road and then an additional 30km along the R357 gravel road to the west of the proposed site (see Figure 16). The R358 and the R357 to the west of the proposed site are existing gravel roads. The construction vehicles would need to turn off the N14 onto the gravel R358 which is approximately 45km long and then travel an additional 30km on the R357 gravel road to reach the proposed site. The construction vehicles will be travelling a total of 70km on gravel roads to reach the site. Gravel roads are more prone to erosion and wear and tear. Construction vehicles and heavy trucks travelling on gravel roads for such a long distance will have a significant impact on dust pollution in the area. The surrounding area is primarily utilised for livestock grazing and grape cultivation closer to the Gariep River. The area is already dry and dust pollution will have an increased negative impact on the agricultural production. The movement of heavy trucks and construction vehicles along the access road 2 will generate dust pollution and increase the wear and tear on the existing gravel roads for the duration of the construction phase of 27-30 months). The dust pollution and increased use of the local gravel roads are expected to be negative impacts. The surrounding landowners have requested that dust pollution on vineyards and grazing areas should be prevented (dust pollution from the movement of construction vehicles on the gravel road).

The proposed water pipeline will also run along the servitude of this existing gravel road on the M357. This route would need to be utilised by construction vehicles for the construction of the water pipeline (see Section 5.1.10 for a separate assessment of the impacts associated with the water pipeline). However it is not necessary for this gravel road to be utilised for the construction of the CSP facility and power line and other associated infrastructure. The landowners along this western side of the R357 have indicated that dust pollution from the movement of construction vehicles will negatively impact vineyards as well as

grazing areas for livestock. The increase in the movement of vehicles and trucks along the gravel road will create a significant dust pollution issue. It is important that this impact is reduced as far as possible.

Table 19: Assessment of impacts associated with the access road options

Construction Phase				
Nature: Impacts from dust pollution, the impacts on farm infrastructure and the wear and tear on the access road				
	Access Road 1		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	Minor (2)	Minor (2)	High (8)	Moderate (6)
Probability	Probable (3)	Improbable (2)	Probable (3)	Probable (3)
Significance	Low (15)	Low (10)	Medium (33)	Low (27)
Status (positive or negative)	Negative			
Reversibility	Yes			
Irreplaceable loss of resources	No			
Can impacts be mitigated	Yes			
Mitigation				
<ul style="list-style-type: none"> » If the access road 2 is utilised, the developer would need to establish appropriate agreements with the surrounding landowners along the R357 gravel road to ensure that the dust pollution is prevented. Possible options for dust mitigation include either: <ul style="list-style-type: none"> ○ Consider upgrading the access road to tar surfaced road on the gravel section of the R357, ○ Consider applying dust suppressants - There are many types and brands of chemical dust suppressants which work by binding lighter particles. Biodegradable suppressants may be applied as a surface treatment to "seal" the top of an area, or may be applied using a mixing method that blends the product with the top few inches of the land surface material, or ○ Consider using water sprays to keep dust under control with reduced vehicle speeds - High vehicle speeds increase the amount of dust created from unpaved areas. Reducing the speed of a vehicle to 20kmph can reduce dust emissions by a large extent. Speed bumps are commonly used to ensure speed reduction. » The contractor must ensure that damage / wear and tear caused by construction related traffic to the access road is repaired before the completion of the construction phase. » Ensure all vehicles are road worthy, speed limits are followed, and drivers are 				

<p>qualified and are made aware of the potential dust issues.</p> <ul style="list-style-type: none"> » Ensure that vehicles used to transport sand and building materials are fitted with tarpaulins or covers. » 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.
<p>Residual impacts</p> <p>Only damage to roads that are not fixed could affect road users</p>

The impact of the Access Road option 1 is assessed to be negative; local in extent; temporary, short term in duration; minor intensity and improbable with mitigation measures.

The impact of the Alternative site 2 is assessed to be negative; local in extent; temporary short term in duration; moderate intensity and probable with mitigation measures.

From a social perspective it is recommended that Access Road 1 is selected as the preferred alternative. This is the preferred access road option taking into account the matter of protecting the vineyards and grazing areas (from dust pollution) located along the gravel route of access road 2. It furthermore makes sense from an access management point of view that neighbouring solar farms share an access point to limit the number of access routes (provided that construction phases are at different times).

5.1.10. Assessment of the water pipeline impacts

The water pipeline is planned to run along the R357 Onseepkans Road from the proposed CSP site to the Gariep River and will be approximately 30km in length. The pipeline will run parallel to the existing KaXu Solar One pipeline within the servitude of the existing R357 Onseepkans road until it reaches the abstraction point. The abstraction point on the Gariep River will be located on the remaining extent of the farm Vrugbaar 422 adjacent to the existing abstraction point which is utilised by commercial fruit farming activities. The landowner of Farm Vrugbaar RE/422 has requested that the pipeline traverses as close as possible to the property edge to keep the current land vacant for future farming purposes. No alternative pipeline routes have been identified by the applicant. There are seven impacted landowners that are likely to be affected by the construction of the proposed water pipeline. There are sensitive social receptors, sensitive farming areas, activities and infrastructure that may be negatively impacted by the construction of the proposed pipeline.

The construction activities of the water pipeline and movement of construction vehicles along the pipeline route will generate dust pollution which will negatively impact vineyards and livestock grazing areas. The impacted landowners along the water pipeline route have requested for dust pollution to be prevented. The movement of heavy trucks on the gravel road can create extensive dust along the pipeline route that passes through the agricultural areas. This has the potential to negatively impact on the current grape cultivation activities and grazing lands.

A few of the landowners along the pipeline route raised the following issues regarding dust pollution:

- » "Dust will be an issue during the construction of the pipeline as it settles on the grass. Grazing activities will be impacted." (Mr Willem Burger- Farm Paardeneiland RE/90.
- » "Dust caused by construction activities and an increase in traffic and abnormal loads is a serious concern. The surrounding land is used for grazing purposes and livestock do not eat grass covered in dust." (Mr Fanie van der Heever- Farm Scuit-Klip RE/422)
- » "I am concerned about the impact that the potential increase in dust would have on the vineyards during the construction of the pipeline. Dust pollution can have a negative impact on the grape production." (Lukas van Zyl- Farm Vrugbaar RE/422)

It is important that dust suppression measures are implemented to minimise the impacts of the construction of the water pipeline on farming areas. The dust impacts from the construction activities of the pipeline are expected to be negative but temporary for the duration of the construction of the water pipeline.

As a result of the construction of the water pipeline along the M357 servitude (gravel road) and Farm Vrugbaar RE/422 this may negatively impact farm fences and gates along the road as well as other infrastructure such as existing pipelines or buildings. Blasting may need to be undertaken for the construction of the new pipeline which increases the risk of damage to infrastructure in the area. It was also noted during the stakeholder consultation process that tremors caused by blasting that took place for the previous projects in the area have resulted in cracks occurring in the walls of infrastructure on farms. Infrastructure such as roads, fencing, gates, existing pipelines and buildings should either be maintained in the present condition or repaired if disturbed or damaged due to project activities. The developer and contractor should be responsible for managing this impact on private property.

Another issue that was raised by surrounding landowners was the increased risk of stock theft with the increase of construction workers coming into the area. The perceived loss of security during the construction phase of the water pipeline 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 farmers in the area, 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. All of the farms in the study area are utilised for livestock farming and/or grape cultivation farming, therefore the development coming into the rural area may expose these farming activities to potential stock theft and grapes being stolen. It is important that a security company is appointed and that appropriate security measures are implemented that are agreed upon with the impacted landowners in the area.

Table 20: Assessment of impacts associated with the construction of the water pipeline

Construction Phase		
Nature: Temporary increase in dust pollution, security risks and impacts on farm infrastructure associated with the construction of the water pipeline		
	Without mitigation	With mitigation
Extent	Local (2)	Local (2)
Duration	Short-term (2)	Short-term (2)
Magnitude	Moderate (6)	Low (4)
Probability	Probable (3)	Probable (3)
Significance	Medium (30)	Low (24)
Status (positive or negative)	Negative	Negative
Reversibility	Yes	
Irreplaceable loss of resources	No	
Can impacts be mitigated	Yes	
Mitigation		
<ul style="list-style-type: none"> » The EPC contractor must implement dust mitigation measures that include either: <ul style="list-style-type: none"> ○ Consider upgrading the R357 from a gravel road to tar surfaced road, ○ Consider applying dust suppressants - There are many types and brands of chemical dust suppressants which work by binding lighter particles. Biodegradable suppressants may be applied as a surface treatment to "seal" the top of an area, or may be applied using a mixing method that blends the product with the top few inches of the land surface material, or ○ Consider using water sprays to keep dust under control with reduced vehicle speeds - High vehicle speeds increase the amount of dust created from unpaved areas. Reducing the speed of a vehicle to 20kmph can reduce dust emissions by a large extent. Speed bumps are commonly used to ensure speed reduction. » Ensure all vehicles are road worthy, speed limits are followed, and drivers are qualified and are made aware of the potential dust issues. » Ensure that vehicles used to transport sand and building materials are fitted with tarpaulins or covers. » The developer and engineering, procurement and construction (EPC) contractors must 		

<p>ensure that the fencing / entrance gates or any other infrastructure along the water pipeline route is either maintained in the present condition, improved upon if necessary to ensure security, or repaired if disturbed or damaged due to project activities.</p> <ul style="list-style-type: none"> » A security company is to be appointed and appropriate security procedures are to be implemented. » 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.
<p>Residual impacts</p> <p>Only damages to infrastructure that aren't repaired could affect farmers</p>

The impact is assessed to be negative; local in extent; temporary in duration; moderate intensity; and improbable with appropriate mitigation measures implemented.

5.2. OPERATION PHASE

The potential positive and negative social impacts which could arise as a result of the operation (~20-25 years) 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 construction workers is not confirmed at this stage, it is estimated that approximately ~60-70 jobs will be generated for the lifetime of the project (approximately 20 years). Given that CSP facilities are relatively new in South Africa, a number of highly skilled personnel may need to be recruited from outside the local labour force. If the local labour force does not have sufficient skills by the time the project is operational, experts from outside the local area will be employed for a few years to transfer the necessary skills. Less skilled employees will also be required for the operation of the CSP facility, such as safety and security personal, cleaning crew and engineering assistants. It is estimated at approximately 30% of the labour force will be available to low-skilled and semi-skilled personnel and 70% will be available for skilled workers. Maintenance will be carried out throughout the lifetime of the CSP facility and associated infrastructure. Typical activities during maintenance include washing heliostats routinely and vegetation control and maintenance (for the CSP facility and associated infrastructure). Employment opportunities will be generated during the operation phase from the local community (approximately 30% will be locally sourced labour), although there will be a relatively small number of jobs created, these jobs will have a

positive impact on the local economy (in terms of revenue generated and the unemployment situation).

It should be encouraged that majority of the employees be sourced from within the local and regional municipal pool and if the relevant skills are not available then these should be sought out on a national basis. The proponent will need to demonstrate a commitment to local employment targets in order to maximise the opportunities and benefits for members of the local community. The focus for employment should be on local people, including women; this will have a maximum positive long-term impact (and if there is sufficient transfer of skills the positive impact can be extended). As the employment opportunities generated during the operation phase are more permanent and sustainable in the long run, as opposed to those generated during the construction phase (which are only temporary), sourcing of local labour during this phase will have long term beneficial impacts. The applicant has indicated that training will also be provided to employees. Establishing and operating the plant will result in improved skills amongst the staff as the facility will include training employees. On-the-job training is a key element of the staff development; many of the required skills during the operational phase will be taught to staff through day-to-day operations. Specific skills training for local employees 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.

Table 21: Employment opportunities and skills development

Operation Phase		
Nature: The creation of employment opportunities and skills development opportunities during the operation phase		
	Without enhancement	With enhancement
Extent	Local- regional (3)	Local- Regional (3)
Duration	Long term (4)	Long term (4)
Magnitude	Low (4)	Low (4)
Probability	Probable (3)	Highly probable (4)
Significance	Medium (33)	Medium (44)
Status (positive or negative)	Positive	Positive
Reversibility	N/A	
Irreplaceable loss of resources	N/A	
Can impacts be enhanced	Yes	
Enhancement		
» It is recommended that local employment policy is adopted to maximise the opportunities made available to the local community as far as possible.		
» 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; low intensity and probable. The impact is assessed to be of medium significance to the decision-making process.

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

According to the Department of Energy (DoE) renewable energy projects under the Renewable Energy Independent Power Producer Procurement programme (REIPPPP) 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 to 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 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 operational phase of 20 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. Key issues relevant to authorities are facing include external workforces being brought into the local areas, social responsibilities not being met properly and a lack of communication with the relevant local authorities in terms of the community trust and socio-economic development plans. It is important for the developers to engage and communicate with the local municipality so that the municipality can provide guidance on what's required in the local area for socio-economic development plans. It is also important that the correct representatives are appointed to be part of the community trust. 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 impacts to the local area however the issues raised need to be addressed with new developments coming into the area. Socio-economic spin-offs from the proposed development could contribute to better infrastructure provision and educational investment in the local area.

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

Operational Phase		
Nature: Benefits to the local area from SED/ ED programmes and community trust from REIPPPP social responsibilities		
	Without enhancement	With enhancement
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)	Positive	Positive
Reversibility	Yes	
Irreplaceable loss of resources	No	
Can impacts be enhanced	No	
Enhancement		
<ul style="list-style-type: none"> » 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 (KMLM) with social responsibility plans 		
Residual impacts		
Improvements in local communities through socio-economic development and enterprise development		

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

5.2.3. 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. The energy-intensive sectors of the economy emit carbon emissions that are higher than those of most developed economies. The

use of solar radiation for power generation is considered a non-consumptive use of a natural resource which produces zero greenhouse gas 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 indigenous and naturally available, its use will strengthen energy security as it will not be subjected to disruption by international crisis. Furthermore, recent policy highlights the desirability of 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 CSP 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 CSP facility is small; however, the 200MW facility will help contribute to offset the total carbon emissions associated with energy generation in South Africa.

Table 23: Assessment of the development of clean, renewable energy infrastructure

Operational Phase		
Nature: Development of clean, renewable energy infrastructure		
	Without enhancement	With enhancement
Extent	Local- Regional- National (4)	Local- Regional- National (4)
Duration	Long term (4)	Long term (4)
Magnitude	Minor (2)	Minor (2)
Probability	Highly probable (4)	Highly probable (4)
Significance	Medium (40)	Medium (40)
Status (positive or negative)	Positive	Positive
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 reducing		

global warming

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 to the decision-making process.

5.2.4. Visual impact and sense of place impacts

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 the demographics of the population that resides in the area and their perceptions regarding trade-offs. 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 and visual impact of the proposed CSP facility and associated infrastructure. The alteration of the sense of place in view of the local residents and road users will start during the construction phase; visual impacts will remain during the entire operation period. Sense of place impacts from the CSP facility and associated infrastructure is difficult to mitigate. The area is developed around sense of place, natural beauty and natural resources. Impacts associated with the tourism industry include visual interferences and negatively impacting the sense of place. The most significant tourism activities in the nearby area include eco-tourism and heritage sites. Attractions in the nearby area include:

- » The Quiver tree forest near Onseepkans, is one of the natural highlights in the area which is dominated by the stark desert landscape and unusual granite outcrops (DWS, 2016). The Quiver Tree (Kokerboom in Afrikaans) forest lies between Pofadder and Onseepkans and is the largest forest of its type in the Southern hemisphere. It is one of the natural highlights in the area which is dominated by the stark desert landscape and unusual granite outcrops (DWS, 2016). However, this quiver tree forest is not listed as a protected area. It does add to the areas rural sense of place and eco-tourism character. The Quiver Tree forest is located on Farm Copoob, approximately 20km west from the proposed Paulputs CSP site. The Quiver tree forest is visible from the R358 and MR357 roads. The proposed tower may impact the rural nature and eco-tourism associated with the Quiver Tree forest as the view from the R358 will be transformed.

There are not many options as to the mitigation of the visual impact of the proposed tower infrastructure, as no amount of vegetation screening or

landscaping would be able to hide the structure of the CSP dimensions (especially within the receiving environment). Therefore the receiving environment will be transformed for the lifespan of the project.

It is envisaged that farmers residing adjacent to the proposed site and commuters travelling on the R357 will be predominantly impacted visually and impacted in terms of the areas sense of place from the proposed CSP facility. There is some infrastructural character within the area. Prominent features surrounding the proposed site and associated infrastructure include:

- » Existing Kaxu Solar 1 Energy Facility (on Farm Scuit-Klip RE/422)
- » Existing Konkoonsies 1 PV facility (on Farm Konkoonsies 6/91)
- » Kaxu Solar IPP substation (on Farm Scuit-Klip RE/422)
- » Paulputs substation (on Farm Scuit-Klip RE/422)
- » Electricity transmission line traversing Farm Scuit-Klip 4/92 and Farm Scuit-Klip 1/92
- » Minor road R357 and MR73

These are infrastructural elements that currently have an impact on the sense of place and visual resources in the area.

Table 24: Visual impact and impacts on sense of place assessment

Operational Phase		
Nature: Visual impacts and sense of place impacts associated with the operation phase of the CSP facility and associated infrastructure		
	Without mitigation	With mitigation
Extent	Local (1)	Local (1)
Duration	Long term (4)	Long term (4)
Magnitude	Low (4)	Low (4)
Probability	Highly Probable (4)	Highly Probable (4)
Significance	Medium (36)	Medium (36)
Status (positive or negative)	Negative	Negative
Reversibility	Yes	
Irreplaceable loss of resources	No	
Can impacts be mitigated	Yes	
Mitigation		
» Implement mitigation measures and recommendations proposed by the visual specialist as part of the VIA.		
Residual impacts		
None anticipated if the visual impact will be removed after decommissioning, provided the CSP and associated infrastructure is removed and the site is rehabilitated to its original (current) status.		

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

significance to the decision-making process, however review of the VIA should be acknowledged and recommendations implemented.

5.3. DECOMMISSIONING PHASE

Typically, the major social impacts associated with the decommissioning phase are linked to the loss of jobs and associated income. This has implications for the households who are directly affected, the communities within which they live, and the relevant local authorities. However, in the case of the proposed facility the decommissioning phase is likely to involve the disassembly and replacement of the existing components with more modern technology. This is likely to take place in the 20 - 25 years post commissioning. The decommissioning phase is therefore likely to create additional, construction type jobs, as opposed to the jobs losses typically associated with decommissioning however for a limited period of time.

Given the relatively small number of people employed during the operation phase (~45), 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 25: 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		
<ul style="list-style-type: none"> » 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; & 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.

5.4. 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 safety and security impacts. The impact is therefore neutral.
- » There would also be an opportunity loss in terms of job creation, skills development and associated economic business opportunities for the local economy.

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

5.5. ASSESSMENT OF THE 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 other renewable energy facilities. Other renewable developments located within 30km of the proposed development include (also see Figure 18):

Table 26: The other projects/ developments within 30km from the Paulputs CSP facility

Project Name		Approximate distance from the Paulputs CSP facility site	Project Status
Konkoonsies Solar Facility	II	PV facility located <1km south-west of the development footprint	Preferred Bidder Round 4
Konkoonsies Solar Facility	I	PV facility located ~2km south-west of the development footprint	Constructed
Xina Solar One		CSP facility located on Portion 4 of the farm Scuitklip 92 located ~1km south-east of development footprint	Under construction
KaXu Solar One		CSP facility located on Portion 4 of the farm Scuitklip 92 located ~1.5km south-east of the development footprint	Constructed and operational

As can be seen from the above, all projects are Preferred Bidder projects in various stages of development. The potential for significant cumulative impacts is therefore likely to occur. This could result in positive permanent impacts on the economy, business development, employment and education in the area and the Province. It may also cause certain negative impacts such as influx of jobseekers, nuisance impacts and change in the area's sense of place. However the other facilities in the area will already be constructed by the time the current proposed project is constructed. Therefore, the proposed project would not add significantly to the cumulative impacts, it would mainly just extend the period over which the impacts are experienced.

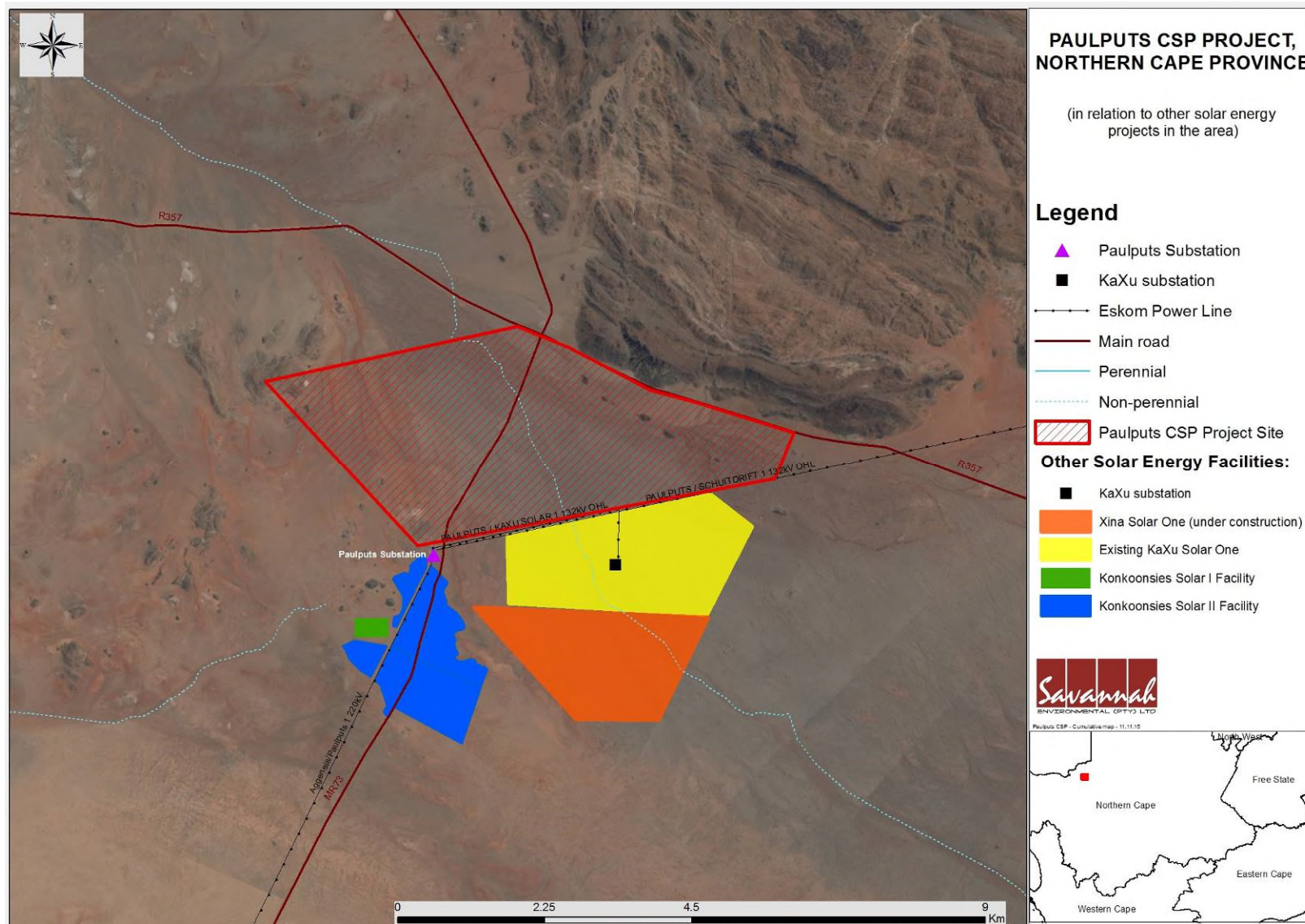


Figure 18: Location of the proposed Paulputs CSP project site in relation to other renewable energy projects

5.5.1. Cumulative impacts from employment, skills and business opportunities

The proposed CSP 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 Province, which in turn, will result in a positive social benefit. 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 Renewable Energy Independent Power Producer Procurement Programme (REIPPPP) 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.

Table 27: 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 has the potential to have a positive cumulative impact on the area in the form of employment opportunities, skills development, business opportunities and SED/ED. 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.

5.5.2. 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, businesses 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 project, 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 for 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 Vryburg (population of 21 182 people) and the smaller settlements nearby. With the influx of new individuals, secondary industries in the town may also begin to grow, more individuals will move to the area to fill these secondary positions. 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. If more than one solar energy facility is under construction at any one time, then the impacts from in-migration of people is likely to have more of a negative impact on the local area. However, this is unlikely to occur as all other facilities in the area are already operating, under development or soon to

be developed. All the other facilities will already be developed by the time this proposed project is under construction. Therefore, the proposed project would not add significantly to the cumulative impact, it would mainly just extend the period over which the impact is experienced.

Table 28: Cumulative impacts with large-scale in-migration of people

Construction & Operational Phase		
Nature: Negative impacts and change to the local economy with an in-migration of labourers, businesses 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	Short term (2)	Long term (4)
Magnitude	Minor (2)	Low (4)
Probability	Improbable (2)	Improbable (2)
Significance	Low (14)	Low (22)
Status (positive or negative)	Negative	Negative
Reversibility	Yes	
Irreplaceable loss of resources	No	
Can impacts be mitigated	Yes	
Confidence in findings	High	
Mitigation		
<ul style="list-style-type: none"> » 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; low intensity and probable. The overall impact is likely to have a low negative significance to the local area.

5.5.3. 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 projects indicate that site clearing does increase dust pollution and noise being generated, which in turn impacts the adjacent farming areas that are utilized for livestock farming and grape cultivation.

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. Generation of dust would come from construction activities and movement of construction vehicles on gravel roads. Short-term increases in the use of local roads would occur during the construction periods. 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 and congestion. An increase of traffic from the rise in construction vehicles is a potential safety concern for road users and local communities in the area. The combined nuisance impacts with several other solar developments in the area in relation to noise, dust and traffic impacts could significantly affect sensitive social receptors in the local area. However, this is unlikely to occur as all other facilities in the area are already operating, under development or soon to be developed. All the other facilities will already be developed by the time this proposed project is under construction. Therefore, the proposed project would not add significantly to this cumulative impact, it would mainly just extend the period over which the impact is experienced.

Table 29: 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)	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	Yes	
Confidence in findings	High	
Mitigation		
<ul style="list-style-type: none"> » 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 and are made aware of the potential noise and dust issues. 		

- » Working hours to be appropriately arranged during the construction phase, and/or as any deviation that is approved by the surrounding landowners.
- » All vehicles must be road worthy and drivers must be qualified, obey traffic rules, follow speed limits and made aware of the potential road 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 N14 and 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.

5.5.4. Cumulative impacts on the sense of place and landscape

The immediate landscape of the area has already been altered by the existing CSP parabolic trough projects and the Paulputs substation which are located adjacent to the proposed development. The proposed project will intensify the industrial character within a limited impact area. The potential impact of solar facilities on the landscape is an issue that does need to be taken into consideration, specifically given the growing number of solar energy facility applications in the Northern Cape Province. The Environmental Authorities in the province should therefore be aware of the potential cumulative impacts when evaluating applications.

Table 30: Cumulative visual impacts and impacts on sense of place assessment

Operational Phase		
Nature: Visual impacts and change in the sense of place impacts 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 (1)	Local (2)
Duration	Long term (4)	Long term (4)

Magnitude	Low (4)	Moderate (6)
Probability	Highly Probable (4)	Highly Probable (4)
Significance	Medium (36)	Medium (48)
Status (positive or negative)	Negative	Negative
Reversibility	Yes	
Irreplaceable loss of resources	No	
Can impacts be mitigated	No	
Confidence in findings	High	
Mitigation		
» Implement mitigation measures and recommendations proposed by the visual specialist as part of the VIA.		

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. 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 site or study area alternatives are proposed for this project. A summary of the comparative analysis of alternatives that were assessed are as follows:

- » Based on the analysis of the access road options that were assessed, it can be concluded that:
 - o The preferred access road option from a social perspective is the access road option 1. This is the preferred access road option to access the proposed Paulputs CSP facility taking into account the matter of protecting the vineyards and grazing areas from dust pollution impacts along the gravel route of access road 2.

7. 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 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 31 and 32 below; a summary of the cumulative social impacts is also provided in table 33.

Table 31: Summary of social impacts during construction phase

CONSTRUCTION PHASE				
Impact	Significance Without Mitigation/ enhancement		Significance With Mitigation/ enhancement	
Positive Impacts				
<i>Direct employment and skills development</i>	Medium (36)		Medium (44)	
<i>Economic multiplier effects</i>	Low (27)		Medium (33)	
Negative Impacts				
<i>Population change</i>	Medium (30)		Low (24)	
<i>Influx of jobseekers</i>	Low (24)		Low (18)	
<i>Nuisance impacts (noise, dust and traffic)</i>	Medium (30)		Low (24)	
<i>Safety and security risks</i>	Low (16)		Low (12)	
Impacts associated with the critical staff accommodation on site	Low (21)		Low (14)	
<i>Impacts on 'sense of place'</i>	Low (21)		Low (15)	
Assessment of impacts associated with the Access Road Options	<i>Access Road 1</i>	<i>Access Road 2</i>	<i>Access Road 1</i>	<i>Access Road 2</i>
	Low (15)	Medium (33)	Low (10)	Low (27)
Assessment of the water pipeline impacts	Medium (30)		Low (24)	

Table 32: Summary of social impacts during operation phase

OPERATION PHASE				
Impact	Significance Without Mitigation/ enhancement		Significance With Mitigation/ enhancement	
Positive Impacts				
<i>Direct employment and skills development</i>	Medium (33)		Medium (44)	
<i>Benefits associated with REIPPP socio-economic development plans and community trust</i>	Low (24)		Medium (30)	

<i>Development of clean, renewable energy infrastructure</i>	Medium (40)	Medium (40)
Negative Impacts		
<i>Visual and sense of place impacts</i>	Medium (36)	Medium (36)

Table 33: 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		
<i>Cumulative impact from employment, skills and business opportunities</i>	Low (27)	Medium (39)
Negative Cumulative Impacts		
<i>Cumulative impact with large-scale in-migration of people</i>	Low (14)	Low (22)
<i>Cumulative impact of nuisance impacts (noise, dust & traffic)</i>	Low (24)	Medium (30)
<i>Cumulative impacts on the sense of place and landscape</i>	Medium (36)	Medium (48)

Key findings

The area under investigation is sparsely populated. There are already a number of solar facilities developed within the area surrounding the site, and another one planned to commence with construction shortly. The area is already impacted in this regard.

There are some vulnerable communities in the project area that may be affected by the proposed CSP and associated infrastructure. Construction phases are traditionally associated with social impacts. Many of the social impacts are unavoidable and will take place; therefore the management of social impacts are more important. Negative and positive 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. Positive impacts can be enhanced by implementing appropriate enhancement measures and through careful planning. Based on the social impact assessment, the following general conclusions and findings can be made:

- » The preferred access road option from a social perspective is the access road option 1. This is the preferred access road option to access the proposed Paulputs CSP facility taking into account the matter of protecting the vineyards and grazing areas from dust pollution impacts along the gravel route of access road 2. It furthermore makes sense from an access management point of view that neighbouring solar farms share an access point to limit the number of access routes (provided that construction phases are at different times).
- » The potential negative social impacts associated with the construction phase are typical of construction related projects and not just focussed on the construction of CSP facility (these relate to influx of non-local workforce and jobseekers, intrusion and disturbance impacts (noise and dust, wear and tear on roads) and safety and security risks) and could be reduced with the implementation of the mitigation measures proposed. Although this will impact the local farming community, the impacts can be mitigated.
- » The development will introduce a significant number of employment opportunities during the construction phase (temporary employment) and a limited number of permanent employment opportunities during operation phase.
- » 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 project could assist the local economy in creating entrepreneurial growth and opportunities, especially if local business is involved in the provision of general material, goods and services during the construction and operational phases.
- » The proposed development also represents an investment in infrastructure for the generation of clean, renewable energy, which, given the challenges created by climate change, represents a positive social benefit for society as a whole.
- » The largest negative social impacts associated with the proposed development will result from the nuisance impacts and an influx of people into the local area.
- » The proposed project does not result in an unacceptable increase in cumulative impacts. However, when considering the proposed CSP facility, it is also important to consider the cumulative social impacts that may arise with other proposed solar energy facilities in the area.

Recommendations

The following recommendations are made on the basis of the Social Impact Assessment 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:

- » If feasible, a community liaison officer must be appointed 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 low-skilled 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, wherever possible, 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 operational 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 (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 access road 1 option. This is the preferred access road option to access the proposed Paulputs CSP facility taking into account the matter of protecting the vineyards and grazing areas from dust pollution impacts along the gravel route of access road option 2. It furthermore makes sense from an access management point of view that neighbouring solar farms share an access point to limit the number of access routes (provided that construction phases are at different times).

Overall Conclusion

The proposed Paulputs CSP facility and associated infrastructure is unlikely to result in permanent damaging social impacts. 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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APPENDIX A: SIA ENVIRONMENTAL MANAGEMENT PROGRAMME (EMPR)

Construction Phase

Direct employment and skills development

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

Project component/s	Construction of the proposed project 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	<ul style="list-style-type: none"> » 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
If possible, employ local contractors that are compliant with Broad Based Black Economic Empowerment (BBBEE) criteria	The Developer & EPC Contractor	Pre-construction & construction phase
It is recommended that local employment policy is adopted to maximise the opportunities made available to the local labour force (sourced from nearest towns (Pofadder, Onseepkans and Pella) or within the KMLM).	The Developer & EPC Contractor	Pre-construction & construction phase
The recruitment selection process should seek to promote gender equality and the employment of women wherever possible	EPC Contractor	Pre-construction & construction phase
Where feasible, training and skills development programmes are to be initiated prior to the commencement of the construction phase	The Developer	Pre-construction & construction phase
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 to record all complaints and queries relating to the project and the action taken to resolve the issue.	EPC Contractor	Pre-construction & construction phase

Performance Indicator	<ul style="list-style-type: none"> » 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	<ul style="list-style-type: none"> » 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	Construction of the proposed solar energy 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
It is recommended that a local procurement policy is to be adopted to maximise the benefits to the local economy	The Developer & EPC Contractor	Pre-construction & construction phase
Where feasible, 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 where applicable	The Developer & EPC Contractor	Pre-construction & construction phase
Where feasible, 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	<ul style="list-style-type: none"> » Local procurement policy is adopted » Local goods and services are purchased from local suppliers where feasible
Monitoring	<ul style="list-style-type: none"> » The developer must monitor indicators listed above to ensure that they have been met for the construction phase

Impacts from population change

OBJECTIVE: Reduce the pressure on resources, service delivery, infrastructure and social dynamics from a population change as a result of an increase of construction workers during the construction phase

Project component/s	Construction of the proposed solar energy facility and associated infrastructure
Potential Impact	Population changes resulting in additional pressure on resources service delivery, infrastructure maintenance and social dynamics during the construction phase as a result of an influx of construction workers into the study area
Activity/risk source	Influx of construction workers
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 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 Developer & EPC contractor	Pre-construction & construction phase

Performance Indicator	<ul style="list-style-type: none"> » EPC contractor should appoint a designated staff member to implement grievance procedures » A Public Complaints register must be maintained, by the Contractor and monitored by the ECO
Monitoring	<ul style="list-style-type: none"> » The developer and EPC contractor must monitor the indicators listed above to ensure that they have been met for the construction phase

Impacts from an influx of jobseekers

OBJECTIVE: Reduce the pressure on economic and social infrastructure and social conflicts from an influx of jobseekers during the construction phase

Project component/s	Construction of the proposed solar energy 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 jobseekers
Activity/risk source	Influx of 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 should be advertised for construction employment opportunities, especially for semi and low-skilled job categories.	The Developer & EPC contractor	Pre-construction & construction phase
This '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; Pofadder, Onseepkans and Pella, and if this is not possible, then the broader focus areas should be considered for sourcing workers such as KMLM.	EPC contractor	Pre-construction & construction phase
Tender document should stipulate the use of local labour as far as possible	EPC contractor	Pre-construction & construction phase
Prior to construction commencing representatives from the local community (e.g. ward councillor, surrounding landowners) should be informed of details of the construction schedule and exact size of the workforce.	The Developer & EPC contractor	Pre-construction & construction phase
Recruitment of temporary workers at the gates of the development should not be allowed. A recruitment office should be established by the contractor in a nearby town to deal with jobseekers.	EPC contractor	Pre-construction & construction phase
A security company is to be appointed and appropriate security procedures to be implemented.	EPC contractor	Pre-construction & construction phase
Establish procedures for the control and removal of loiters at the construction site.	EPC contractor	Pre-construction & construction phase
A method of communication should be implemented whereby procedures to lodge complaints are set out in order for the local community to express any	EPC contractor	Pre-construction phase & Construction

Mitigation: Action/control	Responsibility	Timeframe
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.		phase

Performance Indicator	<ul style="list-style-type: none"> » Ensure 'locals first' policy is adopted/advertised » Ensure no recruitment takes place on site » Control/removal of loiters
Monitoring	<ul style="list-style-type: none"> » The developer must keep a record of local recruitments and information on local labour to be shared with the ECO for reporting purposes

Impacts on daily living and movement patterns

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

Project component/s	Construction of the proposed solar energy 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
Dust suppression measures must be implemented a regular basis along the internal access roads 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
Speed limits must be imposed on internal roads to limit dust generation	EPC contractor	Construction phase
Ensure all vehicles are roadworthy, drivers are qualified and are made aware of the potential noise and dust issues.	EPC contractor	Construction phase
Working hours to be appropriately arranged during the	EPC contractor	Construction

Mitigation: Action/control	Responsibility	Timeframe
construction phase, and/or as any deviation that is approved by the surrounding landowners.		phase
All vehicles must be road worthy and drivers must be qualified, obey traffic rules, follow speed limits and made aware of the potential road safety issues.	EPC contractor	Construction phase
Heavy vehicles should 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 N14 and 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 any damage / wear and tear to the roads caused by construction related traffic/ project activities is repaired.	EPC contractor	Construction phase
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.	EPC contractor	Construction phase

Performance Indicator	<ul style="list-style-type: none"> » Dust suppression measures implemented » Vehicles are roadworthy, inspected regularly and speed limits are adhered to » Provision of traffic warning signs on R357 and N14
Monitoring	<ul style="list-style-type: none"> » 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 avoid or reduce the possibility of the increase in crime and safety and security issues during the construction phase

Project component/s	Construction of the proposed solar energy facility and associated infrastructure
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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 surrounding landowners.	EPC contractor	Construction phase
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 period.	EPC contractor	Construction phase
Access in and out of the site should 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 are not allowed, except in designated areas.	EPC contractor	Construction 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 person trained in first aid on site to deal with smaller incidents that require medical attention	EPC contractor	Construction phase
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.	EPC contractor	Construction phase

Performance Indicator	<ul style="list-style-type: none"> » The construction site is appropriately secured with a controlled access system » Ensure a security company is appointed and appropriate security
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	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

Impacts associated with the critical staff accommodation

OBJECTIVE: Reduce the negative impacts associated with the critical staff accommodation during the construction phase

Project component/s	Construction of the proposed solar energy facility and associated infrastructure
Potential Impact	Pressure on existing serviced and infrastructure, potential pollution impacts, unhygienic living conditions, risk of fires, risk of crime, and increased noise levels.
Activity/risk source	Influx of construction workers
Mitigation: Target/Objective	To avoid or minimise the potential impact on local infrastructure, services local communities, the workforce and their livelihoods

Mitigation: Action/control	Responsibility	Timeframe
Safety at and around the construction site and staff accommodation area should be ensured by fencing off the construction area to avoid unauthorised access and employing security personnel	EPC Contractor	Construction phase
The perimeter of the construction site and staff accommodation should be appropriately secured to prevent any unauthorised access to the site; the fencing of the site should be maintained throughout the construction phase	EPC Contractor	Construction phase
Access in and out of the staff accommodation area should be strictly controlled by a security company.	EPC Contractor	Construction phase
Each person entering the project site should be required to present an access cards.	EPC Contractor	Construction phase
Family members and friends should not to be permitted access into the staff accommodation on site.	EPC Contractor	Construction phase
Security Company to be appointed and appropriate security procedures to be implemented.	EPC Contractor	Construction phase
A comprehensive employee induction programme would cover land access protocols, fire management and access controls. This must be addressed in the construction EMP as the best practice	The Developer & EPC contractor	Pre-construction & construction phase
Rubble and other solid waste should be disposed of appropriately on a regular basis.	EPC Contractor	Construction phase
Appropriate sanitation and waste facilities to be	EPC Contractor	Construction phase

Mitigation: Action/control	Responsibility	Timeframe
provided to eliminate possible pollution problems. These facilities should be cleaned and maintained on a regular basis.		
A comprehensive employee induction programme should address issues such as HIV/ AIDS and sexually transmitted diseases as well as alcohol and substance abuse. The induction should also address a code of conduct for employees that would align with community values.	The Developer & EPC contractor	Pre-construction & construction phase
Appoint a Health and Safety Officer. Contact details of this person should be made available to the construction workers and local community and procedures to lodge complaints set out.	The Developer & EPC contractor	Pre-construction & construction phase
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.	EPC Contractor	Construction phase

Performance Indicator	<ul style="list-style-type: none"> » Employee induction programme, covering land access protocols, fire management and road safety » Security company to be appointed and appropriate security procedures to be implemented Security personnel on site on a permanent basis » Staff accommodation is managed efficiently
Monitoring	<ul style="list-style-type: none"> » The developer and EPC contractor must monitor the indicators listed above to ensure that they have been met for the construction phase

Impacts on 'sense of place'

OBJECTIVE: To avoid or minimise the potential intrusion impacts such as aesthetic pollution, noise and light pollution during the construction phase

Project component/s	Construction of the proposed solar energy facility and associated infrastructure
Potential Impact	Intrusion impacts could impact the areas 'sense of place'
Activity/risk	Construction activities

source	
Mitigation: Target/Objective	To avoid or minimise the potential intrusion impacts such as aesthetic pollution, noise, dust and light pollution during the construction phase

Mitigation: Action/control	Responsibility	Timeframe
Limit noise generating activities to normal daylight working hours and avoid weekends and public holidays	EPC Contractor	Construction phase
The movement of heavy vehicles associated with the construction phase should be timed to avoid weekends, public holidays and holiday periods where feasible	EPC Contractor	Construction phase
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	EPC Contractor	Construction phase
All vehicles must be road-worthy and drivers must be qualified and made aware of the potential road safety issues and need for strict speed limits	EPC Contractor	Construction phase
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.	EPC Contractor	Construction phase

Performance Indicator	<ul style="list-style-type: none"> » Limit noise generating activities » Dust suppression measures implemented for all heavy vehicles that require such measures during the construction phase » Enforcement of strict speeding limits » Community liaison officer available for community grievances and communication channel
Monitoring	<ul style="list-style-type: none"> » The EPC contractor must monitor the indicators to ensure that they have been met for the construction phase

Impacts associated with the access road

OBJECTIVE: To avoid or minimise the potential impacts of dust pollution, impacts on farm infrastructure and the wear and tear on the access road

Project component/s	Construction of the proposed solar energy facility and associated infrastructure
Potential Impact	Dust pollution, damage to farm infrastructure and wear and tear on roads
Activity/risk source	Construction activities
Mitigation: Target/Objective	To avoid or minimise the potential impacts such as dust pollution and damage to farm infrastructure and roads

Mitigation: Action/control	Responsibility	Timeframe
<p>» If the access road option 2 is utilised, the developer would need to establish appropriate agreements with the surrounding landowners along the R357 gravel road to ensure that the dust pollution is prevented. Possible options for dust mitigation include either:</p> <ul style="list-style-type: none"> ○ Consider upgrading the access road to tar surfaced road on the gravel section of the R357; ○ Consider applying dust suppressants - There are many types and brands of chemical dust suppressants which work by binding lighter particles. Biodegradable suppressants may be applied as a surface treatment to "seal" the top of an area, or may be applied using a mixing method that blends the product with the top few inches of the land surface material; or ○ Consider using water sprays to keep dust under control with reduced vehicle speeds - High vehicle speeds increase the amount of dust created from unpaved areas. Reducing the speed of a vehicle to 20kmph can reduce dust emissions by a large extent. Speed bumps are commonly used to ensure speed reduction. 	EPC Contractor	Construction phase
Ensure that damage / wear and tear caused by construction related traffic on the access road is repaired before the completion of the construction phase.	EPC Contractor	Construction phase
Ensure all vehicles are road worthy, speed limits are followed, and drivers are qualified and are made aware of the potential dust issues.	EPC Contractor	Construction phase
Ensure that vehicles used to transport sand and building materials are fitted with tarpaulins or covers.	EPC Contractor	Construction phase

<p>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.</p>	<p>EPC Contractor</p>	<p>Construction phase</p>
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<p>Performance Indicator</p>	<ul style="list-style-type: none"> » Dust suppression measures implemented » Vehicles used to transport sand and building materials are fitted with tarpaulins or covers » Appoint a designated staff member to implement grievance procedures and address issues and complaints
<p>Monitoring</p>	<ul style="list-style-type: none"> » The EPC contractor must monitor the indicators to ensure that they have been met for the construction phase

Impacts associated with the water pipeline

OBJECTIVE: To avoid or minimise the potential impacts of dust pollution, security risks and impacts on farm infrastructure

<p>Project component/s</p>	<p>Construction of the proposed solar energy facility and associated infrastructure</p>
<p>Potential Impact</p>	<p>Dust pollution, damage to farm infrastructure and security risks</p>
<p>Activity/risk source</p>	<p>Construction activities</p>
<p>Mitigation: Target/Objective</p>	<p>To avoid or minimise the potential impacts such as dust pollution and damage to farm infrastructure and security and safety risks</p>

Mitigation: Action/control	Responsibility	Timeframe
<ul style="list-style-type: none"> » The developer would need to establish appropriate agreements with the impacted landowners along the water pipeline route to ensure that the dust pollution is prevented. Possible options for dust mitigation include either: <ul style="list-style-type: none"> o Consider upgrading the R357 from a gravel road to tar surfaced road, o Consider applying dust suppressants - There are many types and brands of chemical dust suppressants which work by binding lighter particles. Biodegradable 	<p>EPC Contractor</p>	<p>Construction phase</p>

<p>suppressants may be applied as a surface treatment to "seal" the top of an area, or may be applied using a mixing method that blends the product with the top few inches of the land surface material, or</p> <ul style="list-style-type: none"> o Consider using water sprays to keep dust under control with reduced vehicle speeds - High vehicle speeds increase the amount of dust created from unpaved areas. Reducing the speed of a vehicle to 20 kmph can reduce dust emissions by a large extent. Speed bumps are commonly used to ensure speed reduction. 		
<p>Ensure all vehicles are road worthy, speed limits are followed, and drivers are qualified and are made aware of the potential dust issues.</p>	EPC Contractor	Construction phase
<p>Ensure that vehicles used to transport sand and building materials are fitted with tarpaulins or covers.</p>	EPC Contractor	Construction phase
<p>The developer and engineering, procurement and construction (EPC) contractor's must ensure that the fencing / entrance gates or any other infrastructure along the water pipeline route must either be maintained in the present condition, improved upon or repaired if disturbed or damaged due to project activities.</p>	The developer & EPC Contractor	Construction phase
<p>A security company is to be appointed and appropriate security procedures to be implemented.</p>	EPC Contractor	Construction phase
<p>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.</p>	EPC Contractor	Construction phase

Performance Indicator	<ul style="list-style-type: none"> » Dust suppression measures implemented » Vehicles used to transport sand and building materials are fitted with tarpaulins or covers » Appoint a designated staff member to implement grievance procedures and address issues and complaints
Monitoring	<ul style="list-style-type: none"> » 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 local employment and skills opportunities associated with the operation phase

Project component/s	Operation and maintenance of the proposed solar energy 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
It is recommended that local employment policy is adopted to maximise the opportunities made available to the local community.	The Developer & EPC contractor	Operation phase
The recruitment selection process should seek 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	<ul style="list-style-type: none"> » Percentage of workers that were employed from local communities » Number of people attending vocational training on an annual basis
Monitoring	<ul style="list-style-type: none"> » 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	Operation and maintenance of the proposed solar energy facility and associated infrastructure
Potential Impact	Loss of socio-economic opportunities for local area
Activity/risk	Operation of the CSP facility and associated infrastructure

source	
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	The Developer	Pre-Operation phase

Performance Indicator	<ul style="list-style-type: none"> » Community needs analysis » Engage and involvement of the local municipality
Monitoring	<ul style="list-style-type: none"> » The developer must keep a record of key stakeholders consultations that took place with the local municipality and key community members

**APPENDIX B: MINUTES OF MEETINGS DURING SIA STAKEHOLDER
CONSULTATION PROCESS**



**ENVIRONMENTAL IMPACT ASSESSMENT
PROCESS**

**PAULPUTS CONCENTRATED SOLAR POWER
(CSP) PROJECT**

NORTHERN CAPE PROVINCE

PUBLIC PARTICIPATION PROCESS

SCOPING PHASE

**LANDOWNERS FOCUS GROUP MEETING
W. BURGER PAARDENEILAND RE/90**

HELD ON

18 NOVEMBER 2015 AT 10:30

VENUE

POFADDER

Savannah Environmental (Pty) Ltd

Contact: Gabriele Wood

Address: PO Box 148
Sunninghill, 2157

Tel: 011 656 3237

Fax: 086 684 0547

E-mail: gabriele@savannahsa.com

Notes for the Record prepared by:

Savannah Environmental

Please address any comments to Gabriele Wood at the above address.

PAULPUTS CSP FACILITY, NORTHERN CAPE PROVINCE

Venue: Mr Burger's Residence, Pofadder
Date: 18 November 2015
Time: 10:30

WELCOME AND INTRODUCTION

Stephan Bezuidenhout of Savannah Environmental welcomed all in attendance. He requested the members of the meeting to introduce themselves (refer to attendance register below).

Stephan Bezuidenhout stated that Paulputs CSP (Pty) Ltd proposes the development of a 200MW Concentrated Solar Power (CSP) project and associated infrastructure on the farm Scuitklip 92 which is located approximately 40km north-east of Pofadder in the Northern Cape Province. He noted that project is referred to as the Paulputs CSP facility and that it would be located adjacent to the existing KaXu CSP facility. He explained that Savannah Environmental has been appointed as the independent environmental consultancy to undertake the Environmental Impact Assessment (EIA) for the project.

Stephan Bezuidenhout thanked the members of the meeting for the opportunity to brief them about the proposed Paulputs CSP facility. He noted that the purpose of the meeting was to introduce the project, present the findings of the draft Scoping Report and to facilitate comments on the report and project in general.

MEETING ATTENDEES

Name	Organisation
Mr Willem Burger	Farm Paardeneiland RE/90 – Adjacent Landowner
Stephan Bezuidenhout (SB)	Savannah Environmental – Environmental Control Officer
Gabriele Wood (GW)	Savannah Environmental – Public Participation and Social Consultant

APOLOGIES

None

BACKGROUND & TECHNICAL ASPECTS REGARDING THE PROPOSED PROJECT

Stephan Bezuidenhout of Savannah Environmental presented the background and introduction to the project and provided an overview of the potential environmental impacts of the project identified in the draft Scoping Report (refer to attached presentation).

DISCUSSION SESSION

Question / Comment	Response
WB: How far will the facility be from the existing road gravel road (MR73)?	SB: The gravel road (MR73) currently bisects the site. The road will need to be realigned so that it does not traverse through the facility.
WB: Where will the pipeline be routed?	SB: The pipeline will run along the servitude of the existing road until it reaches the farm Vrugbaar. The abstraction point on the Orange River will be located on the remaining extent of the farm Vrugbaar 422.
WB: Dust will be an issue during the construction of the pipeline as it settles on the grass. Grazing camps located closest to the facility will be affected as sheep will not eat dust covered grass.	SB: Comment noted. Dust suppression methods will be used to control dust pollution.
WB: Please ensure that the contractors do not damage to the boundary fences along the pipeline route.	SB: Contractors will be required to replace the fences if they are damaged as a result of construction.
WB: The possibility of stock theft will increase.	SB: Comment noted. Construction workers are supervised. Incidences of stock theft should be reported to the construction team.
WB: I have three camps that are located next to the proposed water pipeline. These camps do not have any water sources. Would it be possible to tap into the pipeline to get water for the three camps? I would require at least a 1000l/day.	SB: Your request is noted and will be forwarded to the applicant.

WAY FORWARD AND CLOSURE

In closing Stephan Bezhuidenhout noted that the draft Scoping Report is currently available for review. He stated that the comments received would be responded to and included in the final Scoping Report that would be submitted to the Department of Environmental Affairs. Stephan Bezhuidenhout thanked the Mr Burger for availing himself for the meeting and the inputs which were provided.



**ENVIRONMENTAL IMPACT ASSESSMENT
PROCESS**

**PAULPUTS CONCENTRATED SOLAR POWER
(CSP) PROJECT**

NORTHERN CAPE PROVINCE

PUBLIC PARTICIPATION PROCESS

SCOPING PHASE

**LANDOWNERS FOCUS GROUP MEETING
F. VAN DER HEEVER KONKOONSIES**

HELD ON

18 NOVEMBER 2015 AT 12:00

VENUE

KONKOONSIES FARM

Savannah Environmental (Pty) Ltd

Contact: Gabriele Wood

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Notes for the Record prepared by:

Savannah Environmental

Please address any comments to Gabriele Wood at the above address.

PAULPUTS CSP FACILITY, NORTHERN CAPE PROVINCE

Venue: Konkoonsies Farm
Date: 18 November 2015
Time: 12:00

WELCOME AND INTRODUCTION

Stephan Bezuidenhout of Savannah Environmental welcomed all in attendance. He requested the members of the meeting to introduce themselves (refer to attendance register below).

Stephan Bezuidenhout stated that Paulputs CSP (Pty) Ltd proposes the development of a 200MW Concentrated Solar Power (CSP) project and associated infrastructure on the farm Scuitklip 92 which is located approximately 40km north-east of Pofadder in the Northern Cape Province. He noted that project is referred to as the Paulputs CSP facility and that it would be located adjacent to the existing KaXu CSP facility. He explained that Savannah Environmental has been appointed as the independent environmental consultancy to undertake the Environmental Impact Assessment (EIA) for the project.

Stephan Bezuidenhout thanked the members of the meeting for the opportunity to brief them about the proposed Paulputs CSP facility. He noted that the purpose of the meeting was to introduce the project, present the findings of the draft Scoping Report and to facilitate comments on the report and project in general.

MEETING ATTENDEES

Name	Organisation
Mr Fanie van der Heever (FvdH)	Landowner – Konkoonsies Farm
Stephan Bezuidenhout (SB)	Savannah Environmental – Environmental Control Officer
Gabriele Wood (GW)	Savannah Environmental – Public Participation and Social Consultant

APOLOGIES

None

BACKGROUND & TECHNICAL ASPECTS REGARDING THE PROPOSED PROJECT

Stephan Bezuidenhout of Savannah Environmental presented the background and introduction to the project and provided an overview of the potential environmental impacts of the project identified in the draft Scoping Report (refer to attached presentation).

DISCUSSION SESSION

Question / Comment	Response
FvdH: Dust caused by construction activities and an increase in traffic and abnormal loads is a serious concern. The surrounding land is used for grazing purposes and my livestock do not eat grass covered in dust.	SB: Mitigation measures including such as dust suppression measures and the possible tarring of roads will be implemented to control dust.
FvdH: Tremors caused by blasting that took place for the previous project have resulted in cracks occurring in the walls of infrastructure on my farm. Will blasting take place for the CSP facility?	SB: Comment noted. Blasting is likely to occur during the construction phase.
FvdH: Who will be responsible for the upkeep and maintenance of perimeter fencing?	SB: The landowner will be responsible for upkeep and maintenance. The contractor will be responsible for repairs to the boundary fence if the fences are damaged as a result of construction.

WAY FORWARD AND CLOSURE

In closing Stephan Bezuidenhout noted that the draft Scoping Reports are currently available for review. He stated that the comments received would be responded to and included in the final Scoping Report that would be submitted to the Department of Environmental Affairs. Stephan Bezuidenhout thanked the members of the meeting for availing themselves for the meeting and the inputs which were provided.



**ENVIRONMENTAL IMPACT ASSESSMENT
PROCESS**

**PAULPUTS CONCENTRATED SOLAR POWER
(CSP) PROJECT**

NORTHERN CAPE PROVINCE

PUBLIC PARTICIPATION PROCESS

SCOPING PHASE

**LANDOWNERS FOCUS GROUP MEETING
WILLEM AND ELMEN JANNETJIS ASTOF 2/421
HELD ON
18 NOVEMBER 2015 AT 13:00**

VENUE

FARM ASTOF 2/421

Savannah Environmental (Pty) Ltd

Contact: Gabriele Wood

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Notes for the Record prepared by:

Savannah Environmental

Please address any comments to Gabriele Wood at the above address.

PAULPUTS CSP FACILITY, NORTHERN CAPE PROVINCE

Venue: Farm Astof 2/421

Date: 13:00

Time: 13:00

WELCOME AND INTRODUCTION

Stephan Bezhuidenhout of Savannah Environmental welcomed all in attendance. He requested the members of the meeting to introduce themselves (refer to attendance register below).

Stephan Bezhuidenhout stated that Paulputs CSP (Pty) Ltd proposes the development of a 200MW Concentrated Solar Power (CSP) project and associated infrastructure on the farm Scuitklip 92 which is located approximately 40km north-east of Pofadder in the Northern Cape Province. He noted that project is referred to as the Paulputs CSP facility and that it would be located adjacent to the existing KaXu CSP facility. He explained that Savannah Environmental has been appointed as the independent environmental consultancy to undertake the Environmental Impact Assessment (EIA) for the project.

Stephan Bezhuidenhout thanked the members of the meeting for the opportunity to brief them about the proposed Paulputs CSP facility. He noted that the purpose of the meeting was to introduce the project, present the findings of the draft Scoping Report and to facilitate comments on the report and project in general.

MEETING ATTENDEES

Name	Organisation
Willem Jannetjis (WJ)	Farm Astof 2/421 – Landowner
Elmien Jannetjis (EJ)	Farm Astof 2/421 – Landowner
Stephan Bezhuidenhout (SB)	Savannah Environmental – Environmental Control Officer
Gabriele Wood (GW)	Savannah Environmental – Public Participation and Social Consultant

APOLOGIES

None

BACKGROUND & TECHNICAL ASPECTS REGARDING THE PROPOSED PROJECT

Stephan Bezuidenhout of Savannah Environmental presented the background and introduction to the project and provided an overview of the potential environmental impacts of the project identified in the draft Scoping Report (refer to attached presentation).

DISCUSSION SESSION

Question / Comment	Response
WJ: We do not have any concerns regarding the project or the construction of the proposed pipeline.	SB: Comment noted, if you have any queries in future please contact me or Gabriele Wood of Savannah Environmental.
EJ: Would it be possible for the surrounding farmers to tap into the water pipeline? We applied for a water use license with the Department of Water and Sanitation for 4000l/day and we are waiting for a response.	SB: Your request is noted. The project developer will be informed of your request.

WAY FORWARD AND CLOSURE

In closing Stephan Bezuidenhout noted that the draft Scoping Reports are currently available for review. He stated that the comments received would be responded to and included in the final Scoping Report that would be submitted to the Department of Environmental Affairs. Stephan Bezuidenhout thanked the members of the meeting for availing themselves for the meeting and the inputs which were provided.



**ENVIRONMENTAL IMPACT ASSESSMENT
PROCESS**

**PAULPUTS CONCENTRATED SOLAR POWER
(CSP) PROJECT**

NORTHERN CAPE PROVINCE

PUBLIC PARTICIPATION PROCESS

SCOPING PHASE

LANDOWNERS FOCUS GROUP MEETING
NEIL VAN RENSBURG ASTOF RE/421
Held on
18 NOVEMBER 2015 AT 13:15

VENUE
FARM ASTOF RE/421

Savannah Environmental (Pty) Ltd

Contact: Gabriele Wood

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Notes for the Record prepared by:

Savannah Environmental

Please address any comments to Gabriele Wood at the above address.

PAULPUTS CSP FACILITY, NORTHERN CAPE PROVINCE

Venue: Farm Astof RE/421

Date: 18 November 2015

Time: 13:15

WELCOME AND INTRODUCTION

Stephan Bezhuidenhout of Savannah Environmental welcomed all in attendance. He requested the members of the meeting to introduce themselves (refer to attendance register below).

Stephan Bezhuidenhout stated that Paulputs CSP (Pty) Ltd proposes the development of a 200MW Concentrated Solar Power (CSP) project and associated infrastructure on the farm Scuitklip 92 which is located approximately 40km north-east of Pofadder in the Northern Cape Province. He noted that project is referred to as the Paulputs CSP facility and that it would be located adjacent to the existing KaXu CSP facility. He explained that Savannah Environmental has been appointed as the independent environmental consultancy to undertake the Environmental Impact Assessment (EIA) for the project.

Stephan Bezhuidenhout thanked the members of the meeting for the opportunity to brief them about the proposed Paulputs CSP facility. He noted that the purpose of the meeting was to introduce the project, present the findings of the draft Scoping Report and to facilitate comments on the report and project in general.

MEETING ATTENDEES

Name	Organisation
Niel van Rensburg (NvR)	Astof RE/421 - Landowner
Stephan Bezhuidenhout (SB)	Savannah Environmental – Environmental Control Officer
Gabriele Wood (GW)	Savannah Environmental – Public Participation and Social Consultant

APOLOGIES

None

BACKGROUND & TECHNICAL ASPECTS REGARDING THE PROPOSED PROJECT

Stephan Bezuidenhout of Savannah Environmental presented the background and introduction to the project and provided an overview of the potential environmental impacts of the project identified in the draft Scoping Report (refer to attached presentation).

DISCUSSION SESSION

Question / Comment	Response
NvR: There are geotechnical issues within the area. Hard rock (klipbanke) as large as 50m x 100m occurs within the vicinity. It will be very costly to lay the pipeline as a lot of blasting will have to be undertaken.	SB: Comment noted, this information will be forwarded to the EIA team and project developer.
NvR: How many pumps will be used to extract water from the river and what is the elevation difference between the river and the proposed site?	SB: The number of pumps to be used and the elevation difference between the river and the proposed site is not confirmed at this stage. This information will be provided in the EIA phase.

WAY FORWARD AND CLOSURE

In closing Stephan Bezuidenhout noted that the draft Scoping Reports are currently available for review. He stated that the comments received would be responded to and included in the final Scoping Report that would be submitted to the Department of Environmental Affairs. Stephan Bezuidenhout thanked the members of the meeting for availing themselves for the meeting and the inputs which were provided.



**ENVIRONMENTAL IMPACT ASSESSMENT
PROCESS**

**PAULPUTS CONCENTRATED SOLAR POWER
(CSP) PROJECT**

NORTHERN CAPE PROVINCE

PUBLIC PARTICIPATION PROCESS

SCOPING PHASE

**LANDOWNERS FOCUS GROUP MEETING
NORTHERN CAPE DEPARTMENT OF
ENVIRONMENT AND NATURE CONSERVATION
(DENC)**

**HELD ON
19 NOVEMBER 2015 at 08:30**

VENUE

**DENC OFFICES, CNR VOORTEKKER & MAGASYN
STREET, SPRINGBOK**

Savannah Environmental (Pty) Ltd

Contact: Gabriele Wood

Address: PO Box 148
Sunninghill, 2157

Tel: 011 656 3237

Fax: 086 684 0547

E-mail: gabriele@savannahsa.com

**Notes for the Record prepared by:
Savannah Environmental**

Please address any comments to Gabriele Wood at the above address.

PAULPUTS CSP FACILITY, NORTHERN CAPE PROVINCE

Venue: Vrugbaar Boerdery, Farm Vrugbaar RE/422

Date: 18 November 2015

Time: 14:00

WELCOME AND INTRODUCTION

Stephan Bezuidenhout of Savannah Environmental welcomed all in attendance. He requested the members of the meeting to introduce themselves (refer to attendance register below).

Stephan Bezuidenhout stated that Paulputs CSP (Pty) Ltd proposes the development of a 200MW Concentrated Solar Power (CSP) project and associated infrastructure on the farm Scuitklip 92 which is located approximately 40km north-east of Pofadder in the Northern Cape Province. He noted that project is referred to as the Paulputs CSP facility and that it would be located adjacent to the existing KaXu CSP facility. He explained that Savannah Environmental has been appointed as the independent environmental consultancy to undertake the Environmental Impact Assessment (EIA) for the project.

Stephan Bezuidenhout thanked the members of the meeting for the opportunity to brief them about the proposed Paulputs CSP facility. He noted that the purpose of the meeting was to introduce the project, present the findings of the draft Scoping Report and to facilitate comments on the report and project in general.

MEETING ATTENDEES

Name	Organisation
Lukas van Zyl (LvZ)	Vrugbaar Boerdery (Farm Vrugbaar RE/422) - Landowner
Stephan Bezuidenhout (SB)	Savannah Environmental – Environmental Control Officer
Gabriele Wood (GW)	Savannah Environmental – Public Participation and Social Consultant

APOLOGIES

None

BACKGROUND & TECHNICAL ASPECTS REGARDING THE PROPOSED PROJECT

Stephan Bezuidenhout of Savannah Environmental presented the background and introduction to the project and provided an overview of the potential environmental impacts of the project identified in the draft Scoping Report (refer to attached presentation).

DISCUSSION SESSION

Question / Comment	Response
LvZ: It is preferred that the pipeline traverse as close as possible to the property edge to keep the current land use vacant for future farming purposes.	SB: Comment noted, the EIA team and specialist who will undertake the assessment studies will be informed of this.
LvZ: I am concerned that my existing pipeline will be at risk during blasting which will be undertaken for the construction of the new pipeline.	SB: Your concern is noted. This will be brought to the attention of the project developer.
LvZ: I am concerned about the impact that the potential increase in dust would have on the vineyards during the construction of the pipeline.	SB: Dust suppression measures will be implemented in accordance with the Environmental Management Programme (EMPr).

WAY FORWARD AND CLOSURE

In closing Stephan Bezuidenhout noted that the draft Scoping Reports are currently available for review. He stated that the comments received would be responded to and included in the final Scoping Report that would be submitted to the Department of Environmental Affairs. Stephan Bezuidenhout thanked the members of the meeting for availing themselves for the meeting and the inputs which were provided.



**ENVIRONMENTAL IMPACT ASSESSMENT
PROCESS**

**PAULPUTS CONCENTRATED SOLAR POWER
(CSP) PROJECT**

NORTHERN CAPE PROVINCE

PUBLIC PARTICIPATION PROCESS

SCOPING PHASE

**LANDOWNERS FOCUS GROUP MEETING
NORTHERN CAPE DEPARTMENT OF
ENVIRONMENT AND NATURE CONSERVATION
(DENC)**

HELD ON

19 NOVEMBER 2015 at 08:30

VENUE

**DENC OFFICES, CNR VOORTEKKER & MAGASYN
STREET, SPRINGBOK**

Notes for the Record prepared by:

Savannah Environmental

Please address any comments to Gabriele Wood at the above address.

PAULPUTS CSP FACILITY, NORTHERN CAPE PROVINCE

Venue: DENC Offices, Cnr Voortrekker & Magasyn Street, Springbok
Date: 19 November 2015
Time: 08:30

WELCOME AND INTRODUCTION

Stephan Bezuidenhout of Savannah Environmental welcomed all in attendance. He requested the members of the meeting to introduce themselves (refer to attendance register below).

Stephan Bezuidenhout stated that Paulputs CSP (Pty) Ltd proposes the development of a 200MW Concentrated Solar Power (CSP) project and associated infrastructure on the farm Scuitklip 92 which is located approximately 40km north-east of Pofadder in the Northern Cape Province. He noted that project is referred to as the Paulputs CSP facility and that it would be located adjacent to the existing KaXu CSP facility. He explained that Savannah Environmental has been appointed as the independent environmental consultancy to undertake the Environmental Impact Assessment (EIA) for the project.

Stephan Bezuidenhout thanked the members of the meeting for the opportunity to brief them about the proposed Paulputs CSP facility. He noted that the purpose of the meeting was to introduce the project and to present the findings of the Scoping Report as well as to facilitate comments on the Scoping report and project in general.

MEETING ATTENDEES

Name	Organisation
Peter Cloete (PC)	Northern Cape Department of Environment and Nature Conservation – Research and Developments
Conrad Geldenhuys (CG)	Northern Cape Department of Environment and Nature Conservation – Research and Developments
Stephan Bezuidenhout (SB)	Savannah Environmental – Environmental Control Officer
Gabriele Wood (GW)	Savannah Environmental – Public Participation and Social Consultant

APOLOGIES

None

BACKGROUND & TECHNICAL ASPECTS REGARDING THE PROPOSED PROJECT

Stephan Bezuidenhout of Savannah Environmental presented the background and introduction to the project and provided an overview of the potential environmental impacts of the project identified in the Scoping Report (refer to attached presentation).

DISCUSSION SESSION

Question / Comment	Response
PC: Will a wet or dry-cooling system be used for this CSP facility?	SB: A dry-cooling system will be used for the proposed project.
CG: With reference to the sensitivity map, what criteria were used to identify the sensitive areas on the site?	SB: The methodology used by the ecologist, Adrian Hudson of Hudson Ecology, for the Ecological Scoping Study, included a literature review, review of previous work conducted for the property, a site investigation which was conducted from the 4 August 2015 – 14 August 2015. Twelve study sites within the study area were randomly selected to understand that character of the environment as well as flora and fauna species that may be impacted by the proposed activities. The ecologist based his assessment on the Precautionary Principle (SOMEST 2005) which assumes a higher conservation importance.
CG: The term "Natural Areas" on the sensitivity map needs to be clarified. How do the natural areas identified differ from the areas identified as "moderate ecological function" shown in pink. Does it imply that the pink areas are not natural areas? There needs to be a better description of "natural areas" and areas of "moderate ecological sensitivity".	GW: Comment noted. The Ecological Scoping Study provides a description of these terms and is included as Appendix E of the Scoping Report.
PC: What is the development footprint of the neighbouring CSP facilities?	SB: The existing KaXu Solar One facility is approximately 450ha in extent and the Xina Solar One project, currently under

Question / Comment	Response
	construction, is approximately 600ha in extent.
CG: Why is a new pipeline route being investigated? Why can't the developer use the existing pipeline that provides water to the other two projects?	SB: A separate pipeline and abstraction point is required for bidding purposes.
PC: Will the pipeline traverse along the river bed?	SB: The pipeline it is likely to be aligned along the foot of the hills located on the remaining extent of the farm Vrugbaar 422.
CG: In what season is the ecological specialist study scheduled to take place?	SB: The ecological study will take place in the wet season. The specialist plans to conduct the assessment in January 2016.
CG: The Northern Cape is currently experiencing drought conditions. It is advised that the specialist notes that drought conditions in their reporting.	GW: Comment noted, this will be communicated to the specialist.
GW: Are there any other stakeholders from your Department that we should register as an Interested and Affected Party (I&AP).	PC: Please register Onwabilwe Nduzmo the Impact Management Officer based in Springbok.
CG: Will cumulative impacts be assessed within the EIA?	GW: A cumulative impact assessment will be undertaken as per the EIA Regulations, 2014.
CG: When will public participation meetings take place?	GW: Focus group meetings with the landowners located adjacent to the proposed site and pipeline route were conducted on 18 November 2015. Meetings were also convened with key organs of state departments. A public meeting and follow-up focus group meetings will be convened in the EIA phase of the process.
CG: It is recommended that bat populations will have to be investigated and assessed, especially in the mountainous areas. It is understood that insects are attracted to the residual glow from the tower in the evening which may attract bats. The impact of this would need to be understood. Marnus Smit, a previous employee of the DENC, may have existing data on bat populations in the area which the specialist could use.	SB: Comment noted, the specialist will be requested to include the impact on bats within his EIA assessment.
PC: Have you consulted the Department of	GW: A pre-consultation meeting was held

Question / Comment	Response
Water and Sanitation (DWS)?	<p>with the Department of Water and Sanitation in Upington on 18 November 2015. The applicant will submit a water use license application (WULA). Acknowledgment of receipt of a WULA from DWS is required for bidding purposes.</p> <p>The DWS is consulted as a commenting authority during the EIA process and are required to submit comments on the EIA report.</p>
PC: Please can you send me the shapefiles of the proposed development.	GW: The shapefiles will be sent in due course.
CG: Will the project have evaporation ponds? Will monitoring of the evaporation ponds be undertaken during the operational phase?	SB: There will be six evaporation ponds on site. Monitoring is undertaken on the evaporation ponds for the neighbouring projects. It is likely that monitoring will take place for this project. This will be confirmed by the applicant.
PC: Will dust suppression methods be applied?	SB: Dust suppression measures will be applied.
CG: Does the development area fall within the SEA process? It seems that the government is trying to roll out the SEA process in specific areas to streamline renewable energy developments.	GW: The project is located within the Eskom "Critical Power" Corridor as identified through the Eskom SEA.
CG: Is there an alternative for the pipeline route?	GW: No alternative pipeline routes have been identified by the applicant at this stage.
CG: Will the heliostats be constructed on terraces around the tower or will they be constructed on a flat surface?	SB: This level of detail will be finalised once the project design phase. Vegetation clearing will most likely occur.
CG: How large are the heliostats in comparison to the troughs?	SB: This information will be confirmed by the project developer.
CG: Does the size of the heliostats have an impact on the generation capacity?	SB: This information will be confirmed by the project developer.

WAY FORWARD AND CLOSURE

In closing Stephan Bezuidenhout noted that the Scoping Report is currently available for review. He stated that the comments received would be responded

to and included in the final Scoping Report that would be submitted to the Department of Environmental Affairs. Stephan Bezuidenhout thanked the members of the meeting for availing themselves for the meeting and the inputs which were provided.

APPENDIX C: DECLARATION OF INDEPENDENCE



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, 2010

PROJECT TITLE

Proposed Paulputs CSP Tower Facility and associated infrastructure near Pofadder, 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):

25 April 2016

Date:

APPENDIX D: EXTERNAL REVIEWER'S REPORT AND CV

Dr. Neville Bews & Associates

Social Impact Assessors

Committed to building high trust environments

P. O. Box 145412
Bracken Gardens
Alberton
South Africa
1452

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Tel: +27 11 867-0462
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Mobile: +27 82 557-3489
Skype: neville.bews
Email: bewsco@netactive.co.za

28 April, 2016

Attention: Candice Hunter

Savannah Environmental Pty Ltd

5 Woodlands Drive Office Park
Cnr Woodlands Drive and Western Service Road
Woodmead


**Re: Peer review of the Social Impact Specialists Report for
the Proposed Paulputs CSP Tower and associated
infrastructure near Pofadder, Northern Cape Province**

Having reviewed the above report I find that in essence it provides a description of the project and the social environment within which the project will unfold. It also provides an indication of the social impacts that are likely to arise as a result of the proposed project and suggests appropriate optimisation and mitigation measure.

Attached is a schedule, in accordance with Appendix 6 of the National Environmental Management Act, 1998 (ACT NO. 107 OF 1998). Environmental Impact Assessment Regulations, 2014, indicating the level of compliance of the report in respect of this regulation.

DECLARATION OF INDEPENDENCE

I, Neville Bews, as authorised representative of Dr Neville Bews & Associates hereby confirm my independence as a specialist and declare that neither I nor Dr Neville Bews & Associates have any interest, be it business, financial, personal or other, in any proposed activity, application or appeal in respect of which Dr Neville Bews & Associates was appointed as social impact assessment specialists in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), other than fair remuneration for work performed. This declaration is specifically in connection with the review of the Social Impact Report for the Proposed Paulputs CSP Tower and associated Infrastructure, to be developed on Portion 4 of the Farm Scuit-klip 92, located approximately 40 km north-east of Pofadder in the Northern Cape Province.

Signed: 

Date: 28 April 2016

Appendix 6: Specialist reports	Check	Comment
A specialist report prepared in terms of these Regulations must contain-		
(a) details of-		
(i) the specialist who prepared the report; and	Section 1.3 Page 17	
(ii) the expertise of that specialist to compile a specialist report including a curriculum vitae;	Section 1.3 Page 17 & Appendix C & D	
(b) a declaration that the specialist is independent in a form as may be specified by the competent authority;	Appendices C & D	
(c) an indication of the scope of, and the purpose for which, the report was prepared;	Section 1.2 Page 16-17	Addressed under "Terms of Reference"
(d) the date and season of the site investigation and the relevance of the season to the outcome of the assessment;	Not applicable	
(e) a description of the methodology adopted in preparing the report or carrying out the specialised process;	Section 2 Page 23-27	
(f) the specific identified sensitivity of the site related to the activity and its associated structures and infrastructure;	Section 4. Pages 44-71	
(g) an identification of any areas to be avoided, including buffers;	None	
(h) a map superimposing the activity including the associated structures and infrastructure on the environmental sensitivities of the site including areas to be avoided, including buffers;	Figure 1 Page 22 Figure 10 Page 58 Figure 16 Page 69 Figure 18 Page 104	
(i) a description of any assumptions made and any uncertainties or gaps in knowledge;	Section 2.5 Page 27	
(j) a description of the findings and potential implications of such findings on the impact of the proposed activity, including identified alternatives on the environment;	Sections 5, 6, & 7 Pages 72-114	
(k) any mitigation measures for inclusion in the EMPr;	Sections 5 & 6 Pages 71-110.	
(l) any conditions for inclusion in the environmental authorisation;	None	
(m) any monitoring requirements for inclusion in the EMPr or environmental authorisation;	None	

(n) a reasoned opinion-		
(i) as to whether the proposed activity or portions thereof should be authorised; and	Section 7 Pages 109-114	
(ii) if the opinion is that the proposed activity or portions thereof should be authorised, any avoidance, management and mitigation measures that should be included in the EMP, and where applicable, the closure plan;	Sections 5, 6, & 7 Pages 71-114	See mitigation measures, key findings and recommendations.
(o) a description of any consultation process that was undertaken during the course of preparing the specialist report;	Sections 2.3 Page 24 & 4.4 Page 69-71	Appendix B.
(p) a summary and copies of any comments received during any consultation process and where applicable all responses thereto; and	Appendix B	
(q) any other information requested by the competent authority.	None	

EXTERNAL REVIEWER'S CV:

**NEVILLE BEWS
CURRICULUM VITAE**

Details and Experience of Independent Consultant

Qualifications:

University of South Africa: B.A. (Honours) – 1984

Henley Management College, United Kingdom: The Henley Post-Graduate Certificate in Management – 1997

Rand Afrikaans University: M.A. (cum laude) – 1999

Rand Afrikaans University: D. Litt. et Phil. – 2000

Projects:

The SIA for the Gautrain Rapid Rail Link; The impact assessment for the Australian – South African sports development programme; SIA for Kumba Resources, Sishen South Project; Evaluation of a Centre for Violence Against Women for The United Nations Office on Drugs and Crime; SIAs for the following Exxaro Resources Ltd.'s mines, Leeuwan Coal Mine Delmas, Glen Douglas Dolomite Mine Henley-on-Klip, Grootegeluk Open Cast Coal Mine Lephalale; SIA for the South African National Road Agency Limited (SANRAL) on Gauteng Freeway Improvement Project (GFIP); SIA for SANRAL on the N2 Wild Coast Toll Highway; Research into research outputs of the University for the University of Johannesburg; SIA for Waterfall Wedge housing and business development in Midrand Gauteng; SIA for the Environmental Management Plan for Sedibeng District Municipality; Social and Labour Plan for the Belfast Project on behalf of Exxaro Resources Ltd; SIA for the Transnet New Multi-Product Pipeline (Commercial Farmers) on behalf of Golder Associates Africa (Pty) Ltd; SIA for the Proposed Vale Moatize Power Plant Project in Mozambique on behalf of Golder Associates Africa (Pty) Ltd; SIA for Kumba Resources Ltd.'s proposed Dingleton Resettlement Project at Sishen Iron Ore Mine on behalf of Water for Africa (Pty) Ltd; SIA for Gold Fields West Wits Project for EcoPartners; SIA for the Belfast Project for Exxaro Resources Ltd; SIA for Eskom Holdings Ltd.'s Proposed Ubertas 88/11kV Substation on behalf of KV3 Engineers (Pty) Ltd; SIA for the Mokolo and Crocodile River (West) Water Augmentation Project (MCWAP) for the Department of Water Affairs on behalf of Nemaï Consulting and the Trans Caledonian Water Authority; Assisted Octagon Consulting with the SIA for Eskom's Nuclear 1 Power Plant on behalf of Arcus GIBB Engineering & Science. SIA for the 150MW Photovoltaic Power Plant and Associated Infrastructure for Italgest Energy (Pty) Ltd, on behalf of Kalahari Survey Solutions cc. SIA for Eskom Holdings Limited, Transmission Division's Neptune-Poseidon 400kV Power Line on behalf of Nemaï Consulting. Ncwabeni Off-Channel Storage Dam for security of water supply in Umzumbe, KwaZulu-Natal. Social Impact assessment for Eskom Holdings

Limited, Transmission Division, Forskor-Merensky 275kV±130km Powerline and Associated Substation Works in Limpopo Province. Social impact assessment for the proposed infilling of the Model Yacht Pond at Blue Lagoon, Stiebel Place, Durban. ABC Prieska Solar Project; Proposed 75 MWp Photovoltaic Power Plant and its associated infrastructure on a portion of the remaining extent of ERF 1 Prieska, Northern Cape. Sekoko Wayland Iron Ore, Molemole Local Municipalities in Limpopo Province. Langpan Chrome Mine, Thabazimbi, Limpopo; Jozini Nodal Expansion Implementation Project, KwaZulu-Natal, on behalf of Nema Consulting; SIA for Glen Douglas Dolomite Burning Project, Midvaal Gauteng, on behalf of Afrimat Limited; SIA for Lyttelton Dolomite mine Dolomite Burning Project, Marble Hall Limpopo on behalf of Afrimat Limited. Tubatse Strengthening Phase 1 – Senakangwedi B Integration for Eskom Transmission on behalf of Nsovo Environmental Consulting; Department of Water and Sanitation, South Africa (2014). Environmental Impact Assessment for the Mzimvubu Water Project: Social Impact Assessment DWS Report No: P WMA 12/T30/00/5314/7.

Regularly lecture in the Department of Sociology at the University of Johannesburg and collaborated with Prof. Henk Becker of Utrecht University, the Netherlands, in a joint lecture to present the Social Impact Assessment Masters course via video link between the Netherlands and South Africa and regularly lecture on this course. Presented papers on Social Impact Assessments at both national and international seminars. Published on both a national and international level.

Affiliation:

The International Association for Impact Assessment Southern Africa.

Registered on the database for scientific peer review of iSimangaliso GEF project outputs.