

Solar Park Integration Project

Social Impact Assessment



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February 2013

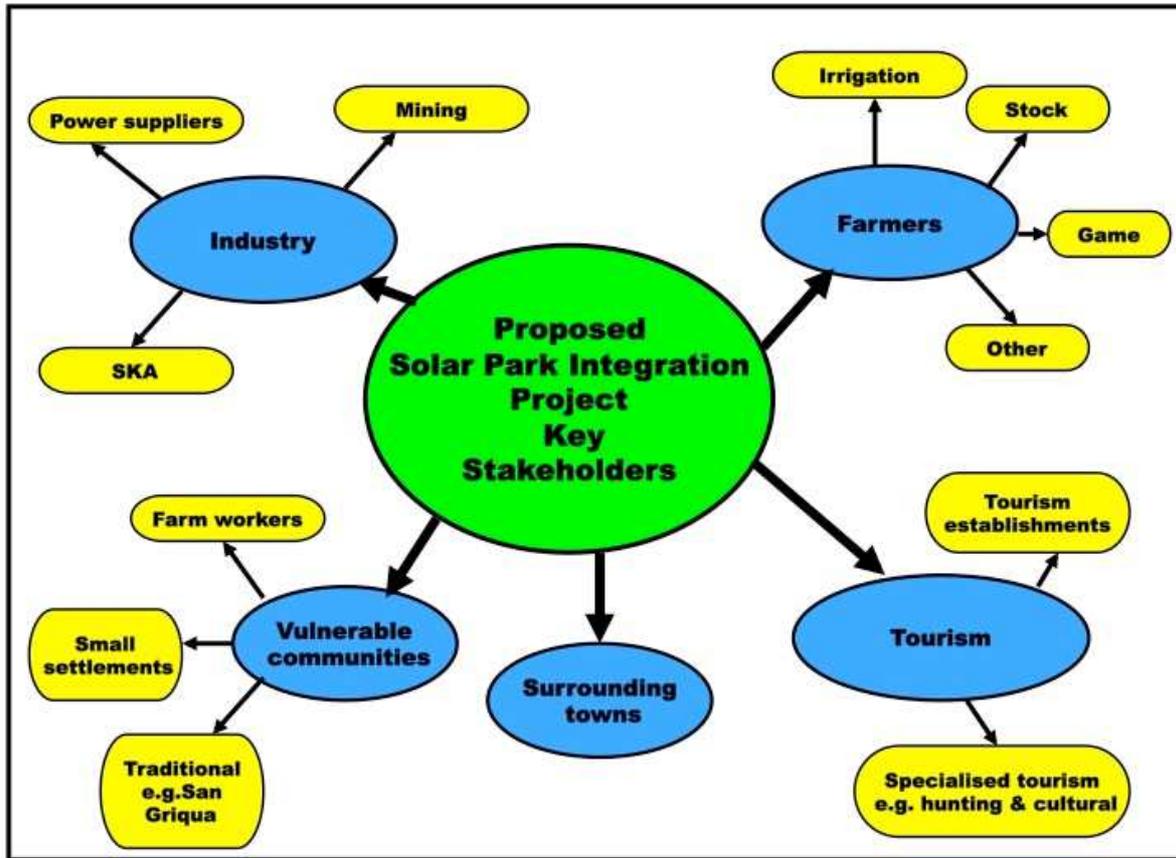


EXECUTIVE SUMMARY

The purpose of this document is to assess the potential social impacts associated with the proposed Solar Park Integration project and to recommend the most suitable alternatives from a social perspective. The proposed project is located in the Northern Cape Province. The different components of the project are located in the following areas:

- The CSP site is located just outside Upington in the //Khara Hais Local Municipality that is located within the Siyanda District Municipality.
- The Aries substation is located in the Kai !Garib Local Municipality in the Siyanda District Municipality. The transmission lines run through the //Khara Hais Local Municipality and the Kai !Garib Local Municipality, both located in the Siyanda District Municipality.
- The Nieuwehoop substation is located in the !Kheis Local Municipality in the Siyanda District Municipality. The transmission lines run through the //Khara Hais Local Municipality and the !Kheis Local Municipality.
- The Ferrum substation is located in the Gamagara Local Municipality that is in the John Taolo Gaetsewe. The transmission lines run through the //Khara Hais Local Municipality and the Tsantsanbane Local Municipality in the Siyanda DM, and the Gamagara LM in the John Taolo Gaetsewe District Municipality.

Based on the research conducted, potentially affected stakeholders were identified. The next figure provides a summary of the stakeholder groups:



A stakeholder analysis was conducted, and the potential impacts on each stakeholder group were investigated. The table below contains a summary of the potential impacts and the stakeholder groups that may be affected by these impacts:

Social Process	Change	Possible Social Impact	Affected stakeholder group
In-migration		Increased pressure on local services & infrastructure Increased incidence of STD's, HIV & AIDS Disruption to existing power relationships and decision-making structures Social nuisance e.g. prostitution, damage to property, discrepancy in income of workers	Vulnerable communities Surrounding towns Tourism Farmers
Resettlement		Range of social impacts – specific	Vulnerable communities



	<p>procedures to be followed, best to be avoided</p> <p>Uncertainty about future</p>	
Change in land use	<p>Decreased access to sources of livelihood resulting in poverty and/or drop in standard of living</p> <p>Loss of productive land leading to loss of profit leading to job losses</p> <p>Long term conflict about management of servitudes</p> <p>Environmental nuisance e.g. noise, dust</p> <p>Safety hazards</p> <p>Communication and arrangements surrounding access to properties & management of servitude – can be positive or negative</p> <p>Loss of sense of place</p>	<p>Farmers</p> <p>Vulnerable communities</p> <p>Tourism</p>
Deviant social behaviour	<p>Increase in crime and disorder</p> <p>Breakdown of traditional values</p>	<p>Vulnerable communities</p> <p>Farmers</p> <p>Industry</p> <p>Tourism</p> <p>Surrounding towns</p>
Employment opportunities	<p>Loss of workers to construction process because of higher pay</p> <p>Opportunity for local low skill employment</p> <p>Indirect employment opportunities</p>	<p>Vulnerable communities</p> <p>Farmers</p> <p>Industry</p> <p>Tourism</p> <p>Surrounding towns</p>
Legal processes	<p>Uncertainty resulting from EIA process</p>	<p>Industries</p>



	(selection of route) Fear and anxiety related to the land acquisition process Feelings related to management of servitude – Eskom’s social license to operate.	Farmers Vulnerable communities Tourism Surrounding towns
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Mitigation measures and monitoring plans were suggested for each potential impact. Many of the social impacts are unavoidable and will take place, therefore the management of social impacts are much more important than the identification. A number of social impacts will need to be managed in the long term – that is for the entire life of the project. These impacts are specific to the management of the servitude. The routes that are recommended are seen as the routes which will have a less significant social impact, bearing in mind that for each affected party the impacts that he/she experience is highly significant.

Detailed recommendations are made in the impact assessment section of this report. Many social impacts occur as a result of bad communication processes, and positive relationships can go a long way in dealing with issues. The way in which issues are approach are a crucial aspects in the success with which it can be dealt with. The following general recommendations are made:

Construction

- Appoint a social monitor to assist with management of social impacts and dealing with community issues;
- Consult with the landowner of each affected property and note special concerns;
- Install proper grievance and communication systems;
- Involve the community in the process as far as possible – encourage co-operative decision-making and management and partnerships with local entrepreneurs;
- Be accessible and sensitive to community needs.

Operation

- Appoint permanent community liaison officer to deal with communities and build relationships with affected communities
- Become member of community organisations such as community police forums, fire management areas etc.
- Develop and implement community relations programme



The preferred alternatives from a social perspective are:

- From CSP to Aries – Aries_Alternative 1B
- From CSP to Nieuwehoop – Nieuwehoop_Alternative 3
- From CSP to Ferrum- Ferrum_Alternative 3A (3B also acceptable)
- Substations – no preference

The need for the proposed project is undeniable in the current economic conditions. It is therefore recommended that the project proceed. The mitigation measures should be adhered to.



Declaration of Independence

Ptersa Environmental Management Consultants declare that:

- All work undertaken relating to the proposed project were done as an independent consultant;
- They have the necessary required expertise to conduct social impact assessments, including the required knowledge and understanding of any guidelines or policies that are relevant to the proposed activity;
- They have undertaken all the work and associated studies in an objective manner, even if the findings of these studies were not favourable to the project proponent;
- They have no vested financial interest in the proposed project or the outcome thereof, apart from remuneration for the work undertaken under the auspices of the abovementioned regulations;
- They have no vested interest, including any conflicts of interest, in either the proposed project or the studies conducted in respect of the proposed project, other than complying with the required regulations;
- They have disclosed any material factors that may have the potential to influence the competent authority's decision and/or objectivity in terms of any reports, plans or documents related to the proposed project as required by the regulations.



Record of Experience

This report was compiled by Ilse Aucamp and San-Marié Aucamp.

Ilse Aucamp has more than 12 years of experience in Social Impact Assessment. She holds a Masters degree in Environmental Management as well as a degree in Social Work and is frequently a guest lecturer in pre- as well as post-graduate programmes at various tertiary institutions. Her expertise includes social impact assessments, social management plans, social and labour plans, social auditing, training and public participation. She is the past international chairperson of the Social Impact Assessment section of the International Association of Impact Assessment (IAIA) and a past member of the National Executive Council of IAIA South Africa.

San-Marié Aucamp is a registered Research Psychologist with extensive experience in both the practical and theoretical aspects of social research. She has more than 10 years experience in social research and she occasionally presents guest lectures in social impact assessment. Her experience includes social impact assessments, social and labour plans, training, group facilitation and social research. She is a past council member of the Southern African Marketing Research Association (SAMRA).



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GLOSSARY OF TERMS

Sense of place: Defining oneself in terms of a given piece of land. It is the manner in which humans relate or feel about the environments in which they live.

Social impact: Something that is experienced or felt by humans. It can be positive or negative. Social impacts can be experienced in a physical or perceptual sense.

Social change process: A discreet, observable and describable process that changes the characteristics of a society, taking place regardless of the societal context (that is, independent of specific groups, religions etc.). These processes may, in certain circumstances and depending on the context, lead to the experience of social impacts.

Social Impact Assessment: The processes of analysing, monitoring and managing the intended and unintended social consequences, both positive and negative, of planned interventions (policies, programs, plans, projects) and any social change processes invoked by these interventions. Its primary purpose is to bring about a more sustainable and equitable biophysical and human environment.

Social license to operate: The acceptance and belief by society, and specifically local communities, in the value creation of activities.



LIST OF ABBREVIATIONS

CR	Community Relations
CS	Community Survey
CSP	Concentrated Solar Power
DM	District Municipality
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
ESOMAR	European Society for Opinion and Marketing Research
GDP	Gross Domestic Product
GGP	Gross Geographical Product
HDSA	Historically Disadvantaged South African
IDP	Integrated Development Plan
IFC	International Finance Corporation
IPP	Independent Power Producer
LM	Local Municipality
MRDPA	Mineral and Petroleum Resources Development Act, No 28 of 2002
NEMA	National Environmental Management Act, No 107 of 1998
NWA	National Water Act, No 36 of 1998
SAMRA	Southern African Marketing Research Association
SIA	Social Impact Assessment
UNEP	United Nations Environmental Programme



1 Introduction

The purpose of this report is to provide baseline information regarding the social environment affected by the proposed development, to identify possible social risks/fatal flaws and social impacts that may come about as a result of the proposed development and to suggest ways in which these impacts can be mitigated. This will assist decision-makers on the project in making sound decisions by providing information on the potential or actual consequences of their actions. The process entailed the following:

- A baseline socio-economic description of the affected environment;
- Identification of potential social change processes that may occur as a result of the project;
- Identification and assessment of potential social impacts; and
- Identification of mitigation measures.

Disregarding social impacts can alter the cost-benefit equation of development and in some cases even undermine the overall viability of a project. A proper social impact assessment can have many benefits for a proposed development (UNEP, 2002) such as:

- Reduced impacts on communities or individuals,
- Enhanced benefits to those affected,
- Avoiding delays and obstruction – helps to gain development approval (social license),
- Lowered costs,
- Better community and stakeholder relations,
- Improved proposals.

Zitholele Consulting (Pty) Ltd was appointed to manage the environmental authorisation process for the proposed Solar Integration project and they appointed Ptersa Environmental Management Consultants to perform a social impact assessment to include in their study. This report represents the social impact assessment for the proposed project.



2 Background and project overview

Eskom Holdings SOC Limited (Eskom) is the main South African utility that generates, transmits and distributes electricity. The utility is the largest producer of electricity in Africa, and is among the top seven utilities in the world in terms of generation capacity and among the top nine in terms of sales (Zitholele Consulting, 2012). Eskom plays a major role in accelerating growth in the South African economy by providing a high-quality and reliable supply of energy. Electricity provided by Eskom is generated through a variety of means, including coal-fired power stations, nuclear power stations, hydro-electric plants and gas fired plants.

Eskom intends to generate additional electricity by implementing demand side interventions in conjunction with the construction of a variety of power plants, including: open cycle gas turbine power stations, hydro-electric pump-storage schemes, solar energy power plants, wind turbine power plants, nuclear power plants, and coal fired power stations.

Whilst Eskom's reliance on coal fired power stations has allowed for the generation of some of the cheapest electricity in the world at ~R10/W, it has resulted in South Africa being the largest producer of greenhouse gases in Africa, and one of the Top 20 greenhouse gas producing countries in the world. South Africa being committed to reducing Carbon emissions, is a signatory to the UN Framework Convention on Climate Change (UNFCCC) and the Kyoto Protocol, and is in the process of implementing strategies aimed at reducing the countries carbon emissions.

Demonstration projects and research, undertaken by Eskom, have shown that both solar and wind energy show great potential in South Africa. Until now solar power has been one of the least utilised renewable energy technologies. It however appears that the potential of solar energy is growing. The main deterrent to the use of solar power has been its cost, estimated at about R22,00/W (Zitholele Consulting, 2012).

The Upington area is one of the highest solar radiation locations in the world, providing the best opportunities for using the sun to generate electricity. In an effort to utilise renewable energy resources to meet the growing demand for electricity, the South African Government proposes the establishment of a R 150 billion Solar Park at Klipkraal, ~15 km west of Upington in the Northern Cape. The Solar Park will use the sun's energy to eventually generate 5 000 MW of electricity.

Eskom is planning to construct a 100 MW Concentrating Solar Power (CSP) plant at the Solar Park. This employs an array of mirrors controlled by tracking systems to focus a large area of sunlight into



a small beam. The resulting heat is used to generate electricity. The Department of Energy as well as several Independent Power Producers (IPPs) are busy with investigations to construct solar plants at the Solar Park which should source sufficient electricity to make up the 5 000 MW planned for the solar park. No technologies have been selected for these plants as yet.

The electricity generated at the Upington Solar Park (by IPP's and Eskom) will need to be integrated into the National Grid. The purpose of this Solar Park Integration Project is to address the major infrastructural investments that Eskom will need to make in order to tie the Upington Solar Park into the National Grid. The proposed Solar Park Integration Project entails the construction of a substation at the Upington Solar Park, 400kV transmission lines to the east and south of Upington to feed the electricity into Eskom's National Grid as well as the construction of a number of 132kV power lines inter-linking the IPP solar plants with the Eskom Grid and distributing the power generated to Upington.

The proposed project covers the following activities:

- Solar Park substation (400kV and 132kV);
- 2 x (\pm) 125km 400kV lines from Solar Park to Aries substation (southwest of Kenhardt) and associated feeder bays;
- 1 x (\pm) 70km 400kV line from Solar Park to Nieuwehoop substation (northeast of Kenhardt) and associated feeder bays;
- 1 x (\pm) 200km 400kV line from Solar Park to Ferrum substation (Kathu) and associated feeder bays;
- 3 x 132kV lines for the Eskom CSP Site and 2 x 20MVA Transformers at Solar Park site;
- 3 x 132kV lines for the IPP in Solar Park;
- 5 x 132kV lines for the DoE Solar Park; and
- 2x (\pm) 25km 132kV lines to Gordonia Substation (Upington).

Infrastructure requirements for the proposed project is as follows:

- Solar Park Substation:
 - 5 x 500 MVA 132/400kV transformer & associated switchgear;
 - Establish 5x400kV transformer feeder bay;
 - Establish 13x132kV transformer feeder bay.
- Aries Substation:
 - Establish 2x400kV transformer feeder bay;



- Add a 400/132kV transformer;
- 132kV busbar;
- 400/132kV 500MVA x 3 transformers;
- 8x 132kV feeder bays and associated lines.
- Nieuwehoop Substation:
 - Establish 2x400kV transformer feeder bay;
 - Add a 400/132kV transformer;
 - 132kV busbar;
 - 400/132kV 500MVA x 3 transformers;
 - 8x 132kV feeder bays and associated lines.
- Ferrum Substation:
 - Establish 1x400kV transformer feeder bay;
 - Add a 400/132kV transformer.
- Transmission Lines:
 - Approximately 2 x ±130 km 400kV power lines between the CSP and Aries Substation;
 - Approximately 1 x ±75 km 400 kV power line between the CSP and Nieuwehoop Substation;
 - Approximately 1 x ± 200 km 400 kV power line between the CSP and Ferrum Substation.

A number of route alternatives to each substation have been identified:

- From **CSP to Aries**
 - Aries_Alternative 1

Aries_Alternative 1 commences at the CSP outside of Upington traverses south-westward along the Orange River and N14 Highway next to an existing 132 kV distribution line to just before Kakamas (about 60 km). There the line turns south, crosses over the Orange River and heads south for the 75 km to the Aries substation, crossing over the Hartbees River. The last section of this alignment has been moved a few kilometres to the north, since it transpired through the stakeholder engagement process that the original alignment was too close to the SKA (Square Kilometre Array Telescope) remote site.



- Aries_Alternative 2

Aries_Alternative 2 commences at the CSP outside of Upington traverses south-westward along the Orange River and N14 Highway next to an existing 132 kV distribution line to 10 km before Kakamas (about 50 km). There the line turns south, crosses over the Orange River and heads south for the 75 km to the Aries substation, crossing over the Hartbees River.

- Aries_Alternative 3

Aries_Alternative 3 commences at the CSP outside of Upington traverses south-westward along the Orange River and N14 Highway next to an existing 132 kV distribution line up to 10 km after Loxtonvale (about 40 km). There the line turns south, crosses over the Orange River and heads south for the 75 km to the Aries substation, crossing over the Hartbees River.

- **From CSP to Nieuwehoop**

- Nieuwehoop_Alternative 1

Nieuwehoop_Alternative 1 commences at the CSP outside of Upington traverses north-eastward along the Orange River for 5 km. After Louisvale the line turn southeast, crosses over the Orange River and travels the approx. 60 km to the Nieuwehoop Substation, crossing over the Kareeboom River.

- Nieuwehoop_Alternative 2

Nieuwehoop_Alternative 2 commences at the CSP outside of Upington traverses south-westward for a very short distance (<2km) before turning southeast, crossing over the Orange River and travelling the approx. 60 km to the Nieuwehoop Substation, crossing over the Kareeboom River.

- Nieuwehoop_Alternative 3

In addition to the Nieuwehoop alternatives mentioned above stakeholders at the public meeting requested that an additional alternative be investigated during the EIA phase that is aligned along the local dirt road rather than traversing through farming land.



Nieuwehoop_Alternative 3 commences at the CSP outside of Upington, traverses north-eastward for approximately 3 km before turning south-east to cross the Orange River at the approximate coordinates: 28°33'17.74" S; 21°10'37.20" E. The proposed corridor passes Louisvale to the north after which the corridor follows the existing dirt road for approximately 30 km before joining the proposed corridor for Nieuwehoop_Alternative 1 for the last 27 km.

- Nieuwehoop_Alternative 3B

Nieuwehoop_Alternative 3B was proposed because the feasibility of placing the proposed corridor next to an existing road, as in Nieuwehoop_Alternative 3, was neutralized by the unfeasible nature of the proposed river crossing for the alternative. This alternative proposes that the corridor follow the Nieuwehoop_Alternative 1 route from the CSP north-eastward and cross the Orange River at the most favourable river crossing for the Nieuwehoop line as concluded by the aquatic specialist. When the corridor reaches the R359 it turns southwards, leaving the proposed Nieuwehoop_Alternative 1 route, up to the existing dirt road where it joins the Nieuwehoop_Alternative 3 corridor route. From here Nieuwehoop_Alternative 3B follows the Nieuwehoop_Alternative 3 route all the way to the Nieuwehoop substation. The receiving environment surrounding this deviation is not discernibly different to that of Alternative 1 and Alternative 3.

- From **CSP to Ferrum**

- Ferrum_Alternative 1

Ferrum_Alternative 1 commences at the CSP outside of Upington traverses north-eastward approximately 15 km before turning eastwards for ~10 km. From here the route turns north-east again for ~ 120 km before meandering through the Langeberge for some 30 km. Lastly the route circles around Sishen Mine and into Kathu along other existing power lines to the existing Ferrum Substation.

- Ferrum_Alternative 2

Ferrum_Alternative 2 commences at the CSP outside of Upington traverses north-eastward approximately 160 km before meandering through the Langeberge for some 10 km. Lastly the route joins Alternative 1 and circles around Sishen Mine and



into Kathu along other existing power lines to the existing Ferrum Substation.

- Ferrum_Alternative 3

In addition to the alternatives mentioned above the stakeholders at the public meeting requested that an additional alternative be investigated during the EIA phase that is aligned with the N14 highway rather than traversing through farming land. This alternative has been taken back to the public in the EIA phase, and the Rooiwal Farmer's Association refined their suggestions about the alignment of this route. These suggestions have been included in this study. Ferrum_Alternative 3 also runs in a westerly direction from the Ferrum Substation before turning sharply to the south, and then to the west at the N14. The alignment follows the road for a distance, before it banks to the northwest, west, south west and south east, curving around the north west of Upington before linking with the new substation at the Solar Park. This corridor is approximately 282km in length.

- Ferrum_Alternative 3A

Ferrum_Alternative 3A follows the central alignment in a southwesterly direction from the Ferrum Substation, but then turns sharply to the south. At the N14, the alignment turns to the southwest, and follows the same alignment at Ferrum_Alternative 3 to the new substation at the Solar Park. This corridor is approximately 270km in length.

- Ferrum_Alternative 3B

Ferrum_Alternative 3B runs in a relatively straight line to the south west along the existing 275kV power line. The alignment runs over the railway line, before swinging to the west and then to the south west, to link with the N14 and the Ferrum_Alternative 3A corridor beyond. This corridor is approximately 266km in length.

- Ferrum_Alternative 3C

Ferrum_Alternative 3C also runs along the power line to the south west before swinging to the south west at the railway line to link with the N14 and the Ferrum_Alternative 3A corridor. This corridor is approximately 262km in length.



- Ferrum_Alternative 3D

Ferrum_Alternative 3D runs along the power to the south west before swinging to the west at the railway line to link with the N14 and the Ferrum_Alternative 3A corridor. This corridor is approximately 263km in length.

- Ferrum_Alternative 3E

Ferrum_Alternative 3E runs along the power to the south west along the existing 275kV power line. The alignment runs over the railway line, before swinging to the north west to link with the N14 and the Ferrum_Alternative 3A corridor. This corridor is approximately 267km in length.

In addition to the routes identified above, several positions for the potential substation have been identified. Figures 1 -5 gives an overview of the proposed project. The main concern for the substation location is avoiding sensitivities and to find suitable geology for the founding conditions required for the heavy transformers.



Figure 1: Overview of Solar Park Integration Project.

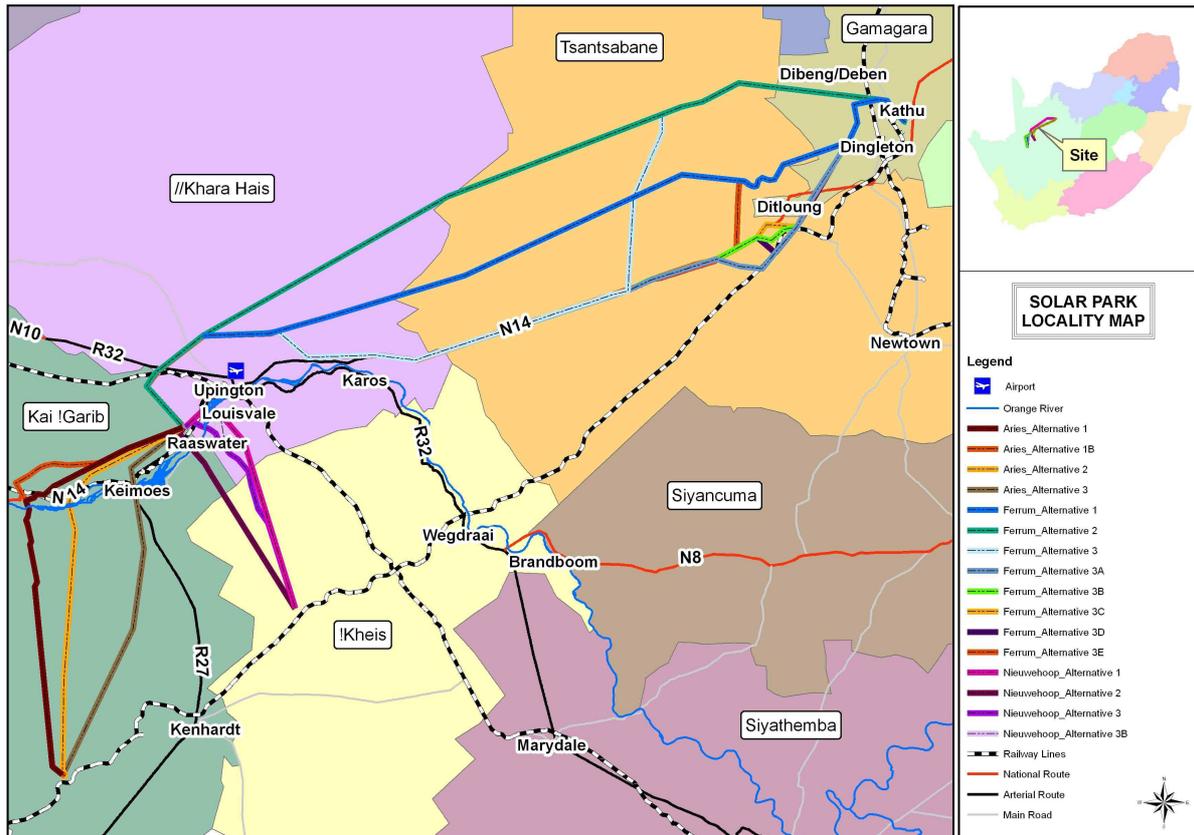


Figure 2: Locality of Solar Park.

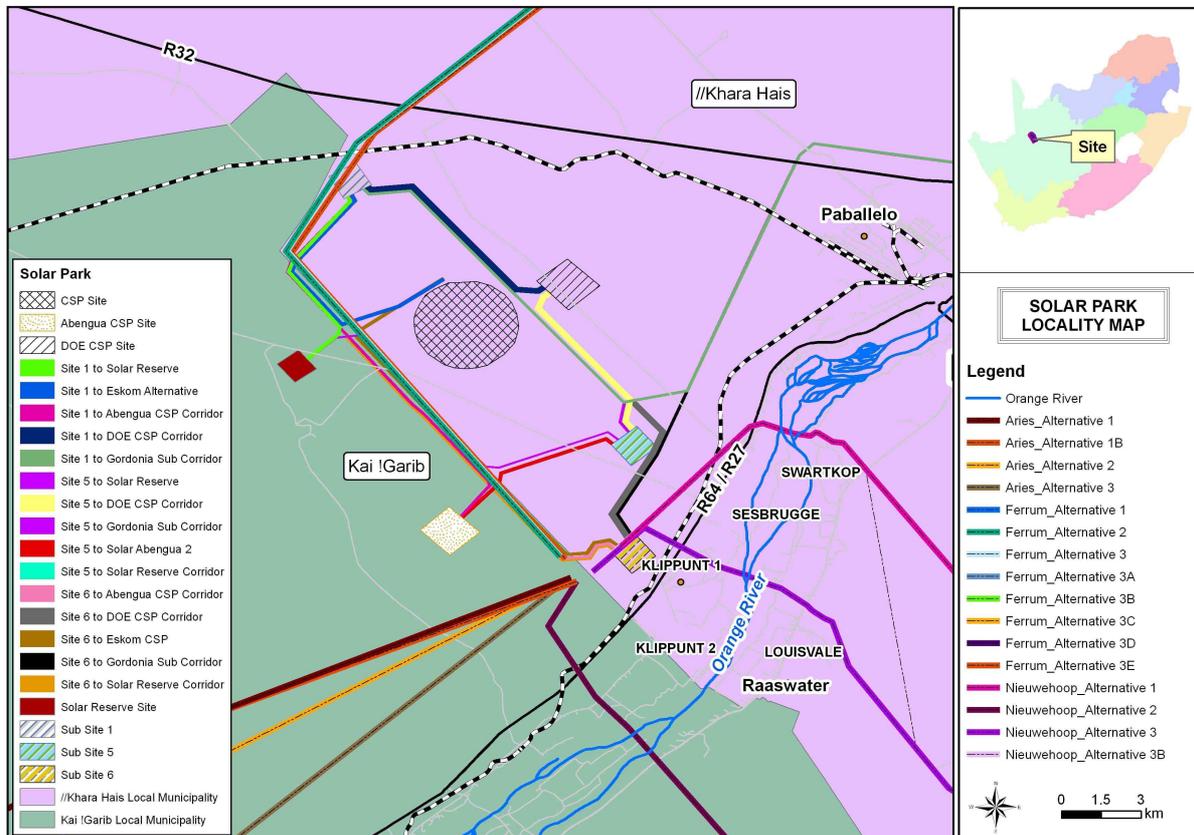




Figure 3: Overview of Aries Route.

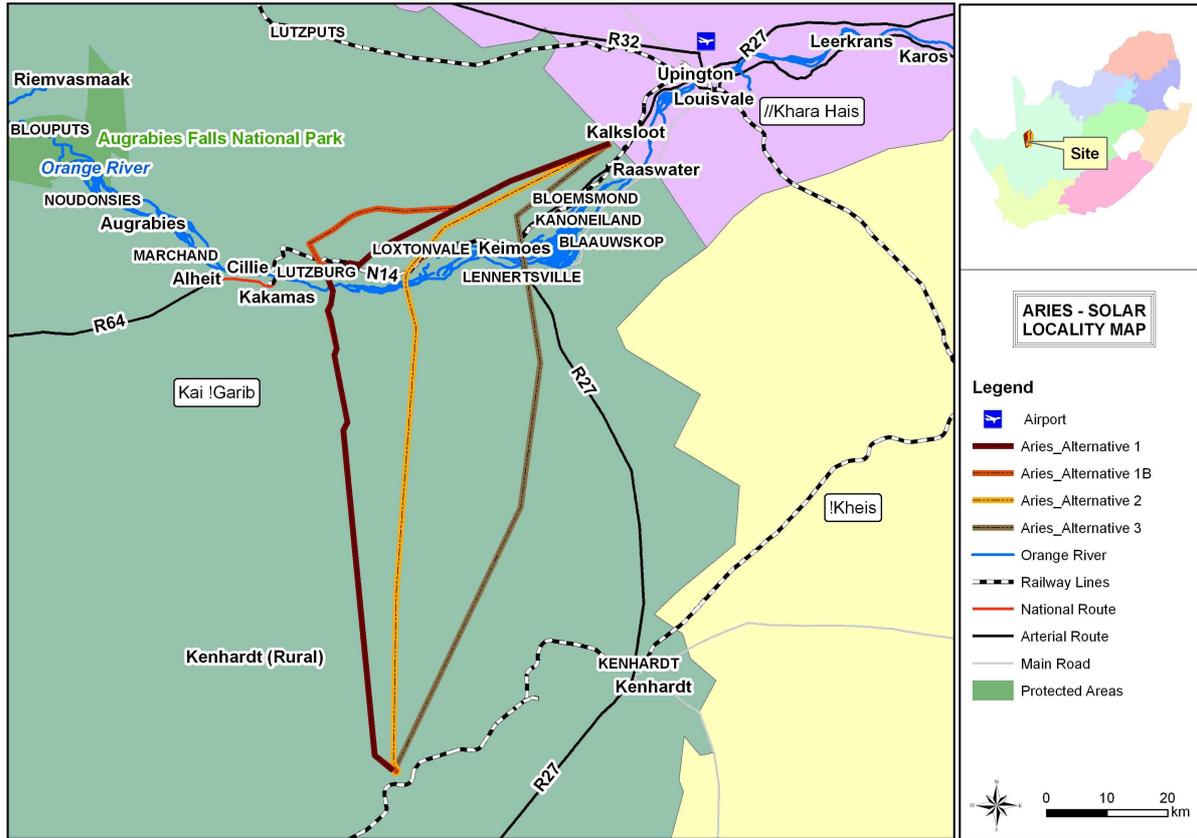


Figure 4: Overview of Ferrum Route.

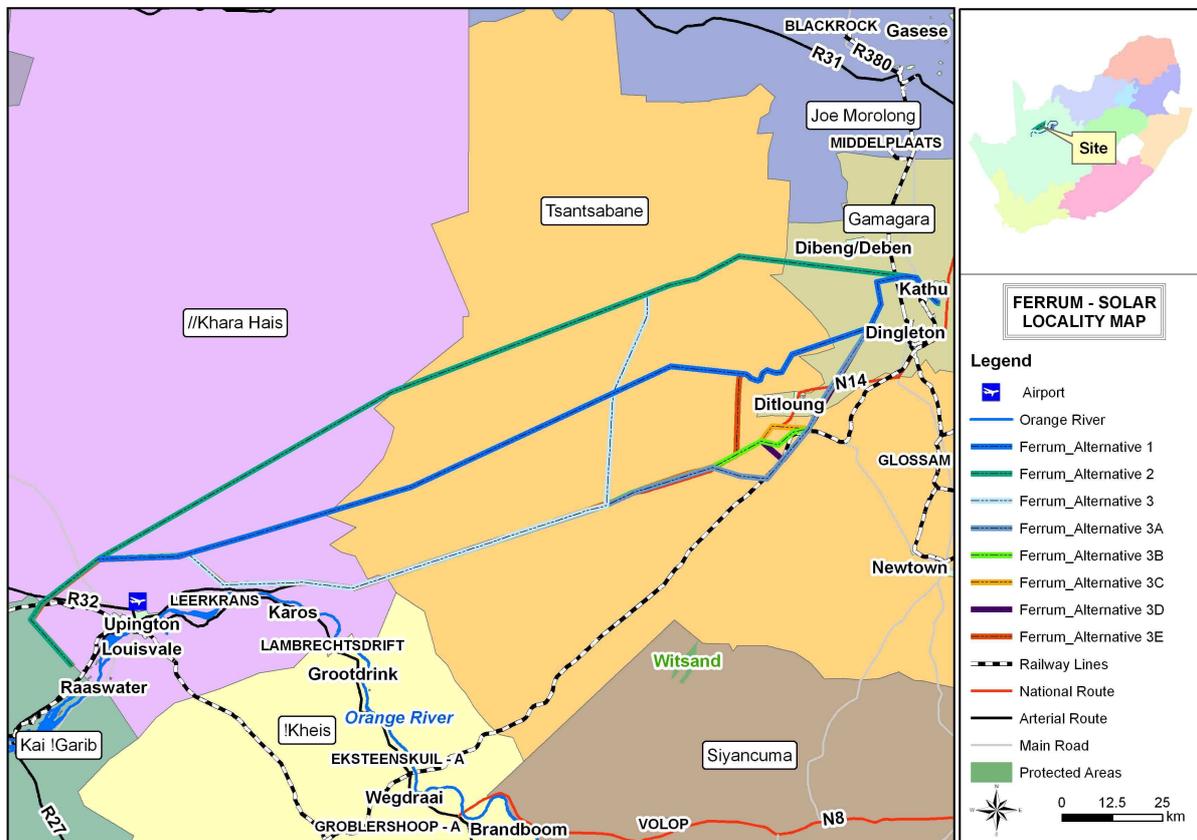
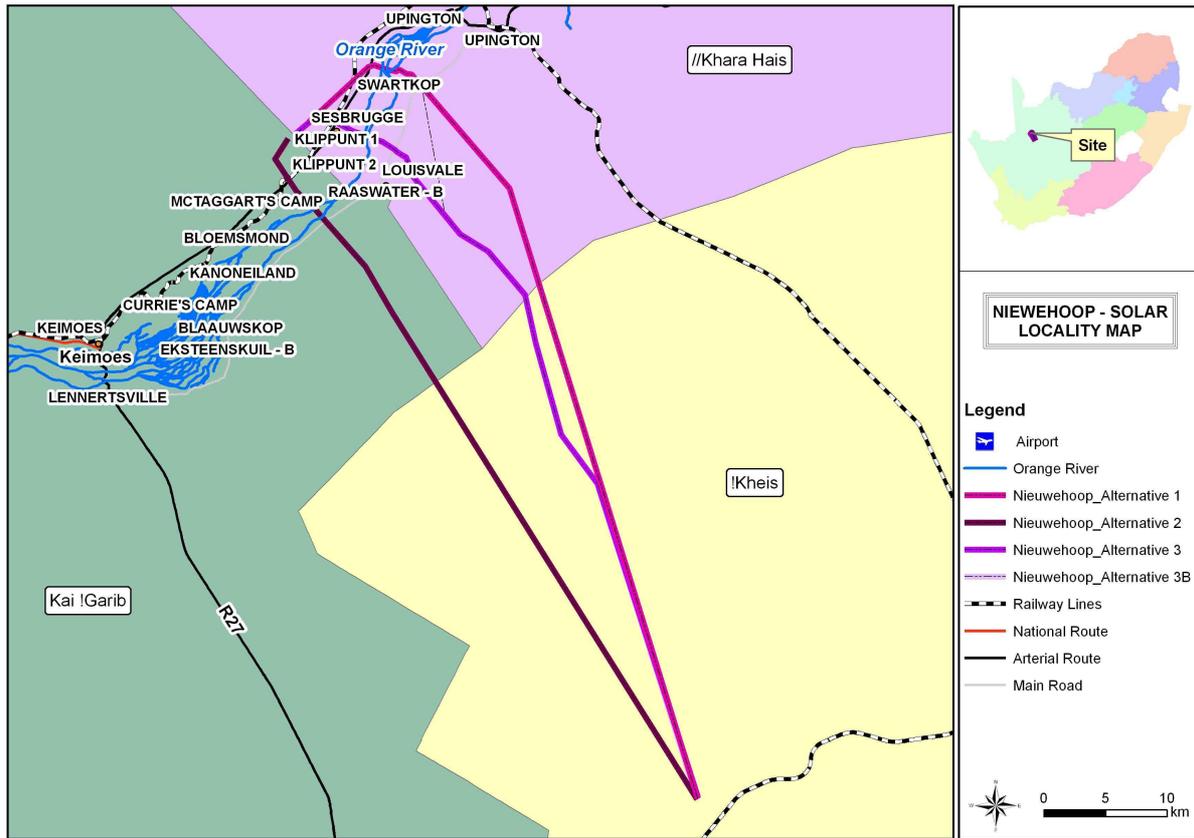




Figure 5: Overview of Nieuwehoop Route.





3 Study approach

3.1 Information base

The information used in this study was based on the following:

1. A literature review (see list provided in the References);
2. Professional judgement based on experience gained with similar projects;
3. Minutes of meetings with affected parties.
4. Interviews and focus group meetings

3.2 Assumptions and limitations

The following assumptions and limitations were relevant:

1. The social environment constantly changes and adapts to change, and external factors outside the scope of the project can offset social changes, for example changes in local political leadership. It is therefore difficult to predict all impacts to a high level of accuracy, although care has been taken to identify and address the most likely impacts in the most appropriate way for the current local context within the limitations.
2. Social impacts can be felt on an actual or perceptual level, and therefore it is not always straightforward to measure the impacts in a quantitative manner.
3. Social impacts commence when the project enters the public domain. Some of these impacts are thus already taking place, irrespective of whether the project continues or not. These impacts are difficult to mitigate and some would require immediate action to minimise the risk.
4. There are different groups with different interests in the community, and what one group may experience as a positive social impact, another group may experience as a negative impact. This duality will be pointed out in the impact assessment phase of the report.
5. Social impacts are not site-specific, but take place in the communities surrounding the proposed development.
6. The study area is extensive and it was not possible to meet with all potentially affected



parties.

3.3 Methodology

Scientific social research methods were used for this assessment. In order to clarify the process to the reader, this section will start with a brief explanation of the processes that have been used in this study.

3.3.1 Defining of concepts

The theoretical model used for this impact assessment was developed by Slootweg, Vanclay and Van Schooten and presented in the International Handbook of Social Impact Assessment (Vanclay & Becker, 2003). This model identifies pathways by which social impacts may result from proposed projects. The model differentiates between social change processes and social impacts, where the social change process is the pathway leading to the social impact. Detail of how the model works is not relevant to this study, but it is important to understand the key concepts, which will be explained in the following paragraphs.

Social change processes are set in motion by project activities or policies. A social change process is a discreet, observable and describable process that changes the characteristics of a society, taking place regardless of the societal context (that is, independent of specific groups, religions etc.) These processes may, in certain circumstances and depending on the context, lead to the experience of social impacts (Vanclay, 2003). If managed properly, however, these changes may not create impacts. Whether impacts are caused will depend on the characteristics and history of the host community, and the extent of mitigation measures that are put in place (Vanclay, 2003). Social change processes can be measured objectively, independent of the local context. Examples of social change processes are an increase in the population, relocation, or the presence of temporary workers. Social change processes relevant to the project will be discussed before the possible social impacts will be investigated.

For the purpose of this report, the following social change process categories were investigated:

- demographic processes;
- economic processes;
- geographic processes;
- institutional and legal processes;
- emancipatory and empowerment processes;



- sociocultural processes; and
- other relevant processes.

The International Association for Impact Assessment (2003) states that Social Impact Assessment includes the processes of analysing, monitoring and managing the intended and unintended social consequences, both positive and negative, of planned interventions (policies, programs, plans, projects) and any social change processes invoked by these interventions. Its primary purpose is to bring about a more sustainable and equitable biophysical and human environment. The Inter-organizational Committee on Principles and Guidelines for Social Impact Assessment (2003) defines Social Impact Assessment in terms of “efforts to assess, appraise or estimate, in advance, the social consequences likely to follow from proposed actions”.

A **social impact** is something that is experienced or felt by humans. It can be positive or negative. Social impacts can be experienced in a physical or perceptual sense. Therefore, two types of social impacts can be distinguished:

- **Objective** social impacts – i.e. impacts that can be quantified and verified by independent observers in the local context, such as changes in employment patterns, in standard of living or in health and safety.
- **Subjective** social impacts – i.e. impacts that occur “in the heads” or emotions of people, such as negative public attitudes, psychological stress or reduced quality of life.

It is important to include subjective social impacts, as these can have far-reaching consequences in the form of opposition to, and social mobilisation against the project (Du Preez & Perold, 2005).

For the purpose of this SIA, the following Social Impact Assessment categories were investigated:

- health and social well-being;
- quality of the living environment;
- economic impacts and material well-being;
- cultural impacts;
- family and community impacts;
- institutional, legal, political and equity impacts; and
- gender impacts.



Relevant criteria for selecting significant social impacts included the following:

- probability of the event occurring;
- number of people that will be affected;
- duration of the impact;
- value of the benefits or costs to the impacted group;
- extent to which identified social impacts are reversible or can be mitigated;
- likelihood that an identified impact will lead to secondary or cumulative impacts;
- relevance for present and future policy decisions;
- uncertainty over possible effects; and
- presence or absence of controversy over the issue.

For the purpose of this study, the model was adapted to suit the South African context, and where processes and impacts were not relevant to the study, it was omitted. Each category has a number of sub-categories, which also have been investigated. The Equator Principles, International Finance Corporation Performance Standards and World Bank Environmental, Health and Safety guidelines were consulted in the writing of this report and the mitigation suggested adheres to these requirements.

3.3.2 Literature study

A detailed literature search was undertaken to obtain secondary data for the baseline description of the socio-economic environment. The information in this report was acquired via statistical data obtained from Statistics South Africa, SIA literature (see References) as well as information from reputable sources on the World Wide Web.

3.3.3 Research approach

Traditionally there are two approaches to SIA, a technical approach and a participatory approach. A technical approach entails that a scientist remains a neutral observer of social phenomena. The role of the scientist is to identify indicators, obtain objective measures relevant to the situation and provide an expert assessment on how the system will change (Becker, Harris, Nielsen & McLaughlin, 2004). A participatory approach uses the knowledge and experiences of individuals most affected by



the proposed changes as the basis for projecting impacts. In this case the role of the scientist is facilitator of knowledge sharing, interpretation and reporting of impacts (Becker et al, 2004).

The findings presented in this report are based on primary as well as secondary (desk) research. A qualitative approach was followed for the primary research, while qualitative as well as quantitative data were used for the secondary research.

The layperson sometimes criticises qualitative research as “subjective” or “not really that scientific”. For this reason it is vital to understand the distinction between qualitative and quantitative research as well as their respective areas of application.

Qualitative research as a research strategy is usually characterised by the inference of general laws from particular instances, forms theory from various conceptual elements, and explains meaning (David & Sutton, 2004). It usually emphasise words rather than quantification in the collection and analysis of data. Data collection takes place by using methods such as unstructured or semi-structured interviews, focus groups, observations, etc. Data is not recorded in any standardised coding format, but are usually reported according to themes. Qualitative data express information about feelings, values and attitudes. This approach is used where insight and understanding of a situation is required (Malhotra, 1996). Participants are selected based on their exposure to the experience or situation under review. The aim of qualitative research is to understand, not to quantify and as such is extremely suitable for assessing social impacts. A potential impact has to be understood before it can be assessed appropriately.

Quantitative research as a research strategy usually makes inferences of particular instances by reference to general laws and principles and tends to emphasize what is external to or independent of the mind (objective) and incorporates a natural science model of the research process (David & Sutton, 2004). This usually makes it easier for a person with a natural or physical sciences background to relate to. This approach usually emphasises quantification in the collection and analysis of data. Data collection take place by using methods such as structured questionnaires and data is recorded in a numeric or some other standardised coding format. Data is expressed in numerical format and statistical techniques are usually used to assist with data interpretation. This approach is used when information needs to be generalised to a specific population and participants are usually selected using probability sampling techniques (although non-probability methods can be used depending on the characteristics of the target population).



Although in theory the qualitative phase of this project could be followed by a quantitative phase, for a number of reasons it was not done. A quantitative phase would be more resource intensive in terms of labour, time and cost and the incremental precision obtained in terms of generalisability would not warrant the additional investment. Due to the strong emotional component relating to the perceived impacts, respondents may intentionally magnify the intensity of the impacts or indicate all impacts are equally severe in an attempt to bias the results in their favour, which will reduce the utility of quantitative results as part of the primary research process.

3.3.4 Ethical issues

The fact that human beings are the objects of study in the social sciences brings unique ethical problems to the fore. Every individual has a right to privacy which is the individual's right to decide when, where, to whom, and to what extent his or her attitudes, beliefs and behaviour will be revealed (Strydom, 2002). Every person interviewed for the purposes of this report has been ensured that although the information disclosed will be used, their names will not be disclosed without their permission. Therefore, to protect those consulted and to maintain confidentiality, the people interviewed for this report will not be named in the report. Records of the interviews have been kept. This is in line with international as well as national research practices such as the ESOMAR and SAMRA codes of conduct.



4 Baseline description of the social environment

According to the National Environmental Management Act (NEMA, 1998) environment refers to the surroundings in which humans exist. When viewing the environment from a social perspective the question can be asked what exactly the social environment is. Different definitions for social environment exist, but a clear and comprehensive definition that is widely accepted remains elusive. Barnett & Casper (2001) offers the following definition of human social environment:

“Human social environments encompass the immediate physical surroundings, social relationships, and cultural milieus within which defined groups of people function and interact. Components of the social environment include built infrastructure; industrial and occupational structure; labour markets; social and economic processes; wealth; social, human, and health services; power relations; government; race relations; social inequality; cultural practices; the arts; religious institutions and practices; and beliefs about place and community. The social environment subsumes many aspects of the physical environment, given that contemporary landscapes, water resources, and other natural resources have been at least partially configured by human social processes. Embedded within contemporary social environments are historical social and power relations that have become institutionalized over time. Social environments can be experienced at multiple scales, often simultaneously, including households, kin networks, neighbourhoods, towns and cities, and regions. Social environments are dynamic and change over time as the result of both internal and external forces. There are relationships of dependency among the social environments of different local areas, because these areas are connected through larger regional, national, and international social and economic processes and power relations.”

Environment-behaviour relationships are interrelationships (Bell, Fisher, Baum & Greene, 1996). The environment influences and constrains behaviour, but behaviour also leads to changes in the environment. The impacts of a project on people can only be truly understood if their environmental context is understood. The baseline description of the social environment will include the identification of relevant stakeholders; a description of the area within a provincial, district and local context that will focus on the identity and history of the area as well as a description of the population of the area based on a number of demographic, social and economic variables.

4.1 Description of the area

The proposed project is located in the Northern Cape Province. The different components of the project are located in the following areas:

- The CSP site is located just outside Upington in the //Khara Hais Local Municipality that is



located within the Siyanda District Municipality.

- The Aries substation is located in the Kai !Garib Local Municipality in the Siyanda District Municipality. The transmission lines run through the //Khara Hais Local Municipality and the Kai !Garib Local Municipality, both located in the Siyanda District Municipality.
- The Nieuwehoop substation is located in the !Kheis Local Municipality in the Siyanda District Municipality. The transmission lines run through the //Khara Hais Local Municipality and the !Kheis Local Municipality.
- The Ferum substation is located in the Gamagara Local Municipality that is in the John Taolo Gaetsewe. The transmission lines run through the //Khara Hais Local Municipality and the Tsantsanbane Local Municipality in the Siyanda DM, and the Gamagara LM in the John Taolo Gaetsewe District Municipality.

4.1.1 The Northern Cape Province

The Northern Cape is South Africa's largest province, covering an area of 361 830 square km, representing 29.7% of South Africa's land mass (www.northern-cape.gov.za). The province borders the Atlantic Ocean and shares international borders with Namibia and Botswana. Locally it borders the Western Cape, Eastern Cape, Free State and North West provinces. The province is divided in five administrative districts, namely Siyanda, Pixley Ka-Seme, Namaqua, Frances Baard and Kgalagadi. The name of the Kgalagadi district changed in December 2008 to John Taolo Gaetsewe, the name of a late freedom fighter and trade unionist (www.northerncapebusiness.co.za). The major towns in the province include Kimberley, De Aar, Kuruman, Upington, Calvinia and Springbok.

The Northern Cape is a dry region with fluctuating temperatures, especially in winter. The weather is typically that of desert and semi-desert areas with the annual rainfall usually lower than the rate of evaporation. The western parts of the province receive rainfall during the winter months that bring to life large displays of wildflowers from late August until the end of September, which is one of the great tourist attractions of the province. Other tourist attractions include 4x4 trails, the Kimberley Big Hole and mine museum, the Vanderkloof Dam, the Augrabies Falls National Park, the |Ai|Ais Richtersveld Transfrontier Park, the Kgalagadi Transfrontier Park and the Eye of Kuruman. The province is also known for its historical mission stations, the Anglo-Boer War Battlefields route, its Khoisan rock art and the Riemvasmaak community. The Northern Cape is a popular area for hunting and is further known for its copper and diamonds. It is home to the South African Astronomical Observatory, the Vaalharts Valley (housing one of the largest irrigation schemes in the world), as well as the Orange River Wine Cellars.



From a tourism perspective, the province has been divided into five different regions (www.northerncape.org.za), namely the Green Kalahari, Kalahari, Diamond Fields, Karoo and Namakwa. The proposed site falls in the Kalahari region. This region is rich in iron, manganese and other precious ores. Towns in the Kalahari region are Black Rock, Dibeng, Dingleton, Hotazel, Kathu, Kuruman, Olifantshoek and Van Zylsrus.

The province faces a number of societal challenges that predominantly emanate from the effects of poverty (Kgalagadi District Municipality, 2007). These challenges include reducing the backlog in services relating to basic needs such as water, sanitation and housing; access to health, education and social services; the prevalence of HIV and AIDS; creating of opportunities for employment; reducing crime and addressing the needs of vulnerable groups.

4.1.2 The Siyanda District Municipality

The Siyanda District Municipality forms the mid-northern section of the Northern Cape Province and borders Botswana as well as Namibia. It covers an area of more than 100 000 km² of which 65 000 km² consist of the Kalahari Desert, the Kgalagadi Transfrontier Park and the former Bushman Land (Siyanda District Municipality, 2011). The Siyanda District Municipality consists of six local municipalities, namely Mier; Kai !Garib; //Khara Hais; Tsantsabane; !Kheis and Kgatelopele. Upington is the district municipality. The District Management Area consists mainly of areas in the Kalahari, private farmlands in the Kenhardt and surrounding areas and the community of Riemvasmaak. The greatest social problems in the Siyanda district are illiteracy and poverty.

Economic activities in the area consist mainly of agriculture, tourism and minerals and mining. In terms of GGP by sector, the share of agriculture is gaining ground. Agricultural activities consist of grape production, livestock farming and game farming. There is also limited extensive irrigation farming in the surroundings of Byna-Bo and Schuitdrift. The only form of communal farming in the DMA is at Riemvasmaak. Tourism is one of the most important economic sectors in the district and the fastest growing component of the economy. The Kgalagadi Transfrontier Park and the Spitskop Nature Reserve is in the district. The district also offers eco-adventures and safaris and there are various opportunities for 4x4 enthusiasts. No economically viable mineral resources have been found in the area, except for recent findings in the Rietfontein area. There are small pockets of various minerals of which the largest are copper and zinc at Areachap north of Upington. Various small concentrations of calcite, lead, fluorspar, barite, wolfram and amethyst have been mapped, but not on a notable scale. Salt is mined in the district and mining activity occurs in the local municipalities of Tshantsabane and Kgatelopele where manganese, diamonds and raw materials

Solar Park Integration Project, February 2013



(ash) for producing cement are found.

4.1.3 Kai !Garib Local Municipality

The Kai !Garib Local Municipality is situated along the Orange River and the landscape is characterised by contrasts between semi-desert plains and hilly areas. The Orange River is the life vein of the area and cultivated land is found on both sides of the river, forming the largest economic base of the area. The municipality borders Namibia. There are three large towns in the area, namely Kakamas, Keimoes and Kenhardt. Riemvasmaak (Sending and Vredesvallei) has become part of the municipality since the municipal elections in 2011 (Kai !Garib Local Municipality IDP, 2012). Between these towns, six former settlements are found. Kakamas and Keimoes are situated in the midst of an intensive irrigation farming community that stretches from Groblershoop in the east up to Blouputs in the west. Commercial farmers cultivate grapes for export and produce raisins and wine. Citrus fruit are becoming more prevalent in the area. The emerging farmers focus more on small stock farming, lucerne, cotton, corn and nuts.

Tourism in the area still has a lot of potential. Popular attractions include the Augrabies Waterfalls and the Kokerboom Route. Other tourism attractions include the Tierberg Nature Reserve; heritage sites and ancient rock art in Kenhardt; historical routes between islands / Island Route; water tunnels in Kakamas; Rooibergdam in Kenhardt; and Riemvasmaak historical and cultural values. There are also some mining activities in the area.

4.1.4 !Kheis Local Municipality

The main town in the !Kheis Local Municipality is Groblershoop. Other settlements include Grootdrink, Topline, Wegdraai, Gariiep, Opwag and Boegoeberg. The !Kheis Local Municipality is mainly a stock-farming and irrigation area, with the Orange River making economic development possible. Table grapes for export are produced in the area and provide most of the jobs in the area, which is to a large extent seasonal. Residents of the area are settled close to the river. The natural environment creates opportunity for tourism, especially the creation of 4x4 routes. The most popular tourism attraction in the area is the Boegoeberg Dam. The area has a rich cultural heritage with groups like the San, Korannas, Griekwas, Tswana, Coloureds, Whites and Xhosas migrating across the area and settled within the area at one time or another in the past (!Kheis Local Municipality IDP, 2012 – 2017), which provide the opportunity for cultural tourism. There are some mineral deposits in the area, but it seems as if mining is taking place on a very small scale, if at all.



4.1.5 //Khara Hais Local Municipality

The main town in the //Khara Hais Local Municipality is Upington and is the hub of activities in the region. There are seven smaller settlements and various farms in the jurisdiction of the municipality. Settlements include Lambrechtsdrift; Karos; Leerkrans; Leseding; Raaswater; Sesbrugge and Klippunt; and Kalksloot. The inhabitants of these settlements mainly rely on agricultural activities for their livelihoods. The municipality has availed 5 500 ha commonage known as Hondejag, Klipkraal and portions of the farm Olyvenhoudtsdrift and South to provide needy, prospective farmers with grazing land for a total of approximately 4 500 sheep (//Khara Hais Locap Municipality IDP, 2012 – 2017).

The town of Upington is well situated for exploration of the area and has good infrastructure in terms of accommodation. The Spitskop Nature Reserve is located about 13 km from Upington. Due to the municipality's strong tourism sector, its economy is centred around trade and retail. Agriculture is important to the local economy, but the manufacturing sector is not performing well. Upington is well-known for the variety of semi-precious stones that occur in abundance close to the surface like beryl, amethyst, agate, tourmaline, jasper, aquamarine and tiger eye. Small deposits of various minerals occur in the area, including zinc, copper, calcite, lead, barites, fluorspar, tungsten and amethyst. Due to the small quantities, these minerals are not mined on a significant scale (//Khara Hais Spatial Development Framework, Vol 1, 2009).

4.1.6 Tsantsabane Local Municipality

Settlements in the Tsantsabane Local Municipality include Postmasburg, Groenwater/ Skeyfontein and Jenn Haven (Tsantsabane IDP Review, 2005). Olifantshoek was part of the Tsantsabane Local Municipality until 2006 when it was amalgamated into the Gamagara Local Municipality. There are mining activities in Tsantsabane where manganese, diamonds and the raw materials (ash) for producing cement are found (Siyanda District Municipality IDP, 2011/12). Approximately 70% of The Tsantsabane LM's economy is based on mining (Atkinson, 2007). Agricultural activities consist mainly of sheep and goat farming, as well as some mixed cattle farming. Tourism is poorly developed.

4.1.7 The John Taolo Gaetsewe District Municipality

The Kgalagadi District Municipality was renamed the John Taolo Gaetsewe District Municipality (JTGDM) on 6 December 2008 after the later freedom fighter and trade unionist, John Taolo Gaetsewe (www.northerncapebusiness.co.za). The JTGDM covers an area of 27 283 km² and is made



up of the Kgalagadi District Management Area as well as the Gamagara, Ga-Segonyana and Moshaweng Local Municipalities. Moshaweng consists mostly of tribal land, with some tribal land in Ga-Segonyana. There is no tribal land in Gamagara. Towns in the area include Kuruman, Kathu, Dibeng, Olifantshoek, Hotazel, Black Rock and Van Zylsrus.

The main industries in the area are mining, agriculture and tourism. Minerals mined include manganese ore, iron ore and tiger's eye. The rural land in the area is used extensively for sheep, cattle, goat and game farming. The area is well-known for commercial hunting in winter. Other current tourism attractions are the Kgalagadi Transfrontier Park, the Eye of Kuruman, the Wonderwerk Cave, the Sishen Golf Club, the Khai Apple Recreation Resort and the Moffat Mission.

4.1.8 The Gamagara Local Municipality

The Gamagara Local Municipality covers the smallest area in the JTGDM, namely 2 619 km² (www.kgalagadi.gov.za), and it has the second smallest population size in the area after the Kgalagadi District Management Area. The primary land use in Gamagara is mining and agriculture with iron ore and manganese being the prime minerals mined in the area and the Sishen mine near Kathu is one of the largest open-cast iron mines in the world. The mine is the Northern Cape's largest employer (www.northerncapebusiness.co.za), and a major trainer of artisans in South Africa. The main focus of agriculture is on cattle and goats. Game farming and hunting are increasing in popularity.

The municipal area of Gamagara consists of four towns (Kathu, Debeng, Dingleton and Olifantshoek), a large farming community and the mining corporations (Kgalagadi District Municipality, 2007). There is also a settlement named Sesheng just outside Kathu. The Sishen mine supplies water to the municipality as a result of dewatering of the mine for mining purposes.

4.2 Description of the population

The baseline description of the population will take place on three levels, namely provincial, district and local. An awareness of the differences and similarities between these different levels guide the reader towards a clearer understanding of social impacts. For this study the focus will be on the Khai !Garib, Kheis, //Khara Hais and Tsantsabane Local Municipalities in the Siyanda District Municipality and the Gamagara Local Municipality in the John Taolo Gaetsewe District Municipality and the Northern Cape Province. Recent population statistics for the area is not available on a lower level than that of the local municipal area.



The data used for the socio-economic description was sourced from the Community Survey (CS) conducted by Statistics South Africa in 2007¹. The Community Survey is a large-scale household survey conducted by Statistics South Africa to bridge the gap between censuses. It served as a mini census and its purpose is to collect information on the trends and level of demographic and socio-economic data; the extent of poor households; access to facilities and services; levels of employment/unemployment; in order to assist government and private sector in planning, evaluation and monitoring of programmes and policies (www.statssa.gov.za).

Community Survey 2007 yields more up-to-date information than Census 2001 that used to be the most recent source of demographic and socio-economic data on national, district and municipal level. It should however be noted that Community Survey 2007 is not a replacement of the Census (Statistics South Africa, 2007a) and that there are certain limitations inherent to the study that should be taken into consideration when interpreting the results (Statistics South Africa, 2007b):

- The scope of the study only included households and individuals. Institutions such as military bases, national parks, prisons, hotels, hospitals, military barracks, etc. were excluded from the fieldwork. The institutional population is an approximation based on 2001 figures and not new data.
- The measurement of unemployment is higher and less reliable due to the differences in questions asked relative to the normal Labour Force Surveys.
- The income includes unreasonably high income for children probably due to misinterpretation of the question, e.g. listing parent's income for the child.
- The distribution of households by province has very little congruence with the General Household Survey or Census 2001. It is not yet clear whether these changes are real or whether they are due variables that could be ascribed to the study.
- Since the Community Survey is based on random sample and not a Census, any interpretation should be understood to have some random fluctuation in data, particularly concerning the small population for some cells. It should be understood that the figures are within a certain interval of confidence. This applies in particular to cross-tabulations on municipal level where small numbers are likely to give an under or overestimation of the true population (due to group not present in sample or number realised for sample very small). The aggregated total number per municipality however provides more reliable

¹ Census 2011 data has been released in 2013, but where not available during the initial writing of this report. Due to time constraints related to the EIA process the statistics have not been updated.



estimates (Statistics South Africa, 2007a).

- Further it should be noted that the estimates were done with the use of the de-facto population (the group of population who were enumerated according to where they stayed on a specific night) and not the de-jure population (the group of population who were enumerated according to where they usually live). These results are presented as the de-jure population.

Based on this the results should be viewed as indicative of the population characteristics in the area and should not be interpreted as absolute. In some instances where Community Survey 2007 data are not available, the Census 2001 data was used for indicative purposes.

4.2.1 Population

According to the Community Survey 2007 the population of South Africa is approximately 48.5 million and has shown an increase of about 8.2% since 2001. The household density for the country is estimated on approximately 3.87 people per household, indicating an average household size of 3-4 people (leaning towards 4) for most households that are slightly down from the 2001 average household size of 4 people per household.

As shown in Table 1 the growth rate in the Northern Cape Province is lower than the national average. The JTGDM shows a decline in population size since 2001 and this can most likely be ascribed to the closure of some of the asbestos mines in the district as well as the prevalence of HIV/AIDS (although it is well below the national prevalence rate). Negative growth is estimated for the area between 2005 and 2015 for both high and low growth scenarios (Kgalagadi District Municipality, 2007). The Siyanda DM showed an increase in population size between 2001 and 2007 that is well above the national average. All the local municipalities in the area under discussion showed an increase in population that was above the national average, except for the Kai !Garib LM, that showed only a marginal increase in population.

**Table 1: Community Survey 2007 Population, growth and household estimates**

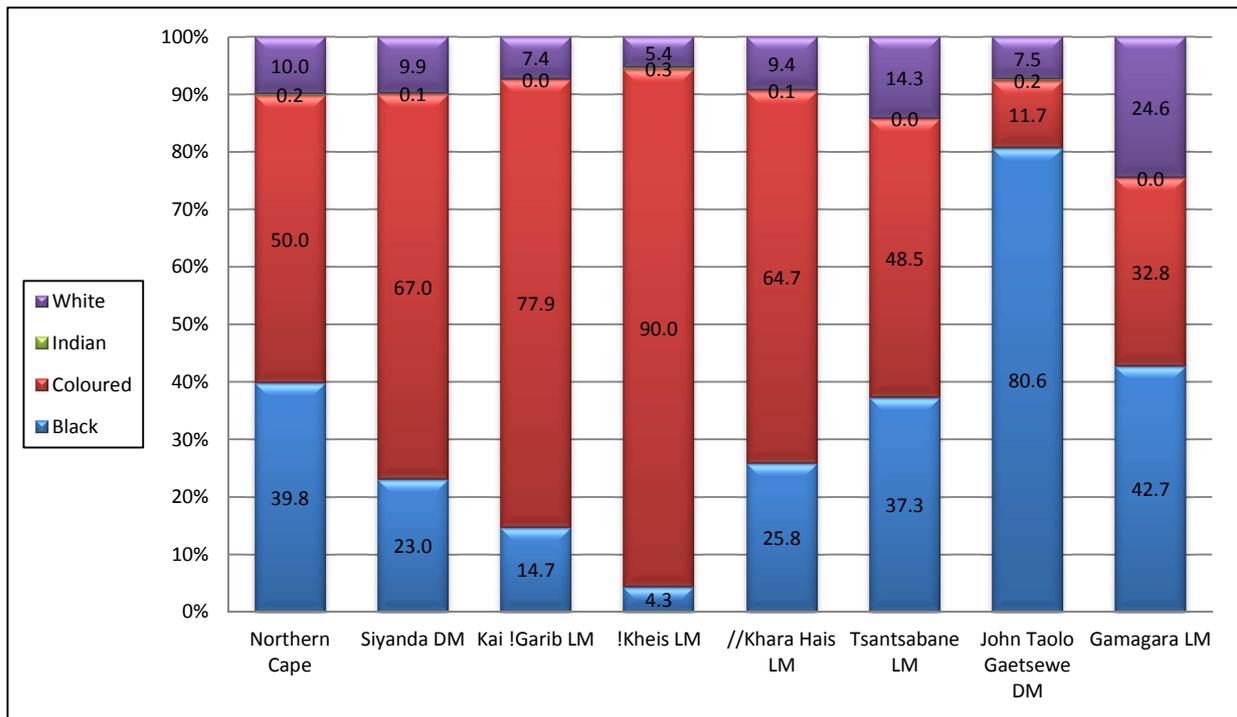
	Approximate population size	Estimated growth in population since 2001	Average household size
Northern Cape Province	1,058,060	6.67%	4.00
Siyanda DM	238,063	17,76%	3,97
Kai !Garib LM	56,501	1,43%	3,25
!Kheis LM	18,920	17,35%	4,22
//Khara Hais LM	100,920	33,37%	4,82
Tsantsabane LM	28,005	16,75%	3,95
John Taolo Gaetsewe DM	173,454	-9.44%	4.12
Gamagara LM	28,054	20.91%	3.67

On provincial and district level, the average household sizes have decreased since 2001. On local level, household sizes have decreased in all the municipalities except in !Kheis and //Khara Hais Local Municipalities where the household sizes have increased. The //Khara Hais LM has the highest average household size (4.82) while the Kai !Garib LM has the lowest average household size (3.25).

The population distribution profiles of the municipalities differ. In all the municipalities except in the Gamagara LM, the majority of the population belong to the Coloured population group. The Gamagara LM has the most diverse population distribution with the highest proportion of people belonging to the White population group as well as the highest proportion of people belonging to the Black population group among the municipalities under investigation (Figure 6). This is most likely due to the presence of the Sishen mine as the largest employer in the area. Technical expertise and tertiary education is required for many jobs in mining operations. People from the White population group had a historical advantage in acquiring the technical skills and tertiary education required for some of the jobs.



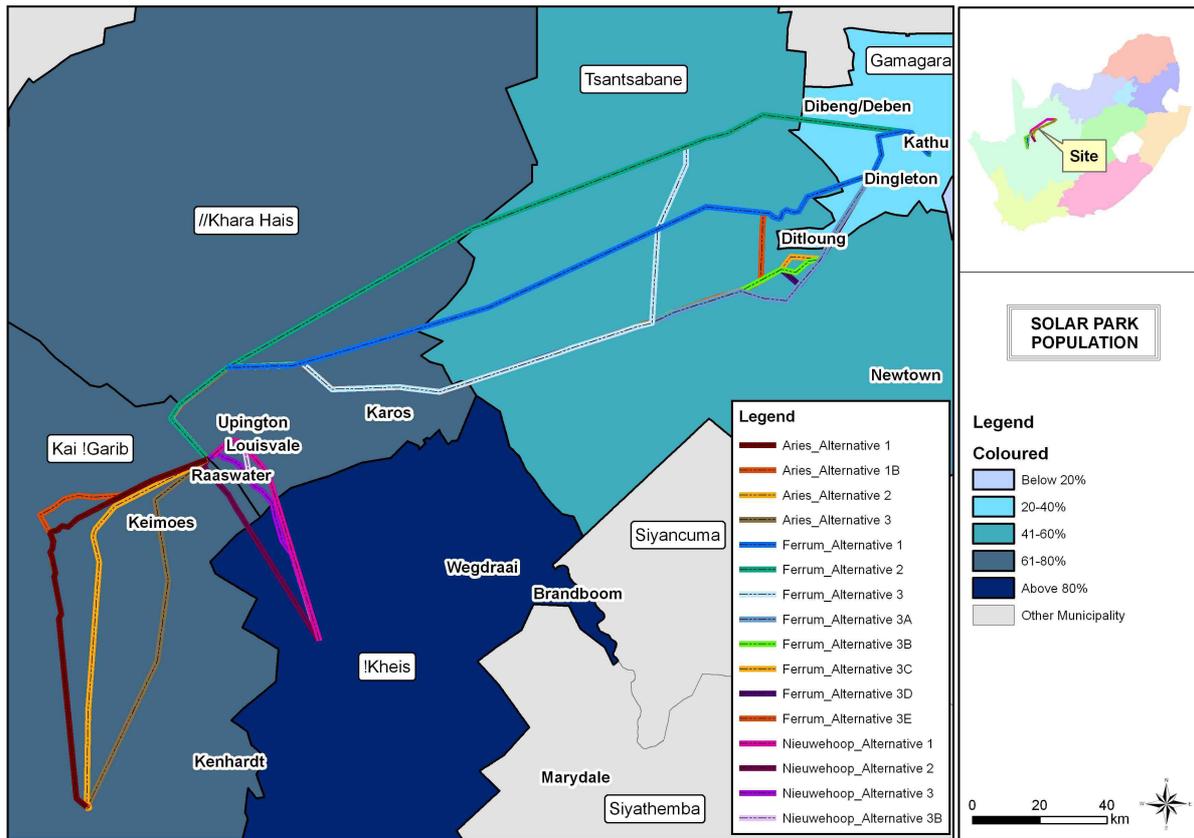
Figure 6: Population distribution (shown in percentage, source: CS 2007)



The population distribution gives an indication of the cultural make-up of the area and has implications for the proposed project in terms of the approach that should be used in terms of communication regarding the project as well as the implementation of the project. Figure 7 shows the percentage of the population in each municipality belonging to the Coloured Population group in relation to the proposed project.



Figure 7: Percentage of population belonging to the Coloured Population group (source: CS 2007).

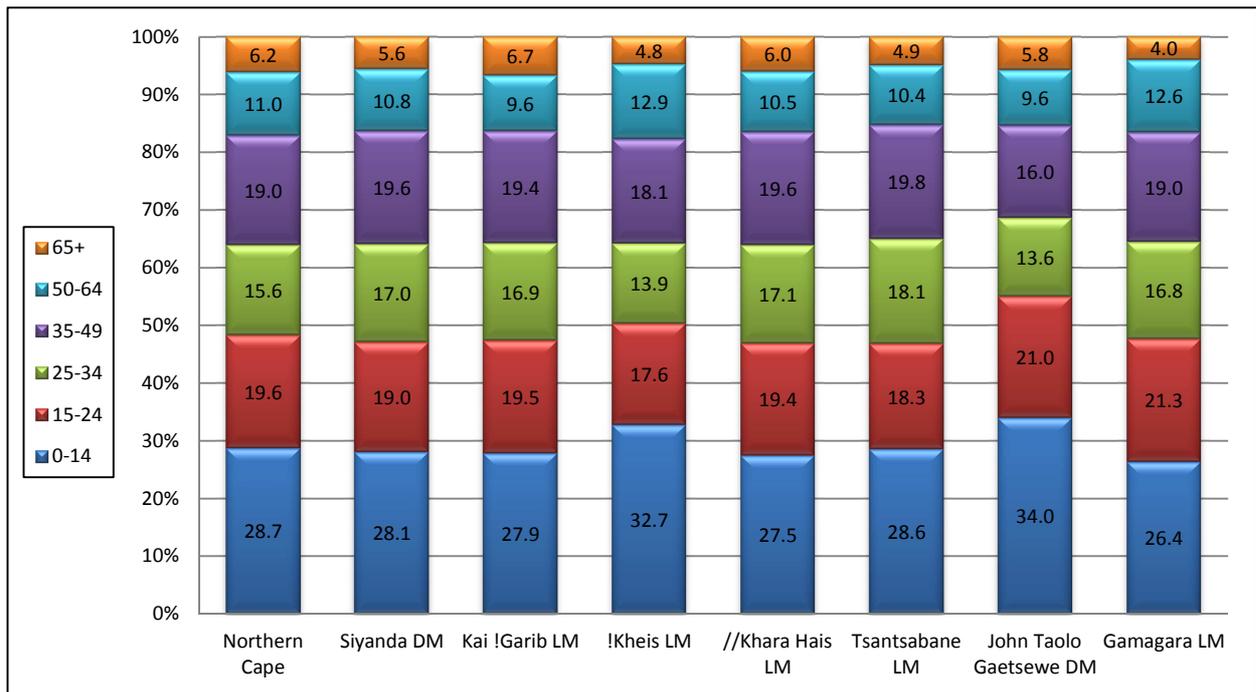


4.2.2 Age

The age distribution for the Kai !Garib, //Khara Hais and Tsantsabane Local Municipalities look very similar, with the greatest proportion of the population being younger than 15 years of age (Figure 8). The !Kheis LM has the greatest proportion of people younger than 15 years of age of all the local municipalities under investigation, with almost a third of the population being younger than 15 years of age. The large proportion of people below the age of 15 years in the district indicates a greater future demand for employment and infrastructure. The !Kheis LM has the lowest proportion of people in the age group 25 – 34 years, which can indicate an outmigration of people in this age group to other areas in search of job opportunities. The Gamagara LM has the lowest proportion of people younger than 15 years of all the local municipalities under investigation, and the highest proportion of people in the age group 15 – 24 years.



Figure 8: Age distribution (shown in percentage, source: CS 2007)



The total dependency ratio is used to measure the pressure on the productive population. It shows the number of dependants per 100 working-age population members. As the ratio increases, there may be an increased burden on the productive part of the population to maintain the upbringing and pensions of the economically dependent. A high dependency ratio can cause serious problems for a country as the largest proportion of a government’s expenditure is on health, social grants and education that are most used by the old and young population. The !Kheis LM has the greatest dependency ratio of the local municipalities under investigation while the Gamagara LM has the lowest. (Table 2)

Table 2: Dependency ratio’s (source, CS 2007)

Area	Total Dependency Ratio	Youth Dependency Ratio	Aged Dependency Ratio
Northern Cape	53,57	44,11	9,46
Siyanda DM	50,78	42,34	8,44
Kai !Garib LM	52,82	42,56	10,25
!Kheis LM	60,06	52,40	7,66
//Khara Hais LM	50,34	41,27	9,07

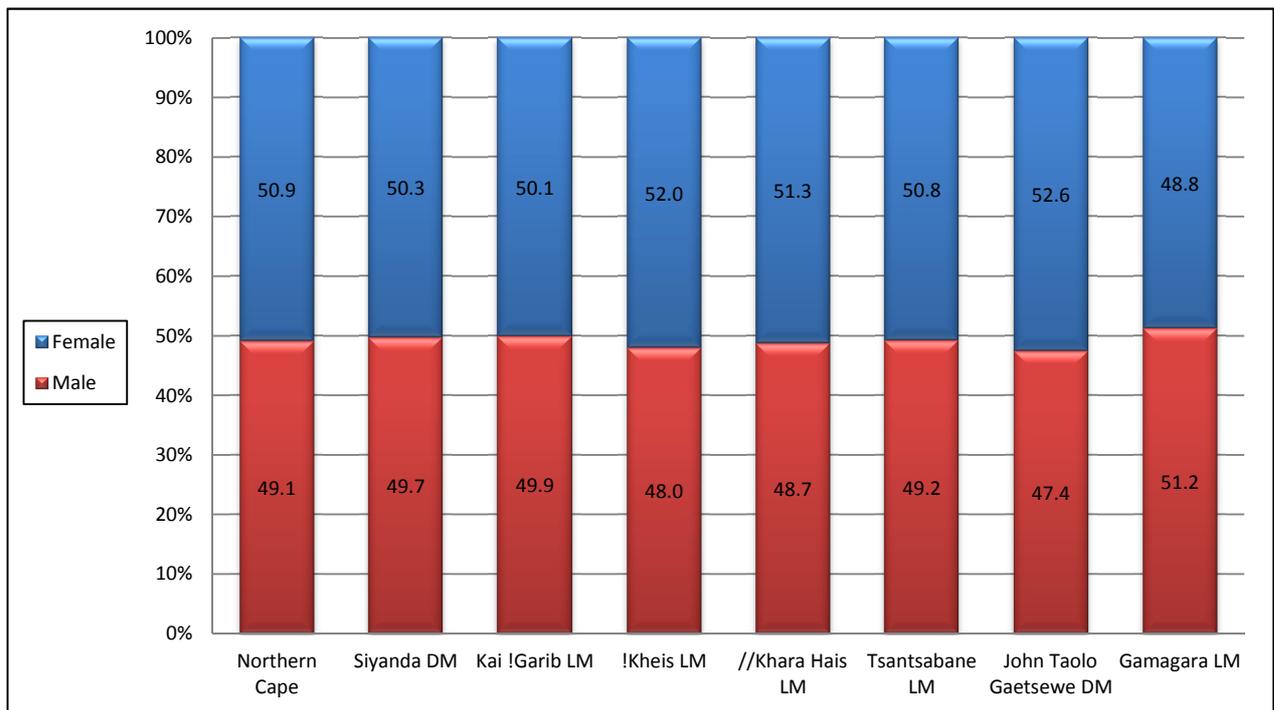


Tsantsabane LM	50,36	42,95	7,41
John Taolo Gaetsewe DM	66,08	56,47	9,61
Gamagara LM	43,55	37,84	5,70

4.2.3 Gender

The gender distribution is more or less equal in most of the local municipalities under investigation, except in the !Kheis LM and the //Khara Hais LM where there is a bias towards females and in the Gamagara LM where there is a bias towards males (Figure 9). The bias towards males in the Gamagara LM can be ascribed to the extensive mining activities in the area. Traditionally mine workers tend to be male. The bias towards females in the !Kheis LM can possibly be ascribed to an out-migration of males in search of job opportunities.

Figure 9: Gender distribution (shown in percentage, source: CS 2007)



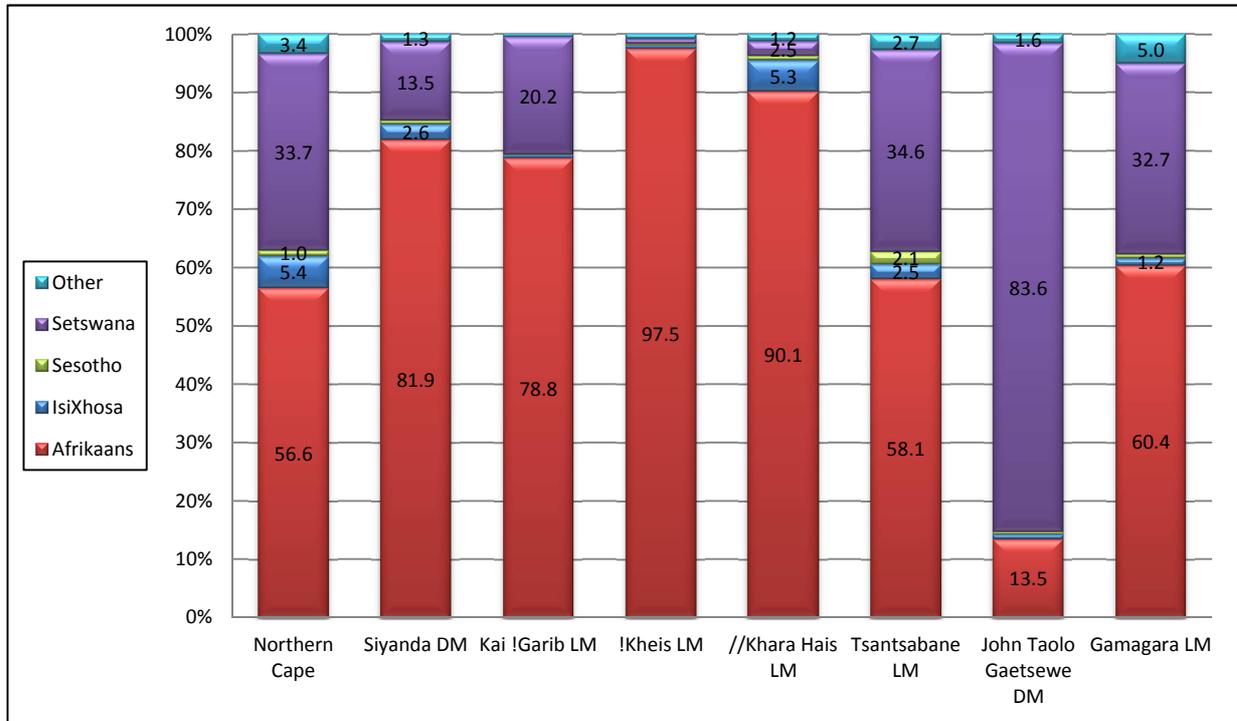
4.2.4 Language

Information on language has not been released for CS 2007. For this reason the Census 2001 data for language will be reviewed to get an indication of the language distribution in the area. Language also



gives an indication of the culture of the people in the area. More languages spoken in area is an indication of greater cultural diversity in the area. The most prevalent home language in all the Local Municipalities is Afrikaans, followed by Setswana (Figure 10).

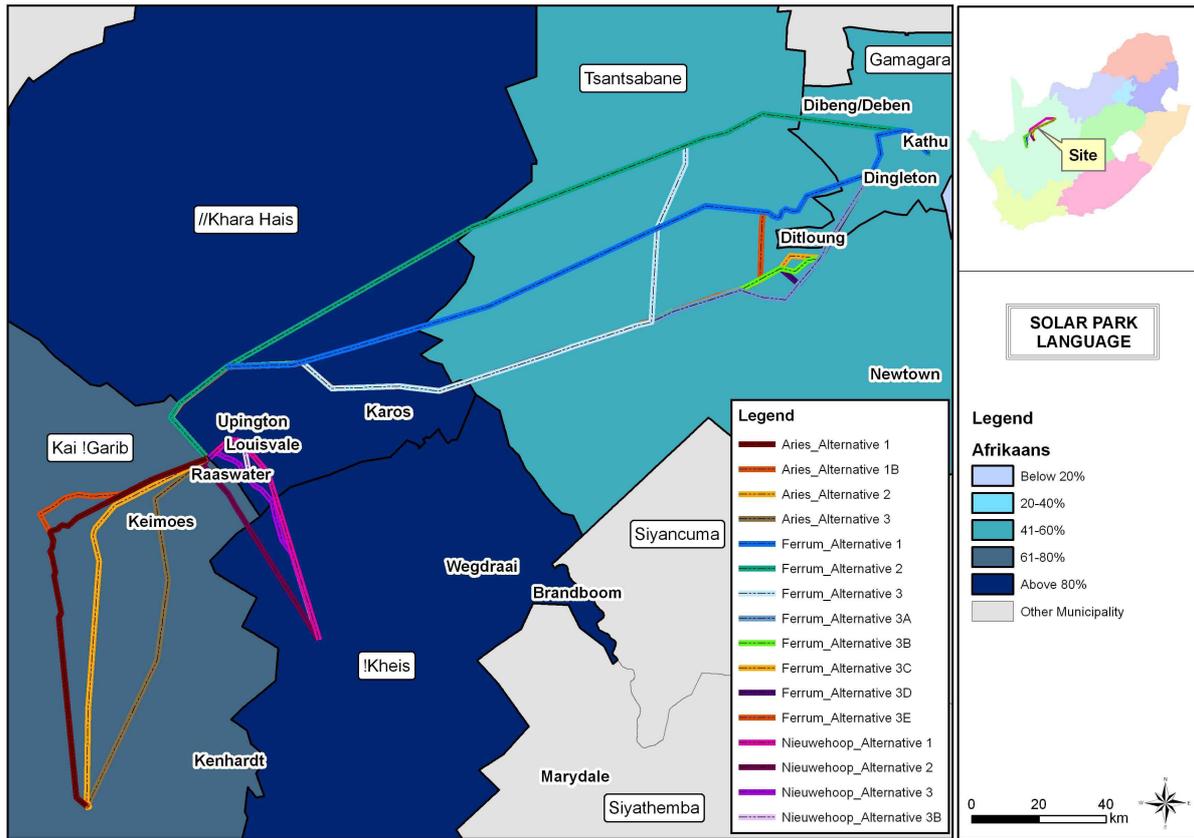
Figure 10: Language distribution (shown in percentage, source: Census 2001)



This indicates that in addition to English, Afrikaans and Setswana should also be used for communicating about the project. The language profiles also indicate that the local municipalities are likely to be culturally different from one another. Figure 11 shows the percentage of the population that has Afrikaans as home language against the proposed project.



Figure 11: Percentage of population having Afrikaans as home language (source: Census 2001).



4.2.5 Education

Education Deprivation is one of the domains of multiple deprivation that was used to calculate the Provincial Indices of Multiple Deprivation (Noble et al, 2006). There is a close link between educational attainment, the type of work an individual is engaged in and the associated earnings potential. The level of education achieved by an individual determines current income and savings potential, as well as future opportunities for individuals and their dependants. This does not bode well for the JTGDM, as the education levels in the area are generally low.

The education profiles for the local municipalities under investigation are very different from one another (Figure 12). The Gamagara LM has the largest proportion of people (about a fifth) with an education higher than Grade 12, but the //Khara Hais LM has the lowest proportion of people with no schooling. In general, education levels are the lowest in the Kai !Garib and !Kheis Local Municipalities.



Figure 12: Highest education level – people 20 years or older (shown in percentage, source: CS 2007)

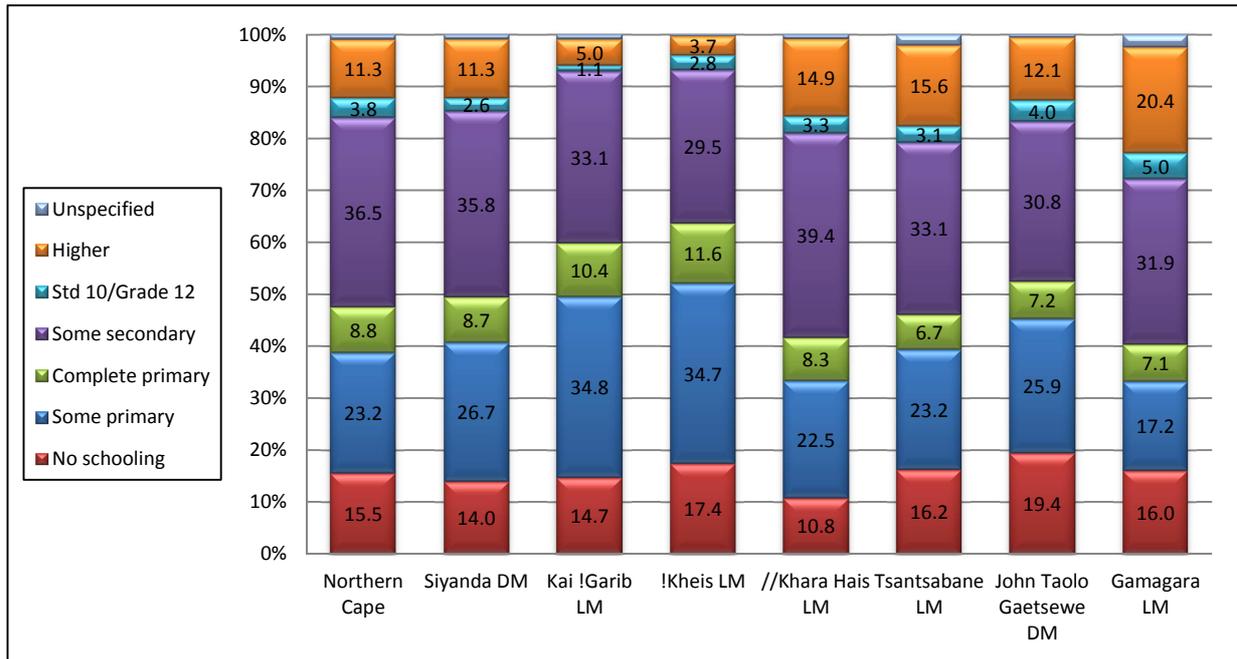
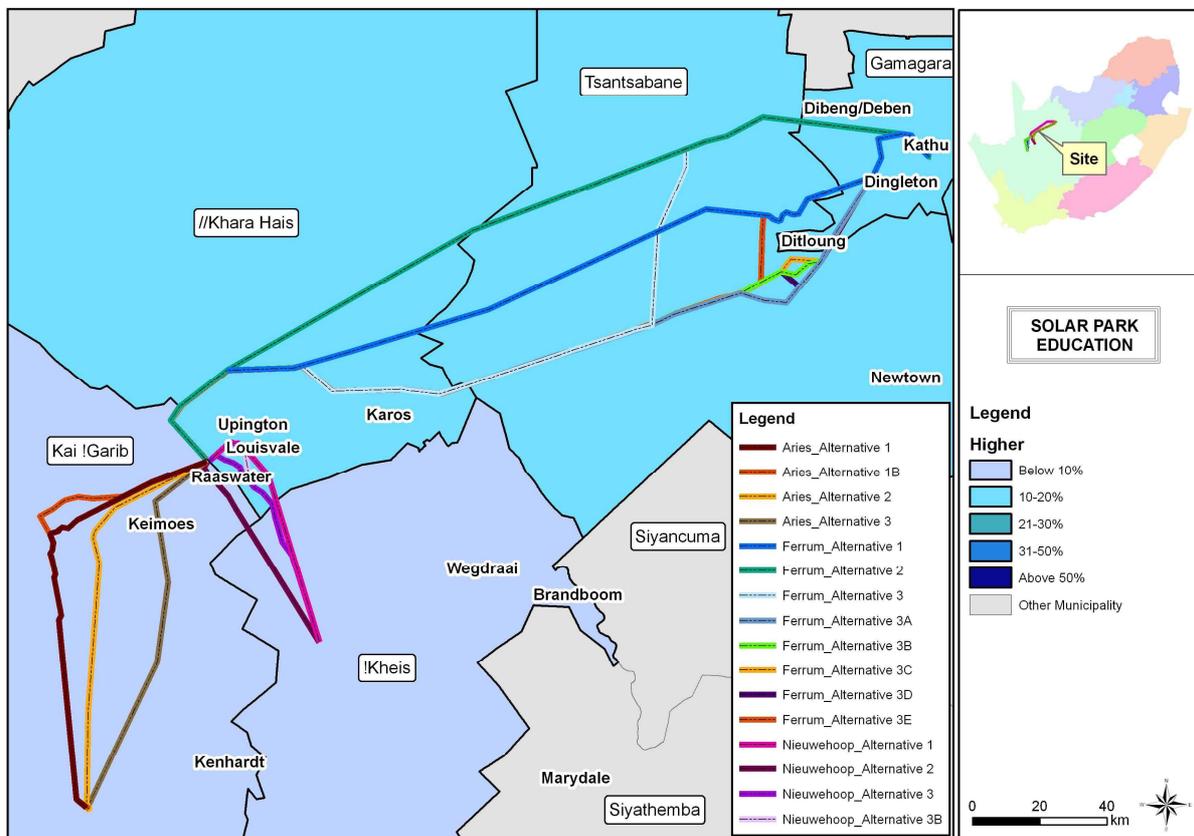


Figure 13 shows the percentage of the population with education higher than Grade 12 within the context of the proposed project.

Figure 13: Percentage of population with education higher than Grade 12 (source: CS 2007).





4.2.6 Income

The income profiles for the local municipalities look very different from one another. The Kai !Garib LM has the lowest proportion of people who have indicated that they have no income (Figure 14). The highest proportion of people with no income is found in the !Kheis LM and the Tsantsabane LM, but the Tsantsabane LM has higher proportions of people in higher income groups. The most affluent area is the Gamagara LM.

Figure 14: Monthly Personal Income distribution (shown in percentage, source: CS 2007)

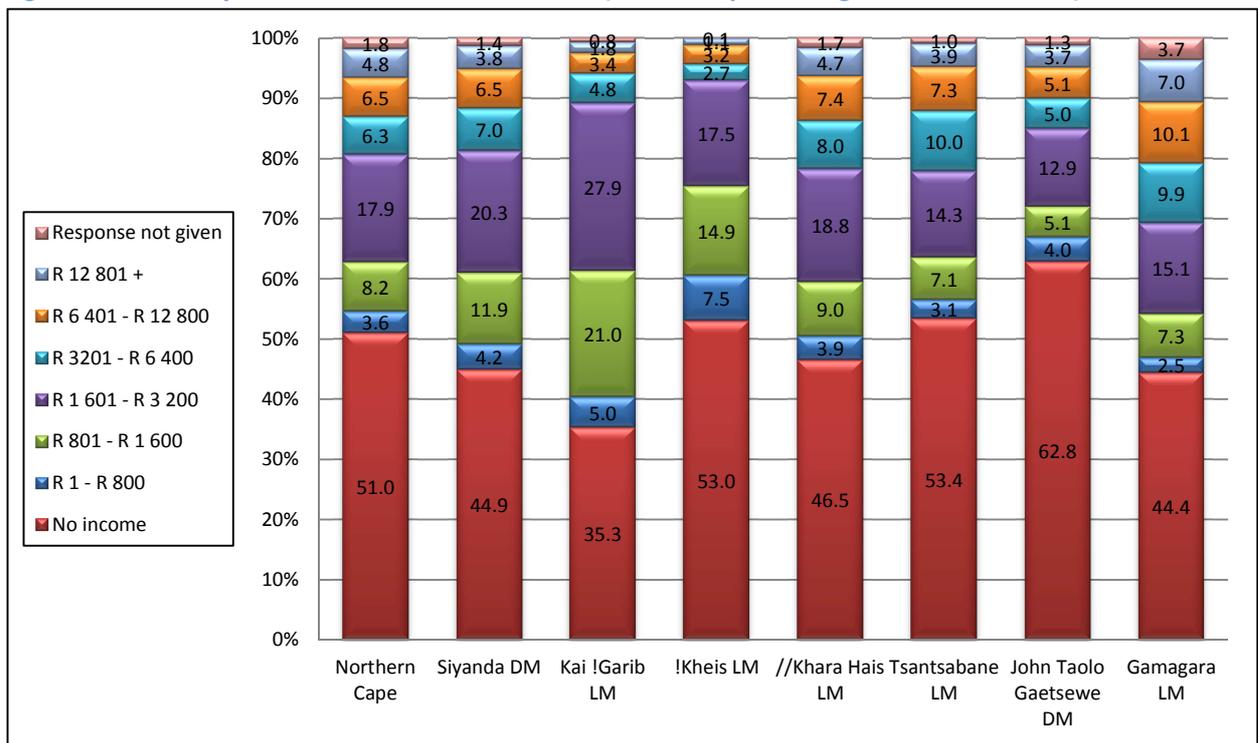
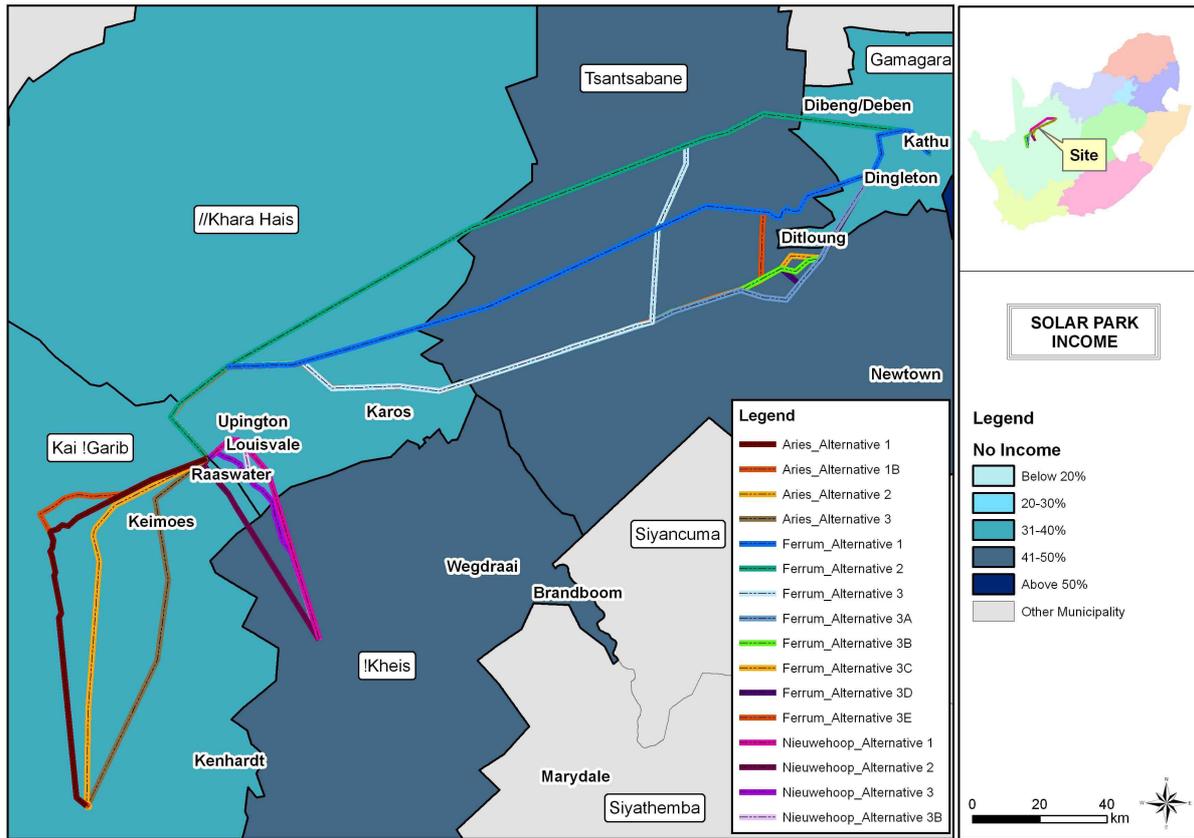


Figure 15 shows the percentage of the population with no income within the context of the proposed project.



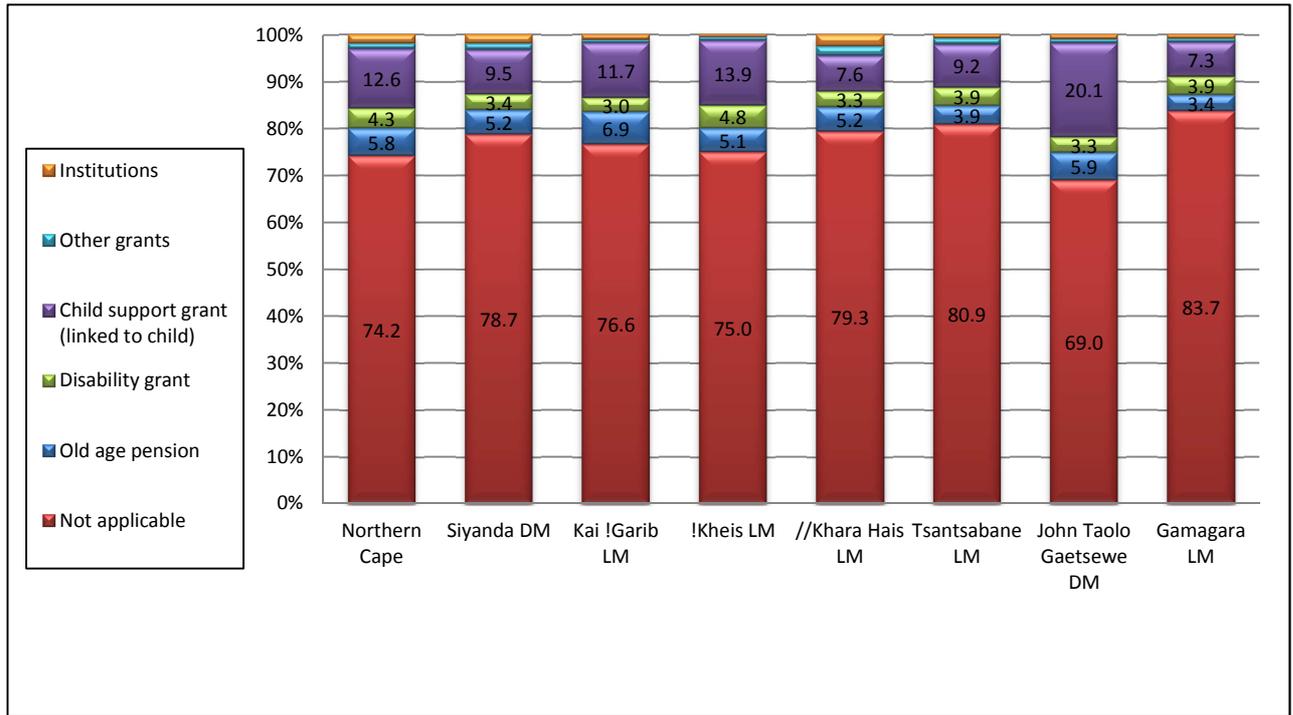
Figure 15: Percentage of population with no income (source: CS 2007).



It is important to note however that monthly personal income as per CS 2007 includes all sources of income and not only income through formal employment. For many people social grants are also an important source of income. The !Kheis LM has the highest proportion of people receiving social grants of the areas under investigation (Figure 16). Most of the people in the !Kheis LM that receive social grants, receive a child support grant.



Figure 16: Social grants received (shown in percentage, source: CS 2007)



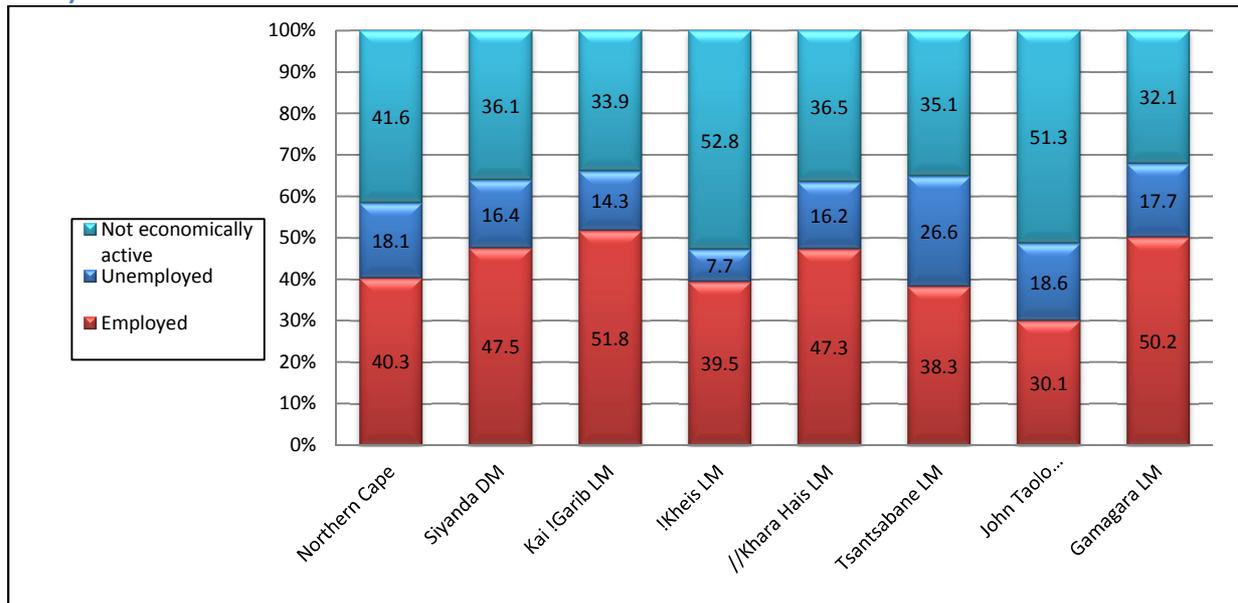
4.3 Industry

4.3.1 Employment, occupations and industry

Employment Deprivation (Noble et al, 2006) can be conceptualised as the involuntary exclusion of someone from the economically active age group from the world of work. More than half of the people in the !Kheis LM have indicated that they are not economically active (Figure 17), that is, they are not employed and are also not taking active steps to find work. In the more remote rural areas people may not be looking for work because there is no work available in the immediate area, they don't have the required qualifications or they may not have the funds available to travel further distances in search of a job.

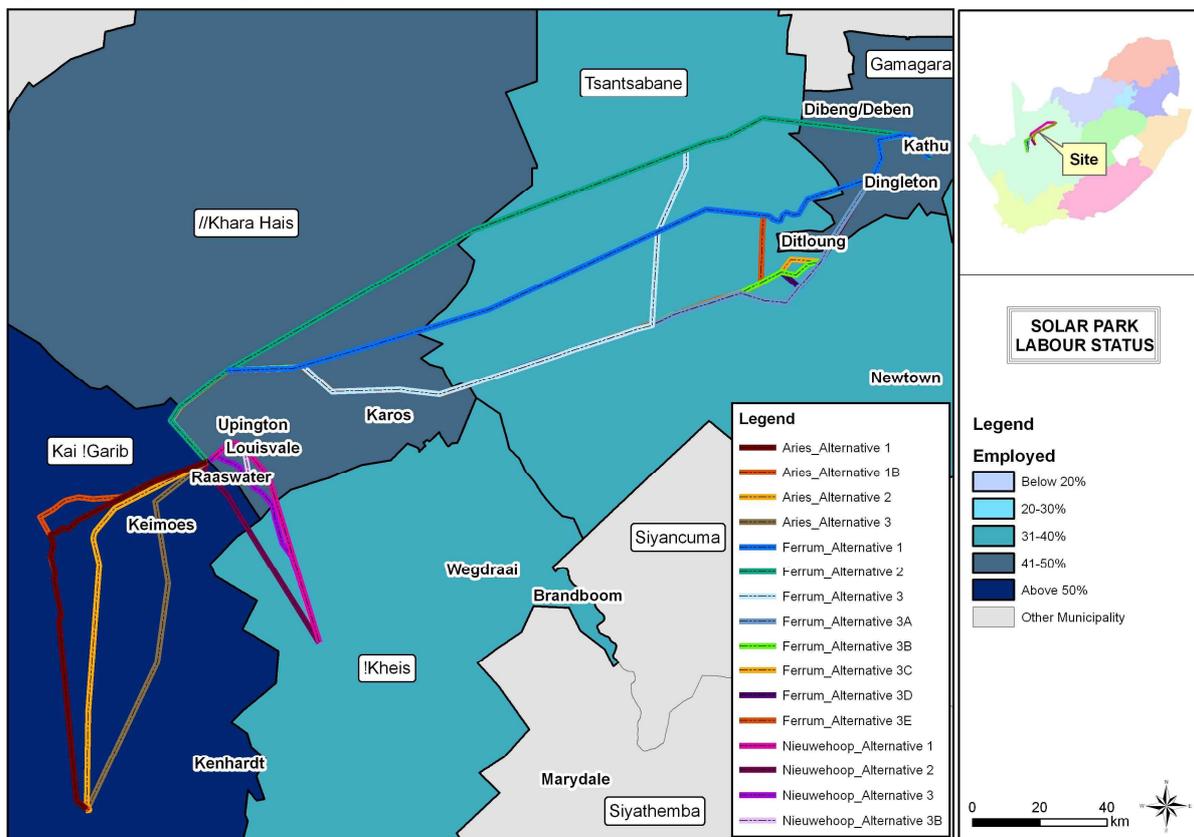


Figure 17: Employment distribution of those aged 15-65 years (shown in percentage, source: CS 2007)



The largest proportion of employed people are found in the Kai !Garib LM and the Gamagara LM (Figure 18).

Figure 18: Percentage of population who are employed (source: CS 2007).

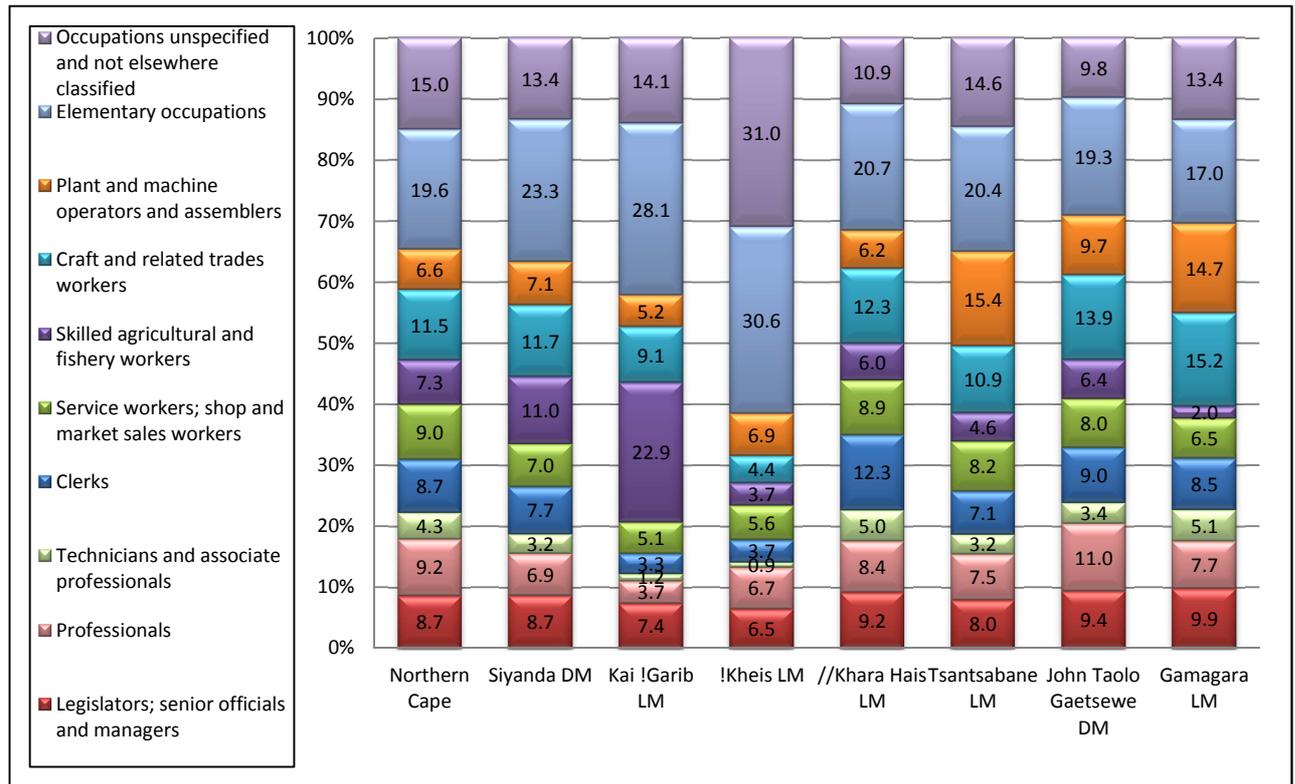


The occupation profiles for the local municipalities are varied, but the majority of the employed Solar Park Integration Project, February 2013



people is working in elementary occupations (Figure 19). Elementary occupations include domestic workers, street vendors, shoe cleaners, building caretakers, messengers, porters, garbage collectors, agricultural workers, mining and construction labourers, manufacturing labourers, transport labourers and freight handlers. In each area a relatively large proportion of occupations were unspecified or not elsewhere classified, which means that some of the profiles may change should this data be re-classified.

Figure 19: Occupation distribution of the employed (shown in percentage, source: CS 2007)



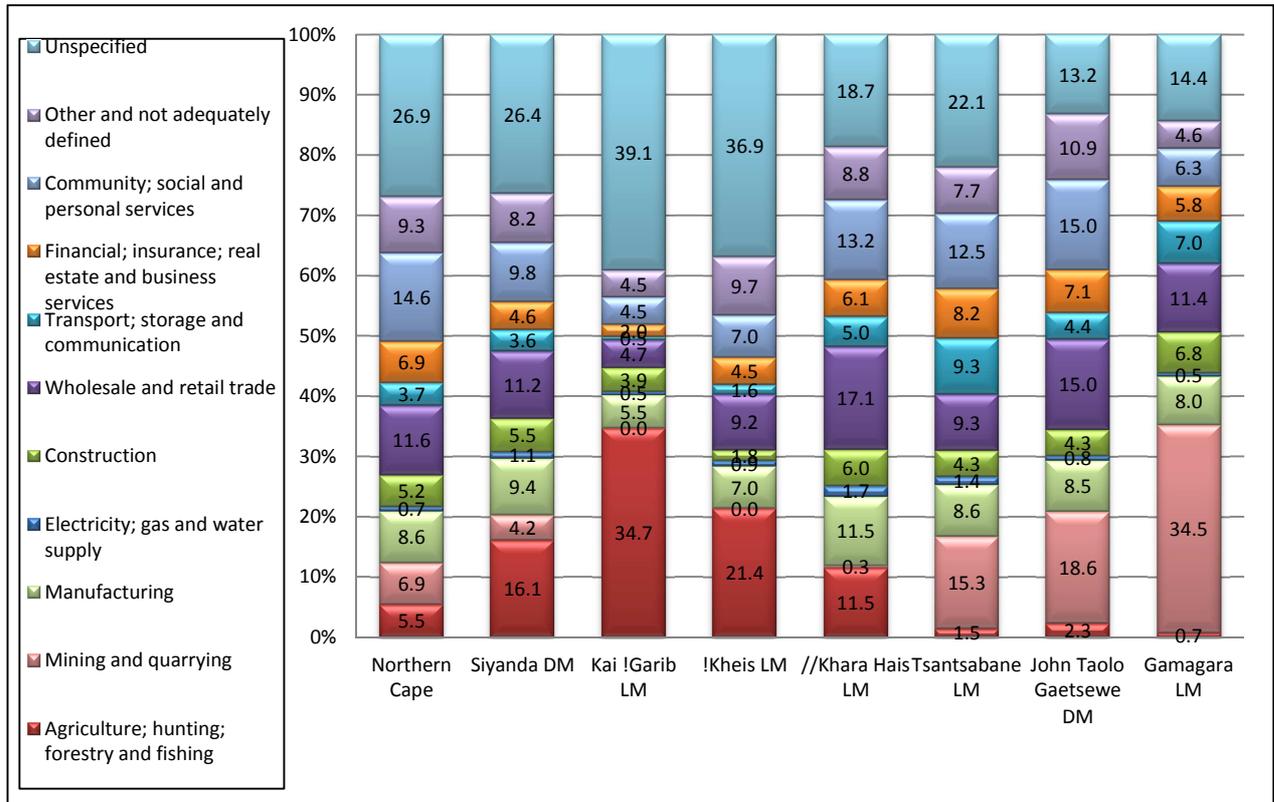
In the Gamagara LM the second and third largest occupation groups are Craft and related trades workers followed by Plant and machine operators and assemblers. In the Tsantsabane LM Plant and machine operators and assemblers is the second largest occupation group, followed by Craft and related trades workers. The category Craft and related trades workers include extraction and building trades workers such as miners and shot firers as well as metal, machinery and related trades workers. The category Plant and machine operators and assemblers include mining and mineral processing plant operators. In the Kai !Garib LM, the second largest occupation group is Skilled agricultural and fishery workers.

The Agriculture, hunting, forestry and fishing industry is proportionately the largest employer in the Kai !Garib LM and the !Kheis LM (Figure 20). In the Gamagara LM and the Tsantsabane LM, Mining



and quarrying is the largest employer, while Wholesale and retail trade is the largest employer.

Figure 20: Industry distribution of the employed (shown in percentage, source: CS 2007)



A large proportion of the employed people’s industries have been indicated as unspecified, especially on provincial level. Having these reclassified and sorted out may change the profiles.

4.4 Infrastructure

4.4.1 Services: Water, Sanitation, Electricity and Refuse Removal

Access to piped water, electricity and sanitation services relate to the domain of Living Environment Deprivation as identified by Noble et al (2006). The distribution of water supply varies for the different local municipalities. The Gamagara LM has the highest incidence of households with piped water either inside the dwelling or inside the yard (Figure 21). The Tsantsabane LM has the highest incidence of households with access to water through an access point outside the yard.



Figure 21: Distribution of water supply (households, shown in percentage, source: CS 2007)

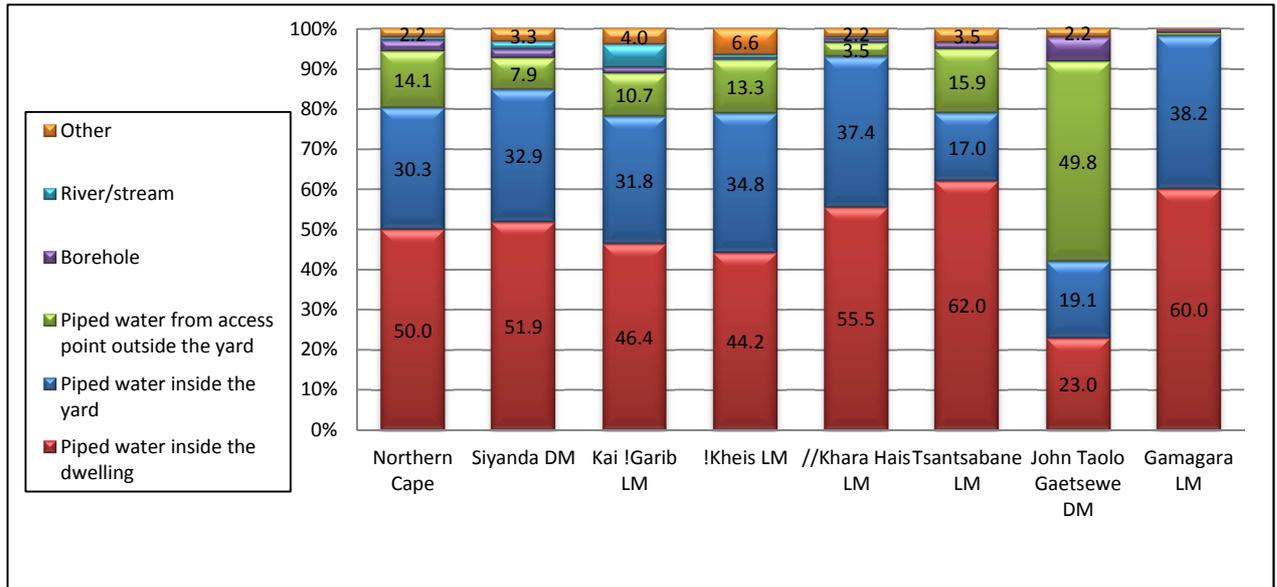
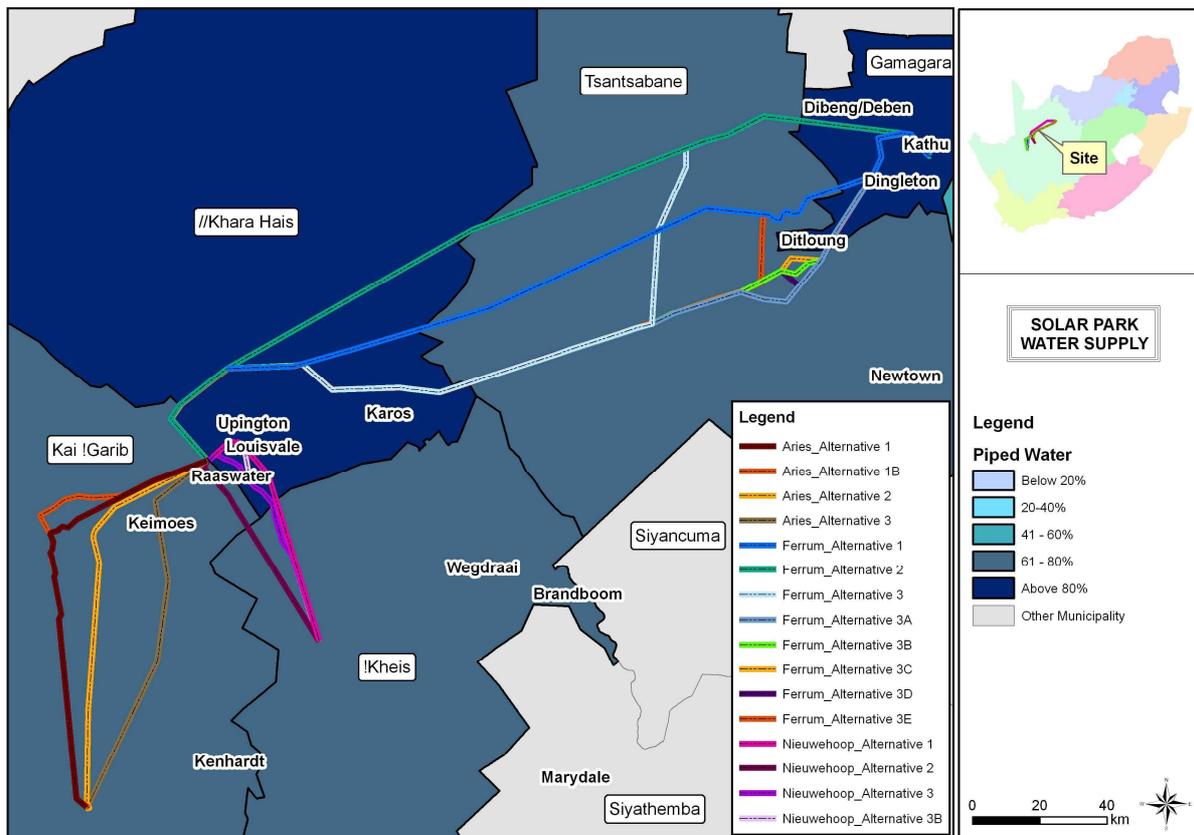


Figure 22 shows the percentage of households that have piped water inside the dwelling or inside the yard within the context of the proposed project.

Figure 22: Percentage of households that have piped water inside the dwelling or inside the yard (source: CS 2007).





another. The !Kheis LM and the Tsantsabane LM have the highest proportion of people with no access to sanitation services (Figure 23). This creates the risk of pollution of ground water, rivers and streams and the spreading of diseases.

Figure 23: Sanitation distribution (households, shown in percentage, source: CS 2007)

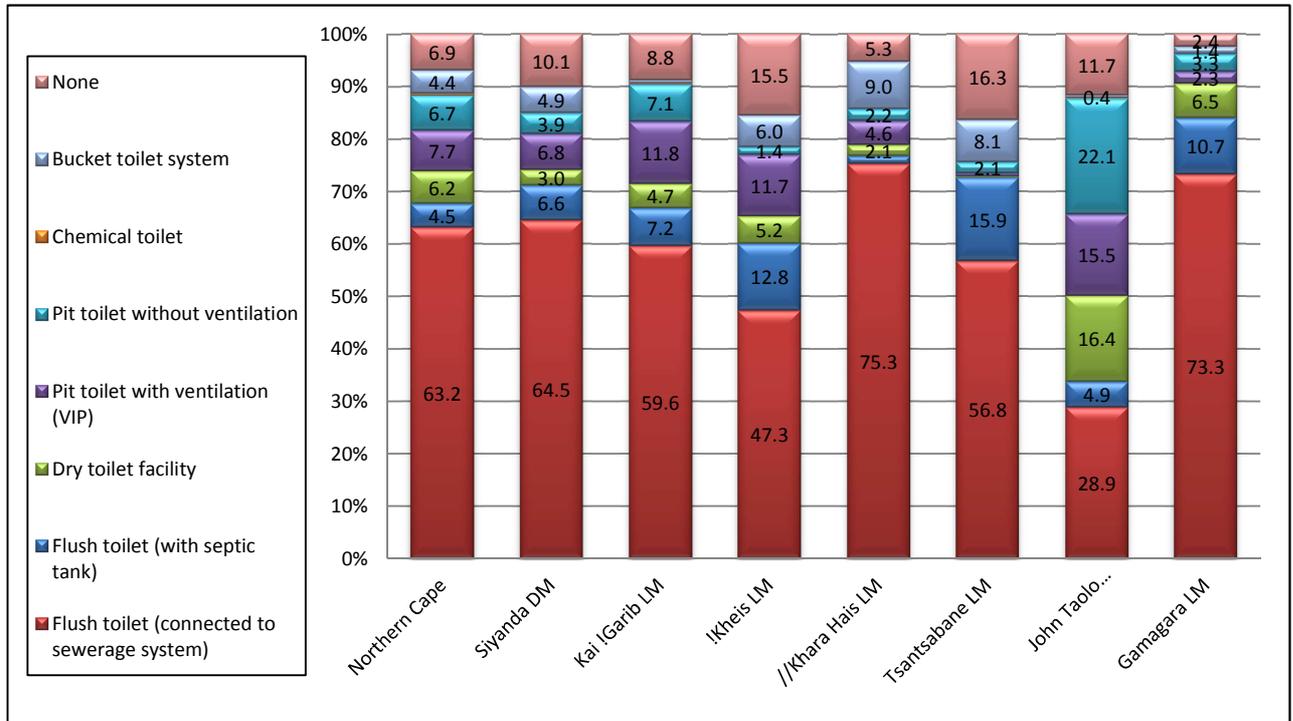
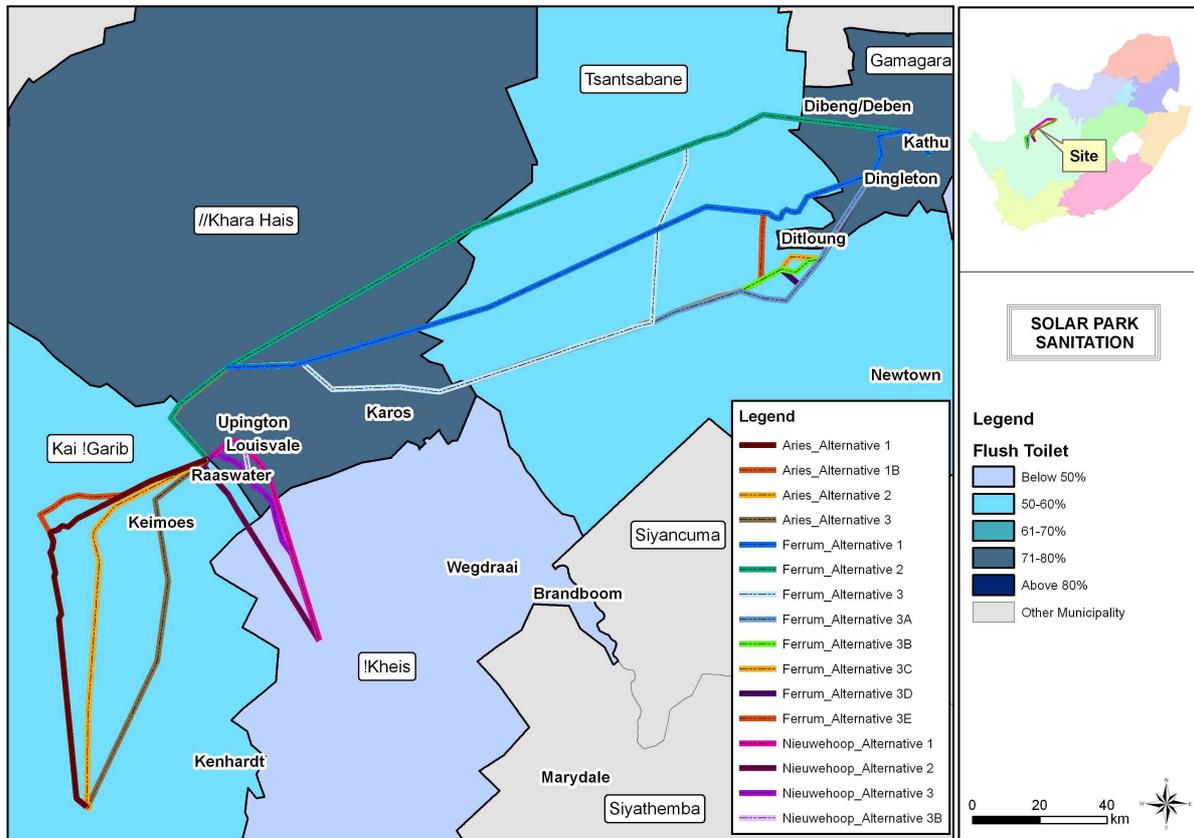


Figure 24 shows the percentage of households that have access to flush toilets within the context of the proposed project. The //Khara Hais LM and the Gamagara LM have the highest proportion of households with access to flush toilets that are connected to a sewerage system.



Figure 24: Percentage of households that have flush toilets connected to a sewerage system (source: CS 2007).



Electricity is the preferred energy source for lighting (Noble et al, 2006) and the lack thereof should thus be considered a deprivation. Even though electricity as energy source may be available, the choice of energy for cooking depends to a large extent on cultural preferences, although cost, availability and effectiveness are also factors that play a role. The !Kheis LM has the lowest proportion of households with access to electricity for lighting purposes, while the Gamagara LM has the highest proportion (Figure 25).



Figure 25: Distribution of energy source for lighting (households, shown in percentage, source: CS 2007)

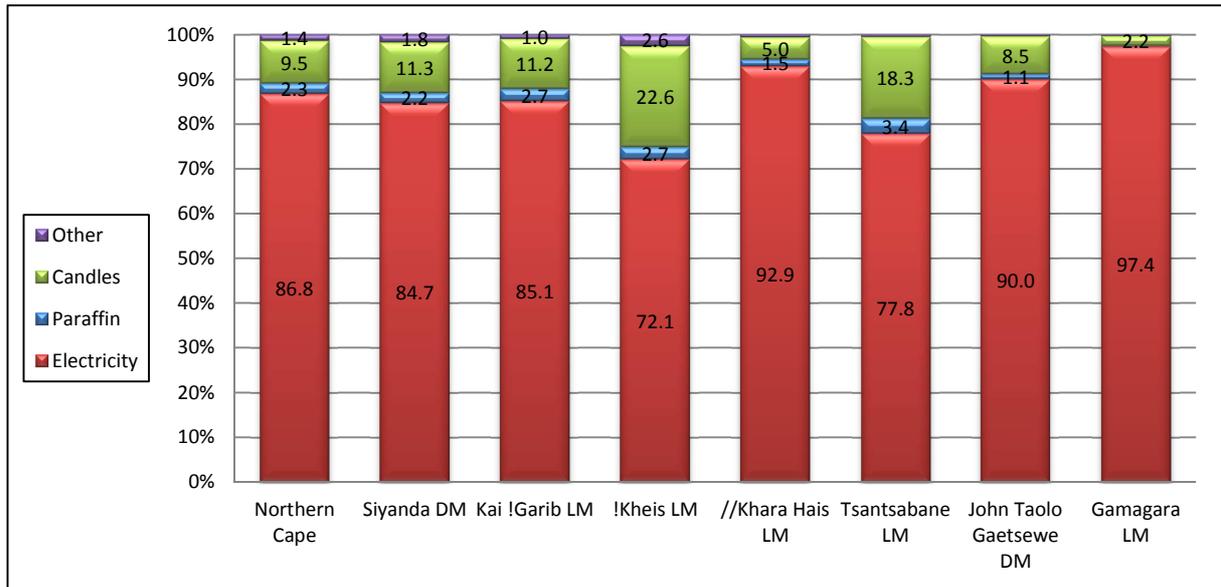
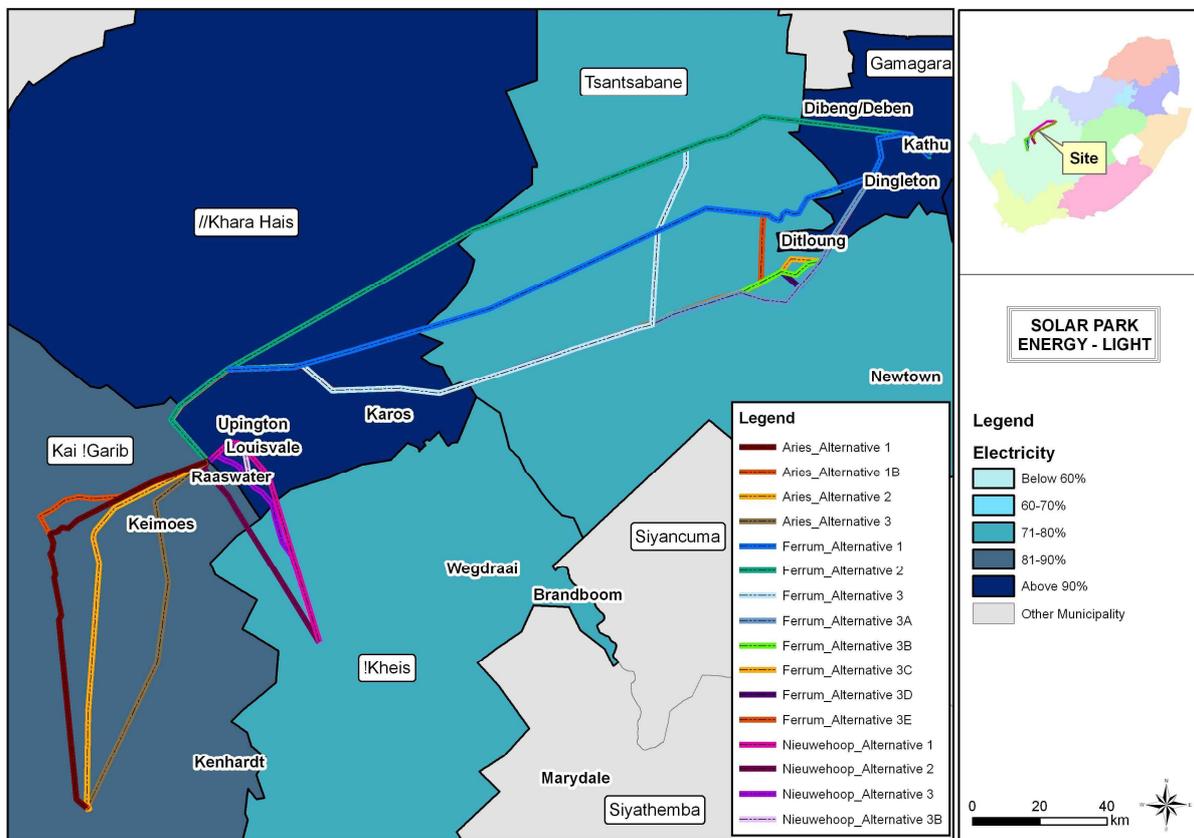


Figure 26 shows the percentage of households that have access to electricity for lighting purposes within the context of the proposed project.

Figure 26: Percentage of households that have access to electricity for lighting purposes (source: CS 2007).





The Gamagara LM has the highest proportion of households that have refuse removal by a local authority or private company at least once a week (Figure 27), while the Kai !Garib LM has the lowest proportion.

Figure 27: Refuse removal distribution (households, shown in percentage, source: CS 2007)

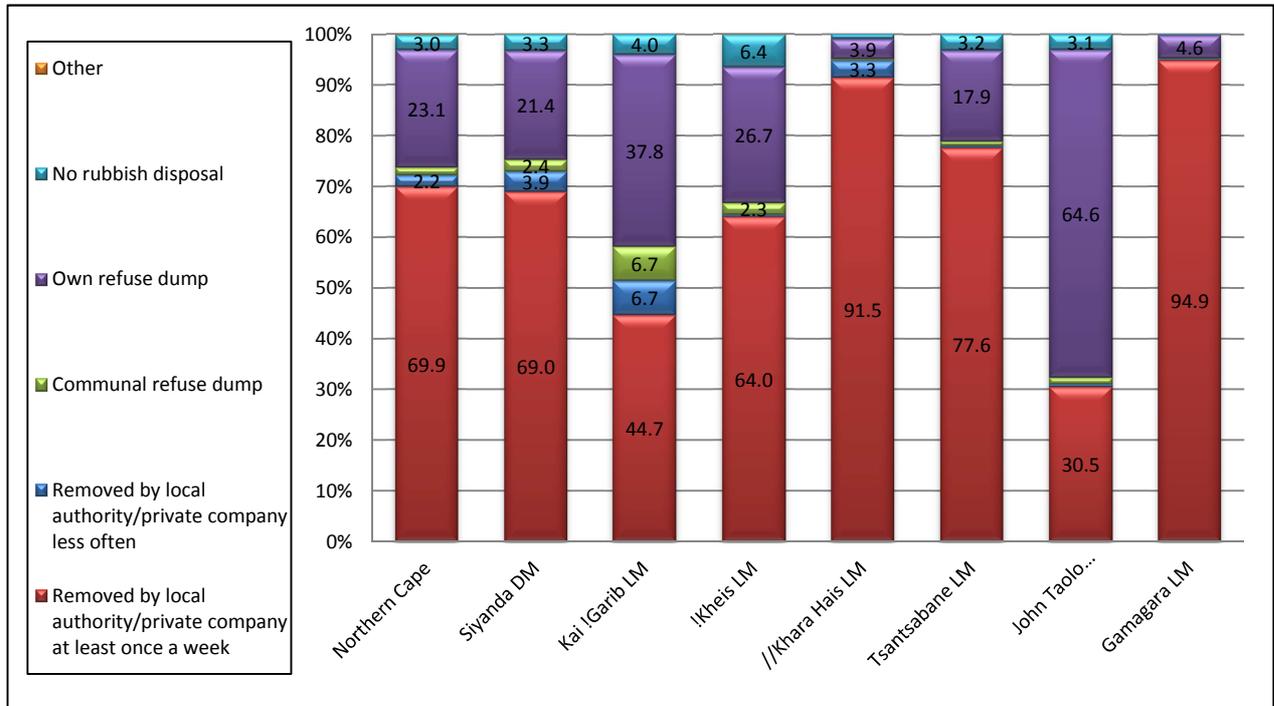
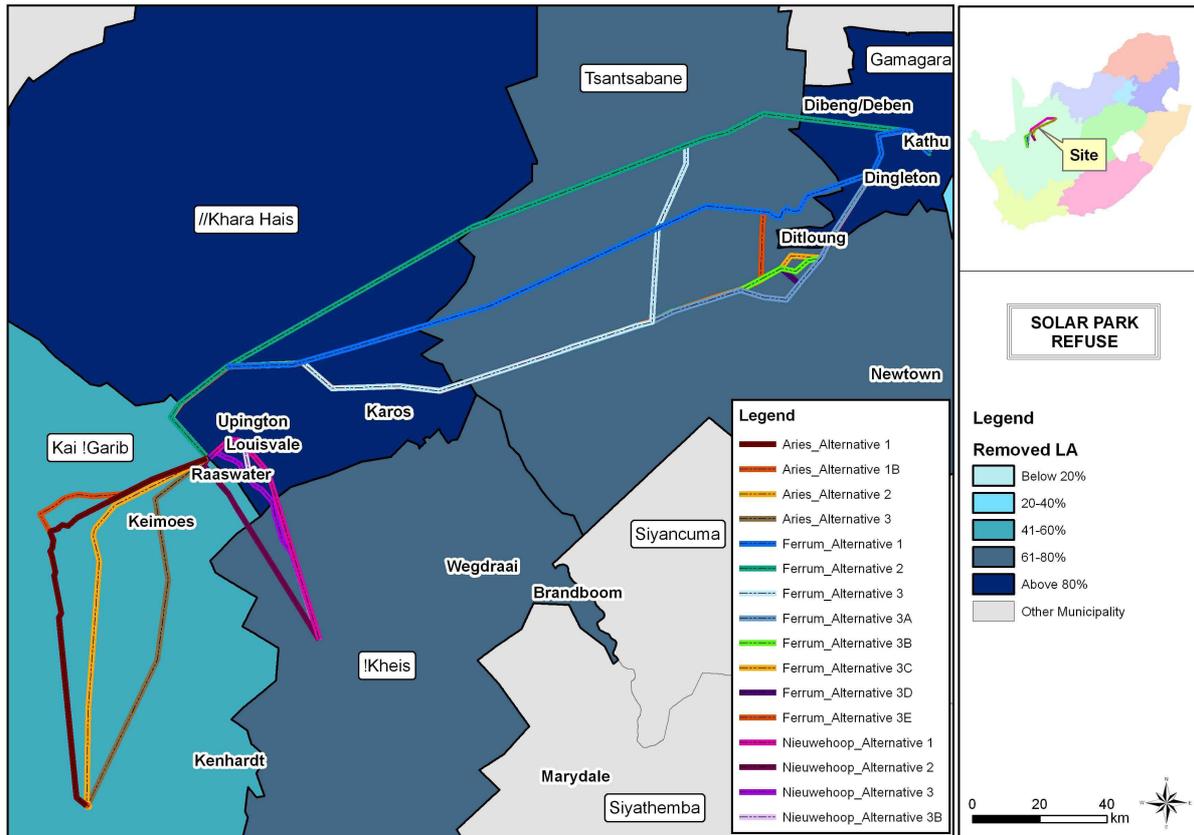


Figure 28 shows the percentage of households that have their refuse removed by a local authority or private company at least once a week. Excluding the Gamagara LM, most local municipalities have a relatively high proportion of households with their own refuse dumps.



Figure 28: Percentage of households that have their refuse removed by a local authority or private company at least once a week (source: CS 2007).



Households with their own refuse dumps rely mostly on backyard dumping, burial and burning. These practices adversely impact on human health and the environment, specifically:

- air pollution from smoke;
- pollution of ground and surface water resources and home grown fruit and vegetables;
- people inhaling smoke from fires at risk of contracting disease (cancer, respiratory related illness); and
- fires that can destroy property.

4.4.2 Tenure

The Gamagara LM and the !Kheis LM have the lowest proportions of houses or brick structures on a separate yard or stand (Figure 29). The !Kheis LM has the highest proportion of informal dwellings in a backyard, which can indicate a livelihood strategy in that area, where people erect structures in their yard to rent out. The Tsantsabane LM has the highest proportion of informal dwellings that are not in a backyard.



Figure 29: Type of dwelling (shown in percentage, source: CS 2007)

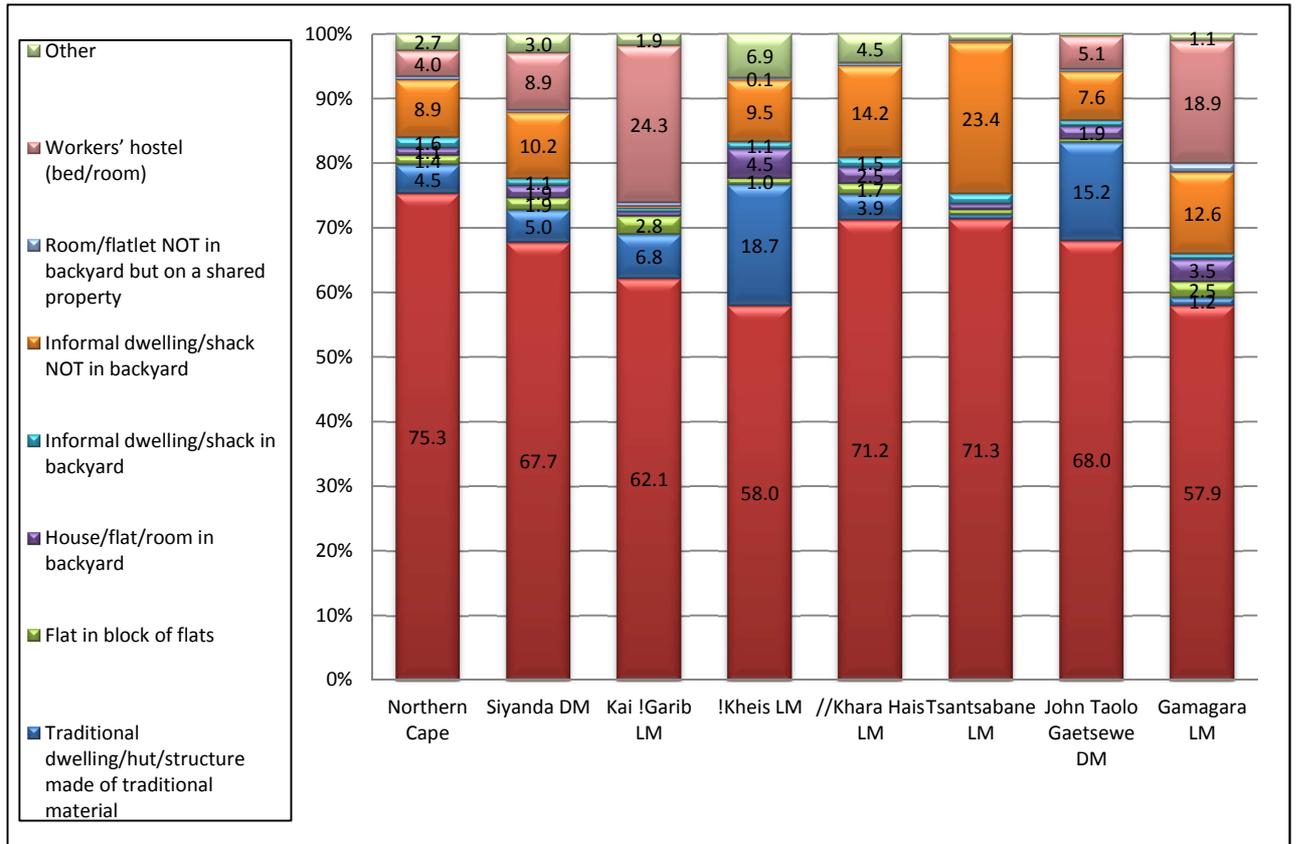
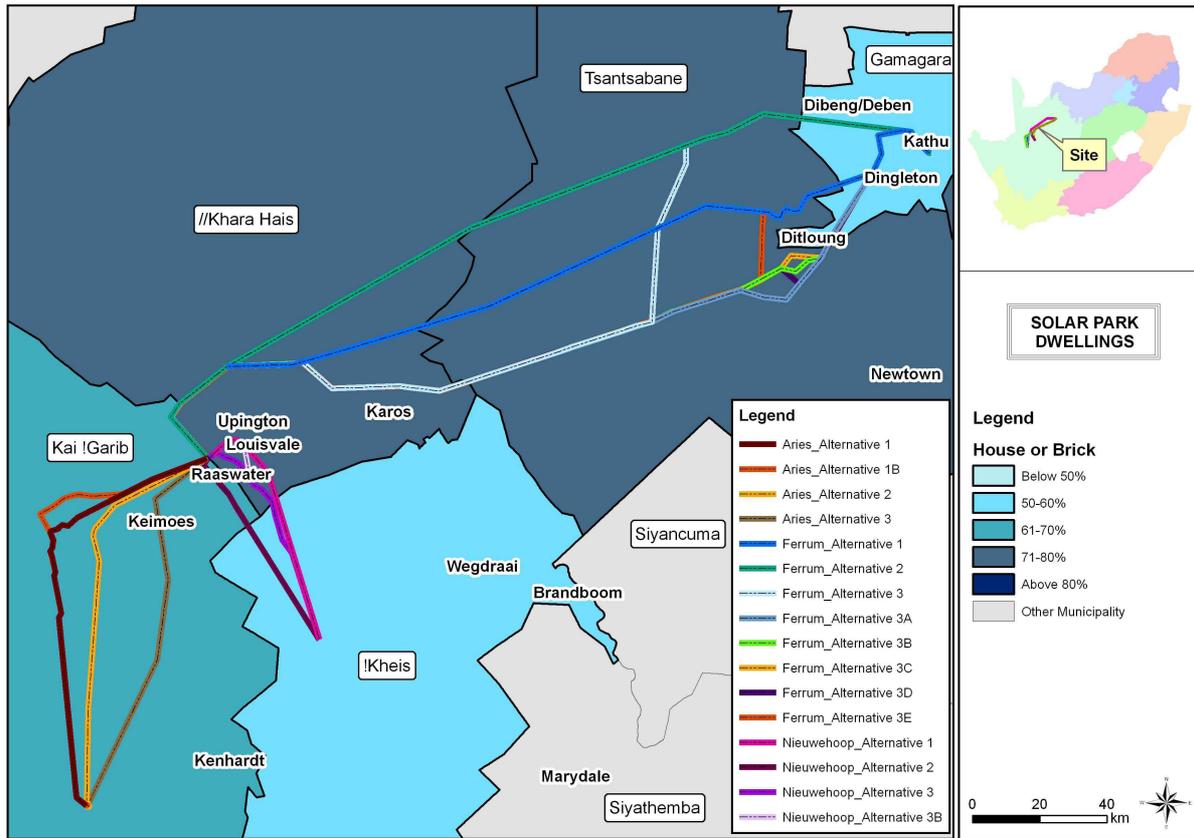


Figure 30 shows the proportion of households whose dwellings are house or brick structures on a separate stand or yard within the context of the proposed project.



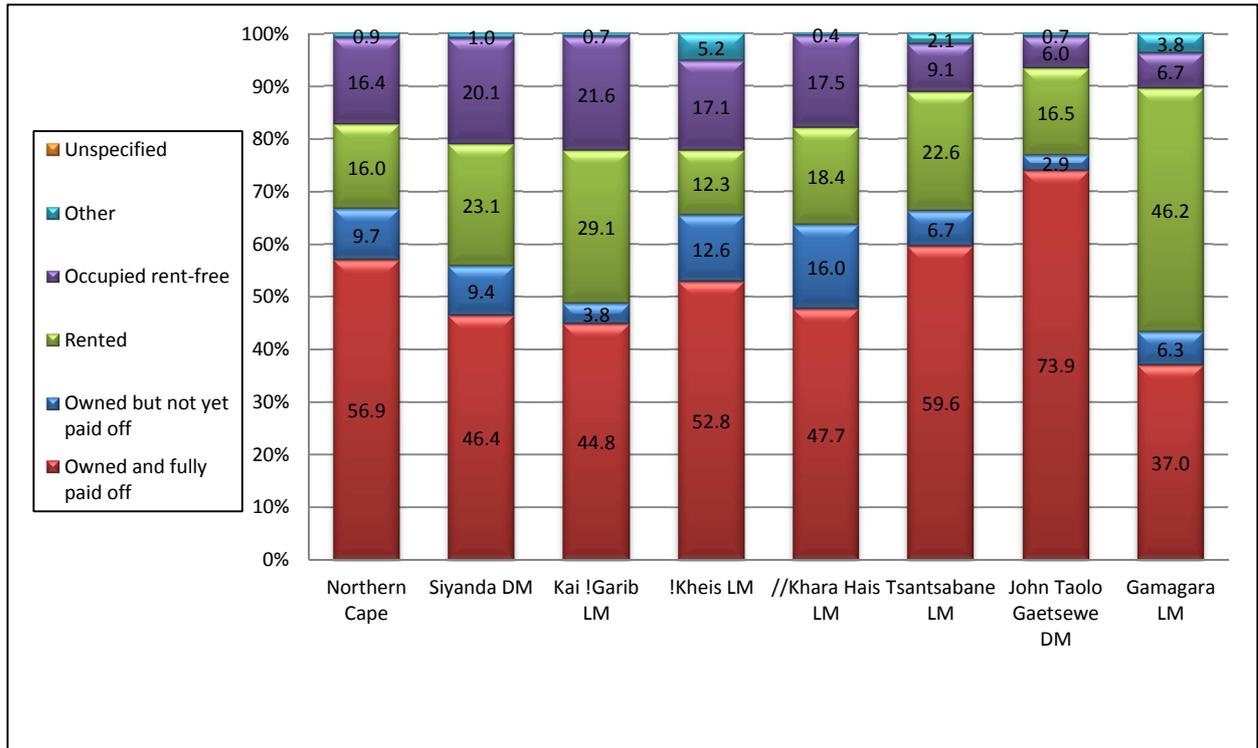
Figure 30: Percentage of households whose dwellings are house or brick structures on a separate stand or yard (source: CS 2007).



The Gamagara LM has the highest proportion of households renting their dwellings (Figure 31), and the lowest proportion of households that own their dwellings and have paid them off in full. The Kai !Garib LM, !Kheis LM and //Khara Hais LM have the largest proportions of households occupying their dwellings rent free.



Figure 31: Tenure status distribution (shown in percentage, source: CS 2007)



4.4.3 Transport

CS 2007 did not release data on a person’s mode of travel to school or their place of work. For indicative purposes the data from Census 2001 was used, but it is acknowledged that changes in mode of travel are likely to have taken place since 2001. Most people in the area under investigation travel by foot (Figure 32). The Tsantsabane LM and the Gamagara LM has the largest proportion of people travelling by bus.



Figure 32: Mode of travel to school / place of work (shown in percentage, source: Census 2001)

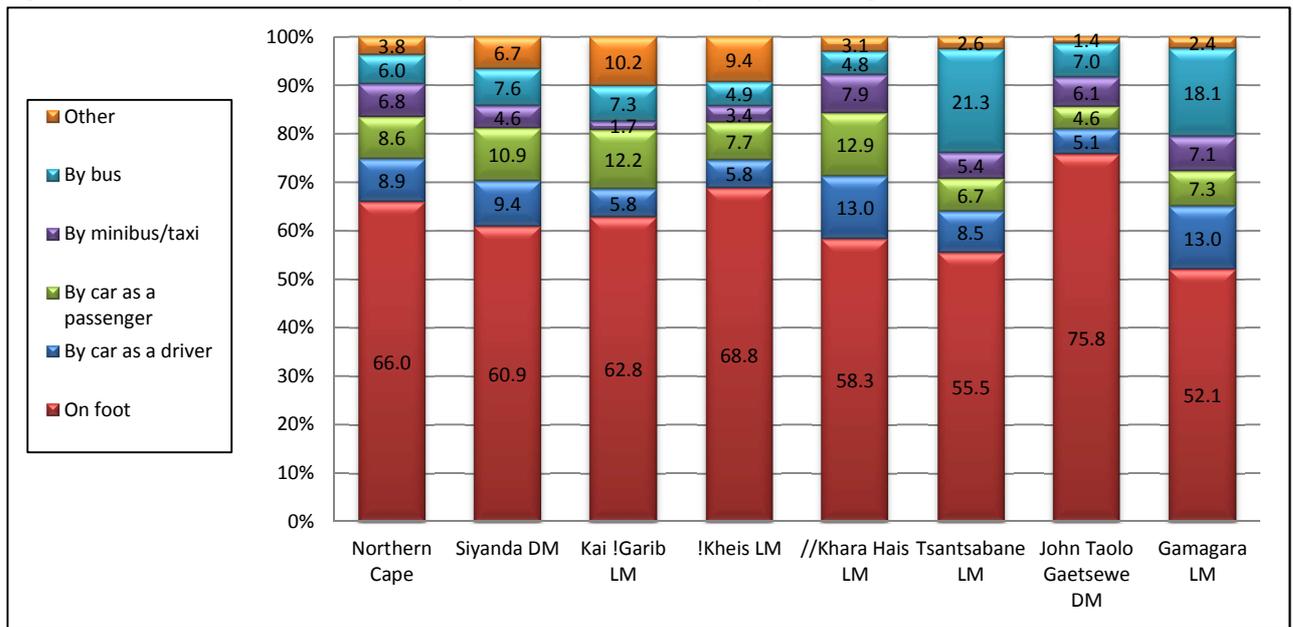
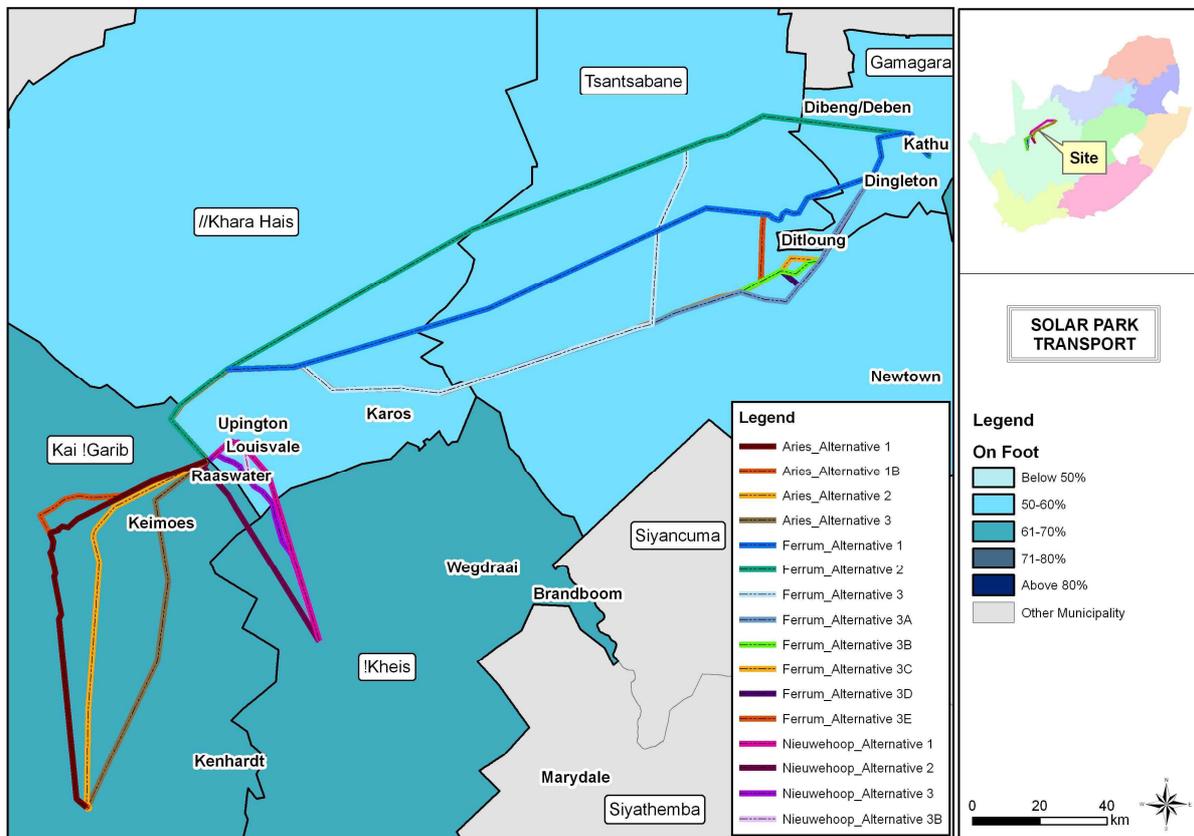


Figure 33 shows the percentage of people who travel to their place of work or study by foot in the context of the proposed project.

Figure 33: Percentage of people who travel by foot to their place of work or study (source: Census 2001).





5 Stakeholder identification and analysis

Every individual potentially affected by this project is a stakeholder in the project. The definition of a stakeholder is:

Any individual, group, or institution who has a vested interest in the social, economic or bio-physical resources of the project area and/or who potentially will be affected by project activities and have something to gain or lose if conditions change or stay the same (Adapted from WWF, 2005).

Stakeholder analysis identifies all primary and secondary stakeholders who have a vested interest in the issues with which the project is concerned. The goal of stakeholder analysis is to develop a strategic view of the human and institutional landscape, and of the relationships between the different stakeholders and the issues they care about most.

The stakeholder analysis will help the project identify:

- The interests of all stakeholders who may affect or be affected by the project;
- Potential conflicts or risks that could jeopardise the initiative;
- Opportunities and relationships that can be built on during implementation;
- Groups that should be encouraged to participate in different stages of the project;
- Appropriate strategies and approaches for stakeholder engagement; and
- Ways to reduce negative impacts on vulnerable and disadvantaged groups (WWF, 2005).

The full participation of stakeholders in both project design and implementation is a key to – but not a guarantee of – success. Stakeholder participation:

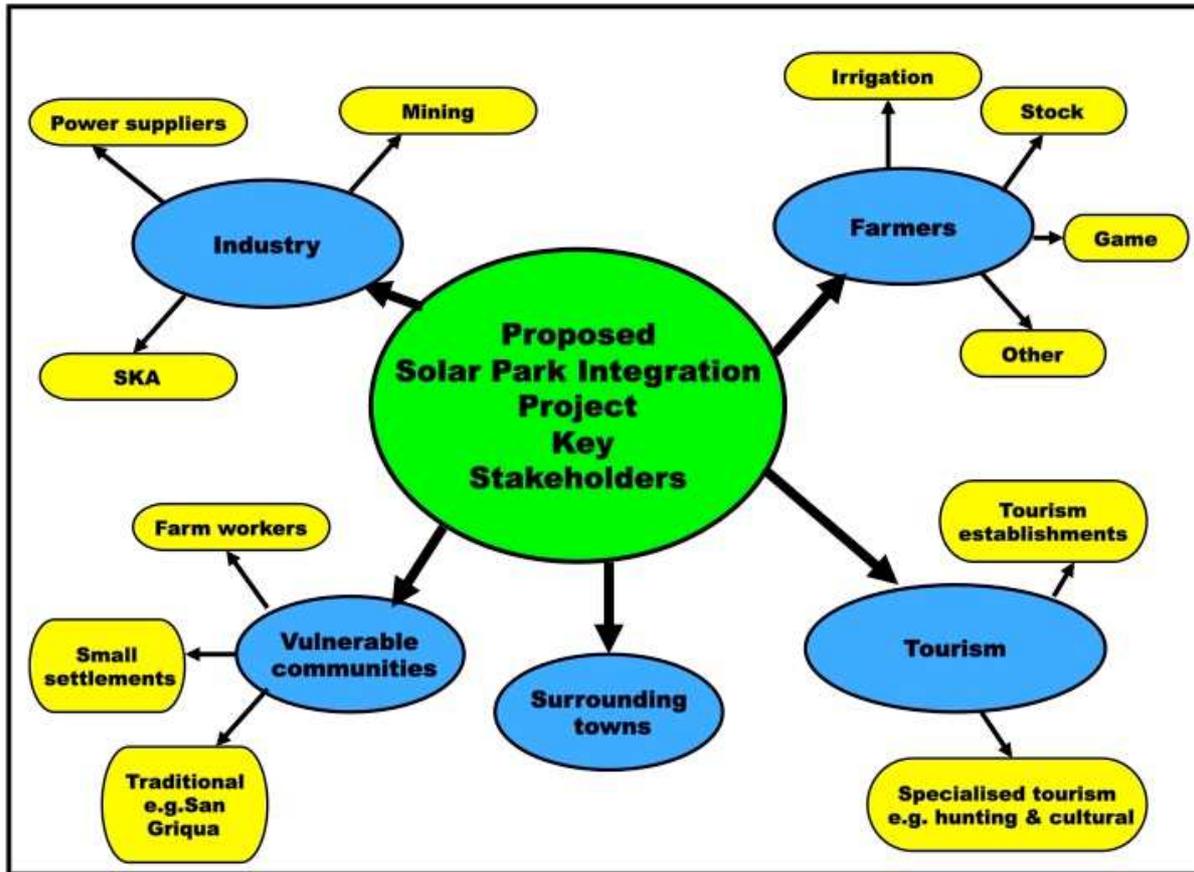
- Gives people some say over how the project may affect their lives;
- Is essential for sustainability;
- Generates a sense of ownership if initiated early in the development process;
- Provides opportunities for learning for both the project team and stakeholders themselves; and
- Builds capacity and enhances responsibility (WWF, 2005).

5.1 Stakeholder analysis

For the purpose of the stakeholder analysis, stakeholders have been clustered in groups. The figure below indicates the key stakeholders in the project. A more detailed description of each group and



their activities that may be impacted on by power lines follows in the paragraphs below.



5.1.1 Farmers

All the proposed routes cross farming areas. There are different commodities that are farmed. The impacts on the farming practices will depend on the commodity. A simplified distinction between different types of farmers has been made for the purpose of this report. Subsistence farmers will be discussed under the heading of vulnerable communities.

A significant part of the study area comprises **live stock farmers**. These farmers farm with cattle, goats or sheep that have adapted to the arid conditions. Some of the farmers breed with the stock, whilst others produce animals for the food market.

There are a few **game farmers** in the area. Game farms usually get their revenue from tourism, hunting or speculation with game. Game capture are often done by helicopter – the helicopters fly low and herd the game into capture areas. Sense of place, or a feeling of undisturbed nature is important for tourists visiting game farms to view game or to hunt.

There are also **irrigation farmers** in the area, especially around the Orange River. A number of the farmers farm with a combination of commodities. Crops include grapes (export, wine, raisins) and



citrus. One of the biggest issues for this stakeholder group are access control and safety/security issues.

It must be acknowledged that some of the farmers on the route and especially near Kathu already have infrastructure such as power lines, water pipelines and railways traversing their properties. The impact on these properties will be of a cumulative nature.

5.1.2 Industry

Economic activities in the study area are mainly concentrated in the mining and agricultural industry. The Sishen Mine falls in the study area for the Solar to Ferrum lines. It is one of the largest mines in South Africa, and part of the motivation for the project is that the mine want to increase its iron ore exports and therefore the existing railway line would need to be upgraded.

The core (the region with the highest concentration of receivers) of the Square Kilometre Array (SKA), the world's largest radio telescope will be constructed in the Northern Cape Province, about 80 km from the town of Carnarvon. The telescope will be very sensitive to interference, and therefore no power lines can be constructed in areas that may affect the functioning of the SKA, which is a project of international significance and as such very important to the South African scientific and economic community.

5.1.3 Vulnerable communities

It is important to consider that vulnerability is not a synonym for poverty (Moser, 1998:3). Although poor people are usually amongst the most vulnerable, not all vulnerable people are poor. Vulnerability, according to Chambers (1997: xvi), means exposure and defenselessness. He explains that it has two sides: the external side of exposure to shocks, stress and risk; and the internal side of defenselessness, which implies a lack of means to cope without damaging loss. Moser (1998: 3) phrase this differently and states that vulnerability has two dimensions, namely sensitivity and resilience. Sensitivity refers to the extent of a system's response to an external event, and resilience refers to the ease and speed of a system's recovery from stress. From these two definitions it can be seen that vulnerability deals with sensitive groups, which have low defenses, and are therefore susceptible to harm, and who are not able to recover from stresses easily or without external help. This definition for vulnerability was considered in the selection of vulnerable communities for the purpose of this report.

The first group of vulnerable people to consider is the **farm workers**. Due to the historical process that created the farm-worker class, farm workers have become one of the most subjugated and marginalised sectors of the South African society. In many cases, the problems have become



ingrained, thereby creating a culture of poverty in farm worker households (Atkinson, 2007). Farm workers as a class are often invisible in society. They are a powerless group because the unskilled or semi-skilled nature of their jobs means that someone else can easily replace them.

Many of the proposed alternative routes also traverse **traditional areas** governed by traditional authorities. The Griqua and the San are two minority groups that reside in the area. They represent some of the most marginalised communities in South Africa.

There are a number of **small settlements** in the study area. The people living in these settlements are poor and often “forgotten” by the government. There are no or limited activities in these settlements, and often existing social pathology like gender violence, alcoholism and drug abuse. These communities are vulnerable to influences from outside the area and impacts traditionally associated with construction activities.

Some of the people in the vulnerable groups make a living from subsistence farming on communal land or around the settlements. They are vulnerable with regards to any setbacks such as loss of land, loss of access to resources such as water and stock theft.

5.1.4 Surrounding towns

The proposed power lines may affect a number of towns. The biggest impact on these towns will be during the construction phase and will be associated with pressure on infrastructure and deviant social behaviour. There may also be positive social impacts associated with the construction phase.

5.1.5 Tourism

The project area includes several scenic places that are well known for their attraction to tourists. The tourism industry in the area is developed around the sense of place, natural beauty and natural resources. One of the concerns is the visual impact of the proposed line on the livelihoods of owners of tourism establishments. There may also be a positive impact on the tourism industry in the construction phase when contractors look for temporary accommodation.



6 Social Impact Assessment

“Almost all projects almost always cause almost all impacts. Therefore more important than predicting impacts is having on-going monitoring and adaptive management.” Frank Vanclay

Considering the statement above, some social impacts will not be discussed in detail and the focus of the report will be on the most severe impacts. The impact assessment section will commence with a discussion of social impacts that will occur throughout the project area. These impacts are generic and will take place irrespective of the route that will be chosen. Section 7 will discuss the alternatives proposed for each section of the project. For SIA purposes the project has been divided in the following sections:

1. Solar Park to Aries Substation
2. Solar Park to Nieuwehoop Substation
3. Solar Park to Ferrum Substation
4. Solar Park and other local infrastructure

Each section includes the relevant substation and power lines.

The period of time between the start of the construction phase and the completion of the SIA must be considered. Since the social environment is dynamic and adapts to change, it is highly likely that impacts predicted in this report might have changed when construction starts. A social impact management plan will be included in this report. The implementation of the relevant sections of this plan should start immediately. It must also be considered that social impacts of the project started when the project was announced. The management of social impacts is more important than the predicting and listing of impacts. Many of the social impacts that will be experienced as a result of the proposed project is generic, and will take place regardless of which route or sub-station site will be chosen. Some social impacts are specific to certain stakeholder groups.

Given the complexity of the SIA an attempt was made to simplify the impact assessment and to focus on aspects that can aid the decision-making process. For the purpose of this assessment social change processes that can potentially cause social impacts have been identified. A social change process is a discreet, observable and describable process that changes the characteristics of a society, taking place regardless of the societal context (that is, independent of specific groups, religions etc.). Social change processes can be measured objectively. The way in which social change



processes are perceived, given meaning or valued, depend on the social context in which various societal groups act. Some groups in society are able to adapt quickly and exploit the opportunities of a new situation. Others (e.g. vulnerable groups) are less able to adapt and will bear most of the negative consequences of change. These social change processes may, in certain circumstances and depending on the context, lead to the experience of social impacts. Social impacts are therefore completely context-dependent (Vanclay, 2003). A number of social change processes have been identified. Under each social change process the following will be discussed:

1. Statement of the situation
2. Potential impacts
3. Opportunity for mitigation/enhancement
4. Monitoring
5. Impact table

The following table represent the social change processes that have been identified and the possible social impacts that may result because of these processes. It also identifies the stakeholder group that is most likely to be affected by the process.

Table 3: Social change processes leading to impacts

Social Change Process	Possible Social Impact	Affected stakeholder group
In-migration	Increased pressure on local services & infrastructure Increased incidence of STD's, HIV & AIDS Disruption to existing power relationships and decision-making structures Social nuisance e.g. prostitution, damage to property, discrepancy in income of workers	Vulnerable communities Surrounding towns Tourism Farmers
Resettlement	Range of social impacts – specific procedures to be followed, best to be avoided	Vulnerable communities



	Uncertainty about future	
Change in land use	<p>Decreased access to sources of livelihood resulting in poverty and/or drop in standard of living</p> <p>Loss of productive land leading to loss of profit leading to job losses</p> <p>Long term conflict about management of servitudes</p> <p>Environmental nuisance e.g. noise, dust</p> <p>Safety hazards</p> <p>Communication and arrangements surrounding access to properties & management of servitude – can be positive or negative</p> <p>Loss of sense of place</p>	<p>Farmers</p> <p>Vulnerable communities</p> <p>Tourism</p>
Deviant social behaviour	<p>Increase in crime and disorder</p> <p>Breakdown of traditional values</p>	<p>Vulnerable communities</p> <p>Farmers</p> <p>Industry</p> <p>Tourism</p> <p>Surrounding towns</p>
Employment opportunities	<p>Loss of workers to construction process because of higher pay</p> <p>Opportunity for local low skill employment</p> <p>Indirect employment opportunities</p>	<p>Vulnerable communities</p> <p>Farmers</p> <p>Industry</p> <p>Tourism</p> <p>Surrounding towns</p>
Legal processes	<p>Uncertainty resulting from EIA process (selection of route)</p> <p>Fear and anxiety related to the land</p>	<p>Industries</p> <p>Farmers</p>



	acquisition process Feelings related to management of servitude – Eskom’s social license to operate.	Vulnerable communities Tourism Surrounding towns
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The impact tables have been designed taking the following criteria into consideration:

The significance (quantification) of potential environmental impacts identified during scoping and identified during the specialist investigations have been determined using a ranking scale, based on the following:

- Occurrence
 - Probability of occurrence (how likely is it that the impact may occur?), and
 - Duration of occurrence (how long may it last?)
- Severity
 - Magnitude (severity) of impact (will the impact be of high, moderate or low severity?), and
 - Scale/extent of impact (will the impact affect the national, regional or local environment, or only that of the site?)

Each of these factors has been assessed for each potential impact using the following ranking scales:

Probability:	Duration:	Scale:	Magnitude:
5 – Definite/don’t know	5 – Permanent	5 – International	10 - Very high/don’t know
4 – Highly probable	4 - Long-term (ceases with the operational life)	4 – National	8 – High
3 – Medium probability	3 - Medium-term (5-15 years)	3 – Regional	6 – Moderate
2 – Low probability	2 - Short-term (0-5 years)	2 – Local	4 – Low
1 – Improbable	1 – Immediate	1 – Site only	2 – Minor
0 – None		0 – None	

The significance of each potential impact was assessed using the following formula:

$$\text{Significance Points (SP)} = (\text{Magnitude} + \text{Duration} + \text{Scale}) \times \text{Probability}$$



The maximum value is 100 Significance Points (SP). Potential social impacts were rated as high, moderate or low significance on the following basis:

- More than 60 significance points indicates high environmental significance.
- Between 30 and 60 significance points indicates moderate environmental significance.
- Less than 30 significance points indicates low environmental significance.

It must be stated that the impact tables and ratings have been adapted from the environmental sciences and that it is not always possible to compartmentalise the social impacts. For the sake of consistency this has been attempted, but it is not innate to social sciences. Allowance for the changing and adaptive nature of social impacts should be made when interpreting the impact tables. Another consideration is that the management and mitigation of some social impacts require input from a number of agencies, as these can only be addressed within the greater societal context. Proper mitigation and management would also take a number of years – this period would go far beyond the construction phase of the project. The focus of this report will therefore be on project-specific mitigation. The social impact will be discussed, but in some instances it is not possible for the proponent to implement the mitigation without support from other role players. The recommendations at the end of the report will focus on the best way to manage social impacts in the context of this project.



Impacts identified, mitigation and social management plan

This section of the report focuses on the identification of social change processes leading to social impacts, mitigation and management measures. The following social impacts may be experienced as a result of the project. This section describes the impacts and the mitigation measures that will be relevant to the entire project.

6.1 Social change 1: In-migration

6.1.1 Statement of situation

In-migration is a demographic process that relate to the movement and composition of people in the study area. There will be a temporary in-migration of construction workers. The construction period will last for a couple of years, depending on how many contractors will be used. The contracting strategy will be developed closer to the construction start time, and will be influenced by project time lines, costs, resource availability at the estimated time of construction. Apart from construction teams there may also be an influx of people looking for economic opportunities, especially with the development of the Concentrating Solar Power Plant around Upington. There are a number of small settlements in the area that can be seen as sensitive receptors. Poverty and unemployment rates in these areas are high, and there may be existing social problems such as HIV/AIDS, drug abuse, alcoholism and teenage pregnancies that may be exaggerated by the presence of newcomers in the area. During the operational phase there will probably not be significant in-migration into the area, but the residual impact may remain.

6.1.2 Potential impacts

The first impact associated with in-migration is increased pressure on local services and infrastructure. This includes services such as sanitation, electricity, water, waste management and the availability of housing. There will also be an increase in the use of local roads and transport systems that may cause road deterioration and congestion. This impact will be magnified on private properties, since the farm roads were not designed to carry heavy traffic. The physical environment is very sensitive and the roads are prone to erosion. There is concern about the maintenance of the roads and the construction of new roads. The local health and education system may not be able to absorb the extra load. Religious, community and recreational facilities will need to provide these services to additional people. Squatter settlements may develop near the construction fronts or in surrounding towns to accommodate job seekers. In-migration can also have an impact in the areas



where the aspiring labour force comes from. These labour-sending areas may experience a loss of skilled labour, family units may be destabilised and spending patterns in those areas may change. In-migration can also have an indirect positive impact on infrastructure. This can happen when construction camps are erected in towns or settlements and the physical infrastructure are left behind after the construction is finished for the use of the local community. This can be used for housing, clinics or community centres, for example.

The second impact associated of in-migration is around sexual behaviour. There may be an increase in the incidence of sexually transmitted diseases, HIV and AIDS. This is usually the result of men being far away from their homes and as a result engages in sexual activity with local woman. There can be secondary impacts that will have a long-term impact on the host communities. Local woman may provide sexual and housekeeping services to men in exchange for financial security – not to be confused with prostitution, but rather a livelihood strategy. This may result in pregnancies. There is a risk that these women may be left destitute when the construction workers move on to a new project in another area, leaving the local communities with the responsibility to ensure that these individuals survive. There could therefore be an increase in female-headed households in these areas.

In all communities power and authority is distributed unequally – that means everybody cannot be in a position of authority. The distribution of power depends on different aspects, ranging from financial or political status to age or gender. Communities have implicit and explicit social rules that have developed to maintain power relationships. New economic opportunities and increased local employment may result in people achieving a higher status in the community, and therefore be able to challenge existing power relationships. This may cause conflict within communities. If outsiders do not respect or align themselves with existing authority structures, it may also impact on the community cohesion and structure.

Tension between local communities and contractors may develop because of a number of social nuisance factors. Local woman may use prostitution as an income strategy, since the presence of contractor may create a market for these services. This can contribute to the breakdown of traditional value systems and social tension and violence. Another factor to be considered is damage to properties. Contractors may knowingly or unknowingly damage the property of local people. This can be something relatively small like taking out a gatepost or a devastating thing such as leaving gates open and breeding animals are lost because of careless behaviour. The discrepancy in income between local people and construction workers could also cause social tension. They may choose to spend their money on activities such as alcohol consumption or prostitution that may be offensive to



local communities, or just the fact that they are able to enjoy much higher standards of living may create social differentiation and inequity (actual or perceived).

6.1.3 Opportunity for mitigation/enhancement

Some social impacts are difficult to mitigate on a project level, as proper mitigation would require input from government or other agencies outside the project area. It would not be practical for a project proponent to manage impacts that occur in a greater societal context. It is very difficult to control an influx of people into an area, especially in country where there are high levels of unemployment. It is therefore important to anticipate the impacts and plan accordingly. The fact that the impact on local infrastructure will be temporary, and that the construction area will change as the construction progress, contributes to the difficulty of managing this impact. The mitigation will therefore focus on impacts that can be mitigated, such as infrastructure where impacts will be permanent unless mitigated. Infrastructure such as roads should be maintained in the present condition or improved on. The contractor should be responsible for managing this impact on private property. The must adhere to the rules established by the owner of the property. This aspect should be included in their scope of work to ensure that they provide the financial means to execute the necessary maintenance and repair work required. Any incidences must be reported in a complaints register that should be inspected by the social and environmental monitor on a weekly basis. Eskom must audit this document on a monthly basis. When provincial and national roads are involved, the expectation is not that the contractors are responsible, but that the responsibility lies with Eskom, and they should consult with the relevant roads agency to ensure that they do not contribute to the deterioration of roads without taking some responsibility for the impact that their vehicles have on the road during construction.

The site of construction camps must be discussed with local government structures (or traditional structures in areas under traditional leadership) and opportunities for co-operative development should be investigated. The government may for example donate the land and services, whilst the contractor donates the physical infrastructure such as buildings. This should then be left behind after the construction process for the use of the local communities.

The contractor should have a person trained in first aid on site to deal with smaller incidents that require medical input.

If construction camps with local barracks are used these should adhere to strict environmental requirements. Services should be negotiated with landowners and local municipalities and Eskom should audit the agreements that must be put in place to ensure that essential services are not



taken away from communities. Eskom must appoint an environmental and social monitor for the project. These people must be independent from the contractor. The social monitor can also act as the community liaison officer. Local landowners should be allowed to produce a set of rules to which contractors must adhere if they are on private property. The environmental and social monitor should inspect this. The landowner must sign a release form when the construction team leave his property to ensure that there is no unfinished business on his property. The social monitor must check in with the affected landowners on a weekly basis whilst there are construction activities on the property. Communication and grievance channels must be explained in writing. The landowners must not be sent on a wild goose chase between Eskom and the contractors if they have grievances or complaints. Should the provision of bulk-services to contractors be to the detriment of the affected communities, these services should be brought in from outside the affected area. When investigating existing accommodation the contractor should ensure that the necessary sanitation services are available and have the capacity to meet the additional needs. This insurance should be given to the contractor in writing.

Eskom cannot control squatter settlements surrounding towns. The contractor must ensure that no squatter settlements are erected near or adjacent to construction camps. People should be asked to leave before they have the opportunity to settle. The assistance of the local police in this matter will be crucial. The contractor must put up signs that no recruitment will take place on site, and all jobseekers must be shown away from site. The contractor should not allow his staff to utilise services from squatters. There must be a formal trading area for informal traders, but they must not be allowed to sleep where they trade or set up camps in close proximity to the construction camp.

HIV/AIDS awareness training must form part of the induction of staff. Condoms must be freely available on site. In conjunction with local NGOs or the Department of Health, these awareness training must also be given at local schools and clinics. The training should include discussions about birth control and the potential long-term risks associated with casual sex. Condoms should also be distributed in local places such as schools, clinics, shebeens and other recreational facilities. The workforce must be discouraged from engaging in casual sexual relationships with local people and informed of the consequences. Local people must be discouraged from entering the construction camp.

Access to the construction camp should be controlled. Visitors should be signed in and out and no overnight visitors should be allowed. The code of conduct as agreed with the affected communities and landowner should be adhered to. No alcohol should be sold in the camps, and the amount of alcohol allowed in the camp should be limited. Prostitutes should not be allowed to enter the camp.



There should be fines for breaking the rules. Frequent inspections of the camps should take place, and if non-conformances are found payment for the contractor must be withheld until it is corrected. The contractor must take out insurance for the damage of local property – this should be a condition of the contract. The insurance should take the external environment into consideration. Proof of this insurance must be given to Eskom.

6.1.4 Monitoring

Eskom must appoint an environmental and social monitor for the project. These people must be independent from the contractor. The social monitor can also act as the community liaison officer. Frequent inspections of the camps should take place, and if non-conformances are found payment for the contractor must be withheld until it is corrected. The contractor must keep a formal complaint register that can be inspected on a weekly basis and audited on a monthly basis.

6.1.5 Impact table

Before mitigation							Mitigation	After mitigation					
Finding	Phase	Impact (+/-)	Magnitude	Duration	Scale	Probability	Significance	Means of mitigation	Magnitude	Duration	Scale	Probability	Significance
Pressure on infrastructure	Construction	Negative	8	2	3	5	65 (High)	Contractor maintain & repair private infrastructure Eskom negotiate about regional infrastructure Trained First Aid person on site Ensure adequate capacity before construction start	6	2	3	5	55 (Moderate)
Leave behind infrastructure for community	Construction	Positive	10	5	3	2	36 (Moderate)	Liaise with municipalities for construction camp sites Enter partnership where infrastructure is left behind for use of communities	10	5	3	3	54 (Moderate)
Increase in STDs	Construction	Negative	8	3	3	4	56 (Moderate)	STD awareness training part of induction Condoms available Local education	6	4	3	3	39 (Moderate)



Social nuisance	Construction	Negative	8	2	2	5	60 (High)	Access control to camps	6	2	2	3	30 (Moderate)
						No sale of alcohol							
						No overnight visitors							
						Code of conduct & fines							
						Social & Environmental Monitors							
						Insurance against damage							

6.1.6 Cumulative impacts

Cumulative impacts can be viewed in two ways. The first is to add impacts that may be caused by this project to impacts caused by other projects in the area. The second way in which to understand cumulative impacts is to look at it from the reference point of the receiver as the totality of the impacts experienced. In some areas where there are specific industrial development e.g. Kathu and Uppington some of the impacts may already being experienced. The specific route should therefore determine what cumulative impacts might occur.

6.1.7 Residual impacts

Many of the impacts cannot be mitigated to such an extent that they are no longer significant. Many of the impacts will be short term, and disappear after the construction phase. Residual impacts that are mentioned are those impacts that will be long term or permanent. Many of these impacts cannot be managed or controlled by Eskom, as some occur on an individual level. Damage to roads may not be repaired for a long period, and as a result local communities and travellers will be exposed to safety risks. The mitigation of this impact lies outside the scope of Eskom. Although they can enter into negotiations with the relevant parties, the influence that they have to prioritise repairs may be limited. Another residual impact is STDs and HIV/AIDS. For all practical purposes this is a permanent impact that will be felt on an individual level. Unplanned pregnancies resulting in female-headed households are also a long-term residual impact that Eskom can do little about. Changes in power relationships in power relationships and community cohesion may have long-term implications resulting in permanent changes in the community. It must be acknowledged that social change occurs in any event, and that communities can adapt to this change.

6.2 Social change 2: Resettlement

6.2.1 Statement of situation

Resettlement refers to a co-opted or coerced process by which local people surrender land for a project and are relocated elsewhere as part of the relocation package. Since there are real risks



associated with living in close proximity of a power line, people whose houses fall within a certain distance of the proposed line would need to be relocated. If the line traverses some of the rural or traditional areas there is a distinct possibility that there will be people who need to be relocated.

6.2.2 Potential impacts

Resettlement is a traumatic process that can cause a myriad of social impacts. The potential impacts that may be experienced will depend on which community will be affected. It is therefore difficult to assess the potential impact without more detail about the affected community, which can only be obtained once an alignment has been selected. Examples of impacts associated with resettlement are loss of income, loss of physical assets, disruption of family life, relocation of graves, fear and anxiety, loss of social networks, loss of environmental assets, change in livelihood strategies and access issues. The social structure of affected communities should also be considered, since it may be necessary to move a number of houses even if just one household is affected because of the social and cultural significance of the settlement pattern.

6.2.3 Opportunity for mitigation/enhancement

This impact should be avoided if possible. A detailed resettlement action plan should be compiled specifically for the community that will be affected by such a process. There is international best practice guidelines compiled by the IFC that should be adhered to if this impact occurs. A specialist in the field of relocation should conduct the process and the community must be actively involved in the process to ensure participatory decision-making and that cultural significance is taken into consideration. It must be acknowledged that even if this impact is mitigated it will remain high. The mitigation referred to will take care of the physical impacts, but the psychological impacts will not be altered.

6.2.4 Monitoring

Monitoring will be done as part of the Resettlement Action Plan.



6.2.5 Impact table

Before mitigation							Mitigation	After mitigation					
Finding	Phase	Impact (+/-)	Magnitude	Duration	Scale	Probabilitiv	Significance	Means of mitigation	Magnitude	Duration	Scale	Probabilitiv	Significance
Resettlement	Construction	Negative	10	5	2	5 2		85 (High)	Compile and implement a resettlement action plan according to the best practice guidelines as prescribed by the IFC. Use an independent specialist to implement the plan.	10	5	3	5

6.2.6 Cumulative impacts

Cumulative impacts will be community-specific.

6.2.7 Residual impacts

It takes years for a community to stabilise after resettlement. It will have a permanent impact on the affected communities. Whilst physical things can be mitigated quite easily with financial aid, psychological and social impacts will take time to recover. It must be considered that when dealing with social change and social impacts that second or higher order change/impacts often cause more harm than first order change/impacts.³

6.3 Social change 3: Change in land use

6.3.1 Statement of the situation

Change in land use is a geographic process that affects the land use patterns of society. The changes in land use that are relevant to this project are the change from agricultural land to a servitude that must be kept clear. This may cause a number of impacts. In some of the areas there are plants that are used for traditional medicine, and communities have free access to these areas. The visual changes to the landscape as a result of the project are another change that should be considered. Although the land use under the lines remains the same, the visual impact and potential environmental impacts may cause a number of second- or higher-order social impacts.

² Probability rating of 5 since we don't know whether this impact will occur, but if it occurs this rating would also be 5.

³ Social change processes/impacts that result directly from the intervention, the so-called "first order changes/impacts" can lead to several other social changes/impacts - the second and higher order change processes/impacts.



6.3.2 Potential impacts

Change in land use may mean that some affected communities no longer have access to natural resources on which they depend for their livelihoods. The result will be loss of income and drop in standard of living. This will affect tourism groups that rely on the natural beauty and pristine nature of the area to lure potential clients to the area – commonly referred to as sense of place. In the book “Making sense of place” (Vanclay, Higgins & Blackshaw) Vanclay offers the following explanation of place:

“Place” can be understood as being “space” filled with meaning. It therefore refers more to the meanings that are invested in a location than to the physical locality. Sometimes it is the biophysical characteristics that are important in being a foundation for those personal meanings.

People therefore specifically visit the area because of the natural beauty and the personal meaning that the particular area have for them. Should a power line be erected, this meaning will be lost, and they may choose to rather go to a different area that can still offer unspoilt vistas than visiting establishments in the project area. Tourism establishments also do not want this type of infrastructure near their physical infrastructure, mainly due to the visual impact and the secondary impacts on their businesses. Some properties already have servitudes housing power lines, water pipelines or railtracks traversing them, and another powerline will intensify the existing impact.

There will also be a positive impact on the owners of tourism establishments during the construction phase when there will be an increase in demand for these services.

In some areas the line cuts properties in half. This is especially a concern of small-holding owners near towns like Upington and Kathu. These farmers may lose productive land to the servitude and servitude road. Some of the properties may become too small to allow a viable farming business with the remaining resources. These people would need to find an alternative livelihood. New businesses take time to build up, and this may result in a decrease in quality of life and a negative impact on social wellbeing. Loss of access to, and loss of plants used as traditional medicine will also affect some of the communities.

The management of servitudes will potentially be the source of a vast amount of impacts. One of the main issues will be access control. Farmers are very sensitive about who enters their property and the idea of strangers having access to their farms do not sit comfortably with most farmers. In addition, there is a number of farmers that farm with livestock or game, and they may experience damage if gates are left open.

Another important aspect to consider is the way in which servitude arrangements are made. This



refers to access and management arrangements. There should be one person to communicate with about Eskom-servitude matters to whom farmers have direct access. A lack of communication will have a severe negative impact, whilst proper management of communication can result in positive long-term impacts in terms of social license to operate.

Environmental nuisances such as an increase in dust and noise due to construction activities and an increase in the number of heavy vehicles in the area may cause short-term frustration, and in some sensitive individuals even health impacts such as asthma or allergies. There is also a “humming” noise associated with the line during the operational phase that can be a source of nuisance to people in close proximity of the line.

A number of safety hazards are associated with the line. The most important hazard is to children that may climb on the pylons, especially where the lines traverse settlements. Another concern is the possibility that people may attempt illegal connections or cable theft, which will result in immediate death. The hazard to low-flying aircraft, which is used by game farmers should also be considered.

6.3.3 Opportunity for mitigation/enhancement

Impacts on sense of place cannot be mitigated. The only way to mitigate is to avoid the impact. The recommendation would therefore be that unspoilt natural areas should be avoided as far as possible and infrastructure should rather be erected in areas where similar infrastructure already occur, whilst considering cumulative impacts. A services corridor adjacent to existing roads will be ideal. To ensure local service providers benefit as much as possible from the proposed project, the use of these establishments by Eskom and contractors is recommended. This should be on a rotation basis to ensure that the benefits are distributed across the service providers.

Loss of productive land cannot simply be compensated by looking at the financial value of the piece of land in question. The replacement cost of the land must be considered. In some areas people already have infrastructure such as railways, roads, water pipelines and power lines on their properties. Putting another line over such a property should be avoided if possible. Plants that are used for medicinal purposes should be removed, kept in a nursery and replanted where possible.

Management of the servitude will be of extreme importance. Eskom must work in conjunction with the farmer’s associations and any security systems that they have. Farmers should be informed the day before there is any activity on the servitude. If there is an emergency and this cannot happen, the farmer must be informed at least before his property is entered. Eskom staff must wear identification cards and farmers should have access to a phone number that they can call to confirm



that the person on the card is authorised to be in the servitude. A multi-lock and chain system should be used to ensure that gates remain locked but that all the relevant people always have access to the servitude. There must be a designated person at Eskom that deal with the community affected by the servitude. All affected landowners must have direct access to this person. Landowners should only have to deal with one person and be allowed to establish a relationship of trust with this person.

Environmental nuisances that occur during construction will be temporary. Given the fact that there are existing impacts from heavy vehicles in some areas, many of the nuisances will be cumulative. Where possible dust suppression must be used. No construction work should take place on Sundays, public holidays and during the night.

Eskom must approach local schools and community organisations in the project area to present information sessions about the safety risks associated with power lines. The responsibility of contacting these organisations is on Eskom, and not on the organisations.

6.3.4 Monitoring

Meetings with affected landowners should take place at least once a year to review the issues around the management of the servitude. The designated person responsible for community liaison should be responsible for organising these meetings.

The environmental and social monitor should ensure that nuisances are controlled in an appropriate manner as part of their duties. The social monitor should approach schools and community organisations to ensure that Eskom has given awareness training. This person can also be the link between these parties.



6.3.5 Impact table

Before mitigation							Mitigation	After mitigation					
Finding	Phase	Impact (+/-)	Magnitude	Duration	Scale	Probabilitiv	Significance	Means of mitigation	Magnitude	Duration	Scale	Probabilitiv	Significance
Sense of place	Constr. & Operation	Negative	8	5	3	5	80 (High)	This impact cannot be mitigated	8	5	3	5	80 (High)
Management of servitude	Operation	Negative (can be +)	8	4	3	4	60 (High)	Appoint communication person Ensure frequent communication Work with farmer's and community association	6	4	3	3	39 (Moderate +)
Safety hazards	Construct.&Operate	Negative	6	4	2	3	36 (Moderate)	Awareness raising in local schools and community organisations	4	4	2	2	20 (Low)
Environmental nuisance	Construct.&Operat	Negative	6	3	2	5	55 (Moderate)	Manage working hours Dust suppression	4	3	2	5	45 (Moderate)

6.3.6 Cumulative impacts

If there are landowners with more than one servitude on their farm there will be the cumulative impact of additional people wanting to access the servitude, and loss of productive land. In areas where people had negative experiences with the management of servitudes their expectation will be to have similar experiences, and should Eskom not improve their service the impact will be felt much more intense.

In some of the rural areas there are already heavy vehicles travelling on a daily basis, and the construction activities will add to these impacts creating a bigger nuisance for local residents.



6.3.7 Residual impacts

If farmers have to change the way in which they make a livelihood, it will take a couple of years to get back on their feet. The residual impact on tourism is difficult to anticipate, but in all likelihood there will be a change in the profile of people visiting the area.

6.4 Social change 4: Deviant social behaviour

6.4.1 Statement of the situation

Deviant social behaviour can be described as the types of social behaviour that might be deviant or anti-social, such as excessive alcohol consumption, illegal drug use, various types of risk taking behaviour and vandalism. There can be a number of causes of deviant social behaviour. The source can be the local communities or the people that migrated into the area. The socio-political context of the area should be considered. There are high levels of unemployment and a large portion of the population is semi- or illiterate. There are limited economic opportunities available in the area and poverty rates are high. There is a big poverty- gap in the area. Opportunistic criminals from outside the area may use the fact that there will be a large influx of people into the area to try and disguise their criminal intent.

6.4.2 Potential impacts

The first potential impact is that there may be an increase in crime and disorder. An increase in crime is often associated with construction activities. It is more difficult to control access into the area and there are large numbers of strangers present, which allow opportunistic criminals to take advantage of the situation. There is also more money available in the area. This can lead to an increase in alcohol abuse and prostitution, which in turn also create an enabling environment for crime.

The second potential impact is the breakdown of traditional values. Behaviour that used to be unacceptable in the past is now accepted as appropriate. Where respect for authority might have been culturally ingrained, the norm might change when newcomers with different ideas enter the area. Younger people who are unemployed may be especially susceptible to people who encourage them to challenge traditional values. This may cause conflict and social instability in the area.

6.4.3 Opportunity for mitigation/enhancement

It is a challenge to mitigate the impact of crime, as it is a greater societal problem that affects communities throughout South Africa. From a project perspective it is important to make the area as unattractive as possible to criminals. Although access to the area in general cannot be controlled, Solar Park Integration Project, February 2013



access to the servitude and to the construction area can be controlled to a certain extent. Contractors and Eskom employees must wear recognisable uniforms and carry identification cards. There must also be a telephone number that landowners can phone to confirm whether people are employees. Community policing in association with farmer's associations and local security groups should be implemented. There should be radio-contact in the construction period.

Access to the site and the servitude should be controlled as far as possible. Construction camps must be fenced and local security companies must be employed to patrol the areas where there are active construction activities.

There must be a well-published, culturally appropriate grievance mechanism. This must be agreed with local communities at the start of the construction period in the area. The communities must give input in the process to ensure ownership. Grievances must be dealt with within a certain period. All grievances must be recorded in a register stating the grievance, date that it occurred and action taken. The aggrieved person should sign a form that explain the grievance, the process followed and what the outcomes were.

6.4.4 Monitoring

The community police forum should meet on a monthly basis during construction time to discuss the results/issues of the past month. The social monitor should inspect grievance registers on a monthly basis. Eskom must audit these registers every three months.



6.4.5 Impact table

Before mitigation							Mitigation	After mitigation					
Finding	Phase	Impact (+/-)	Magnitude	Duration	Scale	Probabilitiv	Significance	Means of mitigation	Magnitude	Duration	Scale	Probabilitiv	Significance
Increase in crime & disorder	Construction	Negative	8	2	3	4	52 (Moderate)	Community police forum Wear identification Control access Patrol servitude Fence construction camps	6	2	3	3	33 (Moderate)
Breakdown of traditional value systems	Construction	Negative	10	2	2	4	56 (Moderate)	Install grievance register Handle grievances promptly Negotiate grievance process with local communities	8	2	2	3	36 (Moderate)

6.4.6 Cumulative impacts

In some places in the project area there are other construction activities. This means that there may already be an influx of people and crime might have increased already.

6.4.7 Residual impacts

There may be a breakdown of traditional values as a result of crime and external influences.

6.5 Social change 5: Employment opportunities

6.5.1 Statement of the situation

There are high levels of unemployment in the area. A large number of the population are semi- or illiterate and have limited skills. In the deep rural areas there are limited opportunities for employment. Issues surrounding employment can have positive or negative social impacts in the study area. Construction will be done by specialist line contractors that will bring in a number of their own staff given the specialist nature of the work. Opportunities for local labour will therefore be limited to work that does not require a substantial amount of skill. Since the construction process will take place over a large area, the work opportunities will be short term. Another issue to consider is that Eskom does not have a single recruitment protocol, but each contractor have their own



recruitment protocol.

6.5.2 Potential impacts

The first potential impact is the loss of workers in other industries to the construction team. This risk increases with semi-skilled workers. It is beneficial to the contractor to employ local people, because it takes the responsibility of supplying housing away from them. Since the contractors only employ people in the short term, they are able to offer better payment. This may result in people leaving their permanent jobs for short terms jobs, but ending up unemployed after the construction period ended. This have a negative impact on the industries like farms, and the vulnerable people supported by these industries. Whilst it will not be fair to deny people a better income, the long-term implications must be explained to them. In areas with high unemployment rates there are enough unemployed people that need to benefit from employment, and the focus of recruiting should be on these individuals.

The construction process will create a number of opportunities for low skilled people. The focus should be on local people who are not employed elsewhere. There is a risk that woman will not be given equal opportunities to men because of the perception that they cannot do manual labour. This will have a negative impact on the number of opportunities for woman. If local people, including woman, are employed, this will have a very positive short-term impact, and if there is sufficient transfer of skills the positive impact can be extended.

Another positive impact is the indirect employment opportunities that will be created. These opportunities will be experience in the industries that provide services to the construction team such as transport, hospitality and equipment rental etc. These opportunities can also be extended to local entrepreneurs such as woman's groups that provide a laundry service or sell meals. The understanding from Eskom is that the workforces should provide their own food. The risk associated with this aspect is that it will mean that they need to travel some distance to get meals, which put extra pressure on infrastructure and cost time and money, or that they need to bring food with them which may result in unhygienic situations as well as waste in the areas where they work.

6.5.3 Opportunity for mitigation/enhancement

Local unemployed people must be given preference in the recruitment process. Contractor must refrain from employing people who are currently employed in permanent positions. There must be employment desks in the towns or settlement areas. No recruitment may take place in the construction camps. A standard recruitment policy must be implemented across the project area, especially if more than one contracting firm is used. The local recruitment process must be agreed



with local leadership. This process must then be advertised in an accessible way – radio advertisements, community meetings and press releases in local languages. No false expectations must be created and it must be underlined that the employment opportunities are specifically for the unemployed. Women must make out a percentage of the workforce.

Indirect employment/entrepreneurship opportunities must be enhanced. Eskom and the contractor must support local entrepreneurs as far as possible. Eskom should consider a local economic development programme that can stretch across all its operations. An example would be to buy a mobile kitchen, and train women along the construction route to cater for the construction forces. This kitchen can move with the labour force and women in different areas will be given the opportunity to get trained and earn an income.

It must be acknowledged that there will be local entrepreneurs trying to sell their goods to the construction force. Unless managed carefully this may lead to squatter camps near the construction camps. The contractor should provide a designated area where such services can be provided – the area should ideally form part of the construction camp and be cleared and fenced. No open fires must be allowed. Food should rather be prepared off-site and transported in, or people can be encouraged to sell food parcels. The vendors must also travel in and out of the area and should not be allowed in the construction area. The social monitor must assist in managing this process.

6.5.4 Monitoring

The contractor must keep records of the number of locally employed people, clearly stating the number and gender of the workforce. The social monitor should ensure that local partnerships are formed and managed. The number of local entrepreneurs that benefitted should be fed back to Eskom every time the construction team move. The social monitor must keep a written record of this.



6.5.5 Impact table

Before mitigation							Mitigation	After mitigation					
Finding	Phase	Impact (+/-)	Magnitude	Duration	Scale	Probabilitiv	Significance	Means of mitigation	Magnitude	Duration	Scale	Probabilitiv	Significance
Loss of workers to construction team	Construction	Negative	8	2	3	5	65 (High)	Do not employ people who already have jobs Focus on the unemployed Advertise that no employed people will be given jobs	6	2	3	3	33 (Moderate)
Local job opportunities	Construction	Positive	8	2	3	4	52 (Moderate)	Employ local people Employ a minimum percentage of women Standardise a recruitment process Involve local communities in developing the recruitment process	10	2	3	4	60 (High)
Indirect employment opportunities	Construction	Positive	8	2	2	4	48 (Moderate)	Create opportunities for local entrepreneurs Support local entrepreneurs Create an enabling environment for the entrepreneurs to benefit financially Combine support with skills development initiatives	10	2	3	5	75 (High)

6.5.6 Cumulative impacts

Cumulative impacts on local entrepreneurs will be positive and assist in developing their businesses further. Local businesses in some parts of the project area may loose labour to other construction processes.

6.5.7 Residual impacts

Residual impacts will be a positive impact on skills development and economic growth for small-scale entrepreneurs. There may be a negative impact on workers who were temporarily employed and lost their jobs, in that they might struggle to find new employment opportunities.

6.6 Social change 6: Legal processes

6.6.1 Statement of the situation

There are a number of legal processes that dictate the process that precedes the physical construction of a power line. First of all there are regulatory processes, of which the EIA is the Solar Park Integration Project, February 2013



process that is conducted mostly in the public domain. Part of the EIA process is an extensive public participation process. This process brings the proposed activity in the public eye, and it is through this process that most people learn about the project. Once the EIA is approved, other legal processes set in. The most important of these processes is the land acquisition process. Through this process the servitudes are bought and agreements about the management of the servitude is made. For a member of the public these processes can be daunting and cause a lot of anxiety.

6.6.2 Potential impacts

Some of the impacts associated with the EIA process are already taking place. The uncertainty about which route will be selected have a detrimental effect on the emotional wellbeing of some of the potentially affected parties, especially some of the older and more vulnerable members of society. This impact is felt more by individuals than by industries. The concept of alternative routes is also difficult for some communities to understand. Although they cognitively understand the concept, they keep on bringing the impact back to their personal situation. One possibility is to only engage with people once a definite decision is taken and to focus on mitigation and management. This is a difficult situation since the philosophy behind the public participation process is to allow people input in decision-making processes that have the potential to have a major impact on them, and an analysis of alternatives is a legal requirement.

Another unfamiliar process that is causing fear and anxiety is the land acquisition process. People are unsure about how the process will work and whether they will be compensated in a fair manner.

Another impact relating to legal processes refers to the feelings that people have about the manner in which the servitude will be managed. They fear that the management of the servitude will not be done in a way that protect their interests. Eskom must earn a social licence to operate in the area. Social licence to operate is the concept used to describe the importance of having broad-based community consent for major projects. The social licence to operate concept is normally seen as being additional to the need to secure formal licences, planning permissions and permits from government agencies. Failing to address community concerns and hence losing community support (the licence to operate) has resulted in severe disruption to, or closure of, many large investment projects.

6.6.3 Opportunity for mitigation/enhancement

Once a final route is chosen the uncertainty associated with the route will be dealt with. In the ground-truthing phase of the project, when a physical route will be determined by in-depth investigations the affected landowners must be consulted and kept informed about the future



actions. The social monitor should be appointed in this phase to start building relationships with affected communities and looking for opportunities to link with local entrepreneurs. It must be acknowledged that the EIA process is biased towards the western way of thinking and doing, and an effort should be made to engage with affected parties in a culturally sensitive manner in the next phase of the project, especially since all routes potentially affect vulnerable communities.

The land acquisition process must be explained to affected parties in a language of their choice. They must also be supplied with a written document spelling out the process. It must be considered that this process would need to be explained repeatedly to affected parties to allow them to digest it. Two land valuers that work independent of each other should be appointed. One of them should have local knowledge and knowledge of the affected industry, if relevant. The other should have experience in similar projects across the country.

Eskom must attempt to earn a social licence to operate. A community relations programme should be implemented (take note that this is different from a public relations programme). Eskom must ensure that personnel with appropriate qualifications are appointed and that communication channels with communities are established and maintained.

6.6.4 Monitoring

A social monitor must be appointed early in the process to start building relationships. A database of affected landowners and local entrepreneurs must be compiled. There should be a communication register documenting all interaction between landowners and Eskom teams. This should be submitted to the project manager once a month for inspection. The social monitor should assist with the land acquisition process to monitor the procedures followed.



6.6.5 Impact table

Before mitigation							Mitigation	After mitigation					
Finding	Phase	Impact (+/-)	Magnitude	Duration	Scale	Probabilitiv	Significance	Means of mitigation	Magnitude	Duration	Scale	Probabilitiv	Significance
Uncertainty caused by EIA process	Pre-construction	Negative	8	2	3	5	65 (High)	Announce route Communicate in cultural sensitive way in next phase of the project Appoint social monitor	6	2	3	3	39 (Moderate)
Fear & anxiety caused by land acquisition process	Pre-construction	Negative	8	2	2	4	48 (Moderate)	Communicate process in language of choice Put process in writing Appoint two land valutors	6	2	2	4	40 (Moderate)

6.6.6 Cumulative impacts

People loose faith in the EIA process if they experience a number of these processes in a negative light. The less faith they have in the process the higher the levels of stress and anxiety will be.

6.6.7 Residual impacts

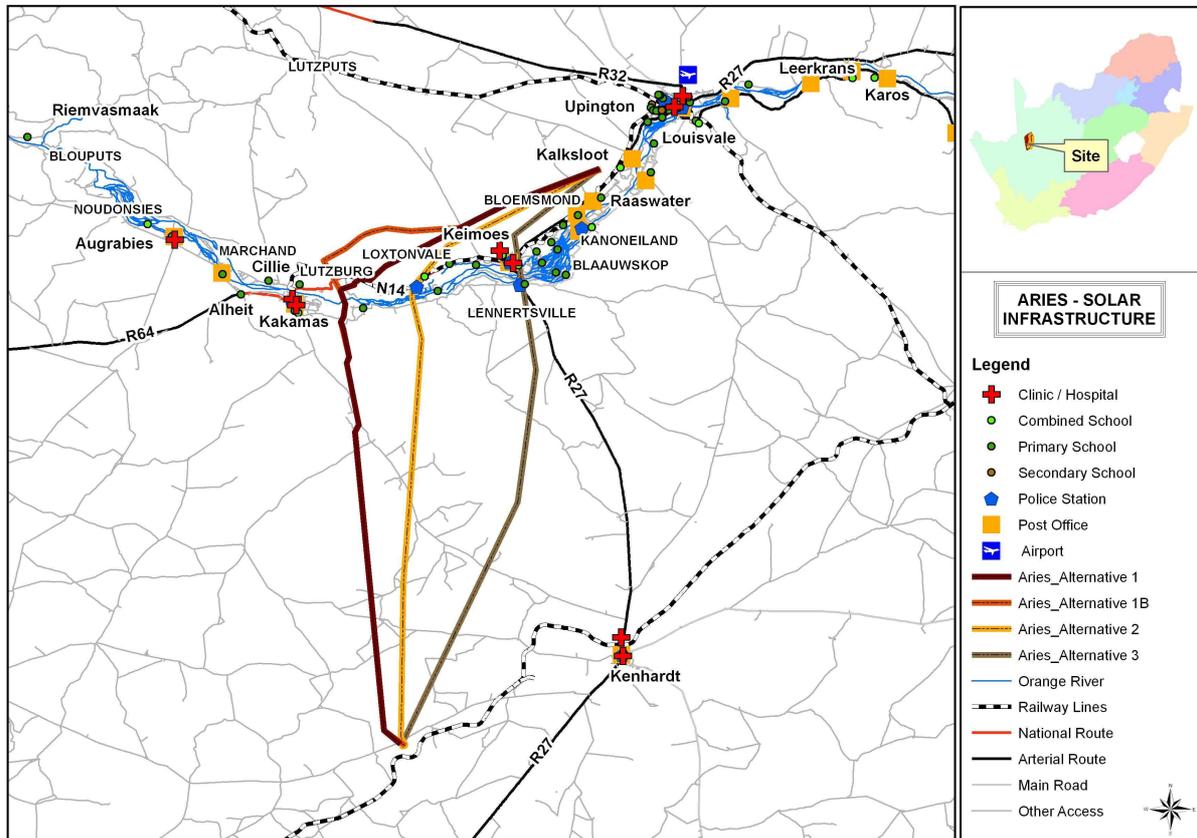
Should Eskom implement the mitigation, especially related to a community relations programme the results will be a long term and positive in terms of neighbourly relationships.



7 Analysis of Alternatives

7.1 From CSP to Aries

Figure 34: Overview of Aries Route.



○ Aries_Alternative 1

Aries_Alternative 1 commences at the CSP outside of Upington traverses south-westward along the Orange River and N14 Highway next to an existing 132 kV distribution line to just before Kakamas (about 60 km). There the line turns south, crosses over the Orange River and heads south for the 75 km to the Aries substation, crossing over the Hartbees River. The last section of this alignment has been moved a few kilometres to the north, since it transpired through the stakeholder engagement process that the original alignment was too close to the SKA (Square Kilometre Array Telescope) remote site.

○ Aries_Alternative 2

Aries_Alternative 2 commences at the CSP outside of Upington traverses south-



westward along the Orange River and N14 Highway next to an existing 132 kV distribution line to 10 km before Kakamas (about 50 km). There the line turns south, crosses over the Orange River and heads south for the 75 km to the Aries substation, crossing over the Hartbees River.

- Aries_Alternative 3

Aries_Alternative 3 commences at the CSP outside of Upington traverses south-westward along the Orange River and N14 Highway next to an existing 132 kV distribution line up to 10 km after Loxtonvale (about 40 km). There the line turns south, crosses over the Orange River and heads south for the 75 km to the Aries substation, crossing over the Hartbees River.

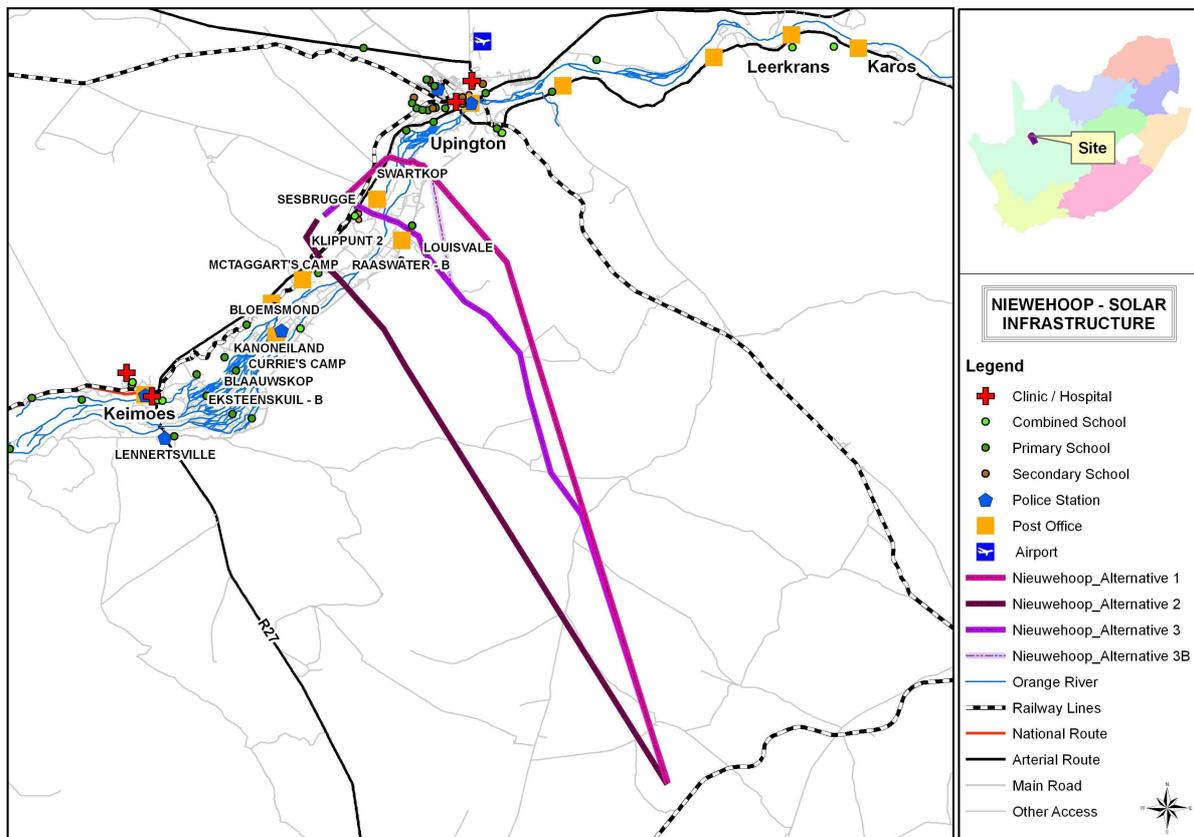
Discussion:

From a social perspective there is not a big difference regarding which alternative is chosen. As a rule of thumb routes that align with existing infrastructure are preferred in order to form an infrastructure corridor that will minimise the visual impact and the disruption to land owners. Another consideration is the impact on existing social infrastructure like schools and police stations. Aries_Alternative 1B seems to be the best match in terms of these criteria, and the least intrusive to communities next to the Orange River and are therefore the preferred alternative from a social perspective.



7.2 From CSP to Nieuwehoop

Figure 35: Overview of Nieuwehoop Route



○ Nieuwehoop_Alternative 1

Nieuwehoop Alternative 1 commences at the CSP outside of Upington traverses south-westward for a very short distance (<2km) before turning southeast, crossing over the Orange River and travelling the approx. 60 km to the Nieuwehoop Substation, crossing over the Kareeboom River.

○ Nieuwehoop_Alternative 2

Nieuwehoop_Alternative 2 commences at the CSP outside of Upington traverses north-eastward along the Orange River for 5 km. After Louisvale the line turn southeast, crosses over the Orange River and travels the approx. 60 km to the Nieuwehoop Substation, crossing over the Kareeboom River.

○ Nieuwehoop_Alternative 3



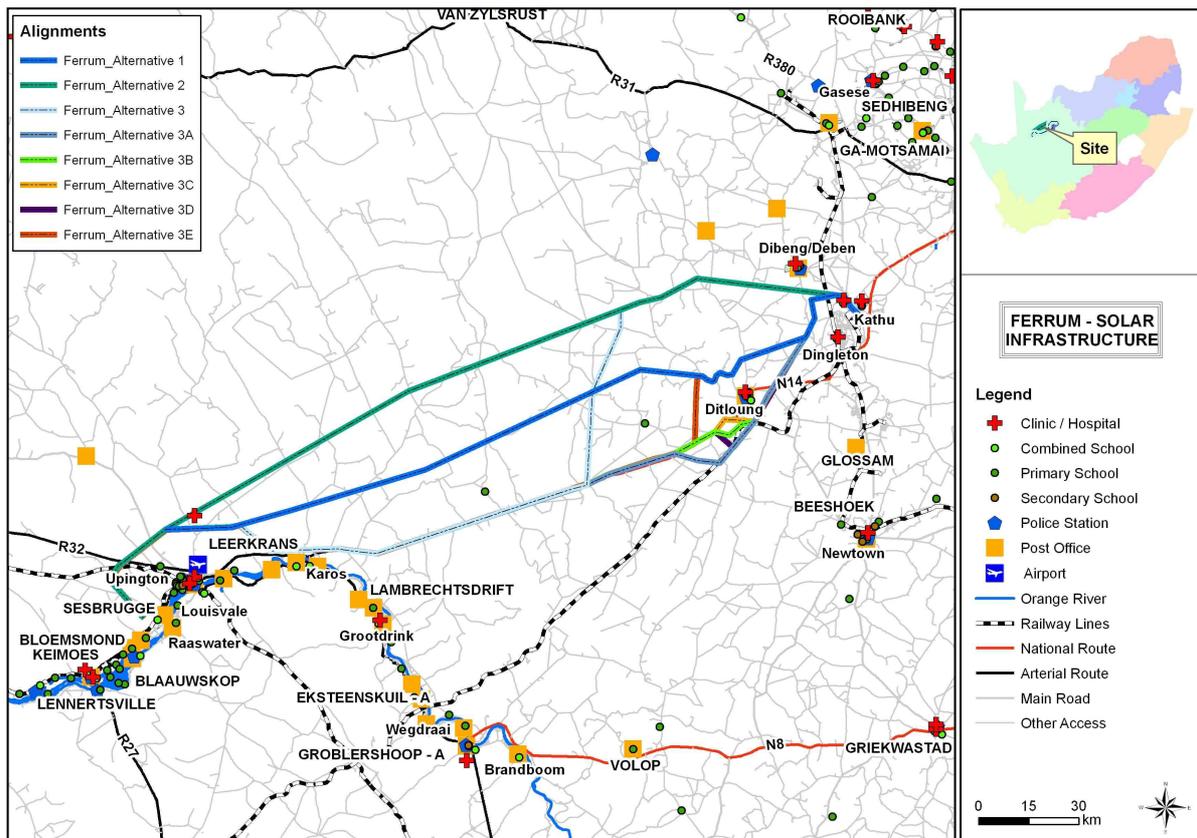
In addition to the Nieuwehoop alternatives mentioned above the stakeholders at the public meeting requested that that an additional alternative be investigated during the EIA phase that is aligned along the local dirt road rather than traversing through farming land.

Discussion:

Nieuwehoop_Alternative 3 or the stakeholder suggested alternative is the preferred option from a social perspective. This alternative is aligned with existing infrastructure and will limit the impact of strangers accessing properties and leaving gates open, as the farm fences can be erected outside the servitude. There may be an adverse impact on the existing roads during construction, but this can be mitigated and turned into a positive impact if the roads are fixed when the construction is completed.

7.3 From CSP to Ferrum

Figure 36: Overview of Ferrum Route



- Ferrum_Alternative 1

Ferrum_Alternative 1 commences at the CSP outside of Upington traverses north-



eastward approximately 15 km before turning eastwards for ~10 km. From here the route turns north-east again for ~ 120 km before meandering through the Langeberge for some 30 km. Lastly the route circles around Sishen Mine and into Kathu along other existing power lines to the existing Ferrum Substation.

- Ferrum_Alternative 2

Ferrum_Alternative 2 commences at the CSP outside of Upington traverses north-eastward approximately 160 km before meandering through the Langeberge for some 10 km. Lastly the route joins Ferrum_Alternative 1 and circles around Sishen Mine and into Kathu along other existing power lines to the existing Ferrum Substation.

- Ferrum_Alternative 3, 3A-E

In addition to the alternatives mentioned above the stakeholders at the public meeting requested that an additional alternative be investigated during the EIA phase that is aligned with the N14 highway rather than traversing through farming land. This alternative has been taken back to the public in the EIA phase, and the Rooiwal Farmer's Association refined their suggestions about the alignment of this route. These suggestions have been included in this study.

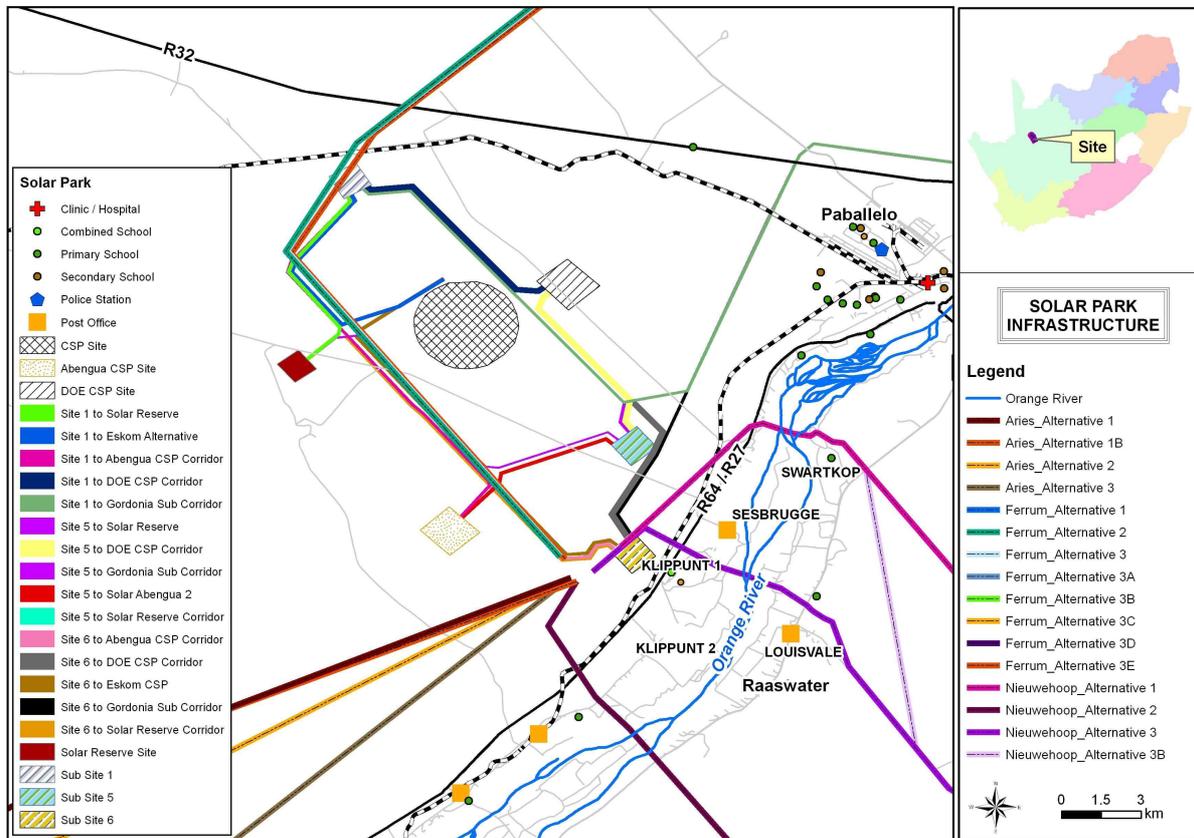
Discussion:

Ferrum_Alternative 3 or the stakeholder suggested alternative is the preferred alternative from a social perspective. Ferrum_Alternative 3A that follows the railway line is the preferred alignment, but Ferrum_Alternative 3B will also be acceptable. This route minimise the impact on affected landowners and ensure that all services are placed in a service corridor, which make management from a community perspective easier.



7.4 Sub-station alternatives

Figure 37: Overview of sub-station alternatives



In addition to the routes identified above, several positions for the potential substation have been identified. From a social perspective the positioning of the substation will not be affected by the impacts, and therefore any of the alternatives are suitable.

8 Conclusions and recommendations

The area in question is sparsely populated. There are some vulnerable communities in the project area that may be affected by the project. Construction phases are traditionally associated with social impacts, and many impacts do occur during construction, some of which have long term implications. It must be considered that although power lines are static structures, there is a number of impacts that can be associated with these structures (i.e. operation phase). These impacts mainly relate to the surrounding land uses. Many of the social impacts are unavoidable and will take place, therefore the management of social impacts are much more important than the identification. A number of social impacts will need to be managed in the long term – that is for the entire life of the project. These impacts are specific to the management of the servitude. The routes that are



recommended are seen as the routes which will have a less significant social impact, bearing in mind that for each affected party the impacts that he/she experience is highly significant.

Detailed recommendations are made in the impact assessment section of this report. Many social impacts occur as a result of bad communication processes, and positive relationships can go a long way in dealing with issues. The way in which issues are approach are a crucial aspects in the success with which it can be dealt with. The following general recommendations are made:

Construction

- Appoint a social monitor to assist with management of social impacts and dealing with community issues;
- Consult with the landowner of each affected property and note special concerns;
- Install proper grievance and communication systems;
- Involve the community in the process as far as possible – encourage co-operative decision-making and management and partnerships with local entrepreneurs;
- Be accessible and sensitive to community needs.

Operation

- Appoint permanent community liaison officer to deal with communities and build relationships with affected communities
- Become member of community organisations such as community police forums, fire management areas etc.
- Develop and implement community relations programme

The preferred alternatives from a social perspective are:

- From CSP to Aries – Aries_Alternative 1B
- From CSP to Nieuwehoop – Nieuwehoop_Alternative 3
- From CSP to Ferrum- Ferrum_Alternative 3A (3B also acceptable)
- Substations – no preference

The need for the proposed project is undeniable in the current economic conditions. It is therefore recommended that the project proceed. The mitigation measures should be adhered to.



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