14. SOCIAL IMPACT ASSESSMENT

14.1 Introduction

14.1.1 Background to the Proposed Project

As part of the environmental impact assessment process for the proposed concentrating solar thermal power plant, a social impact assessment (SIA) was required. Afrosearch was requested to implement the SIA. This report indicts the scope, approach and assessment results of the SIA conducted for the proposed concentrated solar thermal power plant.

14.1.2 Definition of a Social Impact Assessment

This section provides a brief overview of the methodology employed for the Social Impact Assessment. According to the International Association for Impact Assessment (IAIA), "impact assessment, simply defined, is the process of identifying the future consequences of a current or proposed action"[1]. A social impact assessment (SIA) is therefore the process of assessing or estimating, in advance, the social consequences or changes that are likely to emanate from a proposed development. Significance is attributed to these consequences or changes, against the background of social impact variables.

Two internationally widely applied definitions that are in line with, but expand upon the IAIA definition will be used to guide the present study. In this regard, Social Impact Assessment is defined as:

- *"A process aimed at identifying the future consequences for human populations of any public or private action that alters the way in which people live, work, play, relate to one another, organise to meet their needs, and generally cope as members of society".* [2]
- *"(An investigation into) the potential change in the activity, interaction and/or sentiment of the community, as it responds to the impacts resulting from the alteration in the surrounding social and biophysical environment" (Adapted from Burdge*[3]*).*

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1 IAIA (2001), available on-line.

2 Becker, H. (1997) Social Impact Assessment: Method and Experience in Europe, North America and the Developing World. University College of London.

3 Burdge, R.J. (2004). A community guide to social impact assessment. Middleton: Social Ecology Press.

A SIA therefore attempts to predict the probable impacts of a development on individuals and communities and how one should deal with this change. The anticipated impacts that the development could have on the social environment are identified and listed, and issues that have to be addressed during future processes and studies, are highlighted. This enables the project proponent and community to jointly deal with possible negative changes in a pro-active and participative manner, and to determine which aspects need to be mitigated.

14.1.3. Purpose of the Report

The purpose of this report[4] is to provide the findings of the Social Impact Assessment and indicate mitigation measures where relevant. Mitigation measures and recommendations on how to address these anticipated social impacts are provided. The report therefore aims to assist the project proponent, consultants and communities to identify issues that have to be considered during the construction and operational phases of the proposed project.

14.1.4. Scope

The SIA reported in this chapter is partly focused on the impacts that the project is expected to have on the *local social environment*, where the latter is defined as the area delimited by the boundaries of the local municipalities in which the alternative sites are situated (this being the Khara Hais Local Municipality and the !kheis Local Municipality). However, the SIA also takes a broader view by recognising the *long-term, indirect social impacts* that the power station is likely to have at a regional and even national scale. These large-scale social impacts mainly derive from the fact that, by constructing and operating the plant, South Africa stands to gain considerable experience and expertise in terms of the utilisation of solar power. Hence, the project represents a significant step towards reduced reliance on non-renewable energy sources – a step that has far-reaching implications in terms of environmental sustainability. It is also recognised that the project will impact on Eskom's capacity to supply electricity.

14.1.5. Methodology

- *Data Gathering*
  The assessment process was informed by the social characteristics of the area. As part of the data gathering process information was extracted from the relevant integrated development plans (IDP), Stats South Africa as well as the specialist reports and public feedback.

[4] The findings, conclusions and recommendations contained in the report are based on the information supplied to the consultants.

- *Site Visit*
  The social consultants undertook a site visit to familiarise themselves with the study area and to observe the local social dynamics, as well as the general characteristics of the area.

- *Consultation*
  Information was sourced from the consultation processes implemented as part of the environmental assessment process for the proposed concentrating solar thermal power plant. The records of these sessions and comments received from Interested and Affected Parties (I&APs) were used as a basis for the study.

14.1.6. Assessment Categories

- *Impact Variables*
  Social Impact Assessment variables serve to explain the consequences of specific developments and, as such, do not relate to the total social environment. The following variables were assessed (adapted from Burdge[5]) on the basis that they serve to comprehensively reflect probable and identified social impacts resulting from the proposed development:
  * *population impacts.*
  * *community /institutional arrangements;*
  * *individual, community and family level impacts.*
  * *socio-economic impacts; and*
  * *intrusion impacts.*

  Only variables considered to be relevant to this study were assessed, based on, *inter alia,* factors relating to the probability of the events occurring and the number of people impacted upon. These variables were assessed in respect of the construction and operation stages of the project.

- *Rating of Impacts*
  Each identified impact was rated in terms of its expected duration, spatial extent, intensity, probability and significance. The degree of confidence that could be assigned to the aforementioned ratings was also assessed. The criteria used to make these ratings are discussed in greater detail below.

  * *Expected duration*
    The alternative values that could be assigned to an impact on this dimension are listed in the Table 14.1.

[5] Burdge, R.J. (1995). A community guide to social impact assessment. Middleton: Social Ecology Press.

Table 14.1: Alternative ratings in terms of duration

Rating	Explanation
Short term	Less than 5 years (e.g. construction impacts)
Medium term	Between 5 and 15 years
Long term	Between 15 and 30 years
Permanent	Longer than 30 years

* *Spatial extent*

This dimension denotes the geographical area over which the impact is likely to be felt. The alternative values that could be assigned to an impact for this dimension are listed in the Table 14.2.

Table 14.2: Alternative ratings in terms of extent

Rating	Explanation
Individual	The impact will affect individuals in the study area
Household	The impact will affect households in the study area
Localised	The impact will extend over all or part of the local district area
Regional	The impact will extend over all or part of the province
National	The impact will extend over all or part of the country
International	The impact will extend over more than one country

* *Intensity*

This variable denotes the expected severity of a negative impact or the magnitude of a positive impact. Table 14.3 summarises the values that could be assigned to an impact of this dimension.

Table 14.3: Alternative ratings in terms of intensity

Rating	Explanation
Very severe	Irreversible or permanent damage that cannot be mitigated
Severe	A long term impact that could be mitigated, although with some difficulty or expense
Moderately severe	A medium to long term impact that could be mitigated
Slight	A medium to short term impact that could be easily and affordably mitigated
Slightly beneficial	A medium to short term impact with negligible benefits that could be more easily obtained in other ways
Moderately beneficial	A medium to long term impact with real benefits that would be equally difficult or expensive to obtain in other ways
Beneficial	A long term impact and substantial benefit that would be more difficult, time consuming or expensive to obtain in other ways
Very beneficial	A permanent and very substantial benefit that could not readily be obtained in other ways
Undetermined	It is not possible to determine the severity of the impact

* *Probability*

  This variable indicates the likelihood of an impact occurring. Table 14.4 summarises the values that could be assigned to an impact of this dimension.

Table 14.4: Alternative ratings in terms of probability

Rating	Explanation
Very unlikely	The chance of these impacts occurring is extremely slim, e.g. an act of god such as an earthquake
Unlikely	The risk of these impacts occurring is slight. For example an impact such as an increase in family violence as a result of increased wealth is unlikely to occur
May	The risk of these impacts is more likely, although it is not definite, for example the chance that a road accident may occur during the construction phase
Definite	There is no chance that this impact will not occur, for example, an increase in construction traffic.

* *Significance*

  This dimension represents in integrated assessment of the importance of an impact based on its expected duration, extent, intensity and probability. Positive as well as negative impacts might be rated as highly significant. Table 14.5 summarises the values that could be assigned to an impact to reflect its significance.

Table 14.5: Alternative ratings in terms of significance

Rating	Explanation
Very high	These impacts would be considered by society as constituting a major and usually permanent change to the social environment, and usually result in severe or very severe effects – or, alternatively, beneficial or very beneficial ones
High	These impacts would be considered by society as constituting an important and usually long term change to the social environment, and would be viewed in either a serious or a very positive light
Moderate	These impacts are real but not substantial, and would be viewed by society as constituting a fairly important and usually medium term change to the social environment
Low	These impacts have little real effect, and would be viewed by society as constituting a fairly unimportant and usually short term change to the social environment
No significance	These impacts have no primary or secondary consequences that are important to scientists or the public

* *Confidence*
  This variable denotes the degree of certainty associated with the assessment of a particular impact, and is thus related to the amount of data that is available to support a particular rating.

Table 14.6: Alternative ratings in terms of confidence

Rating	Explanation
Definite	More than 90% sure; substantial supporting data is available
Probable	More than 70% sure; sufficient supporting data is available
Possible	More than 40% sure; some supporting data is available
Unsure	Less than 40% sure; limited supporting data is available

14.1.7. Impact Tables

The SIA and discussion is presented in the form of assessment tables (evaluation framework) for each theme, e.g. population impacts and specific impact variables, e.g. inflow and outflow of temporary workers.

14.2. Proposed Sites

14.2.1. Alternative Sites

Three alternative sites were considered for the proposed concentrating solar thermal power plant (please refer to Figure 14.1 for the location of the sites). These sites are as follows:

- Site 1. The Olyvenhouts drift site is located just more than 10km to the south west of Upington within Ward 10 of Khara Hais Local Municipality. This site emerged as the preferred site for the proposed concentrating solar thermal power plant.
- Site 2 is located approximately 10km to the north west of Groblershoop in Ward 1 of !Kheis Local Municipality.
- Site 3 lies approximately 15 km to the east of Groblershoop, just outside the boundary of the !Kheis Local Municipality.

14.2.2. Preferred Site – Olyvenhouts Drift

The preferred site for the proposed concentrating solar thermal power plant is site 1 (please see Figure 14.2 for the location of the proposed plant). Site 1 is on the farm Olyvenhouts Drift. This falls within the Siyanda District Municipality (DC8) which is one of 5 District Municipalities located in the Northern Cape Province.[6]

[6] The Siyanda District Municipality (DC8) is situated to the north of the province and covers an area of 103 771 square kilometres, bordering Botswana to the east and Namibia to the north.

This District Municipality consists of 6 Local Municipalities, including the Khara Hais Local Municipality (NC083). The Olyvenhouts Drift site falls within the area of jurisdiction of the Khara Hais Local Municipality, in ward 10.

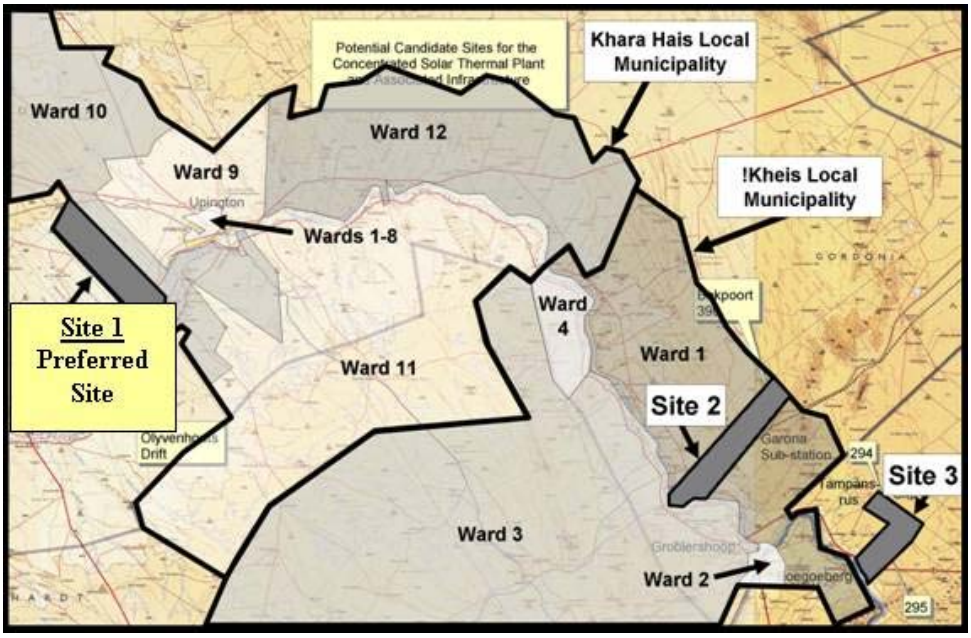

Figure 14.1: The three alternative sites in relation to the local municipalities

The south-eastern part of the Olyvenhouts Drift farm borders on the Orange River, and is cultivated as agricultural land. This part of the farm is also traversed by the N14 highway, and there are a few settlements close to the road. These include Oranjevallei, Klippunt and the small informal settlement of Kalksloot. The road to the town of Lutzputs crosses diagonally over the farm.
Please refer to Figure 14.2 for an indication of the proposed location of the concentrating solar thermal power plant on Olyvenhouts Drift.

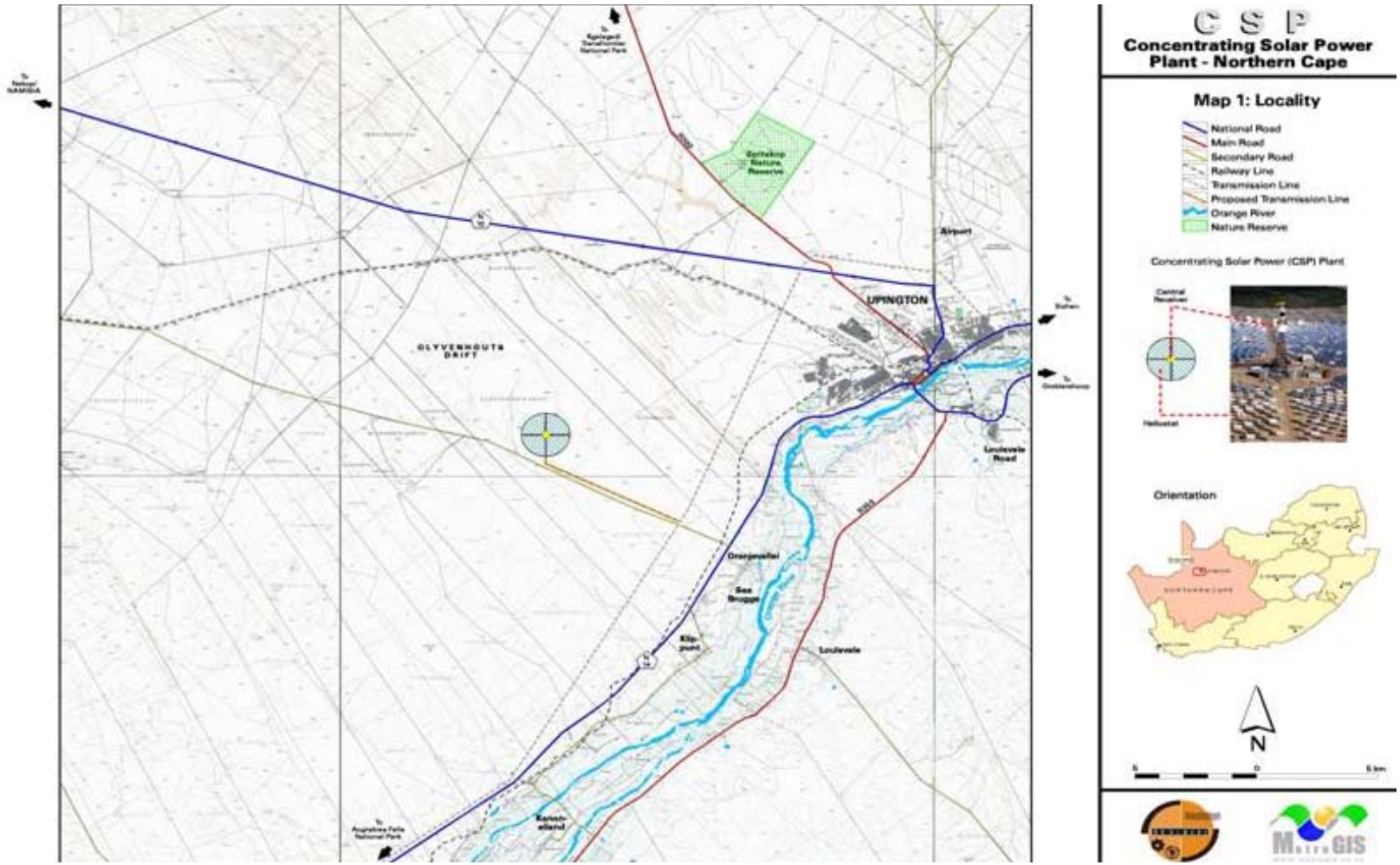

Figure 14.2: Location of Proposed Concentrating Solar Power Plant

14.3. Key Demographic Information

14.3.1. Demographics

The following paragraphs present an overview of the population density and composition, the age and gender distribution and the education levels of the populations residing in the Khara Hais Local Municipality within the Siyanda District Municipality. The information used to compile this social profile is based on Census 2001 data, which may render it dated in some respects.

- *Population*
  * Northern Cape

    The Northern Cape covers and area of 363 000 square kilometres with a population of approximately 823 000 (according to Census 2001 data) and a population density of just over 2 people per square kilometre. In 2001 just over 50% of that population consisted of Coloured individuals and a further 35% consisted of Africans.
  * Siyanda District Municipality

    The total population of the Siyanda District Municipality at this time was approximately 210 000, which may be equated to approximately a quarter of the total population for the Northern Cape. Correspondingly the racial distribution of the population is similar to that of the Northern Cape, with 64% Coloured and 24% African people, while the population density is exactly the same at 2 people per square kilometre.
  * Khara Hais Local Municipality

    The population in Khara Hais Local Municipality stands at approximately 74 000 with a population density of 17 people per square kilometre. Coloured individuals compose the majority of the population at 65%. This is followed by Africans at 19% and Whites at 16%. As indicated above, the Olyvenhouts Drift site falls within Ward 10 of Khara Hais Local Municipality. The total population of ward 10 is approximately 7300 individuals at a population density of roughly 5 people per square kilometre. Of this population, 66% are coloured, 24% White and 11% African.

- *Age and gender distribution*
  * Northern Cape

    The Northern Cape as a whole in 2001 had an approximately equal distribution of females and males with there being marginally more females than males. The highest population density for the Northern Cape fell into the age group 15 to 34 for females and males, more specifically 35% of the total male population and 34% of the total female population.
  * Siyanda District Municipality

Similarly in the Siyanda District Municipality, the male and female population were largely equal in 2001 with there being about 5000 more females. Just over a third of the male and female population in Siyanda was observed to fall between 15 and 34 years of age. Of interest in relation to the given project may be the distribution of individuals between the ages of 15 and 64 as the sector of the population that is of the age to enter, act within or just be leaving the employment arena. In Siyanda 31% of the males and 33% of the females fell between the ages of 15 and 64.

* Khara Hais Local Municipality

  Within Khara Hais Local Municipality approximately a third of the population fell between the ages of 15 and 34 years old. Some 28% of the population were from 35 to 64 years of age. When considering Ward 10 within Khara Hais Local Municipality the gender distribution remains roughly equal and the highest density of age distribution remains at 15 to 34 closely followed by those of the age group 34 to 64 years.

- *Education*
  * Northern Cape

    In the Northern Cape as a whole, 30% of the population over 20 years of age (in 2001) have been educated up to a secondary level but have not obtained a Grade 12. In this population, 21% have some primary school education and 18% have no education.
  * Siyanda District Municipality

    The education level of over 20 year olds in Siyanda District Municipality in 2001 was similar to the majority of this population having done secondary schooling (30%) followed by 24% having done some primary school and 17% not having any form of formal education.
  * Khara Hais Local Municipality

    Khara Hais Local Municipality had a better educated population. In the group older than 20 years in 2001, only 13% had no education, 20% had some primary education and up to 36% possessing secondary education. An impressive 22% of the population had obtained Grade 12. Ward 10 within Khara Hais Local Municipality had a lower percentage of individuals with a secondary education at 27% in their population over 20 years of age, while it had a higher level of this population who have only had some primary school education (25%) and a 13% with no education.

14.3.2. Key Economic Activities in the Region

The GGP of the Northern Cape Province at 2002 prices was R22 546 million, which accounts for approximately 2% of the national GDP. Given that Upington forms an integral part of this study, the key economic activities in Upington were also considered.

Upington as a town is the largest domestic consumer of the Orange River water supply downstream of the VanderKloof Dam, using approximately 12 million m^3 per annum. This reliable supply of water is critical in the maintenance of Upington's economy which is largely dependant on agriculture, tourism and the service industry.[7]

The agricultural activities are largely made possible by irrigation from the Orange River, these include the growth and production of grapes for export, the production of wine that is sold both locally and abroad, the production of dried fruit particularly raisins and sultanas (up to 93% of South Africa's area cultivated to grow sultanas is located around the Orange River[8] as well as cotton production and export.[9] The production of grapes for wine constitutes one of the more significant agricultural activities as is evident by the location in Upington of Orange River Wine Cellars which was established in 1963, is the biggest wine co-operative in the country and apparently the second biggest in the world.[10] Tourism in Upington is also a significant economic activity due to the town's close location to the Orange River, which offers tourists the opportunity to go water rafting or view the Augrabies Falls. Spitskop Nature Reserve is located 13km from Upington, offering game viewing to tourists[11].

14.3.3. Employment and Income

The following paragraphs contain information on unemployment rates, sectoral employment and income distributions in Siyanda District Municipality, and in particular the Khara Hais Local Municipality and ward 10, in which the preferred site is located.

- *Unemployment rates*
  - * Northern Cape
    In the Northern Cape the total labour force was estimated to consist of approximately 313 000 or 38% of the total population with an aggregate of a third of the total labour force being unemployed in 2001.
  - * Siyanda Local Municipality
    Siyanda Local Municipality had a total labour force of roughly 83 000 of which 27% were unemployed.

7 http://www.dwaf.gov.za/orange/low_orange/upington.html

8 Mabiletsa, 2006

9 http://www.places.co.za/html/upington.html

10 http://www.riverstale.com/index.php?page=owc

11 www.places.co.za/html/upington.html

* Khara Hais Local Municipality

  The unemployment rate within the Khara Hais Local Municipality stands at 35% with a rate of 26% for Ward 10 specifically. In contrast, Upington had an unemployment rate of 7%. Refer to Figure 14.3 for a graphic illustration of the comparative unemployment levels of Upington, the Khara Hais Local Municipality as a whole and ward 10 of the Khara Hais Local Municipality.

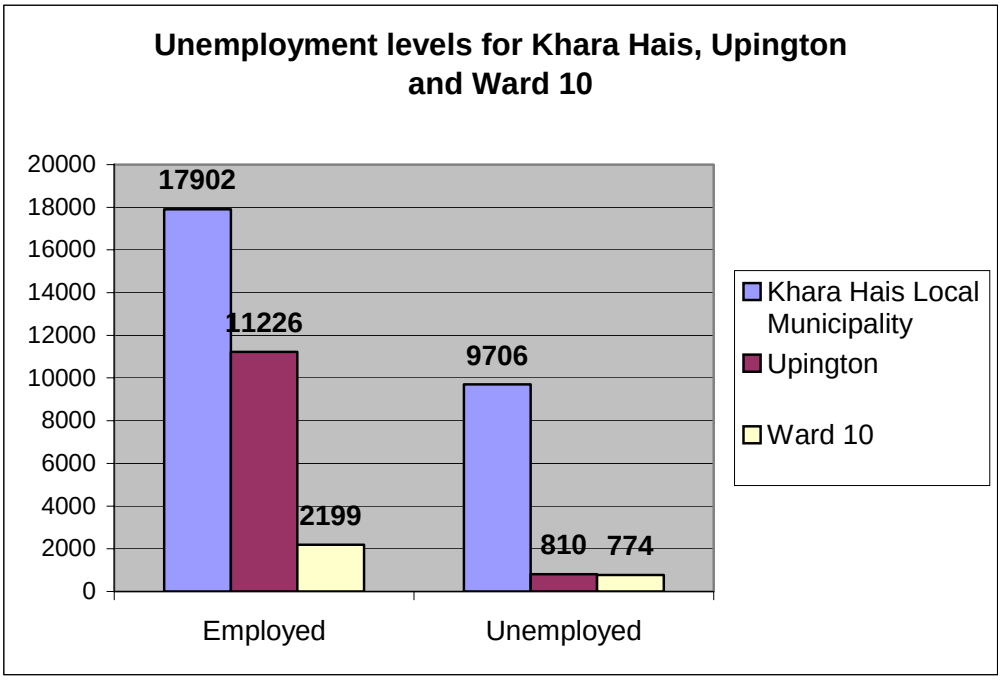

Figure 14.3: Comparative unemployment levels

- *Sectoral employment*
  * Siyanda District Municipality

    The largest source of employment within Siyanda District Municipality in 2001 was agriculture with 42% of the employed labour force working within this sector. This is followed by community, social and personal employment occupying 14% of the employed labour force.

  * Khara Hais Local Municipality

    In Khara Hais there seems to be a greater distribution of the labour force over the various vocations. A majority of the employed population (23%) was occupied with community, social and personal employment followed by employment in the agricultural sector (13%).

    Ward 10 in Khara Hais seems to offer more opportunities to its labour force with it being more dispersed over the various occupational sectors even though agriculture was still the dominant form of employment, occupying 27% of the labour force. The remainder of the labour force within Ward 10 work within retail and wholesale (10% of total labour force), community, social or personal sector (8% of labour force), private

households (8% of total labour force), business and finance sector (6% of labour force) and manufacturing (4%).

Refer to Figure 14.4 for an indication of the sectoral employment breakdown for the Khara Hais local Municipality area.

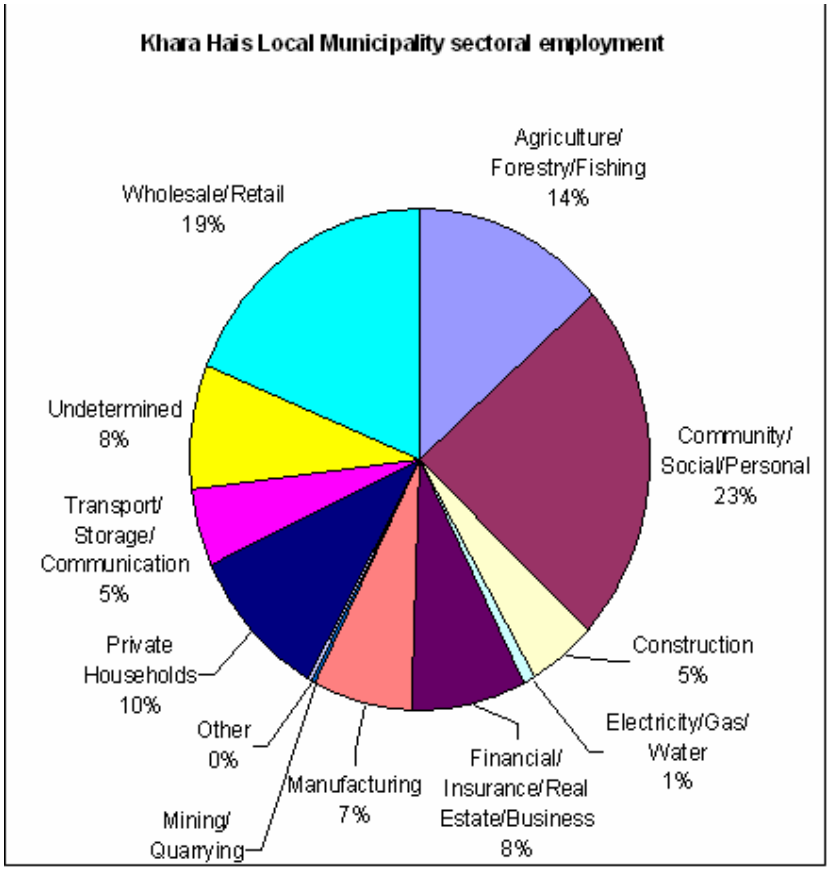

Figure 14.4: Sectoral employment in the Khara Hais Local Municipality

- *Income*
  * Siyanda District Municipality

    Poverty appears to be a widespread problem in the Siyanda District Municipality with up to 60% of the total population not earning a monthly income in 2001. In addition this does not seem to be a stable figure, as this percentage has increased from 51% in 1996. Of those earning a salary a further 17% of the total population in the Siyanda District Municipality only earned between R400 and R800 a month.
  * Khara Hais Local Municipality

    Up to 64% of the population of the Khara Hais Local Municipality did not earn a monthly income in 2001. Some 12% of the population earned between R400 and R800 per month. Ward 10 of Khara Hais Local Municipality reflects a similar scenario, with 60% of the population not earning any monthly income and 13% earning between R400 and R800. A further 12% of the ward 10 population earned up to R400 per month.

14.3.4. Housing and Services

The following sub-sections present an overview of the availability of housing and services (transport, electricity, water and sanitation) in the study area.

- *Housing*
  * Northern Cape
    In the Northern Cape as a whole, 83% of households were formal dwellings (according to Census 2001 data) while the remainder consisted of informal or traditional housing.
  * Siyanda District Municipality
    In the case of the Siyanda District Municipality, the large majority of dwellings are formal. The majority of households in Siyanda have a size of 2 people per household with the average household consisting of 4 rooms.
  * Khara Hais Local Municipality
    Roughly two-thirds of households in Ward 10 within Khara Hais Local Municipality are formal. The average house size was 2 people per house while the majority of households consist of 4 rooms. For Ward 10 within Khara Hais, the majority of households have 2 people yet the bulk of houses were either 1 or 2 room abodes.

- *Transport*
  * Siyanda District Municipality
    The mode of transport used by the population at the given sights is noteworthy for this population may harbour a significant portion of the potential workforce for the development. As such, in 2001, the main mode of transport for the majority of individuals living within the Siyand District Municipality was by foot (62%).Some 10% of the population travelled by car.
  * Khara Hais Local Municipality
    In the case of the Khara Hais Local Municipality and Ward 10, the main mode of transport to and from work and school for the majority of inhabitants was by foot (56%).
  * Adjacent towns
    The potential labour force that may be used for the site may be drawn from Upington but may have no means of getting to work outside of the town. In Upington, the majority of 67% travel by foot, followed by 9% using taxies or minibuses.

- *Electricity*
  * Siyanda District Municipality
    Approximately 72% of households in Siyanda District Municipality had electricity as their source of energy for lighting in 2001, while 21% used candles or other alternatives.
  * Khara Hais Local Municipality
    Khara Hais Local Municipality had a higher occurrence of households using electricity (65% versus 18% who used candles). In Ward 10 of the Khara Hais Local Municipality, 60% of the households used electricity for lighting, the rest using candles or other alternatives.

- *Water*
  * Siyanda District Municipality
    In the Siyanda District Municipality, 36% of households had house connections with 44% of households having yard connections. Most of the remaining households collected water from a community stand or a river/stream.
  * Khara Hais Local Municipality
    In the case of Ward 10 in Khara Hais Local Municipality, approximately a third of the households had house connections, a further third had yard connections and the rest collected water form community stands or from the river/stream.

- *Sanitation*
  * Siyanda District Municipality
    Within the Siyanda District Municipality, up to 58% of the total households had waterborne sanitation facilities. The rest used pit latrines and other means.
  * Khara Hais Local Municipality
    Within the Khara Hais Local Municipality just over half of all of the households have waterborne sanitation facilities. Some 7% of households indicated not having any formal sanitation facilities. The rest of the households used pit latrines and other means. Within Ward 10 in Khara Hais, approximately a third of households have waterborne sanitation, while 12% do not have access to any means of sanitation.

14.3.5. Land Use Profile

This section provides a profile of land use on the farms within which the three sites are located. Figure 14.5 on the following page depicts a map of land cover in the study area, and therefore provides approximate information on land uses.

The south-eastern part of the Olyvenhouts Drift farm borders on the Orange River, and is cultivated as agricultural land in the area along the river. It also includes residential areas and road infrastructure.

The farm to the south of the site belongs to Carstens Boerdery – a large supplier of grapes. The area surrounding the site is mostly municipal property, with some sheep and cattle farming taking place.

The Spitskop Nature Reserve is located a few kilometres to the north of the site. Although there are plans to expand Upington, an interview with the town planning department of Khara Hais Local Municipality confirmed that these developments are to take place in the vicinity of the airport and towards the north. They are therefore some distance from the proposed site.

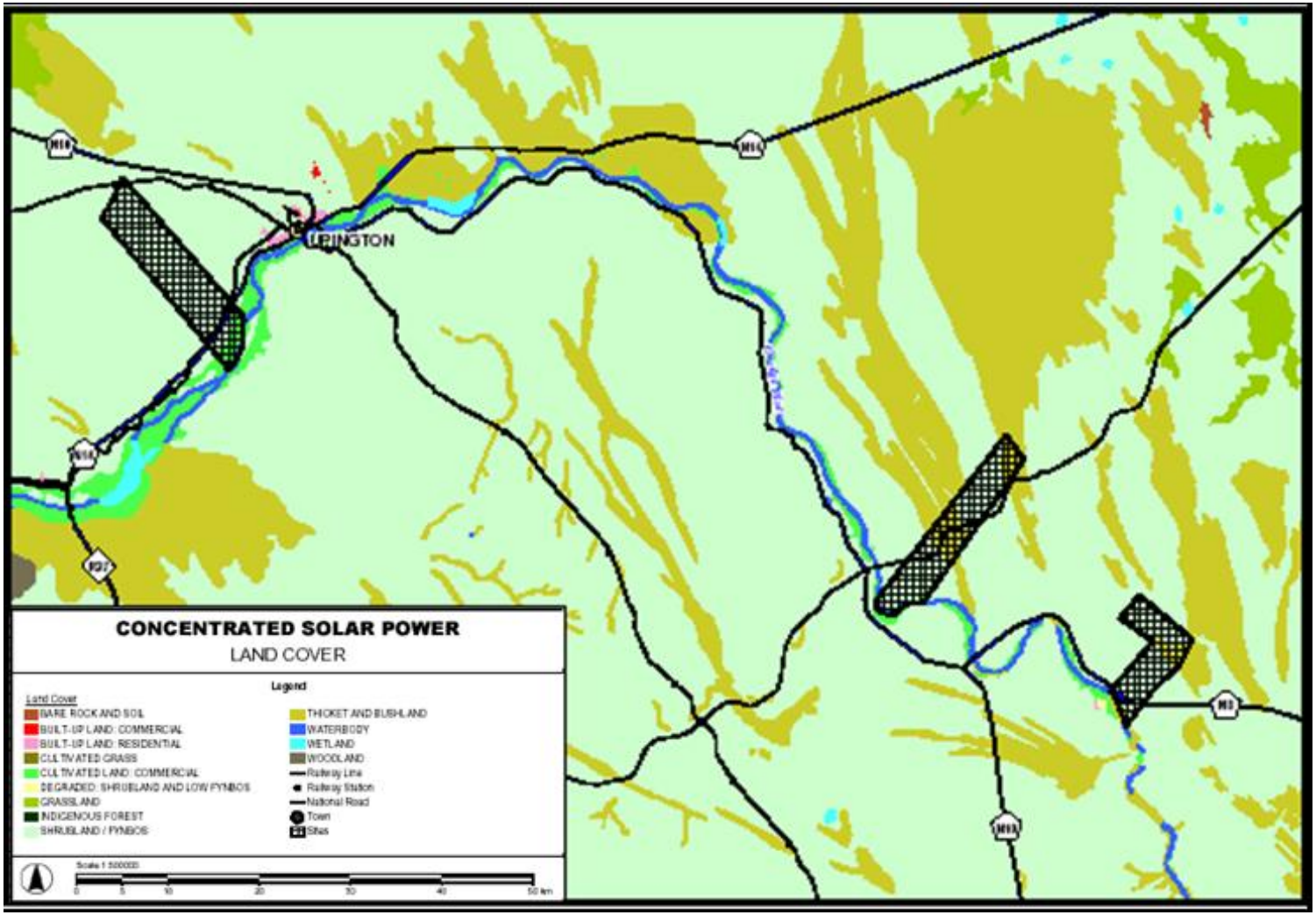

Figure 14.4: Land use profile of the study area

14.4. Social Impact Assessment

14.4.1. Population Impacts

Population change refers to acute or transient changes in the demographic composition (age; gender; racial/ethnic composition) of the population. Two aspects were considered in this regard, namely impacts commensurate with the influx of temporary workers during the construction period in the first instance, the introduction of people dissimilar in demographic profile in the second and the relocation of individuals and families.

The likelihood of this negatively impacting on the local[12] residents depends on the following:

- whether local labour would be used;
- where the additional people would be accommodated;
- the existence of sufficient accommodation and related facilities for these people;
- safety and security considerations;
- the rate of influx of persons due to construction activities and whether it will be a phased-approach; and
- the timeframe of the construction phase.

This issue is linked to employment opportunities, inflow and outflow of temporary workers and impacts on health and safety.

It is anticipated that there would be between 1500 to 2500 temporary construction jobs.

- *Inflow of Temporary Workers*
  This sub category serves as a continuation of the main category on population impacts, and deals with the inflow of temporary workers to the site during the construction. As indicated, it is anticipated that there would be between 1500 to 2500 temporary construction jobs.

  As news regarding the proposed project spreads, expectations regarding possible employment opportunities may take root. Consequently, the area surrounding the site may experience an influx of job seekers. Indications are that Upington is already experiencing an influx of job seekers (Public Meeting - personal communication), and it is likely that this may increase once construction activities commence.

[12] Local refers to the area surrounding the site, including Uppington.

When considering that the unemployment rate within the Khara Hais Local Municipality stands at 35%, and that poverty is a wide spread problem in the area, the likelihood for this influx is high. However, considering the relative remoteness of the project area from the large urban centres, it is anticipated that there may rather be a localised relocation of job seekers than a regional or national influx of external job seekers.

It is anticipated that there would be competition between local residents as well as between local residents and outsiders (outside of the district) to obtain employment. The project proponent should be aware of these sensitivities and minimise the conflict potential thereof.

If there is a large enough influx of job seekers into the local district area, it may have a population impact on the immediate social environment. This population increase may impact on the local municipality in terms of additional demand for services and infrastructure. The large population size of Upington and Khara Hais Local Municipality may by itself minimise the impact to an extent.

Whilst the influx (or relocating) of job seekers may pose a problem, it could also be an opportunity for the applicant. If there was a strong focus on maximising local employment (including training and selectively increasing the skills of locals) the project may contribute hugely to the local economy and the improvement of skills levels in the general job market.

Care should also be taken not to create a situation where there is an influx of workers to the area seeking employment even before construction has started. This could lead to unwanted informal settlements around the proposed site and associated cumulative impacts.

Table 14.7: Rating of impact - Inflow of temporary workers

THEME	**POPULATION IMPACTS**	
Nature of impact	Inflow of Temporary Workers	
Impact focal point	Construction workers, domestic, maintenance and related workers on the proposed development.	
Stage	**Construction**	**Normal Operation**
Duration of impact	Short term	
Extent of impact	Localised	-
Intensity	Moderately severe	-
Probability of occurrence	May	-
Level of significance	Moderate	-

Confidence	Probable	-
Mitigation measures	• Maximise the use of local labour and contractors where possible. • Maximise the use of local service providers (accommodation, maintenance, etc.) • Pro-active measures to accommodate an inflow of additional people in terms of infrastructure development e.g. housing facilities, upgrading of roads around the site related services • As far as possible, the movement of construction workers should be confined to the work site to avoid any potential for impact from this variable in proximate residential areas. • Ensure safe and secure public transport access points. • Specify the conduct of contract workers in worker related management plans and employment contracts.	-
Level of significance after mitigation	Low	Low

- *Introduction of People Dissimilar in Demographic Profile*
  This sub category deals with people living on site, or in the area, during the construction phase and for the life of the project.

  As indicated, it is anticipated that there will be between 1500 to 2500 temporary construction jobs. The influx of temporary workers during the construction phase is dealt with in the previous section.

  Eskom has indicated that these workers would not be housed in a construction village, but in available lodgings in a residential area close to the site (including Upington). If this is the case, there will be interaction with the local community one way or the other. It is possible that conflict might arise between the newcomers and local residents. One possible reason for such conflict would be the perception among locals that the outsiders are taking up jobs that could have gone to unemployed members of the local community.

An influx of construction workers and job seekers might be accompanied by a real or perceived increase in crime. Even if particular instances of crime are not as a result of the newcomers, they may still be attributed to them by local communities. In addition, this population influx may make a real (or perceived) contribution to alcohol and drug abuse and may increase the spread of sexually transmitted diseases in the local population.

It is also indicated that some of the construction workforce will have to be housed reasonably close to the construction site. Care should also be taken to minimise the influx of informal businesses (i.e. vendors, etc) into the project area. Whilst this is a local government issue, the emergence of such an informal development process will bring with it a number of potential social problems, ranging from health and safety impacts to security intrusions on to the project site.

This impact may begin during or even prior to construction of the proposed power station. However, it might also continue after construction has been completed and the power station becomes operational.

Table 14.8: Rating of impact - Introduction of people dissimilar in demographic profile

THEME	**POPULATION IMPACTS**	
Nature of impact	Introduction of people dissimilar in demographic profile	
Impact focal point	Construction workers, domestic, maintenance and related workers on the proposed development	
Stage	**Construction**	**Normal Operation**
Duration of impact	Medium term	Long term
Extent of impact	Localised	Localised
Intensity	Moderately severe	Slight
Probability of occurrence	May	May
Level of significance	Moderate	Low
Confidence	Possible	Possible
Mitigation measures	• Maximise the use of local service providers. • Maximise the local workforce component. • Ensure safe and secure public transport access points. • As far as possible, the movement of construction workers should be confined to the work site to avoid any potential for impact from this	• Maximise the use of local service providers. • Use local workforce – where possible. • Implement access control. • Ensure effective safety and security measures.

	variable in proximate areas. • Do not allow construction workers to stay on the site (over and above security personnel). • Do not build contractors village on site.	
Level of significance after mitigation	Low	Very Low

- *Relocation of Individuals and Families.*
  This sub category serves as a continuation of the main category on population impacts, and deals with the need to relocate individuals or families as a result of the proposed project.

  Indications are that no communities would have to be relocated as a result of the proposed project. The owner of the property may relocate – once Eskom has bought the property. This will however be a commercial property transaction. If the whole farm is purchased, current residents should not be relocated, but included in the workforce where possible.

Table 14.9: Rating of impact - Relocation of individuals and families

THEME	**POPULATION IMPACTS**	
Nature of impact	Relocation of Individuals and Families	
Impact focal point	Individuals and Families resident on the proposed project site	
Stage	**Construction**	**Normal Operation**
Duration of impact	Long term	Long term
Extent of impact	Household	Household
Intensity	Slight	Slight
Probability of occurrence	Unlikely	Unlikely
Level of significance	Low	Low
Confidence	Unsure	Unsure
Mitigation measures	• Maximise the use of local service providers. • Use farm residents as workforce • Provide social and related services to farm residents – if relevant. • Ensure effective safety and security measures.	• Maximise the use of local service providers. • Use farm residents as workforce • Provide social and related services to farm residents – if relevant. • Ensure effective
Level of significance after mitigation	Very Low	Very Low

14.4.2. Community / Institutional Arrangements

- *Change in Community Infrastructure*

  The proposed concentrating solar thermal power plant will probably result in an increase in the requirements for basic infrastructure such as electricity, water, sewage reticulation and possibly housing due to the influx of outsiders to the area as well as specific project-related requirements. Insufficient contractor accommodation can lead to squatting and negative impacts on the environment. However, if outside workers would be used, it is not expected that all these contractors would seek accommodation on or near site, but could rather commute daily from nearby towns. The intensity of this impact therefore depends on the number of outside workers entering and seeking accommodation in the area. Additional traffic loads on the local roads as a result of the construction and operational phases of the proposed estate may have a direct traffic and accessibility impact.

Table 14.10: Rating of impact - Change in community infrastructure

THEME	**COMMUNITY / INSTITUTIONAL ARRANGEMENTS**	
Nature of impact	Change in Community Infrastructure	
Impact focal point	Surrounding communities, including Upington	
Stage	**Construction**	**Normal Operation**
Duration of impact	Short term	Long term
Extent of impact	Localised	Localised
Intensity	Moderately severe	Low
Probability of occurrence	May	May
Level of significance	Moderate	Low
Confidence	Probable	Possible
Mitigation measures	• Maximise the use of local service providers. • Maximise the local workforce component. • Ensure pro-active services coordination and planning with local municipality. • As far as possible, the movement of construction workers should be confined to the work site to avoid any potential for impact from this variable in proximate residential areas. •	• Maximise the use of local service providers. • Maximise the local workforce component. • Integrate permanent staff with local communities – i.e. use accommodation and services in existing town – possibly Uppington.

Level of significance after mitigation	Low	Very low

- *Impact on Local Government*
  This variable relates to projected impacts on Local Government as a result of the proposed project. This includes potential implications on traffic, zoning and spatial planning and land-use.

  Local benefits could accrue to the Khara Hais Local Municipality through an increased tax base.

  This increase is expected to impact on the local municipality in various ways, including a need to install additional water and sanitation infrastructure. An additional demand for housing, schools and health care facilities will also be created. Meeting these demands will imply significant capital expenditure on the part of the municipality. It might therefore be necessary for Eskom to consider the provision of financial assistance to the municipality for the required upgrading of the infrastructure. In addition, the municipality's IDP planning process would have to be adapted to take into account the population increase.

  It is expected however that the construction process could have a significant impact on existing traffic patterns and flow. Construction traffic should be carefully managed and cumulative traffic impacts integrated into the current traffic load capacity of the main and secondary linkages.

  Given the fact that Upington and Khara Hais Local Municipality have a large population base, its ability to absorb these additional demands is likely to be better. The void left in the local community *after the construction phase* when workers have departed might also be much less significant.

Table 14.11: Rating of impact - Impact on local government

THEME	**COMMUNITY / INSTITUTIONAL ARRANGEMENT**	
Nature of impact	Projected Impacts on Local Government	
Impact focal point	Municipal service requirements due to the numbers of construction and related workers on the proposed development.	
Stage	**Construction**	**Normal Operation**
Duration of impact	Short term	Medium term
Extent of impact	Localised	Localised
Intensity	Moderately severe	Slight
Probability of occurrence	Definite	Definite

Level of significance	High	Low
Confidence	• Probable	• Probable
Mitigation measures	• Consult with Khara Hais Local Municipality on service needs and requirements and possible support by Eskom to the municipality. • Provide on site waste, sanitation, water and related services. • Provide on site health support. • Ensure effective construction traffic management in consultation with the Khara Hais Local Municipality • Eskom to consider the provision of financial assistance to the municipality for the required upgrading of infrastructure.	• Consult with Khara Hais Local Municipality on service needs and requirements. • Provide maximum level of services on site. • Provide maximum level of support to Khara Hais Local Municipality.
Level of significance after mitigation	Low	Low to medium

- *Impacts on land use*

  The objective of this section is to assess the potential impact of the project on land use in the area.

  The south-eastern part of the Olyvenhouts Drift farm borders on the Orange River, and is cultivated as agricultural land in the area along the river. It also includes residential areas and road infrastructure

  Although there are plans to expand Upington, the town planning department of Khara Hais Local Municipality confirmed that these developments are to take place in the vicinity of the airport and towards the north. The proposed concentrating solar thermal power plant will therefore not influence the expansion plans for Upington, as it is quite far removed from the planned expansions.

  Various aspects of the proposed project might impact upon land use (at Olyvenhouts Drift as well as in the region). These include:

  * The power station itself, which will occupy an area of 4km^2. This area will be unavailable for other land uses during the project's construction and operational phases.

* Infrastructure for extracting water from the river (which would be necessary if water for the power station is not sourced from the local municipality). Since virtually all of the land adjoining the river is under cultivation, some of this land might have to be acquired to accommodate water extraction infrastructure.
* A pipeline for transporting water to the power station. If the pipeline is placed underground, its impact on land use would be limited to the construction phase.
* Transmission lines linking the power station to the grid. During construction of the transmission lines, the land within the servitude would be lost to grazing as well as to cultivation and human habitation. During operation, the use of this land for grazing could be resumed, as livestock could move between the pylons. Using this land for cultivation might pose a larger problem, however, as pylons might interfere with irrigation. The land within the servitude would also be unavailable for human habitation.
* A substation. The land occupied by the substation would be lost to other land uses during construction and operation. Furthermore, an additional amount of adjoining land might be unavailable during construction.
* Access roads. If it is necessary to construct new roads to provide access to the power station, the land occupied by these roads would be unavailable to other uses during construction and operation.
* Given this land use profile, it is evident that land uses most likely to be affected by the project include commercial cultivation and grazing. Impacts on cultivated land and grazing land are discussed in greater detail below.
* In reference to Figure 14.2, where the proposed location of the proposed concentrating solar thermal power plant is indicated, it follows that the most likely impacts on:
* cultivated land would arise from infrastructure for water extraction and from the pipeline used to transport water to the plant. Transmission lines and access roads could also impinge on cultivated land, depending on the route along which these are aligned; and
* grazing land would arise from the power station itself, as well as from the substation. Impacts as a result of the pipeline and power lines would most likely be limited to the construction phase. Access roads may also impinge on grazing land.

Table 14.12: Rating of impact - Impact on land use

THEME	**COMMUNITY / INSTITUTIONAL ARRANGEMENT**	
Nature of impact	Projected Impacts on Local Government	
Impact focal point	Localised land uses	
Stage	**Construction**	**Normal Operation**
Duration of impact	Short term	Long term
Extent of impact	Localised	Localised
Intensity	Moderately severe	Slight
Probability of occurrence	Definite	Definite
Level of significance	May	May
Confidence	• Possible	• Possible
Mitigation measures	• Environmentally considerate planning. • Careful alignment of ancillary infrastructure. • Environmentally responsible construction practises. • Appoint environmental control officer (ECO). • Monitoring of construction process.	• Effective environmental management. • Monitoring by ECO.
Level of significance after mitigation	Low	Low

14.4.3. Individual, Community and Family Level Impacts

- *Impact on Daily Living and Movement Patterns*
  This variable relates to how, and to what extent, the proposed project will have an impact on the daily living and moving patterns of the communities in the area.

  The construction and operation of the power station are likely to result in an increase in traffic volumes. In addition, moving between 1000 and 2500 workers on a daily basis, for a period of up to five years, will have a noticeable impact on the traffic and transport scenario in the area. A significant increase in traffic movement is therefore anticipated during the construction and operation periods.

  This could lead to damage of local roads and increased speeding through residential areas, thereby impacting on the safety and daily movement patterns of residents in surrounding communities. The population density in Khara Hais Local Municipality is high and therefore the number of people

whose safety and daily movement patterns might be impacted by the project is likely to be greater

There are many cyclists and pedestrians especially schoolchildren who use the local roads. The perceived risks, e.g. accidents related to increased traffic volumes seem to be key concerns. The proposed project could therefore have a negative impact on the daily living and movement patterns of the residents surrounding the site and should be carefully mitigated. This impact may realise not only locally, but also along access routes, hence the extent of impact is considered as regional.

Table 14.13: Rating of impact - Impact on daily living and movement patterns

THEME	**INDIVIDUAL, COMMUNITY AND FAMILY LEVEL IMPACTS**	
Nature of impact	Impact on daily living and movement patterns	
Impact focal point	Residential, areas, schools, busy intersections and roads within the primary and secondary impact areas.	
Stage	**Construction**	**Normal Operation**
Duration of impact	Short term	Long-term
Extent of impact	Localised and regional	Localised and regional
Intensity	Moderately severe	Slight
Probability of occurrence	May occur	May occur
Level of significance	Moderate	Low
Confidence	Probable	Probable
Mitigation measures	Implement agreements to ensure that contractors, subcontractors and suppliers: • Adhere to regulations that limit construction related vehicle use to off-peak periods, • Avoid busy routes, intersections, residential areas and roads past schools, churches, hospitals, etc. • Adhere to road safety regulations, including strict adherence to speed limits. • Construction traffic should be diverted away from the core residential areas.	• Consultation and cooperation with local law enforcement agencies to ensure legal and regulatory compliance. • Ensure entrance and exit access points comply with standards. • Consultation with Khara Hais Local Municipality traffic and roads department is required to ensure planning compliance.
Level of significance after mitigation	Low	Very low

- *Disruption of Social Networks and Alteration of Family Structure*
  The influx of a large number of workers with different values, beliefs and practices to those of locals can lead to the disruption of existing social networks.

  Introduction of between 1000 and 2500 construction workers, probably consisting mainly of single males will have a significant impact on local social networks. In addition, if the lack of housing and after-hours recreational facilities, social problems are likely to occur. Moreover, construction activities are often associated with the emergence of informal/unlicensed business activities such as 'shebeens' and sex workers.

  This aspect may have an impact in the areas where the contractors are housed, but will not have an impact on the site or adjacent area if not housed there.

Table 14.14: Rating of impact - Disruption of social networks and alteration of family structure

THEME	**INDIVIDUAL, COMMUNITY AND FAMILY LEVEL IMPACTS**	
Nature of Impact	Disruption of Social Networks and Alteration of Family Structure	
Impact focal point	Construction workers, domestic, maintenance and related workers on the proposed development.	
Stage	**Construction**	**Normal Operation**
Duration of impact	Short term	Long term
Extent of impact	Localised	Localised
Intensity	Slight to moderately severe	Very slight
Probability of occurrence	May	Very unlikely
Level of significance	High	Low
Confidence	Probable	Unsure
Mitigation measures	• Use local labour and contractors where possible. • As far as possible, the daily movement of construction workers should be confined to the work site to avoid any potential impact on local residents. • Specify the conduct of contract workers in worker related management plans and employment contracts. • Consult with local structures and NGOs on social matters and	• Maximise the use of local service providers (accommodation, maintenance, etc.). • Ensure safe and secure public transport access points.

	support. • Ensure sufficient safety and security measures. • Provide social support services to workers. • Provide AIDS awareness and related education to workers.	
Level of significance after mitigation	Moderate	Low

- *Introduction of New Social Classes*

  The impact of this variable depends on whether locals or outsiders/foreigners will be used at any given time during the construction and operational phases of the project. It is expected that specialists (even foreigners) might be employed during the construction phase, which could create a new social class with different behaviours and lifestyles. A limited impact of short duration is expected, especially if these outsiders are not accommodated in the area in the long term, or even accommodated within existing villages.

  The intensity of this impact during the operational phase of the project depends on the number of foreigners that will be sourced and if the available infrastructure meets their needs (accommodation, recreation and retail).

Table 14.15: Rating of impact - Introduction of new social classes

THEME	**INDIVIDUAL, COMMUNITY AND FAMILY LEVEL IMPACTS**	
Nature of Impact	Introduction of New Social Classes	
Impact focal point	Construction workers, domestic, maintenance and related workers on the proposed development.	
Stage	**Construction**	**Normal Operation**
Duration of impact	Short term	Long term
Extent of impact	Localised	Localised
Intensity	Slight	Slight
Probability of occurrence	May	Unlikely
Level of significance	Low	None
Confidence	Possible	Possible
Mitigation measures	• Use local labour and contractors where possible. • Specify the conduct of contract workers in worker related management plans and employment contracts. • Minimise the use of foreign	• Maximise the use of local service providers (accommodation, maintenance, etc.).

	workers.	
Level of significance after mitigation	Low	Low

- *Formation of attitudes toward the project and interest group activity*
  During the public participation process and consultation sessions, very few viewpoints expressed were in opposition to the proposed concentrating solar thermal power plant. Although indications are that most respondents and stakeholders do not necessarily oppose the proposed project, some respondents indicated concern with regard to the potential impact that this will have on the tourism activities, agriculture and water usage in the area.

  At this stage, one could therefore conclude that there is little (if any) attitude formation or interest group activity against the proposed project. One should, however, be mindful of the fact that this situation could change over time and particularly if the impacts, attitude and behaviour of construction workers are not carefully managed and mitigated.

  Communication is of high importance. There is a need to ensure that regular, open and transparent communication takes place between Eskom and local political and community leadership on matters relating to the project, impacts, labour and social issues.

Table 14.16: Rating of impact - Formation of attitudes toward the project and interest group activity

THEME	**INDIVIDUAL, COMMUNITY AND FAMILY LEVEL IMPACTS**	
Nature of Impact	Formation of attitudes toward the project and interest group activity	
Impact focal point	Local communities, construction workers, maintenance and related workers in project	
Stage	**Construction**	**Normal Operation**
Duration of impact	Short term	Long term
Extent of impact	Localised	Localised
Intensity	Slight	Slight
Probability of occurrence	Unlikely	Unlikely
Level of significance	Low	Low
Confidence	Possible	Possible
Mitigation measures	• Use local labour and contractors where possible. • Form a community liaison forum. • Ensure ongoing communication with I&APs.	• Ensure ongoing communication with I&APs. • Ensure maximisation of local benefits. • Focus on support of local economic development activities.

Level of significance after mitigation	Low	Low

14.4.4. Socio-economic Impacts

- *Environmental benefits of solar power*
  The social impacts derived from the environmental and economic benefits of increased reliance on solar power are discussed in greater detail below.

  One of the major benefits of solar thermal power is that it has little environmental impact, with none of the polluting emissions or safety concerns associated with conventional electricity generation technologies. Estimates indicate that each square metre of CSP solar field surface is sufficient to avoid the annual emission of 200kg of carbon dioxide. Increased reliance on solar power can therefore help to slow the pace of global climate change.

  Although the proposed plant will help to meet evening peak loads in South Africa, it will not bring about a reduction in energy prices over the short term. Indications are that CSP will cost more than Eskom's current price of coal power for the foreseeable future (SABRE-Gen, 2005). Nevertheless, the plant could produce the lowest cost solar electricity in the world to date. Over the longer term, with increasing shortages in fossil fuels, the economic benefits of solar power are likely to become more apparent.

  The cost of solar thermal power is already falling at a steady place. Experience from the Solar Electric Generating Systems (SEGS) in California shows that impressive cost reductions have already been achieved, with generation costs ranging today between 10 and 13 US cents/kWh. As more experience is gained in the utilisation of CSP technology, still greater cost-effectiveness is likely to be achieved (SABRE-Gen, 2005).

  Based on the foregoing discussion, it is clear that increased reliance on solar power will have significant environmental and economic benefits over the long term. Both these effects will translate into social impacts in the form of increased human well-being and prosperity.

Table 14.17: Rating of impact - Social impacts derived from environmental and economic benefits of solar power

THEME	INDIVIDUAL, COMMUNITY AND FAMILY LEVEL IMPACTS	
Nature of Impact	Social impacts derived from environmental and economic benefits of solar power	
Impact focal point	National electricity generation and usage.	
Stage	**Construction**	**Normal Operation**
Duration of impact	-	Long term
Extent of impact	-	National
Intensity	-	Beneficial
Probability of occurrence	-	May
Level of significance	-	High
Confidence	-	Probable
Mitigation measures	-	• Ensure ongoing communication with I&APs. • Ensure maximisation of local benefits • Focus on support of Local economic development activities.
Level of significance after mitigation	Low (positive)	Very high (positive)

- *Industrial Diversification*

  This variable relates to whether changes in occupational opportunities in the area are expected. The proposed project is expected to result in some changes in occupational opportunities in the area. The proposed development could also stimulate commercial growth and ensure that indirect local economic benefits may increase in the case of the support and services sector.

Table 14.18: Rating of impact - Social impacts derived from industrial diversification

THEME	INDIVIDUAL, COMMUNITY AND FAMILY LEVEL IMPACTS	
Nature of Impact	Social impacts derived from industrial diversification	
Impact focal point	Local and regional economy and labour force	
Stage	**Construction**	**Normal Operation**
Duration of impact	Short term	Long term
Extent of impact	Localised-	Localised an regional
Intensity	Slightly beneficial	Moderately beneficial
Probability of occurrence	May	May
Level of	Low	Moderate

significance		
Confidence	Probable	Probable
Mitigation measures	• Use local labour and contractors where possible. • Ensure ongoing communication with I&APs. • Maximise the use of local service providers (accommodation, maintenance, etc.). • Ensure maximisation of local benefits – emphasise and support BEE development.	• Ensure ongoing communication with I&APs. • Maximise the use of local service providers (accommodation, maintenance, etc.). • Ensure maximisation of local benefits – emphasise and support BEE development. • Develop and implement local services and BEE content targets. • Focus on support of Local economic development activities.
Level of significance after mitigation	Moderate (positive)	High (positive)

- *Employment Equity and Occupational Opportunities*

  This aspect refers to the extent to which employment opportunities emerging from the proposed project match the job skills of the unemployed in the area, as well as the creation of new job opportunities and employment equity of minority groups.

  The intensity of the impact will depend on the level to which contractors can recruit local skilled persons. Attention should also be given to women, as they constitute a large number of the unemployed. Experience has shown that specialised skills are required for a variety of construction activities. Efforts should be made not to import all of these specialised skills from outside the region. In addition, it should be investigated what services (maintenance, support services, etc.) could be sourced or developed locally. One could therefore conclude that the proposed project could definitely assist in addressing employment opportunities in general (regional), but the permanent jobs available would not have a significant impact on the local unemployment rate.

Table 14.19: Rating of impact - Employment equity and occupational opportunities.

THEME	**EMPLOYMENT AND RELATED ASPECTS**	
Nature of the impact	Employment Equity and Occupational Opportunities.	
Impact focal point	Localised, regional	
Stage	**Construction**	**Normal Operation**
Duration of impact	Short term	Long-term
Extent of impact	Localised, regional	Localised

Intensity	Slight	Slight
Probability of occurrence	May	May
Level of significance	High	High
Confidence	Probable	Probable
Mitigation measures	• Source skills from the local community as far as possible • Contractors should capacitate locals where practical. • The project proponent could consider training to lessen the skills disparity • Communicate the skill requirements to the local community leaders and community based organisations • Ensure an equitable process whereby minorities and previously disadvantaged individuals (women) are taken into account.	Employers should • adhere to labour legislation and regulations; • ensure fair labour practices; • ensure an equitable process whereby minorities and previously disadvantaged individuals (women) are taken into account.
Level of significance after mitigation	Moderate (Positive)	Low to moderate (Positive)

- *Job creation*

  Construction activities will create a number of temporary employment opportunities. The magnitude of this impact will depend on the number of construction workers to be employed, either by Eskom itself or by contractors. Sourcing of construction workers from the local labour pool is likely to be limited to unskilled workers due to the highly technical nature of the work to be undertaken. This could have some economic benefits for surrounding communities, although only of a temporary nature. The construction process is expected to last approximately 3 years. At its peak, it will involve some 800 construction workers. In total, between 1 500 and 2 500 jobs will be created during the construction phase.

  In addition to creating job opportunities for construction workers, the project may also offer other sources of temporary employment. These include rehabilitation of the buffer zone around the power station after the completion of construction activities. Indirect employment creation in the informal sector may also occur, for instance in terms of food stalls for the convenience of construction workers.

The operational phase of the power station will result in the creation of approximately 100 employment opportunities. Of these, between 35 and 45 will be part of the Eskom workforce, with the remainder being filled by permanent contractors.

Whether the benefits of these employment opportunities will accrue to surrounding communities will depend on whether those positions will be filled by local residents. This will, in turn, depend on whether the necessary *skills* are available in surrounding communities or whether Eskom will put in place the relevant training schemes.

Information contained in the social profile indicates that slightly over a one-third of the people over 20 years of age in Khara Hais Local Municipality have secondary school education, while just under a quarter have a Grade 12 qualification.

Eskom has indicated that the majority of jobs among contractors would be semi-skilled. Its permanent workforce, on the other hand, would comprise management, engineering and operations/ maintenance staff – i.e. positions requiring fairly high skills levels.

It can therefore be concluded that the employment opportunities for local communities as a result of the project will be at the level of semi-skilled labour, with a relatively smaller number of skilled jobs being created as well as support and maintenance service opportunities.

Table 14.20: Rating of impact - Creation of employment opportunities

THEME	**EMPLOYMENT AND RELATED ASPECTS**	
Nature of the impact	Creation of employment opportunities	
Impact focal point	Local labour pool and services industry.	
Stage	**Construction**	**Normal Operation**
Duration of impact	Short term	Long-term
Extent of impact	Localised	Localised
Intensity	Very beneficial	Beneficial
Probability of occurrence	Will definitely occur	Will definitely occur
Level of significance	High	Moderate
Confidence	Definite	Definite
Mitigation measures	• Source skills from the local community as far as possible. • Contractors should capacitate locals where practical.	Employers should • adhere to labour legislation and regulations; • ensure fair labour practices; • ensure an equitable

	• The project proponent could consider training to lessen the skills disparity. • Communicate the skill requirements to the local community leaders and community based organisations. • Ensure an equitable process whereby minorities and previously disadvantaged individuals are taken into account. • Support the development of local economic development initiatives.	process whereby minorities and previously disadvantaged individuals are taken into account. • Support the development of local economic development initiatives.
Level of significance after mitigation	Moderate (Positive)	Low to moderate (Positive)

- *Change in Tourism and Leisure Opportunities*
  This variable addresses the potential impact on tourism and leisure opportunities.

  It is not anticipated that the proposed project would cause any significant changes in tourism and leisure opportunities. The proposed project may well add value to the local tourism industry by becoming a scientific destination. In addition, visitors and employees, specialist's etc. may support the local hospitality industry.

Table 14.21: Rating of impact – Change in tourism and leisure opportunities

THEME	**EMPLOYMENT AND RELATED ASPECTS**	
Nature of the impact	Change in tourism and leisure opportunities	
Impact focal point	Local tourism and leisure industry	
Stage	**Construction**	**Normal Operation**
Duration of impact	Short term	Long-term
Extent of impact	Localised	Localised
Intensity	Slightly beneficial	Moderately beneficial
Probability of occurrence	May	May
Level of significance	Low	Low
Confidence	Definite	Definite
Mitigation measures	• Source skills from the local community as far as possible. • Liaise with local tourism operators and	• Source skills from the local community as far as possible. • Liaise with local tourism operators and

	organisations. • Market the CSP as a tourism destination.	organisations. • Market the CSP as a tourism destination.
Level of significance after mitigation	Low to moderate (Positive)	Moderate (Positive)

14.4.5. Intrusion Impacts

- *Air/dust pollution*

  This variable addresses the potential impact of air, dust and effluent pollution. During the construction phase, drilling and blasting activities, as well as vehicular movement would create possible dust pollution. It follows that this aspect will have a far greater significance during the construction period. This is an aspect can benefit hugely from effective mitigation measures.

Table 14.22: Rating of impact – Air/Dust pollution

THEME	**INTRUSION IMPACTS**	
Nature of the impact	Air/Dust Pollution	
Impact focal point	Local residents	
Stage	**Construction**	**Normal Operation**
Extent of impact	On Site	On Site
Duration of impact	Short term	Long term
Intensity	Moderate	Low
Probability of occurrence	Very probable	Improbable
Level of significance	Moderate to high	Low
Cumulative Impacts	N/A	
Mitigation measures	• Effective construction management. • Dust control measures.	Strict adherence to municipal air quality regulations.
Level of significance after mitigation	Low	Very Low

- *Light intrusion*

  This variable relates to potential impacts from lighting used during the construction and operational phases. Light intrusion is an issue from the perspective for neighbouring property owners (urban and rural) as well as the aviation sector – considering the proximity of the Upington airport.

  The concentrating solar thermal power plant will have a significant visual impact. With a height of 250m, the central receiving tower will be visible for many kilometres around. It is therefore possible that the plant will have an impact on the surrounding area by altering its sense of place.

  The Olyvenhouts drift site is already surrounded by several developed areas. Hence, the proposed location of the plant on Olyvenhouts drift would

represent an addition to existing artificial structures rather than a radical change in the atmosphere of the area.

Table 14.23: Rating of impact - Light intrusion

THEME	INTRUSION IMPACTS	
Nature of the impact	Light intrusion	
Impact focal point	Local residents and aviation users	
Stage	**Construction**	**Normal Operation**
Duration of impact	Short term	Long term
Extent of impact	Localised	Localised
Intensity	Moderately severe	Moderately severe
Probability of occurrence	Definite	Definite
Level of significance	High	Very high
Confidence	Probable	Definite
Mitigation measures	• Limit any additional external lighting of the facility. • Position lights at such an angle that light is focused on the immediate site and not the surrounding area. • Use focused light sources.	• Limit any additional external lighting of the facility. • Position lights at such an angle that light is focused on the immediate site and not the surrounding area. • Use focused light sources. • Ensure effective airspace control to minimise aviation impacts. • Emphasize the tourism potential of the site.
Level of significance after mitigation	Moderate	High

- *Noise intrusion*
  This variable relates to potential noise impacts.

  Studies have found a reliable correlation between the intensity of sound and the degree of annoyance reported by people. Sounds below 50 decibels (such as the hum of a fridge or air-conditioner) appear to annoy few people, whereas a larger number of people are bothered by sound over 70 decibels (e.g. a vacuum cleaner) or, worse still, a pneumatic drill (120 decibels+)[13]. It appears however, that people get used to an intrusive noise once it loses its novelty value.[14] It is currently unsure whether blasting will take place on site.

[13] Source: Kimble, 1990.

[14] Source: Brügge, 2001.

Heavy vehicles and construction machinery activity must be planned, where possible to take place during office hours.

Table 14.24: Rating of impact - Noise intrusion

THEME	**INTRUSION IMPACTS**	
Nature of Impact	Noise Intrusion	
Impact focal point	Adjacent landowners	
Stage	**Construction**	**Normal Operation**
Duration of impact	Short term	Long-term
Extent of impact	Localised	Localised
Intensity	Moderate severe	Low
Probability of occurrence	Definite	May
Level of significance	Moderate	Low
Confidence	Probable	Possible
Mitigation measures	• Limit construction activities with potential noise impacts to non intrusive times (i.e. not on Sundays, night times, etc. • Ensure that all vehicles comply with noise abatement regulations. • If blasting takes place, a crack survey of adjacent structures should be undertaken. The adjacent property owners must be notified of times and frequency of blasting. • All safety related aspects must be strictly adhered to.	• Manage operational noise levels. • Ensure that all vehicles and equipment comply with generally accepted noise levels and noise abatement regulations.
Level of significance after mitigation	Very Low	N/A

14.5. Conclusions and Recommendations

14.5.1. Preliminary Conclusions

Based on the social impact assessment, a number of preliminary conclusions can be drawn:

- *Preliminary Positive Social Impacts*
  The proposed concentrating solar thermal power plant will have the following anticipated positive social impacts:
  * developing a sustainable energy source has vast environmental benefits;

* the proposed project is expected to create a large number of temporary and a limited number of permanent jobs;
* the proposed project could attract businesses to the area to meet the additional infrastructure and support services demands;
* it could establish a desperately needed source of employment for the local communities;
* it will make a contribution to the local municipal tax base;
* it will improve employment equity and occupational opportunities;
* indirect local benefits could accrue to the local communities in the form of donations and financial assistance to the Local Authority to improve the existing infrastructure in the area;
* the proposed project could have regional economic benefits; and
* the proposed project may be of benefit to the tourism community.

Preliminary Negative Social Impacts

* The proposed concentrating solar thermal power plant may have the following negative social impacts:
* there will be an inflow of temporary workers;
* there could be conflict between outsiders and locals regarding occupational opportunities and a disruption of the social network could materialise;
* the proposed project could therefore have a negative impact on the daily living and movement patterns of the residents surrounding the site;
* there may be an increase in the requirements for basic municipal infrastructure and services negative;
* there may be land use impacts,
* there may be a disruption in social networks by the influx of temporary workers;
* dust/air pollution impacts could be a nuisance especially during the construction phase of the project;
* there may be significant light intrusion impacts;
* noise impacts could be disturbing although it would not have a detrimental impact on the surrounding communities;
* the influx of additional people to the area could increase the HIV/AIDS infection rates; and
* additional traffic could have safety and accessibility impacts.

From the I&AP inputs received to date, it is evident that there do not seem to be overwhelming criticisms of the proposed development. Mitigation measures are expected to fully or partially resolve the negative impacts, especially those short-term impacts associated with the construction phase of the project. Mitigation measures must however be strictly implemented across the board. Continuous monitoring is critical to ensure that the

mitigation measures are properly carried out and that recommendations made by the other specialist studies are adhered to.

- *Concluding*
  However, based on the findings derived from the information available at this stage it is concluded that the proposed project does not pose severe social risks and/or threats to the local communities. A balance should be sought between what is socially desirable on the one hand, and technically, environmentally and financially feasible, on the other.

14.5.2. Preliminary Recommendations

The following specific recommendations are made:

- the proposed development (in particular the traffic and services impacts) should take cognisance of any other developments planned in the area;
- local labour should be used as far as possible to:
  * ensure direct local benefits of the proposed development;
  * avoid conflict between the local community members and outsiders, as well as a disruption of the social networks due to dissimilarity in age, gender, racial and ethnic composition; and
  * limit the need for additional infrastructure such as contractors housing.
- the existing roads may need to be upgraded to accommodate the possible increase in traffic.
- a project focused HIV and Aids awareness campaign and education programme should be launched;
- a communication and liaison forum should be established;
- safety and security issues must be addressed proactively. In this regard:
  * the site must be fenced;
  * no labour should overnight on site unless the necessity arises; and
  * all labourers and contractual staff should wear a unique item of identifiable clothing.
- catering and related facilities should be formalised on site. Informal businesses in the near area should be discouraged by providing those services and requirements on site;
- finalising a permanent and acceptable solution to the accommodation needs of the on site household; and
- the EMP should reflect the relevant recommendations.