Social Impact Assessment Baseline Report
SolAfrica CSP and PV Plants

Prepared for RHDHV

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Royal
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ACRONYMS

ASGISA:	Accelerated and Shared Growth Initiative – South Africa
EA:	Environmental Authorisation
EIA:	Environmental Impact Assessment
EIR:	Environmental Impact Report
GEAR	Growth, Employment and Redistribution Strategy
GVA	Gross Value Added
IFC:	International Finance Corporation
ISRDP	Integrated Sustainable Rural Development Programme
JIPSA	Joint Initiative on Priority Skills Acquisition
MDGs:	Millennium Development Goals
MTSF:	Medium Term Strategic Framework
NDP	National Development Plan
NEPAD:	New Partnership for Africa's Development
NGP:	New Growth Path
NU	Non-Urban
RDP	Reconstruction and Development Plan
SIA:	Social Impact Assessment
UNDP:	United Nations Development Programme

EXECUTIVE SUMMARY

This Social Impact Assessment Baseline Report is compiled for the proposed Concentrated Solar Plants using Central Receiver(CR) technology and Parabolic Trough (PT) technology, and the Photovoltaic (PV) Power Plant. The proposed development is planned within the !Kheis Local Municipality, within the Siyanda District Municipality in the Northern Cape Province.   The SIA is part of the Specialist input towards an overall current Environmental Impact Assessment process underway.

While specific social impacts are inferred through scrutinising the current social environment, its receptors and identifying potential impact drivers, macro-economic impacts are gleaned through a similar exercise. A short summary of the results will be encompassed below, following the conclusion of the SIA.

1   INTRODUCTION

Royal HaskoningDHV (RHDHV) were commissioned to undertake a desktop research study toward a Social Baseline Assessment for the installation of a solar energy project, which incorporates the following technologies and components:

- Central Receiver(CR) technology;
- Parabolic Trough (PT) technology;
- Photovoltaic (PV) Power Plant technology;
- A water supply pipeline;
- A 132kV overhead power line; and
- Ancillary infrastructure components associated with the above installations.

The proposed project is located within the !Kheis Local Municipality in the Groblershoop area of the Northern Cape Province of South Africa. This report constitutes RHDHV's desktop research findings with respect to key socio-economic strengths and weaknesses at national, provincial, district and local municipal level that are pertinent to the proposed development. The data presented in this report is a consolidation of information obtained from numerous sources. Primary data sources are as follows:

- Millennium Development Goals Country Report: Republic of South Africa, 2010;
- Northern Cape Provincial Growth and Development Strategy. 2004 – 2014;
- Human Sciences Research Council Fact Sheet: Poverty in South Africa. 2004; and
- Statistics South Africa. South African National Census Database. 2011.

1.1 Project Context and Background

The proposed project will include the installation of three different solar electricity technologies, namely Central Receiver, Parabolic Trough and Photovoltaic (PV) technologies and their associated electricity and bulk water infrastructure. The footprint of the proposed development area (Figure 1-1) is approximately 5200 hectares in extent, although it must be noted that only a small portion of this area will be developed. The proposed plant is located approximately 14 km northwest of the town of Groblershoop, within the Siyanda District Municipality, and

the !Kheis Local Municipality of the Northern Cape province (Figure 1-1). The proposed development area also falls within the jurisdiction of Ward 3 of the !Kheis Local Municipality.
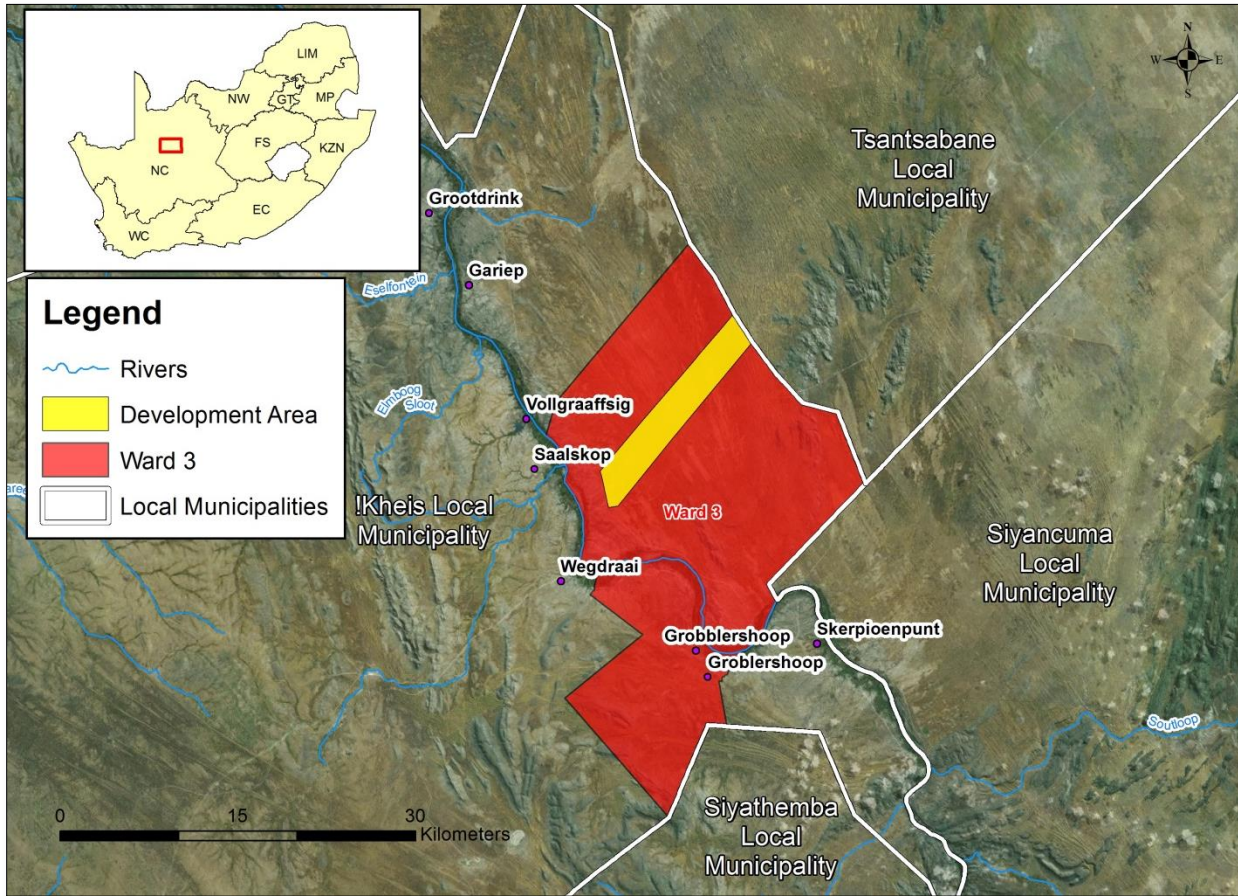
FIGURE 1-1 : SITE MAP

Sections 1.1.1 to 1.1.5 below provide detailed summaries of the relevant solar technologies and their ancillary infrastructure.

1.1.1   Central Receiver Technology

This project component will consist of a 150MW Concentrated Solar Power plant based on Central Receiver technology. The facility will also include ancillary infrastructure in support of the power plants including water abstraction systems, waste management systems, power lines, roads, storage facilities, administration and operation buildings, construction laydown areas and temporary housing facilities.

A circular array of heliostats (large mirrors with sun-tracking motion) concentrates sunlight on to a central receiver mounted at the top of a tower. A heat-transfer medium in this central receiver absorbs the highly concentrated radiation reflected by the heliostats and converts it into thermal energy, which generates superheated steam for the turbine. To date, the heat transfer media demonstrated includes water/steam, molten salt and air (Figure 1-2).
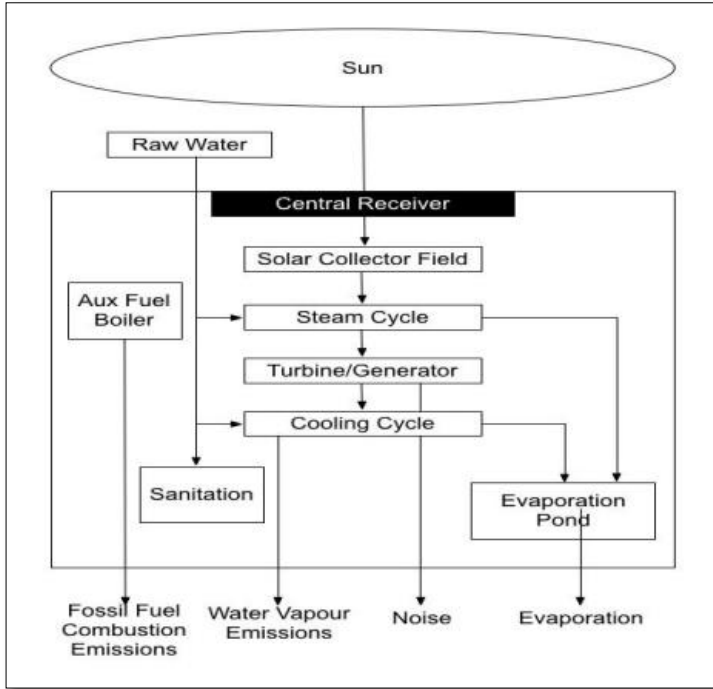
FIGURE 1-2: OVERVIEW OF CENTRAL RECEIVER TECHNOLOGY

1.1.2 Parabolic Trough Technology

The project component will consist of a 150MW Concentrated Solar Power plant based on Parabolic Trough technology (Figure 1-3). As with the Central Receiver component, this facility will also include ancillary infrastructure in support of the power plants including: water abstraction systems, waste management systems, power lines, roads, storage facilities, administration and operation buildings, construction laydown areas and temporary housing facilities.

Parabolic trough-shaped mirror reflectors are used to concentrate sunlight on to thermally efficient receiver tubes placed in the trough's focal line. The troughs are usually designed to track the sun along one axis, predominantly north-south. A thermal transfer fluid, such as synthetics thermal oil, is circulated in these tubes. The fluid is heated to approximately 400 0C by the sun's concentrated rays and then pumped through a series of heat exchangers to produce superheated steam. The steam is converted to electrical energy.
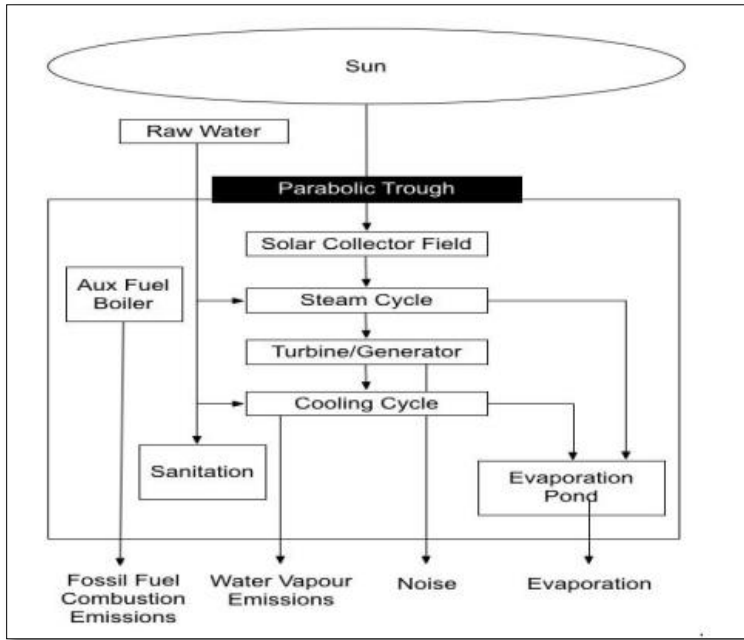
FIGURE 1-3: OVERVIEW OF PARABOLIC TROUGH TECHNOLOGY

1.1.3 Photovoltaic Power Plant Technology

This project component will consist of a 125MW Photovoltaic (PV) power plant. The facility will also include ancillary infrastructure in support of the power plants including: water abstraction systems, waste management systems, power lines, roads, storage facilities, administration and operation buildings, construction laydown areas and temporary housing facilities.

See Figure 1-4. A PV cell or solar cell is a semiconductor device that converts sunlight into electricity. These cells are interconnected to form modules which, in turn, are combined with associated electrical equipment to create what are called arrays – the actual solar generation systems which connect to the energy grid. As sunlight hits the solar panel, photons can be reflected, absorbed, or pass through the panel. When photons are absorbed, they have the energy to knock electrons loose, which flow in one direction within the panel and exit through connecting wires as solar electricity.
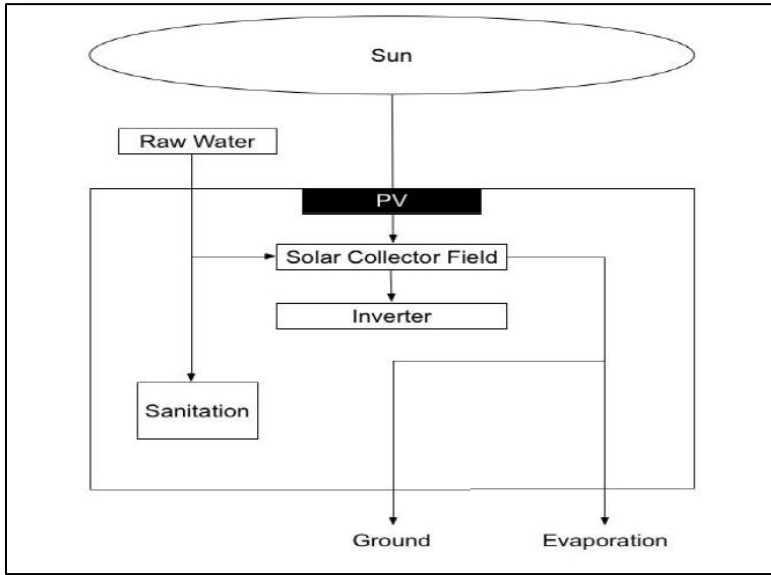
FIGURE 1-4: OVERVIEW OF PV TECHNOLOGY

1.1.4   Power line Options

The exact dimensions of the proposed water pipeline are unknown at this stage. Two alignment alternatives are proposed, those being Alternative 01 and Alternative 02 (Figure 1-5). Alternative 01 follows the eastern boundary of the development area in a south westerly direction before branching to the northeast towards the Bokpoort substation. Conversely, Alternative 02 follows the western boundary of the development area, also in a south westerly direction before branching off to the northeast and bisecting the development area before joining with the proposed alignment of Alternative 01 (Figure 1-5). A more detailed description and assessment of the proposed power line alignments will follow during the EIA phase.
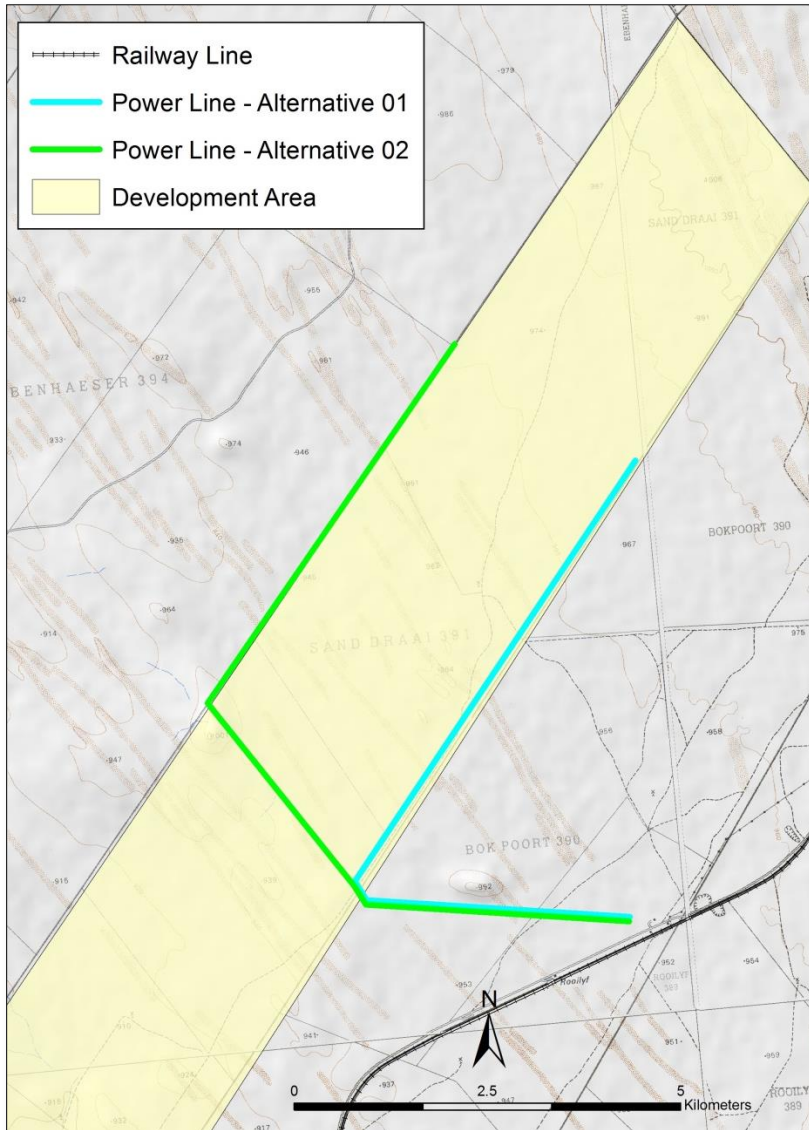
FIGURE 1-5: PROPOSED POWERLINE ALTERNATIVES

1.1.5 Water Pipeline Options

The exact dimensions of the proposed water pipeline are unknown at this stage. Two alignment alternatives have been proposed viz. Alternative 01 and Alternative 02 (Figure 1-6). Similar to the proposed power line alternatives, water pipeline Alternative 01 hugs the western boundary of the development area in a south westerly direction towards the Orange River. Approximately 1km before reaching the river, proposed Alternative 01 deviates to the west in order to avoid existing cultivated areas for approximately 1.7 km before resuming its original south westerly bearing to the proposed abstraction point on the Orange River (Figure 1-6). Alternative 02 traverses the eastern development areas boundary towards the Orange River before intersecting and following the railway line. Roughly, 500m before reaching the river, Alternative 02 deviates to the south for 2.5 km before diverting in an easterly direction to the proposed abstraction point on the Orange River (Figure 1-6). A more detailed description and assessment of the proposed water pipeline alignments will follow in the EIA phase, in the form of corridors, from the sources of water to the point of usage.
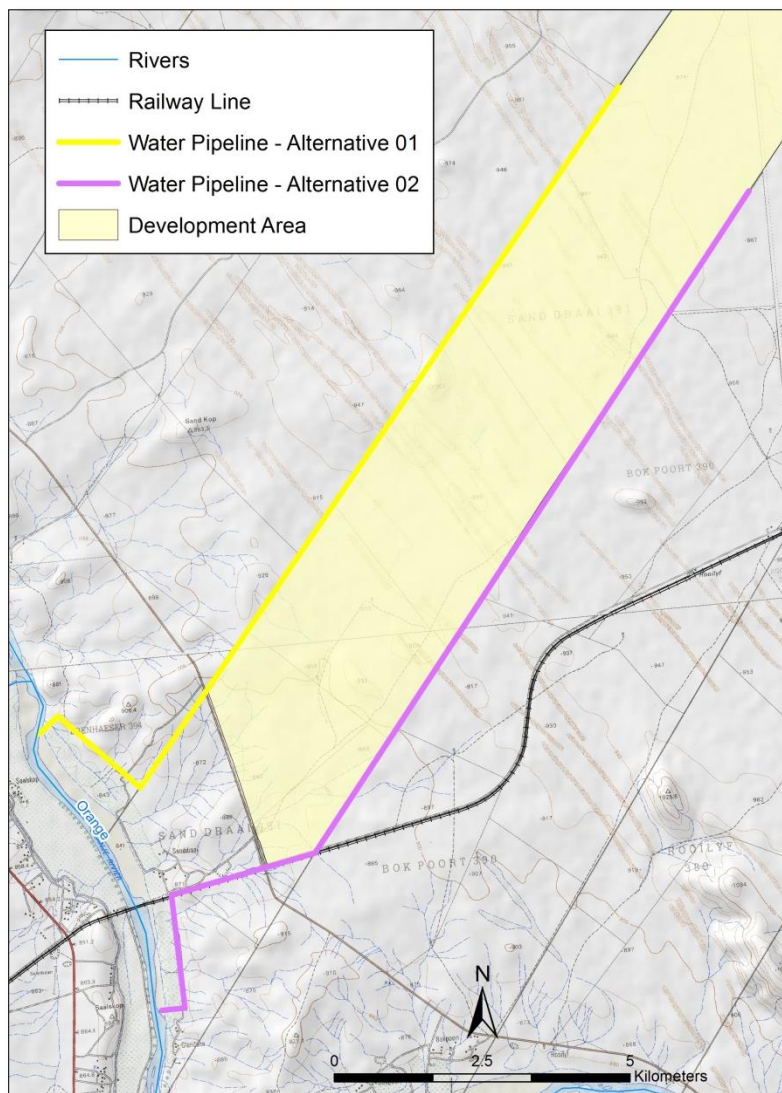
FIGURE 1-6: PROPOSED WATER PIPELINE ALTERNATIVES

2 REPORT STRUCTURE

This report commences with a review and analysis of pertinent legislation and policy at national and provincial level (Section 3), followed by the socio-economic baseline which is further broken down into national, provincial and regional information (Section 4). The structure is as follows:

Section 1	:	Project introduction, reflecting context and background;
Section 2	:	An overview of the report structure (this section);
Section 3	:	An assessment of relevant legislation and local level context;
Section 4	:	Socio-economic baseline (at provincial, municipal, ward and local (community) level);
Section 5	:	SEIA SoW, impact considerations and proposed impact method; and
Section 6	:	Literature cited.

3   LEGISLATION AND LOCAL AREA CONTEXT

This SIA baseline report forms part of the Specialist input towards an overall current Environmental Impact Assessment. It is important to contextualise the national backdrop against which social and economic development is proposed, and this we try to ascertain through a review of various national and local level strategic plans and policies.

3.1 South African Millennium Development Goals

The Millennium Development Goals (MDGs) consist of eight development priorities. The eight Millennium Development Goals range from halving extreme poverty to halting the spread of HIV/AIDS and providing universal primary education and form a blueprint agreed to by all the world's countries and all of the leading developmental institutions in the world. As a member state of the United Nations, South Africa is a signatory to this agreement. The eight MDGs, in numerical order, are:

1) To eradicate extreme poverty and hunger (MDG1);
2) To achieve universal primary education (MDG2);
3) To promote gender equality and empower women (MDG3);
4) To reduce child mortality (MDG4);
5) To improve maternal health (MDG5);
6) To combat HIV/AIDS, malaria and other diseases (MDG6);
7) To ensure environmental sustainability (MDG7); and
8) To develop a global partnership for development (MDG8).

(Country Report 2010, UNDP)

The New Partnership for Africa's Development (NEPAD) was launched in 2002 and was designed to address the current challenges facing the African continent. Issues such as the escalating poverty levels, underdevelopment and the continued marginalisation of Africa are seen to need radical intervention. The NEPAD states that it is spearheaded by African leaders to develop a new vision that would guarantee Africa's renewal.

The primary objectives of NEPAD are:

1) To eradicate poverty;
2) To place African countries, both individually and collectively, on a path of sustainable growth and development;
3) To halt the marginalisation of Africa in the globalisation process and enhance its full and beneficial integration into the global economy; and
4) To accelerate the empowerment of women.

The national agenda implemented through the Reconstruction and Development Plan (RDP) and Growth, Employment and Redistribution Strategy (GEAR) in the first fifteen years of democracy and through the National Development Plan (NDP) and New Growth Path (NGP) going forward constitutes a 'continuity of change.' (MDG, South Africa, October 2013). Since 1994, there have been a great number of development initiatives. These are outlined in the table below.

TABLE 3-1 DEVELOPMENT INITIATIVES SINCE 1994

Programme/ Strategy/ Plan	Objectives
Reconstruction and Development Plan (RDP)	i. Meeting basic needs; ii. Developing human resources; iii. Building the economy; and iv. Democratising the state and society.
Growth, Employment and Redistribution Strategy (GEAR)	i. Restructure the economy; ii. Create plentiful jobs; iii. Create environment for attracting foreign investment; and iv. Create and implement policies to counter high inflation.
Integrated Sustainable Rural Development Programme (ISRDP)	i. Accelerate rural development; ii. Create economic opportunities in rural areas; iii. Decrease levels of poverty and unemployment; and iv. Implement access to free basic services (water, sanitation and electricity)
Urban Renewal Programme (URP)	i. Accelerate urban renewal; ii. Create economic opportunities in 21 nodal areas of poverty; iii. Decrease levels of poverty and unemployment; iv. Implement access to free basic services (water, sanitation and electricity); and v. Access to housing.
Accelerated and Shared Growth Initiative - South Africa (ASGISA)	i. Halve unemployment and poverty; ii. Improve the capacity of the state; and iii. Reduce the regulatory burden on small and medium enterprises (SMEs); etc.
Joint Initiative on Priority Skills Initiative (JIPSA)	i. Improve skills base required by the economy for accelerated growth; and ii. Focus on scarce and critical skills; etc.
New Growth Path (NGP)	Employment creation
National Development Plan (NDP)	i. Eliminate poverty and reduce unemployment; ii. Improve the quality of school education; iii. Deconstruct the spatial patterns of the apartheid system; iv. Reduce unemployment from 27% to 14% by 2020 and to 6% by 2030; v. Decrease the level of inequality, as measured by the Gini coefficient, from 0.7 in 2007 to 0.6 in 2030; and vi. Become a less resource intensive economy, adopt sustainable development practices, etc.

3.1.1   South Africa's Medium Term Strategic Framework

The Medium Term Strategic Framework (MTSF) (MTSF 2009-2014) is a statement of government intent. It identifies the development challenges facing South Africa and outlines the medium term strategy for improving living conditions of South Africans. The MTSF base document is meant to guide planning and resource allocation across all spheres of government. National and provincial departments in particular need to develop five-year

strategic plans and budget requirements, taking into account the medium-term imperatives. Similarly, informed by the MTSF and their 2006 mandates, municipalities are expected to synergise their integrated development plans in line with the national medium-term priorities (UNDP Country Report 2010).

The MTSF's strategic priorities are captured in the table below.

TABLE 3-2 LINKAGES BETWEEN MEDIUM TERM STRATEGIC FRAMEWORK AND MILLENIUM DEVELOPMENT GOALS

Linkage between South Africa's national development planning and the MDGs	
MTSF STRATEGIC ELEMENTS	**RELEVANT MDGS**
1. Strategic Priority 1: Speeding up growth and transforming the economy to create decent work and sustainable livelihoods	MDG 1, MDG 2, MDG 3, MDG 8
2. Strategic Priority 2: Massive programme to build economic and social infrastructure	MDG 1, MDG 3, MDG 8
3. Strategic Priority 3: Comprehensive rural development strategy linked to land and agrarian reform and food security	MDG 1, MDG 2, MDG 7
4. Strategic Priority 4: Strengthen the skills and human resource base	MDG 2
5. Strategic Priority 5: Improve the health profile of all South Africans	MDG 4, MDG 5, MDG 6
6. Strategic Priority 6: Intensify the fight against crime and corruption	MDG 2, MDG 3
7. Strategic Priority 7: Build cohesive, caring and sustainable communities	MDG 2, MDG 3, MDG 7
8. Strategic Priority 8: Pursuing African advancement and enhanced international cooperation	MDG 8
9. Strategic Priority 9: Sustainable resource management and use	MDG 2, MDG 3, MDG 7
10. Strategic Priority 10: Building a developmental state, including improvement of public services and strengthening democratic institutions	MDG 1, MDG 2, MDG 3, MDG 8

Source: UNDP Country Report 2010

3.2 South Africa's Accelerated and Shared Growth Initiative (ASGISA)

ASGISA which is one of South Africa's government programmes which promotes economic development is structured around the following framework of key interventions:

- Bulk infrastructure investments through all three spheres of Government, State Owned Enterprises and Public-Private Partnerships;
- Immediate, top and medium priority investments in specially selected sectors of the economy;
- The building of Human Capital from very basic primary school infrastructure to tertiary education level;
- Provision for a Joint Initiative on Priority Skills Acquisition (JIPSA);
- Special focused Second Economy Interventions that incorporate youth, women and people with disabilities in sector investment strategies, mass roll out of the Expanded Public Works Programme, Small Micro and Medium Enterprises promotion and Micro credit facilities; and
- Strengthening Governance and Institutional arrangements for service delivery.

3.3 The Constitution of the Republic of South Africa (Act No. 108 of 1996)

The Constitution defines the role of the public in the activities of all three spheres of government, namely national, provincial and local government (Sections 59, 72, 118, 152 and 154). Section 59 refers to the National Assembly, Section 72 refers to the National Council of Provinces and Section 118 refers to the Provincial Legislature. These Sections state that public involvement in the legislative and other processes of the Assembly/ Council/ Legislature must be facilitated, where its business is in an open and public manner. Section 152 of the Constitution states that one of the objects of local government is to encourage the involvement of communities and community organisations in its matters, whilst Section 154 states the requirement that draft provincial and national legislation be published for public comment and feedback. Chapter 10 of the Constitution (Section 195) states that the basic values and principles governing public administration include encouraging public participation in policy-making and responding to public need.

Chapter 3 (Section 40) requires all spheres of government to adhere to the principles (Section 41) of cooperative governance by informing one another of, and consulting one another, on matters of common interest and providing effective, transparent, accountable and coherent governance for the Republic as a whole.

3.4 !Kheis Local Municipality

Given that the municipal economy is heavily reliant on livestock and irrigated crop farming, local economic development (LED), food security and the spatial distribution of settlements within !Kheis Local Municipality are all driven largely by the Orange River (!Kheis Local Municipality, 2013). Livestock farming consists mainly of sheep farming for meat production, with local markets located at Groblershoop and Upington, while mutton is also sold further afield in Johannesburg and Cape Town. Cotton, corn, wheat, tomatoes, peanuts, musk melons and pumpkins are cultivated under irrigation from the Orange River (!Kheis Local Municipality, 2013).

Additionally, mineral deposits of *inter alia* feldspar, uranium, nickel, copper and zinc are found within the jurisdiction of the municipality and contribute to the local economy (!Kheis Local Municipality, 2013). The utilisation of solar energy to drive both the green economy as well as local economic development has been identified at the district level as a strategic development opportunity, while the development of a recycling programme is promoted at the local municipal level as having the potential to alleviate poverty through job creation (!Kheis Local Municipality, 2013). Tourism is also listed as a potential growth strategy, with a focus on cultural, agricultural and eco-tourism opportunities within the municipality.

!Kheis is a grant-dependent local authority, and this is reflected in its reliance on capital funding from national and provincial government for the development of bulk water distribution and treatment infrastructure, as well as for infrastructure maintenance. It is reasonable to infer that municipal income from rates, levies and taxes is low due to the fact that 7% of the population is considered indigent (!Kheis Local Municipality, 2013).

4 SOCIO-ECONOMIC BASELINE

The project development area lies within the Northern Cape, !Kheis Local Municipality and Ward 3 respectively and thus relevant data to this local context is reflected within this section.

4.1 The Northern Cape's Social and Economic Challenges

According to the Northern Cape Provincial Growth and Development Strategy (NCPGDS, Northern Cape Provincial Government, 2011), the province's share of South Africa's gross domestic product (GDP) was 2 % in 2002, the lowest contribution of the nine provinces. Although the Northern Cape has the smallest economy of the nine provinces, gross domestic product of the region (GDPR) per capita is higher than the national average (Northern Cape Provincial Government, 2011). The economy of the province is heavily dependent on the primary sectors of the economy, which in 2002 made up 31.0 % of the GDPR. Economic advantages which create a positive environment for the province include:

- Abundant mineral and natural resources;
- Infrastructure;
- Unique climate conditions;
- Unique tourism destination;
- Abundant land for economic growth planning; and
- Manageable demographic proportions for economic growth planning.

The most significant challenge that the NCPGDS recognises is that of the reduction of poverty. The strategy notes that most of the other challenges faced by the province emanates largely from the effects of poverty. While addressing poverty, attention needs to be given to a range of societal problems that includes:

- Reducing the backlog of basic needs such as water, sanitation and housing;
- Improving and increasing access to health, education and social services;
- Decreasing the prevalence rate of HIV and AIDS;
- Creating opportunities for employment;
- Reducing crime; and
- Targeting vulnerable groups.

In addition to poverty reduction, unemployment is of concern in the Province. 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 (Census, 2001). A direct comparison between the 2001 census data relating to unemployment and the 2007 Community Survey was not possible, as unemployment was not considered in depth for the latter survey.

Data gleaned from the NCPGDS Strategy helps to render a social and economic perspective on the Northern Cape Province. These are found below:

- The Province is mostly rural in nature,
- It has a low population density and relative inadequate infrastructure, especially in the remote rural areas,
- The Province has inherited an enormous backlog in basic service delivery and maintenance, and it will take time to eradicate these,

- The population is predominantly poor with high levels of illiteracy and dependency that seriously affect their productivity and ability to compete for jobs,
- The Province is faced with HIV/Aids as a social and economic challenge,
- Available resources are unevenly distributed and offer limited potential for improved delivery of services and growth; and
- Job creation and poverty eradication together with the low level of expertise and skills, stand out as the greatest challenges to be resolved.

4.1.1   The Provincial Economy

Source: Statistics South Africa 2013

Figure 4-1 shows the contribution of various sectors to the provincial GDP within the Northern Cape in 2013.
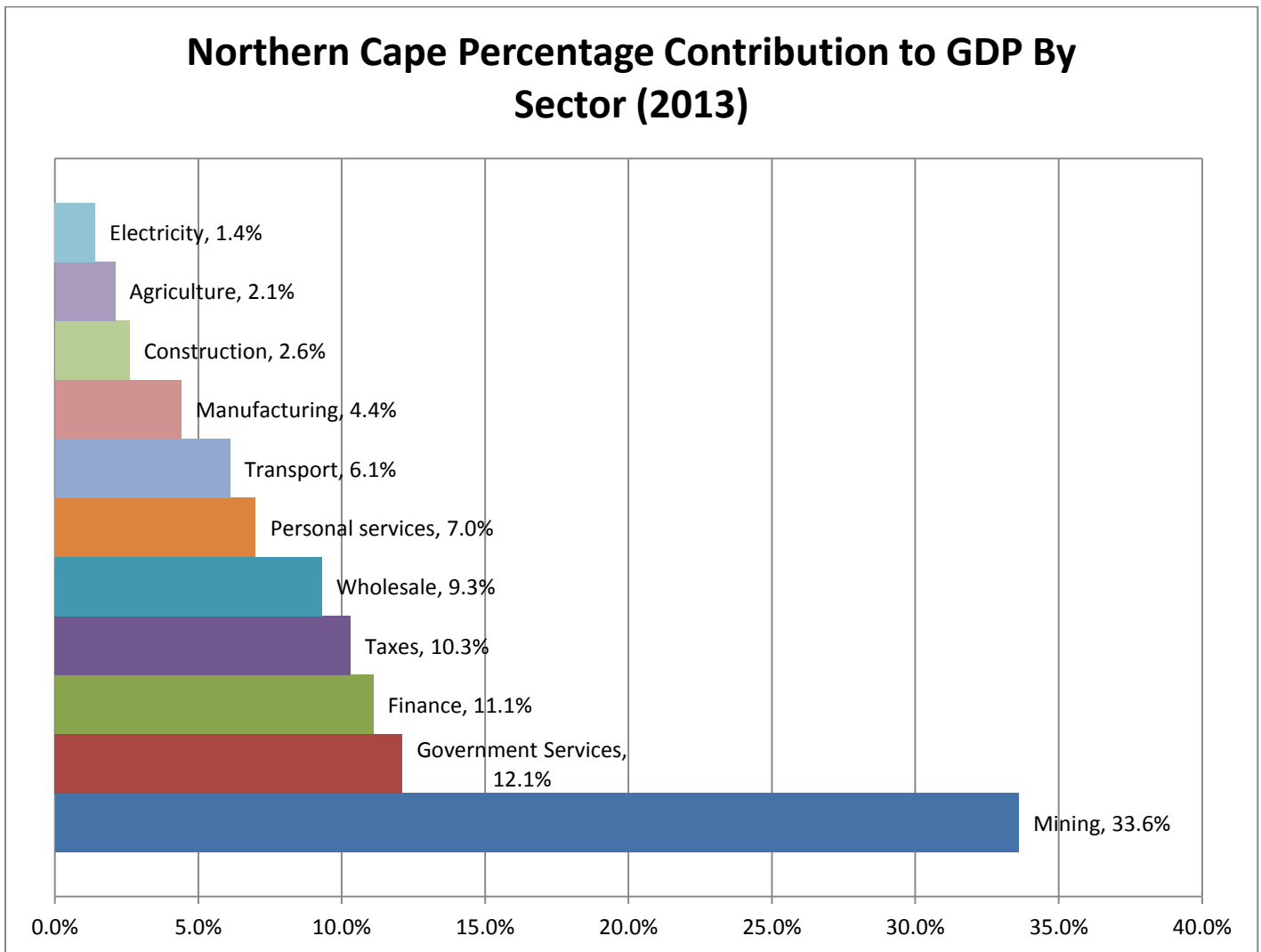
Source: Statistics South Africa 2013

FIGURE 4-1: SECTOR CONTRIBUTION TO THE NORTHERN CAPE GDP IN 2013

Mining

The exceptional mineral wealth of the Northern Cape Province has ensured the importance, both nationally and internationally, of the internationally, of the province's mining industry. The minerals economy of the Northern Cape is a hundred and fifty (150) years old and fifty (150) years old and continues to remain the mainstay of the provincial economy contributing 33.6 % to GDP in 2013 (Source: Statistics in 2013 (Source: Statistics South Africa 2013

Figure 4-1). In 1998, the Northern Cape produced around 37 % of South Africa's diamond output, 44 % of its zinc, 70 % of its silver, 84 % of its iron-ore, 93 % of its lead and 99 % if its manganese. Certain sub-sectors of the mining industry in the Northern Cape are approaching maturity with downscaling already having commenced in the copper and diamond mining industries. This poses serious socio-economic challenges in the affected areas and there is an urgent need to identify and promote alternative economic activities to mitigate the negative impact of minerals downscaling. However, at the same time, there are still significant known reserves of a range of minerals as well as many unexploited deposits in other areas that will sustain the provincial mining industry for many years to come (Northern Cape Provincial Government, 2011).

One of the key challenges faced by planners and those responsible for promoting minerals development is how to ensure that residents of the Northern Cape benefit more extensively from the exploitation of the province's mineral wealth

FIGURE 4-2 : SPATIAL DISTRIBUTION OF MINING'S CONTRIBUTION TO GVA IN 2009

in the future. New minerals legislation, enacted in 2004 has raised the prospect of the transformation of the mining industry through the de-concentration of ownership, increased access to mineral resources on the part of junior and small-scale mining companies and black economic empowerment. At the same time, the new legislation is intended to stimulate new growth in the industry and bring about increased levels of minerals processing and related economic development in the province (Northern Cape Provincial Government, 2011).

Figure 4-2 shows the contribution of mining to provincial gross value added (GVA) and its spatial distribution in the province. The concept of GVA has been used as an indicator for making estimates of regional economic

activity (Naudé, Badenhorst, Zietsman, Van Huyssteen, & Maritz, 2007) and is broadly similar to what is more generally known as Gross Geographic Product (GGP).The Kimberly diamond fields, the Kuruman area and the West Coast emerge as the key mining areas of the Northern Cape.

Agriculture

While contributing only around 3% to the provincial economy in 2013, agriculture remains an economic mainstay of the province due to its widespread practice and implementation. Despite the largely semi-arid and arid environment in the province, the fertile land that lies alongside the Orange and Vaal rivers supports the production of some of the country's finest quality agricultural products. The province has become a major exporter of table grapes produced along the Orange River and is world-renown for the quality of meat produced in the province (Northern Cape Provincial Government, 2011). The Northern Cape is also well known for the production of wool, mohair and karakul pelts as well as dates, citrus products, wine and raisins.

Two major factors currently constrain growth prospects in the agricultural sector in the Northern Cape. The first is the need to promote transformation so that new and emerging

FIGURE 4-3: PATIAL DISTRIBUTION OF AGRICULTURE, FORESTRY AND FISHING'S CONTRIBUTION TO GVA IN 2009

farmers can take their place as equal members of the commercial agricultural fraternity and in so doing satisfy the need for redistributive justice through increased access by the previously disadvantaged to land and agricultural resources. The second factor, is the need to achieve greater levels of diversification in irrigated agriculture in order to spread risk and promote the development of crops that have a high affinity for agro-processing. High priorities for the Northern Cape Government include promoting the transformation and the development of an enlarged agro-processing sector that contributes to growth in manufacturing and job creation (Northern Cape Provincial Government, 2011).

Figure 4-3 highlights the critical role played by the Orange River and the areas adjacent to it in terms of contribution to provincial GVA by means of agriculture and forestry. Hartswater, Kimberly, Calvinia and De Aar are also key nodes for the generation of these aspects of GVA.

Fishing and Mariculture

The cold but nutrient rich up-welling Benguela current that runs along the Namaqualand coast sustains an abundance of marine life that gives rise to enormous potential for the development of fishing and mariculture industries. The area already has a rich fishing and cray-fishing history and research shows that it should be possible under the recently amended legislative and regulatory framework to significantly rejuvenate the fishing industry. However, perhaps the greatest opportunity for economic development based on the exploitation of marine resources today is the development of the pump-ashore mari-culture industry. Mari-culture entails the cultivation of a range of high value marine species with tremendous potential for exports to lucrative overseas markets. Arguably, the Northern Cape has the best conditions for mari-culture out of any area along the South African coast and indications are that mari-culture offers sufficient growth potential to replace diamond mining over the long-term as coastal Namaqualand's principal industry. The provincial government is currently working closely with pioneer private sector business persons involved in mari-culture to develop new mari-culture ventures in the area (Northern Cape Provincial Government, 2011).

Figure 4-3 also shows that Port Nolloth and Kleinsee are the most important nodes from a fisheries perspective.

Manufacturing

The Northern Cape manufacturing sector's contribution to provincial Gross Geographic Product (GGP) was comparatively low at 4.2 % in comparatively low at 4.2 % in 2002, but increased to 4.4% in 2013 (Source: Statistics South Africa 2013

Figure 4-1). Manufacturing enterprises make a significant contribution to the local economy in those localities where there is some concentration of manufacturing activity, mainly in the Kimberley, Upington, Hartswater and Kleinsee areas (Figure 4-4). Most manufacturing that takes place in the Northern Cape involves value-addition to the province's mineral and agricultural raw material output, or, the fabrication of intermediate products used in those industries. Despite the relative insignificance of the manufacturing sector in aggregate, there is significant scope for growth in certain economic sub-sectors, particularly if conditions conducive to increased investment in manufacturing can be created through institutional support and reform (Northern Cape Provincial Government, 2011).
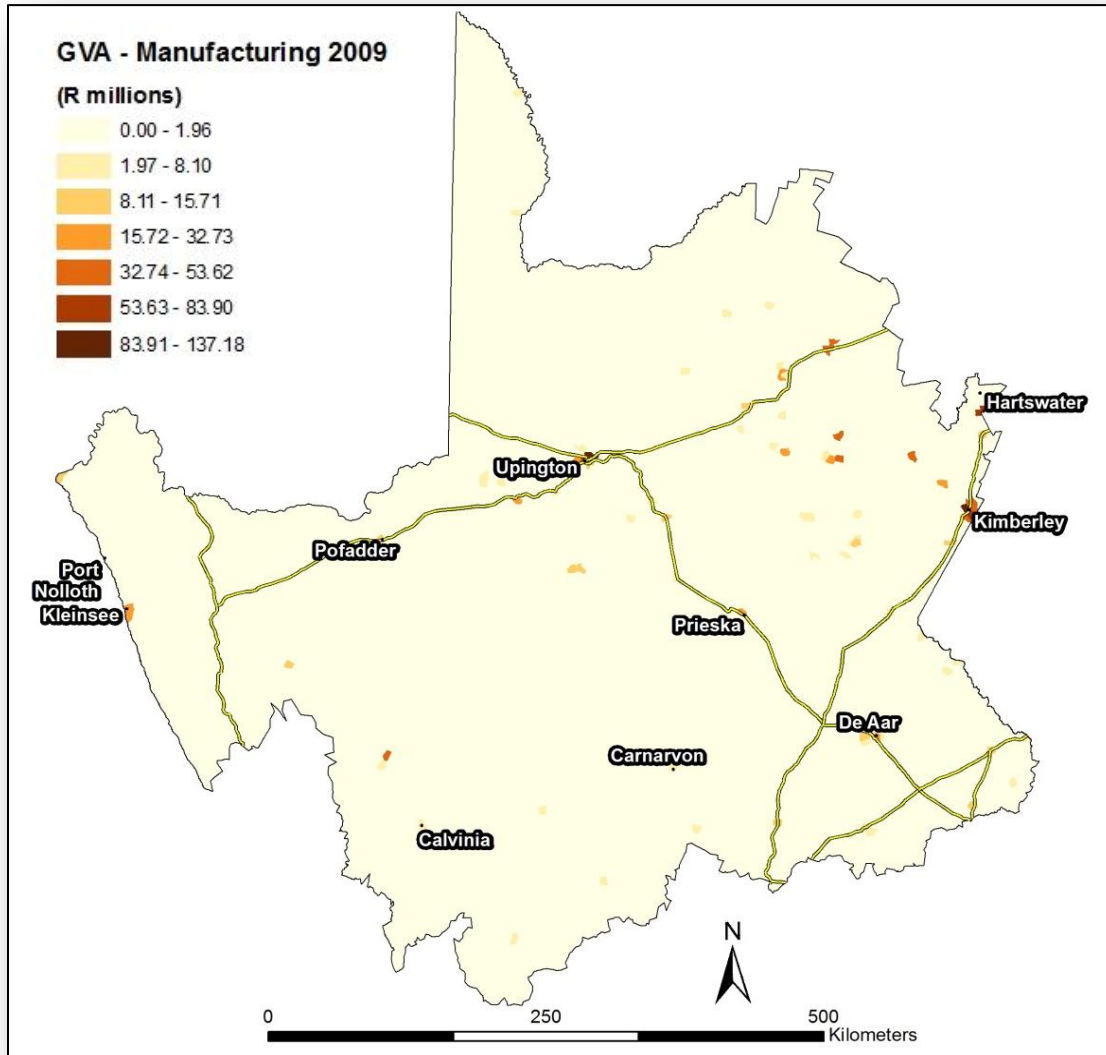
FIGURE 4-4: SPATIAL DISTRIBUTION OF MANUFACTURING'S CONTRIBUTION TO GVA IN 2009

Tourism

In many respects, tourism in the Northern Cape can be seen as a service industry with tremendous growth potential. Since the advent of democratic government in 1994, the Northern Cape tourism industry has blossomed largely as a result of the opening up of South Africa as a long-haul tourist destination for the world's travellers but also because the province has gained exposure to growing numbers of domestic tourists too. The province caters ideally for nature-based eco-tourists looking for a new experience and at the same time offers traditional tourists a great deal owing to its history in the development of the mining industry in South Africa. A number of major new conservation and eco-tourism developments are currently underway in the province in conjunction with the governments of Botswana and Namibia. At varying stages of execution, it is anticipated that these projects will have a major positive impact on the regional tourist economy, particularly if it is possible to use the conservation assets in each case to leverage private sector investment in new tourism plant and capacity (Northern Cape Provincial Government, 2011).
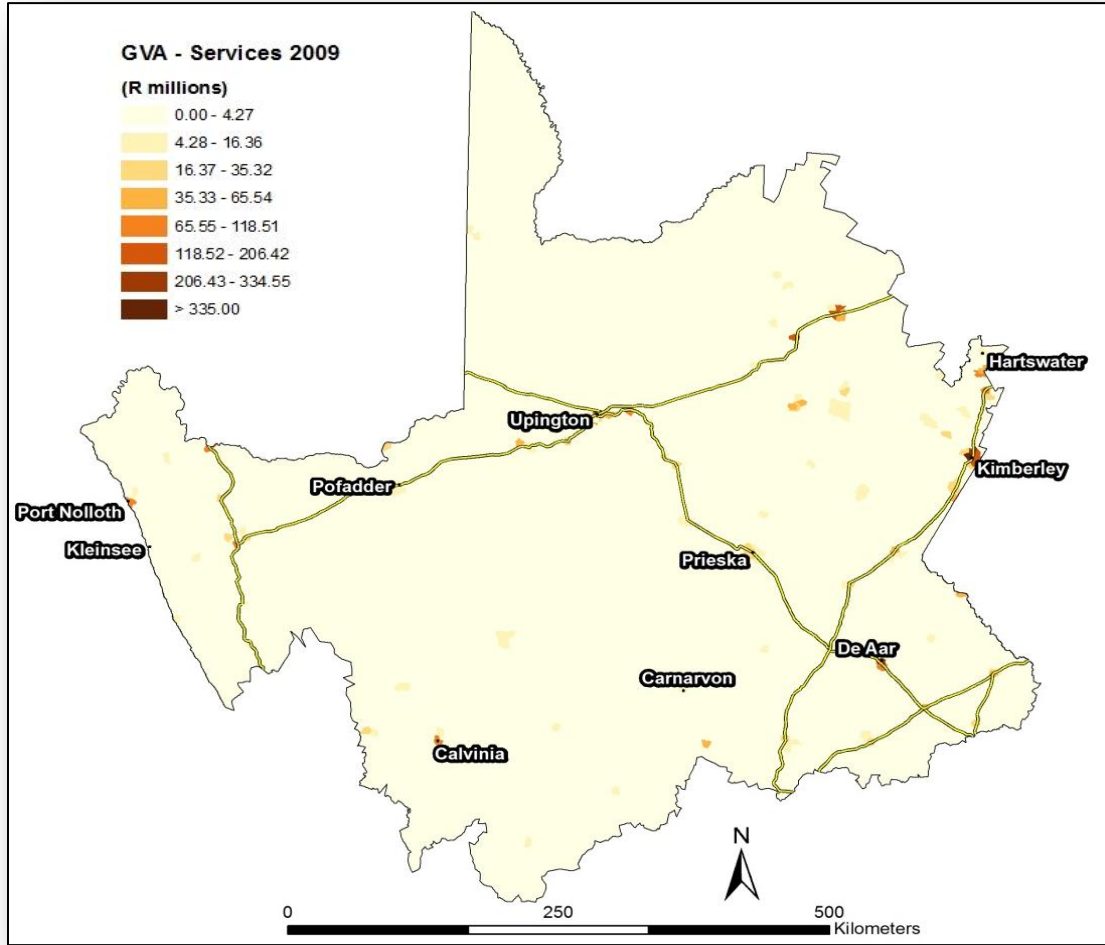
FIGURE 4-5: SPATIAL DISTRIBUTION OF THE SERVICE SECTOR'S CONTRIBUTION TO GVA IN 2009

4.2 Social and Economic Characteristics of the !Kheis Local Municipality

4.2.1 Background and Demographics

!Kheis Local Municipality falls within the Siyanda District Municipality in the Northern Cape province. !Kheis is a Khoi name meaning "a place where you live" or "your home". The !Kheis municipal area was initially inhabited by the Khoisan people, who were also the first permanent inhabitants of South Africa. The San, who lived a nomadic life, migrated through the area. !Kheis Municipality was established from the former Groblershoop Municipality, from settlements that were previously part of the ZF Mgcawu (Siyanda) and Karoo District Municipalities. These municipalities administrated these settlements and provided them with services up until the demarcation in November 2000 (!Kheis Local Municipality, 2013). Roads in the !Kheis municipal area are mainly gravel, although national roads also traverse the municipality, including the N8 and N10 which link Groblershoop to Griekwastad and Upington respectively. !Kheis Local Municipality was established from the former Groblershoop Municipality,

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including the following settlements: Boegoeberg, Gariep, Grootdrink, Kleinbegin, Opwag, Topline, and Wegdraai (Statistics South Africa, 2011).

Sex and Age Ratios

Source: Statistics South Africa Census 2011

Figure 4-6 shows age distribution and sex ratios for the !Kheis Local Municipality in 2011. The emergent trend in terms of age structure is that the municipality is dominated by a young population (0-19 years). The fact that persons aged 60 to 85+ accounted for a mere 7.9% of the total population in 2011 is indicative of a low life expectancy. Sex ratios within the municipality are uniform for the most part, with the exception of the 30-34 age group, where 4.2% of the male population occurred as opposed to 3.5% of the female population (Statistics South Africa, 2011).
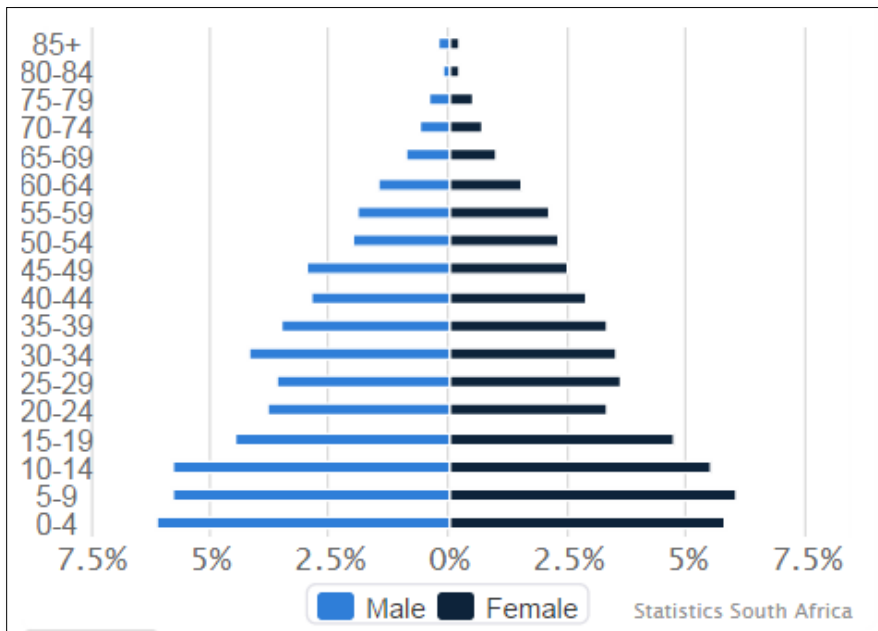
Source: Statistics South Africa Census 2011

FIGURE 4-6: AGE DISTRIBUTION IN !KHEIS LM IN 2011

Languages

Source: Statistics South Africa Census 2011

Figure 4-7 illustrates languages spoken within !Kheis Local Municipality. At 93%, Afrikaans is dominant, while English and Setswana constitute approximately 1% each (Source: Statistics South Africa Census 2011
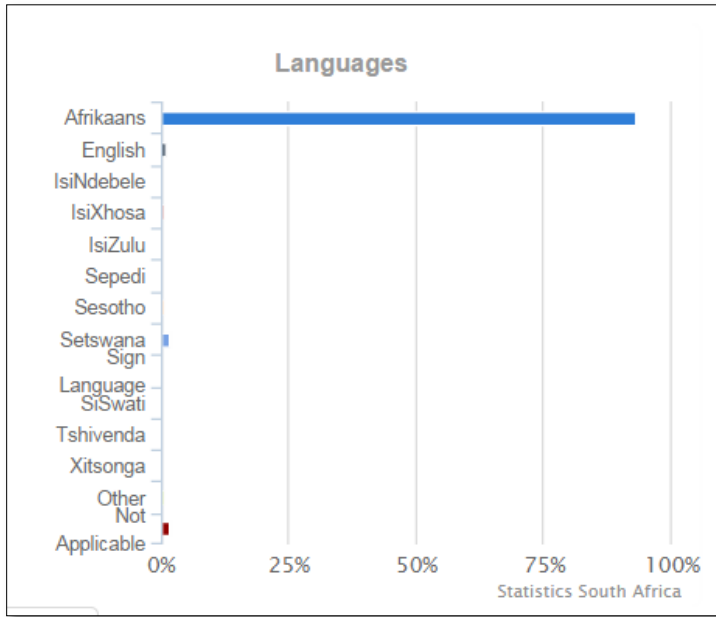
Figure 4-7).

Source: Statistics South Africa Census 2011

FIGURE 4-7: DISTRIBUTION OF SPOKEN LANGUAGES WITHIN !KHEIS LM IN 2011

Tenure Status

Source: Statistics South Africa Census 2011

Figure 4-8 shows tenure[1] status within the !Kheis Local Municipality in 2011. Over half of the landowners within the municipality had paid off their properties, while roughly 10% owned their properties but had not yet paid them off in 2011. Approximately 30% of landowners either rented their properties or occupied them rent-free (Source: Statistics South Africa Census 2011
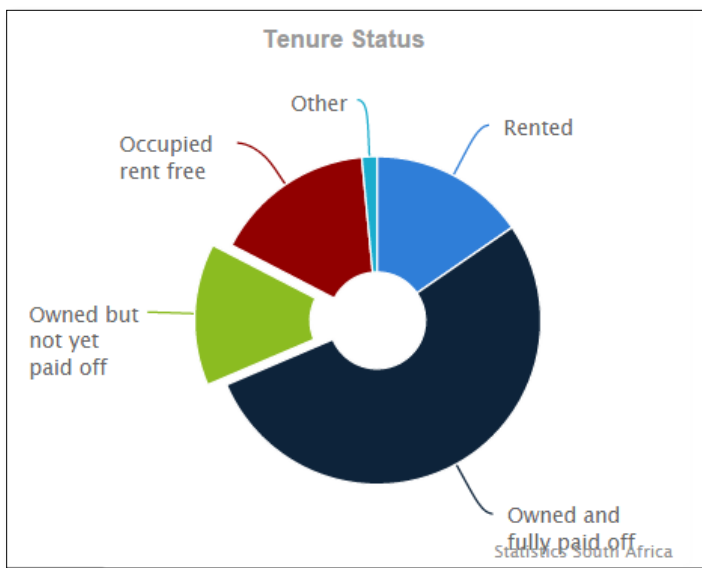
Figure 4-8).

Source: Statistics South Africa Census 2011

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[1] Tenure refers to land and/or property occupancy/ ownership status

FIGURE 4-8: TENURE STATUS WITHIN !KHEIS LM IN 2011

Agricultural Households

Given the importance of agriculture to the provincial, district and local economy, it is useful to determine what agricultural activities take place agricultural activities take place within the !Kheis Local Municipality. Source: Statistics South Africa Census 2011

Figure 4-9 highlights the importance of livestock farming which accounted for 66% of agricultural activity in 2011, followed by crop farming (20%) and mixed farming (13%).
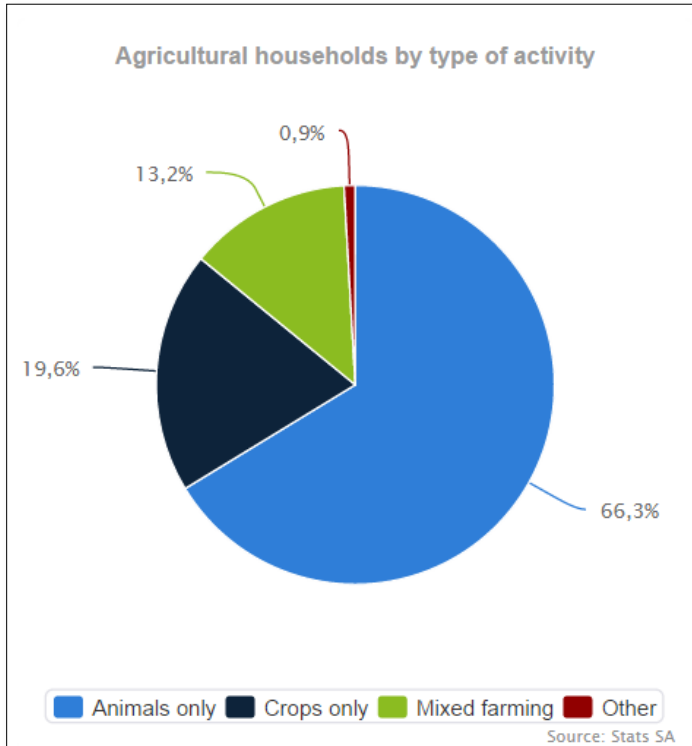
Source: Statistics South Africa Census 2011

FIGURE 4-9: TYPE OF AGRICULTURE BY HOUSEHOLD WITHIN !KHEIS LM IN 2011

4.2.2 *Social and Economic Indicators in Affected Ward 3*

The proposed development area occurs within Ward 3 of the !Kheis Local Municipality. In this Section social and economic indicators are presented at the levels of Ward 3 and the !Kheis local municipality (Figure 4-10).
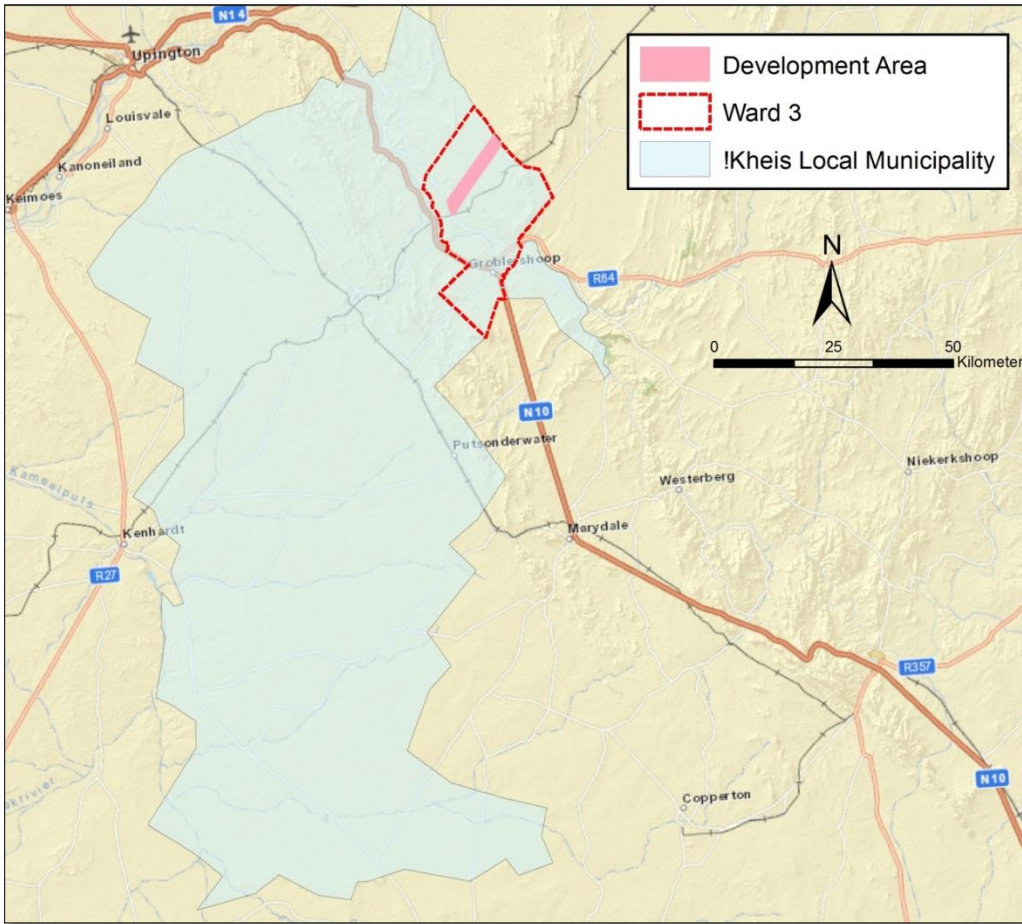
FIGURE 4-10: LOCATION OF WARD 3 WITHIN !KHEIS LM

Employment Sector

Source: Statistics South Africa Census 2011

Figure 4-11 shows the percentage of employed persons by sector in 2011. In both Ward 3 and the !Kheis Local Municipality the majority of respondents indicated that their employment sector was 'not applicable'. This may simply mean that they did not belong to either the formal or informal employment sectors. Of the remainder, the majority were employed in the formal sector in Ward 3, and in the informal sector in the !Kheis Local Municipality in 2011 (Source: Statistics South Africa Census 2011

Figure 4-11).

Employment by Sector 2011

	In the formal sector	In the informal sector	Private household	Not applicable
!Kheis	17.6%	6.5%	1.0%	74.7%
Ward 3	26.5%	3.1%	1.3%	68.9%
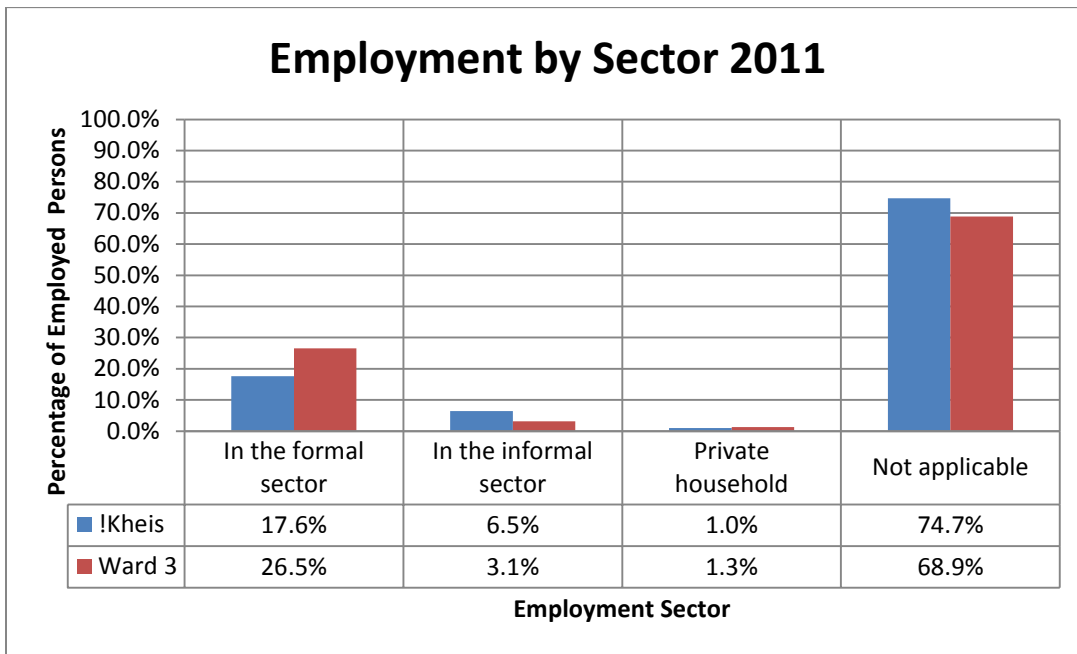
Source: Statistics South Africa Census 2011

FIGURE 4-11: EMPLOYMENT BY SECTOR IN 2011 FOR !KHEIS LM AND WARD 3

Employment Status

The percentage of people employed within Ward 3 was higher than that of the !Kheis Local Municipality in 2011, as was the percentage of as was the percentage of people who responded 'other not economically active' (Source: Statistics South Africa Census 2011

Figure 4-12). This category (Other not economically active), typically points to those people that are able and willing to work, but cannot find employment of any sort. Percentages of unemployed persons and discouraged work seekers were higher in the !Kheis Local Municipality than in Ward 3 in 2011.

Employment Status 2011

	Employed	Unemployed	Discouraged work-seeker	Other not economically active	Not applicable
!Kheis	24.3%	9.4%	3.3%	23.2%	39.7%
Ward 3	30.8%	8.1%	2.5%	24.3%	34.3%
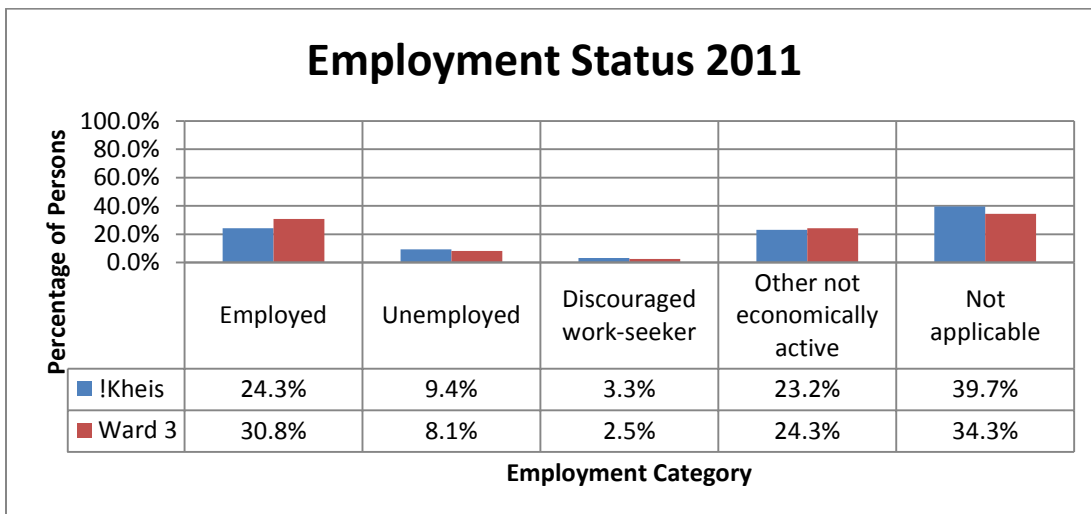
Source: Statistics South Africa Census 2011

FIGURE 4-12: EMPLOYMENT BY STATUS IN 2011 IN !KHEIS LM AND WARD 3

Energy Used for Cooking

In 2011, more than 80% of households within Ward 3 used electricity for cooking, significantly higher than the corresponding figure of 55% of corresponding figure of 55% of households in the municipality as a whole (Source: Statistics South Africa Census 2011

Figure 4-13). While only 10% of households use wood for cooking in Ward 3, this figure is higher at the municipal level at approximately 35%. This is indicative of a greater percentage of electricity provision within Ward 3 than in the !Kheis Local Municipality as a whole, particularly since other energy types such as gas and paraffin made only marginal contributions to energy used for cooking in 2011 (Source: Statistics South Africa Census 2011

Figure 4-13).

Energy Used for Cooking 2011

Energy Type	Electricity	Gas	Paraffin	Wood
■ !Kheis LM	55.3%	8.3%	0.7%	34.8%
■ Ward 3	85.0%	3.2%	1.0%	10.0%
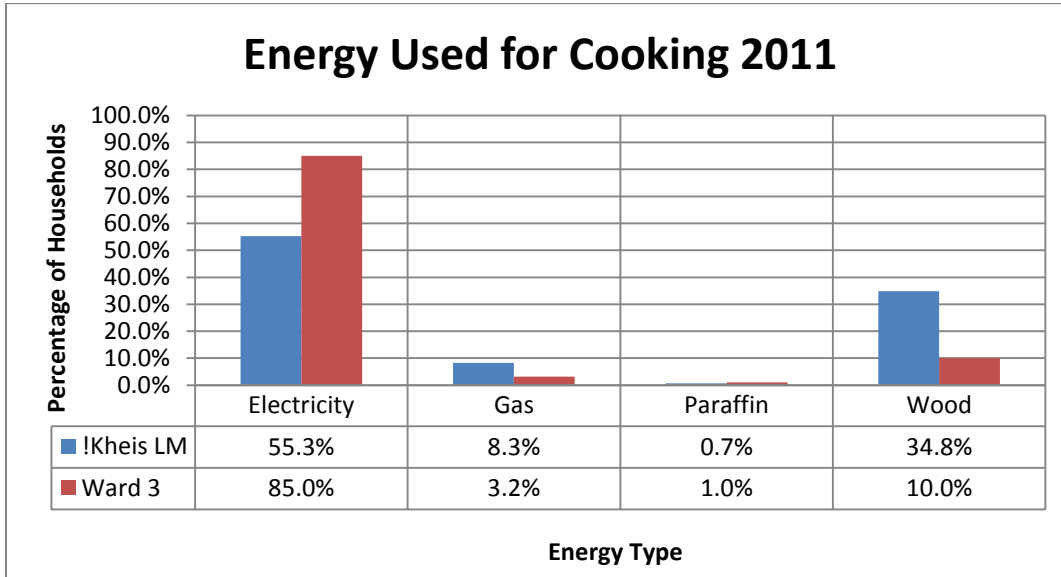
Source: Statistics South Africa Census 2011

FIGURE 4-13: ENERGY USED FOR COOKING IN 2011 IN !KHEIS LM AND WARD 3

Energy Used for Heating

Similar to the trend observed in energy used for cooking, energy used for heating was dominated by electricity in both Ward 3 and the !Kheis both Ward 3 and the !Kheis Local Municipality at 75% and 50% respectively in 2011 (Source: Statistics South Africa Census 2011

Figure 4-14). Ward 3 again shows higher percentages of electrification than the !Kheis Local Municipality.

Energy for Heating 2011

Energy Type	Electricity	Gas	Wood	Solar	None
!Kheis	49.6%	1.7%	42.2%	0.5%	5.8%
Ward 3	74.4%	0.5%	21.3%	0.2%	3.6%
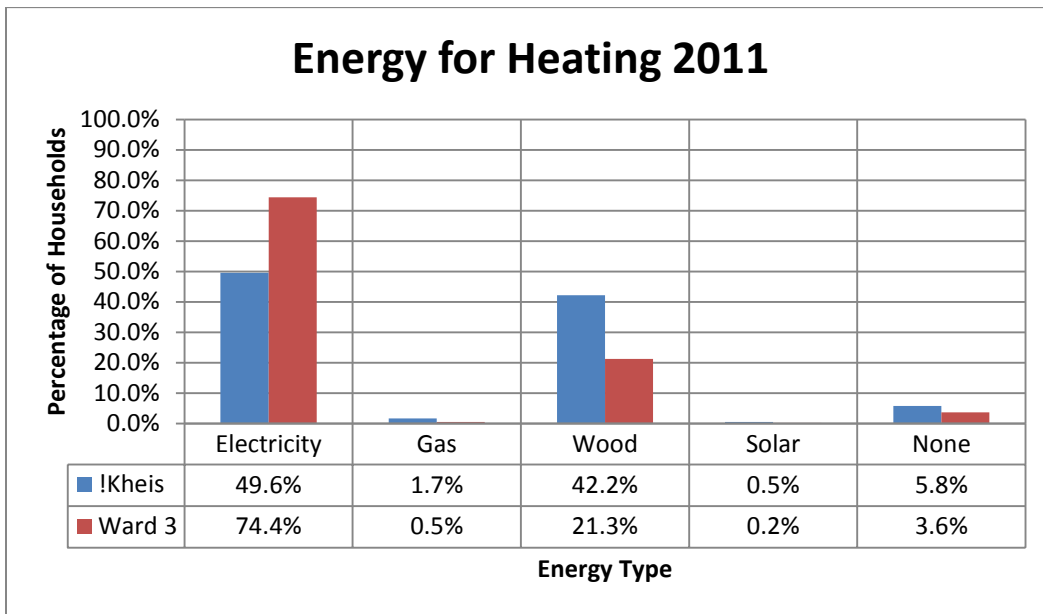
Source: Statistics South Africa Census 2011

FIGURE 4-14: ENERGY USED FOR HEATING IN 2011 IN !KHEIS LM AND WARD 3

Energy Used for Lighting

Assessing the percentage of households that utilised electricity for lighting in 2011 confirms the trend identified in the previous two sections, the previous two sections, that relatively more households within Ward 3 are electrified than within the !Kheis Local Municipality as a whole (Source: Statistics South Africa Census 2011

Figure 4-15). The high percentage of households that still utilised candles for lighting in 2011 within the !Kheis Local Municipality is further indicative of this trend.

Energy Used for Lighting 2011

Energy Type	Electricity	Paraffin	Candles	Solar
!Kheis	64.0%	2.0%	30.4%	2.7%
Ward 3	91.3%	0.2%	8.0%	0.4%
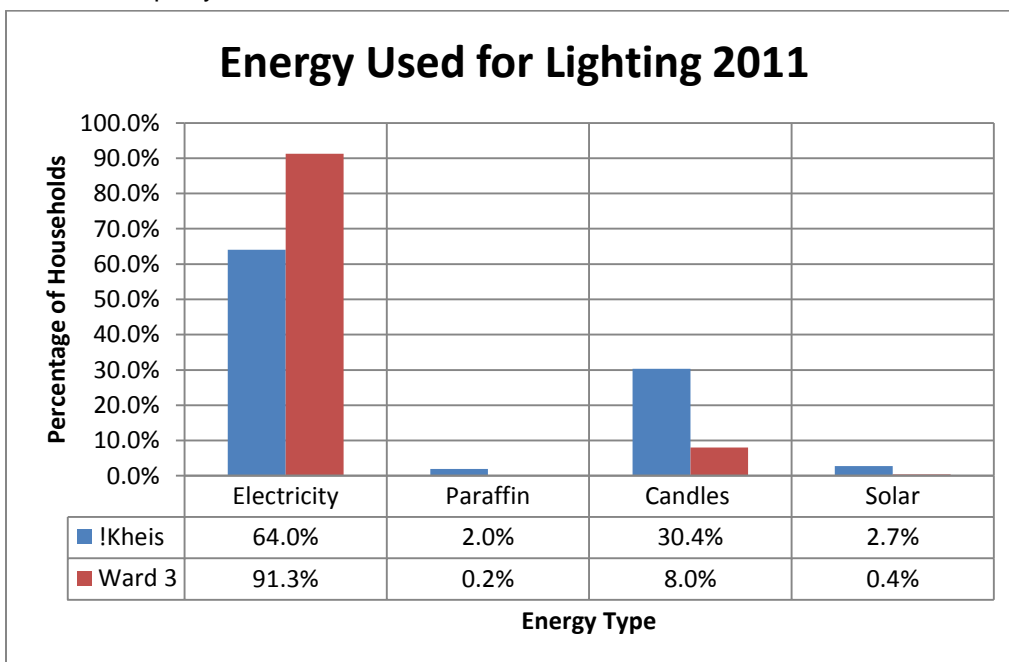
Source: Statistics South Africa Census 2011

FIGURE 4-15: ENERGY USED FOR LIGHTING IN 2011 IN !KHEIS LM AND WARD 3

Gender

Source: Statistics South Africa Census 2011

Figure 4-16 shows the gender ratio for Ward 3 and the !Kheis Local Municipality in 2011. Ward 3 had a marginally higher ratio of males to females in 2011 (Source: Statistics South Africa Census 2011

Figure 4-16).

Gender 2011

Gender	Male	Female
!Kheis	50.5%	49.5%
Ward 3	51.1%	48.9%
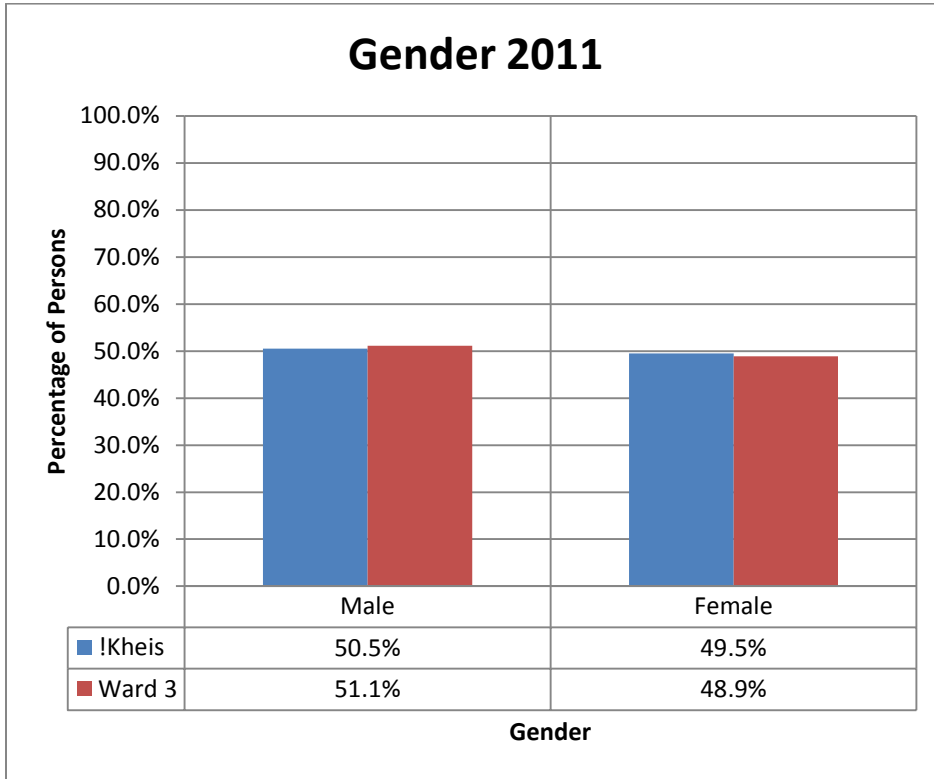
Source: Statistics South Africa Census 2011

FIGURE 4-16: GENDER PROFILE IN 2011 IN !KHEIS LM AND WARD 3

Education Level

In terms of the highest level of education attained by people within Ward 3 and the !Kheis Local Municipality in 2011, the majority of 2011, the majority of respondents within Ward 3 finished high school (41%), while within the !Kheis Local Municipality as a whole, the majority Municipality as a whole, the majority indicated primary school as their highest level of education attained (Source: Statistics South Africa Census 2011

Figure 4-17). The high percentage of 'not applicable' respondents as well as the low levels of tertiary education in both Ward 3 and the !Kheis Local Municipality is also noted.

Highest Level of Education Attained 2011

Level of Education	Primary School	High School	Not Applicable	None	Grade 0	Teritiary
■ !Kheis LM	38.1%	33.8%	13.5%	8.6%	4.9%	1.2%
■ Ward 3	30.4%	41.5%	15.3%	6.5%	4.9%	1.5%
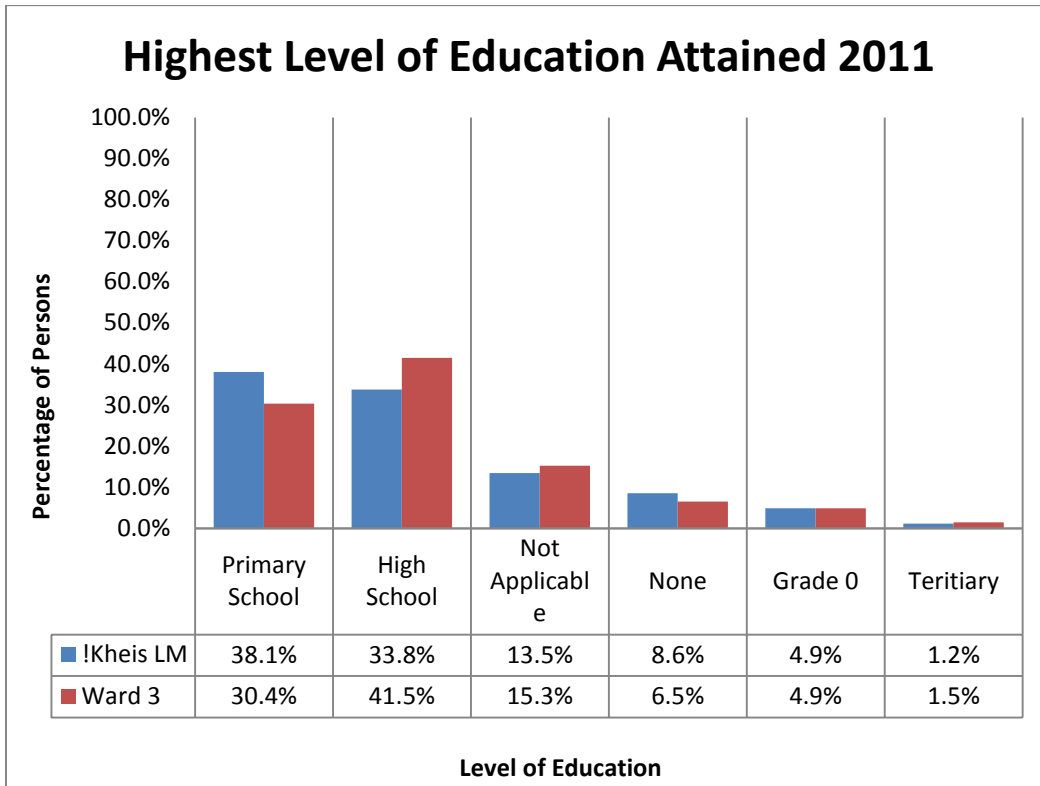
Source: Statistics South Africa Census 2011

FIGURE 4-17: HIGHEST LEVEL OF EDUCATION ATTAINED IN 2011 IN !KHEIS LM AND WARD 3

Annual Household Income Levels

Annual household income is a useful indicator of among others, levels of potential poverty within a given spatial area. Within Ward 3, the area. Within Ward 3, the majority of households earned between R38 000.00 and R76 000.00 per annum in 2011, which is higher than the which is higher than the corresponding figure of 28% of households within the !Kheis Local Municipality that earned between R19 000.00 and earned between R19 000.00 and R38 000.00 in 2011 (Source: Statistics South Africa Census 2011

Figure 4-18). Typically, households earning below R9 600 per month would qualify as 'living below the breadline.' The data shows that the majority of households in both Ward 3 and the LM were living below the breadline.
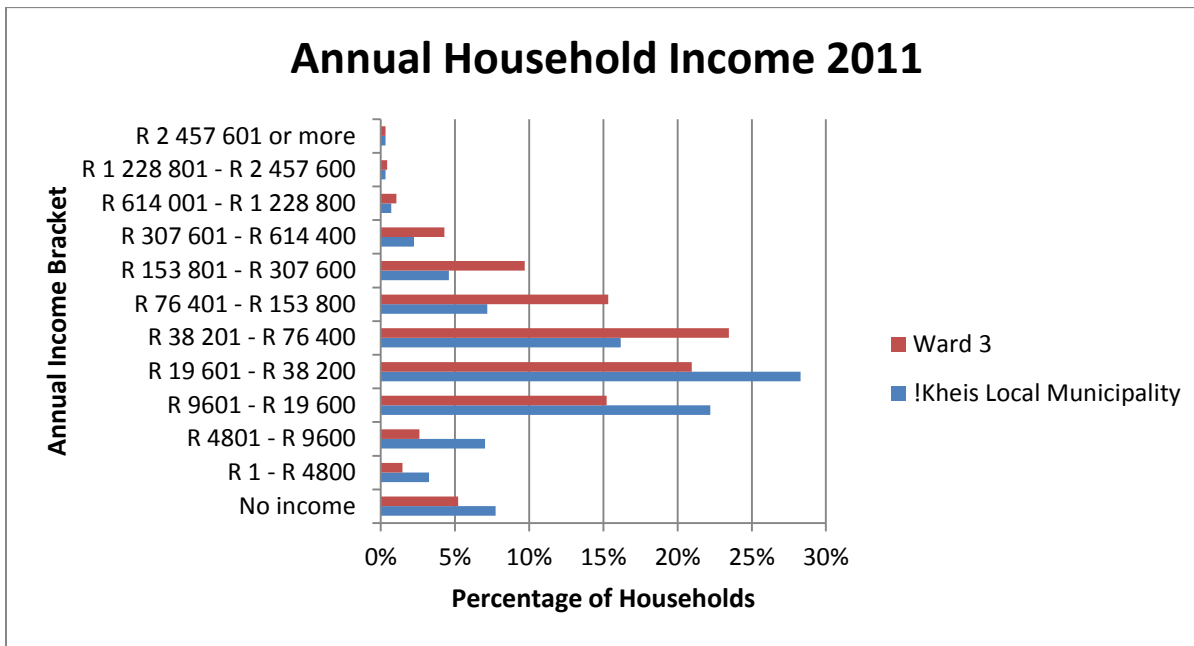
Source: Statistics South Africa Census 2011

FIGURE 4-18: ANNUAL HOUSEHOLD INCOME IN 2011 IN !KHEIS LM AND WARD 3

Population Group 2011

The majority population group within both Ward 3 and the !Kheis Local Municipality in 2011 was Coloured (85% and 78% respectively), and 78% respectively), followed by Black African (7% and 12% respectively), and White (5% and 7% respectively). 'Other' and Indian or Asian respectively). 'Other' and Indian or Asian were minorities in both Ward 3 and the !Kheis Local Municipality in 2011 at approximately 1% each at approximately 1% each (Source: Statistics South Africa Census 2011

Figure 4-19).

Population Group Distribution 2011

Population Group	Coloured	Black African	White	Other	Indian or Asian
■ !Kheis LM	85.4%	6.9%	5.4%	1.4%	1.0%
■ Ward 3	78.8%	11.8%	7.0%	1.1%	1.3%
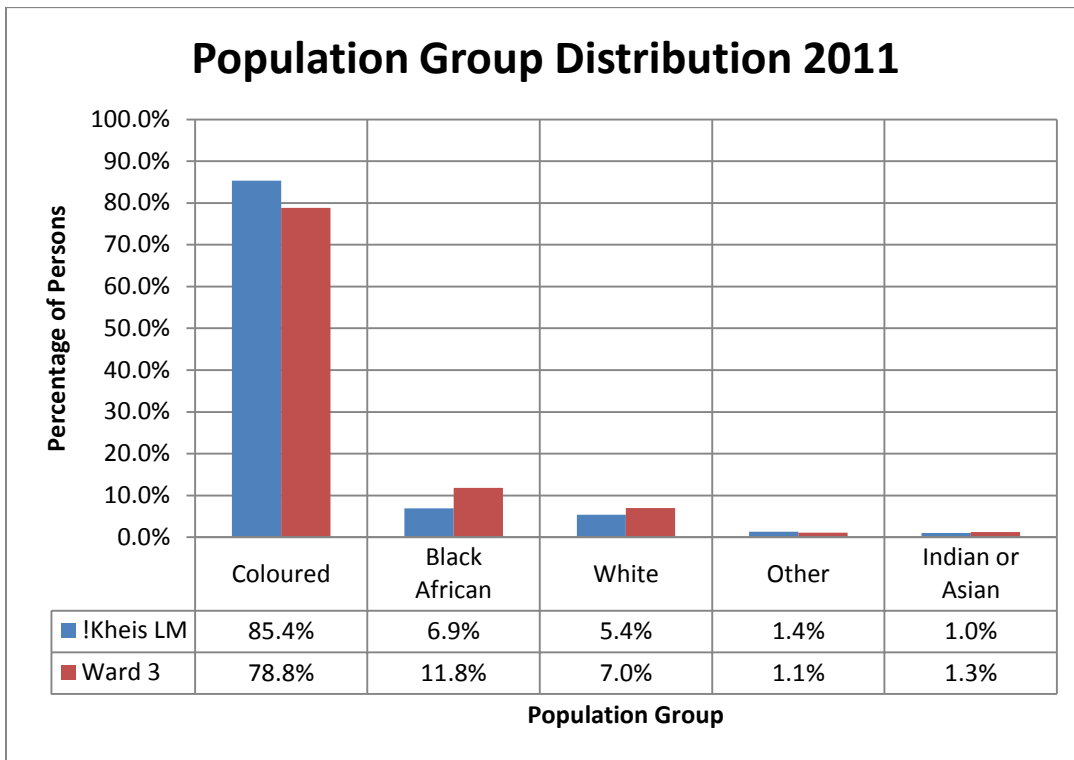
Source: Statistics South Africa Census 2011

FIGURE 4-19: POPULATION GROUP IN 2011 IN !KHEIS LM AND WARD 3

Access to Toilet Facilities 2011

Toilet facilities within households in 2011 for both Ward 3 and the !Kheis Local Municipality were dominated by flush toilets (both sewerage flush toilets (both sewerage mains and septic tanks), but the percentage of households within Ward 3 with flush toilets was significantly higher toilets was significantly higher than the !Kheis Local Municipality at 55% versus 27% (Source: Statistics South Africa Census 2011

Figure 4-20). The fact that a quarter of the households in the !Kheis Local Municipality had no sanitation in 2011 is of grave concern.

Toilet Facilities by Type 2011

Type of Facility	Flush toilet (sewerage system)	None	Flush toilet (septic tank)	Pit toilet with ventilation	Pit toilet without ventilation	Other/Not Applicable	Bucket toilet
!Kheis LM	27.0%	24.7%	21.3%	12.1%	8.8%	3.5%	2.0%
Ward 3	55.3%	7.4%	30.2%	4.0%	1.0%	2.2%	0.0%
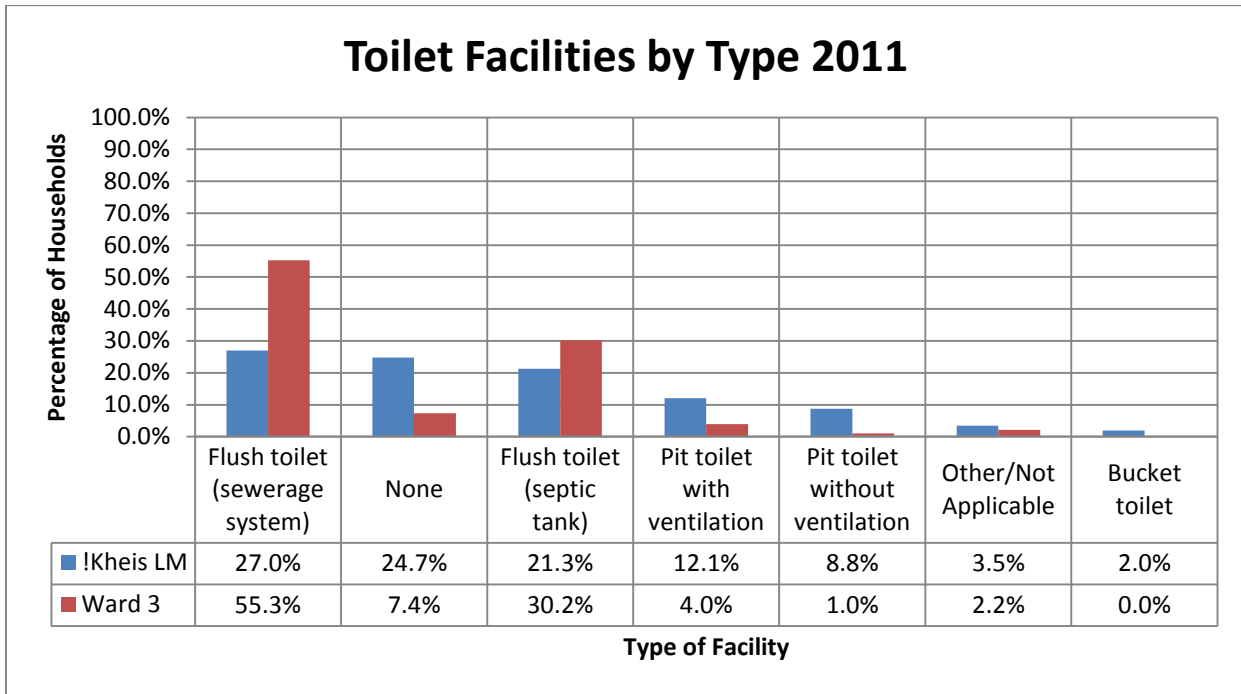
Source: Statistics South Africa Census 2011

FIGURE 4-20: TOILET FACILITIES IN 2011 IN !KHEIS LM AND WARD 3

Water Source

The type of water source that serviced households within Ward 3 and the !Kheis Local Municipality in 2011 is dominated by formal municipal dominated by formal municipal distribution at 78% and 62% respectively (Source: Statistics South Africa Census 2011

Figure 4-21). Contrary to the trend displayed in previous sections (where Ward 3 is generally better serviced than the !Kheis Local Municipality); the percentage of households that sourced their water from dams, pools or stagnant water in 2011 was higher in Ward 3 in 2011 at 11% versus 8% for the !Kheis Local Municipality, as shown in Source: Statistics South Africa Census 2011

Figure 4-21.

Water Source by Type 2011

	Municipal Water Scheme	Other/Not Applicable	Borehole	Dam/Pool/Stagnant Water
■ !Kheis LM	61.9%	13.1%	8.8%	8.1%
■ Ward 3	78.1%	7.8%	2.2%	11.2%

Type of Water Source
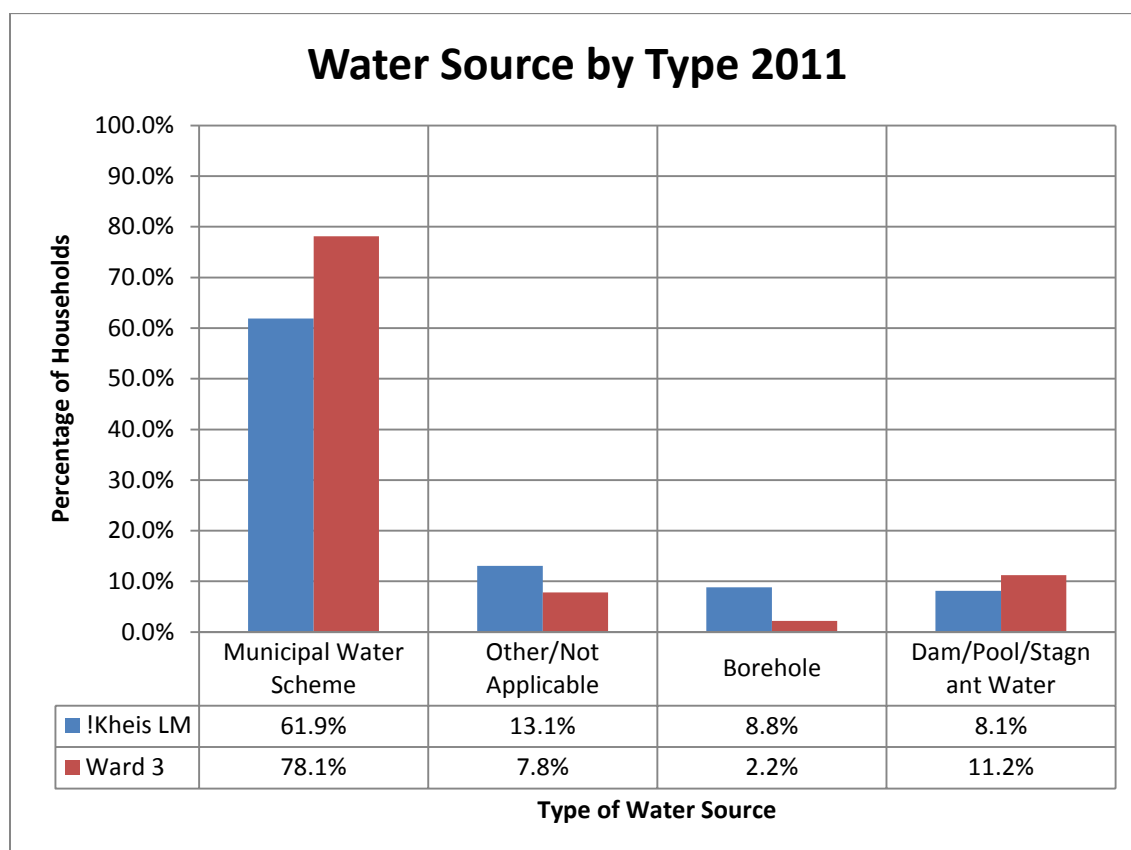
Source: Statistics South Africa Census 2011

FIGURE 4-21: WATER SOURCE IN 2011 IN !KHEIS LM AND WARD 3

4.2.3 Social and Economic Indicators for Identified Communities within the 25km Buffer

Indicators for identified areas within the 25 km project buffer were extracted from Census 2011. A detailed map showing local areas that fall within a 25km project buffer is found below in Figure 4-22. The statistical areas (mainplaces) within which the identified areas are found are shown as coloured polygons (Table 4-1 and Figure 4-23). There are four relevant statistical areas, all of which were representative of smaller, local areas. See Table 4-1 below. This sub section presents all available and relevant Census data for the identified statistical (and thus local) areas.

TABLE 4-1: STATISTICAL AREAS AND IDENTIFIED LOCAL AREAS

Statistical Area (colour coded)	Identified Local Areas within Statistical Area
!Kheis NU	Vollgraaffsig Skerpioenpunt Gariep Other areas (non-urban)
Saalskop	Saalskop
Groblershoop	Groblershoop
Wegdraai	Wegdraai
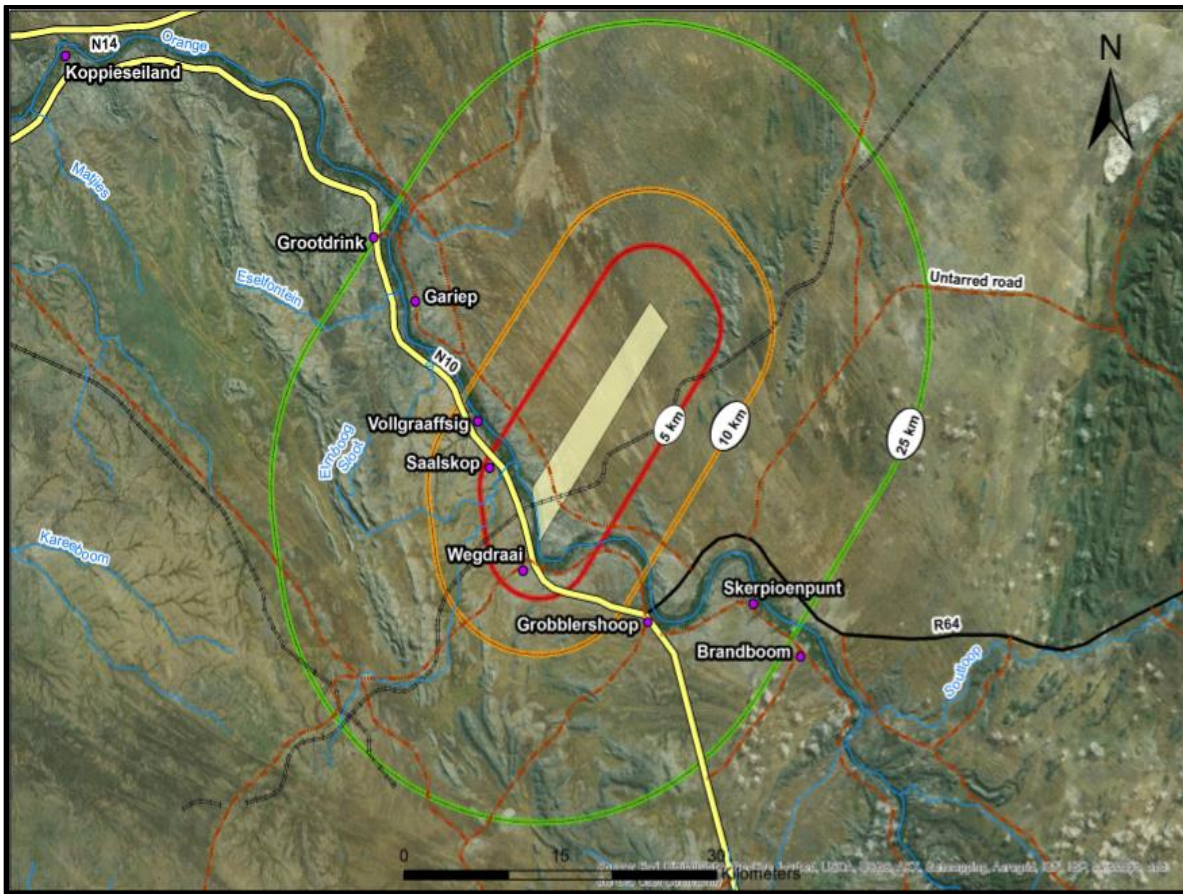
FIGURE 4-22: OVERALL PROJECT FOOTPRINT WITH RESPECTIVE 5KM, 10KM AND 25 KM BUFFERS
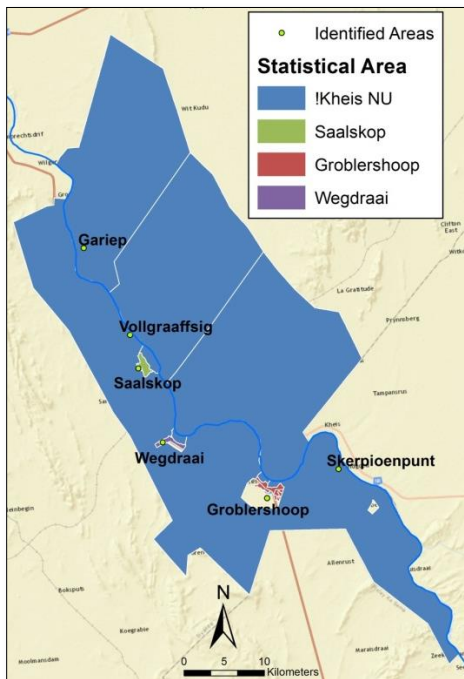
FIGURE 4-23: EXTENT AND LOCATION OF STATISTICAL AREAS AND IDENTIFIED LOCAL AREAS

The spatial hierarchy for the study area is as follows: Four mainplaces (shown as statistical areas in Table 4-1 and Figure 4-23) and six identified local areas. The size and settlement nature of the statistical areas should be noted, as the !Kheis non-urban (NU) statistical area dwarfs the other three, but human settlement is sparse in this area due to its rural nature. Conversely, Saalskop, Groblershoop and Wegdraai statistical areas are small but their populations are denser as they are more urban in nature.

Gender & Population

The total male population is at 51% in these statistical areas, with females at 49%. Groblershoop supports at least 40% of the overall population due to its denser settlement pattern (as opposed to !Kheis NU, Saalskop and Wegdraai.) Saalskop supports a mere 13% of the total population (of 10 196 people).

Gender and Population Size 2011

	Male	Female	Total
!Kheis NU	1298	1143	2441
Groblershoop	2078	2090	4168
Saalskop	729	669	1398
Wegdraai	1066	1122	2189
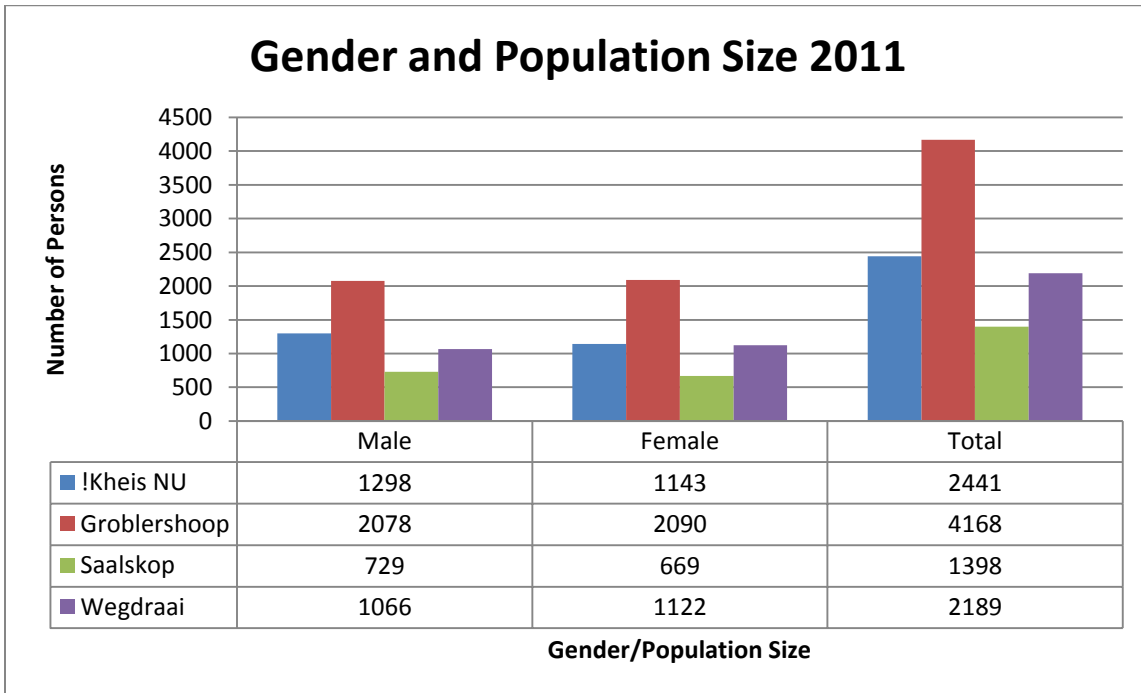
Source: Statistics South Africa Census 2011

FIGURE 4-24: LOCAL AREAS GENDER AND POPULATION SIZE

Population Group

Collectively, the largest racial group found in these statistical areas is Coloured (83%) with 9% Black and the remaining percentage split between the other racial groups. The community in which most Coloured people live is Wegdraai (96%). See Figure 4-25 below.

Individual Population Group 2011

	Black African	Coloured	Indian or Asian	White	Other
■ !Kheis NU	8.8%	71.7%	0.5%	18.5%	0.6%
■ Groblershoop	10.0%	83.1%	1.0%	5.0%	0.9%
■ Saalskop	15.9%	80.8%	1.6%	1.7%	0.0%
■ Wegdraai	3.0%	96.3%	0.4%	0.4%	0.0%
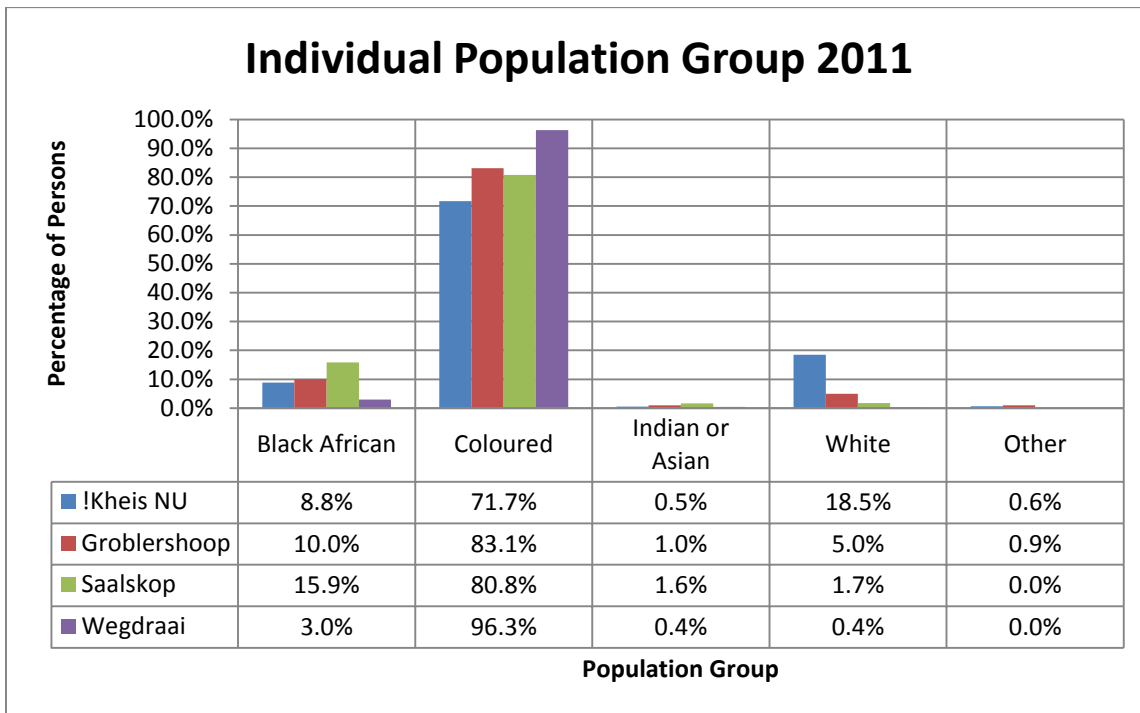
Population Group

Source: Statistics South Africa Census 2011

FIGURE 4-25: LOCAL AREAS INDIVIDUAL POPULATION GROUP

Age Structure

The 0-19 year age category is typically reflective of the school going population, and are usually also identified as dependent populations as they are unable to generate an income due to not officially being part of the working population. The !Kheis NU shows that almost 37% of its entire population is in such a category, while Wegdraai shows a high number of 'children,' at almost 49%. Practically, a healthier economy is dominated by a larger number of people in the 20-64 year age category, which is also termed the 'working age category.' This is the case in !Kheis NU, which has almost a 60% working age category[2]. The 65 -120 year age category is also indicative of a dependent population. The Census data shows that the dependent population in this category remains between 4.3% and 5.3% across the four statistical areas. See Figure 4-26, below.

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[2] The percentage within this category is by no means a reflection of the number of people that are actually employed

Age Category 2011

Percentage of Persons (y-axis: 0.0% to 100.0%)

Age Category (years)	0 - 19	20 - 64	65 - 120
!Kheis NU	38.6%	56.9%	4.5%
Groblershoop	44.3%	51.4%	4.3%
Saalskop	44.8%	50.6%	4.6%
Wegdraai	48.6%	46.1%	5.3%
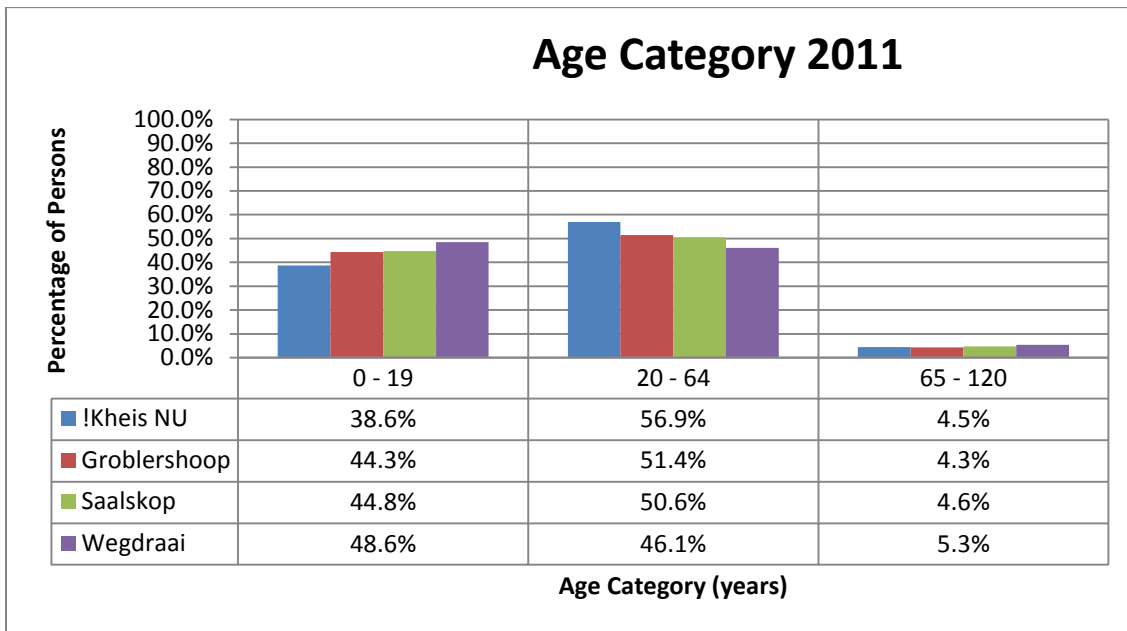
Source: Statistics South Africa Census 2011

FIGURE 4-26: LOCAL AREAS AGE CATEGORIES

Employment Sector

A mere 16.6% of the employable population are actually employed in the formal sector in the said statistical areas. 3.5 Percent are working in the informal sector and an overwhelming 79% have responded to the Census as 'not applicable.' This may denote these individuals do not see themselves as wanting to be part of the formal or informal employment sectors. See Figure 4-27, below.

Employment by Sector 2011

Percentage of Persons (y-axis: 0.0% to 100.0%)

Employment Sector	In the formal sector	In the informal sector	Private household	Not applicable
!Kheis NU	27.3%	8.1%	1.1%	63.2%
Groblershoop	23.1%	2.0%	1.3%	73.5%
Saalskop	10.5%	2.7%	0.6%	85.8%
Wegdraai	5.4%	1.2%	1.0%	92.1%
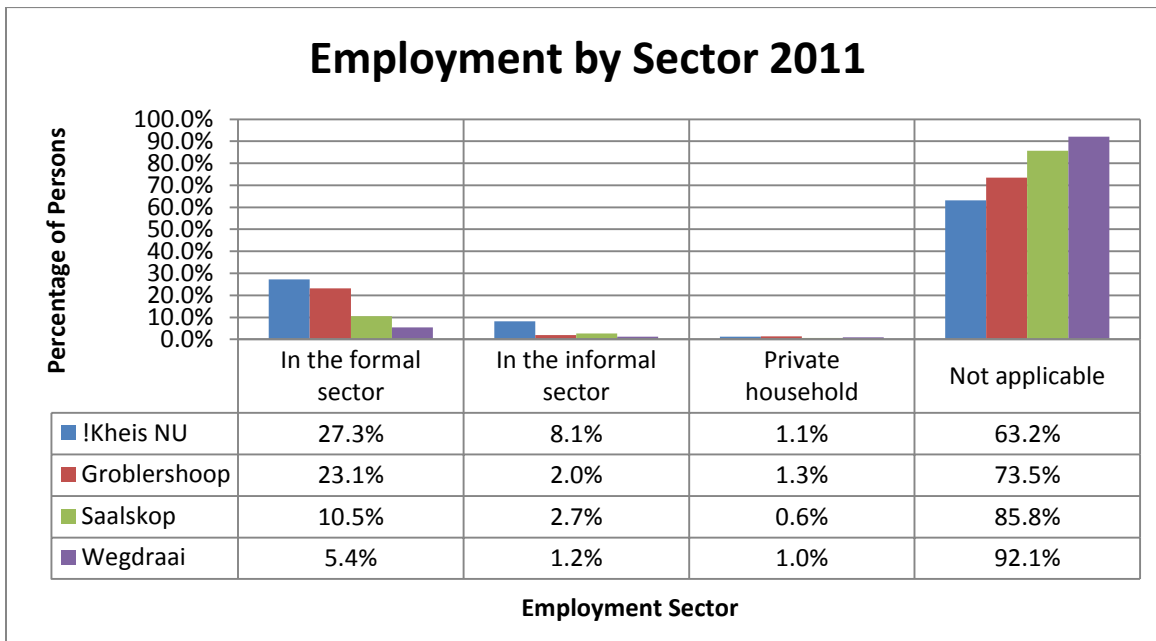
Source: Statistics South Africa Census 2011

FIGURE 4-27: LOCAL AREAS EMPLOYMENT BY FORMAL/ INFORMAL SECTOR

Unfortunately, Census 2011 has still not extrapolated the "Employment by Industry Sector" data. For that reason, this baseline is unable to determine the industry that employs the most or least number of people across industries such as agriculture, forestry and fishing, or even mining.

Employment Status

Collectively 21% of all employable people, are actually employed. The remaining individuals that fall within the categories 'unemployed, discouraged work seekers, and not economically active' add up to a further 40%. This generally means that the 40% that could have been 'providers' in a home, have now become dependents, thus lending to the economic vulnerability of the household.

Employment Status 2011

	Employed	Unemployed	Discouraged work-seeker	Other not economically active	Not applicable
■ !Kheis NU	36.1%	5.8%	1.6%	21.2%	35.3%
■ Groblershoop	26.2%	8.9%	2.4%	25.9%	36.6%
■ Saalskop	13.8%	18.5%	3.6%	25.3%	38.8%
■ Wegdraai	7.9%	16.4%	4.9%	26.4%	44.4%

Employment Category
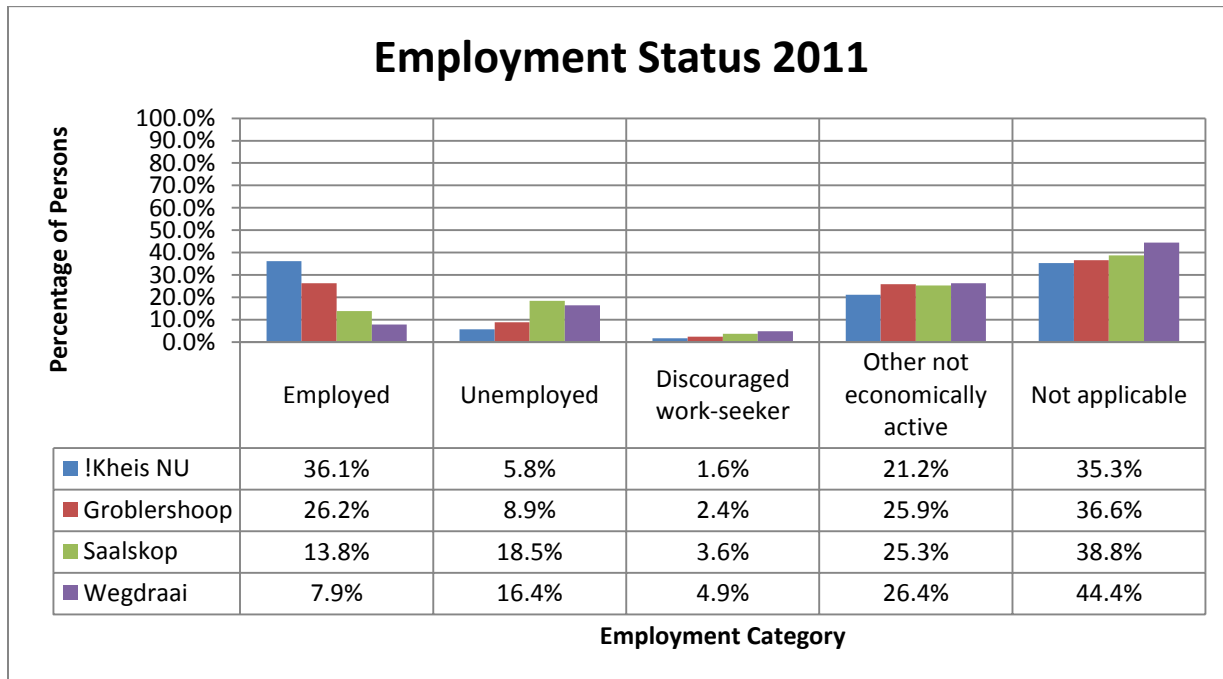
Source: Statistics South Africa Census 2011

FIGURE 4-28: LOCAL AREAS EMPLOYMENT STATUS

Migration – Movement since 2001

The year 1994 was the turning point for South Africans, in that the country held its first democratic elections. People previously constrained to the more 'rural' parts of South Africa gained freedom of movement. Migration post 1994 was on the upswing in South Africa, with many people moving into the urban areas for the purposes of working, extending familial ties and the utilisation of educational and health services. In addition, bigger business markets were opened up and increased mobility was required for the purposes of trade.

What is apparent when analysing Figure 4-29, is that almost 70% of the total population in the statistical areas, had at some point in their lives, migrated into other areas of South Africa[3]. Saalskop had experienced the greatest migration of its citizens (over 76%). This may be indicative of a 'force' that may have driven people to

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[3] Census 2011 does not provide reasons for the individual's migration

migrate. More often than not, people migrate for the purpose of work, and this show of outward mobility may indicate poor economic progress in an area like Saalskop.

Individual Migration

	Yes	No	Born after October 2001 but never moved	Born after October 2001 and moved	Not Applicable
■ !Kheis NU	63.2%	14.3%	20.6%	1.7%	0.1%
■ Groblershoop	63.5%	10.7%	19.7%	0.9%	5.3%
■ Saalskop	75.9%	2.4%	21.3%	0.4%	0.0%
■ Wegdraai	72.6%	1.7%	25.4%	0.2%	0.0%

Movement Since 2001 Category
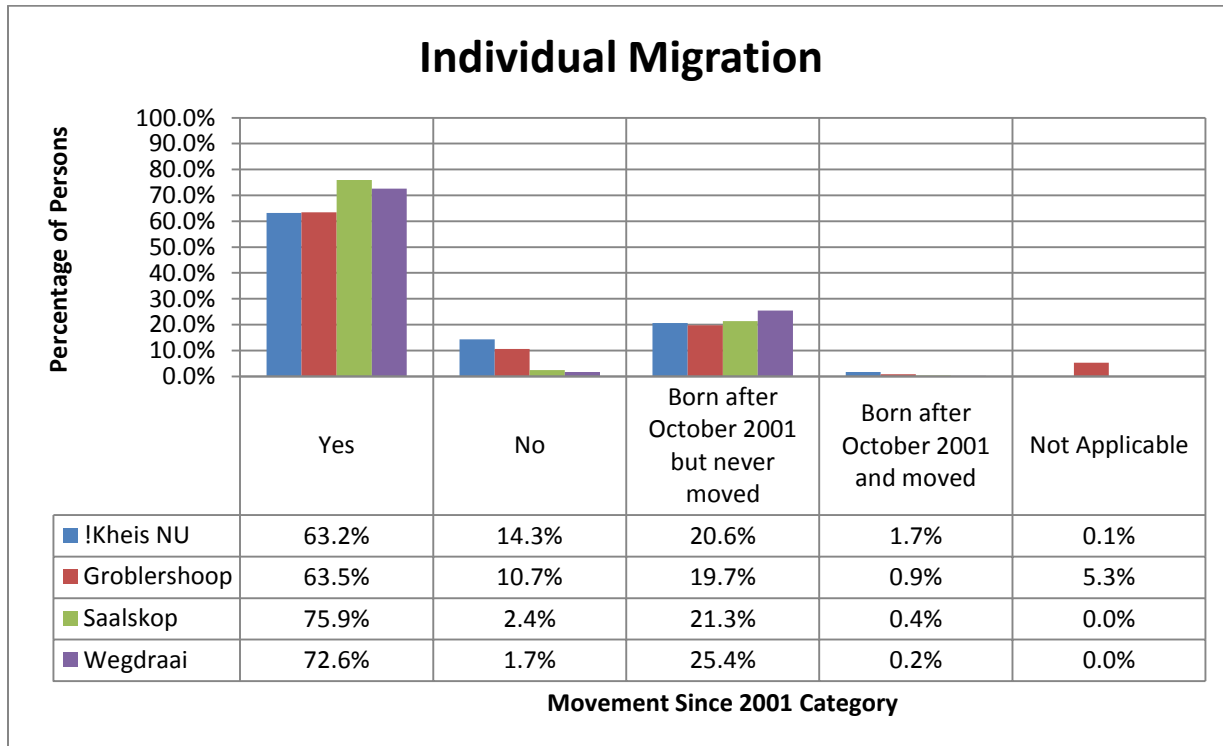
Source: Statistics South Africa Census 2011

FIGURE 4-29: LOCAL AREAS MIGRATION

Region of Birth and Citizenship

The majority of all individuals that had participated in the Census 2011 are born in the area, and are South African citizens. It is worthy to note that there are a limited number of foreign (not South African) people in these areas. This also indicates that almost all people in these statistical areas would have shared similar history, challenges and opportunities. See Figure 4-30 and Figure 4-31 below.

Region of Birth 2011

	Born in South Africa	SADC	Rest of Africa	Asia	Latin America and Caribbean	Unspecified
!Kheis NU	96.6%	1.3%	0.0%	0.0%	0.0%	2.2%
Groblershoop	92.9%	0.5%	0.1%	0.4%	0.1%	6.1%
Saalskop	96.9%	0.3%	0.0%	0.0%	0.0%	2.9%
Wegdraai	99.6%	0.2%	0.0%	0.2%	0.0%	0.0%

Geographical Region
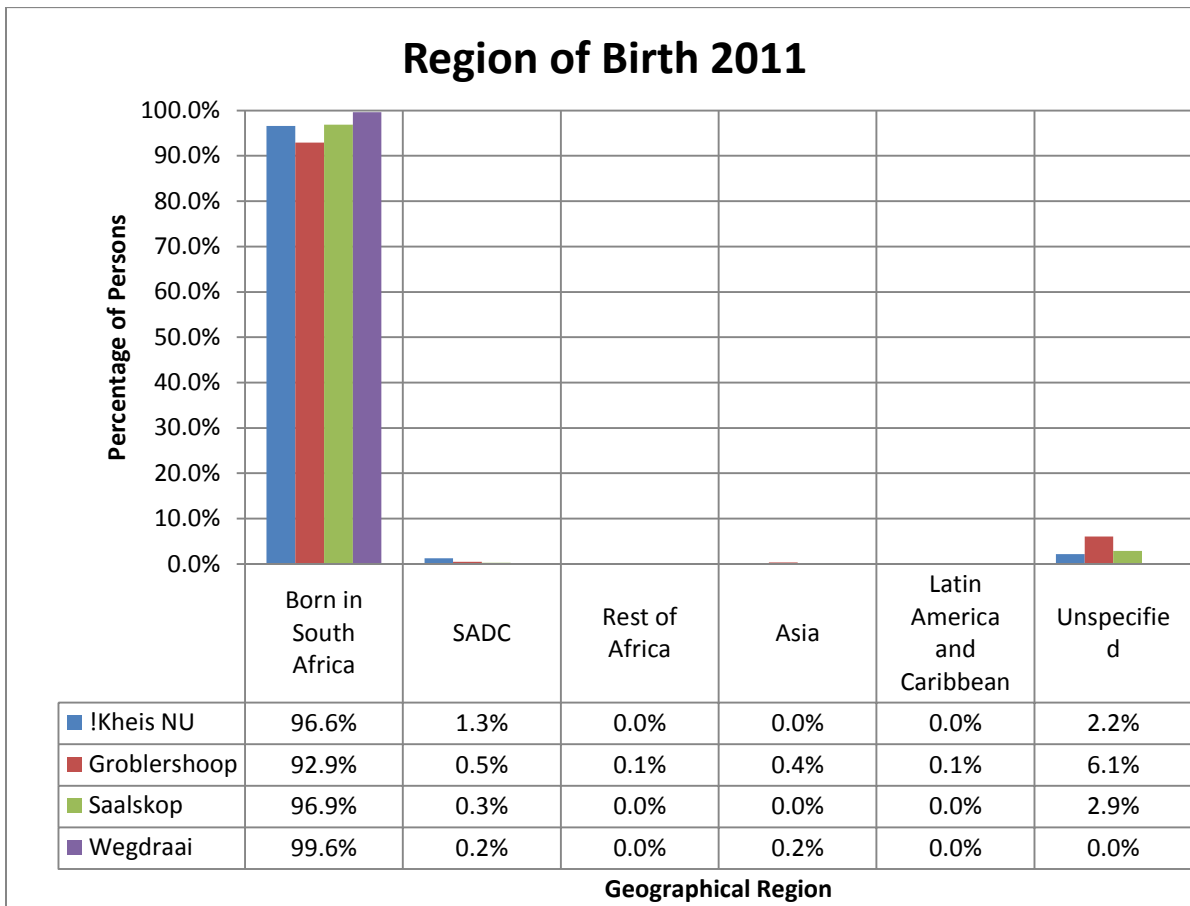
Source: Statistics South Africa Census 2011

FIGURE 4-30: LOCAL AREAS BIRTH CHARACTERISTICS OF POPULATION

South African Citizenship 2011

	Yes	No	Not applicable
!Kheis NU	98.2%	1.3%	0.0%
Groblershoop	94.1%	0.5%	5.1%
Saalskop	98.9%	0.6%	0.0%
Wegdraai	99.8%	0.2%	0.0%

South African Citizenship Category
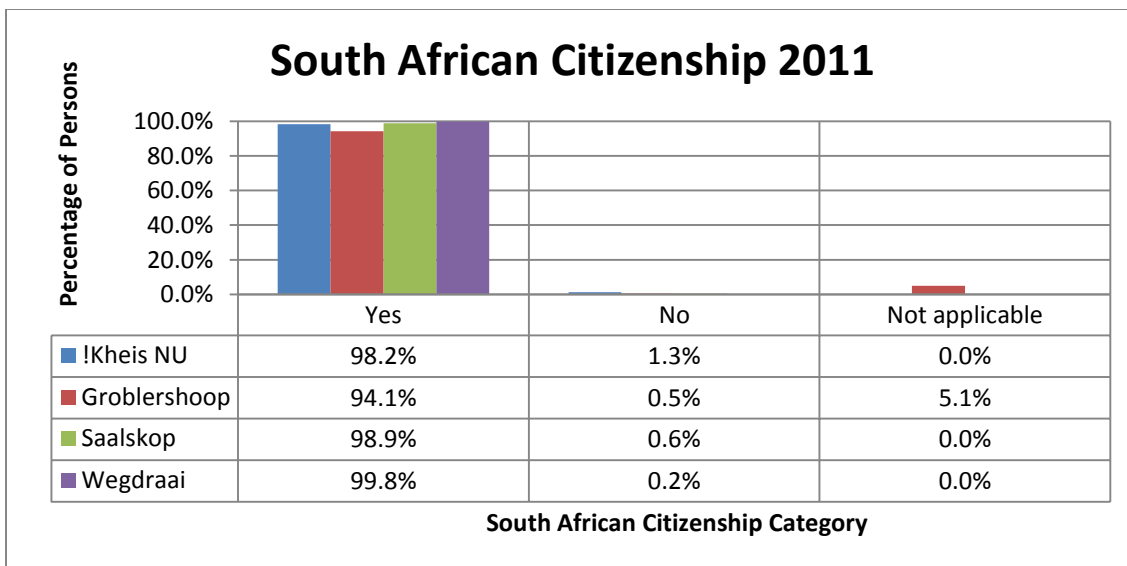
Source: Statistics South Africa Census 2011

FIGURE 4-31: LOCAL AREAS CITIZENSHIP CHARACTERISTICS

Energy for Cooking, Lighting and Heating

Figure 4-32, Figure 4-33Figure 4-34   render detailed energy usage data in terms of what households in the statistical (local areas) utilise for their cooking, lighting and heating purposes.

Households depended on two main sources of energy for cooking, that is, electricity and wood. Groblershoop usage data shows 75% of households used electricity while !Kheis NU, Saalskop and Wegdraai used electricity to a lesser degree (with !Kheis having the lowest usage, at 43%). Instead, !Kheis utilised wood to a greater degree (48.2%). Overall, 57.6% of local areas in the statistical area used electricity for cooking, while 35.75% used wood.

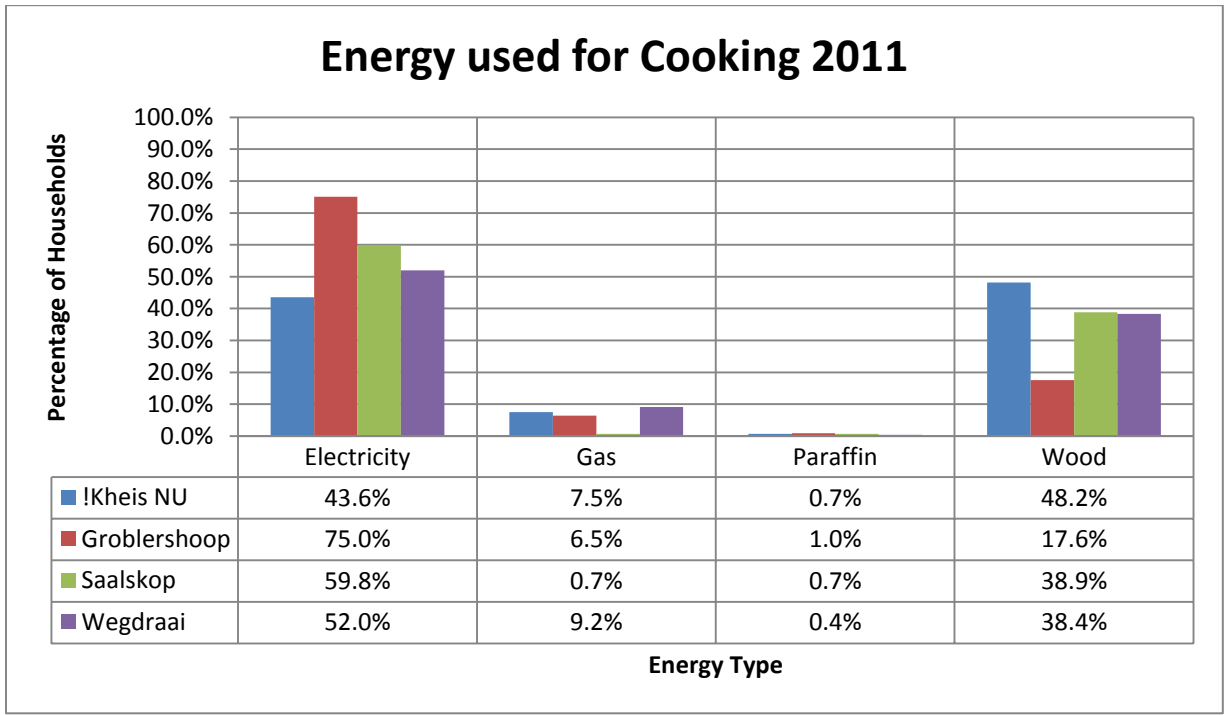Households depended on two main sources of energy for lighting, that is, electricity and candles. Saalskop usage data shows 80.6% of households used electricity while !Kheis NU, Saalskop and Wegdraai used electricity to a lesser degree (with !Kheis having the lowest usage, at 51.2%). Instead, !Kheis utilised candles to a greater degree (44.8%). Overall, 71% of local areas in the statistical area used electricity for cooking, while 26% used candles.

Households depended on two main sources of energy for cooking, that is, electricity and wood. Groblershoop usage data shows 67.2% of households used electricity while !Kheis NU, Saalskop and Wegdraai used electricity to a lesser degree (with Saalskop having the lowest usage, at 17.4%). Instead, Saalskop utilised wood to a greater degree (51.3%). Overall, 46.8% of local areas in the statistical area used electricity for cooking, while 42.4% used wood.

Energy used for Cooking 2011

	Electricity	Gas	Paraffin	Wood
!Kheis NU	43.6%	7.5%	0.7%	48.2%
Groblershoop	75.0%	6.5%	1.0%	17.6%
Saalskop	59.8%	0.7%	0.7%	38.9%
Wegdraai	52.0%	9.2%	0.4%	38.4%

Source: Statistics South Africa Census 2011

FIGURE 4-32: LOCAL AREAS ENERGY USED FOR COOKING

Energy used for Lighting 2011

Energy Type	Electricity	Paraffin	Candles	Solar	None
!Kheis NU	51.2%	1.9%	44.8%	0.7%	0.9%
Groblershoop	78.0%	0.7%	20.4%	0.3%	0.6%
Saalskop	80.6%	0.3%	16.8%	1.0%	0.7%
Wegdraai	73.8%	3.8%	22.4%	0.0%	0.0%
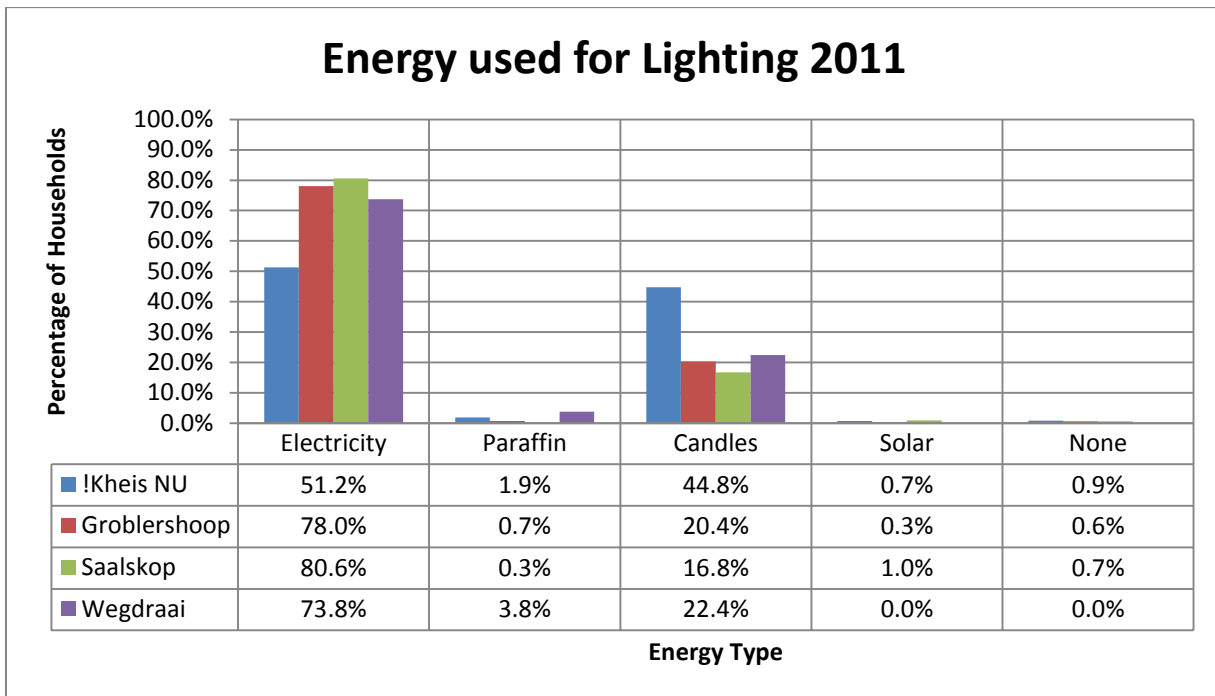
Source: Statistics South Africa Census 2011

FIGURE 4-33: : LOCAL AREAS ENERGY USED FOR LIGHTING

Energy used for Heating 2011

Energy Type	Electricity	Gas	Wood	None
!Kheis NU	38.4%	2.9%	55.7%	2.9%
Groblershoop	67.2%	0.2%	29.2%	3.0%
Saalskop	17.4%	0.3%	51.3%	30.6%
Wegdraai	64.4%	1.1%	33.7%	1.1%
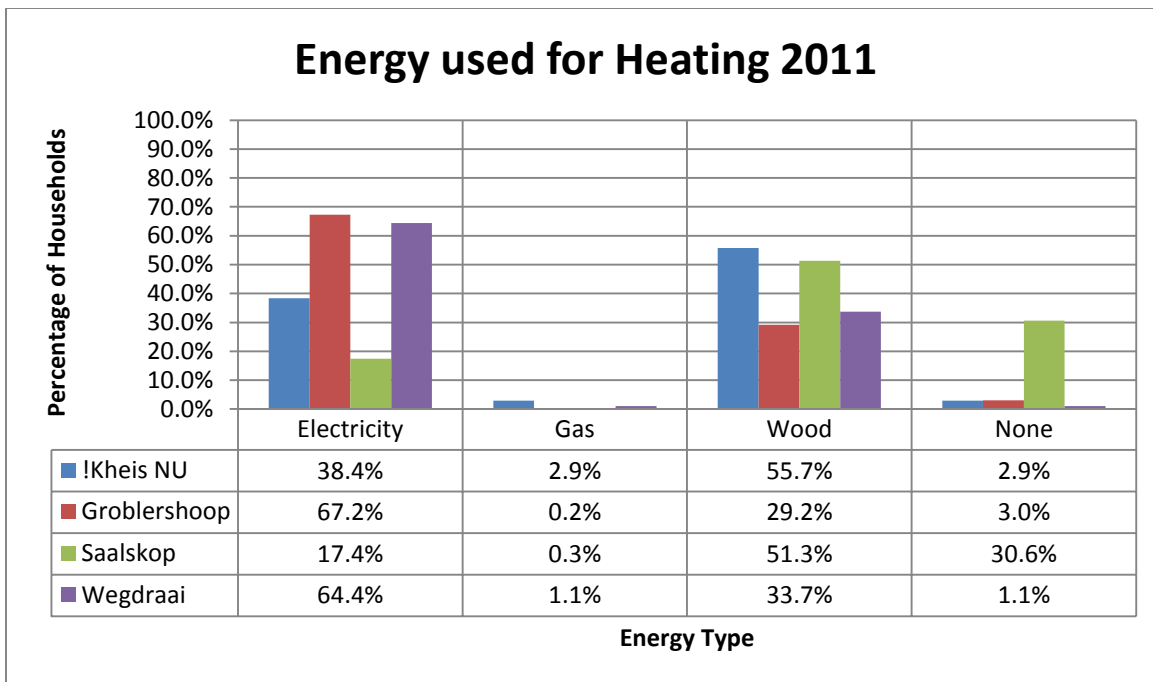
Source: Statistics South Africa Census 2011

FIGURE 4-34: LOCAL AREAS ENERGY USED FOR HEATING

5 SOCIAL AND ECONOMIC IMPACT ASSESSMENT

The assessment of social impacts is complex due to the multi-facetted nature of human systems and organization, the potential inter-connectedness of impacts, and differing implications of the same impacts for different receptors.

The following perspectives will guide the SIA :

- SIA must be based on sound social economic assessment and the comprehensive description and understanding of social and economic baseline conditions;
- Impacts are defined as the social and economic consequences of project driven changes in the baseline environment;
- Impacts might flow directly from project activities (for example the loss of land and crops due to the construction of a facility), or they might be indirect. Indirect impacts could be a consequence of the project itself (for example improved quality of life where an employee of the project is bringing an income to a household), or they might be a secondary outcome (for example credit facilities due to an improved local business outlook);
- Impacts might also be isolated or cumulative. Cumulative impacts are typically those with many links in the local socio-economic system. They also arise from multiple activities associated with the initial project;
- Impacts must be assessed for different phases of the project cycle. The IFC[4] proposes a four-phase breakdown[5] that is, design and planning; construction; operations; decommissioning and closure. For the purposes of this report impacts are assessed at three levels, that is, pre-construction, construction and operation;
- Impacts can be positive or negative. The same change in the baseline condition might be experienced as positive by one section of an affected community, and as negative by another. In principle, all changes are seen to have the potential to initiate development, if the impacts are managed creatively and effectively; and
- The mitigation of impacts must be recommended. However, it should be noted that responses to impacts could range from focused and specific mitigation and compensation to broad and inclusive contributions to sustainable development.

5.1 SEIA Proposed Scope of Work

Based on the findings presented in this social baseline report, this study recommends a three step process scope of work (SoW) to fulfil the requirements for a Social and Economic Impact Assessment:

Step One: Project planning
In this Step, it is expected that:

- The project team will be fully briefed by the client on all activities/ actions to date with regard to the proposed development area. This would include a full technical description of the development and its associated facilities;

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[4] IFC – International Finance Corporation (International lenders. Project typically complies with international guidelines for environmental and social requirements).
[5] International Finance Corporation: Good Practice Note – Addressing the Social Dimensions of Private Sector Projects

- All available documentation will be made available to the project team; and
- The Client and project team will together identify a geographical radius (in meters/ kilometres) for primary and areas of impact from the proposed development.

Step Two: Data Collection[6]

It is expected that all previous and related studies will form the secondary data sources required for interrogation at this point in the SIA. This would include the related public consultation meetings of the EIA study.

While the focus of the public meetings is to elicit information from participants, it also serves as an opportunity for participants to voice their concerns related to the proposed development, as only they can perceive how the development could affect them, their families, their lifestyle and their livelihoods.

The data will be gathered in an unbiased and holistically factual manner from the information received via secondary and primary sources. Should participants prefer not to respond to questions, that is their prerogative, as participants are not persuaded to respond, rather offer information of their own free will.

Step Three: Analysis and Write Up

Following the data collection activities, and following the compilation of a baseline section for the full Social Impact Assessment Report, the SIA specialist will identify the impacts that will be associated with the development in both the long and short term.

The social and economic baseline is compiled in order to increase and contribute to knowledge of the social and economic characteristics of the people and the place in which they work, own and/or reside. All affected or potentially affected persons that undertake an activity, such as farming, and live in an area in which there is a proposed development, have a right to participate in the public meetings to be held.

Social and economic information is obtained in a variety of ways. The assessment of related studies and published material (secondary data collection) as well as limited focus group interviews (primary data collection) with identified willing participants must take place. In addition, input from the various professionals that may form part of the EIA project team (this includes culture and heritage, traffic, noise, air, etc.) is also required to feed into the SIA.

The identification of potential positive and negative impacts will be informed by the data collected (which consists of data collection and analysis of primary quantitative information from Census 2011, the on-going consultation process, and the professional expertise of the project team (this includes other specialist studies, such as, culture and heritage, traffic, noise, air, etc.).

Mitigation measures to address the identified impacts will be recommended and drafted. These measures will be formulated to maximise the positive impacts and reduce the extent of the negative impacts.

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[6] Ideally, the SEIA would have incorporated focus group interviews (qualitative survey) to cross-correlate the quantitative data obtained via Census 2011. However, due to budget cuts, this SIA will concentrate only on the use of data available via the public meetings.

5.2 Impact Considerations for this Study

The Impact Report present the various project anticipated impacts with consideration to the following:

- *Population and Politics:* this includes changes and impacts related to population structure, migration, welfare balances, and power and authority;
- *Economy and Work:* this context includes changes and impacts related to national and regional economic networks, entrepreneurial opportunities, tax income, employment levels and patterns, commercial and labour organization, access to jobs and employment equity, labour exploitation and household and community livelihoods;
- *Land and Resources:* this includes baseline changes and impacts related to the use of and access to natural resources such as land and water, and to location and settlement based on access to such resources;
- *Infrastructure and Social Services:* the social services context includes changes and impacts related to services infrastructure (water, energy, education, roads, and communication) and demand for these services. Health is considered under this heading, particularly in relation to demand for and access to health services;
- *Organisation and Community:* changes and impacts related to local government, crime, community organization, development planning, access to decision making, voluntary organizations (CBOs and NGOs), support networks, community stability, response to change, trust in political and social institutions, barriers to access (skills, literacy), household budgeting and use of income, and cultural resources and practices; and
- *Social Divisions:* this context focuses on changes and impacts around equity (for example the distribution and circulation of compensation), non-participation, unmet expectations, prevailing social tensions and divisions, the influx of newcomers, and the status of vulnerable groups such as the elderly, women, children and the disabled.

5.3 Proposed Impact Method

The RHDHV impact rating method that will be utilised, is found in the table below. The impact assessment will account for impacts that are likely to be experienced during the three phases of a project, that, is the pre-construction, construction and operation phases.

TABLE 5-1 IMPACT SIGNIFICANCE RATING TABLE

Descriptive criteria		
Nature	**Category**	
Extent (E)	Categories 1 – 5	
	1	Footprint / site
	2	Local
	3	Regional

	4	National
	5	International (trans-boundary)
Duration (D)	Categories 1 – 5	
	1	Short (few days to a few months, less than a phase)
	2	Short (few months, or less than a phase in total)
	3	Medium (a few years, significant part of a phase)
	4	Long (lifespan of development (i.e. all of operation))
	5	Permanent
Frequency (F)	Categories 1 – 5	
	1	Very rare to remote (once or twice a decade)
	2	Unusual to occasional (once or twice every 5 years)
	3	Frequent (a few times a month)
	4	Very frequent (a few times a week, to daily)
	5	Continuous (daily to a significant percentage of every day)
Intensity (I)	Categories 1 – 5	
	1	Very low – natural processes not affected
	2	Low – natural processes slightly affected
	3	Medium – natural processes continue but in a modified manner
	4	Medium-high – natural processes are modified significantly
	5	High – natural processes disturbed significantly so that they cease to occur (temporarily / permanently)
Probability (P)	Categories 1 – 5	
	1	Improbable (less than 24% chance of occurring)
	2	Probable (25 – 49%)
	3	Likely (50 – 69%)
	4	Very likely (70 – 89%)
	5	Definite (90 – 100%)
Significance	**Significance = E + D + F + I + P**	
	Minimum value of 5, maximum of 25	
	Status determines if positive / negative	
	Any positive value	No impact. High to low consequence, probability not an issue as positive, **no mitigation required.**
	– 5	Low. Low consequence, probable, **minimal mitigation may be required.**
	– 6 to 10	Medium. Medium consequence, probable, **mitigation is advised / preferred.**
	– 11 to 15	Medium to high. Medium to high consequence, probable to very probable,

		mitigation is necessary.
	– 16 to 20	High. High consequence, probable / definite, **mitigation is essential.**
	– 21 to 25	Extremely High. Very high consequence, definite, **Fatal flaw.**

6 LITERATURE CITED

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6) Naudé, A., Badenhorst, W., Zietsman, L., Van Huyssteen, E., & Maritz, J. (2007). Geospatial Analysis Platform – Version 2: Technical overview of the mesoframe methodology and South African Geospatial Analysis Platform. Pretoria: CSIR.