Tubatse Strengthening Phase 1 – Senakangwedi B

Integration: Social Impact Assessment

Dr Neville Bews & Associates
Social Impact Assessors

Tubatse Strengthening Phase 1 – Senakangwedi B Integration: Social Impact Assessment

DEA ref. no.

Prepared by Neville Bews

Dr Neville Bews & Associates
Social Impact Assessors
P.O. Box 145412
Bracken Gardens
1452

On behalf of

NSOVO Environmental Consulting
748, Richards Drive
Elite Park
Halfway House
1685

For

Eskom Holdings Limited
Transmission Division

30 October, 2014

Executive Summary

1. The continuous development of mines in the Greater Tubatse Local Municipality is resulting in an increasing demand on electricity provision in the area. Due to this, the existing Eskom network is fast approaching its capacity and it will not be able to accommodate the expected load growth in the coming years. Consequently, in order to cater for the future electricity needs of the area, Eskom has proposed to strengthen the network.

2. The proposed scope of work attached to the project will entail the following:
   - Establishment of the new Senakangwedi B substation (1 x 800MVA, 400/275kV and 2X500, 400/132kV); to the south of existing Senakangwedi substation;
   - Construction of loop in and loop out power lines from Senakangwedi B to the existing Arnot – Merensky 400kV line;
   - Construction of Tubatse – Senakangwedi B 400kV line;
   - Construction of Senakangwedi – Senakangwedi B 275kV line;
   - Construction of 8 x 132kV feeder bays (Equip 4);
   - Construction of 2 x 275kV feeder bays (Senakangwedi and Senakangwedi B);

     and
   - Construction of 4 x 400kV feeder bays (Equip 3)

3. The construction phase of the proposed project will take approximately 24 months and the activities include:
   - Access roads
   - Corridor walk down
   - Construction camp
   - Vegetation clearance
   - Substation and pylon construction
   - Steelwork structures
   - Stringing
   - Feeder bays

4. Three alternative site locations as well as various technical and structural alternatives were considered in an effort to limit the impact that the project will have

on the biophysical and social environments. Consideration is also given to a no-go alternative.

5. The proposed development falls within Ward 31 of the Greater Tubatse Local Municipality which falls within the jurisdiction of the Greater Sekhukhune District Municipality in the Limpopo Province. Greater Tubatse is largely rural in nature and consists of 31 municipal wards. These wards incorporate six proclaimed townships and approximately 166 villages. The surrounding land use includes:
    - Mining
    - Farming
    - Residential
    - Commercial and industrial
    - Tourism
    - Archaeological site
    - Surface infrastructure
        - Roads
        - Power lines

    Although largely rural, the municipal area is rich in mineral resources - chrome, vanadium, platinum, andalusite and magnetite. This has resulted in some areas of the municipality and sections of Ward 31 becoming industrialised with the development of mines and smelters with large companies such as African Rainbow Minerals, Assmang, Samancor and Xstrata being active in the area.

6. Both a quantitative and qualitative methodological approach were applied throughout the study, in a research technique referred to as triangulation. A recognised impact assessment technique was applied in assessing the impacts.

7. On this basis the following socially related issues have been identified in relation to the project and were assessed in respect of the construction and operational phases of the project.
    - **Economic issues**
        - Job creation
        - National and regional economy
        - SMME opportunities
    - **Health and safety**
        - Crime and security
        - Dust exposure
        - Exposure to electromagnetic fields (EMFs)
        - Fire risk
        - Social instability

  - STDs, HIV and AIDS risk
  - Risk of road traffic incidents
- **Nuisance**
  - Access across sites
  - Disruption of services and infrastructure
  - Fencing
- **Sense of place**
  - Disturbance of archaeological, cultural, spiritual and/or religious sites
  - Visual intrusion

8. On a social basis there is no obvious compelling reason to choose any of the alternatives over any other. Notwithstanding this, however, Alternative 1 emerges as the socially preferred option as it is relatively close to an existing substation and there are a number of mine tailings facilities in the area. Consequently the area takes on an industrialised brownfields character which is less likely to be spoiled through the construction of power lines than a more pristine environment might.

9. The 'do nothing' alternative is likely to have a negative impact on the economy at the national, provincial, district and local levels.

10. With a number of new ventures being planned by Limpopo Province and the Department of Trade and Industries for the area it is important that the security of power supply is preserved. In this regard the project is necessary to ensure the economic growth of the region.

11. Notwithstanding this, however, it is also important to involve the community in the planning process, to use local labour as far as is possible and to consult with landowners and the Traditional Authorities in an effort to gain buy in to the project.

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Acronyms

AIDS	Acquired immunodeficiency syndrome
DC33	Mopani District Municipality
DC34	Vhembe District Municipality
DC35	Capricorn District Municipality
DC36	Waterberg District Municipality
DEAT	Department of Environmental Affairs and Tourism (National)
DWS	Department of Water and Sanitation
EIA	Environmental Impact Assessment
EMFs	Electromagnetic fields
EMPr	Environmental Management Programme
ESKOM	Eskom Holdings SOC Limited
GPS	Global Positioning System
HIA	Heritage Impact Assessment
HIV	Human Immunodeficiency Virus
I&AP	Interested and Affected Party
IDP	Integrated Development Plan
IRR	Issues Response Report
kV	Kilovolt
LIM471	Ephraim Mogale Local Municipality
LIM472	Elias Motsoaledi Local Municipality
LIM473	Makhuduthamaga Local Municipality
LIM474	Fetakgomo Local Municipality
LM475	Greater Tubatse Local Municipality
MW	Megawatt
MR	Main Route
NBA	Dr. Neville Bews & Associates

NGO	Non-Governmental Organisation
PA	Per Annum (Yearly)
PPP	Public Participation Process
RAP	Resettlement Action Plan
SIA	Social Impact Assessment
SMME	Small Medium and Micro Enterprises
Stats SA	Statistics South Africa
STDs	Sexually Transmitted Diseases
ToR	Terms of Reference
WHO	World Health Organisation

Details and Experience of Independent Consultant

Qualifications:

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

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

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

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

Projects:

The SIA for the Gautrain Rapid Rail Link; The impact assessment for the Australian – South African sports development programme; SIA for Kumba Resources, Sishen South Project; Evaluation of a Centre for Violence Against Women for The United Nations Office on Drugs and Crime; SIAs for the following Exxaro Resources Ltd.'s mines, Leeuwpan Coal Mine Delmas, Glen Douglas Dolomite Mine Henley-on-Klip, Grootegeluk Open Cast Coal Mine Lephalale; SIA for the South African National Road Agency Limited (SANRAL) on Gauteng Freeway Improvement Project (GFIP); SIA for SANRAL on the N2 Wild Coast Toll Highway; Research into research outputs of the University for the University of Johannesburg; SIA for Waterfall Wedge housing and business development in Midrand Gauteng; SIA for the Environmental Management Plan for Sedibeng District Municipality; Social and Labour Plan for the Belfast Project on behalf of Exxaro Resources Ltd; SIA for the Transnet New Multi-Product Pipeline (Commercial Farmers) on behalf of Golder Associates Africa (Pty) Ltd; SIA for the Proposed Vale Moatize Power Plant Project in Mozambique on behalf of Golder Associates Africa (Pty)

Ltd; SIA for Kumba Resources Ltd.'s proposed Dingleton Resettlement Project at Sishen Iron Ore Mine on behalf of Water for Africa (Pty) Ltd; SIA for Gold Fields West Wits Project for EcoPartners; SIA for the Belfast Project for Exxaro Resources Ltd; SIA for Eskom Holdings Ltd.'s Proposed Ubertas 88/11kV Substation on behalf of KV3 Engineers (Pty) Ltd; SIA for the Mokolo and Crocodile River (West) Water Augmentation Project (MCWAP) for the Department of Water Affairs on behalf of Nemai Consulting and the Trans Caledonian Water Authority; Assisted Octagon Consulting with the SIA for Eskom's Nuclear 1 Power Plant on behalf of Arcus GIBB Engineering & Science. SIA for the 150MW Photovoltaic Power Plant and Associated Infrastructure for Italgest Energy (Pty) Ltd, on behalf of Kalahari Survey Solutions cc. SIA for Eskom Holdings Limited, Transmission Division's Neptune-Poseidon 400kV Power Line on behalf of Nemai Consulting. Ncwabeni Off-Channel Storage Dam for security of water supply in Umzumbe, KwaZulu-Natal. Social Impact assessment for Eskom Holdings Limited, Transmission Division, Forskor-Merensky 275kV±130km Powerline and Associated Substation Works in Limpopo Province. Social impact assessment for the proposed infilling of the Model Yacht Pond at Blue Lagoon, Stiebel Place, Durban. ABC Prieska Solar Project; Proposed 75 MWp Photovoltaic Power Plant and its associated infrastructure on a portion of the remaining extent of ERF 1 Prieska, Northern Cape. Sekoko Wayland Iron Ore, Molemole Local Municipalities in Limpopo Province. Langpan Chrome Mine, Thabazimbi, Limpopo; Jozini Nodal Expansion Implementation Project, KwaZulu-Natal, on behalf of Nemai Consulting; SIA for Glen Douglas Dolomite Burning Project, Midvaal Gauteng, on behalf of Afrimat Limited; SIA for Lyttelton Dolomite mine Dolomite Burning Project, Marble Hall Limpopo on behalf of Afrimat Limited.

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

Affiliation:

The International Association for Impact Assessment Southern Africa.

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

Declaration of Independence

I, Neville Bews as authorised representative of Dr Neville Bews & Associates hereby confirm my independence as a specialist and declare that neither I nor Dr Neville Bews & Associates have any interest, be it business, financial, personal or other, in any proposed activity, application or appeal in respect of which Dr Neville Bews & Associates was appointed as social impact assessment specialists in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), other than fair remuneration for worked performed, specifically in connection with the Social Impact Assessment for the Tubatse Strengthening Phase 1 – Senakangwedi B Integration Project. I further declare that I am confident in the results of the studies undertaken and conclusions drawn as a result of it – as is described in my attached report.

Signed  Date 30 October, 2014

1. Introduction

The continuous development of mines in the Greater Tubatse Local Municipality is resulting in an increasing demand on electricity provision in the area. Due to this, the existing Eskom network is fast approaching its capacity and it will not be able to accommodate the expected load growth in the coming years. Consequently, in order to cater for the future electricity needs of the area, Eskom has proposed to strengthen the network. The proposed power lines corridor will be approximately 10km in length and 2km wide. The footprint of the proposed Senakangwedi B substation will be approximately 1km^2.

The proposed scope of work will entail the following:

- Establishment of the new Senakangwedi B substation (1 x 800MVA, 400/275kV and 2X500, 400/132kV); to the south of existing Senakangwedi substation;
- Construction of loop in and loop out power lines from Senakangwedi B to the existing Arnot – Merensky 400kV line;
- Construction of Tubatse – Senakangwedi B 400kV line;
- Construction of Senakangwedi – Senakangwedi B 275kV line;
- Construction of 8 x 132kV feeder bays (Equip 4);
- Construction of 2 x 275kV feeder bays (Senakangwedi and Senakangwedi B);

and

- Construction of 4 x 400kV feeder bays (Equip 3)

1.1. Activities associated with the project

The construction phase of the proposed project will take approximately 24 months and the activities included are discussed hereunder:

1.1.1. Access roads

Access roads will comprise of existing public roads and the use of private roads negotiated with land owners. However, where such roads do not provide access to site, access roads may need to be built. The construction of access roads will be compliant with a Type 6 gravel road. This comprises of 6 meter wide raised gravel extended to 14

meters with meadow drainage in flat terrain, increased to 16 meters with 'V' type drainage in rolling terrain. Where necessary, suitable erosion control measures will be implemented at storm watercourse crossings. Where necessary, culverts will also be constructed. Gravel required to build the road may be obtained from the nearest borrow pit/s and alternative supply of gravel will be considered.

According to the recommendation from DWS following the review of the draft Scoping Report excessive wash down of soil shall be prevented and the disturbed areas shall be rehabilitated on an ongoing basis to prevent erosion.

1.1.2. Corridor walk-down

The primary objective of the corridor walk-down is to ensure that all sensitive areas are avoided and where necessary, buffers are created for conservation purposes. Furthermore, the walk-down will aim to establish the exact coordinates for the establishment of the pylons and Senakangwedi B substation.

1.1.3. Construction camp

The need and exact locality for construction camps will be addressed in the site specific Environmental Management Programme (EMPr).

1.1.4. Vegetation clearance

Forty seven (47) and fifty five (55) meter servitudes for the proposed 275kV and 400kV power lines are required respectively. The clearance of flora will be limited to the exact footprint of the construction activities and according to the EMPr as well as Eskom policies and guidelines.

1.1.5. Substation and pylon construction

The civil works will include the excavations of foundations and construction of the Senakangwedi B substation and pylons as well as the associated infrastructure.

1.1.6. Steelworks structures

The components will be delivered in segments, assembled and erected on site. Various types of pylons are under consideration and the exact type will be determined by the terrain.

1.1.7. Stringing

Once the pylons have been erected, the conductors will be strung between the pylons.

1.1.8. Feeder bays

Feeder bays will be erected in the existing footprint of the existing Senakangwedi substation.

1.1.9. Completion of construction work

Once construction work is complete, the site will be rehabilitated as per the specifications of the construction EMPr. Among other activities, the rehabilitation activities will include:

- Removal of excess construction material;
- Building rubble and waste;
- Repairing any damage caused as part of the construction activities;
- Rehabilitating the area affected by temporary access roads;
- Reinstating existing roads; and
- Replacing topsoil and planting indigenous grasses where necessary.

1.2. Description of feasible and reasonable alternatives

The identification of alternatives is an important component of the EIA process. The various identified alternatives will be assessed in terms of both environmental acceptability as well as technical and economic feasibility during the EIA process wherein the preferred alternative will be highlighted and presented to the authorities.

Four alternative sites including the no-go alternative are being considered for the Senakangwedi B substation. Power lines will be constructed in order to connect the existing and the newly proposed substation. The power line corridor will be determined

by the location of the substation site. A 2km corridor will be assessed on all the options within which a servitude of 55m and 47m for 400kV and 275kV respectively will be utilised. Various technical options were considered with those finally being proposed considered to be the most technically, economically and environmentally viable.

1.2.1. Technical Alternatives

Instead of constructing the proposed line above ground, underground construction can be an alternative. The advantages of this alternative would include minimisation of the impact on land use, reduced impact on bird interaction and a visual impact benefit.

From a technical perspective, the construction of underground cables would not be feasible owing to the mountainous nature of the area. This could cause major technical problems and would have major cost implications. Unlike aboveground cables, underground cables need to be insulated against the surrounding soil. On low voltage reticulation networks (11kV & 22kV) the heat generated by the cable is low enough for standard insulation to be used. But on larger power lines such as the proposed 275kV and 400kV the methods of electrical and heat insulation becomes more onerous.

Control of electrical losses and heat control are critical for underground cables. As a result, cables are 4 times the diameter and 10 times the weight of equivalent overhead lines. Heat control is also a factor in the laying of the cables. The three phases of low and medium voltage cables (up to 132kV) can be placed in the same trench, while the phases for higher voltage cables must be spaced apart, typically in a flat formation.

Faulting on underground cable is rare yet bush fires, lightning strikes and bird related faults make up 80% of faults on overhead transmission lines in South Africa. These are not risks associated with underground cables. When such faults occur on overhead lines they are usually re-energised by automatically reclosing the circuit-breaker within a few seconds of the fault. More serious faults, such as a damaged line may be easily found and repaired within a few days at most; while on underground cables the faults are almost exclusively a permanent fault, requiring inspection and correction on site. This usually requires excavating a section of the line. However, location of faults is not easy unless there is clear evidence of excavation damage. Therefore, the search and repair of underground cables can take several weeks. This may severely compromise the network design standard.

Economically, costs vary and are dependent on terrain, land use and size of the line. However, underground cabling is in orders of magnitude greater than overhead cables. Underground cables are 3 to10 times more expensive than overhead lines. The mark up for 'undergrounding' is therefore significant. There is not much expertise for high voltage underground cabling in the country therefore such expertise would have to be sourced from the international market.

In terms of maintenance underground cables are reported to be much more reliable, but outages are more difficult to fix as it is harder to find the faults, and therefore the outages last much longer. The lifespan of underground cables is reported to be much shorter, about half that of overhead cables.

1.2.2. Structural alternatives

Three design alternatives have been proposed and these are the Guide V type, Cross rope suspension type and the Self-supporting suspension type. These are illustrated in Figures 1, 2, 3, 4, 5 and 6 below. It is important to note that the topography will largely dictate the types of towers to be used. From this perspective, it should be noted that where the line crosses mountainous terrains and where it changes direction at an angle, there will be a need to use self-supporting towers. Narrow base towers may be utilised on sections where space is a challenge. An example of these is illustrated in Figure 7 below.

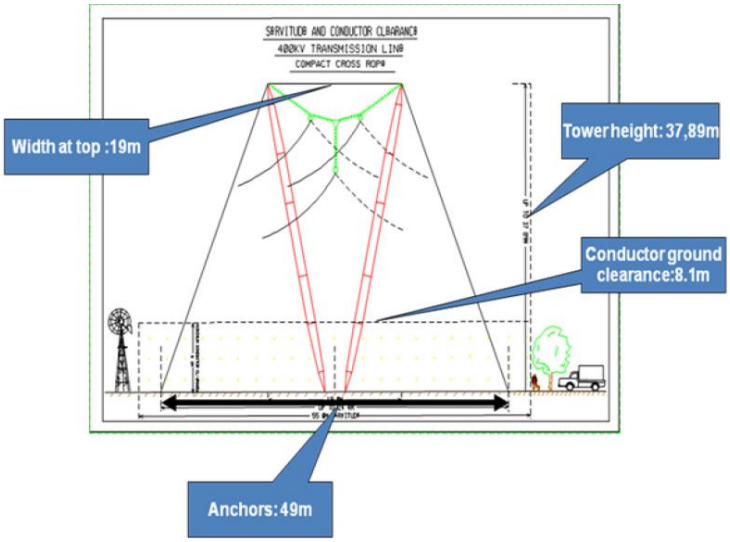


Figure 1: Guide V Tower

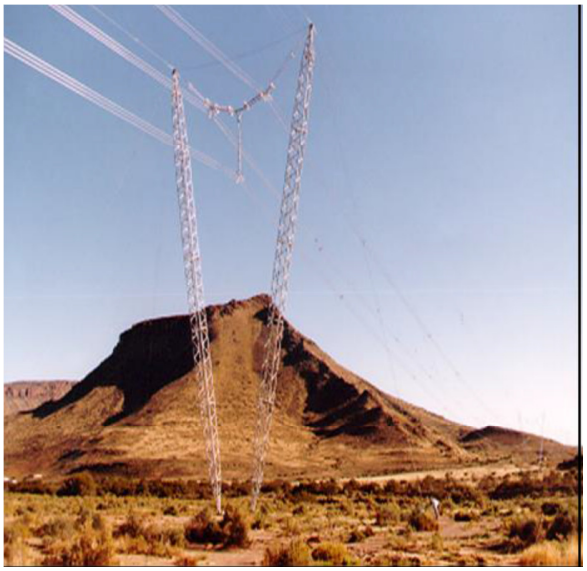


Figure 2: Photo of Guide V Tower

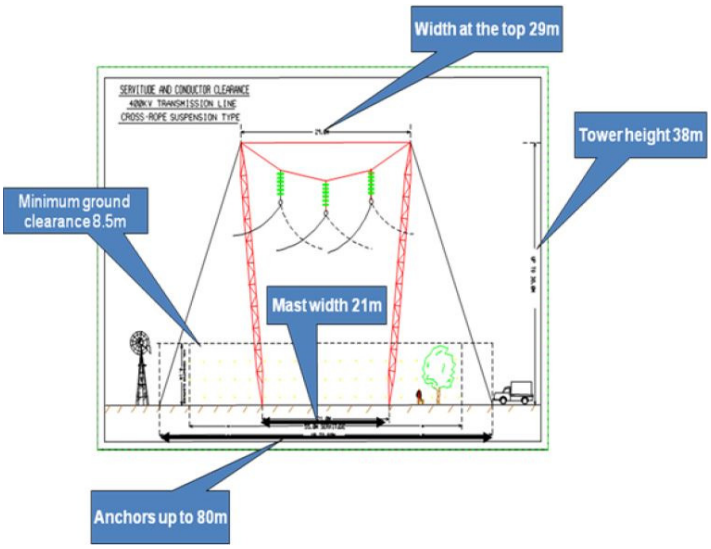


Figure 3: Cross Rope Suspension Tower

Figure 4: Photo of Cross Rope Suspension Tower

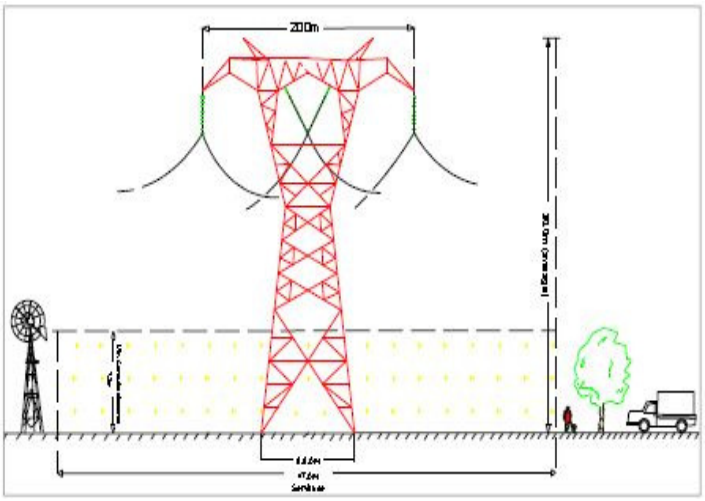


Figure 5: Self-supporting Suspension Tower

Figure 6: Photo of Self-supporting Suspension Tower

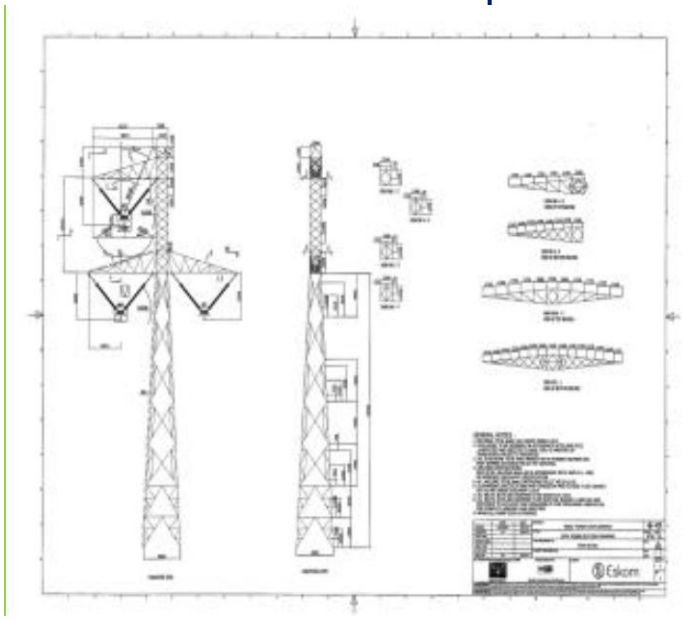


Figure 7: Narrow base tower

None of the above options have been dismissed and remain alternatives depending on the terrain and topography.

Based on input from the specialist, it is recommended that where at all possible the narrow base tower be used to reduce the visual impact as well as the impact on fauna. The narrow base minimises the footprint and possibility of birds flying and elephants pushing on stay wires of the cross rope type.

1.2.3. Site alternatives

1.2.3.1. Alternative 1

This site is situated on Farm Dwars Rivier 372KT adjacent to the existing Uchoba substation. The site is located in close proximity to an unnamed road that leads to Middelburg. Further, there is a quarry operation adjacent to the site and the Dwars Rivier mine within approximately a kilometre distance. The proposed substation will be connected to the existing Senakangwedi substation through the proposed power line which will traverse the R555, R577 Road and an unnamed road. Further, the line will traverse farms and the Tweefontein mine property. No residential communities were noted in proximity to the site during the study.

Alternative 1 covers a distance of 25.935KM and is depicted in orange in Figure 8 below.

1.2.3.2. Alternative 2

Alternative 2 is situated on Farm Tweefontein 360KT about 1km away from Nokaneng/Kalkfontein village. The site is also adjacent to the road which leads to Middelburg. The proposed substation will be connected to the existing Senakangwedi substation through a proposed power line which will traverse the R555 and R577 roads as well as farms with no formal agricultural activities.

Alternative 2 covers a distance of 21.455km and is depicted in green in Figure 8 below.

1.2.3.3. Alternative 3

Alternative 3 is situated on Farm Frischgewaagd 359KT. This substation will be connected to the existing Senakangwedi substation through a proposed power line which will traverse the R555 road and some game farms.

Alternative 3 covers a distance of 26.227km and is depicted in purple in Figure 8 below.

1.2.3.4. No-go alternative

In accordance with GNR 543, consideration must be given to the option to not act. This option is usually considered when the proposed development is envisaged to have such

significant negative environmental impacts that mitigation measures cannot ameliorate effectively.

The no-go alternative would be the option of not undertaking the construction of the proposed project. It would imply no improvement in reliability of electricity supply which would benefit electricity users, primarily the mines.

Should the no-go alternative be adopted, the mines will be deprived of a much needed essential service, particularly given the already existing problem with energy supply countrywide. The alternative substation sites and associated power line corridors are illustrated in Figure 8 below.

1.3. Locality and Descriptions of Affected Property

The proposed substation will be constructed on an area of about 1km^2 whereas the power lines will be approximately 10km long. The proposed sites are located approximately 20km from Steelpoort which is the nearest town.

1.3.1. Local authority

The proposed development falls within Ward 31 of the Greater Tubatse Local Municipality which falls within the jurisdiction of the Greater Sekhukhune District Municipality in the Limpopo Province.

1.4. Surrounding land use

1.4.1. Mining

Although largely rural, the municipal area is rich in mineral resources including iron ore, chrome, vanadium, platinum, and alusite and magnetite. This has resulted in some areas of the municipality and sections of Ward 31 becoming industrialised with the development of mines, smelters and large companies such as African Rainbow Minerals, Asmang, Samancor and Xstrata being active in the area.

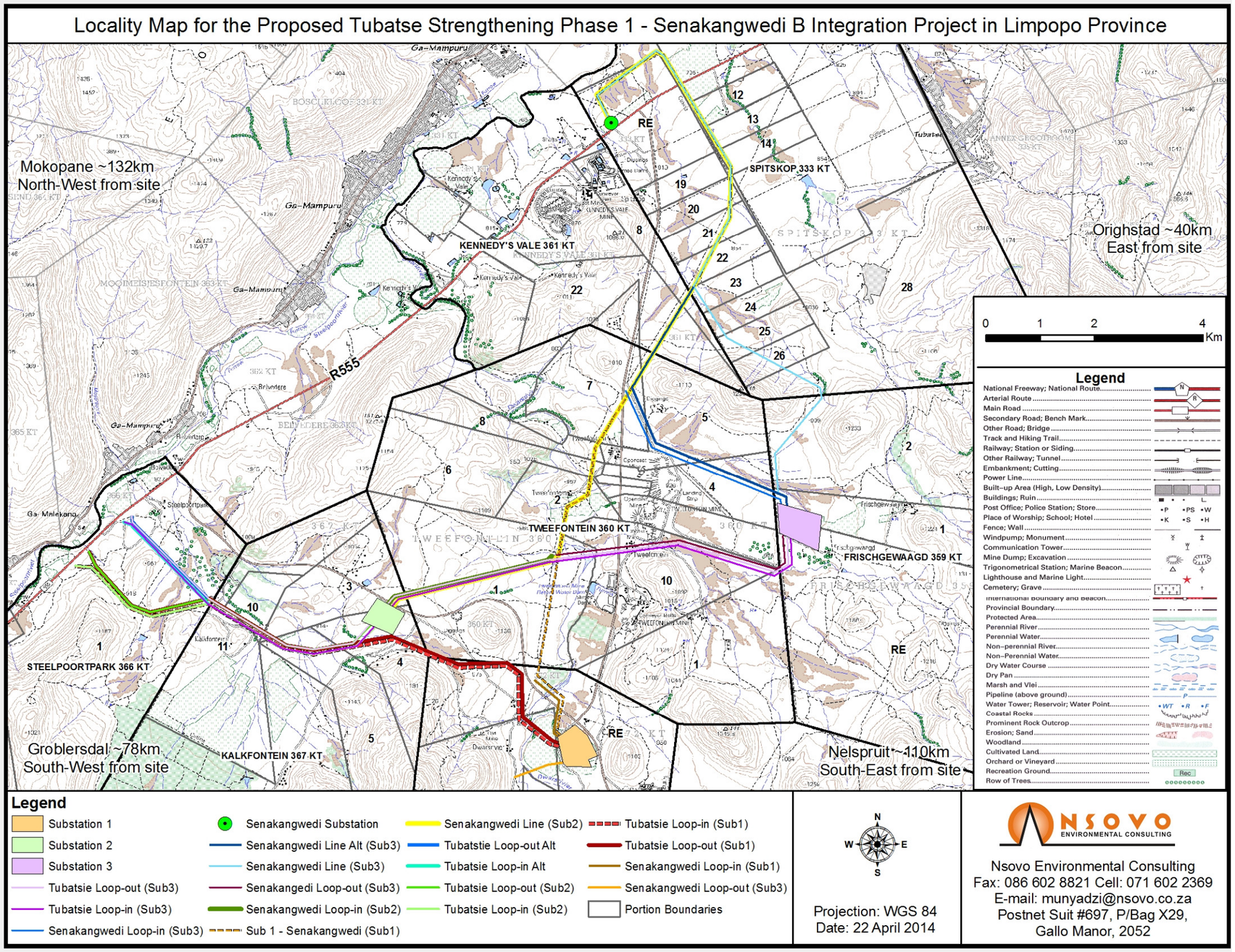


Figure 8: Locality Map indicating alternatives considered

1.4.2. Farming

The proposed project traverses various farms that are used for various purposes including stock farming, especially near substation alternative site 3. Some of the farms traversed are currently redundant with no indication of any activity taking place.

1.4.3. Residential

The proposed project stretches mostly across vacant properties, i.e. farms with no evidence of agricultural farming activity; however one game farm was noted in proximity to substation alternative site 3. Nokaneng/ Kalkfontein rural village is the only village that is located close to the project. The village is situated approximately a kilometre away from substation alternative site 2. There are no residential areas in proximity to the other two site alternatives.

1.4.4. Commercial and industrial

The commercial and industrial activities occurring around the proposed site include but not limited to the following:

- Ngululu bulk Carriers;
- Conway Johnson Transport;
- Bohlabatsatsi Eatern Development;
- Spitskop Ready Mix;
- Limpopo Ready Mix; and
- Babata Pumps.

1.4.5. Tourism

Tourism in the GTLM is underdeveloped as most tourist attraction places are found beyond the municipal boundaries e.g. the Kruger National Park, Mala Mala Game Reserve etc. Tjale heritage site is one of the tourism projects in Tubatse and is currently being developed by the Sekhukhune District Municipality. The mining activities and natural resources available in the area have created a definite potential to develop tourism and thereby diversify the economic base of the GTLM.

1.4.6. Sites of Archaeological and Cultural Significance

According to the Phase 1 Archaeological Impact Assessment Specialist Study Report there is an indication of Iron Age people settlement in the area approximately 600m from the nearby river. According to Huffman (2007) Iron Age people preferred to settle in areas with rich alluvial soils close to rivers.

The Dwars River national heritage site is situated between the loop in and loop out lines associated with alternative substation site 1. These lines are in close proximity (approximately 200 metres) of the heritage site and have the potential of directly or indirectly impacting the site.

1.5. Surface infrastructure

1.5.1. Roads

The primary roads that exist in close proximity to the project sites are the R555 (Middelburg to Burgersfort) and R577, further there are other secondary and tertiary roads in the area. Substation site alternatives 1 and 2 are accessible through secondary roads, while substation site alternative 3 is also accessible through other roads. Generally access roads to all proposed sites exist, however; access to proposed substation sites 1 and 3 is relatively constrained.

1.5.2. Power lines

There are several other existing power lines located in the study area. The power lines range from transmission to distribution power lines and these include Duvha-Leseding 400kV line, Merensky-Lavino 22kV and Arnot- Merensky 400kV power lines.

2. Objective of Study

The objective of the study is to identify the social baseline conditions in which the proposed project will take place and based on the project description, assess and mitigate the likely social impacts that may occur due to the proposed project.

3. Scope of Study

The terms of reference of the study are to:

- Conduct a review of available data, including Statistics SA data, various reports generated for the proposed Tubatse Strengthening Phase 1 – Senakangwedi B Integration Project and documentation compiled during the public participation process;
- Identify potential social impacts during the construction, operational and closure phases of the proposed project;
- Recommend appropriate optimisation measures to maximise positive impacts and mitigation measures to avoid or minimise the effect of the identified negative social impacts.

Issues excluded from this study and dealt with in other specialist reports are:

- The macro economic impacts associated with the project;
- The potential impacts of the project on property values;
- It was assumed that the data provided by Nsovo Environmental Consulting and Eskom Limited was a correct reflection of the EIA process to this point.

A brief indication of the methodology applied during the assessment will now be indicated.

4. Methodology

Both a quantitative and qualitative methodological approach was applied throughout the study, in a research technique referred to as triangulation. A recognised impact assessment technique was applied in assessing the impacts and is described below in greater detail.

4.1. Data Collection Method

Data was gathered through:

- Statistics South Africa, Census 2011; Quarterly Labour Force Survey Fourth Quarter, 2013.
- A comprehensive scan of the Issues and Response Report generated by Nosovo Environmental Consulting.

- Discussions with the project proponents and Environmental Impact Assessment Consultants.
- A literature review of various documents such as the relevant municipal Integrated Development Plans (IDPs) and other specialist reports and documents.
- Site visits undertaken on 23rd January, 2014.
- A broader literature scan.

4.2. Assessment Methodology

The assessment criteria used in evaluating the impacts of the proposed Tubatse Strengthening Phase 1 – Senakangwedi B Integration project are as follows.

Status
The project could have a positive, negative or neutral impact on the environment.

Extent
- **Local** - extend to the site and its immediate surroundings.
- **Regional** - impact on the region but within the province.
- **National** - impact on an interprovincial scale.
- **International** - impact outside of South Africa.

Magnitude
Degree to which impact may cause irreplaceable loss of resources.
- **Low** - natural and social functions and processes are not affected or minimally affected.
- **Medium** - affected environment is notably altered; natural and social functions and processes continue albeit in a modified way.
- **High** - natural or social functions or processes could be substantially affected or altered to the extent that they could temporarily or permanently cease.

Duration
- **Short term** - 0-5 years.
- **Medium term** - 5-11 years.
- **Long term** - impact ceases after the operational life cycle of the activity either because of natural processes or by human intervention.
- **Permanent** - mitigation either by natural process or by human intervention will not occur in such a way or in such a time span that the impact can be considered transient.

Probability
- **Almost certain** - the event is expected to occur in most circumstances.
- **Likely** - the event will probably occur in most circumstances.
- **Moderate** - the event should occur at some time.
- **Unlikely** - the event could occur at some time.
- Rare/Remote - the event may occur only in exceptional circumstances.

Significance
Provides an overall impression of an impact's importance, and the degree to which it can be mitigated. The range for significance ratings is as follows-
0 – Impact will not affect the environment. No mitigation necessary.
1 – No impact after mitigation.
2 – Residual impact after mitigation.
3 – Impact cannot be mitigated.

Attention will now turned towards the limitations of the study.

5. Assumptions and Limitations

Every effort was made to gather data from a wide range of sources within the constraints of the timeframe and budget limitations. Some of the data used in generating this report was made available by other specialist consultants within the EIA team as well as the lead Environmental Impact Assessment (EIA) consultants, Nsovo Environmental Consulting, and consequently depend on the accuracy of the data made available by these sources. It is important to note that, as with a great deal of social research, the findings of this study are contextually specific and, as such, cannot be generalised and applied to other populations.

It must also be noted that:
"SIA is much more than the prediction step within an environmental assessment framework. Social impacts are much broader than the limited issues often job issues, financial security, and impacts on family life. A limited view of SIA creates demarcation problems about what are the social impacts to be identified by SIA, versus what is considered by related fields such as health impact assessment, cultural impact assessment, heritage impact assessment, aesthetic impact assessment, or gender impact assessment" (Vanclay, 2003, pp. 7-8). It is in this regard that the application of the assessment criteria as stipulated above is also likely to result in certain limitations. One of the limiting factors in assessing social issues is the difficulty of attaching values to these issues. Many social issues are based on perceptions and what may be of importance to some people or groups may not be to others. Apart from this the Significance Criteria and Rating Scales are better suited to the more positive character of natural sciences than they are to the ambiguity often apparent in the social sciences. Attention will now be turned towards providing a demographic description of the study area.

6. Baseline Description

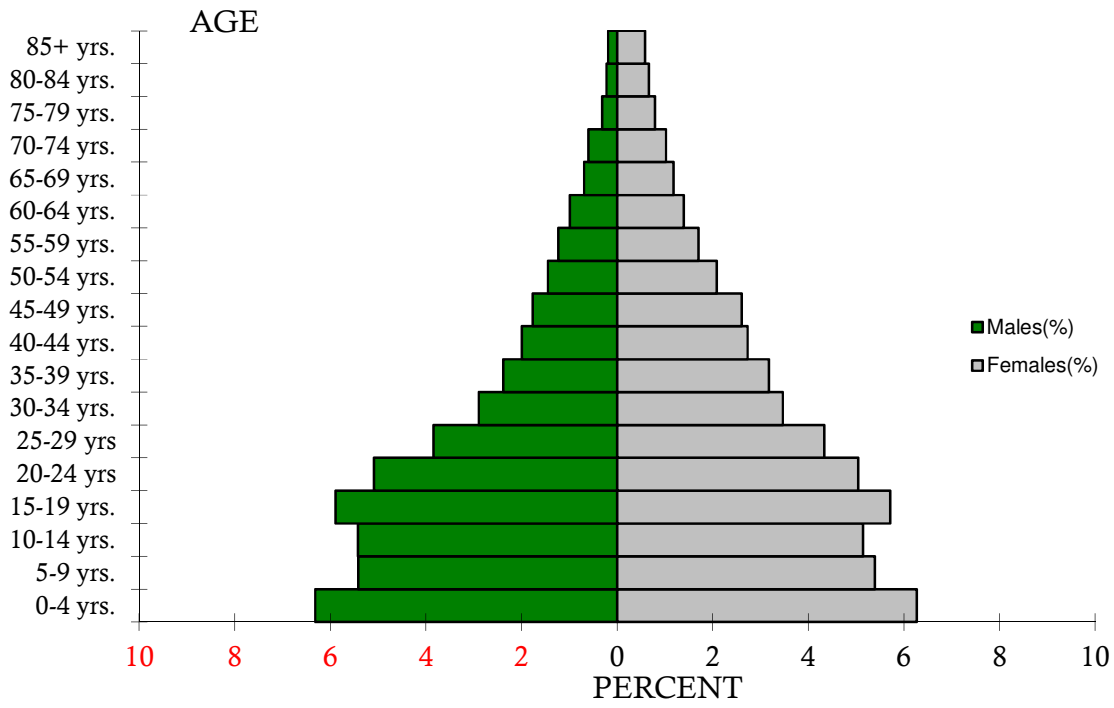
The project is located within Ward 31 of the Greater Tubatse Local Municipality (LIM475) which, together with the following 4 local municipalities, Ephraim Mogale (LIM471), Elias Motsoaledi (LIM472), Makhuduthamaga (LIM473) and Fetakgomo (LIM474), makes up the Greater Sekukhune District Municipality (DC47). The Greater Sekukhune District Municipality is in turn one of the 5 district municipalities located within the Limpopo Province. The other 4 district municipalities include Mopani (DC33), Vhembe, (DC34), Capricorn (DC35) and Waterberg (DC36). The demographics of the political and administrative structure of the region commencing at a provincial level and proceed to the municipal and ward levels are now described.

6.1. Provincial Description

The Limpopo Province is the most northerly province in South Africa and shares common boarders with Botswana to the west, Zimbabwe to the north and Mozambique to the east. The province covers a geographical area of 125 754 km^2 and accounting for some 10.3% of the total land area of South Africa. Limpopo also accounts for 10.4% of the total population of South Africa and has a population density of 42.9/km^2 placing it 5th when compared against the other nine provinces of South African. In this respect Gauteng is the most densely populated at 675.1/km^2 and the Northern Cape, the least densely populated at 3.1/km^2. The population density of South Africa is 42.4/km^2.

The capital of Limpopo is Polokwane and the dominant home language in the province is Sepedi, spoken by 52.9% of the population. This is followed by Xitsonga and Tshivenda, spoken respectively by 17% and 16.7% of the population. With regard to age structure 34% of the population of Limpopo is under 15 years of age while 59.8% fall between 15 and 64 years and 6.3% are over 64. The population pyramid of the province is illustrated in Figure 9 below. In 2011 the dependency ratio in the province was 67,3 while the sex ratio was 87,6. Between 2001 and 2011 Limpopo had a per annum population growth rate of 0.79%.

Figure 9: Population pyramid Limpopo Province



Data source: (Statistics South Africa, 2012)

In respect of population grouping, 96.67% of the population of Limpopo comprises of black African people followed by white people at 2.58%, Indian or Asian at 0.33% and coloured people at 0.27%.

In the 4th Quarter of 2013 the official unemployment level in Limpopo was reflected as 16.9% which, at that point, placed it as the province with the lowest level of official unemployment in the country as illustrated below in Figure 10. The significance of this must, however, be considered with caution as the official unemployment rate is defined by Stats SA as follows;

"***Unemployed*** *persons are those (aged 15–64 years) who:*

a) Were not employed in the reference week ***and;***

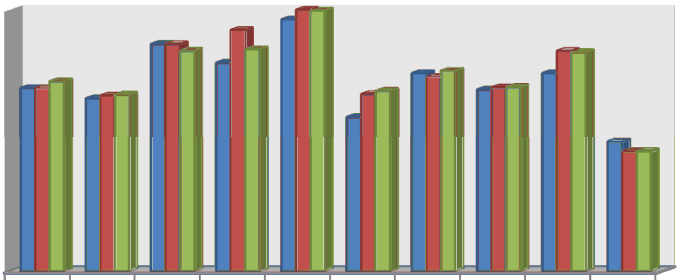
b) Actively looked for work or tried to start a business in the four weeks preceding the survey interview ***and;***

c) Were available for work, i.e. would have been able to start work or a business in the reference week ***or;***

d) Had not actively looked for work in the past four weeks but had a job or business to start at a definite date in the future and were available" (StatsSA, 2014, p. xviii).

The official definition excludes discouraged work seekers which, when included in the expanded version of unemployment, give Limpopo an expanded rate of unemployment of 38.4%. A summary of the labour market indicators across South Africa are illustrated in Figure 11 below.

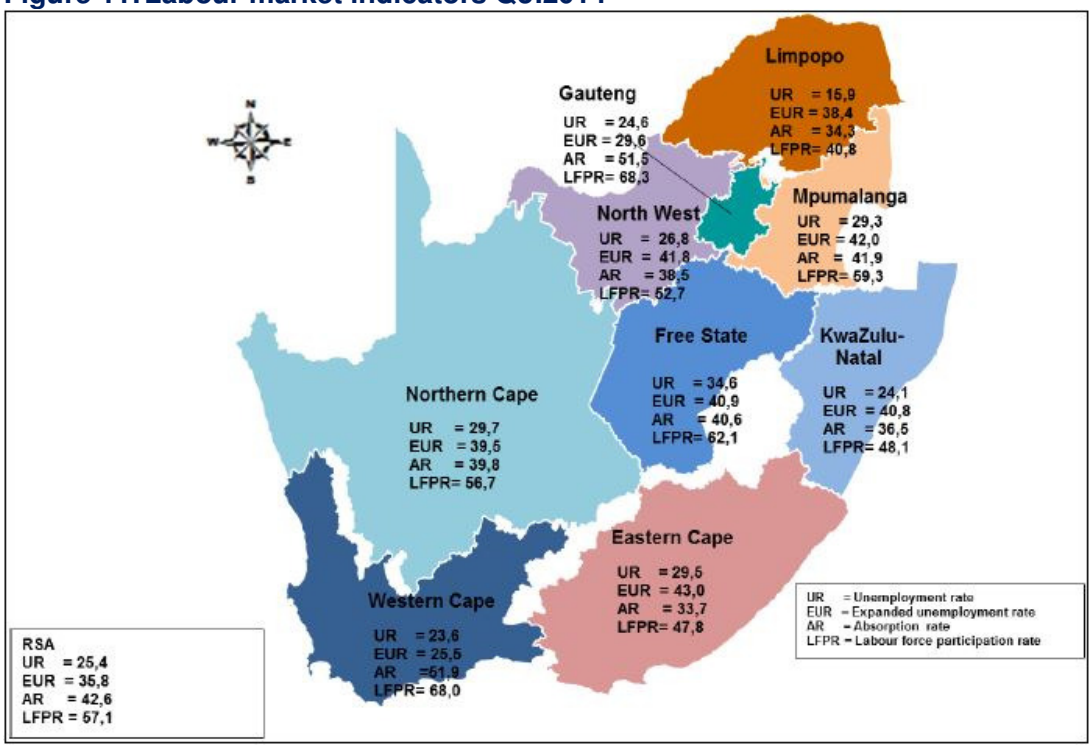
Figure 10: Unemployment Q3:2013 – Q3:2014



	SA	WC	EC	NC	FS	KZN	NW	GP	MP	LP
Jul-Sep 2013	24.5	23.1	30.4	27.9	33.7	20.6	26.5	24.3	26.5	17.2
Apr-Jun 2014	24.5	23.5	30.4	32.3	35.0	23.7	26.0	24.6	29.5	15.9
Jul-Sep 2014	25.4	23.6	29.5	29.7	34.9	24.1	26.8	24.6	29.3	15.9

Source: (StatsSA, 2014, p. xiv)

Figure 11: Labour market indicators Q3:2014



Source: (StatsSA, 2014, p. xv)

With regard to the HIV prevalence rate, as Figure 12 illustrates, at 16.3% in 2012, Limpopo had the third lowest rate of HIV prevalence amongst those aged 25 years and older across South Africa. This is above the Northern Cape which has a prevalence rate of 12.5% and the Western Cape with the lowest prevalence rate of 6.8%. The highest level of HIV prevalence amongst those 25 years of age and older is found in KwaZulu-Natal with a rate of 30.1% compared to the national rate of 19.9% (Shisana, et al., 2014).

Figure 12: HIV prevalence by province aged 25 years and older 2002 – 2012

Province	2002			2005			2008			2012		
	n	%	95% CI	n	%	95% CI	n	%	95% CI	n	%	95% CI
Western Cape	579	11.2	6.6–18.3	1,072	2.7	1.6–4.6	1,017	5.4	3.7–7.9	1,973	6.8	4.6–9.9
Eastern Cape	562	8.1	5.5–11.9	1,128	13.8	10.9–17.4	986	15.6	12.0–20.1	1,958	22.0	19.0–25.3
Northern Cape	347	10.6	7.0–15.6	588	8.0	5.6–11.4	636	8.6	6.2–11.9	1,261	12.5	7.3–20.8
Free State	368	22.0	14.3–32.2	534	19.7	13.2–28.4	505	20.4	17.0–24.3	1,074	23.7	18.4–30.1
KwaZulu-Natal	720	14.9	10.1–21.5	1,449	20.5	16.8–24.6	1,338	23.5	19.7–27.8	3,589	30.1	26.9–33.6
North West	307	17.8	13.4–23.3	528	18.9	14.3–24.5	600	17.7	13.9–22.2	984	21.1	18.2–24.3
Gauteng	658	18.1	13.8–28.8	1,317	14.9	11.9–18.4	1,057	14.4	11.4–18.0	1,647	18.8	15.0–23.4
Mpumalanga	241	21.0	14.8–28.8	584	24.4	19.6–30.0	475	24.5	18.4–31.9	1,047	23.6	18.8–29.2
Limpopo	299	14.0	8.8–21.8	712	11.4	8.7–14.9	577	16.7	12.2–22.4	1,283	16.3	12.1–21.6
Total	**3,981**	**15.5**	**13.6–17.6**	**7,912**	**15.6**	**14.2–17.1**	**7,191**	**16.8**	**15.3–18.4**	**14,816**	**19.9**	**18.3–21.6**

(Shisana, et al., 2014, p. 46)

On an economic level Limpopo has a developing economy exporting primary products and importing manufactured products with agriculture, mining and tourism seen as the three pillars of the economy. Contributing to approximately a fifth of the provincial economy, the mining industry includes platinum group metals, iron ore, chromium, coal, diamonds, antimony, phosphate, and copper amongst other minerals (Limpopo Business, 2013). The agricultural industry is well established with various commercial farms as well as the majority of South Africa's game farms being found in the province while the tourist industry continues to grow in the region. These developments necessitate a fine balance between industrial and commercial expansion and environmental conservation in the area. Attention is now turned towards a more in-depth demographic description of the study area at the municipal and ward levels.

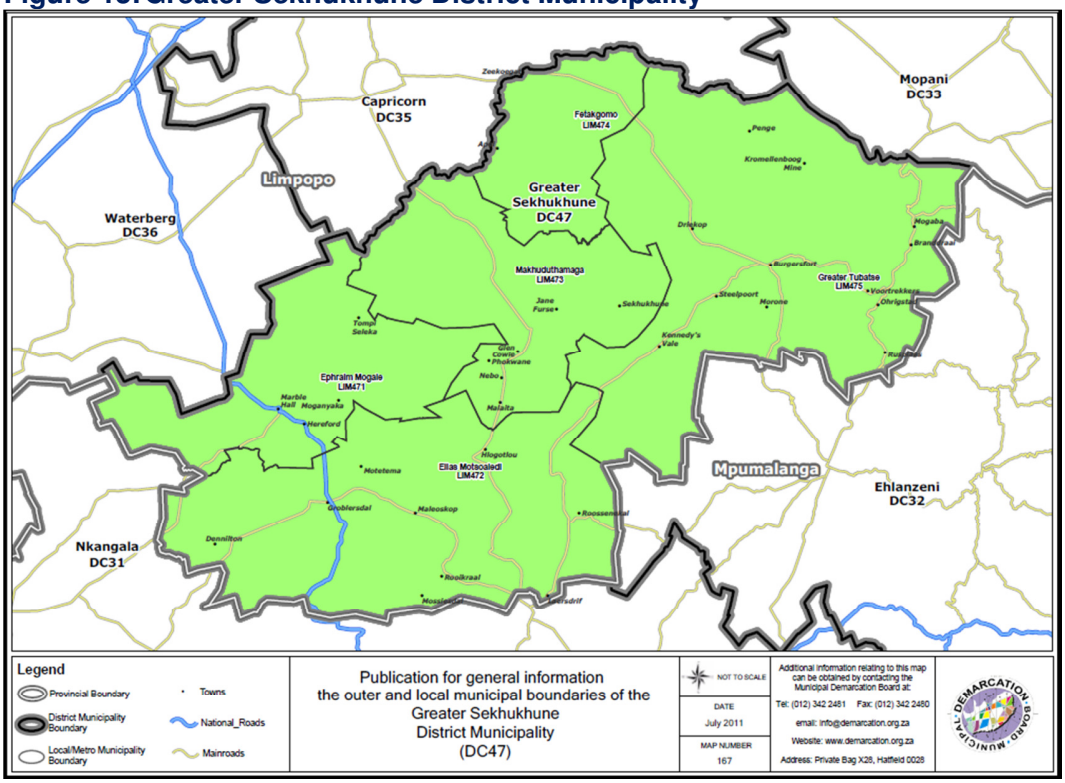
6.2. Municipal Description

Covering a geographical area of approximately 13 527.72 km^2 with a population of 1 076 840 people living within 263 802 households, the Greater Sekhukhune District Municipality, illustrated in Figure 13, is situated in the southeast of Limpopo Province and encompasses the following 5 local municipalities;

- Ephraim Mogale Local Municipality (LIM471);
- Elias Motsoaledi Local Municipality (LIM472);
- Makhuduthamaga Local Municipality (LIM473);
- Fetakgomo Local Municipality (LM474);
- Greater Tubatse Local Municipality (LIM475).

With a population density of 80 people per km^2 and a household density of 19.5 households per km^2 the district is characterised by some 740 sparsely populated and poorly serviced rural villages scattered across the region. Although the road network links the district to most areas, these roads are in a poor state of repair in many places and the region suffers from a general lack of service delivery. Mining is the most dominant contributor to the economy of the region, particularly in the Greater Tubatse area, with the Greater Sekhukhune District being heavily reliant on government service delivery. Of the 5 local municipalities in the district, four, including Greater Tubatse, fall within the Department of Cooperative Governance and Traditional Affairs' classification of most vulnerable municipalities (Department of Cooperative Governance and Traditional Affairs, n.d., pp. 14-15).

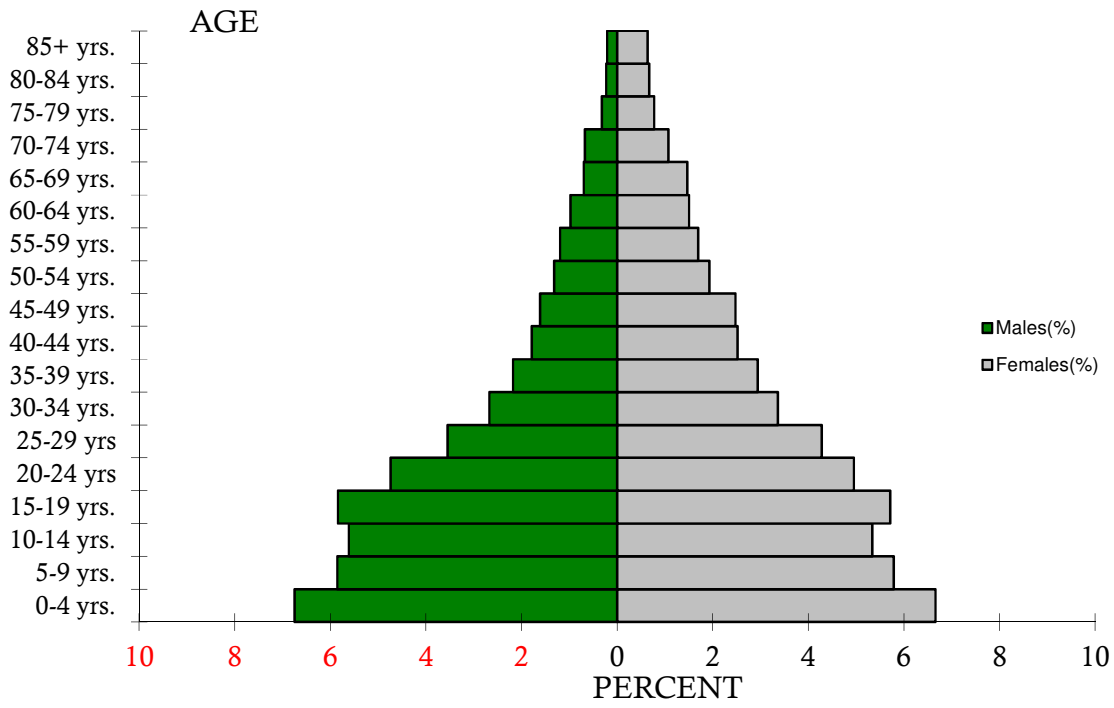
Figure 13: Greater Sekhukhune District Municipality



Source: Municipal Demarcation Board

With regard to social indicators, Greater Sekhukhune has a dependency ratio of 74.7 and a sex ratio of 85.9. The population growth rate of the district, as measured between 2001 and 2011, was 1.07%. In 2011 the official unemployment rate was 50.9% with the official unemployment rate amongst the youth, aged between 15 and 34 years, being 60.6%. In respect of schooling amongst those aged 20 years and older, 20.9% have no schooling, 21.3% have a matric and 5.8% have a higher education. The population pyramid of Greater Sekhukhune is illustrated below in Figure 14.

Figure 14: Population pyramid of the Greater Sekhukhune District Municipality

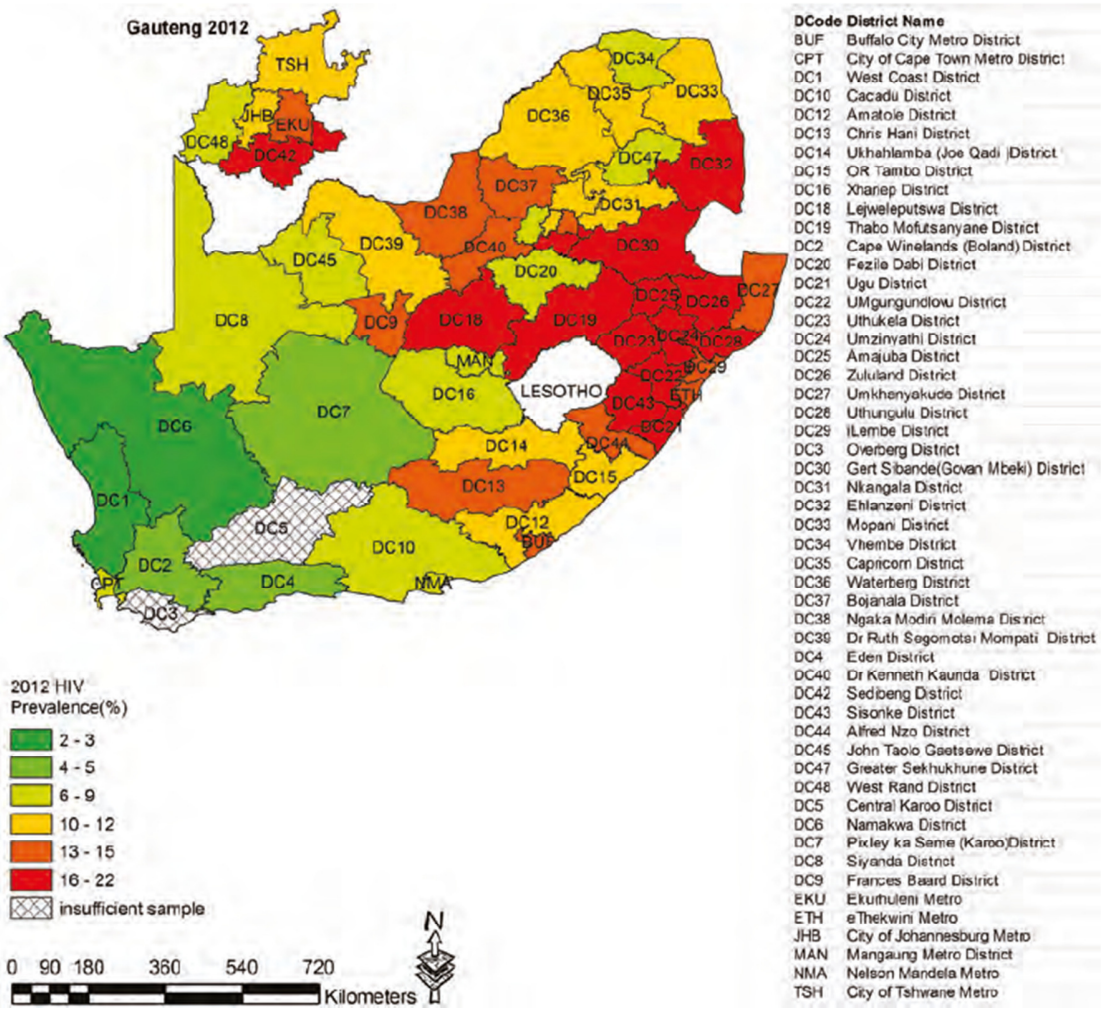


Data source: (Statistics South Africa, 2012)

Concerning household dynamics, the average size of households in Greater Sekhukhune is 4.1 and 52.9% of these households are headed by females. In respect of dwelling type 88.7% of housing is formal in nature while 58.2% are owned or are being paid off. Vis-à-vis household services, 6.3% have a flush toilet connected to a sewerage system, 8.2% have their refuse removed weekly, and 9.3% have piped water delivered inside the dwelling while 85.9% use electricity as an energy source for lighting.

The HIV prevalence rate across the districts is illustrated in Figure 15 below and indicates that the Greater Sekhukhune District Municipality, together with the Vhembe district, have a prevalence rate of between 6 and 9 percent which is the lowest HIV prevalence rate across Limpopo.

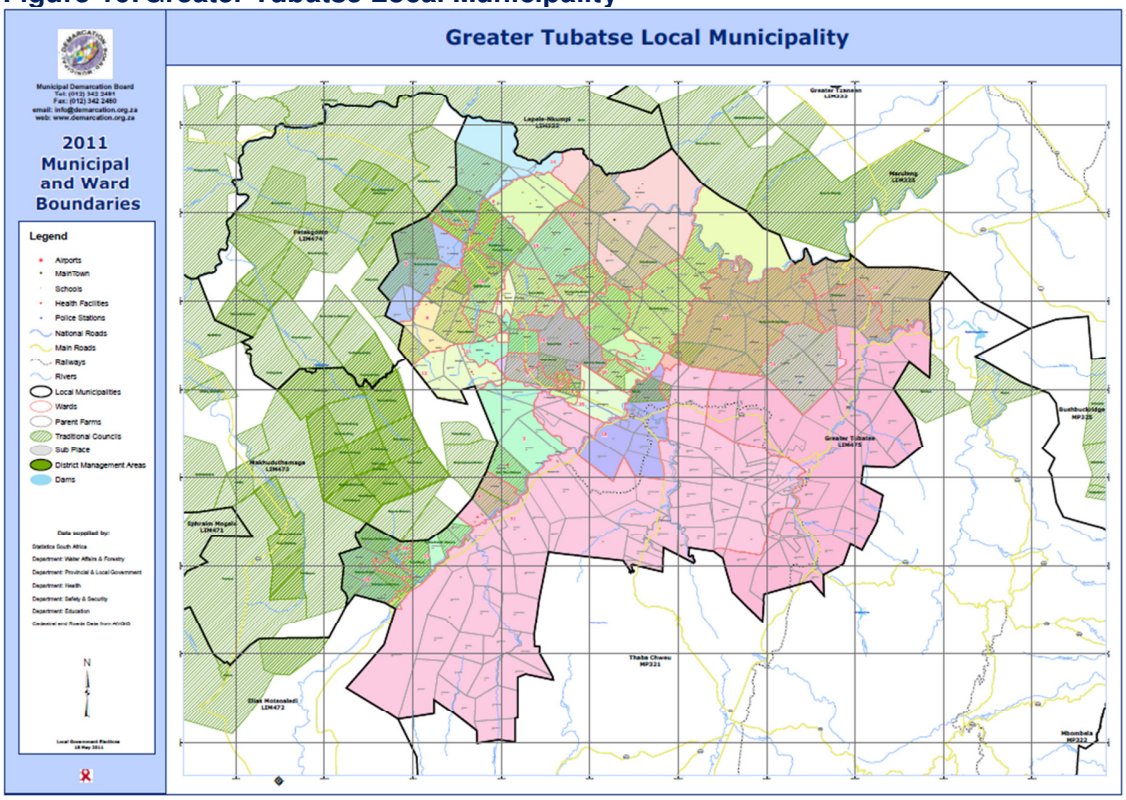
Figure 15: HIV prevalence by district, South Africa 2012



(Shisana, et al., 2014, p. 48)

Greater Tubatse Local Municipality covers a geographical area of 4 550 km^2 and in 2011 had a population of 335 676 people accommodated in 83 199 households. This gives the area a population density of 73.77/km^2 and household density of 18.28/km^2. On a geographical basis the municipality covers the largest area in Greater Sekhukhune accounting for 34.3% of the district and is illustrated below in Figure 16.

Figure 16: Greater Tubatse Local Municipality



Source: Municipal Demarcation Board

Greater Tubatse is largely rural in nature and consists of 31 municipal wards. These wards incorporate six proclaimed townships and approximately 166 villages. It is indicated in the Integrated Development Plan of the local municipality that;

> "*Due to its rural nature; the municipality is confronted with* [*a*] *high service delivery backlogs. Majority of the settlements are far apart which; makes the provision and maintenance of services very costly. Some of these areas are too small to attain the economic threshold required to provide social facilities in a cost-effective manner*" (Greater Tubatse Local Municipality, 2014, p. 19).

Although largely rural, the municipal area is rich in mineral resources chrome, vanadium, platinum, andalusite and magnetite. This has resulted in some areas of the municipality and sections of Ward 31 becoming industrialised with the development of mines and smelters with large companies such as African Rainbow Minerals, Assmang, Samancor and Xstrata being active in the area. In Figure 17 a section of the Xstrata Lion Ferrochrome Smelter is viewed from the entrance to Eskom's Senakangwedi Sub-station.

Figure 17: Xstrata Lion Ferrochrome Smelter

The sex ratio of the municipality is 91.5 meaning that for every 100 women there are 91.5 males in the population. At 98.25% black African people make up the largest portion of the population, followed by white people at 1.31% with the other population groups making up the remaining 0.43%. The dominant home language spoken across Greater Tubatse is Sepedi, which is spoken by 88.11% of the population followed by SiSwati spoken by 2.60%, isiZulu at 1.70% and Afrikaans at 1.52%. The rest of the official South African languages fill the minor percentages together making up the remaining 7.59%.

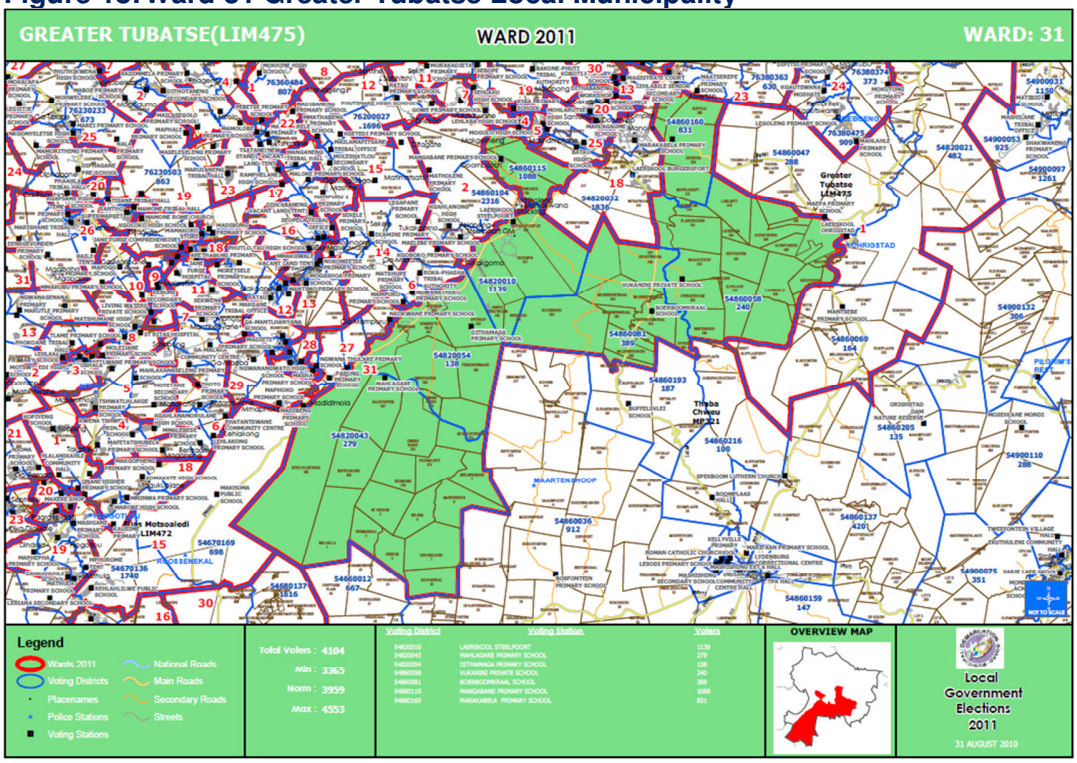
The dependency ratio of the municipality is 65.6% and 60.4% of the population is of working age between 15 and 64 years with 34.5% under 15 years and 5.1% over 64 years of age. The official unemployment rate of Greater Tubatse is 50.3% with a high percentage of youth being officially unemployed at 59.6%. Amongst those aged 20 years and above, 15.1% have no schooling, 22.6% have a matric and 6.6% have a higher level of education. Between 2001 and 2011 the growth rate in the area was 2.19%.

Amongst the 83 199 households 25 347 are categorised as agricultural households and 46.9% are female headed. Formal dwellings account for 83.2% of the dwelling types in the municipality and 53.9% of the housing are either owned or are being paid off. Only 6.3% of households have flush toilets connected to the sewerage system,

7.9% have their refuse removed on a weekly basis, 9.5% have piped water delivered inside the dwelling and 75.7% use electricity for lighting.

The proposed project falls within Ward 31 of the local municipality illustrated in Figure 18 below.

Figure 18: Ward 31 Greater Tubatse Local Municipality



Source: Municipal Demarcation Board

The social indicators and population dynamics of Ward 31 will now be compared against those of the local municipality. The population of the ward has a lower percentage of black African people at 88.06% compared to that of the local municipality at 98.25%. There is a significantly higher percentage of white people in Ward 31 at 10.69% compared to 1.31% in Greater Tubatse. While the local municipality has a sex ratio of 91.5, indicating a higher percentage of females across the region, the situation is reverse in Ward 31 which has a sex ratio of 118, indicating a higher percentage of males. This is probably as a result of in migration due to at least a perception of job opportunities in the area. A lower percentage of the population of Ward 31 currently attends school compared to across the local municipality with the relative percentages being 26.11 and 34.92. There is also a lower percentage of people, 39.26%, having no

income in Ward 31 compared to 47.84% across Greater Tubatse. The statistics discussed above are presented in Table 1 below.

Table 1: Population demographics municipal and ward levels

Population Group	LIM475 Greater Tubatse		Ward 31	
Black	329,810	98.25%	11,580	88.06%
Coloured	643	0.19%	124	0.94%
Indian or Asian	538	0.16%	31	0.24%
White	4,409	1.31%	1,406	10.69%
Gender				
Male	160,398	47.78%	7,117	54.12%
Female	175,278	52.22%	6,033	45.88%
Present school attendance				
Yes	117,215	34.92%	3,434	26.11%
No	163,268	48.64%	6,810	51.79%
Do not know	112	0.03%	8	0.06%
Not applicable	8,558	2.55%	319	2.43%
Individual monthly income				
No income	160,604	47.84%	5,163	39.26%
R 1 - R 400	80,191	23.89%	2,299	17.48%
R 401 - R 800	8,210	2.45%	313	2.38%
R 801 - R 1 600	32,418	9.66%	1,458	11.09%
R 1 601 - R 3 200	10,147	3.02%	758	5.76%
R 3 201 - R 6 400	12,842	3.83%	495	3.76%
Official employment status				
Employed	49,522		3,673	
Unemployed	50,220	50.3%	1,774	32.6%

Source: (Statistics South Africa, 2012)

The population group of the head of household is predominantly black African across both the municipality and ward with Ward 31 having the highest percentage of white headed families at 10.32%. Ward 31 also has a relatively high proportion of households headed by males at 64.33% and the lowest percentage of households having no income at 11.86%, compared to 15.65% across Greater Tubatse. Consistent with this the lowest level of unemployment amongst the head of the household, at 20%, is found in Ward 31. Census, 2011 data pertaining to the household demographics discussed above is presented in Table 2 below.

Table 2: Household demographics municipal and ward levels

Population group of head of household	LIM475 Greater Tubatse		Ward 31	
Black African	81,532	98.00%	3,343	88.72%
Coloured	123	0.15%	22	0.58%
Indian or Asian	153	0.18%	11	0.29%
White	1,253	1.51%	389	10.32%
Gender of head of household				
Male	44,202	53.13%	2,424	64.33%
Female	38,996	46.87%	1,344	35.67%
Annual household income				
No income	13,023	15.65%	447	11.86%
R 1 - R 4800	5,421	6.52%	193	5.12%
R 4801 - R 9600	9,869	11.86%	381	10.11%
R 9601 - R 19 600	15,485	18.61%	835	22.16%
R 19 601 - R 38 200	14,758	17.74%	616	16.35%
Employment status of household head				
Employed	30,245		2,372	
Unemployed	14,585	32.53%	593	20.00%
Discouraged work-seeker	3,158		13	3,158
Other not economically active	34,985		205	34,985
Household size				
1	20,167	24.24%	1,422	37.74%
2	10,706	12.87%	614	16.30%
3	11,206	13.47%	466	12.37%
4	11,943	14.35%	459	12.18%
5	9,735	11.70%	288	7.64%
6	7,025	8.44%	197	5.23%
7	4,589	5.52%	110	2.92%
8	3,092	3.72%	90	2.39%
9	1,909	2.29%	53	1.41%
10+	2,827	3.40%	68	1.80%

Source: (Statistics South Africa, 2012)

The highest percentage of rented accommodation, at 45.33%, is found in Ward 31. At 49.49% the highest percentage of owned and fully paid off housing is in the Greater Tubatse Local Municipality. Most types of dwellings across the region are house or brick/concrete structures on a separate stand or yard or on a farm. Table 3 contains Census 2011 data relating to the state of housing across the municipality and ward.

Table 3: Housing municipal and ward levels

Tenure status	LIM475 Greater Tubatse		Ward 31	
Rented	13,697	16.46%	1,708	45.33%
Owned but not yet paid off	3,768	4.53%	72	1.91%
Occupied rent-free	22,575	27.13%	907	24.07%
Owned and fully paid off	41,108	49.41%	1,056	28.03%
Type of main dwelling				
House or brick/concrete block structure on a separate stand or yard or on a farm	65,792	79.08%	2,426	64.38%
Traditional dwelling/hut/structure made of traditional materials	3,790	4.56%	153	4.06%
Flat or apartment in a block of flats	409	0.49%	25	0.66%
Cluster house in complex	157	0.19%	15	0.40%
Townhouse (semi-detached house in a complex)	146	0.18%	3	0.08%
Semi-detached house	52	0.06%	4	0.11%
House/flat/room in backyard	731	0.88%	20	0.53%
Informal dwelling (shack; in backyard)	2,961	3.56%	291	7.72%
Informal dwelling (shack; not in backyard; e.g. in an informal/squatter settlement or on a farm)	6,445	7.75%	677	17.97%
Room/flatlet on a property or larger dwelling/servants quarters/granny flat	1,925	2.31%	91	2.42%
Caravan/tent	167	0.20%	47	1.25%
Number of rooms				
1	9,754	11.72%	401	10.64%
2	10,715	12.88%	1,017	26.99%
3	8,884	10.68%	565	14.99%
4	11,472	13.79%	378	10.03%
5	11,421	13.73%	458	12.15%
6	11,422	13.73%	404	10.72%
7	8,875	10.67%	222	5.89%
8	5,538	6.66%	151	4.01%
9	2,676	3.22%	105	2.79%
10	1,163	1.40%	34	0.90%

Source: (Statistics South Africa, 2012)

With regard to service delivery, this situation is virtually the same across both the municipality and Ward 31 except for refuse disposal and toilet facilities in respect of which Ward 31 enjoys somewhat of a higher service delivery level. Regarding refuse removal 27.23% of households in Ward 31 have their refuse collected on a weekly basis compared to 7.93% across the municipality. In Ward 31 the situation is marginally better when it comes to toilet facilities with 35.01% of households having flush toilets connected to the sewerage system compared to the 6.31% across Greater Tubatse. This data is represented below in Table 4.

Table 4: Access to services across municipal and ward levels

Source of water	LIM475 Greater Tubatse		Ward 31	
Regional/local water scheme (operated by municipality or other water services provider)	36,168	43.47%	1,625	43.13%
Borehole	13,692	16.46%	1,358	36.04%
Spring	1,008	1.21%	9	0.24%
Rain water tank	1,693	2.03%	29	0.77%
Dam/pool/stagnant water	4,869	5.85%	39	1.04%
River/stream	14,089	16.93%	186	4.94%
Water vendor	3,513	4.22%	29	0.77%
Water tanker	4,261	5.12%	88	2.34%
Energy for cooking				
None	142	0.17%	23	0.61%
Electricity	45,374	54.54%	2,289	60.75%
Gas	858	1.03%	66	1.75%
Paraffin	7,029	8.45%	118	3.13%
Wood	29,443	35.39%	1,266	33.60%
Coal	119	0.14%		
Animal dung	108	0.13%	2	0.05%
Solar	115	0.14%	3	0.08%
Energy for heating				
None	13,983	16.81%	539	14.30%
Electricity	32,689	39.29%	1,554	41.24%
Gas	664	0.80%	21	0.56%
Paraffin	2,287	2.75%	42	1.11%
Wood	33,008	39.67%	1,588	42.14%
Coal	261	0.31%	1	0.03%
Animal dung	184	0.22%	2	
Solar	122	0.15%	21	0.56%
Energy for lighting				
None	307	0.37%	16	0.42%
Electricity	62,984	75.70%	3,048	80.89%
Gas	144	0.17%	6	0.16%
Paraffin	739	0.89%	9	0.24%
Candles (not a valid option)	18,426	22.15%	680	18.05%
Solar	599	0.72%	8	0.21%
Refuse disposal				
Removed by local authority/private company at least once a week	6,600	7.93%	1,026	27.23%
Removed by local authority/private company less often	505	0.61%	121	3.21%
Communal refuse dump	539	0.65%	109	2.89%
Own refuse dump	60,353	72.54%	1,908	50.64%
No rubbish disposal	14,794	17.78%	540	14.33%
Toilet facilities				
None	5,661	6.80%	219	5.81%
Flush toilet (connected to sewerage system)	5,252	6.31%	1,319	35.01%
Flush toilet (with septic tank)	1,036	1.25%	221	5.87%
Chemical toilet	737	0.89%	11	0.29%
Pit toilet with ventilation (VIP)	7,775	9.35%	61	1.62%

Source of water	LIM475 Greater Tubatse		Ward 31	
Pit toilet without ventilation	60,097	72.23%	1,575	41.80%
Bucket toilet	1,259	1.51%	10	0.27%

Source: (Statistics South Africa, 2012)

Pertaining to household goods such as cell phones, computers, satellite television and internet access, amongst those others listed in Table 5 below, the situation within the ward and across the municipality is not significantly different.

Table 5: Household goods across municipal and ward levels

Mail Post box/bag	LIM475 Greater Tubatse		Ward 31	
Yes	19,742	23.73%	1,168	31.00%
No	63,458	76.27%	2,600	69.00%
Mail delivered at residence				
Yes	1,638	1.97%	123	3.26%
No	81,561	98.03%	3,645	96.74%
Cell phone				
Yes	73,997	88.94%	3,430	91.03%
No	9,203	11.06%	339	9.00%
Computers				
Yes	7,845	9.43%	609	16.16%
No	75,354	90.57%	3,159	83.84%
Satellite television				
Yes	36,049	43.33%	1,459	38.72%
No	47,150	56.67%	2,309	61.28%
DVD player				
Yes	43,853	52.71%	1,780	47.24%
No	39,346	47.29%	1,988	52.76%
Motor-car				
Yes	16,656	20.02%	1,010	26.80%
No	66,544	79.98%	2,758	73.20%
Internet				
From home	2,022	2.43%	273	7.25%
From cell phone	10,398	12.50%	326	8.65%
From work	1,537	1.85%	104	2.76%
From elsewhere	2,609	3.14%	89	2.36%
No access to internet	66,633	80.09%	2,977	79.01%
Radio				
Yes	47,603	57.22%	1,762	46.76%
No	35,597	42.79%	2,006	53.24%
Landline/telephone				
Yes	1,667	2.00%	110	2.92%
No	81,532	98.00%	3,658	97.08%

Refrigerator				
Yes	50,902	61.18%	2,009	53.32%
No	32,298	38.82%	1,759	46.68%
Electric/gas stove				
Yes	50,708	60.95%	2,239	59.42%
No	32,491	39.05%	1,529	40.58%
Vacuum cleaner				
Yes	2,990	3.59%	413	10.96%
No	80,209	96.41%	3,356	89.07%
Washing machine				
Yes	10,189	12.25%	680	18.05%
No	73,010	87.75%	3,088	81.95%
Television				
Yes	49,474	59.46%	2,005	53.21%
No	33,725	40.54%	1,763	46.79%

Source: (Statistics South Africa, 2012)

Attention will now be turned towards the impacts associated with the project.

7. Impact Assessment and Mitigation Measures

Based on the social environment described above, as well as the various public meetings, submissions and responses received in respect of the project the following socially related issues have been identified. These issues, alphabetically listed below, are addressed in respect of the construction and operational phases of the project.

- **Economic issues**
  - Job creation
  - National and regional economy
  - SMME opportunities
- **Health and safety**
  - Crime and security
  - Dust exposure
  - Exposure to electromagnetic fields (EMFs)
  - Fire risk
  - Social instability
  - STDs, HIV and AIDS risk
  - Risk of road traffic incidents
- **Nuisance**
  - Access across sites
  - Disruption of services and infrastructure
  - Fencing
- **Sense of place**
  - Disturbance of archaeological, cultural, spiritual and/or religious sites
  - Visual intrusion

- **Assessment of Alternatives**

- **Decommissioning phase**

Changes caused by the project regarding these issues may result in an impact on the lives of individuals, groups or communities. The generation of dust for instance may have an impact on the health of individuals just as an increased influx of workers may be disruptive to social stability in the area. A further complicating factor is the objectivity or subjectivity of the impact. An objective social impact can be measured and independently verified whereas a subjective impact may only be experienced as a perception. Subjective impacts can, however, be projected onto others and may take the form of a negative public attitude towards a project or result in unrealistic expectation such as that the project will lead to greater job opportunities which may, in reality, actually not exist. A further complication is that what may be perceived or even experienced as negative to one individual or group may be positive to another individual or group. It is with this in mind that the following assessment is undertaken.

7.1. Job creation

Description of impact: The power line will result in the creation of jobs during both the construction and operation phases of the project.

During construction job opportunities will be limited as the construction process is put out to tender and contractors are appointed to construct the substation and transmission lines. These contractors employ skilled workers and although they are encouraged to employ local people for semi and unskilled work such jobs are limited and temporary in nature, thus limiting the impact they may have.

Optimisation objective: To increase the benefit of job creation.

Optimisation measures:

- Use local labour as far as possible;
- Create opportunities for the employment of women;
- Where possible use labour-intensive methods of construction;
- Go beyond the minimum wage rate and invest in local staff development.

The impact on job creation is assessed and presented in Table 6 below.

Table 6: Job creation

Site	Status	Extent	Magnitude	Duration	Probability	Significance
Construction Phase						
A1	Positive	Local	Low	Short term	Almost certain	1
A2	Positive	Local	Low	Short term	Almost certain	1
A3	Positive	Local	Low	Short term	Almost certain	1
Operational Phase						
A1	Positive	Local	Low	Long term	Almost certain	1
A2	Positive	Local	Low	Long term	Almost certain	1
A3	Positive	Local	Low	Long term	Almost certain	1

7.2. National and regional economy

Description of impact: The macro-economic effects of the project.

The construction of the proposed substation and transmission line has become necessary as part of Eskom's undertaking to upgrade the country's existing electricity grid. Eskom has indicated that the proposed project is driven by the requirements of mines and industry in the area and is necessary to improve the security of electricity supply and thus benefit users on both a regional and national basis.

Optimisation objective: To enhance the macro-economic benefit of the project.

Optimisation measures:

- Ensure that the project is run in a responsible manner and that the environment is adequately protected from negative impacts;
- Put adequate monitoring systems in place throughout the duration of the project.

The regional and national economic issues related to the project are only assessed across the operational phase of the project and are and presented as such in Table 7 below.

Table 7: National and regional economy

Site	Status	Extent	Magnitude	Duration	Probability	Significance
Operational Phase						
A1	Positive	National	Medium	Long term	Almost certain	2
A2	Positive	National	Medium	Long term	Almost certain	2
A3	Positive	National	Medium	Long term	Almost certain	2

7.3. SMME opportunities

Description of impact: Opportunities for Small Medium and Micro Enterprise (SMMEs) will possibly occur during both the construction and operational phases of the project.

There is a possibility of a limited number of opportunities for small businesses during both the construction and operational phases of the project. These opportunities will be both directly and indirectly associated with the project with a number being related to the upgrading of the national grid.

Mitigation objective: To optimise the benefit that the project may have for SMMEs.

Optimisation measures:

- Establish a local SMME recruitment preference policy;
- Implement a monitoring system to ensure that the local SMME recruitment preference policy is followed.

The impact on SMME opportunities is assessed and presented in Table 8 below.

Table 8: SMME opportunities

Site	Status	Extent	Magnitude	Duration	Probability	Significance
Construction Phase						
A1	Positive	Local	Medium	Short term	Almost certain	2
A2	Positive	Local	Medium	Short term	Almost certain	2
A3	Positive	Local	Medium	Short term	Almost certain	2
Operational Phase						
A1	Positive	Local	Low	Medium term	Almost certain	1
A2	Positive	Local	Low	Medium term	Almost certain	1
A3	Positive	Local	Low	Medium term	Almost certain	1

7.4. Crime and security

Description of impact: The risk of criminal activity as a result of an influx of workers and increased activities during construction and operation.

The possibility exists that, during the construction phase of the project, an opportunistic criminal element may take advantage of increased activities in some areas around the construction site. During construction workers will be accommodated in construction camps

with these construction camps being situated on land obtained, on a temporary basis, by means of agreement with landowners.

During the operational period maintenance and repair work will be sporadic in nature, only occurring on average two to three times a year. Consequently, the opportunity for criminal activities will be somewhat limited as the project stabilizes and moves into the operational phase.

Mitigation objective: To reduce the risk of criminal activity associated with the project.

Mitigation measures:

- Where appropriate establish liaison structures with local police and communities to monitor changes during the construction phase;
- Workers should be provided with identity cards and should wear identifiable clothing at all times;
- Keep landowners well informed of movements in and around their properties;
- Liaise with landowners prior to entering their property.

The impact of crime and security is assessed and presented in Table 9 below.

Table 9: Crime and security

Site	Status	Extent	Magnitude	Duration	Probability	Significance
Construction Phase						
A1	Negative	Local	High	Short term	Moderate	2
A2	Negative	Local	High	Short term	Moderate	2
A3	Negative	Local	High	Short term	Moderate	2
Operational Phase						
A1	Negative	Local	Low	Long term	Likely	2
A2	Negative	Local	Low	Long term	Likely	2
A3	Negative	Local	Low	Long term	Likely	2

7.5. Dust exposure

Description of impact: Airborne dust particles generated as a result of construction activities and vehicle traffic during construction and maintenance.

Predicted off-site dust fallout is likely to be highest during construction and minimal over the operational period. Apart from this there are no high population concentrations in the

vicinity of any of the alternative sites and consequently the impact of exposure to dust particles will be limited.

Mitigation objective: To reduce the risk of the public and workers exposure to dust particles.

Mitigation measures:

- Air quality must be regularly monitored and reported on throughout the construction phase;
- Appropriate dust suppression measures must, at all times, be used on the construction site and the access routes used by construction vehicles;
- Targets must be set for the management of air quality during construction;

The impact of exposure to dust is assessed and presented in Table 10 below.

Table 10: Dust exposure

Site	Status	Extent	Magnitude	Duration	Probability	Significance
Construction Phase						
A1	Negative	Local	Medium	Short term	Moderate	2
A2	Negative	Local	Medium	Short term	Moderate	2
A3	Negative	Local	Medium	Short term	Moderate	2
Operational Phase						
A1	Negative	Local	Low	Long term	Moderate	2
A2	Negative	Local	Low	Long term	Moderate	2
A3	Negative	Local	Low	Long term	Moderate	2

7.6. Exposure to electromagnetic fields

Description of impact: The extent that the project is likely to expose communities living and working within the vicinity of the substations and transmission lines to electromagnetic fields.

Electromagnetic fields (EMFs) are associated with the operational, rather than construction phase of the project. It is important to note that although the effects of EMFs are addressed at the social level here, the scientific assessment of such health issues are beyond the scope of the specialisation of this study. Consequently, at the social level, health issues are dealt with in terms of public perceptions amongst the affected communities rather than on a scientific basis. The issue of health risks associated with the impact of electromagnetic

fields (EMFs) on communities living within close proximity of transmission lines and electrical substations and on animals is, and remains, a controversial and well documented issue (Wartenberg, 1993; UK Childhood Cancer Study Investigators, 2000; Draper, et al., 2005; Wood, 2006; Copes & Barn, 2008; Electric Power Research Institute, 2009; Huss, et al., 2009; Scientific Committee on Emerging and Newly Identified Health Risks, 2009; Sidaway, 2009). This has led to a high degree of concern amongst many people regarding the following issues.

- The risk of childhood leukaemia;
- The risk of breast cancer particularly amongst women, but should not be restricted to women only;
- A link between Alzheimer's Disease and EMFs;
- The effect of EMFs on animals, particularly the rate and quality of production amongst dairy cattle and poultry but not restricted to only dairy herds and poultry;
- The devaluation of property within close proximity of power lines and electrical substations.

Although it is difficult to establish the real dangers of exposure to EMFs, what is clear is that people at least perceive this as a risk to health and that in turn this may also cause secondary health risks brought about due to elevated stress levels.

Although the alternative sites are situated in different areas it is likely that the health risk across each site will be somewhat similar. In this sense none of the alternatives are associated with high density residential areas, nor are they within close proximity of public facilities such as schools hospitals or clinics. Consequently the health risk associated with EMFs is likely to be limited and is assessed as such in Table 11 below.

Table 11: Exposure to electromagnetic fields

Site	Status	Extent	Magnitude	Duration	Probability	Significance
			Operational Phase			
A1	Negative	Local	Medium	Long term	Moderate	2
A2	Negative	Local	Medium	Long term	Moderate	2
A3	Negative	Local	Medium	Long term	Moderate	2

7.7. Fire risk

Description of impact: Increase in fire risk as a result of construction and maintenance activities.

There may be some increase in the risk of veld fires as a result of construction activities. This is as a result of workers smoking and cooking food within the vicinity of the construction sites. Although the risk may be somewhat less during the operational phase of the project, it would still exist to some degree during maintenance and repair activities.

Mitigation objective: To reduce fire risks that may be created through the project.

Mitigation measures:

- Strategically placed emergency access points along servitude at times when access is restricted to ensure that landowners and emergency services are able to respond to any outbreak of a fire.
- Ensure that both construction and maintenance personnel are made aware of the risks and dangers of veld fires and that, at all times, they behave in a manner to reduce the risk of fire.
- Ensure close co-operation between landowners and construction and maintenance teams to ensure an effective fire management strategy.

The impact of fire risk is assessed and presented in Table 12 below.

Table 12: Fire risk

Site	Status	Extent	Magnitude	Duration	Probability	Significance
Construction Phase						
A1	Negative	Local	Medium	Short term	Almost certain	2
A2	Negative	Local	Medium	Short term	Almost certain	2
A3	Negative	Local	Medium	Short term	Almost certain	2
Operational Phase						
A1	Negative	Local	Medium	Long term	Moderate	2
A2	Negative	Local	Medium	Long term	Moderate	2
A3	Negative	Local	Medium	Long term	Moderate	2

7.8. Social instability

Description of impact: The effect that an influx of job seekers and workers may have on existing family and social structures and networks in the area.

An increase of workers and job seekers can have a number of negative effects for host communities regarding;

- An increase in prostitution;
- Unplanned and unwanted pregnancies;
- An increase in alcohol and drug related incidents;
- Pressure on local services, including housing, clinics, schools, water supplies;
- An increase in local prices and the cost of living;
- Tension and conflict within the community as well as an effect on family networks and relationships and
- Increased competition for available jobs and resources.

It is unlikely that the project will result in a significant increase in job opportunities in the area. As a consequence it is most unlikely that it will lead to a significant influx of workers and job seekers coming into the area. A number of mining houses such as African Rainbow Minerals, Assmang, Samancor and Xstrata are all active in the region with the Xstrata Lion Ferrochrome Smelter alone attracting 2,800 contractors to the area at its peak and creating 1,000 job by 2012 (Merafe Resources, 2011). During the construction phase workers will be accommodated in construction.

Mitigation objective: To reduce the effect that an influx of workers and job seekers may have on existing family networks and social structures.

Mitigation measures:

- Maintain communication channels between the contractor and local community structures in an effort to maximise the employment of local labour;
- Make condoms readily accessible to workers;
- Liaise with the South African Police Services and community structures to ensure that the workforce is controlled;
- Where practical, workers from other area should be provided with adequate on-site temporary accommodation and amenities;

- Dismantle and remove all temporary accommodation on completion of work to prevent the development of informal settlements

The impact on social instability across the site is assessed and presented in Table 13 below.

Table 13: Social instability

Site	Status	Extent	Magnitude	Duration	Probability	Significance
Construction Phase						
A1	Negative	Local	Medium	Short term	Moderate	2
A2	Negative	Local	Medium	Short term	Moderate	2
A3	Negative	Local	Medium	Short term	Moderate	2
Operational Phase						
A1	Negative	Local	Low	Medium term	Moderate	1
A2	Negative	Local	Low	Medium term	Moderate	1
A3	Negative	Local	Low	Medium term	Moderate	1

7.9. STDs, HIV and AIDS risk

Description of impact: The risk of STDs, HIV and AIDS infections due to an influx of workers and work seekers during construction.

The prevalence of HIV in Limpopo is 16.3% which is lower than its neighbouring provinces of Gauteng at 18.8% and Mpumalanga at 23.6% (Shisana, et al., 2014, p. 46). In respect of the districts affected by the project the HIV prevalence rate ranges between 6 and 12% with the Greater Sekhukune together with Capricorn having a rate of between 6 and 9% (Shisana, et al., 2014, p. 48). It is therefore possible that an influx of contract workers from these areas could pose a risk to the HIV status of the province, particularly when this is considered against the fact that the area has a high level of poverty. Prostitution often follows contract workers due to there being a source of income. However, what is a limiting factor is that the contract workforce will not be that large and some labour will be sourced locally.

Mitigation objective: To reduce the risk of the spread of STDs, HIV and AIDS.

Mitigation measures:

- The contractor/operator should, in consultation with local HIV/AIDS organisations and government structures, design and implement an STD, HIV and AIDS

awareness and prevention campaign for employees. This campaign should use various common practice methodologies in order to ensure social and cultural sensitivity;

- The contractor/operator should make STD, HIV and AIDS awareness and prevention programmes a condition of contract for all suppliers and sub-contractors;
- The contractor/operator should provide an adequate supply of free condoms to all workers;
- Condoms should be located in the bathrooms and other communal areas on the construction site and at the construction camps;
- If feasible, a voluntary counselling and testing programme should be introduced during the construction phase and continued during operations. This should be undertaken in conjunction with the existing VCT programmes within the region.

During the operational phase:

- The operator should, in association with HIV/AIDS organisations and government structures, implement an STD, HIV and AIDS awareness and prevention campaign directed at employees.

The impact of STDs, HIV and AIDS across the site is assessed and presented in Table 14 below.

Table 14: STDs, HIV and AIDS

Site	Status	Extent	Magnitude	Duration	Probability	Significance
			Construction Phase			
A1	Negative	Local	Medium	Short term	Likely	2
A2	Negative	Local	Medium	Short term	Likely	2
A3	Negative	Local	Medium	Short term	Likely	2
			Operational Phase			
A1	Negative	Local	Low	Medium term	Moderate	1
A2	Negative	Local	Low	Medium term	Moderate	1
A3	Negative	Local	Low	Medium term	Moderate	1

7.10. Risk of road traffic incidents

Description of impact: Risk of road crashes due to increased traffic volumes and the delivery of heavy equipment.

There may be some increase in the risk of road crashes as a result of construction activities. This is as a result of heavy vehicles delivering equipment to the area. Although the risk may be somewhat less during the operational phase it would still exist to some degree during maintenance and repair activities.

Mitigation objective: To reduce the risks of road traffic incidents that may be related to the project.

Mitigation measures:

- Coordinate the delivery of heavy equipment to coincide with quieter traffic periods.
- Ensure close co-operation between traffic authorities and construction and maintenance teams to reduce the risk of traffic incidents.

The impact of road traffic incidents is assessed and presented in Table 15 below.

Table 15: Risk of road traffic incidents

Site	Status	Extent	Magnitude	Duration	Probability	Significance
Construction Phase						
A1	Negative	Local	Medium	Short term	Moderate	2
A2	Negative	Local	Medium	Short term	Moderate	2
A3	Negative	Local	Medium	Short term	Moderate	2
Operational Phase						
A1	Negative	Local	Medium	Long term	Likely	1
A2	Negative	Local	Medium	Long term	Likely	1
A3	Negative	Local	Medium	Long term	Likely	1

7.11. Access across site

Description of impact: During both construction and operation it is likely that the substation and transmission lines will result in restriction of access across sections of the servitude.

This impact will essentially be associated with the construction phase of the project and in this sense is likely to be temporary in nature. The intensity of this impact will depend largely on the construction activity being undertaken at the time. For instance during excavation and foundation work, access will be more confined than during the tower assembly and stringing process, as this is likely to stretch across sections exceeding 1 km. Access across the site during the construction of the substation may also be more restrictive as will entrance into the vicinity of construction camps.

Disruption of access across the site is not entirely restricted to the construction phase of the project as disruption is likely to occur during the operational phase, particularly when maintenance and repair work is being carried out. This is, however, only likely to occur on sporadic occasions and for a relatively short period at a time thus limiting the impact it may have on the public.

Mitigation objective: To limit disruption of access across the selected servitude route.

Mitigation measures:

- Provide strategically distributed crossing points to secure existing access routes currently used by the public;
- Consult with property owners, local authorities and communities to ensure that all affected parties are informed of the timing and extent of any disruptions;

The impact on access across the site is assessed and presented in Table 16 below.

Table 16: Access across site

Site	Status	Extent	Magnitude	Duration	Probability	Significance
Construction Phase						
A1	Negative	Local	Medium	Short term	Moderate	2
A2	Negative	Local	Medium	Short term	Moderate	2
A3	Negative	Local	Medium	Short term	Moderate	2
Operational Phase						
A1	Negative	Local	Medium	Long term	Likely	1
A2	Negative	Local	Medium	Long term	Likely	1
A3	Negative	Local	Medium	Long term	Likely	1

7.12. Disruption of services and infrastructure

Description of impact: Interfering with and/or disrupting service infrastructure and provision in the vicinity of the substation and servitudes.

There is some risk that construction activities could result in damage to or disruption of existing services such as electrical transmission lines, roads, water and sewerage facilities.

Mitigation objective: To reduce any negative effect the power line may have on existing infrastructure.

Mitigation measures:

- Liaise with all relevant service providers such as the district and local municipalities, South African National Roads Agency Limited (SANRAL) and the water authorities in the area to ensure that any disruption to existing infrastructure is limited.
- Liaise with property owners to ensure that existing infrastructure is recorded and any damage repaired or compensated for;

The impact on service and infrastructure across the site is assessed and presented in Table 17 below.

Table 17: Disruption of services and infrastructure

Site	Status	Extent	Magnitude	Duration	Probability	Significance
Construction Phase						
A1	Negative	Local	Medium	Short term	Moderate	2
A2	Negative	Local	Medium	Short term	Moderate	2
A3	Negative	Local	Medium	Short term	Moderate	2
Operational Phase						
A1	Negative	Local	Medium	Long term	Likely	1
A2	Negative	Local	Medium	Long term	Likely	1
A3	Negative	Local	Medium	Long term	Likely	1

7.13. Fencing

Description of impact: Damage to existing fencing during construction and/or maintenance operations and the provision of adequate fencing around construction sites.

Damage that may occur to fencing is of specific concern to game farmers as they need to ensure that their farms are secured at all times to prevent any loss of game. In addition to this the required fence structures must conform to particular standards resulting in repairs being expensive to undertake. For the safety of both people and animals it is also important to ensure that construction sites are properly fenced off during the construction phase

Mitigation objective: To reinstate any damage to existing fencing and to secure the construction site.

Mitigation measures:

During construction;

- Fence the construction site to prevent access;
- Inspect fencing on a weekly basis and ensure it is properly maintained by the contactor until completion of construction;
- Adequately and promptly repair damage caused to fencing by contractors to an acceptable standard.

During the operation;

- Adequately and promptly repair damaged caused to fencing during maintenance and repair work to an acceptable standard.

The impact on service and infrastructure across the site is assessed and presented in Table 18 below

Table 18: Fencing

Site	Status	Extent	Magnitude	Duration	Probability	Significance
Construction Phase						
A1	Negative	Local	Medium	Short term	Moderate	2
A2	Negative	Local	Medium	Short term	Moderate	2
A3	Negative	Local	Medium	Short term	Moderate	2
Operational Phase						
A1	Negative	Local	Medium	Long term	Likely	1
A2	Negative	Local	Medium	Long term	Likely	1
A3	Negative	Local	Medium	Long term	Likely	1

7.14. Sense of place

Impact description: Sense of place is a social phenomenon encompassing a wide range of human experiences including the natural, cultural and social, on which basis individual perceptions of an environment are formed (Tuan, 1980; Blake, 2002; Derr, 2002; Stedman, 2003).

Regarding sense of place, as there are a number of mines as well as the Xtrata smelter in the region, the area takes on somewhat of a mixed rural and industrialised character. Although a heritage site has been identified at latitude 24°54'53.04"S and longitude 30°5'15.51"E, which is situated between the loop in and loop out lines associated with Alternative 1 these lines do not directly interfere with this site. Probably the most intrusive aspect of the project on the sense of place is associated with the visibility of the project, particularly the transmission lines that will stretch across the landscape the longest, associated with Alternative 3, is 3.72 km.

Mitigation objective: To limit the negative impact that the project may have on the environment and to retain the sense of place as far as possible.

Mitigation measures:

- Consult with affected communities in an effort to identify and address issues relating to the visual impact and sense of place;
- Reinstate the natural environment as swiftly as possible;

The impact on disruption of sense of place across the site is assessed and presented in Table 19 below.

Table 19: Disruption of sense of place

Site	Status	Extent	Magnitude	Duration	Probability	Significance
Operational Phase						
A1	Negative	Local	Medium	Long term	Almost certain	2
A2	Negative	Local	Medium	Long term	Almost certain	2
A3	Negative	Local	Medium	Long term	Almost certain	2

Having assessed the impacts identified on a social basis in relation to the project these alternatives will now be compared.

7.15. Assessment of alternatives

On a social basis there is no obvious compelling reason to choose any of the alternatives over any other. Notwithstanding this, however, Alternative 1 emerges as the socially preferred option as it is relatively close to an existing substation and there are a number of mine tailings facilities in the area. Consequently the area takes on an industrialised brownfields character which is less likely to be spoiled through the construction of power lines than would a more pristine environment might.

8. Decommissioning phase

It is not anticipated that the Senakangwedi Substations and associated transmission lines will be decommissioned in the medium term which makes it difficult to assess the situation over a fairly long time span. Nevertheless, in the event of such an occurrence decommissioning plans with appropriate mitigation measures will need to be developed based on the social environment as it exists at that point in time.

9. Do Nothing Alternative

If the project was not to proceed the impacts associated with the project, both positive and negative, will not occur and there will be some loss of economic opportunities for the provincial, district and local economies. It is likely that the negative impacts associated with the project can be successfully mitigated and that, on a social level, the project has a number of social benefits at a national level that would be lost if the project was not to proceed as described.

Description of impact: To not construct the substation and transmission lines leaving the status quo in place.

If the project did not proceed then;

- All the impacts discussed above would be irrelevant and the status quo would remain in place;
- The national electricity supply grid would be compromised in that it would not be possible to supply any additional electricity through the existing transmission network;
- Eventually there would be insufficient electricity to meet the demand of Eskom's customers in the area which would lead to the interruption of supply to certain areas resulting in load shedding;
- The dependability and quality of supply would be compromised resulting in serious regional and possibly national economic consequences.

The impact of not proceeding with the project is assessed and presented in Table 20 below.

Table 20: Do nothing alternative

Status	Extent	Magnitude	Duration	Probability	Significance
Negative	National	High	Long-term	Almost certain	3

10.Conclusion

The Limpopo economy relies heavily on agricultural and, to a lesser degree, on mineral resources. With a number of new ventures being planned by Limpopo Province and the Department of Trade and Industries (Gabara, 2013; Masondo, 2013) it is important that the security of power supply is retained in the area. In this regard the project is necessary to ensure the economic growth of the area.

Notwithstanding this, however, it is also important to involve the community in the planning process and to use local labour as far as is possible. Where relevant, landowners must be consulted with regard to the placing of pylons and access to their properties during construction and maintenance.

The erection of construction camps must be done in consultation with local communities, land owners and ward councillors. A protocol should be developed in consultation with local communities to guide the expectations of local communities with regard to the behaviour of construction workers and to ensure that any transgressions in terms of these expectations are swiftly and constructively addressed. In this regard it is important to recognise the role of the Traditional Authority in the area.

11.References

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