ENVIRONMENTAL IMPACT ASSESSMENT
FINAL ENVIRONMENTAL IMPACT REPORT

PROPOSED CONSTRUCTION OF A 20MVA SUBSTATION, 132KV LOOP IN LINE AND A 22kV OVERHEAD POWERLINE - SCHMIDTSDRIFT, NORTHERN CAPE

PREPARED FOR:

Eskom Distribution NWR
Land Development
P. O. Box 356
Bloemfontein
9300

PREPARED BY:

The Environmental Partnership
P O Box 945
Cape Town
8000

October 2009

Department of Environmental Affairs Reference number:
12/12/20/1350

THE ENVIRONMENTAL PARTNERSHIP

P O Box 945
CAPE TOWN 8000
Tel: 021-4220999
Fax: 021-4220998

56 Shortmarket Street (3rd Floor)
CAPE TOWN
E-mail: en*viropart@icon.co.za*
www.enviropartnership.co.za

EXECUTIVE SUMMARY

This report serves as the documentation in support of an assessment level of study forming part of the Environmental Impact Assessment (EIA) process being carried for the proposed construction of a 20MVA substation and associated infrastructure in Schmidtsdrift, Northern Cape.

The Schmidtsdrift area in the Northern Cape is a steadily growing area with its primary expansion in diamond mining and agricultural activities including livestock, game farming and irrigated cropping. This continued growth in the Schmidtsdrift area has resulted in an increasing demand for additional electricity supply. In order to improve the current supply and distribution of electricity as well as accommodate future economic development that may occur in the area, additional infrastructure is required.

It is therefore the intention of Eskom Pty (Ltd), the proponent, to construct additional services which include a 20MVA substation and associated infrastructure in the Schmidtsdrift area, Northern Cape. The proposed development will facilitate the future load growth and economic development within the area. It will assist in providing improved efficiency, reliability and quality of supply to current consumers and reduce the technical losses experienced due to short reticulation lines, thus reducing fault levels.

The EIA therefore proposes to assess a 1ha site for the proposed substation, associated 22kV route alignment alternatives and a 132kV loop-in line. The proposed substation site is located approximately 71 kilometres west of Kimberly and 53 kilometres north-east of Douglas. The proposed development will cross Erf 248. The property landowner is the Schmidtsdrift Property Communal Association. The development falls in the jurisdiction of the Siyancuma Local Municipality in the Northern Cape. The study area is predominantly situated in the Savanna Biome.

The Environmental Partnership is commissioned by Eskom Pty (Ltd) to undertake the Environmental Impact Assessment, with public participation, to ensure that decision-makers are properly informed and to comply with the necessary legislation.

The proposed project includes the following activities:

- Construction of a 20MVA substation with an area of approximately 10 000m² (Figure 4).
- Construction of a 132kV loop-in line intended to connect the substation to the existing electricity network (Figures 4 & 5)
- Construction of a 22kV overhead powerlines (Figure 6).

Two site alternatives and five associated route alignments were initially formulated and are documented in the Scoping Report. Subsequent to the scoping phase of the EIA, Eskom undertook investigations to determine whether these alternatives would be feasible from a technical perspective, in terms of radio coverage and supporting networks, the following was determined.

1. Radio signals strength

Site alternative 1 was found to have stronger radio signal strength than site alternative 2 and therefore the visibility of the substation to the regional control centre would be better for site alternative 1.

2. Proximity to existing 22kV feeders

Currently the 22kV feeders in the surrounding area have no more spare power supply capacity. The new substation will thus allow reticulation lines to be built and connected to the existing 22kV feeders and would provide increased capacity for power supply. Site alternative 1 is nearer to the existing feeders than site alternative 2; therefore site alternative 1 is a more practical option from this perspective.

It is for these technical reasons that site alternative 2 and associated route alignment alternatives was not carried forward into the assessment phase of this EIA. Thus the alternatives being considered relate to the various route alignments associated with the 20MVA substation called alternative 1. Two route alignment alternatives and the 'Do-Nothing' option associated with this site are assessed.

The EIA is being undertaken as per Government Notice (GN) 386 and GN 387 of the National Environmental Management Act [NEMA] (107 of 1998), per GN 386 and 387 of 21 April 2006 as amended. The GN contains schedules of activities that may have a substantial detrimental effect on the environment and will require an EIA. The nature of this proposed development includes activities listed in both GNs. These activities are:

GN 387:

- *The transmission and distribution of above ground electricity of 120 kilovolts or more.*

The "Do Nothing Option" (see Figure 2) implies that no substations and overhead powerline lines will be constructed. This scenario has implications for future growth in the area.

Public participation is an essential component of the Environmental Impact Assessment process and is used to introduce the proposed development to the public. This process was undertaken through a public consultation process which included:

- the publishing of media notices in a local newspaper;
- informing councillors of the relevant wards of the proposed development;

- informing landowners, stakeholder and organs of state of the proposed development;
- erecting site notices on the perimeter of the site;
- the distribution of Background Information Documents (BIDs) by means of a mail;
- BID were also made available on request;
- focus meetings held with I&APs , Stakeholders (Municipality) and Organs of State,
- the distribution of the Draft Scoping Report and Information Sheet 2 for comment, and
- the distribution of the Draft Environmental Impact Assessment Report and Information Sheet 3 for comment.

A number of potential environmental concerns were identified by *The Environmental Partnership* and interested and affected parties. Following are the groups of potential issues/impacts that have been captured through the scoping process:

<u>Evaluated and assessed impacts</u>

1 Botanical Impacts
2 Avifaunal Impacts
3 Visual Impact
4 Socio- Economic Impacts
5 Future land use planning
6 Potential Health and Fire Impacts resulting from Malfunctioning of the substation and powerlines
7 Compatibility with the surrounding area
8 Construction Disturbances

<u>Screened impacts</u>

4 River Impacts
3 Geological Impacts
5 Heritage Impacts

In order to summarise the assessment of impacts, a summary table is provided below. This table is intended to assist in the decision-making process. The issues in the table below were assessed and evaluated.

Summary of Significance ratings with and without mitigation (Mtg: Mitigation, N/A: not applicable)

(Blue- low negative significance, yellow - Medium to low negative, orange – medium negative, Brown-medium positive, Green - High positive significance)

IDENTIFIED ISSUE	Substation Site		Route Alignment Alternative 1a		Route Alignment Alternative 1b		No-Go	
	Without mtg	With mtg	Without mtg	With mtg	Without mtg	With mtg	Without mtg	With mtg
Botanical	**Medium to low (-)**	**Low (-)**	**Low (-)**	**Low (-)**	**Low (-)**	**Low (-)**	**N/A**	**N/A**
Avifaunal: - Electrocutions	**N/A**	**N/A**	**Medium (-)**	**Low (-)**	**Medium (-)**	**Low (-)**	**N/A**	**N/A**
Avifaunal: Collisions	**N/A**	**N/A**	**Medium (-)**	**Low (-)**	**Medium (-)**	**Low (-)**	**N/A**	**N/A**
Avifaunal: Habitat Destruction	**Low (-)**	**Low (-)**	**Low (-)**	**Low (-)**	**Low (-)**	**Low (-)**	**N/A**	**N/A**
Visual	**Low (-)**	**Low (-)**	**Low (-)**	**Low (-)**	**Low (-)**	**Low (-)**	**N/A**	**N/A**
Social-economic	**High (+)**	**High (+)**	**High (+)**	**High (+)**	**High (+)**	**High (+)**	**Medium (-)**	**Medium (-)**
Future Land-use Planning	**Low (-)**	**Low (-)**	**Medium (-)**	**Medium (-)**	**Low (-)**	**Low (-)**	**Medium (-)**	**Medium (-)**
Fire and health	**Medium (-)**	**Low (-)**	**Medium (-)**	**Low (-)**	**Low (-)**	**Low (-)**	**N/A**	**N/A**
Compatibility with surrounding	**Medium (-)**	**Low (-)**	**Low (-)**	**Low (-)**	**Low (-)**	**Low (-)**	**N/A**	**N/A**
CONSTRUCTION PHASE IMPACTS								
Noise levels	**Low (-)**	**Very Low (-)**	**Low (-)**	**Very Low (-)**	**Low (-)**	**Very Low (-)**	**N/A**	**N/A**
Soil Contamination	**Low (-)**	**Very Low (-)**	**Low (-)**	**Very Low (-)**	**Low (-)**	**Very Low (-)**	**N/A**	**N/A**
Disruption of boundary lines and fences	**Low (-)**	**Very Low (-)**	**Low (-)**	**Very Low (-)**	**Low (-)**	**Very Low (-)**	**N/A**	**N/A**

Way forward

We submit that this Final Environmental Impact Report evaluates and addresses the environmental issues and concerns raised during the scoping phase of the project. The issues and concerns were raised by I&APs, authorities, the project team as well as specialist input.

It is recommended that the proposed construction of a 20MVA substation, 132kV loop-in line and 22kV powerline in the Schmidtsdrift area, Northern Cape be approved. With reference to alternatives that have been designed, it is recommended that route alignment alternative 1b be approved provided that the recommendations and mitigation measures made in Chapter 6 are incorporated.

This Final Environmental Impact Report is being submitted to the regulatory authority, Depart of Environmental Affaires, for a decision. This decision made by the Department of Environmental Affairs will be made known to all registered interested and affected parties and they will be allowed to appeal within a 30day period. If appeals are received by the Minister, they will be addressed and she will grant a new decision which may or may not uphold the appeals that were received.

CONTENTS

9. DIAGRAM, FIGURES AND ANNEXURES **43**

DIAGRAMS

FIGURES

ANNEXURES

ABBREVIATIONS

DEA	Department of Environmental Affairs
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
I&APs	Interested and Affected Parties
BID	Background Information Document
BOSWA	Northern Cape Heritage Authority
IEM	Integrated Environmental Management
NEMA	National Environmental Management Act (107 of 1999)
SADF	South African Defense Force
SANDF	South African National Defense Force
CPAS	Communal Property Association of Schmidtsdrift

GLOSSARY OF TERMS

Alternative	Means a different means of meeting the general purpose and need of a proposed activity. (Guideline 5, June 2006)
Construction	Means the building, erection or expansion of a facility, structure or infrastructure that is necessary for the undertaking of an activity, but excludes any modification, alteration or upgrading of such facility, structure or infrastructure that does not result in a change to the nature of the activity being undertaken or an increase in the production, storage or transportation capacity of that facility, structure or infrastructure;" (R386, 2006).
Environment:	Surroundings within which humans exist and that are made up of: (i) the land, water and atmosphere of the earth; (ii) micro organisms, plant and animal life; (iii) any part or combination of (i) and (ii) and the interrelationships among and between them; and (iv) the physical, chemical, aesthetic and cultural properties and conditions of the foregoing that influence human health and well being
Environmental Impact Assessment (EIA)	A process of collecting, analysing, interpreting, evaluating and communicating data as it pertains to possible impacts (positive and negative) upon the environment due to a development.
Environmental Impact Report (EIR):	The EIR assess and evaluates the impacts which have been identified in the Scoping phase of the EIA. Significance ratings are assigned and mitigation measures are described in this report.
Interested and affected party	refers to: (a) Any person, group of persons or organisation interested in or affected by an activity; and (b) Any organ of state that may have jurisdiction over any aspect of the activity;" (R385, 2006).

Linear activity	Means an activity that is undertaken across several properties and which affects the environment or any aspect of the environment along the course of the activity in different ways, and includes a road, railway line, power line, pipeline or canal" (R385, 2006).
Loop-in Line	this is used to connect the substation to the existing servitudes (see section 4 of this report)
Public participation process	Means a process in which potential interested and affected parties are given an opportunity to comment on, or raise issues relevant to, specific matters."(R385, 2006).
Plan of study for environmental impact assessment	Means a document contemplated in regulation 29(1)(i) which forms part of a scoping report and sets out how an environmental impact assessment must be conducted;"(R385,2006).
Scoping:	The scoping process identifies the issues that are likely to be of most importance during the EIA and eliminates those that are of little concern
Scoping Report:	The Scoping Report describes the proposed project and identifies the possible impacts of the proposed development

1. BACKGROUND AND INTRODUCTION

1.1 BACKGROUND

This report serves as the documentation in support of an assessment level of study forming part of the Environmental Impact Assessment (EIA) process being carried for the proposed construction of a 20MVA substation and associated infrastructure in Schmidtsdrift, Northern Cape (Figure 1).

The proposed project includes the following activities:

- Construction of a 20MVA substation within an area of approximately 10 000m² (Figure 4).
- Construction of a 132kV loop-in line intended to connect the substation to the existing electricity network (Figure 5 & 6)
- Construction of a 22kV overhead powerline (Figure 7).

The Schmidtsdrift area in the Northern Cape is a steadily growing area with its primary expansion in diamond mining and agricultural activities including livestock, game farming and irrigated cropping. This continued growth in the Schmidtsdrift area has resulted in an increasing demand for additional electricity supply. In order to improve the current supply and distribution of electricity as well as accommodate future economic development that may occur in the area, additional infrastructure is required.

It is therefore the intention of Eskom Pty (Ltd), the proponent, to construct additional services which include a 20MVA substation and associated infrastructure in the Schmidtsdrift area, Northern Cape. The proposed development will facilitate the future load growth and economic development within the area. It will assist in providing improved efficiency, reliability and quality of supply to current consumers and reduce the technical losses experienced due to short reticulation lines, thus reducing fault levels.

Two site alternatives and five associated route alignments were initially formulated and are documented in the Scoping Report. Subsequent to the scoping phase of the EIA, Eskom undertook investigations to determine whether these alternatives would be feasible from a technical perspective, in terms of radio coverage and supporting networks, the following was determined.

1. Radio signals strength

Site alternative 1 was found to have stronger radio signal strength than site alternative 2 and therefore the visibility of the substation to the regional control centre would be better for site alternative 1.

2. Proximity to existing 22kV feeders

Currently the 22kV feeders in the surrounding area have no more spare power supply capacity. The new substation will thus allow reticulation lines to be built and connected to the existing 22kV feeders and would provide increased capacity for power supply. Site alternative 1 is nearer to the existing feeders than site alternative 2; therefore site alternative 1 is a more practical option from this perspective.

It is for these technical reasons that site alternative 2 and associated route alignment alternatives will not be carried forward into the assessment phase of this EIA. Thus the alternatives being considered relate to the various route alignments associated with the 20MVA substation called alternative 1. Two route alignment alternatives and the 'Do-Nothing' option associated with this site will be assessed.

The EIA therefore proposes to assess a 1ha site for the proposed substation, associated 22kV route alignment alternatives and a 132kV loop-in line. The proposed substation site is located approximately 71 kilometres west of Kimberly and 53 kilometres north-east of Douglas. The proposed development will cross Erf 248. The property landowner is the Communal Property Association of Schmidtsdrift (CPAS). The development falls in the jurisdiction of the Siyancuma Local Municipality in the Northern Cape. The study area is predominantly situated in the Savanna Biome.

1.2 INTRODUCTION

The Environmental Partnership has been commissioned by Eskom Pty (Ltd) to undertake the EIA for the proposed 20MVA substation and associated infrastructure to be constructed in the Schmidtsdrift area, in the Northern Cape.

The sequence of documents produced thus far for this EIA is the Department of Environmental Affairs (DEA) Application Form; providing the formal application for the project, a Background Information Document (BID), a media notice, a Draft Scoping Report, Final Scoping Report and Draft Environmental Impact Report and this Final Environmental Impact Report. The application was accepted by DEA (see Annexure 1) and the Assessment Phase process which is documented in this report was approved by DEA (see Annexure 8).

1.3 LEGISLATIVE REQUIREMENTS

In order to protect the environment and ensure that this development is undertaken in an environmentally responsible manner, there are two significant pieces of environmental legislation which focus this assessment. They are as follows:

- The Constitution of South Africa (108 of 1996) states that everyone has a right to a non-threatening environment and that reasonable measures should be applied to protect the environment. This protection encompasses preventing pollution and promoting conservation and environmentally sustainable development, while promoting justifiable economic and social development.

- The National Environmental Management Act (107 of 1998) also states that principles of Integrated Environmental Management (IEM) should be adhered to in order to ensure sustainable development. A vital underpinning of the IEM procedure is accountability to the various parties that may be interested in or affected by a proposed development. Public participation in the formulation of development proposals is a requirement of the IEM procedure in terms of the identification of significant environmental impacts (scoping) by Interested and Affected Parties (I&APs). The IEM procedure is designed to ensure that the environmental consequences of development proposals are understood and adequately considered during the conceptual design process, allowing negative aspects to be resolved or mitigated and positive aspects to be enhanced. It is thus a code of practice for ensuring that environmental considerations are fully integrated into all stages of development, by providing a procedural and regulatory mechanism for EIAs.

Government Notice 387 (1 July 2006) of the National Environmental Management Act [NEMA] (107 of 1998), as amended, contains a schedule of activities that may have a substantial detrimental impact on the environment and will require an EIA. The nature of the proposed development includes activities listed in this schedule. These activities are:

Regulation 387:
- *The transmission and distribution of above ground electricity of 120 kilovolts or more.*

This report describes the Assessment Phase of the EIA process and will be submitted to DEA, who have the delegated authority to apply the said Act. According to the NEMA (107 of 1998), construction can only proceed once an environmental approval is granted. This study is therefore in accordance with Government Notice Regulation 385, 386 and 387 of the said Act.

Eskom Pty (Ltd) as the proponent of the project, together with the consulting team responsible for undertaking the study are committed to achieving a net benefit for the environment as a whole, through reconciling the biophysical and socio-economic elements of the environment in the area.

1.4 REPORT STRUCTURE

This report is structured as follows:

Chapter One	*Provides the introduction, legislative requirements and background to the study*
Chapter Two	*Provides the methodology to the study*
Chapter Three	*Describes the study area*
Chapter Four	*Describes the project components*
Chapter Five	*Describes the public participation process*
Chapter Six	*Provides an assessment of the identified issues*
Chapter Seven	*Concludes the report and describes the way forward*

2. THE BRIEF

2.1 TERMS OF REFERENCE

To demonstrate their environmental responsibility, Eskom Pty (Ltd) appointed *The Environmental Partnership* to assess the environmental impacts of the proposed 20MVA substation and associated infrastructure to be located in Schmidtsdrift, Northern Cape. In addition, the appointment is to ensure that the proponent complies with the legislated requirements for the approval of the EIA mentioned in GN 385. In order to undertake a comprehensive EIA, the following key processes will be followed.

- Formulation of the study

Prior to the initiation of the actual study and the public participation process, a commonality of understanding must be achieved with the regulatory authorities and all parties playing a role with regard to the environmental, heritage and planning components of this project. Together with this is the need for agreement on the part of the regulatory authorities regarding the process and method to be adopted in carrying out the EIA.

- Providing input into the formulation of the proposal and alternatives

Input into the proposal and alternatives will be given so as to ensure that biophysical, social, heritage and planning constraints are taken into consideration during proposal formulation and to ensure that reasonable alternatives are presented to the public and taken into the assessment phase.

- Public consultation throughout the EIA process

A public participation programme has been undertaken throughout this study to ensure that I&APs are given an opportunity to participate and to ensure that issues of importance to them are addressed. This is reported in more detail in Chapter 5.

- Scoping (identification of issues)

The scoping process sees the initiation of the study in the eyes of the public and allows for the first iteration in participation, when comments and concerns can be elicited. It is also the stage at which relevant information is gathered, including defining the specialist studies required. To round off this process-driven phase, the truly significant issues will have been clearly defined and the means to better understand them will be in place.

- Assessment and evaluation

This process assesses and evaluates issues that have been identified during the scoping phase. During this phase, specialist reports are analysed and incorporated into the assessment report. Mitigation measures are provided which aims to ameliorate the potential environmental impacts resulting from the development. Additionally, a Construction Environmental Management Plan is developed which provides mitigation measures for impacts associated with construction activities.

- Submission of the documented EIA for decision.

The EIA Report will be submitted to the authorising body, DEA for a decision.

2.2 STUDY APPROACH

The study approach that will be followed is divided into two phases, the project initiation and scoping phase and the assessment phase. The project initiation, scoping phase and assessment phase has been completed to date. The activities associated with these phases are described below.

Project initiation and scoping phase

The following activities have been undertaken to date:

- Communication with the relevant authorities
- Sourcing and analysing of relevant baseline information and site inspections
- Compilation of the DEA application notice for the project and submission of this notice to the DEA to provide them with the initial notification of the project
- Public participation and consultation: The following steps were included in the first iteration of public participation:

    - ✓ Identification of key interested and affected parties (I&APs). These include people who are considered to be most affected by the development and landowners.
    - ✓ Preparation of a Background Information Document (BID) which provided background to the project and information regarding the EIA process. The BID was distributed to identified I&APs as well as members of the community located within proximity to the proposed development. The BID was also made available to the public requesting a copy thereof. The public were allowed to comment for a 30 day period.
    - ✓ Compilation and publishing of a media notice in a local newspaper. A media notice was used to notify the public of the proposed development and the availability of a BID, and to invite the public to comment on the proposed development.

- ✓ Compilation and placing site notices on the proposed development site. Site notices were used to notify the public of the proposed development and the availability of a BID, to invite them to register as I&APS.
- ✓ Addressing the comments received on the BID i.e. comments received during the first iteration of public participation and consultation.

- Compilation of a Draft Scoping Report and the incorporation of the first iteration of public comments into this report
- Distribution of Information Sheet 2 (i.e. summary of the Draft Scoping Report) to the public, distribution of the report to relevant organs of state and placing copies of the report in relevant libraries. The public were allowed to comment for another 30 day period (i.e. second iteration of public participation).
- Addressing comments received on the Draft Scoping Report and the finalisation of the Scoping Report
- Compilation of a Plan of Study for the next phase i.e. assessment phase
- Submission of the Plan of Study and Final Scoping Report to DEA for approval

Assessment phase

- Assessment and evaluation of impacts identified in the scoping phase.
- Commissioning and management of any specialist studies required.
- Compilation of a Draft Environmental Impact Report (DEIR).
- Compilation of a Draft Environmental Management Plan for the construction phase.
- Distribution of Information Sheet 3 (i.e. summary of the Draft DEIR) to the public, distribution of the report to relevant organs of state and placing copies of the report in relevant libraries. The public will be allowed to comment for a 30 day period (i.e. third iteration of public participation)
- Addressing comments received from the public on the DEIR and finalisation of the DEIR
- Submit final EIR to DEA for a Record of Decision (RoD)
- Dissemination of RoD to I&APs

The study approach has been summarised in the process flow chart below:

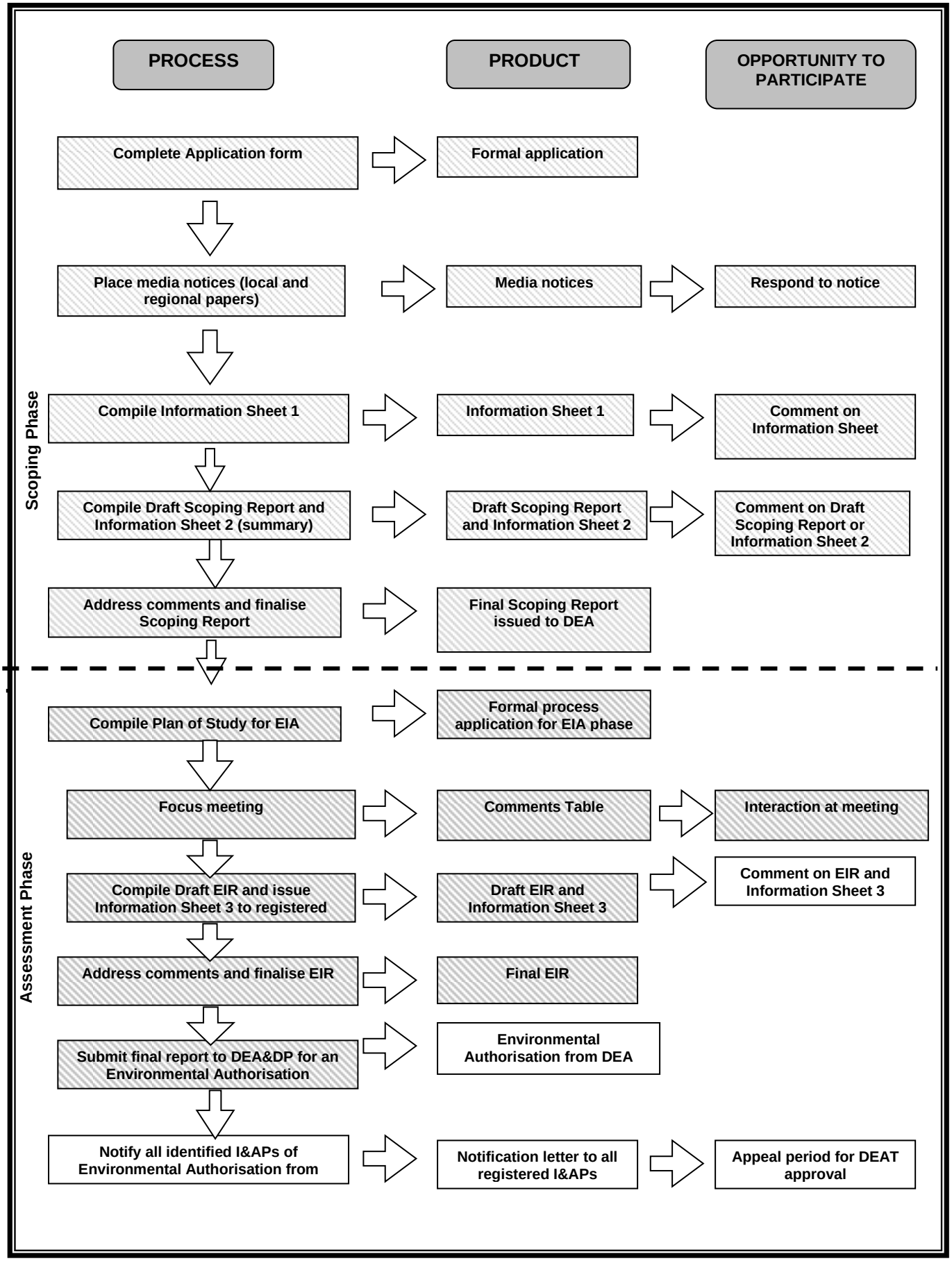

Diagram 1: Process Flow Chart
DEA: Department of Environmental Affairs **I&AP:** Interested and affected party

- **Process completed to date**

- **Process still to be undertaken**

2.3 ASSUMPTIONS AND LIMITATIONS

- All information received from sources contributing to this project is believed to be correct.
- Initially, two site alternatives and five route alignments were investigated, however for technical reasons, site alternative 2 and its associated route alignments were eliminated and thus site selection for the proposed substation site will not form part of this EIA process. However, alternatives with regard to the powerline routes will be assessed and evaluated.

3. STUDY AREA

3.1 GENERAL DESCRIPTION OF THE SITE AND SURROUNDING AREA

The proposed study area and route alignments are located in proximity to the banks of the Vaal River, approximately 71 km west of Kimberly and 53 km north-east of Douglas in Schmidtsdrift, Northern Cape (see Figure 1). The area falls within the jurisdiction of the Siycancuma Local Municipality and the Pixley ka Seme District Municipality.

The project area falls outside the urban edge and within the Savanna Biome. The terrain within the study area is characterised by a combination of flat areas and low hills, with relatively vast tracts of open areas of natural vegetation; predominantly grasslands. The area is predominantly arid and thus the majority of the land is used for livestock farming (cattle, goat and sheep).

The area is sparsely populated with isolated clusters of homesteads scattered in the area. The proposed substation & powerline are within proximity to the Schmidtsdrift informal settlement which abuts the R64 Road to the south and the Vaal River to the east. The study area includes disused buildings and a disused landing strip that once formed part of South African Defence Force (SADF) [which is now known as SANDF] infantry battalion military training base. Other amenities in the area include a newly built primary school (Schmidtsdrift Primary School). The current land use activities in the surrounding area are mining, agriculture, livestock farming (mainly subsistence and partially commercial exploitation).

3.2 SITE LOCATION

The proposed study area is located, along a dirt road, co-ordinates, 28º38’42.47’’S, 23º59’51.84’’E. The site is approximately 71km west of Kimberly, 53 km northeast of Douglas and 21km north of the Schmidtsdrift informal settlement. The Herbert Vaal Farmers powerline lies directly overhead the proposed site, which will enable the proposed infrastructure to connect to this existing infrastructure.

The proposed substation site lies adjacent to the Schmidtsdrift R370 which is currently a dirt road. The site lies approximately 12km north of the Schmidtsdrift informal settlement and approximately 20m southeast of the Ulco-Herbert 132kV line.

3.3 CLIMATE

The climate in this region is classified as arid, with an average annual rainfall below 400mm. Summer day temperatures are extreme in this region often ranging above 40 degrees Celsius during the day. Maximum temperatures in midwinter average 26 degrees Celsius with a minimum average of 7 degrees Celsius. Midsummer maximum temperatures average 30 degrees Celsius and the minimum average is 16 degrees Celsius according to the South African Weather Bureau Service. The table below provides temperature information on monthly average.

Monthly Averages	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
Temp (°c)	22.6	22.1	20.9	18.3	15.1	12.2	12.2	14.4	17.8	19.7	20.9	21.9
Sunshine (hrs)	253	221	241	232	271	261	279	281	277	265	235	254
Rainfall (mm)	82	60	52	33	11	5	3	6	17	43	85	81

3.4 GEOLOGY AND TOPOGRAPHY

[1]The published geological map of the area shows that the site is underlain by dolomite of the Schmidsdrif Formation. [2]The Schmidtsdrift Subgroup represents a transition between the underlying Vryburg Formation and the overlying Campbell Rand Subgroup. The lower part of it (Boomplaas Formation) consists of interlayered dolomite, shale and limestone, while its upper part (Clearwater Formation) consists of dolomite, shale and sandstone layers.

Underlying layer: Vryburg Formation comprises mainly siltstone with subordinate shale; quartzite and andesitic lava.

Overlying layer: Campbell Formation consists mainly of grey dolomite. It is over 200m thick and contains the fossilised remains of some of the oldest life forms on earth. Lead deposits occur in places, and economically important limestone lenses are found near the top.

The topography is flat with irregular plains and less than 1˚ slopes running from east to west. The area is covered with shallow soils of surface limestone layered on shale and quartzite of the Black Reef Formation, and parts are sandy loams or silty or clayey soils

[1] Final Geotechnical investigation Moore Spence Jones (February 2009)

[2] Council for Geoscience,. www.councilforgeoscince.co.za, 2008

3.5 WATER RESOURCES

The major water feature within the study area is the Vaal River. The vegetation associated with riparian habitats is often distinct from that of the surrounding landscape, thus representing a unique habitat for a variety of biota. Although highly mobile, birds often exhibit distinct species assemblages associated with a Riparian habitat in the section of the Vaal River within the study area has been reduced largely due to mining and agricultural activities.

3.6 GEOHYDROLOGY

The site is underlain by a minor aquifer system with least vulnerability status. The expected depth to groundwater is between 10m and 20m below surface level with an average borehole yield of between 0.8l/s and 1.5l/s.

3.7 BOTANICAL

The study area falls within the Eastern Kalahari Bushveld Bioregion of the Savanna Biome. At the local level, including the area along the Vaal River, significant pressure on the vegetation can be noted and levels of transformation are relatively high. The two vegetation units present within the study area are the Schmidtsdrif Thornveld and Ghaap Plateau Vaalbosveld.

Schmidtsdrif Thornveld

The dominant trees of the Schmidtsdrif Thornveld are the black thorn (*Acacia mellifera)* and the umbrella thorn (*Acacia tortilis)*. Shrubs in this vegetation unit include buffalo thorn (*Ziziphus mucronata)* and raisin bush (*Grewia flava)*. Where the vegetation is in good condition, the grass layer and annual herb species are also prominent.

Ghaap Plateau Vaalbosveld

The Ghaap Plateau Vaalbosveld consists of an open tree layer comprising buffalo thorn (*Ziziphus mucronata*), umbrella thorn (*Acacia tortilis)*, karee (*Searsia lancea)* and shepherd's tree *Boscia albitrunca*. The shrub layer of this vegetation unit is dominated by vaalbos (*Tarchonanthus camphorates* and *Acacia mellifera)*.

3.8 CURRENT AVAILABLE SERVICES

A limited range of services are available to the Schmidtsdrift community. These are deemed insufficient by the community. Groundwater is utilsed from 40 boreholes, three of which are in proximity to the settlement and are able to provide long-term potable water. The settlement has recently received electrical infrastructure to supply electricity to homes in the

area, however this is not sufficient for the entire settlement. [3] Sixty percent of the community use pit latrines, with the remainder having access to a rudimentary waterborne sanitation system. With the return of people to Schmidtsdrift, families erected informal corrugated-iron houses.

3.9 SOCIO-ECONOMIC PROFILE

Extracted from *Conquest For Life, The !Xu and Khwe San Community, A Brief Profile of Schmidtsdrift & Schmidtsdrift Community Land Claim, Karin Klienbooi, Published by the Programme for Land and Agrarian Studies, School of Government, University of Western Cape (August 2007),* Publishers unknown

The Schmidtsdrift community is made up of two distinct San tribal groups: the !Xu and the Khwe. Currently there are approximately 5000 people living in the community. A local government sponsored school exists in the community. Currently there are 1200 registered students, although this number is perceived to be much higher. The majority of the population is unemployed and must rely on monthly pensions provided by the government to sustain their livelihood.

The Twsanas have claimed the Schmidtsdrift area as their traditional homeland and consequently a Land Claim Settlement was signed on April 2000 to return the land to its original inhabitants. Five farms, all unregistered state land, of approximately 34,000ha in total, were restored to the Batlhaping community, represented by the Communal Property Association Schmidtsdrift (CPAS), which became the legal custodian. Erf 248 lies within ownership of the Schmidtsdrift Communal Property Association. The claimant community consists of approximately 800 households (identified and verified) of which 200 households are currently residing in Schmidtsdrift.[4] Furthermore, the New Diamond Corporation has indicated that the area is rich in diamond ore, and thus the corporation is interested in forming a relationship with the community to facilitate mining the land.

3.10 LOCAL ECONOMIC FUTURE PLANNING FOR THE SCHMIDTSDRIFT SETTLEMENT

Extract from, Schmidtsdrift Community Land Claim; Published February 2007

The settlement of the Schmidtsdrift claim was preceded by a preplanning phase. In 1995, consultants were appointed to assist the community in meeting its basic needs in terms of local governance, administration and capacity building and infrastructure planning for the

[3] Research Report 34 Schmidtsdrift Community Claim, 2007

[4] Research Report 34 Schmidtsdrift Community Claim, 2007

provision of essential services. The aims of the pre-planning process were set out as follows:

- Facilitate the speedy restitution of the land claim.
- Co-ordinate and oversee the return of the claimants in an organised way.
- Resolve the land need of the San community that was settled in Schmidtsdrift under the SADF.
- Develop a master plan that would set out the provision of infrastructure; land use planning and economic development.

With almost no economic activity on the land it was important to explore which forms of land use would be possible and could potentially create sustainable livelihoods for the families that would return to Schmidtsdrift. The potential income-generation businesses were identified as:

- mining (of diamonds)
- livestock and game farming
- irrigation farming
- small enterprises.

A township settlement planning process identified housing, a school, and electricity and water supply as the main infrastructure and service needs. Apart from the building of the school no tangible settlement development has been implemented to date. However land within the Schmidtsdrift area has been earmarked, by SCPA, for future development this includes housing, agriculture, commercial and industrial development (see Figure 10).

4. PROJECT PROPOSAL AND ALTERNATIVES

Two site alternatives and five associated route alignments were initially formulated and are documented in the Scoping Report. Subsequent to the Scoping the phase of the EIA, Eskom undertook investigations to determine whether these alternatives would be feasible from a technical perspective in terms of radio coverage and supporting networks. The following was determined.

1. Radio signals strength

Site alternative 1 was found to have stronger radio signal strength than site alternative 2 and therefore the visibility of the substation to the regional control centre would be better for site alternative 1.

2. Proximity to existing 22kV feeders

Currently the 22kV feeders in the surrounding area have no more spare power supply capacity. The new substation will thus allow reticulation lines to be built and connected to the existing 22kV feeders and would provide increased capacity for power supply. Site alternative 1 is nearer to the existing feeders than site alternative 2; therefore site alternative 1 is a more practical option from this perspective.

It is for the above technical reasons that proposed site alternative 2 and associated route alignment alternatives will not be carried forward into the assessment phase of this EIA. Site Alternative 1 and the related alternative routes will be assessed and evaluated in this EIA. Two route alignment alternatives and the 'Do-Nothing' option will be assessed.

4.1 PROPOSED ACTIVITIES

The proposed project comprises the following components:

- a 20MVA substation linked to the Ulco Herbert 132kV line,
- a 132kV loop-in line connecting the substation to the existing Ulco Herbert line and
- a 22 kV powerline intended to extend from the substation to connect to the existing Herbert-Vaal Farmers 22kV line.

4.2 20 MVA SUBSTATION

The proposed substation will occupy an area of approximately 100m x 100m (footprint). The substation is an outdoor type and will contain two 10MVA transformers and associated equipment (see Figure 4). The purpose of the substation is to feed the generated electricity from the existing Ulco-Herbert 132kV line to the proposed 22kV powerline.

The proposed substation site will be enclosed with a small stock fence and a diamond mesh fence that will be installed around the substation yard (see Figure 4). The proposed development will be constructed according to the *Guideline for Servitude Widths and Building Restrictions,* see Annexure 9.

4.3 PROPOSED POWERLINES

4.3.1 132kV LOOP-IN LINE

In order to connect the proposed substation to the existing powerline network, a 132kV loop-in line is required between the substation and the existing Ulco-Herbert line. The loop-in line consists of a new 132 kV powerline off the existing Ulco-Herbert powerline, carrying power to the proposed substation (see Figure 6). The loop is closed through a link back to the existing Ulco-Herbert line via a parallel 132 kV line, thus allowing the flow of electricity to continue.

The 132kV loop-in line will extend for approximately 125m between the existing 132kV Ulco-Herbert line and the proposed substation. The 132kV loop-in line specifications and component details are illustrated in Figure 6 of this report. The proposed structures will be erected and spaced according to the *Guideline for Servitude Widths and Building Restrictions,* see Annexure 9.

4.3.2 22kV OVERHEAD POWERLINE

A 22kV powerline is proposed to extend from the new substation, connecting to the existing Herbert-Vaal Farmers 22kV powerline. The structures to be utilised include 11m high, 180mm-199mm top diameter wooden pole structures on the 22kV line and where they cross public roads, 13m poles will be used to ensure sufficient clearance. The Hare conductor will be utilized and span lengths will be limited to 120m due to pole strength (see Figure 7). The proposed structures will be erected and spaced according to the *Guideline for Servitude Widths and Building Restrictions, see Annexure 9*.

4.3.2.1 ALTERNATIVES

Alternatives proposed for the development include two route alignment alternatives for the overhead 22kV powerline (see Figure 3). A description of each alternative is provided below.

4.3.2.1.1 Route Alignment Alternative 1a (see Figure 9)

This route alignment alternative will connect the substation to the existing Herbert-Vaal Farmer powerline. The proposed overhead powerline will exit the substation, running parallel to the southern side of a nearby dirt road in a southeasterly direction for approximately 3.2km until it reaches the intersection of the dirt road and the R370. The line will then run in a southerly direction for approximately 0.5 km. It will then continue running parallel to the dirt road for 5.5 km, crossing the disused SANDF landing strip until it reaches the existing Herbert-Vaal Farmers powerline at the Schmidtsdrift informal settlement. The total length of the proposed line will be approximately 9.2km.

4.3.2.1.2 Route Alignment Alternative 1b (see Figure 9)

This route alignment alternative will connect the substation to the existing Herbert-Vaal Farmers powerline. The proposed overhead powerline will exit the substation, continuing in a northeasterly direction for approximately 0.5 km crossing the nearby dirt road. The line then continues on the northern side of the dirt road in a southeasterly direction for approximately 9 km as it follows the dirt road to join the existing Herbert-Vaal Farmers powerline at the Schmidtsdrift informal settlement. The total length of the proposed line will be approximately 9.5 km.

4.4 THE "DO-NOTHING" OPTION

The "Do Nothing Option" (see Figure 2) implies that no substation and overhead powerline will be constructed. This scenario has implications for future growth in the area.

4.4 TRAFFIC AND ACCESS MANAGEMENT

Traffic is intended to be accommodated on the road (R370) immediately adjacent to the site (see Figure 2 and 3).

5. PUBLIC PARTICIPATION

Public participation forms an integral part of the EIA process and plays a crucial role in the scoping process. To ensure that all issues relevant to the project are identified, public participation is undertaken.

The public participation process was initiated in January 2009 with the placing of a media notice in a local newspaper (see Annexure 2); erection of site notices at the proposed sites (see Figure 11) and the distribution of a BID (see Annexure 3) to landowners and I&APs that have been identified. A copy of the Draft Scoping Report and Information Sheet 2 was distributed to registered I&APs and organs of state for comment. In addition to this, an invitation was sent out to registered I&APs informing them of a focus meeting and site inspections to be undertaken. This focus meeting served to inform I&APs of the development proposal and the process to be followed, to help understand the concerns of the public and to resolve issues of clarity. A copy of the DEIR was distributed to organs of state, stakeholders and the relevant landowners for comment as well as information sheet (Information 3, a summary of the DEIR).

The various methods used to undertake the public participation process are discussed below.

5.1 MEDIA NOTICES

As part of the public participation process, a media notice informing the general public of the proposed development and the environmental process being undertaken was published in a local newspaper, *Die Noordkaap* 23 January 2009 (see Annexure 2). Members of the public were also provided with an opportunity to enlist as I&APs and were informed in the media notice that a BID was available. Contact details of the consultant to whom representations should be made were also provided.

5.2 BACKGROUND INFORMATION DOCUMENT

A BID (see Annexure 3) was compiled which briefly described the background to the project, the proposal in brief; the EIA procedure and the impacts identified to date. An invitation to enlist as an interested and/or affected party was also extended. A locality map indicating the proposed substation site and route alignment alternatives was included in the BID.

Notification of the BID's availability was published in the aforementioned media notice. BIDs were also made available via email to those I&APs who responded to the media notice as well as by means of a mail drop to the residents of the informal settlement (see Figure 12).

In addition, the BID was emailed, faxed and posted to the following key people and groups:

- Affected landowners,
- Local municipality, i.e. Siyancuma Municipality
- Department of Tourism, Environment and Conservation
- Department of Water Affairs and Forestry
- Department of Local Housing
- Wildlife Environment Society of South Africa
- Schmidtsdrift Communal Property Association
- Ward Councillors
- Provincial Heritage Resource Agency Northern Cape (Boswa)

5.3 MEETING WITH STAKEHOLDERS

Identified stakeholders such as the affected landowners and local authorities were contacted and consulted as part of the project initiation phase. This took the form of various focus group meetings which was held on 1 and 2 July 2009.

Focus meetings where held with I&APs, they include:

- The Communal Property Association of Schmidtsdrift (landowner)
- The local municipality, Siyancuma Municipality
- Department of Water Affairs and Forestry (DWAF), Northern Cape; and the
- Provincial Department of Tourism, Conservation and Environment.

The meetings provided an opportunity for I&APs to seek clarity on the proposed development and to undertake site inspections of the proposed substation site. The meeting with the SCPA and the local municipal representatives was held at the SCPA offices, see attendance registers attached. Issues raised were captured and incorporated into the comments and response table (Annexure 5).

A site inspection was undertaken with Mr. Lebohang, a representative from DWAF, this was held on the 2 July 2009. The aim of the site inspection was to establish whether any surface water or groundwater resources would be affected by the proposed development. A comment is being sought from DWAF to confirm their findings.

A meeting was held with the local Provincial Environmental Department: the Department of Tourism, Conservation and Environment to discuss any issues of clarity. The department representative indicated that the department would comment on this Draft EIR.

5.4 ORGANS OF STATE

As a result of the issues identified to date, the following organs of state are considered key stakeholders.

- Local municipality, i.e. Siyancuma Municipality,
- Department of Tourism, Environment and Conservation,
- Department of Water Affairs and Forestry,
- Department of Local Housing,
- Wildlife Environment Society of South Africa and
- Provincial Heritage Resource Agency Northern Cape (Boswa)

5.5 DISTRIBUTION OF THE DRAFT SCOPING REPORT

Registered I&APs were notified of the availability of the Draft Scoping Report and were sent a copy of the executive summary of the report. To make the report available for public comment, copies of the report will be placed at the following libraries and locations:

- The office of the Schmidtsdrift Communal Property Association
- Douglas Library, Charl Cilliers Street, Douglas, Northern Cape
- Kimberly Public Library, 62 Chapel Street, Kimberly, Northern Cape

5.6 DISTRIBUTION OF THE DRAFT ENVIRONMENTAL IMPACT REPORT

As part of the Assessment phase, information sheets (Information Sheet 3) were distributed to all registered I&APs. The information sheet is a summary of the Draft Environmental Impact Report. In addition to this, the information sheet notified registered I&APs of the availability of the report in libraries in the vicinity as well as on site.

Organs of state such as the Provincial Department of Tourism, Environment, and Conservation, Department of Water Affairs and Forestry and Wildlife Environment Society of South Africa; the Local Municipality and the Communal Property Association of Schmidtsdrift (landowners) were sent copies of the Draft Environmental Impact Report for comment.

5.7 COMMENTS RECEIVED

Details of the feedback received from I&APs and organs of state have been captured in a Comments and Response Table (see Table 5). This includes comments captured from the focus meeting, Draft Scoping Report and via other forms of communication. A response to comments and issues raised is also provided, see Annexure 7.

6. DESCRIPTION OF POTENTIAL IMPACTS AND POSSIBLE MITIGATION MEASURES

This chapter provides a detailed description of the potential impacts which may occur as a result of the implementation of the proposed project described in Chapter 4. These impacts have been subject to assessment and evaluation and include potential biophysical, social and economic impacts which may arise during the operational phase of the proposed activities (i.e. long-term impacts) as well as potential construction related impacts (i.e. short-term).

ASSESSMENT METHODOLOGY

An examination of each impact in terms of its extent, duration, intensity, probability, significance and mitigatory potential follows:

- Extent of impact being either:
  - Immediate (the site and immediate surrounds)
  - Local (adjacent areas)
  - Regional (Northern Cape)
  - National (Country wide)
  - International
- Duration of impact being either:
  - Short term (0-5 years)
  - Medium term (5-15 years)
  - Long term (operational life of the development)
- Intensity of impact being either:
  - Low (natural and/ or social functions and/ or processes are *slightly* altered)
  - Medium (natural and/ or social functions and/ or processes are *notably* altered)
  - High (natural and/ or social functions and/ or processes are *substantially* altered)
- Probability of impact being either:
  - Low probability (possibility of impact occurring is low)
  - Probable (where there is a distinct possibility that it will occur)
  - Highly probable (where the impact is most likely to occur)
  - Definite (where the impact will occur)

- Significance of impact:
  - Low (natural and/ or social functions and/ or processes are *slightly* altered)
  - Medium (natural and/ or social functions and/ or processes are *notably* altered)
  - High (natural and/ or social functions and/ or processes are *substantially* altered)

6.1 SCREENED IMPACTS

The following impacts were previously outlined in the Scoping Report; these impacts are however no longer applicable as they are associated with the substation Site Alternative 2 and associated powerline route alignments. These have subsequently been withdrawn from the proposal.

6.1.1 RIVER IMPACTS

River impacts are applicable to the proposed route alignments associated with substation Site Alternative 2. As these alternatives no longer form part of the project proposal, river impacts will not be assessed in this report. For the proposed Site Alternative 1 and associated route alignments, the closest distance to the Vaal River is approximately 700m, and therefore there are no river impacts to be assessed.

6.1.2 GEOLOGY IMPACTS

A Geotechnical investigation was undertaken to determine if the proposed site is suitable for the construction of a substation. According to the findings of the study, the site is considered suitable for the development of a substation. However recommendations that should be considered during the construction phase are highlighted in the EMP, see Annexure 14.

6.1.3 HERITAGE IMPACTS

With reference to Section 3.8 of this report, the study area forms part of a historical land claim settlement. A heritage scan of the site was undertaken and it has been recommended that no further specialist conservation studies are required, see Annexure 13. In addition a comment from Provincial Heritage Resource Agency Northern Cape (Boswa) is being sought.

6.2 POTENTIAL IMPACTS

The following potential impacts were identified by *The Environmental Partnership* and interested and affected parties.

6.2.1 BOTANICAL IMPACTS

(a) Substation

Potential impacts:
The proposed activity could result in the loss of natural vegetation where the proposed substation is to be located. The substation has a footprint of one hectare (100m x 100m) which would impact the same area of vegetation.

Discussion:
A botanical investigation was undertaken on 20 June 2009 (see Annexure 12) to ascertain which vegetation types are present in the study area; to establish its ecological significance and to determine whether sensitive species exist in the area.

It was found that two vegetation types are present in the study area; these are the Schmidtsdrift Thornveld and the Ghaap Plateau Vaalbosveld, each with an ecosystem status of “Least Threatened”. This means that there would be no significant disruption of ecosystem functioning and that the vegetation type has more than 80% of its original extent untransformed.

The investigation was undertaken in winter which is not the ideal time to undertake a field survey, so some species may not have been present at the time. A red data list species that could potentially be present in the area is *Hoodia gordonii,* which is a declining species. During a field survey, the shepherd’s tree (*Boscia albitrunca)*, a protected species was noted. Other protected species that could exist in the area include Bontaalwyn (*Aloe grandidentata*), Berglelie (*Ammocharis coranica*), Bobbejaanuintjie *(Babiana hypogeal),* Aasblom *(Huernia barbata),* Geelaasblom (*Orbeopsis lutea*), *Pachypodium succulentum* and *Ruschia* species.

Endemic species that could exist in the area are *Euphorbia wilmaniae, Prepodesma orpenii, Searsia tridactyla and* Olienvaalbos (*Tarchonanthus obovatus*).

The botanical investigation report concludes that the expected potential impact of the substation on the vegetation will be a low negative impact if all the recommended mitigation measures and recommendations are followed.

Recommendations:

- To prevent waste pollution, the soil sample sites in and around the proposed substation site need to be cleaned up. The plastic sample bags pollute the area and could be ingested by livestock grazing in that area.

- Where protected shepherd's trees *Boscia albitrunca* fall within an area to be cleared and have to be removed, permits are required from the Department of Water Affairs and Forestry (Upington) before construction proceeds.

- An alien and invasive species monitoring and control plan should be developed and implemented. This plan should include measures to monitor the emergence of alien invasive species, and the methods to be used to eradicate alien invasive species.

(b) Powerlines:

The proposed activity could result in the loss of natural vegetation where the proposed powerline poles would be planted. The pole diameter is 27cm in diameter and the clearing required to plant the base of the pole would impact an area of vegetation of approximately 527cm^2.

Discussion:

A botanical investigation was undertaken on 20 June 2009 (see Annexure 12) to ascertain which vegetation types are present in the study area, to establish its ecological significance and to determine whether sensitive species exist in the area.

Two vegetation types are present in the study area; these are the Schmidtsdrift Thornveld and the Ghaap Plateau Vaalbosveld, each with an ecosystem status of "Least Threatened". This means that there is no significant disruption of ecosystem functioning and that the vegetation type has more than 80% of its original extent untransformed.

The investigation was undertaken in winter which is not the ideal time to undertake a field survey so some species may not have been present at the time. A red data list species that could potentially be present in the area is *Hoodia gordonii,* which is a declining species. During a field survey, the shepherd's tree (*Boscia albitrunca)*, a protected species was noted. Other protected species that could exist in the area include Bontaalwyn (*Aloe grandidentata*), Berglelie (*Ammocharis coranica*), Bobbejaanuintjie *(Babiana hypogeal),* Aasblom *(Huernia barbata),* Geelaasblom (*Orbeopsis lutea*), *Pachypodium succulentum* and *Ruschia* species.

Endemic species that could exist in the area are *Euphorbia wilmaniae, Prepodesma orpenii, Searsia tridactyla and* Olienvaalbos (*Tarchonanthus obovatus*).

The botanical investigation report concludes that the expected potential impact of the powerline line on the vegetation will be a low negative impact if all the recommended mitigation measures and recommendations are followed.

Recommendations:

- Where protected shepherd's trees *Boscia albitrunca fall* within an area to be cleared and have to be removed, permits are required from the Department of Water Affairs and Forestry (Upington) before construction proceeds.

- An alien and invasive species monitoring and control plan should be developed and implemented. This plan should include measures to monitor the emergence of alien invasive species and the methods to be used to eradicate alien invasive species.

Evaluation of Botanical Impacts

Substation site and proposed route alignments						
	Extent	**Duration**	**Intensity**	**Probability**	**Significance**	
					No mtg	With mtg
Substation Site	Immediate	Long Term	Medium to Low (-)	Low	Medium to Low (-)	Low (-)
Route Alignment Alternative 1a	Immediate	Long Term	Low (-)	Low	Low (-)	Low (-)
Route Alignment Alternative 1b	Immediate	Long Term	Low (-)	Low	Low (-)	Low (-)
No-Go	N/A	N/A	N/A	N/A	N/A	N/A

6.2.2 IMPACTS ASSOCIATED WITH AVIFAUNA

a) Substation

Potential Impact and Discussion

Impacts on birds may occur in the form of disturbance and habitat destruction. During the construction of the substation, habitat destruction and alteration may take place. This may impact on birds breeding, foraging and roosting in proximity to the substation site.

Recommendation

It is recommended that standard Eskom Distribution EMP requirements for the construction of substations and powerlines should be strictly adhered to.

b) Powerlines

Potential Impact

Birds may be negatively impacted by electrical infrastructure via electrocutions due to powerlines or collisions with powerlines. Additional impacts on birds may occur during the construction and maintenance phases in the form of disturbance and habitat destruction

A brief description of bird electrocutions, collisions and habitat destruction are described below:[5]

- Electrocutions
  Electrocutions are a particular problem with regard to smaller lines (i.e. sub powerline and reticulation lines). Depending on the pole design, a large raptor can potentially touch two live components or a live and earthed component simultaneously, resulting in electrocution.

- Collisions
  Collisions occur when birds collide with conductors or earth wires of overhead powerlines. The birds most likely to be impacted on by collisions are heavy-bodied birds that are limited in their ability to manoeuvre in order to avoid collisions. Birds such as storks, bustards, cranes and various species of water birds are most likely to collide with power lines. Additionally, smaller, fast-flying, hunting raptors such as falcons are also at risk of collision.

- Habitat Destruction
  During the construction phase and maintenance of powerlines, a certain degree of habitat destruction and alteration takes place. This happens during the clearing of excess vegetation from servitudes. These activities may impact on birds breeding, foraging and roosting in proximity to the study area.

Discussion

The study area is considered to be generally arid and thus water bodies would be important areas for birds. As both alternative powerlines terminate in proximity to the Vaal River (approximately 700m), most of the avifaunal impacts would be expected to occur in these areas. Both alternative route alignments are in proximity to an existing road which may serve to lessen the risk of bird interactions with the powerlines. It should be noted that the proposed route alignment alternatives run through a similar habitat, however alternative 1b is

[5] Environmental Scoping Study for the Proposed Construction of a 400kV Transmission Power Line Between Ferrum Substation and Garona, Northern Cape Province (Endangered Wildlife Trust 2006)

in greater proximity to the Vaal River than Alternative 1a and therefore bird interactions are more likely to occur with Alternative 1b.

To determine the impact that the powerlines may have on the avifauna in the study area in terms of collisions and electrocutions, Eskom's Bird Mortality Incident Database was consulted. According to the database, no collisions and electrocutions as a result of existing powerlines in the study area were reported (See existing powerlines on Figure 3 – Site Plan)

In terms of habitat destruction, according to the vegetation assessment report for the study area, (see Annexure 12) at the local level there is significant transformation pressure on the vegetation and levels of transformation are relatively high. Habitat destruction as a result of the proposed development is thus considered to have a low impact.

<u>Recommendations</u>

- Electrocutions
  Bird friendly powerlines are to be used that would prevent or limit bird electrocutions.

- Collisions
  Where powerlines fall within a 1km radius of the Vaal River, bird flappers should be used to increase the visibility of powerlines to birds.

- Habitat Destruction and disturbance
  It is recommended that standard Eskom EMP requirements for the construction of substations and powerlines should be strictly adhered to.

Evaluation of Avifaunal Impacts: Electrocutions

Substation site and proposed route alignments						
	Extent	**Duration**	**Intensity**	**Probability**	**Significance**	
					No mtg	With mtg
Substation Site	N/A	N/A	N/A	N/A	N/A	N/A
Route Alignment Alternative 1a	Local	Long term	Medium	Probable	Medium (-)	Low(-)
Route Alignment Alternative 1b	Local	Long term	Medium	Probable	Medium (-)	Low(-)
No-Go	N/A	N/A	N/A	N/A	N/A	N/A

Evaluation of Avifaunal Impacts: Collisions

Substation site and proposed route alignments						
	Extent	**Duration**	**Intensity**	**Probability**	**Significance**	
					No mtg	With mtg
Substation Site	N/A	N/A	N/A	N/A	N/A	N/A
Route Alignment Alternative 1a	Local	Long term	Medium	Probable	Medium (-)	Low(-)
Route Alignment	Local	Long term	Medium	Probable	Medium (-)	Low(-)

Alternative 1b						
No-Go	N/A	N/A	N/A	N/A	N/A	N/A

Evaluation of Avifaunal Impacts: Habitat Destruction

Substation site and proposed route alignments						
	Extent	**Duration**	**Intensity**	**Probability**	**Significance**	
					No mtg	With mtg
Substation Site	Immediate	Permanent	Low	Probable	Low (-)	Low(-)
Route Alignment Alternative 1a	Immediate	Long term	Low	Probable	Low (-)	Low(-)
Route Alignment Alternative 1b	Local	Long term	Low	Probable	Low(-)	Low(-)
No-Go	N/A	N/A	N/A	N/A	N/A	N/A

6.2.3 VISUAL IMPACT

(a) Substation

Potential Impact

The proposed substation can be considered to pose a negative impact as a result of its size and low aesthetic appeal.

Discussion

The substation is located approximately 10km from the R64 main road and along a dirt road not frequented by many vehicles. In addition, the site is located within an irregular topography with dense vegetation cover. This natural landscaping obscures immediate visibility of the substation. The substation will therefore only be visible from approximately 50m when approaching the site from a south-easterly direction and similarly from a north-westerly direction. The study area is regarded as having a moderate to low aesthetic value. As a result, the visual intrusiveness is anticipated to be **low** in significance for the fixed point of development.

(b) Powerlines:

Potential

Due to the largely rural nature of the surrounding area, the powerline will pose a negative visual impact.

Discussion

With reference to route alignment alternatives 1a and 1b, the proposed powerline for both alternatives will be located against a solid natural back drop as it falls within the surrounding

landscape and well below the skyline. As a result, the potential impact is anticipated to be low in significance.

Evaluation of Visual Impacts

Substation site and proposed route alignments						
	Extent	**Duration**	**Intensity**	**Probability**	**Significance**	
					No mtg	With mtg
Substation Site	Immediate	Long term	Low (-)	Low	Low (-)	Very Low (-)
Route Alignment Alternative 1a	Immediate	Long term	Low (-)	Low	Low (-)	Low (-)
Route Alignment Alternative 1b	Immediate	Long term	Low (-)	Low	Low (-)	Low (-)
No-Go	N/A	N/A	N/A	N/A	N/A	N/A

Recommendations:

- Steel components within the substation should not be painted but be galvanised and allowed to oxidise naturally over time. The grey product in this process will help to reduce the visual impact.
- Those parts of the substation that require the protection of paint should be painted in colours chosen from a palette that is matched to the natural colours found in the surrounding landscape.
- All lighting, especially perimeter security lighting must be shielded to minimise light spillage and pollution. No direct light sources must be seen from outside the site.
- Signage should be simple and unobtrusive and not be seen anywhere against the skyline.
- A concerted effort should be made to reduce the height and scale of the structures, if at all possible.

6.2.4 SOCIO- ECONOMIC IMPACTS

Substation and powerlines

Potential impact

Local communities may benefit from jobs which will be created indirectly by the proposed development. The proposed project would assist with the current electricity demand of the informal housing residents as well as the surrounding farming areas.

Discussion

Schmidtsdrift is a steadily growing area with its primary expansion in diamond mining and agricultural activities such as livestock farming, game farming and irrigated cropping. This continued growth in the Schmidtsdrift area has resulted in an increasing demand for additional electricity supply on the current network. In order to improve the current supply

and distribution of electricity, as well as accommodate future economic development that may occur in the area, additional infrastructure is required to be constructed.

In addition, the households within the Schmidtsdrift informal area are currently restricted in terms of the electrical use as a result of the lack of available capacity. As the community expands new households are being established. These households are currently are not linked to an electricity network as a result of insufficient services available.

The proposed construction will make provision for economic growth within the area which in turn may provide job opportunities for the residents of the community. The social impacts associated with the development are thus anticipated to be positive.

Evaluation of Socio Economic Impacts

Substation site and proposed route alignments						
	Extent	**Duration**	**Intensity**	**Probability**	**Significance**	
					No mtg	With mtg
Substation Site	Local	Long term	High (+)	High probable	High (+)	High (+)
Route Alignment Alternative 1a	Local	Long term	High (+)	High probable	High (+)	High (+)
Route Alignment Alternative 1b	Local	Long term	High (+)	High probable	High (+)	High (+)
No-Go	Local	Long term	Medium (-)	Probable	Medium (-)	Medium (-)

Recommendation

- Due to the specialised and technical complexity of the proposed development, it is unlikely that local service providers qualified to undertake the job will be found within the project area. As such, contractors residing in other areas may need to be sought.
- The proposed activities would cater directly to the needs of the Schmidtsdrift community as identified within the status quo report conducted August 2007.

6.2.5 IMPACTS ON FUTURE LANDUSE PLANNING

a) Substation

Potential Impact

The proposed construction of the 20MVA substation could impact on the future land uses proposed for the area.

Discussion

With reference to the history of the Schmidtsdrift area, part of the settlement claim was preceded by a pre-planning phase, this included earmarking areas within the SCPA land reclaimed, for residential, commercial, agricultural, institutional and industrial purposes see

section 3.9, 3.10 and Figure 10. The proposed substation is to be located within the SCPA land and will occupy approximately 1ha of land. According to the land use plan outlined by the SCPA, the substation will occupy land earmarked for agricultural activities. The impact on the future land use is considered marginal as this impact is mitigated by the fact that Eskom would acquire a servitude right with the relevant landowners and that compensation would be negotiated.

b) Route Alignments

Potential Impact

The proposed installation of powerline structures could impact future land uses planned for the area.

Discussion

With reference to the history of the Schmidtsdrift area, part of the settlement claim was preceded by a pre-planning phase; this included earmarking areas within the SCPA land reclaimed, for residential, commercial, agricultural, institutional and industrial purposes see section 3.9, 3.10 and Figure 10.

According to the land use plan outlined by the SCPA, see Figure 10, for proposed route alignment 1a will traverse land earmarked for agricultural activities, commercial and residential development. Currently the Schmidtsdrift community resides west of the R67 and R370 intersection, future residential development will also occur for the broader undeveloped parts of this area. Given the location of the proposed route alignment 1a, the impact on future land use can be considered medium in significance as it will reduce the extent of land earmarked for residential erven and will also effect erven current occupied by residents.

For proposed route alignment 1b, the alignment will traverse land proposed largely for agricultural and light industrial development. According to the land use plan outlined by the SCPA, see Figure 10, this would be a more favourable alignment as they could plan there proposed industrial area along the proposed servitude. This route alignment will not affect areas earmarked for residential development and therefore the impact on future landuse can be considered as **low** in significance for route alignment alternative 1b.

Evaluation of future land-use planning impacts

Substation site and proposed route alignments						
	Extent	**Duration**	**Intensity**	**Probability**	**Significance**	
					No mtg	With mtg
Substation Site	Immediate	Long term	Low (-)	Probable	Low (-)	Low (-)
Route Alignment Alternative 1a	Immediate	Long term	Medium (-)	Probable	Medium (-)	Medium (-)

Route Alignment Alternative 1b	Immediate	Long term	Low (-)	Probable	Low (-)	Low (-)
No-Go	Immdediate	Long term	Medium (-)	Probable	Medium (-)	Medium (-)

Recommendation

- Eskom must acquire servitude rights in discussion with the relevant landowner ensuring that compensation would be negotiated for their loss of land.

6.2.6 POTENTIAL FIRE AND HEALTH IMPACTS RESULTING FROM MALFUNCTIONING OF SUBSTATION AND POWERLINES

a) Substation

Potential impact

Fires may occur as a result of malfunction or accidents occurring at the substation. The proposed substation site is located within a densely vegetated area which could easily catch fire should a malfunction occur.

Extremely low frequency electromagnetic radiation can be considered as a possible threat to the health of persons living near high tension electric power lines, distribution substations, and even in close proximity to common household electric appliances.

Discussion

Fire and health impacts associated with substations and powerlines include the possibility of a transformer fire/explosion and exposure to electromagnetic fields (EMF). According to previous studies undertaken for Eskom, the potential risk is determined by the proximity of residential settlements to the substation and powerline.

A transformer failure of one or more of the transformers could result in a fire and spillage of the purified mineral oil used for insulation and coolant. According to Eskom, the probability of a failure is low, but even in the worst case scenario, the effects of a transformer failure would not affect people or animals beyond the perimeter fence. In the case of a fire, the products of combustion would be released to the surrounding environment. These would be mainly carbon soot, carbon monoxide and the impact on the surrounding area would be low (Ninham Sand, 1996).

Electro magnetic fields are easily blocked by normal building materials from which houses are constructed. Their strength decreases rapidly with distance from the source. The proposed substation's proximity to the existing residential area is within a 12km radius, therefore the potential impact on the residents is considered to be low in significance. In addition, Eskom prescribes guidelines for the separation of residential areas from substations.

a) Powerlines

Potential Impact

Fire and health impacts associated with substations and powerlines include the possibility of a transformer fire/explosion and exposure to electromagnetic fields (EMF). According to previous studies undertaken for Eskom, the potential risk is determined by the proximity of residential settlements to the substation and powerline.

Discussion

The proposed powerline has a voltage of 22kV, which according to studies undertaken by Eskom is considered to be relatively low. As a result, the effects on environment/health are relatively low.

According to the landowners (SCPA) the future land-use plan for the area indicates that the proposed route alignment 1a will extend for approximately 5km through areas proposed for residential development. However, route alignment 1b will traverse land earmarked predominately for agricultural and light industrial activities.

Given that route alignment 1a will traverse predominately through areas earmarked and developed for residential purposes the impact associated with electric fields on health is considered medium in significance for this alternative. However, route alignment 1b is considered low in significance based on its distance from future and current residential development.

Evaluation of potential fire and health impacts resulting from malfunctioning of the substation and powerlines

Substation site and proposed route alignments						
	Extent	**Duration**	**Intensity**	**Probability**	**Significance**	
					No mtg	With mtg
Substation Site	Immediate	Short term	Medium (-)	Probable	Medium (-)	Low (-)
Route Alignment Alternative 1a	Immediate	Short term	Medium (-)	Probable	Medium (-)	Low (-)
Route Alignment Alternative 1b	Immediate	Short term	Medium to low (-)	Probable	Medium to low (-)	Low (-)
No-Go	N/A	N/A	N/A	N/A	N/A	N/A

Recommendations:

The following mitigation measures are proposed:

- A fire emergency plan should be established and implemented through the EMP.

- The construction area should be fenced off to avoid any safety risks for humans and animals.
- General safety measures in terms of construction work should be implemented and relevant regulations adhered to (Occupational Health and Safety Act).
- Eskom vehicles and workers should be easily identifiable.

6.2.7 COMPATIBILITY WITH THE SURROUNDING ENVIRONMENT

a) Substation

Potential impact

The proposed substation site is located within a terrain characterised by a combination of flat areas and low hills, with relatively vast tracts of open areas of natural vegetation and grasslands. A possible impact could be the design of the substation building that may not blend in with the surrounding area.

Discussion

The 20MVA substation will occupy a portion of land of approximately 100m x 100m (footprint) in extent. The proposed substation site is located in an isolated area with the closest settlement approximately 12km from the site. Existing infrastructure in the surrounding area include a R370 (dirt road) and an overhead 132kV regional powerline that runs perpendicular to both the proposed substation and the 22kV power lines.

The substation design is an outdoor type and will contain two 10MVA transformer bays and the associated equipment. The proposed substation site will be enclosed with a small stock fence and a diamond mesh fence that will be installed around the substation yard, this is standard for the substation capacity.

The substation does not blend in well with the surrounding area and can be seen as obtrusive. However the substation will be located along a utility corridor i.e. the 132kV regional line north of the site and east of the R370. The impact of the proposed substation not blending in with the existing environment can be considered medium in significance. With the presence of natural vegetation surrounding the substation, the impact can be considered low in significance as the vegetation cover facilitates a natural landscape in keeping with the surrounding area.

b) Powerlines

Potential impact

The proposed overhead powerline route alignment is located within a terrain characterised by a combination of flat areas and low hills, with relatively vast tracts of open areas of natural vegetation and grasslands. Existing infrastructure in the surrounding area include a R370

(dirt road) and an overhead 132kV regional power line that runs perpendicular to both the proposed substation and the 22kV powerline.

Discussion

With reference to the route alignments both alignments will run parallel to an existing utility corridor, the R370. Where the proposed overhead powerline terminates, in the north, it will link to the Herbert-Vaal Farmers 22kV powerline.

Evaluation of compatibility with surrounding area

Substation site and proposed route alignments						
	Extent	**Duration**	**Intensity**	**Probability**	**Significance**	
					No mtg	With mtg
Substation Site	Immediate	Long term	Medium (-)	Probable	Medium (-)	Low (-)
Route Alignment Alternative 1a	Immediate	Long term	Low (-)	Probable	Low (-)	Low (-)
Route Alignment Alternative 1b	Immediate	Long term	Low (-)	Probable	Low (-)	Low (-)
No-Go	N/A	N/A	N/A	N/A	N/A	N/A

Recommendations:

- No mitigation required, the dense vegetation cover facilitates as natural landscape feature.

6.3 CONSTRUCTION PHASE DISTURBANCES

6.3.1 Impact on noise levels during construction

Substation and powerline

Potential Impacts

Construction activities are generally associated with an increase in noise levels. Noise sources during the construction phase emanate from activities related to drilling, compacting of soil, blasting (if required) loading and unloading of equipment, noise from construction vehicles and personnel.

Discussion

The impact of noise during the construction phase would be considered low in significance due to the distance to the nearest development (settlement) and farming activities. However with mitigation measures as described below are implemented, the significance of the impact would be reduced to very low.

Potential mitigation measures

- Ensure that standardised operating hours are adhered to during the construction phase.
- Implement the Environmental Management Plan presented in Annexure14.

6.3.2 Impact on soil contamination during construction

Substation and powerline

Potential impact

The impact on soil during the construction phase is of particular concern as potential hazardous materials could be brought onto the site. The impact of diesel and oil spillages on soil in the study area is also of concern.

Discussion

The impact of soil pollution during the construction phase would be considered as low in significance.

Potential mitigation measures

- Ensure that procedures are put in place in order to mitigate any soil pollution.
- These procedures are to be written into the construction phase EMP.

6.3.3 Impact on boundary lines or fences during construction

Substation and powerline

Potential Impact

Boundary fences may be damaged during construction or gates may be left open resulting in the unplanned integration of livestock.

Discussion

The impact on boundary lines and fences is considered to be low in significance, as no boundary lines will be disturbed. The proposed activities will occur within the boundary of the SCPA property. However, the remediation of ground cover, phased erection of the pole structures, and replacement of fencing will be implemented so as to avoid the integration of livestock. The property owners, SCPA will be informed of construction activities.

Potential mitigation measures

- Remediation of ground cover, phased erection of the pole structures, and replacement of fencing are addressed and highlighted in the Environmental Management Plan for the construction phase of the development.

- Ensure that phased erection of pole structures are implemented and that the land owners are informed of the construction activities.

Evaluation of construction activities on the environment

Substation site and proposed route alignments						
	Extent	**Duration**	**Intensity**	**Probability**	**Significance**	
					No mtg	With mtg
Noise levels	Immediate	Short term	Low (-)	Low probable	Low (-)	Very Low (-)
Soil Contamination	Immediate	Short term	Low (-)	Low probable	Low (-)	Very Low (-)
Disruption boundary lines or fences	Immediate	Short term	Low (-)	Low probable	Low (-)	Very Low (-)
No-Go	N/A	N/A	N/A	N/A	N/A	N/A

6.4 NO –GO OPTION

The No-go option implies that the proposed infrastructure is not constructed and that no utility services are provided for the area. Currently a limited range of services are available to the Schmidtsdrift community. These are deemed insufficient by members of the community as only a few erven are provided with electricity due to currently insufficient capacity to provide electrical services to the entire settlement.

Under this option, no impacts are associated with the bio-physical environment. The study area will remain unaltered and continue to exist in its natural state. Benefits to the local and surrounding communities will not occur due to a lack of provision of essential services and the resultant limit on future growth with in the local area.

Given that all the identified impacts can be mitigated to a low significance the development proposal will be considered a lost opportunity should the “no go’ option be chosen.

7. CONCLUSION AND WAY FORWARD

We submit that this Final Environmental Impact Report evaluates and addresses the environmental issues and concerns raised during the scoping phase of the project. The issues and concerns were raised by I&APs, authorities, the project team as well as specialist input.

It is recommended that the proposed construction of a 20MVA substation, 132kV loop-in line and 22kV powerline in the Schmidtsdrift area, Northern Cape be approved. With reference to alternatives that have been designed, it is recommended that route alignment alternative 1b be approved provided that the recommendations and mitigation measures made in chapter 6 are incorporated. Reasons for the above recommendation are as follows:

Currently a limited range of services are available to the Schmidtsdrift community. These are deemed insufficient by members of the community as only a few erven are serviced with electricity as a result of insufficient capacity to provide electrical services to the entire settlement. The SCPA constitution outlines the intention of developing the area in such a way that it may sustain itself, this includes:

- the provision of appropriate infrastructure including schools, clinics, road, housing and social institutions,
- to liase and work with the department or any other organs of state in the acquisition and development of the their property, and
- to take any steps that may serve to address poverty, unemployment, socio-economic needs and historical disadvantages amongst its members.

Therefore in order to develop these industries, such as mining and agriculture, the provision of basic utilities such as electrical infrastructure is fundamental in assisting with an economic and social development strategy for the Schmidtsdrift area.

With reference to the alternatives, route alignment alternatives 1a and 1b both extend within the SCPA property boundaries. Both alternatives are similar from an environmental impact perspective. Route alternative 1b is however recommended as the preferred alternative from a future land use planning perspective. For proposed route alignment 1b, the alignment will traverse land proposed largely for agricultural and light industrial development. According to the land use plan outlined by the SCPA, this would be a more favourable alignment as they could plan there proposed industrial area along the proposed servitude way. This route alignment will not affect areas earmarked for residential development.

The summary table below shows that the impacts can be suitably mitigated so that the impacts that have been identified do not cause irreversible damage to the biophysical and social-economic environment.

Summary of Significance ratings with and without mitigation (Mtg: Mitigation, N/A: not applicable)

(Blue- low negative significance, yellow - Medium to low negative, orange – medium negative, Brown-medium positive, Green - High positive significance)

IDENTIFIED ISSUE	Substation Site		Route Alignment Alternative 1a		Route Alignment Alternative 1b		No-Go	
	Without mtg	With mtg	Without mtg	With mtg	Without mtg	With mtg	Without mtg	With mtg
Botanical	**Medium to low (-)**	**Low (-)**	**Low (-)**	**Low (-)**	**Low (-)**	**Low (-)**	**N/A**	**N/A**
Avifaunal: - Electrocutions	**N/A**	**N/A**	**Medium (-)**	**Low (-)**	**Medium (-)**	**Low (-)**	**N/A**	**N/A**
Avifaunal: Collisions	**N/A**	**N/A**	**Medium (-)**	**Low (-)**	**Medium (-)**	**Low (-)**	**N/A**	**N/A**
Avifaunal: Habitat Destruction	**Low (-)**	**Low (-)**	**Low (-)**	**Low (-)**	**Low (-)**	**Low (-)**	**N/A**	**N/A**
Visual	**Low (-)**	**Low (-)**	**Low (-)**	**Low (-)**	**Low (-)**	**Low (-)**	**N/A**	**N/A**
Social-economic	**High (+)**	**High (+)**	**High (+)**	**High (+)**	**High (+)**	**High (+)**	**Medium (-)**	**Medium (-)**
Future Land-use Planning	**Low (-)**	**Low (-)**	**Medium (-)**	**Medium (-)**	**Low (-)**	**Low (-)**	**Medium (-)**	**Medium (-)**
Fire and health	**Medium (-)**	**Low (-)**	**Medium (-)**	**Low (-)**	**Low (-)**	**Low (-)**	**N/A**	**N/A**
Compatibility with surrounding	**Medium (-)**	**Low (-)**	**Low (-)**	**Low (-)**	**Low (-)**	**Low (-)**	**N/A**	**N/A**
CONSTRUCTION PHASE IMPACTS								
Noise levels	**Low (-)**	**Very Low (-)**	**Low (-)**	**Very Low (-)**	**Low (-)**	**Very Low (-)**	**N/A**	**N/A**
Soil Contamination	**Low (-)**	**Very Low (-)**	**Low (-)**	**Very Low (-)**	**Low (-)**	**Very Low (-)**	**N/A**	**N/A**
Disruption of boundary lines and fences	**Low (-)**	**Very Low (-)**	**Low (-)**	**Very Low (-)**	**Low (-)**	**Very Low (-)**	**N/A**	**N/A**

WAY FORWARD

This Final Environmental Impact Report is being submitted to the regulatory authority, Depart of Environmental Affaires, for a decision. This decision made by the Department of Environmental Affairs will be made known to all registered interested and affected parties and they will be allowed to appeal within a 30day period. If appeals are received by the Minister, they will be addressed and she will grant a new decision which may or may not uphold the appeals that were received.

8. BIBLIOGRAPHY

Acocks, J. P. H (1988). Veld Types of South Africa, 3rd Edition, Botanical Research Institute South Africa.

CSIR (2004). *Northern Cape, State of Environment Report 2004, Land Specialist Report.*

Kleinbooi, Karin (2007). *Research Report 34 Schmidtsdrift Community Land Claim.*

Moore Spence Jones (February 2009) Proposed substations at Schmidtsdrift: Geotechnical Investigation Preliminary Report and Recommendations.

Moore Spence Jones (April 2009) Proposed substations at Schmidtsdrift: Geotechnical Investigation Final Report and Recommendations.

Northern Cape Weather and Climate – www.sa-venues.com

Van Rooyen, C. (2006). Environmental Scoping Study for the Proposed Construction of a 400kV Transmission Power Line between Ferrum Substation and Garona, Northern Cape Province: Avifauna, Endangered Wildlife Trust

Ward, David (2005). *The Pniel Project, Research for communal and commercial ranching of domestic and wild herbivores.*

9. DIAGRAMS, TABLES, FIGURES AND ANNEXURES

DIAGRAMS

FIGURES

ANNEXURES