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# **Social Impact Assessment for the Proposed Blanco-Droërivier 400kV Transmission Line**

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**Client: Eskom  
Draft Report Prepared for EIA**

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**Report Prepared by Amina Ismail  
August 2016**

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## **Disclaimer**

This project information in this report is based on information supplied by Eskom and Envirolution, during the time that the social impact assessment was being prepared. Information was also obtained from site visits conducted by the public participation specialist during this time and from comments received from Interested and Affected Parties. The impact assessment was prepared using social information obtained within the time frame of preparing this report.

## List of Abbreviations

Afrik	Afrikaans
EA	Environmental Assessment
EIA	Environmental Impact Assessment
EIAR	Environmental Impact Assessment Report
Eng	English
IDP	Integrated Development Plan
IRPA	International Radiation Protection Association
I&AP	Interested and Affected Party
KPI	Key Performance Indicators
kV/m	Kilo Volts per metre
LM	Local Municipality
LV	Low Voltage
m	Metre
mT	Millitesla
MV	Medium Voltage
NEMA	National Environmental Management Act
NPC	National Planning Commission
PGDS	Provincial Growth and Development Strategy
PM	Particulate Matter
SIA	Social Impact Assessment
SIP	Strategic Integrated Projects
Tesla	Tesla
TSA	Technical Service Area
WHO	World Health Organisation
µm	Micrometres
µT	Microtesla

# 1 Details of Social Impact Assessment (SIA) Specialist

## 1.1 Contact details of SIA Specialist

Name: Amina Ismail

Address: 42 Melville Estates, 24 Main Road East, Melville Extension 1, Johannesburg 2092.

Telephone number: +27 (0) 82 452 9799

e-mail: [solanum@worldonline.co.za](mailto:solanum@worldonline.co.za)

## 1.2 Expertise of Specialist to Compile SIA

Amina Ismail has 20 years of experience working in sustainable development, including 11 years as a senior consultant to government, industry and non-government organisations, and 7 years as a government official in environment and development functions.

She has a Masters degree in Management from the University of the Witwatersrand. Her degree focused on management in the Public and Development sectors. She also has an Honours degree in Medical Sciences from the University of Durban-Westville (now University of Kwa-Zulu Natal) and a Postgraduate Diploma in Science (in Environmental Studies) from the University of the Witwatersrand. In 1997- 1998 she focused a one year Fellowship at Harvard University, United States, on Sustainable Development and Public Policy, and Health Research and Policy. She has also completed numerous short courses including in State of the Environment Reporting, Sustainable Environmental Impact Assessment for Local Urban Authorities, Logical Framework Approach to Project Preparation. She has a Certificate of Competence in Results-Based Monitoring and Evaluation in the Public and Development Sectors, from the World Bank Regional Center for Learning on Evaluation and Results (CLEAR) at the University of the Witwatersrand.

She has worked on Environmental Impact Assessments (EIAs) and has prepared numerous Social Impact Assessments (SIAs), including management measures for mining and infrastructure development projects. She has led and participated in many environment and development projects of national strategic importance. She was South African Country Manager of the United Kingdom funded "Partners for Water and Sanitation", building water and sanitation technical and management capacity in national, provincial and local spheres of government. She was lead researcher for a discussion paper identifying good municipal practices for sustainable energy and water conservation nationally. She led and managed a national survey to identify municipal good practices in labour intensive waste management for addressing the national goals of poverty alleviation, job creation and good environmental management. She has co-authored a number of published papers and presentations, and a book chapter, covering various aspects of social and sustainable development.

Her *curriculum vitae* is attached as Appendix A.

## 1.3 Declaration of Independence

The declaration form as required by the Competent Authority has been signed by the SIA specialist and submitted to Envirolution, for submission to the Department of Environmental Affairs (DEA). Please refer to Appendix B of this report for a signed declaration form.

## 2 Background and Scope of Report

Eskom is planning to build a 250 km 400kv transmission line from Gourikwa power station in Mossel Bay, to the Blanco substation in George. A further 60km 400kv power line is proposed from the Blanco substation to the Droërivier substation in Beaufort West. The power station and both substations will be upgraded. This report is concerned with the power infrastructure from the Blanco substation to the Droërivier substation. The proposed power line and its alternatives are planned to pass through the Western Cape local municipalities of George, Beaufort- West, Prince Albert and Oudtshoorn. Another proposed alignment passes through the Baviaans Local Municipality in the Eastern Cape.

The National Environmental Management Act (NEMA) (Act 107 of 1998) and the EIA Regulations (2014) require Environmental Impact Assessments (EIAs) to be undertaken, to enable the competent authorities to consider authorisation for the developments to take place. Envirolution has been appointed as the independent Environmental Assessment Practitioner (EAP) to undertake the compilation and submission of an EIA and Environmental Management Plan (EMP) for the planned development, to the Department of Environmental Affairs (DEA). Envirolution is also facilitating the public participation as part of the EIA process.

A number of specialist assessments are being undertaken as part of the EIA and EMP. The Social Impact Assessment (SIA) is one specialist study. The purpose of the SIA is to determine what social impacts the project will potentially have on the social environment, and recommend management measures to enhance potential positive impacts and mitigate potential negative impacts.

The purpose of the EIA Report is to elaborate on the issues and potential impacts identified during the scoping phase of the proposed project. This was informed by site visits and by research in the site-specific study area, as well as a comprehensive assessment of the impacts identified during the scoping phase.

The EIA report includes:

- A description of the environment that may be affected by the activity and the manner in which the environment may be affected by the proposed project
- A description and evaluation of environmental issues and potential impacts (including direct, indirect, cumulative impacts and residual risks) that have been identified
- Direct, indirect, cumulative impacts and residual risks of the identified issues are evaluated within the EIA Report in terms of the following criteria:
- the nature, which includes a description of what causes the effect, what will be affected and how it will be affected;
- A statement regarding the potential significance of the identified issues based on the evaluation of the issues/impacts
- A comparative evaluation of the identified feasible alternatives, for nomination of a preferred alternative
- Any aspects which are conditional to the findings of the assessment which are to be included as conditions of the Environmental Authorisation

- Any gaps in knowledge at this point of the study. Consideration of areas that would constitute “acceptable and defensible loss” is included in this discussion.
- A reasoned opinion as to whether the proposed project should be authorised.
- A summary of the positive and negative impacts and risks of the proposed project and identified alternatives.
- Mitigation measures and management recommendations to be included in the Environmental Management Programme

## 3 Description of the SIA methodology

### 3.1 Objectives

The objectives of the social assessment report are:

- To provide the legal framework for assessing the social impact of the planned project;
- To present the social baseline against which the potential social impacts of the project will be assessed;
- To identify and assess potential social impacts associated with the planned project; and
- To prepare management measures for enhancing potential positive social impacts and mitigating potential negative social impacts associated with the project.

### 3.2 Approach

The SIA was undertaken by:

- Using desktop sources including Census 2011 to describe the social *status quo* of the potentially impacted communities.
- Using information from the project description and *status quo* baseline to identify potential social impacts during construction and operations of the project. Measures were also identified for promoting potential positive impacts and avoiding or mitigating possible negative impacts assessed to be significant.
- Comments received from public participation were integrated into the *status quo* and impact assessment, as relevant.

Properties were visited by the public participation specialist to ascertain possible impacts to the potentially impacted communities. For the purposes of this study, a primary impacted area refers to the areas directly occupied by the project physical infrastructure. This includes the 55 metre Eskom servitude required for the project. The secondary impacted areas are those not physically impacted on, but influenced through social activities of the proposed development. Construction activities, for example, will endeavour to employ workers from the local communities. Secondary impacted areas will then include but will not be limited to geographical areas adjacent to the proposed project site and its associated infrastructure. The social study adopts the continuous boundary as delineated by George, Oudtshoorn, Prince Albert, Beaufort West and Baviaans Local Municipalities (LMs) as the outer limit of the secondary area. Where there is significant impact on communities beyond this delineation, the status and impact of these geographical areas have been included in the impact assessment.

#### 3.2.1 Social Baseline

A desktop social baseline of the zones of influence was prepared for the project using the Census 2011 data. The Integrated Development Plans (IDPs) of the five local municipalities provided additional information for building the social profile for the affected municipal areas.

#### 3.2.2 Impact Evaluation

Activities within the framework of the proposed development and their respective construction and operational phases, give rise to certain impacts. For the purpose of assessing these

impacts, the project has been divided into these two phases from which potential impacts can be identified, namely:

**a) Construction phase**

All the construction and construction related activities on site, until the contractor leaves the site.

**b) Operational phase**

All activities, including the operation and maintenance of the proposed development are included in this phase.

### 3.2.3 Methodology for the assessment of impacts in the EIA Phase

Direct, indirect and cumulative impacts of the issues identified through the scoping study, as well as all other issues identified in the EIA phase are required to be assessed in terms of the following criteria:

- The nature, which shall include a description of what causes the effect, what will be affected and how it will be affected.
- The extent, wherein it will be indicated to what extent the geographical area is affected. Where the impact is at more than one scale, that is, at two or more of the local, regional and national scales, the impact will be assessed for each scale to understand what proportion of the eligible population at the geographical level is affected. A value between 1 and 5 will be assigned as appropriate (with 1 being low and 5 being high):
- The duration, wherein it will be indicated whether:
  - the lifetime of the impact will be of a very short duration (0–1 years) – assigned a score of 1;
  - the lifetime of the impact will be of a short duration (2-5 years) - assigned a score of 2;
  - medium-term (5–15 years) – assigned a score of 3;
  - long term (> 15 years) - assigned a score of 4; or
  - permanent - assigned a score of 5;
- The consequences (magnitude), quantified on a scale from 0-10, where 0 is small and will have no effect on the environment, 2 is minor and will not result in an impact on processes, 4 is low and will cause a slight impact on processes, 6 is moderate and will result in processes continuing but in a modified way, 8 is high (processes are altered to the extent that they temporarily cease/ are affected), and 10 is very high and results in complete destruction/ change of patterns and permanent cessation of/ effect on processes.
- The probability of occurrence, which shall describe the likelihood of the impact actually occurring. Probability will be estimated on a scale of 1–5, where 1 is very improbable (probably will not happen), 2 is improbable (some possibility, but low likelihood), 3 is

probable (distinct possibility), 4 is highly probable (most likely) and 5 is definite (impact will occur regardless of any prevention measures).

- the significance, which shall be determined through a synthesis of the characteristics described above and can be assessed as low, medium or high; and
- the status, which will be described as either positive, negative or neutral.
- the degree to which the impact can be reversed.
- the degree to which the impact may cause irreplaceable loss of resources.
- the degree to which the impact can be mitigated.

The **significance** is calculated by combining the criteria in the following formula:

$$S = (E+D+M)P$$

S = Significance weighting

E = Extent

D = Duration

M = Magnitude

P = Probability

The **significance weightings** for each potential impact are as follows:

- < 30 points: Low (i.e. where this impact would not have a direct influence on the decision to develop in the area),
- 30-60 points: Medium (i.e. where the impact could influence the decision to develop in the area unless it is effectively mitigated),
- > 60 points: High (i.e. where the impact must have an influence on the decision process to develop in the area).

Some impacts, such as the improving the quality of life through job creation, occur at both the local and regional/national scales. These impacts are assessed at both scales.

Assessment of impacts will be summarised in the following table format. The rating values as per the above criteria will also be included. A table will be completed and associated ratings for **each** impact identified during the assessment.

## Impact Tables for EIA Report

**Table Number: Table Heading**

<b>Nature:</b> [Outline and describe fully the impact anticipated as per the assessment undertaken]		
	<b>Without mitigation</b>	<b>With mitigation</b>
<b>CONSTRUCTION PHASE</b>		
<b>Probability</b>	Definite (5)	Highly probable (4)
<b>Duration</b>	Medium-term (3)	Medium-term (3)
<b>Extent</b>	Limited to Local Area (2)	Limited to Local Area (2)
<b>Magnitude</b>	High (8)	Moderate (6)
<b>Significance</b>	<b>65 (high)</b>	<b>44 (moderate)</b>
<b>Status (positive or negative)</b>	Negative	Negative
<b>OPERATIONAL PHASE</b>		
<b>Probability</b>	Highly probable (4)	Probable (30)
<b>Duration</b>	Permanent (5)	Permanent (5)
<b>Extent</b>	Limited to Local Area (2)	Limited to the Site (1)
<b>Magnitude</b>	High (8)	Low (4)
<b>Significance</b>	<b>60 (high)</b>	<b>30 (moderate)</b>
<b>Status (positive or negative)</b>	Negative	Negative
<b>Reversibility</b>	Low	Moderate
<b>Irreplaceable loss of resources?</b>	Moderate	Low
<b>Can impacts be mitigated?</b>	Yes/No	

**Mitigation:**

“Mitigation“, means to anticipate and prevent negative impacts and risks, then to minimise them, rehabilitate or repair impacts to the extent feasible.

- Provide a description of how these mitigation measures will be undertaken keeping the above definition in mind.

**Cumulative impacts:** “Cumulative Impact“, in relation to an activity, means the past, current and reasonably foreseeable future impact of an activity, considered together with the impact of activities associated with that activity, that in itself may not be significant, but may become significant when added to existing and reasonably foreseeable impacts eventuating from similar or diverse activities<sup>1</sup>.

**Residual Risks:** “Residual Risk“, means the risk that will remain after all the recommended measures have been undertaken to mitigate the impact associated with the activity (Green Leaves III, 2014).

It must be noted that the methodology used for assessing environmental impacts will be applied for assessing the social impacts. Environmental impacts are by and large characterised as negative and the methodology has been designed to assess negative impacts. Social impacts can be either negative or positive. Also, social impacts can occur at more than one scale (for example, job creation can occur at local and regional/national scales). In the latter cases, the impact is assessed at both scales.

**3.2.4 Environmental Management Plan Table format**

Measures for inclusion in the draft Environmental Management Programme must be laid out as detailed below:

**OBJECTIVE:** Description of the objective, which is necessary in order to meet the overall goals; these take into account the findings of the environmental impact assessment specialist studies.

<b>Project component/s</b>	List of project components affecting the objective		
<b>Potential Impact</b>	Brief description of potential environmental impact if objective is not met		
<b>Activity/risk source</b>	Description of activities which could impact on achieving objective		
<b>Mitigation: Target/Objective</b>	Description of the target; include quantitative measures and/or dates of completion		
	<b>Mitigation: Action/control</b>	<b>Responsibility</b>	<b>Timeframe</b>
	List specific action(s) required to meet the mitigation target/objective described above	Who is responsible for the measures	Time periods for implementation of measures
<b>Performance</b>	Description of key indicator(s) that track progress/indicate the effectiveness		

<sup>1</sup> Unless otherwise stated, all definitions are from the 2014 EIA Regulations, GNR 982

<b>Indicator</b>	of the management plan.
<b>Monitoring</b>	Mechanisms for monitoring compliance; the key monitoring actions required to check whether the objectives are being achieved, taking into consideration responsibility, frequency, methods and reporting

### 3.2.5 Methodology used in assessing alternatives

The specialist understands that the line alignment alternatives were determined by Eskom using its criteria. The alternatives, however, were subjected to assessment of their relative impacts through the specialist studies and the EIA process.

Alternatives will be assessed according to the impact of the specific alignment on the surrounding environment. Since the impacts of all alignments will be the same in generic surroundings, the environment on which these will impact will be the variable which will govern the decision of a recommended alignment, that is, the sensitive areas through which each route alignment passes.

### 3.2.6 Site-specific concerns

As the length of the development is extensive, site-specific concerns were guided by the comments received through the public participation process.

### 3.3 Overall Limitations and Assumptions of the SIA study

A number of limitations and assumptions, as described below, are noted for this social study.

- A desktop assessment of the sensitive receptors on the route was undertaken by examining the Transmission line mapped onto Google Earth. Comments from the public participation process provided details of the concerns on the affected properties.
- The generic Eskom policy for employment that the SIA specialist and Envirolution were familiar with was used to determine the approach that Eskom will adopt when employing local and other workers. It was assumed that Eskom will encourage its contractor/s working on the project to employ local labour as far as possible.
- Similarly, generic knowledge about Eskom procurement policies obtained from experience with similar Eskom projects was used. It is assumed goods and services will be procured locally by Eskom, that is, within the local municipalities the lines traverse, as far as possible.
- Social and economic impacts are linked. There are therefore areas of overlaps between the two specialist reports. In order to minimise duplication, the social specialist and socio-economic specialist have agreed that issues of a largely social nature will be assessed by the social specialist and those associated with economic impacts will be dealt with by the socio-economic specialist. The social specialist will deal with impacts such as:
  - Increased reliability of energy services to support households and social services (health, education, etc.);
  - Improved community health from the introduction and maintenance of safer sources of energy;
  - Community safety risks from increased direct exposure to electrical hazards, if there is tampering or dangerous contact with power infrastructure;
  - Community health risks if workers' camps do not have access to basic services such as sanitation and waste removal;
  - Community health risks from possible increased exposure to HIV/AIDS;
  - Creation of project-related jobs; and
  - The loss of livelihood and residential status on farms, related to loss of jobs due to a reduction in farming activity. This last impact, however, cannot be assessed for reasons discussed below under the scope of the socio-economic study;
  - Physical displacement as a result of loss of household assets if residences are located in the same path as the power infrastructure. It was also not possible to assess the significance of this impact as a 2km width has been provided in the line alignment, to allow for flexibility when siting the towers and the 55 metre servitude required for the infrastructure.

It is noted that the socio-economic specialist will consider:

- Economic displacement as a result of loss of economic activity, including in the agriculture and tourism sector; and
- Job creation (from project-related activities) and job losses (due to economic activities such as tourism and agricultural activities).

The socio-economic specialist has, however, advised that it is impossible to quantify the impacts on agriculture and tourism unless the exact alignment and position of the pillars are known. When that information is available it will have to be combined on a micro level for each farm, type of farming activity and potential impact per farm. It will have to determine what activities can and cannot continue under the lines, and whether current economic activities can be replaced with other activities that can also have an economic contribution. The current scope of the study does not allow for such a detailed study. Job losses therefore cannot be quantitatively estimated in the social or socio-economic studies.

Another potential impact that could not be assessed is the health impacts from electromagnetic fields. The reasons are detailed in Section 6.5.4 below. The SIA however acknowledges that it is a concern for stakeholders. Management measures are therefore provided to address this stakeholder issue.

## 4 Governance Framework for Social Impact Assessment of the Proposed Electricity Transmission Project

This section discusses the legal and policy framework relevant for preparing the SIA for the proposed electricity transmission project.

### 4.1 Legislative Framework for Social Impact Assessment

The social impact assessment will be prepared taking into consideration environmental rights in South Africa's Bill of Rights, as well the requirements as set out in the National Environmental Management Act.

#### 4.1.1 The Constitution of South Africa (Act 108 of 1996)

Section 24 of the Constitution of South Africa (Act 108 of 1996) (the Constitution) in its Bill of Rights confers environmental rights to people in South Africa, that is:

- a) *to an environment that is not harmful to their health or well-being; and*
- b) *to have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that-*
  - i. *prevent pollution and ecological degradation;*
  - ii. *promote conservation; and*
  - iii. *secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development.*

#### 4.1.2 The National Environmental Management Act (No. 107 of 1998)

Before the proposed project goes ahead, authorisation needs to be obtained in terms of the National Environmental Management Act (No. 107 of 1998) (NEMA). The proposed development triggers an Environmental Impact Assessment under the NEMA Environmental Impact Assessment (EIA) Regulations, 2014.

The NEMA requires that sustainable development serve as the general framework for environmental management and implementation plans to be formulated. "Sustainable development" is defined in the act as "*the integration of social, economic and environmental factors into planning, implementation and decision-making so as to ensure that development serves present and future generations*". It requires that Environmental Impact Assessment consider, assess and evaluate the social, economic and environmental impacts of activities, for consideration by the decision-making authority.

The social baseline and impact assessment is part of the EIA compiled for applying for environmental authorisation. The SIA will be prepared in compliance with the requirements in NEMA and the Environmental Impact Assessment Regulations, 2014.

### 4.2 National Plan for Delivery of Electricity

**The National Development Plan 2030** (NDP 2030) recognises that South Africa needs to strengthen its economic infrastructure for providing basic services such as electricity, and meeting industrial, commercial and household needs (National Planning Commission, 2015). This objective will be measured through the **Presidential Outcomes Based Monitoring and Evaluation System (OBM&E)** (The Presidency, 2015). Outcome 6 is to deliver an "*efficient,*

*competitive and responsive economic infrastructure network*”, which will be achieved through **Strategic Integrated Projects (SIPs)**.

The SIP 9 is to generate electricity to support socioeconomic development, and SIP 10 will provide electricity transmission and distribution for all. Strategic Integrated Projects 9 and 10 will be attained by expanding the transmission and distribution network in order to provide access to electricity for all and to support economic development.

Eskom, as the public enterprise responsible for generating electricity has, since 2005, also embarked on a **New Build Programme** to expand its generation and transmission capacity. The Blanco-Droërivier 400kV Transmission Line has been designed to secure increased capacity from the Gourikwa power station, and to expand the electricity transmission in the Western Cape region. This project is therefore aligned with the NDP’s 2030 vision for South Africa.

## 5 Project description

The ability to meet demand in the Western Cape is strongly influenced by the availability of the Transmission network and the status of generation at Koeberg Nuclear Power Station (KNPS). A healthy Transmission system and local generation capacity in the Western Cape ensures that the regional demand is met, especially and most importantly during a unit outage at KNPS. As the base load reserve drops or local network conditions deteriorate, the need to use local gas generation increases. Careful management of local Western Cape generation is very important to limit the risk of supply interruptions and the use of gas generation (at Ankerlig, Gourikwa, Acacia and Port Rex power stations) during this period. The gas turbines are utilised in generating mode when the national grid experiences a shortage of generation capacity.

Eskom is planning to increase the power output at the existing Gourikwa Power Station generating facility at Mossel Bay in the Western Cape. This will increase the output at Gourikwa by 375 MW, increasing the total output at the power station to an expected 1125 MW by 2018. An increase in power output will require strengthening of the existing Transmission network, in order to evacuate the additional power generated.

Various combinations of 400 kV and 765 kV Transmission lines were assessed for the loading scenarios at Gourika. Results showed that loading will result in islanding of the Gourikwa power station in one scenario, and the islanding of the power station together with the Blanco and Proteus Transmission Substations in the second scenario. This means that if the project does not go ahead, then increased power generation at Gourikwa will overload the grid and cut off power supply from the power station. Therefore, in order to ensure that Gourikwa is Grid Code compliant, a third line needs to be built out of the facility. Three options for the line were considered.

When all three options were technically evaluated, the line into Droërivier Substation via Blanco Substation was preferred based on the natural path for the power to flow. This can be attributed to the future generation in the Cape Peninsula and surrounding area. This option is also in alignment with the proposed second Droërivier – Proteus 400 kV line as per the Technical Development Plan. For the Gourikwa-Blanco option, a 400 kV Transmission line from Gourikwa to Blanco (which is the next closest load centre) will have to be established, and a second 400 kV line from Blanco to Droërivier will also have to be put in place. Also, the series capacitor between Blanco and Droërivier will have to be bypassed.

Servitudes for the Transmission lines will need to be acquired. The EIA is being undertaken to assess the impact of the introduction of the Transmission lines between George and Beaufort-West. Figure 1 illustrates two options for the Transmission line route between George and Beaufort-West. Impacts associated with the physical infrastructure of the power line and its 55m servitude (31m on either side of the centre of the line) will be assessed for the study. In addition, impacts associated with a distance of 1 km alongside each side of the line will also be assessed.

If the project is authorised and routes secured, it is expected that the construction phase of the project will over a period of up to 2 years, subject to confirmation by Eskom. The lines are expected to operate over a period of 40 to 50 years.

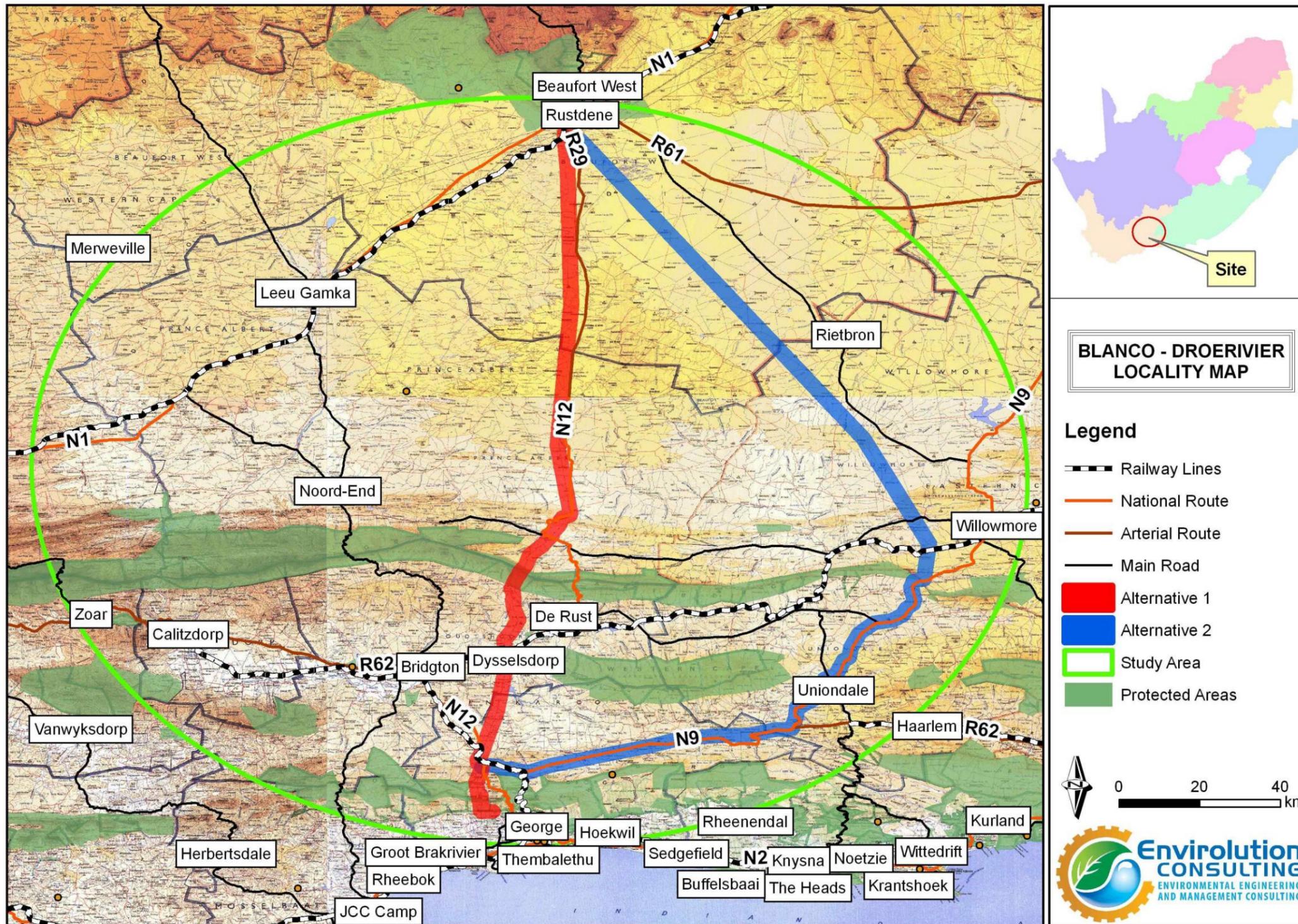


Figure 1: Two alternative routes for the Transmission line from Blanco Substation in George to the Droërivier Substation in Beaufort-West

## **6 Social aspects of the proposed energy project**

Social aspects of the project are discussed in this section to understand the potential social benefits and disadvantages associated with the proposed project. A project of this nature is associated with an improved power supply, work and procurement opportunities, physical and economic displacement, and community health and safety issues. Power supply can improve safety in some ways, but also introduce safety hazards in other ways. These social aspects are discussed as they pertain to the Blanco-Droërivier power upgrading development.

### **6.1 Improved Power Supply**

The largest potential benefit will accrue to residential and business communities that will secure improved services from the infrastructure development. Upgrading the power infrastructure will improve the reliability of power supply to residential homes in the municipalities. Residents will be able to continue domestic activities reliant on energy for cooking, lighting and heating. Residents and businesses will also benefit where electricity supply is strengthened to social and economic infrastructure, such as schools, clinics and businesses in these areas.

An improved power supply is therefore essential to meet current and future needs in this part of the country. The introduction of the additional Transmission lines will prevent overloading of the current infrastructure from the increased output at the Gourikwa power station. It will also essentially facilitate an improved transmission of power in the Western Cape as a whole. Transmission lines will be needed once power generation projects are on line. The lines will also transmit electricity towards power stations in the region such as Gourikwa, when it requires power. It is noted that due to the nature of transmission lines, areas they traverse do not necessarily directly benefit from the energy they carry. .

### **6.2 Work Opportunities and Procurement**

The Eskom contract will be advertised as an open tender. Further, in line with Eskom policy contractors will be encouraged to employ local people on the project. Eskom procurement policy also requires that goods and services be sourced locally where possible. The municipalities' residents and businesses therefore can potentially benefit from work opportunities and expenditure related to the project. However, contractors appointed by Eskom may not necessarily come from these areas. Also, contractors usually have skilled personnel to work on the project. It is possible that where labour may be sourced from local communities, it will be to perform unskilled work such as land clearing and erecting of fences.

### **6.3 Workers' Accommodation**

The entire construction workforce for the Eskom project is likely to be accommodated at various 'construction camps' that will be situated at various points along the route. The location is selected by the contractor who will take into account aspects as such access to the construction site, access to services and access to materials. The contractor will

enter into an agreement with a landowner for the establishment of the construction camp.

The various teams will travel from the camp to the construction site each day. The site moves continuously with the progression of the line, so the teams will probably travel a different distance to the site each time. At any one time some or all of the different teams may be working at different points along the line. There may be days of no activity in the process. There are some 35 active days of construction at any point, though this may take place over a period of two years.

As a rule of thumb, there is usually one construction camp per 100km of transmission line. It is therefore anticipated that there will be two or three construction camps along the route. Accommodation is for singles only.

## **6.4 Physical and Economic displacement**

Land may have to be secured for the proposed power infrastructure footprint, which includes its servitude. Where the proposed route is currently occupied by social or economic infrastructure, a process of negotiation will be initiated by Eskom, to facilitate agreement between the current owner and/ or occupant, and Eskom. Where the land that is required for the Eskom infrastructure and servitude is currently being used for economic activities, a process of negotiation will also be initiated, with a view to reaching agreement between the parties.

Negotiations typically take place if an environmental authorisation of the EIA is obtained. The EIA process will include a record of concerns, including objections, from Interested and Affected Parties. The securing the servitude or title of the portions of land required for the proposed project will be undertaken with the following activities:

- The legal boundaries are identified for each property affected by the project;
- The legal ownership of each property is identified;
- An independent property evaluator is appointed; and
- Negotiations are conducted by Transmission negotiators with each legal landowner, statutory bodies and mineral right holders.

Where land and rights to it are successfully acquired for the power infrastructure, these are registered as Eskom servitudes in the Deeds Office. Topographical surveys are then undertaken, and a procurement process is followed to identify a suitable construction contractor. Following the establishment of the power infrastructure, the affected properties damaged during construction are rehabilitated to their original status. . Damage should not occur if duty of care and good housekeeping is applied. Farming activities such as crop production and cattle grazing are allowed in the area of the servitude, and will therefore resume following construction.

## **6.5 Community Safety and Health**

A number of community safety and health aspects have been identified and are discussed here. Safety and security, respiratory health, electrical hazards, electric and magnetic fields, and HIV/AIDS are potential safety and health issues considered in the SIA study.

### 6.5.1 Safety and Security

Improving energy reliability will increase its reliability for street, residential, business and institutional lighting. This will lead to safer streets and internal environments for residents, businesses and government institutions.

### 6.5.2 Respiratory Health

Communities that use electricity will be less reliant on unhealthy sources of fuel such as coal and wood in indoor household environments (DEAT, 2006). Particulate matter (PM), for instance, is a pollutant emitted from burning fossil fuels. It consists of a mixture of chemicals such as sulfates, nitrates, ammonium, other inorganic ions such as ions of sodium, potassium, calcium, magnesium and chloride, organic and elemental carbon, crustal material, particle-bound water, and metals particles (WHO, 2013).

Particulates with a diameter of less than 10 micrometres ( $\mu\text{m}$ ) are referred to as PM10 and particles with a diameter of less than 2.5  $\mu\text{m}$  are referred to as PM2.5. Both particles can be inhaled and can enter the lung bronchi. Short term exposure to PM10 has been associated with an increase in morbidity (illness) such as aggravation of asthma and respiratory distress. Mortality (death) related to respiratory and cardiovascular conditions have been associated with long term exposure to PM2.5. Children, the elderly and people with lung or heart disease are particularly vulnerable to the effects of PMs. Households with improved access to electricity as opposed to fossil fuels will therefore benefit from better health.

### 6.5.3 Electrical hazards

Cable and electricity theft, and vandalism of power infrastructure is a concern in South Africa. Apart from costing the Eskom several millions of Rands of loss every year, these activities also bear serious risks for the perpetrators. They are often hazardous and can be fatal (Kwevoel, 2015). Eskom has a toll free number to report theft and vandalism anonymously (Eskom 2015b).

### 6.5.4 Electric and magnetic fields

Another potential social concern is the health impacts from electric and magnetic fields. Electric fields are generated by electric charges, and measured in volts per metre (V/m). Magnetic fields arise from the movement of electric charges in a current. Magnetic fields are measured in tesla (T), or millitesla (mT), or microtesla ( $\mu\text{T}$ ). Electric fields are shielded by common materials, such as wood and metal, whilst magnetic fields are not. Both fields are strongest at the source and reduce with distance away from the source (WHO, 2015).

According to Eskom (Eskom, 2015a), the electric field at the boundary of the servitude for its highest voltage transmission line (of 765 kV) is 3kV/m, which is lower than the maximum limit of 5kV/m continuous general public exposure recommended by the International Radiation Protection Association (IRPA) of the World Health Organisation (WHO). The 400kV power line in this project therefore is not expected to cause any health effects where communities are located at the boundary or outside the Eskom servitude.

In 2005, a World Health Organisation (WHO) Task Group of scientific experts concluded that magnetic fields were "possibly carcinogenic to humans" (WHO, 2015).

This classification was based on epidemiological studies showing a doubled increase in childhood leukaemia where residents were exposed to magnetic fields greater than 0.3 to 0.4  $\mu\text{T}$ . However, the WHO recognised that the epidemiological study lacked methodological soundness and the evidence could not be accepted. The IRPA concluded that there was no evidence for adverse effects of exposure to magnetic fields up to 8 T. It advised that there was limited information in this range on minor effects like hand-eye coordination and visual contrast. Eskom (Eskom, 2015a) measured a magnetic field of 3 $\mu\text{T}$  at the end of the servitude of its highest voltage line of 765 kV. It also found that magnetic field levels at the perimeter of various substations were less than 1 T. From the information obtained from the IRPA and Eskom there is insufficient evidence that electric or magnetic fields are detrimental to communities living outside the servitudes of the 400kV Transmission lines.

### 6.5.5 HIV/AIDS

Another potential health issue is the spread of HIV/AIDS. Contractors spending long periods away from home in single accommodation camps may have temporary sexual relations with local people. It is also possible that prostitutes may see an opportunity and move into the project area. Unprotected sex with multiple partners increases the risk for contracting HIV/AIDS.

## 6.6 Influx of work seekers

Unemployed people may be attracted to areas where there is development of new infrastructure, in the hope of finding work. However, as the work on the power lines will be constantly moving, it is not expected that work seekers moving into the area will be able to establish informal settlements for long. It is expected that it will be difficult for job seekers to consistently invest time and resources over a period of many months if they follow the path of the construction work and the worker camp.

## 6.7 Social issues identified during the public participation process

The public participation process for the EIA commenced in April 2015, when landowners were informed about the proposed development. Inputs received from Interested and Affected Parties (A&APs) during this period included comments and concerns about potential social impacts. These, together with economic impacts, are captured in Table 1:

**Table 1: Comments and concerns received when landowners were informed about the proposed development**

Change in social aspect	Nature of impact
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<p>Visual, resulting in <b>economic impacts</b></p>	<p>Visual changes will result in changes in the character of properties. This will have a negative economic impact. Property values and prices will drop. There will be reduced interest in tourism as the nature of the landscape will be affected from a reduction in the quality of the landscape for photography, birding and nature hikes. Where the planned line will pass in front of some holiday homes and caravan parks, it could disrupt the view, and possibly lead to a reduction in property value.</p>
<p>Farming activities disturbed, resulting in:                  - <b>economic displacement</b> from losses in economic activities and jobs                  -<b>physical displacement</b> if workers must give up their residential status on the farm.</p>	<p>Farming activities will be disturbed. Irrigation farmers are specifically worried about areas under centre pivot irrigation, with many channels, roads and irrigation lines that will be disrupted or cease to function. Some of these areas under pivot irrigation are intensively farmed with many crops.</p> <p>Where significant portions of the land under agriculture are affected, this can result in a loss of livelihoods for farmers and possibly farmworkers. If farmworkers are laid off work, this will mean a loss of livelihood for them, and possibly loss of residential status on the farm.</p>
<p>Social and Economic Development Plans disturbed, resulting in <b>loss of development and economic opportunities.</b></p>	<p>Future development planning for, for example, housing estates, roads, helicopter pads, holiday resorts, industries, wind and solar plants planned for the area housing estate will have to be modified</p>
<p>Poor project management for construction, environmental management, resulting in <b>economic losses</b> in the form of compensation</p>	<p>Employees were poorly skilled and management was poor as well. Eskom has no record of environmental management. No attempt was made to rehabilitate or re-imburse owners for damage suffered. We can only hope that the project is given to a suitably qualified and competent private enterprise firm to construct</p>
<p><b>Security and safety threats</b></p>	<p>Eskom does not remove vegetation from its servitudes. This presents unsightly areas where illegal squatters tend to live, posing a security risk to residents.</p>
<p><b>Noise</b></p>	<p>Existing power line are noisy</p>

Concerns about radiation from Electromagnetic fields and, resulting in <b>health impacts</b>	Radiation from lines is a concern.
No Eskom project, the <b>“No Go” alternative</b>	Social impacts from limited supply of electricity if the line is not constructed. Negative impacts will also be avoided.

Interested and Affected Parties were formally invited to submit comments when the Draft Scoping Report was available for public comment. Comments received during this review period are summarised in Table 2.

**Table 2: Summary of the comments received during the review period for the Blanco to Droerivier Draft Scoping Report:**

Potential socio-economic impacts	Comment/Concern	Area
Economic losses	<p>These properties and game farming will be impacted upon by the proposed line. Game fences are located on the farms and more than 17 species of antelope and Zebra are kept. Klipfontein might be divided in two portions by the line. Economic impact will be too high to allow the power line on these properties (unless if placed on the <b>eastern boundary of Klipfontein thus not subdividing the farm.</b>) Planning of the <i>Die Rebosch Rand Wild-en Jagreservaat</i> will be hampered, resulting in a decline in international hunters and tourist visiting the facilities. Helicopters are used to manage the game and power lines pose a serious risk. Gwarrie-veld is scarce and endangered and has high agri-economical value. Visual impacts will be negative.</p>	<p>Willowmore (Alternative 2) Volstruispoort Bekkersvlei Klipfontein (IJ, JC van Heerden)</p>
	<p>The line will impact negatively on the farm where two other Eskom lines are already located. Because of the humidity, the load “jumps down” to the structures below. The farm is fully utilised for fruit orchards and a new line will mean a loss in production and income. There are 3 dams close to the proposed line with bird life that has already been impacted upon by the existing lines. More lines will exacerbate the situation. As an alternative to the proposed alignment, <b>Eskom could consider</b></p>	<p>Waboomskraal Alternative 1 (Johan Kotze, Du Toit-Agri)</p>

<p>Safety from “load jumps” Loss in income</p>	<p><b>the land on the west of the existing line</b> where farming is less intensive.</p>	
<p>Loss in biodiversity</p>	<p>Concerns about the cumulative impacts - the impact of an activity may in itself not be significant, but may become significant when added to the existing and potential impacts eventuating from similar or diverse activities or undertakings in the area. Existing power lines already have an impact on priority species. The impact is substantial and this project/development poses a serious risk of killing many priority species. Options that are deemed to be “not feasible or cost effective” must be decided by the decision of the competent authority.</p>	<p>Alternative 1 and 2 Karoo News Group – Karoo Nuus Groep - KNG</p>
<p>Impact on Ecosystem</p>	<p>There should be an ecological study to synthesise all the biological information so the ecosystem can be understood.</p>	<p>Alternative 2 Eastern Cape DEDEAT</p>
<p>Loss of productive land</p>	<p>What will Agricultural Land be Rezoned to? Why does such a wide strip have to be cleared? Are Eskom’s Internal Guidelines and Standards acceptable from an environmental impact point of view? A focus group meeting to be held with DEDEAT as part of Public Participation Has a WULA been submitted? Was a NID submitted to ECHRA</p>	<p>Alternative 2 Eastern Cape DEDEAT</p>
	<p>EIAs are not mechanisms to expropriate land, more than expected, when applications are submitted to DEA. Any efforts by environmental consultants, acting in their clients’ interests, and not being neutral, and is against the meaning of the applicable law applications. Any land ownership negatively affected must be made clear in unambiguous terms to landowners If land units become unviable, due to subdivisions, it must be canvassed, what the economic impact thereof are – that is, DAFF has a say in this aspect Same holds for accommodation establishments. like ourselves, where the lodge will become un operational <u>Cumulative impacts</u>, of different lines, (previous and new combined)</p>	<p>Alternative 1 and 2 Gisela Weinmann</p>

<p>Economic Losses, Health and Safety, Cumulative impacts</p>	<p>with their correct widths, must be established, now, to determine the impact on planning phases and costs to SOEs, before EIA gets go ahead, else the terms of conditions, are forced onto landowners.                  No one is against the creation of wider electricity networks. All on board must just recognise the fact, <u>that if business is affected, someone must come with monetary / alternative solutions</u>                  Fire started as a result of EMF, which attracts thunderbolts to the mountain range in close proximity to the power lines.                  Our land has many powerlines. This triggers an assessment of EMF and radiation risk to persons living permanently on the lodge.</p>	
<p>Economic losses</p>	<p>Farming at a large scale with, inter alia, onions, butternut, sheep and hops plant.                  At this stage our Client cannot meaningfully comment on the DSR because the proposed powerline corridor stretches 2 km (kilometres) wide whereas the end result would, according to the DSR, compose of a mere 55 m (meters) servitude instead.                  We have the right to submit more detailed comments at a later stage once we can determine the exact location of the proposed powerline with more certainty. Currently it seems as if the 2 kilometre wide proposed powerline covers a substantial part of our Client's properties, which would obviously have catastrophic results on our Client's farming activities. Our Client therefor <u>requires and requests an appropriately scaled layout plan</u> of the proposed powerline in order to supplement his comments.</p>	<p>Alternative 1                  Waboomskraal,                  Kouwdouw farms                  Izak Gerhardus                  Barnard</p>
	<p>CapeNature is aware that a main transmission "backbone" is required to accommodate current and future demands for electricity. This proposal is in support of the Customer Load Networks (CLNs) for part of the Western Grid, namely the West and Southern Cape CLNs.                  The existing transmission powerline network traverses sections of the Protected Area network, by traversing the</p>	<p>Alternative 1 and 2                  Cape Nature</p>

Swartberg Nature Reserve Complex, which is the proposed alignment for Alternative 1 whereas Alternative 2 is proposed to avoid the Swartberg Nature Reserve Complex by routing a new powerline via Uniondale to the Eastern Cape and northwest towards Beaufort West where no servitude exists for the greater part of the area traversing the Great Karoo.

Both route alternatives traverse designated sensitive areas, inter alia, such as Critical Biodiversity Areas and / or Freshwater Ecosystem Priority Areas which should be avoided as far as is practically possible. A restricted form of infrastructural development is permissible within the Critical Biodiversity Areas network (Western Cape Biodiversity Framework); whereas it is advisable to avoid sensitive wetlands and related features by placing Tower Points outside of rivers and associated floodplains (i.e. spanning the width of watercourses by placement of Tower points outside of the riverbanks).

CapeNature requires a comparative assessment of the sensitivity of the areas proposed for both route alternatives; and specifically an assessment of the sensitivity of the mountainous crossings. As the Swartberg Nature Reserve Complex is now a proclaimed World Heritage Site (WHS) an unbiased motivation would be needed for traversing it as Alternative 1 (notwithstanding that an existing servitude traverses the WHS). Similarly it must be shown how this would detract or not from the WHS status and overall connectivity of the Western Cape Biodiversity Framework if implemented. The proposed Alternative 2 is shown to cross another mountain range which is presumed to be free of powerline servitudes and thus a baseline assessment of this area is required to adequately compare the impacts of both alternatives.

Similarly detailed baseline assessments of watercourses,

Loss of Biodiversity and Heritage	wetlands and associated features are required for consideration; as are assessments of the archaeological, palaeontological and heritage features within the study domain.	
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*\*Note: Comments received in Afrikaans were translated into English.*

## 7 Social baseline

Social and economic characteristics of the potentially impacted communities are described in this section to understand the current baseline in the primary and secondary zones of influence. Baseline characteristics will have to be considered with the corresponding social aspects of the project, to understand:

- Social baseline characteristics of the potential project beneficiaries and receptors; and
- How the project social characteristics will potentially change the current social aspects.

The social baseline focuses on describing the *status quo* on the site and in the six municipalities, and includes regional contexts where relevant. Statistics South Africa Census 2011 and the municipalities' IDPs for 2014/ 2015 were the main sources of data used for preparing the social baseline.

### 7.1 Geographical location of the project

The project, including its alternatives, is located largely within the Western Cape province. The Transmission lines are proposed to pass through the George and Oudtshoorn local municipalities in the Eden District Municipality geographical area. The lines are also planned to pass through the Prince Alfred and Beaufort-West in the Central Karoo District Municipality area. Both district municipalities are located in the Western Cape.

In addition, an alternative Transmission line is proposed to pass through the Baviaans Local Municipality located within the Sarah Baartman District Municipality (previously Cacadu District Municipality)<sup>2</sup> area. These two municipalities are located in the Eastern Cape province. The location of the five municipalities is illustrated in Figure 2.

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<sup>2</sup> The Cacadu District Municipality was renamed Sarah Baartman Municipality on 24 September 2015. This was after the baseline was prepared for this report. All references made to the Cacadu District Municipality are to Sarah Baartman District Municipality.



Figure 2: The location of the George, Oudtshoorn, Prince Albert and Beaufort-West Local Municipalities in the Western Cape province, and the Baviaans Local Municipality in the Eastern Cape (Adapted from Municipal Demarcation Board, 2015).

## 7.2 Economy and Livelihoods

This section provides an overview of some key economic factors in the Western Cape and Eastern Cape provinces. Provincial priorities for economic development are also described. The economic activities in each of the five municipalities in the study area are also discussed.

### 7.2.1 Western Cape province

The Western Cape's Gross Value Added (GVA) has grown at an average rate of 2.8% a year between 2005 and 2013 (Western Cape Government Economic Development and Tourism, 2015). Formal jobs however had only increased by 0.5% a year. Labour intensive sectors such as agricultural production had been growing slower than others. Moreover, formal jobs had reduced even in sectors showing higher growth (Western Cape Government, Economic Development and Tourism, 2015).

High levels of in-migration from other provinces into the Western Cape have contributed towards a high population growth rate of 1.98% a year. The province has seen overall unemployment rates increase from 17% in 2005 to 23% in 2013. Youth unemployment, that is, of people under the age of 35, was at 36% in 2013.

A Provincial Strategic Plan (PSP) was developed in 2014, providing strategies and plans for the province for years 2015 to 2019. The 5 Strategic Goals in the PSP are:

- Strategic Goal 1: Create opportunities for growth and jobs
- Strategic Goal 2: Improve education outcomes and opportunities for youth development
- Strategic Goal 3: Increase wellness, safety and tackle social ills
- Strategic Goal 4: Build a quality living environment, resilient to climate change
- Strategic Goal 5: Embed good governance and integrated service delivery through partnerships and spatial alignment.

Three sectors were selected for progressing towards the first goal in the first 3 to 5 years. These are Oil & Gas, Tourism, and Agri-processing. Energy has been identified as an enabler for all priority economic productivity sectors. Electricity supply constraints and rolling blackouts constitute significant risk and negatively affect investment in the resource and manufacturing sectors. The latter two sectors are acknowledged as important for job creation.

### 7.2.2 Eastern Cape province

The Provincial Growth and Development Strategy (PGDS) of the Eastern Cape for 2004 to 2014 is based on three foundation objectives (Eastern Cape Provincial Government, 2015), namely:

- Infrastructure development;
- Human resource development; and
- Public sector and institutional transformation.

This base supports three objectives of the PGDS, which are:

- Systematic eradication of poverty through a holistic, integrated and multi-dimensional approach to pro-poor programming;
- Agrarian transformation and strengthening of household food security; and

- Consolidation, development and diversification of the manufacturing base and tourism potential.

Both the Western Cape and Eastern Cape provinces emphasise support to the agricultural and tourism sectors for growing the provincial economies. Both strategies also recognise that improvements in infrastructure, including electricity grid infrastructure, will attract investment.

Table 3 illustrates employment in the formal economic sectors in South Africa, the Western Cape and Eastern Cape. Community and Social services is the largest employer in the Eastern Cape, as is the case in South Africa as a whole. The Trade sector employs slightly more people in the Western Cape than Community and Social services. Manufacturing is the second largest employer in the Eastern Cape.

**Table 3: Number of people employed in South Africa, the Western Cape and Eastern Cape in key formal sectors for October to December 2014. Source: Statistics South Africa (2015a)**

<b>Economic sector</b>	<b>Western Cape (in thousands)</b>	<b>Eastern Cape (in thousands)</b>	<b>South Africa (in thousands)</b>
<b>Agriculture</b>	131	88	742
<b>Mining</b>	3	1	427
<b>Manufacturing</b>	287	135	1749
<b>Utilities</b>	9	8	104
<b>Construction</b>	190	131	1334
<b>Trade</b>	466	131	3247
<b>Transport</b>	133	68	952
<b>Finance</b>	362	107	2039
<b>Community and social services</b>	465	392	3501
<b>Private households</b>	123	116	1219

### 7.2.3 Local Municipalities in the Study Area

George LM's economy is varied. It includes the primary sector (agriculture and forestry), manufacturing (agro-processing, building material), construction and real-estate services, trade, tourism, catering and professional as well as social services (education, health and old-age care) and public administration (George Municipality, 2015).

The economic base in Oudtshoorn is agriculture (fruit, tobacco, seed production and ostrich farming), but diversification of the economy has resulted in agriculture now employing 18.8% of the workforce (Oudtshoorn Municipality, 2015). The municipality has the world's largest ostrich population. Oudtshoorn in addition to being a centre of agriculture in the region, is also for its cultural, sport and art activities. The Congo Caves draws people to the region and the national Klein Karoo Arts Festival has been held in Oudtshoorn since 1994. There has been a rapid increase in accommodation facilities in the Klein Karoo in recent years.

Prince Albert LM is located in the Central Karoo, at the gateway to the Large Karoo. In the period 2000 to 2010 the greatest growth in the municipality was in the finance, insurance, real estate and business services (13.8%) and construction (13.3%) (Prince Albert Municipality, 2015). The transport, storage and communication sector contracted by 3%, and the agriculture, forestry and fishing sector by 1.8%.

Agriculture forms the basis of the economy in the Beaufort West LM (Beaufort West Municipality, 2015). The sector comprises of the production of fresh and processed meats (e.g. Karoo lamb and biltong), fruits and vegetables (e.g. chutneys and herbs), and processed animal by-products (e.g. wool and mohair), as well as the manufacture and servicing of animal traps. The transportation sector is well developed in Beaufort West, and accounts for 86.4% of the total Gross Geographical Product (GGP) for this sector. Historical, cultural and natural attractions such as the Karoo National Park attract tourists to the municipal area.

Agriculture is also the dominant economic sector in the Baviaans Local Municipality located in the Eastern Cape (Baviaans Municipality, 2015). Agriculture, Community services and Finance, including real estate, contributed the most towards Gross Value Added (GVA) in the municipality. The agricultural sector in Baviaans accounted for 34 % of jobs in 2012, and is viewed favourably as a sector for potential growth. Tourism related to its natural attractions is considered as another growth opportunity in the municipality.

### 7.3 Demography

Census 2011 data was used to construct demographic profiles of the five municipalities through which the proposed transmission line will pass (Table 4).

George's population growth of 2.59% recorded between 2001 and 2011 was the 26<sup>th</sup> largest in a local municipality nationally. A population growth of 2.24% in Prince Albert over the same period was ranked 36<sup>th</sup> nationally. There has been in-migration into the George municipality as people look to secure work and improve their lives (George Local Municipality, 2015). The population growth in George in the period 2001 to 2011 is higher than the average for South Africa of below 2% annually.

The country's average population density was estimated at 42 in 2011 (World Bank, 2015). In the study area population densities in George and Oudtshoorn are much higher (37 and 27 people per square kilometre respectively) than the other three local municipalities (2 people per km<sup>2</sup>). Beaufort-West Local Municipality (LM) which has the highest proportion of young people 14 years and below (31.5%) also has the smallest proportion of elderly people aged 65 and over (5.9%). The proportion of people of working age (that is, aged 15 to 64) ranges from 62.4% in Baviaans LM to 67.3% in George LM.

The Human Development Index (HDI) reflects life expectancy, literacy and income in a population. Mossel Bay LM has the highest HDI (0.75) in the Eden District Municipality, thus therefore indicating the highest level of development in the district. The HDIs of George and Oudtshoorn LMs in comparison are 0.68 and 0.62 respectively.

Dependency ratios<sup>3</sup> were higher in Baviaans and Beaufort West municipalities (60.2% and 59.7% respectively), and lower in George LM (48.6%). The dominant race group in all municipalities under study was Coloured. There is a large White population in George municipality (19.7% respectively). The largest Black African population is also in George (28.2%). The dominant home language in all municipalities under study was Afrikaans (Afrik). The second most spoken home language was isiXhosa; however, in Prince Albert, the second most spoken first language is English (3.5%). In Prince Albert, 0.8% of households spoke isiXhosa.

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<sup>3</sup> The proportion of the population aged below 15 years and those aged 60 years and older divided by those between ages 15 and 64 (Statistics South Africa, Census 2011).

**Table 4: Demographics of the George, Oudtshoorn, Prince Albert, Beaufort-West and Baviaans Local Municipalities (Source: Census 2011 (Statistics South Africa, 2015b)).**

	George LM	Oudtshoorn LM	Prince Albert LM	Beaufort-West LM	Baviaans LM
<b>Population</b>	193.672	95.933	13.136	49.586	17.761
<b>Population growth rate (2001 to 2011)</b>	2.59%	1.25%	2.23%	1.36%	0.5%
<b>Population density (persons/km<sup>2</sup>)</b>	37	27	2	2	2
<b>Percentage of Population that is Young (0-14)</b>	26.3%	28.7%	29.6%	31.5%	31.1%
<b>Percentage of Population of Working Age (15-64)</b>	67.3%	64.2%	64%	62.6%	62.4%
<b>Percentage of Population that is Elderly (65+)</b>	6.4%	7.2%	6.4%	5.9%	6.5%
<b>Dominant race groups</b>	Coloured 50.4%; Black African 28.2%; White 19.7%	Coloured 77.3%; White 12.5%; Black African 9.1%;	Coloured 84.5%; White 11.8%; Black African 2.8%	Coloured 73.5%; Black African 16.3%; White 9.2%.	Coloured 80.3%; Black African 12%; White 7%.
<b>Dominant languages</b>	Afrik 65.7%; IsiXhosa 21.2%. English 7.9%	Afrik 88.9%; IsiXhosa 4.7%; Eng 2.2%	Afrik 92%; Eng 3.5%; IsiXhosa 0.8%	Afrik 81.7%; IsiXhosa 10.4%; Eng 2.4%	Afrik 89.3%; IsiXhosa 5.7%; Eng 1.7%
<b>Dependency ratio</b>	48.6%	55.8%	56.2%	59.7%	60.2%

## 7.4 Education and Unemployment

George, Oudtshoorn and Beaufort-West municipalities fared the best with the proportion of over 20 year olds with matriculation (Table 5). Census 2011 recorded proportion of 20 year olds and over with matriculation in these municipalities as 29,1%, 25,1% and 23.6 respectively. George and Prince Albert also had the highest percentages of people over 20 years old with a higher education. The proportion of the population aged 20 and over with no schooling was the highest in Beaufort West (10.1%), followed by Prince Albert (9.1%) and then Baviaans (8%).

Overall unemployment rates ranged from 19.4% (in Prince Albert LM) and 20.7% (in George LM), to higher rates of 25.3%, 25.5% and 29.4% in Oudtshoorn, Beaufort-West and Baviaans LMs respectively. This represents the economically active people (employed or unemployed but looking for work) who are unemployed. Youth unemployment, that is, unemployment in the economically active 15 to 35 year old age group, was higher in all five municipalities than overall employment rates. The highest youth unemployment rates were recorded in Baviaans (37.9%), Oudtshoorn (35.9%) and Beaufort-West (34.5%) municipalities.

**Table 5: Formal education and unemployment rates of people in the George, Oudtshoorn, Prince Albert, Beaufort-West and Baviaans Local Municipalities. Source: Census 2011 (Statistics South Africa, 2015b).**

	George LM	Oudtshoorn LM	Prince Albert LM	Beaufort-West LM	Baviaans LM
<b>Matric aged 20+</b>	29.1%	25.1%	16.9%	23.6%	16.4%
<b>Higher education aged 20+</b>	11.6%	6.7%	8.5%	6.5%	4.7%
<b>No schooling aged 20+</b>	3.9%	4.5%	9.1%	10.1%	8%
<b>Unemployment rate</b>	20.7%	25.3%	19.4%	25.5%	29.4%
<b>Youth unemployment rate</b>	27.6%	35.9%	25.4%	34.5%	37.9%

## 7.5 Employment and household incomes

The highest proportion (17.4%) of households without an income was recorded in George LM (12.1%) (Table 6). At least 7.8% of households in the remaining four municipalities had no income.

There were larger proportions of households in Prince Albert, Beaufort West and Baviaans LMs in the income categories from R1 to R19,600, than in the other municipalities. The former three municipalities and Oudtshoorn LM had higher proportions of households in the R19,601 to R38,200 category.

Larger percentages of households with an income of R76 401 to more than R2,457,601 were registered in the George LM than in the other four municipalities. It is therefore concluded that a larger proportion of households in the former municipality had higher incomes, and Prince Albert, Beaufort West and Baviaans had a larger proportion of lower income households.

**Table 6: Household Incomes in the George, Oudtshoorn, Prince Albert, Beaufort-West and Baviaans Local Municipalities. Source: Census 2011 (Statistics South Africa, 2015b).**

	George LM	Oudtshoorn LM	Prince Albert LM	Beaufort-West LM	Baviaans LM
<b>None income</b>	12.1%	9%	6.3%	9.5%	7.8%
<b>R1 - R4,800</b>	2.6%	2.3%	3.3%	3.3%	3.7%
<b>R4,801 - R9,600</b>	4.4%	4.5%	6.1%	5.8%	6.8%
<b>R9,601 - R19,600</b>	13.2%	16.3%	19.6%	21.7%	24.5%
<b>R19,601 - R38,200</b>	19.4%	23.7%	26.7%	23.8%	28.4%
<b>R38,201 - R76,400</b>	17.3%	18.9%	17.1%	15.3%	14%
<b>R76,401 - R153,800</b>	12.7%	11.5%	9.4%	9.5%	7.4%
<b>R153,801 - R307,600</b>	9.8%	8.4%	6.5%	6.9%	4.2%
<b>R307,601 - R614,400</b>	6%	4.2%	3.6%	3.2%	2.3%
<b>R614,001 - R1,228,800</b>	1.7%	0.8%	0.6%	0.7%	0.6%
<b>R1,228,801 - R2,457,600</b>	0.5%	0.3%	0.3%	0.2%	0.2%
<b>R2,457,601+</b>	0.3%	0.2%	0.3%	0.2%	0.1%

## 7.6 Residential status

There was no tribal land in any of the five municipalities (Table 7). Land in all municipalities was predominantly urban in character, with George LM having the largest proportion of urban land. All municipalities had farm land, ranging from the smallest proportion in George (11.3%) to higher proportions of 21.1% and 27.5% in Prince Albert and Baviaans LMs. The percentage of agricultural households also follow the same pattern, with the smallest proportion (7.6%) registered in George LM and the largest in Prince Albert (16.5%) and Baviaans (20.6%) LMs. More than 33% of households in all municipalities were headed by women. In Prince Albert, 44.9% of households had women in this position.

George and Oudtshoorn LMs had the largest proportion of informal housing (16.1% and 11.5% respectively). Beaufort-West and Baviaans LMs had less than 0.7% informal households within their local municipal jurisdictions.

**Table 7: Residential status in the George, Oudtshoorn, Prince Albert, Beaufort-West and Baviaans Local Municipalities Source: Census 2011 (Statistics South Africa, 2015).**

	George LM	Oudtshoorn LM	Prince Albert LM	Beaufort-West LM	Baviaans LM
<b>Urban</b>	88.7%	81.6%	78.9%	85.6%	72.5%
<b>Tribal/Traditional</b>	0%	0%	0%	0%	0%
<b>Farm</b>	11.3%	18.4%	21.1%	14.4%	27.5%
<b>Number of Agricultural households</b>	7.6%	10.2%	16.5%	12.2%	20.6%
<b>Female headed households</b>	33.2%	36.2%	44.9%	37.7%	35.8%
<b>Formal dwellings</b>	83.9%	88.5%	93.9%	97.9%	97.4%

## 7.7 Energy use

Energy use for Cooking (C); Heating (H) and Lighting (H) in the six municipalities is indicated in Table 8. Most households in all municipalities used electricity for cooking, heating and lighting.

The proportion of households that used electricity for cooking ranged from around 84% (in George and Beaufort West LMs) to approximately 76.5% (Oudtshoorn and Prince Albert LMs). Gas and wood were the main alternative energy sources for cooking. Gas was more commonly used in George, and Prince Albert LMs. It was found that that between 9% and 15% of households in Oudtshoorn, Prince Albert, Beaufort-West and Baviaans LMs were using wood. Some households (0.2% to 0.4%) in all municipalities except Prince Albert did not have access to any energy for cooking.

A higher proportion of households are using electricity for lighting than for cooking. Between 89% and 93% of households in George, Beaufort-West and Baviaans LMs were using electricity for lighting. Approximately 15% of households in Oudtshoorn and Prince Albert were not using electricity as an energy source for lighting. The most widely used alternative for lighting in all municipalities was candles. In Oudtshoorn, Prince Albert and Baviaans, 13.2%, 8.9% and 7.6% of households respectively were using candles. Between 0.2% and 0.4% of households in all municipalities did not use any source of energy for lighting.

Large proportions of households in all municipalities did not use electricity for heating their homes. Census 2011 found that 43.3% of households (in Baviaans LM) to 67.1% of households (in Beaufort-West LM) were relying on electricity for heating. Large proportions of households (19.2%, 16.3% and 10.1% in George, Oudtshoorn and Baviaans LMs respectively) were not using any form of fuel for heating. Large proportions of households (37.9%, 26.5%, 18.8% and 17.3% respectively in Baviaans, Prince Albert, Beaufort-West and Oudtshoorn) were relying on wood for heating their homes. Gas and paraffin were other commonly used fuel sources for heating homes in all municipalities.

**Table 8: Energy use for Cooking (C); Heating (H) and Lighting (L) in the George, Oudtshoorn, Prince Albert, Beaufort-West and Baviaans Local Municipalities. Source: Census 2011 (Statistics South Africa, 2015b).**

Energy Source	George LM			Oudtshoorn LM			Prince Albert LM			Beaufort-West LM			Baviaans LM		
	% C	% H	% L	% C	% H	% L	% C	% H	% L	% C	% H	% L	% C	% H	% L
<b>Electricity</b>	83.8	56.9	91	77.8	61.6	85.2	76.1	62.6	86.4	84.7	67.1	92	81	43.3	89.2
<b>Gas</b>	7	3.6	0.2	7.8	1.7	0.1	8.4	2.5	0	3.7	1.5	0.3	4.6	1.3	0
<b>Paraffin</b>	5.1	10.4	3.8	3.1	2.3	0.8	0	0.2	0.3	1.5	3.9	0.4	1	2.4	2.4
<b>Solar</b>	0.1%	0.3	0.4	0.1	0.2	0.2	0.4	0.5	4.2	0.2	0.4	1.6	0.1	2.6	0.7
<b>Candles</b>	0	0	4.1	0	0	13.2	0	0	8.9	0	0	5.4	0	0	7.6
<b>Wood</b>	3.4	9.4	0	10.6	17.3	0	15	26.5	0	9.4	18.8	0	13	37.9	0
<b>Coal</b>	0.1	0.1	0	0.2	0.6	0	0	0.1	0	0.2	0.5	0	0.2	2.5	0
<b>Animal Dung</b>	0	0.1	0	0	0,1	0	0	0	0	0	0	0	0	0	0
<b>Other</b>	0.1	0	0	0	0	0	0	0	0	0,1	0	0	0	0	0
<b>None</b>	0.3	19.2	0.4	0.4	16.3	0.4	0	7.5	0.3	0.3	7.8	0.4	0.2	10.1	0.2

## 7.8 Health Status

Respiratory health and HIV status were deemed to be important health characteristics to take into account for the Social Impact Assessment. It is expected that the project has the potential to prevent negative effects on the respiratory health of the population in the study area. There is also a potential for possible deterioration in HIV status. Baseline information for these two health aspects are therefore provided here.

### 7.8.1 Respiratory Health

Respiratory diseases were amongst the ten leading causes of death in the last 3 years in South Africa. Tuberculosis, Influenza and pneumonia were ranked as the leading causes of death in 2011, 2012 and 2013. In addition, chronic lower respiratory disease was ranked tenth for the three years. Tuberculosis and chronic lower respiratory disease were amongst the ten leading causes of death in the Western Cape and Eastern Cape provinces in 2013. People suffering with Tuberculosis, influenza, pneumonia and lower respiratory disease are therefore at higher risk. Conditions that contribute towards the development of these conditions will also contribute towards increasing the risk.

### 7.8.2 HIV/AIDS

The 2012 population-based survey of HIV prevalence (Shisana, O, Rehle, T, Simbayi LC, Zuma, K, Jooste, S, Zungu N, Labadarios, D, Onoya, D et al., 2014) estimated that the HIV prevalence amongst South Africans was 12.2%. This meant that 6.4 million persons were HIV Positive. This represents an increase from the 2008 estimate of 10.6%. However, when children younger than 2 years were excluded in the 2012 figures, as was the case in 2008, the 2012 prevalence is 12.6%. HIV prevalence therefore has increased in South Africa.

The study also identified some high risk groups. For instance, it was found that overall, females had a higher HIV prevalence than males. Also, the prevalence of HIV was highest among females aged 30–34 and among males aged 35–49. Amongst teenagers aged 15–19 years, the estimated HIV prevalence among females was 8 times that of males. Also, there was a significantly higher HIV prevalence amongst rural informal area residents than in urban formal area residents.

The survey also established that the Western Cape was the province with the lowest HIV prevalence (5.0%). Within the Western Cape province, the Eden District had an estimated 4% to 5%. The study sample was insufficient to determine an estimate for the Central Karoo District, which is also in the Western Cape. The Cacadu District in the Eastern Cape province had an estimated 6% to 9% HIV prevalence rate.

HIV/AIDS accounted for 5.1 percent of deaths in South Africa in 2012, and was the recognised as the third most common cause of death for that year (Statistics South Africa, 2014).

## 8 Social Impact Assessment

The energy infrastructure project can deliver many benefits in the long term for communities in the Western Cape and Eastern Cape. Potential negative impacts are also anticipated in the short term, which can be reduced or avoided with management measures.

The potential social impacts are identified and assessed for the EIA. Management measures are also recommended in the EIA phase to mitigate potential negative impacts or enhance positive impacts.

It is anticipated that the project has the potential to realise the following positive social impacts:

- Improved quality of life, through
  - Creation of jobs (**during construction**);
  - Increased reliability of energy services (**during operations**); and
  - Improved community health from the introduction and maintenance of safer sources of energy (**during operations**).

The project can possibly also introduce negative social impacts, including:

- Increased community safety risks from increased direct exposure to electrical hazards, if there is tampering or dangerous contact with power infrastructure (**during operations**).
- Increased community health risks if workers' camps do not have access to basic services such as sanitation and waste removal (**during construction**);
- Increased community health risks from possible increased exposure to HIV/AIDS (**during construction**).

Each of the impacts is assessed in the tables below for the SIA.

Some I& APs registered concerns about the health and safety impacts of electromagnetic fields created by power lines. This impact could not be assessed (see explanation in Section 6.5.4), but the report recommends that the concerns must be addressed. Management measures are therefore provided in the Environmental Management Plan for responding to the concerns. Similarly, other potential impacts raised by I & APs could not be assessed but management measures are provided in the EMP to respond to the issues. These potential impacts are the likelihood of job losses due to losses in economic activity, and safety and security risks introduced during construction or operations.

Physical and economic displacement could not be assessed because of the 2km latitude provided to mitigate the impacts associated with them. The loss of jobs brought about by the the loss of economic activity, for example, could not be assessed (see Section 3.3). Economic and physical displacement, however, are two important criteria considered when assessing the line alternatives (in Section 8.2). Management measures are also provided in the Environmental Management Plan for mitigating the consequences of physical and economic displacement.

## 8.1 Impact Assessment Tables

**Table 9: Improved quality of life, through creation of jobs (during construction)**

<p><b>Issue:</b> Job creation.</p> <p><b>Nature of Impact: what causes the effect, who will be affected and how they will be affected:</b> It is expected that contractors will bring their own workers and will be required by Eskom to employ local people. Jobs therefore will be created for locals and at a national level. Jobs are a source of livelihoods and can therefore improve the quality of life for those who work.</p> <p>Increased procurement during construction will largely sustain jobs. There may also be some jobs created during this time if the levels of procurement justify them. Procurement is expected to benefit companies on a national scale, and to a lesser extent, companies locally.</p> <p><b>Potential sensitive environment and receptors and how they may be affected:</b> Unemployment rates are higher in the Oudsthoorn, Beaufort West and Baviaans Local Municipalities, when compared with Prince Albert and George Local Municipalities. However, it also noted that there has been an in migration of people looking for jobs in George. Employment therefore will be welcomed in all municipalities. Jobs could be of significance in areas such as Baviaans and Beaufort West LMs as dependency ratios are high. It is, however, expected that local employment will be for a short duration at best (2-5 years) and mainly for unskilled positions. The consequence therefore for locals may be low. It could also have a non-cumulative impact at this scale, as jobs are scarce</p> <p>On a national scale, the impact will be also for a short duration but could be cumulative for contract workers as it may mean continuation of work. The consequence for these workers could be high as they will be remunerated for semi-skilled and skilled work. This is expected for both direct project employment and jobs through procurement.</p> <p><b>Type of Impact:</b> Direct job creation, and provision of additional jobs through procurement. Non-cumulative at the local scale; cumulative at the national scale.</p> <p><b>Extent of the impact:</b> Local and National</p> <p><b>Acceptable Losses:</b> Where semiskilled and skilled workers cannot be sourced from the affected local municipal areas, it is acceptable that they be sourced from outside these areas.</p> <p>As far as possible, goods and services must be procured locally. It is acceptable if some goods and services need to be procured from outside the area due to quality and safety requirements.</p>		
<p><b>OPERATIONAL PHASE</b></p>		
<p>It is expected that there will be limited opportunities for job creation during the operations phase, including for maintenance activities, at local and national/regional scales. This impact is therefore not assessed for the operations phase.</p>		
<p><b>CONSTRUCTION PHASE: Note: National is a reference to National or Regional scales.</b></p>		
<p><b>Rating of Impacts</b></p>	<p><b>Without mitigation</b></p>	<p><b>With mitigation</b></p>
<p><b>Probability</b></p>	<p>Local (3); National (5)</p>	<p>Local (5); National (5)</p>

<b>Duration</b>	Local Short (2); National Short (2)	Local Short (2); National Short (2)
<b>Extent</b>	Local (1); National (4)	Local (3); National (4)
<b>Magnitude/Consequence</b>	Local (4); National (8)	Local (8); National (8)
<b>Significance</b>	<b>Local 21 (low); National 70 (high)</b>	<b>Local 65 (high); National 70 (high)</b>
<i>Alternative 1, 2 and 3</i>	Ratings are the same for all	Ratings are the same for all
<b>Status (positive or negative)</b>	Positive	Positive
<b>Reversibility</b>	Not applicable for this impact	Not applicable for this impact
<b>Irreplaceable loss of resources?</b>	Not applicable for this impact	Not applicable for this impact
<b>Can impacts be mitigated?</b>	This is a positive impact and should be promoted. From a developmental point of view, as far as possible local communities should benefit from the impact. Management measures are directed at increasing the likelihood that more eligible locals are employed.	
<b>No Go Alternative</b>	<b>No jobs will be created or sustained through project employment, or employment related to procurement.</b>	
<b>No Go Area</b>	<b>This is a positive impact and a no-go area is not applicable.</b>	
<p><b>Mitigation/ Management:</b> Eskom contract conditions should provide for at least unskilled labour to be sourced from the local municipal area affected. Contractors can be required to assess local applicants to identify those with potential to join the skilled and semi-skilled workforce. These workers can be put onto a regional database for contractors to draw their semi-skilled and skilled labour from, in the future. Where Eskom training schemes make provisions, locals with potential can be offered training opportunities.</p> <p>Eskom can identify as much procurement opportunity as possible at the local level to support businesses and job creation locally.</p>		
<p><b>Cumulative impacts:</b> there is a possibility that cumulative impact will be achieved at regional/national scale without management measures.</p>		
<p><b>Residual Risks/ Benefits:</b> None, as project work will be on a contract basis.</p>		
<p><b>Statement of potential significance of the identified issues based on the evaluation of the impacts:</b> The impact has been assessed as medium on a national scale, and low at the local level. Management options will be sought for increasing the significance at the local level to one of medium.</p>		
<p><b>Nomination of preferred alternative:</b> There is no preferred alignment, as all alignments can deliver the same level of benefit. One may argue that the longer the line, the greater the number of jobs created. However, this benefit will have to be considered against the negative social and environmental costs.</p>		

**Gaps in knowledge:**  
 It is unknown how many jobs will be created for the project and at what skills levels

**Table 10: Improved quality of life from increased reliability of energy services (during operations)**

<p><b>Issue:</b> Increased reliability of energy services</p> <p><b>Nature of Impact: what causes the effect, who will be affected and how they will be affected:</b> Improved quality of life from increased reliability of energy services in the Western Cape region. This is a direct impact that will persist in the long term, that is, during operations.</p> <p>Currently, South Africa is not meeting its electricity demand to support economic growth rates it would like to see. Security of energy supply will therefore positively contribute towards stabilizing and perhaps also stimulating economic activities in the Western Cape. This can improve livelihoods through sustaining and possibly increasing the number of jobs available.</p> <p><b>Potential sensitive environment and receptors and how they may be affected:</b></p> <p>This impact should support all development activities. There will be an Increased reliability of energy services for households in the Western Cape. Between 85% and 92% of households in the George, Oudtshoorn and Beaufort West LMs are on the electricity grid. Electricity supports a vibrant economy in the region. It is therefore important that electrical supply be sustained to continue to support social and economic development in the area.</p> <p>It was noted that 19.2% and 16.3% of households in George and Oudtshoorn were not using any energy source for heating their homes. In Oudtshoorn and Prince Albert, 13.2% and 8.9% of households were using candles for lighting. Extending the energy supply will deliver benefits to those who do not have this basic service.</p> <p>It is expected that the impact will be experienced in the long term (15 years), will benefit a moderate proportion of the population, and will alter lives so that their life processes will be temporarily affected. In order to improve the impact, management measures must endeavor to increase the duration of the impact to permanent, and result in completely effecting change in people’s lives.</p> <p><b>Type of Impact:</b> Direct</p> <p><b>Extent of the impact:</b> Regional</p> <p><b>Acceptable Losses:</b> Security of energy supply must be delivered at the least social, economic and environmental cost as possible to those who are negatively impacted by the proposed development.</p>		
<b>CONSTRUCTION PHASE</b>		
This impact is expected to be delivered after the construction phase.		
<b>OPERATIONAL PHASE:</b>		
<b>Rating of Impacts</b>	<b>Without mitigation</b>	<b>With mitigation</b>
<i>Probability</i>	3	4

<b>Duration</b>	4	5
<b>Extent</b>	3	3
<b>Magnitude/Consequence</b>	8	10
<b>Significance</b>	45 (medium)	72 (high)
<i>Alternative 1, 2 and 3</i>	Ratings are the same for all	Ratings are the same for all
<b>Status (positive or negative)</b>	Positive	Positive
<b>Reversibility</b>	Not applicable for this impact	Not applicable for this impact
<b>Irreplaceable loss of resources?</b>	Not applicable for this impact	Not applicable for this impact
<b>Can impacts be mitigated?</b>	This is a positive impact and should be promoted. If the development benefits many households, businesses and other development units within the municipal areas the infrastructure passes through, this may ease the negative impacts experienced. Management measures are therefore directed at increasing the likelihood that more people benefit from energy provision in these municipalities.	
<b>No Go Alternative</b>	<b>Households, businesses and organisations will not benefit from additional energy or energy security provided by the project. Social and economic development therefore will lack basic infrastructure and services support.</b>	
<b>No Go Area</b>	<b>This is a positive impact and a no-go area is not applicable.</b>	
<p><b>Mitigation/ Management:</b> Infrastructure will have to be maintained on an ongoing basis, to provide a permanent benefit for development. Where infrastructure has to be changed in the long term, for example, if there is a switch to environmentally-friendly energy technology, this should be effected with little disruption.</p> <p>A large proportion of households in the area are unable to pay for services. For example, 12% of households in George do not have any income. While it is favourable that households move towards improving their income status so that they are able to pay for services in the long term, this outcome is very much out of the influence of Eskom. It is therefore recommended that Eskom also consider renewable energy sources especially for no and low income households. This can allow energy access at no cost for poor households and support their social and economic development activities. It can also reduce the burden on Eskom and government in the long term to maintain conventional infrastructure and provide free electricity for households unable to pay for services.</p>		
<p><b>Cumulative impacts:</b> Improving security of supply will be cumulative to having access to electricity. For those who are receiving electricity for the first time and have been beneficiaries of other development measures such as the provision of water, the provision of secure electricity will be cumulative by improving their quality of life further.</p>		
<p><b>Residual Risks/ Benefits:</b> Access to secure sources of electricity can lead to many “downstream” development benefits.</p>		

<p><b>Statement of potential significance of the identified issue based on the evaluation of the impacts:</b> Medium significance, which management measures seek to promote to high significance.</p>
<p><b>Nomination of preferred alternative:</b> There is no preferred alignment, as all alignments deliver the same level of benefit.</p>
<p><b>Gaps in knowledge:</b> It is unclear at this stage of the project which areas will benefit from the energy transmitted by the lines. Transmission lines, unlike distribution lines, do not distribute energy to beneficiary communities.</p>

**Table 11: Improved quality of life, through improved community health and safety from the introduction and maintenance of safer sources of energy (during operations)**

<p><b>Issue:</b> Improved community health from the introduction and maintenance of safer sources of energy.</p> <p><b>Nature of Impact: what causes the effect, who will be affected and how they will be affected:</b> Improved quality of life, through improved community health and safety from the introduction and maintenance of safer sources of energy for the communities in the Western Cape. This is an indirect impact that is expected to persist in the long-term during operations.</p> <p><b>Potential sensitive environment and receptors and how they may be affected:</b></p> <p>Community health can improve with the provision of safer sources of energy than the community is currently using. Candles can be a safety hazard, and inhalation of some particulates emitted by burning wood over a protracted period of time can contribute towards respiratory illnesses.</p> <p>Communities that currently use less safe sources of energy such as candles and wood in internal environments will benefit more from the provision of electricity. These communities, if targeted as beneficiaries, will benefit immensely.</p> <p>It is expected that a small proportion of vulnerable households will benefit from supply, as the improved supply must support a range of development and economic activities. For the health and safety impact to be realised, management measures therefore must be directed towards benefitting as many households as possible using unsafe sources of energy.</p> <p><b>Type of Impact:</b> Direct</p> <p><b>Extent of the impact:</b> Regional</p> <p><b>Acceptable Losses:</b> This is a positive health impact and it would be unbefitting to determine which sections of the population should not benefit from it. The impact should benefit as many households as possible that are using unsafe energy sources.</p>		
<p><b>CONSTRUCTION PHASE</b></p>		
<p>This impact is expected to be delivered after the construction phase.</p>		
<p><b>OPERATIONAL PHASE:</b></p>		
<p><b>Rating of Impacts</b></p>	<p><b>Without mitigation</b></p>	<p><b>With mitigation</b></p>

<b>Probability</b>	3	4
<b>Duration</b>	4	5
<b>Extent</b>	2	3
<b>Magnitude/Consequence</b>	8	10
<b>Significance</b>	42 (medium)	72 (high)
<i>Alternative 1, 2 and 3</i>	Ratings are the same for all	Ratings are the same for all
<b>Status (positive or negative)</b>	Positive	Positive
<b>Reversibility</b>	Not applicable for this impact	Not applicable for this impact
<b>Irreplaceable loss of resources?</b>	Not applicable for this impact	Not applicable for this impact
<b>Can impacts be mitigated?</b>	<p>Yes</p> <p>This is a positive impact. From a developmental point of view, as far as possible communities using energy sources that are unsafe or harmful to their health should be targeted. Management measures are directed at increasing the likelihood that vulnerable populations receive this benefit.</p>	
<b>No Go Alternative</b>	<p><b>People using unsafe sources of energy will continue to do so. These will continue to constitute health and safety hazards, and possibly lead to a deterioration of health status, more injuries and maybe fatalities.</b></p>	
<b>No Go Area</b>	<p><b>This is a positive impact and a no-go area is not applicable.</b></p>	
<p><b>Mitigation/ Management:</b> There may be government policies that restrict electricity access for informal residences. As these households are part of the vulnerable population that will potentially benefit from positive health impacts associated with electrification, Eskom should seek to support alternative electrification solutions in these communities, in association with development partners such as local government. For instance, electrified communal cooking facilities can reduce the need to burn wood indoors.</p>		
<p><b>Cumulative impacts:</b> Benefits will accrue to beneficiaries of the project over the long term, from use of less harmful energy options.</p>		
<p><b>Residual Risks/ Benefits:</b> Better health has obvious benefits. It will improve the capacity of individuals so that they are able to pursue more development options.</p>		
<p><b>Statement of potential significance of the identified issues based on the evaluation of the impacts:</b> The potential significance is currently medium and management measures seek to increase the probability that the health impact will benefit a greater number of vulnerable households.</p>		

<p><b>Nomination of preferred alternative:</b> There is no preferred alignment, as all alignments deliver the same level of benefit.</p>
<p><b>Gaps in knowledge:</b></p> <p>It is currently unclear what criteria are used to determine which households or development activities will benefit from additional supplies of electricity. The project is for transmission lines and therefore there is no indication where the electricity will be subsequently distributed.</p>

**Table 12: Increased community safety risks from increased direct exposure to electrical hazards, if there is tampering or dangerous contact with power infrastructure (during operations)**

<p><b>Issue:</b> Increased community safety risks from increased direct exposure to electrical hazards</p> <p><b>Nature of Impact: what causes the effect, who will be affected and how they will be affected:</b> Increased community safety risks from increased direct exposure to electrical hazards, if there is tampering with power infrastructure including sub stations. It is also hazardous to use helicopters in an area with 400kV pylons. This is a direct impact with potential immediate and long term impacts. The impacts will be experienced during the operations phase.</p> <p><b>Potential sensitive environment and receptors and how they may be affected:</b></p> <p>Tampering with or flying into power infrastructure can lead to serious bodily harm, and even death.</p> <p><b>Type of Impact:</b> Direct</p> <p><b>Extent of the impact:</b> Local</p> <p><b>Acceptable Losses:</b> As exposure to damaged infrastructure can be fatal, there is no acceptable level of loss for this impact.</p>		
<p><b>CONSTRUCTION PHASE</b></p>		
<p>Impacts will occur after the infrastructure is in place, that is, in the operations phase.</p>		
<p><b>OPERATIONAL PHASE:</b></p>		
<p><b>Rating of Impacts</b></p>	<p><b>Without mitigation</b></p>	<p><b>With mitigation</b></p>
<p><b>Probability</b></p>	<p>Improbable (2)</p>	<p>Very Improbable (1)</p>
<p><b>Duration</b></p>	<p>Permanent (5)</p>	<p>Short (1)</p>
<p><b>Extent</b></p>	<p>Local (1)</p>	<p>Local (1)</p>
<p><b>Magnitude/Consequence</b></p>	<p>Permanent (10)</p>	<p>Low (4)</p>
<p><b>Significance</b></p>	<p>Medium (32)</p>	<p>Low (6)</p>

<i>Alternative 1, 2 and 3</i>	Ratings are the same for all	Ratings are the same for all
<b>Status (positive or negative)</b>	Negative	Negative
<b>Reversibility</b>	Low & Moderate Human injury may be reversible but human fatalities are not	Moderate & High Management measures are aimed at prevention and reversibility of injuries
<b>Irreplaceable loss of resources?</b>	High Human lives can be lost, and some injuries may result in permanent loss of function.	Low Management measures are aimed at preventing the loss of life and body function.
<b>Can impacts be mitigated?</b>	If injury is reversible, then yes. In the case of death, no. Management measures try to prevent the impacts	
<b>No Go Alternative</b>	<b>Any likelihood of injury or death associated with exposure to damaged infrastructure is avoided.</b>	
<b>No Go Areas</b>	<b>Where helicopter are used to herd animals, these paths must be considered to be no-go zones for the installation of pylons.</b>	
<p><b>Mitigation/ Management:</b> Where there is a risk of tampering, access to infrastructure will have to be controlled. Infrastructure will also have to be monitored and maintained especially in populated areas so that people (or animals) are not exposed to hazardous conditions.</p> <p>Infrastructure will have to be monitored and maintained especially in populated areas so that people (or animals) are not exposed to hazardous conditions. It is recommended that a rapid and appropriate procedure be put in place for stakeholders to identify, report and manage damaged infrastructure. Workers and residents working in the vicinity of the power infrastructure must be informed about how to implement the procedure. They must be made aware of what should be done if someone is injured or killed because of exposure to electrical hazards.</p>		
<p><b>Cumulative impacts:</b> If damaged infrastructure is not repaired timeously, it can continue to be a health hazard.</p>		
<p><b>Residual Risks/ Benefits:</b> If injury is severe, the impact will persist.</p>		
<p><b>Statement of potential significance of the identified issues based on the evaluation of the impacts:</b> There is a low probability that the impact will happen; however, the consequences could be serious if preventative measures are not in place.</p>		
<p><b>Nomination of preferred alternative:</b> There is no preferred alignment, as all alignments carry the same level of risk.</p>		
<p><b>Gaps in knowledge:</b> It is unclear how prevalent this risk is. There is also no information on how access and the condition of energy</p>		

infrastructure are monitored to reduce the risk of harm to people and animals.

**Table 13: Increased community health risks if workers’ camps do not have access to basic services such as sanitation and waste removal (during construction)**

**Issue:** Increased community health risks if workers’ camps do not have access to basic services such as clean water and adequate sanitation and waste removal.

**Nature of Impact: what causes the effect, who will be affected and how they will be affected:** Increased community health risks if workers’ camps do not have access to basic services such as sanitation and waste removal. This impact can potentially be introduced during construction. This impact could be realized along the construction route of the power line.

**Potential sensitive environment and receptors and how they may be affected:**

This is a direct impact for workers and an indirect impact for the community. It can have an immediate impact on the workers, and longer term impacts for workers and the community if not managed appropriately. If workers’ camps do not have access to appropriate technologies for basic services such as water, sanitation and waste removal, there is a likelihood that they will introduce health hazards into the environment. This will affect their own health and any community members exposed to the hazards. Children and the aged are the most susceptible. Medical care may also be difficult to access for remote communities.

**Type of Impact:** Direct impact for workers and an indirect impact for the community

**Extent of the impact:** Local

**Acceptable Losses:** Exposure to microbiological hazards can lead to debilitating conditions including diarrhea. In children and the aged, this can be a serious condition and could even lead to fatalities. There is no acceptable loss for this impact.

**OPERATIONAL PHASE**

If risks are not managed appropriately during construction, hazardous conditions can persist into the operations phase. Risks can be introduced during construction and management measures must manage the risks during that phase

**CONSTRUCTION PHASE:**

Rating of Impacts	Without mitigation	With mitigation
<b>Probability</b>	Highly probable (4)	Improbable (2)
<b>Duration</b>	Medium (3)	Medium (3)
<b>Extent</b>	Local (3)	Local (1)
<b>Magnitude/Consequence</b>	Permanent (10)	Minor (2)
<b>Significance</b>	<b>56 (medium)</b>	<b>12 (low)</b>
<i>Alternative 1, 2 and 3</i>	Ratings are the same for all	Ratings are the same for all

<b>Status (positive or negative)</b>	Negative	Negative
<b>Reversibility</b>	Low	Moderate
<b>Irreplaceable loss of resources?</b>	Moderate	Low
<b>Can impacts be mitigated?</b>	Yes	
<b>No Go Alternative</b>	<b>The likelihood of introducing health hazards into the environment will be removed.</b>	
<b>No Go Area</b>	<b>Workers camps must not be sited in areas where they can easily introduce health hazards into environmental resources that communities use, for example, river banks.</b>	
<b>Mitigation/ Management:</b> Provide appropriate water, sanitation and waste management facilities. Provide education and awareness to workers about the need to keep the environment clean, and how human waste can create health hazards. Monitor the effectiveness of basic service facilities provided and behavior, and correct if necessary.		
<b>Cumulative impacts:</b> Can be cumulative if not mitigated, for example, if there is poor waste management at the workers' camps.		
<b>Residual Risks/ Benefits:</b> Minimal if mitigated appropriately.		
<b>Statement of potential significance of the identified issues based on the evaluation of the impacts:</b> The issue is of moderate significance, and can be reduced to low with mitigation.		
<b>Nomination of preferred alternative:</b> There is no preferred alignment, as all alignments will carry the same level of risk.		
<b>Gaps in knowledge:</b> It is unclear how prevalent this practice is, and therefore how large a risk it poses.		

**Table 14: Increased community health risks from possible increased exposure to HIV/AIDS (during construction)**

<p><b>Issue:</b> Increased community health risks from possible increased exposure to HIV/AIDS</p> <p><b>Nature of Impact: what causes the effect, who will be affected and how they will be affected:</b> Increased community health risks from possible increased exposure to HIV/AIDS. This is a direct impact caused by transmission of the disease.</p> <p><b>Potential sensitive environment and receptors and how they may be affected:</b></p> <p>The Western Cape is the province with the lowest rate of HIV/ AIDS. Although there may be a low probability of this impact materializing, the impacts are life threatening. This impact has been included to ensure that</p>
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management measures are in place to manage any potential risk.  
 If workers from outside the area temporarily associate with locals and have unprotected sexual relations with them, there is an increased risk of spreading HIV/AIDs if one of them is HIV positive. Unprotected sex with multiple partners increases the risk of HIV/AIDs.

**Type of Impact:** Direct

**Extent of the impact:** National

**Acceptable Losses:** There is no “acceptable loss” for this impact as the consequences can be serious.

**OPERATIONAL PHASE**

Likelihood of transmission during construction.

**CONSTRUCTION PHASE:**

Rating of Impacts	Without mitigation	With mitigation
<b>Probability</b>	Probable (4)	Improbable (2)
<b>Duration</b>	Permanent (5)	Short duration (1)
<b>Extent</b>	National/ Regional (5)	National/ Regional (5)
<b>Magnitude/Consequence</b>	High (8)	Low (4)
<b>Significance</b>	High (72)	Low (20)
<i>Alternative 1, 2 and 3</i>	Ratings are the same for all	Ratings are the same for all
<b>Status (positive or negative)</b>	Negative	Negative
<b>Reversibility</b>	Low	Low, as not applicable: Management is aimed at prevention
<b>Irreplaceable loss of resources?</b>	High	Low
<b>Can impacts be mitigated?</b>	Yes.	
<b>No go Areas</b>	<b>Not applicable for this impact</b>	
<b>No Go Alternative</b>	<b>The increased likelihood of contracting HIV/AIDS will be removed.</b>	

**Mitigation/ Management:** Contractors must provide health awareness to their workers on the serious impacts of

HIV/AIDS. Condoms must be provided to workers, as it is the most effective preventative measure. Contract workers must be allowed time off at regular intervals to visit their families. Workers must have access to recreational activities during their time off. These must be organized with them.

**Cumulative impacts:** HIV/AIDS Prevalence rates will increase

**Residual Risks/ Benefits:** Once contracted, a person will have to most probably be on a lifelong course of Anti-Retroviral Therapy to manage the HIV/AIDS.

**Statement of potential significance of the identified issues based on the evaluation of the impacts:** The significance of the HIV/AIDS impact is high; however, management measures can reduce the risk considerably to a low significance.

**Nomination of preferred alternative:** There is no preferred alignment, as all alignments will hold the same level of risk.

**Gaps in knowledge:**

It is unclear to what extent this currently constitutes a risk amongst Eskom contractors working on site for extended periods of time.

## 8.2 Environmental Management Plan

The overall goal of the Social Component of the Environmental Management Plan is to minimise potential negative social impacts and maximise any positive social impacts associated with the project.

**OBJECTIVE:** To maximise job creation in communities affected by the project infrastructure

<b>Project component/s</b>	Job creation during the operations phase of the project		
<b>Potential Impact</b>	Improve livelihoods for local people		
<b>Activity/risk source</b>	Contract conditions to hire local people and procure goods and services locally		
<b>Mitigation: Target/Objective</b>	To create as many jobs as possible during construction for locals in geographical areas affected by the infrastructure		
<b>Mitigation: Action/control</b>	<b>Responsibility</b>	<b>Timeframe</b>	
Employ locals for unskilled positions	Eskom contract management	Include conditions in contract and ensure implementation during construction	
<b>Performance Indicator</b>	At least 80% of unskilled positions must be filled by locals. Fair procedure in place to recruit locals for unskilled positions.		
<b>Monitoring</b>	Contractors to submit report to Eskom on percentage of locals employed in unskilled positions. Eskom to verify if unskilled positions are filled by local residents.  Contractors to report to Eskom on fair procedures in place to recruit locals for unskilled positions. Eskom to verify if fair procedures were followed.		

**OBJECTIVE:** Increase the reliability of energy services for domestic, business and public sectors.

<b>Project component/s</b>	Operating the Transmission line
<b>Potential Impact</b>	Unreliable source of energy from service provider Eskom
<b>Activity/risk source</b>	Installation of a Transmission line by itself does not guarantee security of supply to end-users. Distribution lines and maintenance of electricity infrastructure in general will ensure that energy is secured in the long term.
<b>Mitigation:</b>	Operation of Transmission line must ensure reliability of energy sources in

<b>Target/Objective</b>	the long term.		
<b>Mitigation: Action/control</b>	<b>Responsibility</b>	<b>Timeframe</b>	
Maintain transmission line to ensure reliability of energy	Eskom	During operations phase	
<b>Performance Indicator</b>	% reduction in power outages for end-users linked to the Gourikwa-Blanco Transmission line network		
<b>Monitoring</b>	Eskom monitors as part of monitoring programme, and reports at least annually		

**OBJECTIVE:** Improved community health and safety from the introduction and maintenance of safer sources of energy

<b>Project component/s</b>	Operating the Transmission line		
<b>Potential Impact</b>	Community respiratory health and safety will deteriorate if source of safe energy supply is unreliable.		
<b>Activity/risk source</b>	Installation of a Transmission line by itself does not guarantee security of supply to end-users. Distribution lines and maintenance of electricity infrastructure in general will ensure that safe energy is secured in the long term.		
<b>Mitigation: Target/Objective</b>	Operation of Transmission line must ensure reliability of energy sources in the long term.		
<b>Mitigation: Action/control</b>	<b>Responsibility</b>	<b>Timeframe</b>	
Maintain transmission line to ensure reliability of energy	Eskom	During operations phase	
<b>Performance Indicator</b>	% reduction in power outages for end-users linked to the Gourikwa-Blanco Transmission line network		
<b>Monitoring</b>	Eskom monitors as part of monitoring programme, and reports at least annually		

**OBJECTIVE:** Avoid or reduce physical displacement (that is, the loss of assets and consequent disruption in people's lives)

<b>Project component/s</b>	Identification of area for placement of towers for the transmission line and acquisition of a servitude of 55 metres
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<b>Potential Impact</b>	If towers and servitude areas occupy an area where social infrastructure such as housing and other fixed assets currently exist, people’s lives will be disrupted and there will be loss of assets		
<b>Activity/risk source</b>	Placement of towers and the associated servitudes		
<b>Mitigation: Target/Objective</b>	Avoid or reduce the loss of assets and disruption in people’s lives when the footprint of towers and associated servitudes are being determined.		
<b>Mitigation: Action/control</b>	<b>Responsibility</b>	<b>Timeframe</b>	
Consult with landowners to understand on which parts of their land the Eskom infrastructure would cause least loss of assets and social disruption.  Provide fair compensation for physical displacement of assets.	Eskom	When negotiations are conducted with land owners to secure servitudes	
<b>Performance Indicator</b>	People displaced and fixed assets lost due to siting of the power infrastructure.  Signed compensation agreements between Eskom and people (e.g. workers, residents or landowners) who have experienced physical displacement of assets.		
<b>Monitoring</b>	Eskom to verify with landowners how many people displaced and assets lost due to physical displacement by the project footprint. Information to be included in the monthly project report.  Record of signed compensation agreements between Eskom and people who have experienced physical displacement of assets.		

**OBJECTIVE:** Reduce community safety risks from direct exposure to electrical hazards

<b>Project component/s</b>	Transmission towers during operations		
<b>Potential Impact</b>	If there is tampering or dangerous contact with power infrastructure (for example by helicopters) during operations, this could lead to serious bodily harm.		
<b>Activity/risk source</b>	Placement of towers in areas where helicopters are used for herding animals, or if people tamper with the infrastructure		
<b>Mitigation: Target/Objective</b>	To reduce safety risks for the community during operations phase.		
<b>Mitigation: Action/control</b>	<b>Responsibility</b>	<b>Timeframe</b>	

<p>Towers should not be erected in areas where helicopters are used for herding animals.</p> <p>Warning signs explaining the dangers of tampering with towers must be placed on the towers. They must be visible and understood by community members (e.g. by using pictures such as a lighting flash). They must include an Eskom contact number that problems can be reported to.</p>	<p>Eskom</p>	<p>During construction</p> <p>During operations</p>
<p><b>Performance Indicator</b></p>	<p>Siting of energy infrastructure must be negotiated with landowner, to avoid areas where helicopters need to be used to herd animals.</p> <p>Warning sign conspicuously mounted on the Eskom tower structures with Eskom emergency contact number visible.</p>	
<p><b>Monitoring</b></p>	<p>Landowners must verify whether Eskom has consulted them on placement of towers away from areas used by helicopters.</p> <p>Maintenance activities to include checking whether warning signs are intact and whether infrastructure has been tampered with. This must form part of ongoing maintenance activities during operations.</p>	

**OBJECTIVE:** Reduce environmental health risks to workers and communities

<p><b>Project component/s</b></p>	<p>Availability of water, sanitation and waste management services at construction camps</p>		
<p><b>Potential Impact</b></p>	<p>Health hazards can be introduced into the environment, and could constitute a health risk for workers and community exposed to them.</p>		
<p><b>Activity/risk source</b></p>	<p>Inadequate water, sanitation and waste management services</p>		
<p><b>Mitigation: Target/Objective</b></p>	<p>Reduce environmental health risks to workers and communities during construction.</p>		
<p><b>Mitigation: Action/control</b></p>	<p><b>Responsibility</b></p>	<p><b>Timeframe</b></p>	
<p>Provide adequate water, sanitation and waste management services at construction camps to prevent introduction of environmental health hazards.</p> <p>Provide education and awareness to workers about the need to keep the environment clean, and how human waste can create health hazards.</p>	<p>Contractors and Eskom</p>	<p>During construction</p>	
<p><b>Performance</b></p>	<p>Adequacy of water, sanitation and waste services to meet the needs of</p>		

<b>Indicator</b>	contractors living in the camp. Behaviour of contractors living in the camp to prevent introducing health hazards into the environment.
<b>Monitoring</b>	Contractor to monitor the effectiveness of basic service facilities provided and behaviour of workers. Corrective action must be taken if necessary. Deviations and corrective action to be recorded and reported to Eskom.

**OBJECTIVE:** Reduce community and workers' health risks from possible increased exposure to HIV/AIDS

<b>Project component/s</b>	Contractors working remotely for long periods of time		
<b>Potential Impact</b>	Increased risk of HIV/ AIDS infection from increased exposure		
<b>Activity/risk source</b>	Unprotected and multiple sexual relations between workers and locals		
<b>Mitigation: Target/Objective</b>	Reduce the likelihood of HIV/AIDS infection		
<b>Mitigation: Action/control</b>	<b>Responsibility</b>	<b>Timeframe</b>	
Contractors must provide health awareness to their workers on the risk factors and serious impacts of HIV/AIDS. Condoms must be provided to workers, as it is the most effective preventative measure. Contract workers must be allowed time off at regular intervals to visit their families. Workers must have access to recreational activities during their time off. These must be organized in consultation with them.	Contractor and Eskom	During construction	
<b>Performance Indicator</b>	Evidence of health awareness provided to workers on the serious impacts of HIV/ AIDs. Condoms discreetly available to workers. Evidence that contract workers have taken time at regular intervals to visit their families. Evidence that recreational activities are available to workers during their time off.		
<b>Monitoring</b>	Progress with achieving performance indicators must be reported to Eskom on a monthly basis		

**OBJECTIVE:** Reduce the likelihood of job losses associated with economic displacement.

<b>Project component/s</b>	Identification of area for placement of towers for the transmission line and the acquisition of a servitude of 55 metres		
<b>Potential Impact</b>	If towers and servitude areas occupy an area which will require significant disruption in economic activities, this may result in the loss of jobs.		
<b>Activity/risk source</b>	Placement of towers and the associated servitudes		
<b>Mitigation: Target/Objective</b>	Prevent job losses by avoiding or reducing significant loss or disruption in economic activity.		
<b>Mitigation: Action/control</b>	<b>Responsibility</b>	<b>Timeframe</b>	
Consult with landowners to understand which parts of their land the Eskom infrastructure would cause least loss or disruption of economic activities.  Provide fair compensation for economic displacement.	Eskom	When negotiations are conducted with land owners to secure servitudes	
<b>Performance Indicator</b>	Number of jobs lost due to disruption or loss of economic activity.  Signed compensation agreements between Eskom and landowners.		
<b>Monitoring</b>	Eskom to verify with landowners how many jobs were lost due to the project footprint causing a loss or disruption in economic activity. Information to be included in the monthly project report during negotiations.  Record of signed compensation agreements between Eskom and landowners.		

**OBJECTIVE:** Reduce health and safety risks associated with Electro Magnetic Fields (EMFs).

<b>Project component/s</b>	EMFs generated by the transmission lines during operations		
<b>Potential Impact</b>	According to the International Radiation Protection Association (IRPA) the maximum limit for continuous exposure to electric fields is 5kV/m and there is no evidence of adverse effects for magnetic fields up to 8T. Exposure beyond these limits may cause adverse health impacts.		
<b>Activity/risk source</b>	Possible cumulative impact from more than 1 powerline in close proximity		
<b>Mitigation: Target/Objective</b>	To reduce health and safety risks associated with electromagnetic fields (EMFs).		



during operations.		
<b>Performance Indicator</b>	<p>Landowners informed about the construction activities, schedule and measures in place to ensure safety for community members</p> <p>Landowners, community members and community representatives (such as local councillors) provided with contact numbers to lodge any grievance during construction or operations.</p>	
<b>Monitoring</b>	<p>Contractor to report dates when individual landowners were informed about the construction activities, schedule and measures in place to ensure safety for community members</p> <p>Eskom to report dates when landowners, community members and representatives were provided with contact details to lodge grievances with Eskom.</p>	

### 8.3 Assessment of Line Alternatives

The two line alternatives were assessed by:

- Evaluating each alternative mapped on Google Earth using potential impacts identified in the impact assessment and
- Considering relevant social concerns raised by I & APs.

The main criteria therefore used for the assessment were:

- Avoidance of physical displacement;
- Avoidance of economic displacement that will lead to job losses;
- Visual intrusion that will decrease property (and therefore asset) value in the long term.
- Visual intrusion that will reduce appeal for tourism if the lines impact on holiday facilities.

**Alternative 1** has been assessed to have the least social impact, as a smaller proportion of the line passes through agricultural activities. There is, however, intensive farming and large scale farming on this alignment and Eskom will have to negotiate careful placement of the line with farmers to ensure least disruption and economic loss. As there is a flexibility of 2km, it is assumed that structures on the farms such as dwellings can be avoided to prevent any physical displacement. If resident workers on these farms lose their jobs and have to leave the premises because of the loss of land under intensive agriculture, they will be both economically and physically displaced.

**Alternative 2** has more farms, including some with pivot irrigation systems that Eskom must negotiate to avoid. There is also a game farm on the alignment that is planning to extend its tourism attractions. The landowner has expressed concern that the visual and physical presence of the towers and line will reduce the tourist value on his game farm. Further, game on the farm is managed by a helicopter. The towers and line will therefore pose a safety hazard for flying a helicopter.

Cumulative impacts are a concern on **both alignments** as the proposed transmission line will add to existing lines on some properties. Concerns were raised about the line subdividing properties to an extent that it makes current and planned economic activities unviable. Placement of these lines on these properties will have to be carefully planned, or severe economic losses will be borne by landowners in the agricultural and tourism sectors.

It is the opinion of the social specialist that **Alignment 1** that passes through a smaller proportion of agricultural land is the **preferred option**. However, there are specific farming and tourism activities on this alignment that requires careful planning with landowners to prevent significant economic and even physical displacement.

## 8.4 Summary and Conclusion

### 8.4.1 Summary of Impacts and Risks

The potential social impacts assessed in the EIA phase are described in the table below:

**Table 15: Summary of potential social impacts assessed**

Potential Impact and Project Phase	Significance without mitigation	Significance with mitigation
<i>Positive impact:</i> Creation of jobs ( <b>during construction</b> )	Local 21 (low); National 70 (high)	Local 65 (high); National 70 (high)
<i>Positive impact:</i> Increased reliability of energy services ( <b>during operations</b> )	45 (medium)	72 (high)
<i>Positive impact:</i> Improved community health from the introduction and maintenance of safer sources of energy ( <b>during operations</b> )	45 (medium)	72 (high)
<i>Negative impact:</i> Increased community safety risks from direct exposure to electrical hazards ( <b>during operations</b> )	32 (Medium)	6 (Low)
<i>Negative impact:</i> Increased community health risks if workers' camps do not have access to basic services such as sanitation and waste removal ( <b>during construction</b> )	56 (Medium)	12 (Low)
<i>Negative impact:</i> Increased community health risks from	72 (High)	20 (Low)

possible increased exposure to HIV/AIDS ( <b>during construction</b> ).		
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Some potential impacts raised by stakeholders could not be assessed. Management measures were however provided in the EMP to address these concerns. These possible impacts are:

- Loss of assets and disruptions due to physical displacement
- Loss of livelihoods (jobs) from economic displacement
- Health and safety risks associated with Electro Magnetic Fields (EMFs)
- Safety and security hazards associated with construction activities and operations

**Statement regarding the potential significance of the identified issues based on the evaluation of the issues/impacts:** It is concluded that all impacts can be managed (or mitigated) to reduce risks or improve benefits. However, physical displacement, HIV/AIDS, safety and environmental health hazards must be given particular attention for management of their potential impacts.

#### 8.4.2 Reasoned opinion of whether the project should be authorised

It is the opinion of the social specialist that from a social impact perspective, the project should be authorised. The project is needed to strengthen the existing transmission network so that it can evacuate the additional power generated at the Gourikwa power stations when they come on line. This will promote continuous power supply for the Western Cape region, particularly when there is a unit outage at Koeberg Nuclear Power Station. The positive impacts, however, must not be undone by the negative impacts associated with establishing and operating the transmission line. Conditions are therefore recommended for inclusion in the environmental authorisation.

#### 8.4.3 Any conditions which must be included in the Environmental Authorization

It is recommended that the following conditions be included in the Environmental Authorization:

- At least 80% of the unskilled labour force must be sourced from communities in the geographical areas affected by the infrastructure
- Eskom demonstrate the effectiveness of the infrastructure during operations for improving the reliability of energy supply in the Western Cape.
- Eskom negotiates with landowners to minimize physical displacement and economic displacement. Areas where significant economic displacement will lead to job losses must be avoided. Fair compensation must be provided for physical and economic displacement.
- Eskom must measure the EMF where stakeholders have requested it, particularly to address concerns about cumulative impacts of EMF and impacts on vulnerable populations such as children.

- Where helicopter are used to herd animals, these paths are considered, in the absence of alternative herding methods, to be no-go zones for the installation of pylons.
- Pivot irrigation must not be disturbed.
- Landowners must be informed, before construction activities starts, about the construction process and measures in place to reduce hazards. Eskom must address all stakeholder concerns about safety.

## 9 References

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## 10 Report prepared by:

Signature: \_\_\_\_\_

Date: 18 August 2016

Amina O. Ismail

Social Impact Assessment (SIA) specialist

## **APPENDIX A: Curriculum vitae of SIA Specialist**

## **APPENDIX B: Specialist declaration of independence**

## **APPENDIX C: Envirolution's Terms of Reference for specialists**

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## Scoping Report Requirements

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### Scoping Report:

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The purpose of the Scoping Report is to determine the main issues and potential impacts of the proposed project during the scoping phase at a desktop level based on existing information:

- » Identify **potential sensitive environments** and **receptors** that may be impacted on by the proposed facility and the **types of impacts** (i.e. direct, indirect and cumulative<sup>4</sup>) that are most likely to occur.
- » Determine the **nature and extent of potential impacts** during the construction and operational phases.
- » Identify '**No-Go**' areas, where applicable.
- » Summarise the potential impacts that will be **considered further** in the EIA Phase through specialist assessments.

For each phase, the scoping report must include:

- » a description of the environment that may be affected by the activity and the manner in which the environment may be affected by the proposed project
- » a description and evaluation of environmental issues and potential impacts (including direct, indirect, cumulative impacts and residual risks) that have been identified
- » Direct, indirect, cumulative impacts and residual risks of the identified issues must be evaluated within the Scoping Report in terms of the following criteria:
  - \* the nature, which shall include a description of what causes the effect, what will be affected and how it will be affected, for each impact anticipated;
  - \* the extent, wherein it will be indicated whether the impact will be local (limited to the immediate area or site of development), regional, national or international. See Table on the next page.
- » a statement regarding the potential significance of the identified issues based on the evaluation of the issues/impacts
- » a comparative evaluation of the identified feasible alternatives, and **nomination of a preferred alternative** for consideration in the EIA phase

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<sup>4</sup> The cumulative impacts are expected to be associated with the scale of the project and any existing impacts affecting the study area. Cumulative effects can only be assessed once the detailed layouts are known. They will then be considered in the detailed specialist studies to be undertaken in the EIA Phase.

- » Identification of potentially significant impacts **to be assessed** within the EIA phase and details of the methodology to be adopted in assessing these impacts. This should be detailed enough to include within the **Plan of Study for EIA** and must include a **description of the proposed method** of assessing the potential environmental impacts associated with the project. This must also include any gaps in knowledge at this point of the study and further recommendations for the EIA Phase. Consideration of areas that would constitute "acceptable and defensible loss" should be included in this discussion.

**Impact Tables for Scoping Report**

**Table XX: Table Heading**

<p><b>Impacts</b></p> <p>[Description of the expected impacts. Areas anticipated to be affected.]</p> <p><b>Desktop Sensitivity Analysis of the Site:</b></p> <p>Sensitivity analysis in terms of the impacts expected. Discuss areas of high concern. Recommend areas for development. Discuss any "acceptable loss" areas/impacts.</p>			
Issue	Nature of Impact	Extent of Impact	No-Go Areas
i.e. Disturbance to and loss of indigenous natural vegetation	Discussion of the consequences of the construction of the facility to the issue/impact considered in column 1.	i.e. Local/Regional/National	No-Go areas would include the larger drainage lines, and .....etc.
<p><b>Gaps in knowledge &amp; recommendations for further study</b></p> <p>Outline areas of limitations in the study. Any areas that require further study.</p>			

### **Plan of Study for the EIA Phase**

Identification of potentially significant impacts **to be assessed** within the EIA phase and details of the methodology to be adopted in assessing these impacts. This should be detailed enough to include within the **Plan of Study for EIA** and must include a **description of the proposed method** of assessing the potential environmental impacts associated with the project.

Detailed description of what is planned to be undertaken during the EIA including but not limited to:

- Methodology
- Field studies planned

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## EIA Report Requirements

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### **EIA Report**

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The purpose of the EIA Report is to elaborate on the issues and potential impacts identified during the scoping phase of the proposed projects. This is achieved by site visits and research in the site-specific study area as well as a comprehensive assessment of the impacts identified during the scoping phase.

For each project, the EIA report must include:

- » a description of the environment that may be affected by the activity and the manner in which the environment may be affected by the proposed project
- » a description and evaluation of environmental issues and potential impacts (including direct, indirect, cumulative impacts and residual risks) that have been identified
- » Direct, indirect, cumulative impacts and residual risks of the identified issues must be evaluated within the EIA Report in terms of the following criteria:
  - \* the nature, which shall include a description of what causes the effect, what will be affected and how it will be affected;
- » a statement regarding the potential significance of the identified issues based on the evaluation of the issues/impacts
- » a comparative evaluation of the identified feasible alternatives, and **nomination of a preferred alternative**
- » Any aspects which are conditional to the findings of the assessment which are to be included as conditions of the Environmental Authorisation
- » This must also include any gaps in knowledge at this point of the study. Consideration of areas that would constitute “acceptable and defensible loss” should be included in this discussion.
- » A reasoned opinion as to whether the proposed project should be authorised.
- » Summary of the positive and negative impacts and risks of the proposed project and identified alternatives.
- » Mitigation measures and management recommendations to be included in the Environmental Management Programme to be submitted with the FEIR

### **Assessment of Impacts**

Direct, indirect and cumulative impacts of the issues identified through the scoping study, as well as all other issues identified in the EIA phase must be assessed in terms of the following criteria:

- » The **nature**, which shall include a description of what causes the effect, what will be affected and how it will be affected.

- » The **extent**, wherein it will be indicated whether the impact will be local (limited to the immediate area or site of development) or regional, and a value between 1 and 5 will be assigned as appropriate (with 1 being low and 5 being high):
- » The **duration**, wherein it will be indicated whether:
  - \* the lifetime of the impact will be of a very short duration (0–1 years) – assigned a score of 1;
  - \* the lifetime of the impact will be of a short duration (2-5 years) - assigned a score of 2;
  - \* medium-term (5–15 years) – assigned a score of 3;
  - \* long term (> 15 years) - assigned a score of 4; or
  - \* permanent - assigned a score of 5;
- » The **consequences (magnitude)**, quantified on a scale from 0-10, where 0 is small and will have no effect on the environment, 2 is minor and will not result in an impact on processes, 4 is low and will cause a slight impact on processes, 6 is moderate and will result in processes continuing but in a modified way, 8 is high (processes are altered to the extent that they temporarily cease), and 10 is very high and results in complete destruction of patterns and permanent cessation of processes.
- » The **probability of occurrence**, which shall describe the likelihood of the impact actually occurring. Probability will be estimated on a scale of 1–5, where 1 is very improbable (probably will not happen), 2 is improbable (some possibility, but low likelihood), 3 is probable (distinct possibility), 4 is highly probable (most likely) and 5 is definite (impact will occur regardless of any prevention measures).
- » the **significance**, which shall be determined through a synthesis of the characteristics described above and can be assessed as low, medium or high; and
- » the **status**, which will be described as either positive, negative or neutral.
- » the degree to which the impact can be reversed.
- » the degree to which the impact may cause irreplaceable loss of resources.
- » the *degree* to which the impact can be *mitigated*.

The **significance** is calculated by combining the criteria in the following formula:

$$S=(E+D+M)P$$

S = Significance weighting

E = Extent

D = Duration

M = Magnitude

P = Probability

The **significance weightings** for each potential impact are as follows:

- » < 30 points: Low (i.e. where this impact would not have a direct influence on the decision to develop in the area),
- » 30-60 points: Medium (i.e. where the impact could influence the decision to develop in the area unless it is effectively mitigated),
- » > 60 points: High (i.e. where the impact must have an influence on the decision process to develop in the area).

Assessment of impacts must be summarised in the following table format. The rating values as per the above criteria must also be included. Complete a table and associated ratings for **each** impact identified during the assessment.

### Impact Tables for EIA Report

**Table XX: Table Heading**

<b>Nature:</b> [Outline and describe fully the impact anticipated as per the assessment undertaken]		
	<b>Without mitigation</b>	<b>With mitigation</b>
<b>CONSTRUCTION PHASE</b>		
<b>Probability</b>	Definite (5)	Highly probable (4)
<b>Duration</b>	Medium-term (3)	Medium-term (3)
<b>Extent</b>	Limited to Local Area (2)	Limited to Local Area (2)
<b>Magnitude</b>	High (8)	Moderate (6)
<b>Significance</b>	<b>65 (high)</b>	<b>44 (moderate)</b>
<b>Status (positive or negative)</b>	Negative	Negative

<b>OPERATIONAL PHASE</b>		
<b>Probability</b>	Highly probable (4)	Probable (30)
<b>Duration</b>	Permanent (5)	Permanent (5)
<b>Extent</b>	Limited to Local Area (2)	Limited to the Site (1)
<b>Magnitude</b>	High (8)	Low (4)
<b>Significance</b>	<b>60 (high)</b>	<b>30 (moderate)</b>
<b>Status (positive or negative)</b>	Negative	Negative
<b>Reversibility</b>	Low	Moderate
<b>Irreplaceable loss of resources?</b>	Moderate	Low
<b>Can impacts be mitigated?</b>	Yes/No	
<p><b>Mitigation:</b></p> <p>"Mitigation", means to anticipate and prevent negative impacts and risks, then to minimise them, rehabilitate or repair impacts to the extent feasible.</p> <ul style="list-style-type: none"> <li>• Provide a description of how these mitigation measures will be undertaken keeping the above definition in mind.</li> </ul>		
<p><b>Cumulative impacts:</b> "Cumulative Impact", in relation to an activity, means the past, current and reasonably foreseeable future impact of an activity, considered together with the impact of activities associated with that activity, that in itself may not be</p>		

significant, but may become significant when added to existing and reasonably foreseeable impacts eventuating from similar or diverse activities<sup>5</sup>.

**Residual Risks:** "Residual Risk", means the risk that will remain after all the recommended measures have been undertaken to mitigate the impact associated with the activity (Green Leaves III, 2014).

**Environmental Management Plan Table format:**

Measures for inclusion in the draft Environmental Management Programme must be laid out as detailed below:

**OBJECTIVE:** Description of the objective, which is necessary in order to meet the overall goals; these take into account the findings of the environmental impact assessment specialist studies

<b>Project component/s</b>	List of project components affecting the objective	
<b>Potential Impact</b>	Brief description of potential environmental impact if objective is not met	
<b>Activity/risk source</b>	Description of activities which could impact on achieving objective	
<b>Mitigation: Target/Objective</b>	Description of the target; include quantitative measures and/or dates of completion	
<b>Mitigation: Action/control</b>	<b>Responsibility</b>	<b>Timeframe</b>
List specific action(s) required to meet the mitigation target/objective described above	Who is responsible for the measures	Time periods for implementation of measures

<sup>5</sup> Unless otherwise stated, all definitions are from the 2014 EIA Regulations, GNR 982

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<b>Performance Indicator</b>	Description of key indicator(s) that track progress/indicate the effectiveness of the management plan.
<b>Monitoring</b>	Mechanisms for monitoring compliance; the key monitoring actions required to check whether the objectives are being achieved, taking into consideration responsibility, frequency, methods and reporting

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**Checklist of Specialist Report**


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**Requirements as per the 2014 EIA Regulations**


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<b>EIA REGULATIONS 2014 GNR 982 Appendix 6</b>  <b>CONTENT OF THE SPECIALIST REPORTS</b>	<b>Required at Scoping/Desk-top Phase</b>	<b>Required at BA/EIA Phase</b>	<b>Cross-reference in this scoping report</b>
(a) details of— the specialist who prepared the report; and the expertise of that specialist to compile a specialist report including a curriculum vitae;	<b>X</b>	<b>X</b>	[i.e. Chapter 2 or Section b etc]
(b) a declaration that the specialist is independent in a form as may be specified by the competent authority;	<b>X</b>	<b>X</b>	
(c) an indication of the scope of, and the purpose for which, the report was prepared	<b>X</b>	<b>X</b>	
(d) the date and season of the site investigation and the relevance of the season to the outcome of the assessment;	<b>X</b>	<b>X</b>	
(e) a description of the methodology adopted in preparing the report or carrying out the specialised process;	<b>X</b>	<b>X</b>	
(f) the specific identified sensitivity of the site related to the activity and its associated structures and infrastructure;	<b>X</b>	<b>X</b>	
(g) an identification of any areas to be avoided,	<b>X</b>	<b>X</b>	

<p><b>EIA REGULATIONS 2014 GNR 982 Appendix 6</b></p> <p><b>CONTENT OF THE SPECIALIST REPORTS</b></p>	<p><b>Required at Scoping/Desktop Phase</b></p>	<p><b>Required at BA/EIA Phase</b></p>	<p><b>Cross-reference in this scoping report</b></p>
<p>including buffers;</p>			
<p>(h) a map superimposing the activity including the associated structures and infrastructure on the environmental sensitivities of the site including areas to be avoided, including buffers</p>	<p><b>X</b></p>	<p><b>X</b></p>	
<p>(i) a description of any assumptions made and any uncertainties or gaps in knowledge;</p>	<p><b>X</b></p>	<p><b>X</b></p>	
<p>(j) a description of the findings and potential implications of such findings on the impact of the proposed activity, including identified alternatives on the environment;</p>	<p><b>X</b></p>	<p><b>X</b></p>	
<p>(k) any mitigation measures for inclusion in the EMPr</p>		<p><b>X</b></p>	
<p>(l) any conditions for inclusion in the environmental authorisation;</p>		<p><b>X</b></p>	
<p>(m) any monitoring requirements for inclusion in the EMPr or environmental authorisation;</p>		<p><b>X</b></p>	
<p>(n) a reasoned opinion—</p> <ul style="list-style-type: none"> <li>i. as to whether the proposed activity or portions thereof should be authorised; and</li> <li>ii. if the opinion is that the</li> </ul>		<p><b>X</b></p>	

<p><b>EIA REGULATIONS 2014 GNR 982 Appendix 6</b></p> <p><b>CONTENT OF THE SPECIALIST REPORTS</b></p>	<p><b>Required at Scoping/Desktop Phase</b></p>	<p><b>Required at BA/EIA Phase</b></p>	<p><b>Cross-reference in this scoping report</b></p>
<p>proposed activity or portions thereof should be authorised, any avoidance, management and mitigation measures that should be included in the EMP, and where applicable, the closure plan;</p>			
<p>(o) a summary and copies of any comments received during any consultation process and where applicable all responses thereto; and</p>	<p><b>X</b></p>	<p><b>X</b></p>	
<p>(p) any other information requested by the competent authority</p>	<p><b>X</b></p>	<p><b>X</b></p>	