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

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**Client: Eskom  
Draft report prepared for EIA**

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September 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
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

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## 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, and the 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 an approximately 250 km 400kv transmission line from the Gourikwa Main Transmission Substation (MTS) in Mossel Bay, to the Blanco substation in George. The Gourikwa MTS will be upgraded. The proposed transmission line and its alternatives pass through the Western Cape local municipal jurisdictions of Mossel Bay and George. Potential social impacts in this report are assessed for the upgrade (refurbishment) of the Gourikwa MTS and the transmission line. The Blanco (Narina) substation is yet to be constructed, and forms part of another EIA process. Impacts of the works at the proposed Narina substation are therefore excluded from this assessment.

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. 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 and Mossel Bay 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

In the Scoping Phase, a desktop social baseline of the zones of influence was prepared for the project using the Census 2011 data. Additional information from the Integrated Development Plans (IDPs) of the municipal areas that will host the infrastructure was also used to build the social profile in the affected municipal areas. The Scoping Phase report was updated and additional findings are now included in this EIA phase report.

### 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 is to 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, as follows:

## 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	
<p><b>Mitigation:</b>            "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 significant, but may become significant when added to existing and reasonably foreseeable impacts eventuating from similar or diverse activities<sup>1</sup>.</p>		
<p><b>Residual Risks:</b> "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).</p>		

It must be noted that the same 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

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

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 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		

### 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, will be 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.

There were also overlaps between the SIA and the Visual Impact Assessment. The changes assessed by the visual assessment specialist could potentially contribute towards a reduced quality of life. The SIA uses the changes in visual quality as evaluated by the visual specialist, to assess the potential decrease in quality of life for residents and tourists in the affected areas.

## 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 was 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 proposed third line were considered (Figure 1).

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 planned as the next closest load centre) will have to be established. At the time of this EIA study, the Blanco (Narina) substation had as yet not been built. Five alternative sites were being investigated. It must also be mentioned that an Alternative 4 has been mapped but not as yet been approved by Eskom.

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 Mossel Bay and George. Figure 1 shows three alternative routes for the Transmission line from Gourikwa Power Station (in Mossel Bay) to Blanco Substation (in George). Impacts associated with the physical infrastructure of the power line and its 55m servitude (27.5m 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 be over a period of up to 2 years, subject to confirmation by Eskom. The operations phase is expected to be for a period of 40 to 50 years.

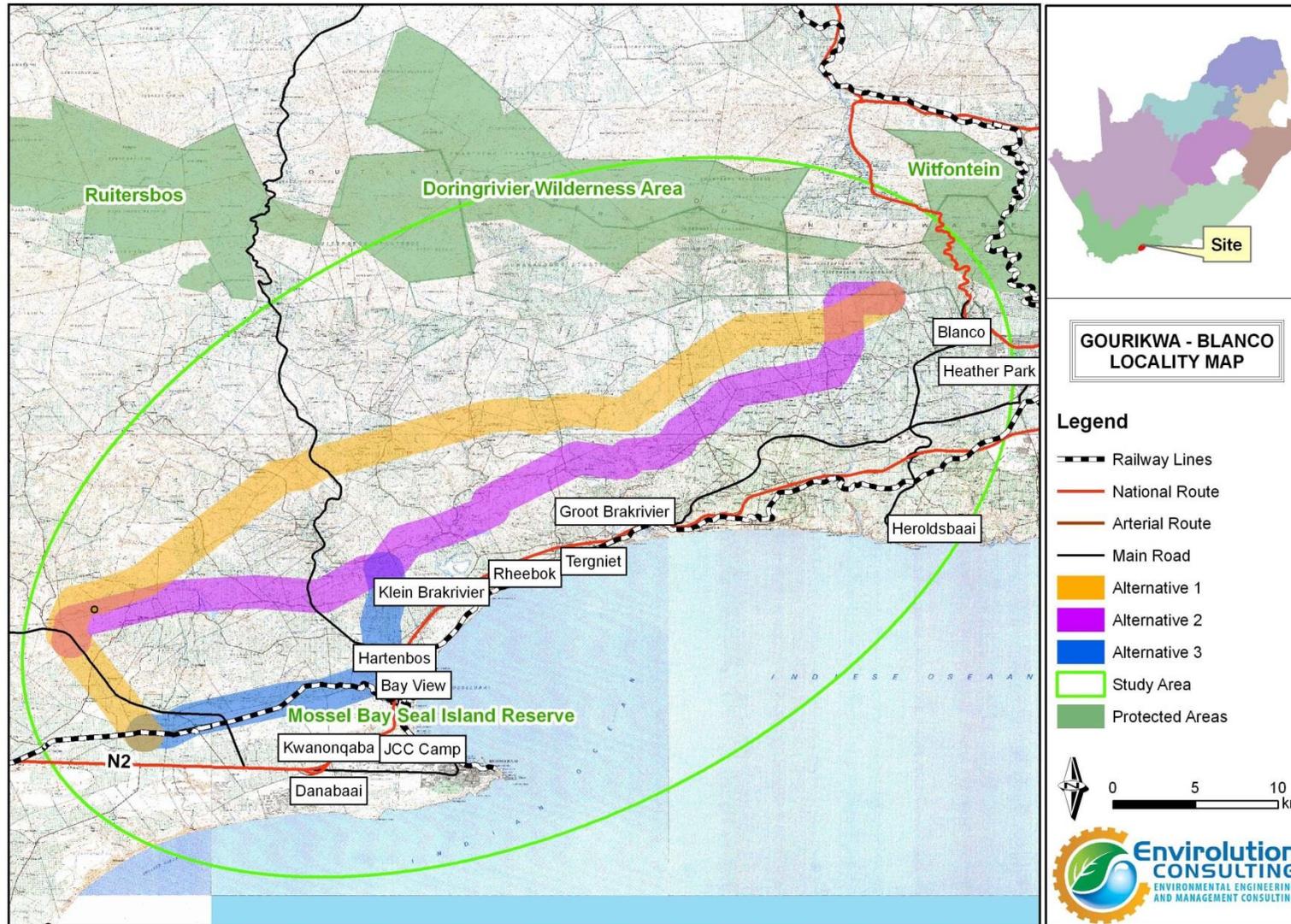


Figure 1: Three alternative routes for the Transmission line from Gourikwa Power Station in Mossel Bay to Blanco Substation in George.

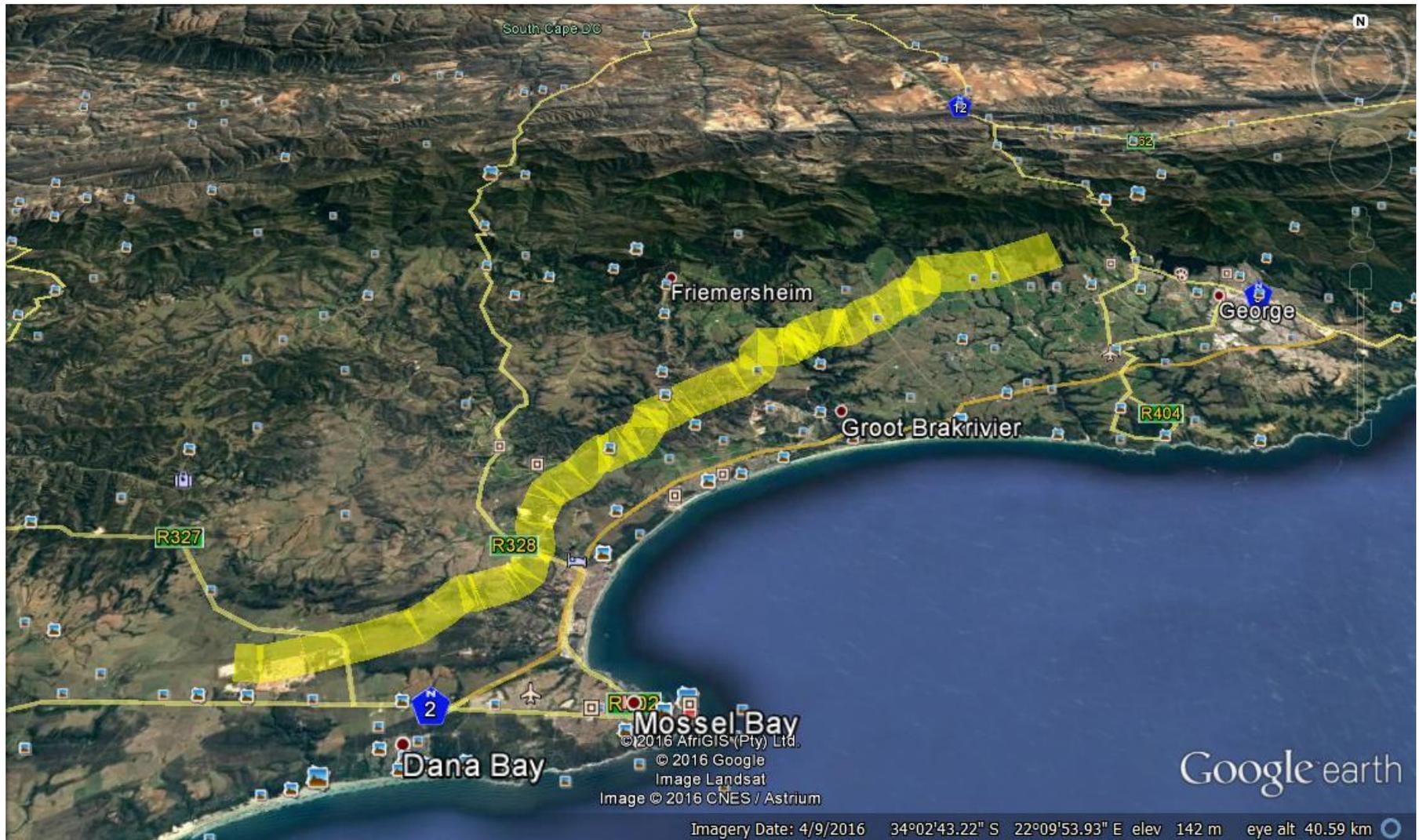


Figure 2: Proposed route for Alternative 4 (not confirmed by Eskom)

## **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 a strengthened 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 Gourikwa-Blanco power upgrading development.

### **6.1 Strengthening the 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 facilitate an increased transmission of power in the Western Cape as a whole. Transmission lines will be needed once power generation projects are on line. The transmission lines will also provide electricity to power stations such as Gourikwa, when they require 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 camps.

## 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 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
Visual, resulting in economic impacts	<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. The planned line will also pass in front of some holiday homes, disrupting the view, and possibly leading to a reduction in property value.</p> <p>Properties potentially affected: Gondwanda Game Reserve, an equestrian estate outside of Mossel Bay town, an eco-estate in George that has an eco-wilderness camp planned for the area through which the line will pass, Monte Christo eco estate in Mossel Bay, holiday homes and caravan parks.</p> <p>Two Eskom High Voltage power lines pass through the properties, Klipheuwel 143/3 and Rheebocksfontein 140/2. A third power line</p>

	across the properties would seriously impact upon the property value for recreational and game purposes. One Eskom high voltage power line currently passes through an inland property, Hartebeeskraal 122/8.
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.	Farming activities will be disturbed. Irrigation farmers are specifically worried about areas under centre pivot irrigation, with many channels, roads and irrigation lines that may be disrupted and cease to function.  The route closest to the sea crosses the Little Brak estuary and is also close to intensive agricultural land
Social and Economic Development Plans disturbed, resulting in <b>loss of development and economic opportunities.</b>	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
No Eskom project, the <b>“No Go” alternative</b>	Social impacts if the line is not constructed
Poor project management for construction, environmental management, resulting in <b>economic losses</b> in the form of compensation	Employees were poorly skilled and management was poor in previous Eskom projects,. 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
<b>Security and safety threats</b>	Eskom does not remove vegetation from its servitudes. This presents unsightly areas where illegal squatters tend to live, posing a security risk to residents.
<b>Economic viability</b> of project	The gas field is at its end and Petro SA is retrenching staff. How is Eskom going to drive those turbines?
<b>Noise</b>	Existing power line are noisy
Concerns about radiation from	Radiation from lines is a concern.

Electromagnetic fields and, resulting in <b>health impacts</b>	
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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. All comments have been retained, for consideration of any linkages between social aspects and other specialist issues. Loss of biodiversity, for example, can negatively impact on tourism. Consequently, the social and economic development of an area can decline.

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

Issue	Comment/Concern	Area
<b>Biodiversity and Economic Losses</b>	The power line (Alt 1 and 2) will run through the game reserve. Cape Nature acknowledges our special conditions and contribution to conservation. Nyaru Game Lodge Borders our reserve on the Eastern boundary and we have very similar conditions as they do. I therefore attach our objections to option 1 & 2 and we agree to your Alternative 4	Alternative 1 & 2 Mossel Bay Hartenbos Private Game Lodge, situated on Goedemoed 166 portion 13 and Hartebeestkuil 213, portion 17 (Eric Teixeira)
<b>Economic loss</b>	Berry farm is located on the Alt 1 alignment, and shade netting is used at about R1million per hectare.	Alternative 1 George (Chrisleo Botha)
<b>Economic Losses and Safety</b>	Existing and new developments that are located in the area will be impacted upon negatively, especially visual but also where wetlands are located. Monte Christo estate may lose attraction. Outeniquabos, Botelierskop make use of helicopters to manage game which will be risky if lines cross the farms. Opposed to Alternative 3 and 4.	Alternative 3 (and 4) Marike Vreken Dreyer van Zyl
<b>Biodiversity Loss</b>	The vegetation of the landscape in the area features Fynbos and other indigenous plants where bird life is abundant, including those with wide wing spans such as the Black Stork and the White Stork, Blue Crane, Secretary Bird, Fish Eagle, Grass Owl and Spoon Bill (Source: A Cockcroft, resident). A planned development in the vicinity of the dam is an eco-friendly "endurance golf course" that will contribute to tourism without disturbing the environment to the extent that a standard golf course would.	Alternative 2 Wolwedans Dam, Sinksaburg (Arthur Cockcroft)
	I agree with the statement that Alt 2	Alternative 2,3

<p><b>Visual impact and environmental loss</b></p>	<p>and 3 will impact on the Wolwedans dam. If the project does go ahead and alternative 1 is not followed, I agree with the proposal that Alt 4 is followed to minimise the impact on the Wolwedans dam. It is crucial to minimise the visual and environmental impact in the area bordering the Wolwedans dam. Will “environmental offsetting” are being considered as mitigating requirement for Eskom? (attached a presentation of Peter Lukey from DEA)</p>	<p>Wolwedans dam Montagu Murray</p>
<p><b>Physical displacement and economic impact</b></p>	<p>Visual and physical impact on hiking, mountain bike, horse riding and jeep trails reducing the Tourism appeal of the area Visual impact from private residences significantly reducing the commercial value. Physical impact on commercial breeding projects of rare game species – sable antelope, cape mountain zebra and bontebok Physical impact –and potential eviction of 20 people from their homes (staff village) Physical impact on birds (improved wetlands and ecosystems established on the reserve) A commercial assessment be done highlighting the negative impact on real-estate and tourism ventures. There is already a line and a second one will have a significant impact. We are in favour of Alternative 4</p>	<p>Alternative 1 and 2 (Mark Rutherford on behalf of Gondwana Lodges Pty Ltd, Gondwana Game Reserve Pty Ltd Gondwana Home Owners)</p>
<p><b>Loss of jobs</b></p>	<p>Direct negative impact on the sustainability of production on these relatively small farms and it will of necessity lead to job losses- which South Africa can ill afford. At best, our clients are prepared to negotiate a location where no irrigation takes place or on land which is not suitable for irrigation purposes.</p>	<p>JdV Robertson. Remainder Portion 10 and Portion 15 of Farm Klein Plaats No. 223</p>
<p><b>Loss of jobs and physical displacement</b></p>	<p>Intensive farming. Crop production will be affected and workers’ houses will have to be demolished as they are in the path of the alignment. Centre pivot irrigation, workers homes and stores must not be affected.</p>	<p>R &amp; JA Barnard. Affected by Alternatives 1 and 2.</p>
<p><b>Safety</b></p>	<p>Safety during construction was a concern, especially during holidays when they do school holiday programmes.</p>	<p>Blesbok dk 120. Alternative 1.</p>
<p><b>Security</b></p>	<p>Eskom does not remove vegetation from their servitudes, thus presenting unsightly areas where illegal squatters tend to live, posing a</p>	<p>Hartenbosheuwels</p>

	security risk to residents.	
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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 two 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 within the Western Cape province. Transmission lines are proposed to pass through the Mossel Bay and George Local Municipalities in the Eden District Municipality geographical area. The location of the two municipalities in the context of surrounding local municipalities is illustrated in Figure 3.



Figure 3: The location of the Mossel Bay and George Local Municipalities, in relation to Oudtshoorn, Prince Albert and Beaufort-West 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 province. The provincial priorities for economic development are also described. The economic activities in each of the two 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 the first goal in the first 3 to 5 years of implementing the strategy. 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.

The Western Cape provincial strategy emphasises support to the agricultural and tourism sectors for growing the provincial economies. The strategy also recognises that improvements in infrastructure, including electricity grid infrastructure, will attract investment.

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

**Table 3: Number of people employed in South Africa and the Western 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>South Africa (in thousands)</b>
<b>Agriculture</b>	131	742
<b>Mining</b>	3	427
<b>Manufacturing</b>	287	1749
<b>Utilities</b>	9	104
<b>Construction</b>	190	1334
<b>Trade</b>	466	3247
<b>Transport</b>	133	952
<b>Finance</b>	362	2039
<b>Community and social services</b>	465	3501
<b>Private households</b>	123	1219

### **7.2.2 Economies of Local Municipalities in the Study Area**

The main economic activities in Mossel Bay are agriculture (aloes, cattle, citrus, dairy, ostriches, sheep, timber, vegetables and wine), fishing, light industry, petrochemicals and tourism (Mossel Bay Municipality, 2015). Mossel Bay LM made the greatest contribution (35.8%) to the economy of Eden District Municipality over the period 2000 to 2010.

George Municipality's economy, on the other hand, is more 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).

## 7.3 Demography

Census 2011 data was used to construct demographic profiles of the two 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 Mossel Bay over the same period was ranked 36<sup>th</sup> nationally. There has been in-migration into the Mossel Bay and George municipalities as people look to secure work and improve their lives (Mossel Bay Local Municipality 2015; George Local Municipality, 2015). The population growth in Mossel Bay and 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 Mossel Bay and George are 44 and 37 people per square kilometre respectively. Mossel Bay has the smallest proportion from the two municipalities of children aged 14 years and below (23.1%), but has a higher percentage (10.1%) of elderly people aged 65 years and older. The proportion of people of working age (that is, aged 15 to 64) is 66.8% in Mossel Bay LM, and 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, indicating the highest level of development in the district. The HDI of George LM is 0.68.

Dependency ratios<sup>2</sup> in George and Mossel Bay municipalities were 48.6% and 49.7% respectively, lower than the national ratio of 52%. The dominant race group in all municipalities under study was Coloured. There is a large White population in Mossel Bay and George municipalities (25.5% and 19.7% respectively). The largest Black African populations are also in Mossel Bay and George (29.5% and 28.2% respectively). The dominant home language in the two municipalities under study was Afrikaans (Afrik). The second most spoken home language was isiXhosa.

**Table 4: Demographics of the Mossel Bay and George Local Municipalities. Source: Census 2011 (Statistics South Africa, 2015b).**

	Mossel Bay LM	George LM
<b>Population</b>	89.430	193.672
<b>Population growth rate (2001 to 2011)</b>	2.24%	2.59%
<b>Population density (persons/km<sup>2</sup>)</b>	44	37
<b>Percentage of Population that is Young (0-14)</b>	23.1%	26.3%
<b>Percentage of Population of Working Age (15-64)</b>	66.8%	67.3%

<sup>2</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).

<b>Percentage of Population that is Elderly (65+)</b>	10.1%	6.4%
<b>Dominant race groups</b>	Coloured 43.5%; Black African 29.5%; White 25.5%	Coloured 50.4%; Black African 28.2%; White 19.7%
<b>Dominant languages</b>	Afrik 66.4%; IsiXhosa 21.1%; Eng 6.4%	Afrik 65.7%; IsiXhosa 21.2%; .Eng 7.9%
<b>Dependency ratio</b>	49.7%	48.6%

## 7.4 Education and Unemployment

Census 2011 recorded the proportion of 20 year olds and over with matriculation in the Mossel Bay and George municipalities as 31.9% and 29.1% respectively (Table 5). Further, the percentages of people over 20 years old with a higher education in Mossel Bay and George was 31.9% and 29.1% respectively.

The overall unemployment rate in George LM was 20.7% and in Mossel Bay it was 22.9%. This indicator 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 both municipalities than their overall employment rates. Youth unemployment rates in Mossel Bay and George municipalities were 29.9% and 27.6% respectively.

**Table 5: Formal education and unemployment rates of people in the Mossel Bay and George Local Municipalities. Source: Census 2011 (Statistics South Africa, 2015b).**

	<b>Mossel Bay LM</b>	<b>George LM</b>
<b>Matric aged 20+</b>	31.9%	29.1%
<b>Higher education aged 20+</b>	13.5%	11.6%
<b>No schooling aged 20+</b>	2.9%	3.9%
<b>Unemployment rate</b>	22.9%	20.7%
<b>Youth unemployment rate</b>	29.9%	27.6%

## 7.5 Employment and household incomes

The proportion of households without an income was recorded as 17.4% in Mossel Bay LM and as 12.1% in George LM (

Table 6). Both municipalities had approximately the same percentages of households in the income brackets from R76 401 to more than R2,457,601 The Mossel LM also had a similar percentage (68.2%) of the population earning R76 400 or less as George LM (69%).

**Table 6: Household Incomes in the Mossel Bay and George Local Municipalities. Source: Census 2011 (Statistics South Africa, 2015b).**

Income Bracket	Mossel Bay LM	George LM
None income	17.4%	12.1%
R1 - R4,800	2.8%	2.6%
R4,801 - R9,600	4.1%	4.4%
R9,601 - R19,600	12.5%	13.2%
R19,601 - R38,200	16%	19.4%
R38,201 - R76,400	15.4%	17.3%
R76,401 - R153,800	13.2%	12.7%
R153,801 - R307,600	10.5%	9.8%
R307,601 - R614,400	5.5%	6%
R614,001 - R1,228,800	1.7%	1.7%
R1,228,801 - R2,457,600	0.5%	0.5%
R2,457,601+	0.4%	0.3%

## 7.6 Residential status

There was no tribal land in the two municipalities (

Table 7). Land in the municipalities was predominantly urban in character. Both municipalities had farm households; in Mossel Bay LM they constituted 5.4% of total households, and in George LM it was more than double at 11.3%. In Mossel Bay, however, almost two thirds (35.8%) of households were headed by women and in George 33.2% were headed by women. George had a significant proportion of informal housing (16. 1%) while in Mossel Bay 2.6% of houses were informal.

**Table 7: Residential status in the Mossel Bay and George Local Municipalities Source: Census 2011 (Statistics South Africa, 2015).**

Type of household	Mossel Bay LM	George LM
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<b>Urban</b>	94.6%	88.7%
<b>Tribal/Traditional</b>	0%	0%
<b>Farm</b>	5.4%	11.3%
<b>Number of Agricultural households</b>	7.2%	7.6%
<b>Female headed households</b>	35.8%	33.2%
<b>Formal dwellings</b>	97.4%	83.9%

## 7.7 Energy use

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

The proportion of households that used electricity for cooking was 85% in Mossel Bay, and in George it was 83.8%. Gas was the main alternative energy sources for cooking in both municipalities. Some households (0.2% to 0.3% respectively) in Mossel Bay and George LMs did not have access to any energy for cooking.

A higher proportion of households (93% and 91% respectively) were using electricity for lighting than for cooking in Mossel Bay and in George. The most widely used alternative for lighting in the two municipalities was candles. Further, in Mossel Bay LM, 0.3% of households did not use any source of energy for lighting, while the proportion of households in George LM with no energy source for lighting was 0.4%.

At least 43% of households in the two municipalities did not use electricity for heating their homes. Census 2011 found that 27.3% and 19.2% of households in Mossel Bay and George, LMs respectively were not using any form of fuel for heating. Gas, paraffin and wood were other commonly used fuel sources for heating homes in the two municipalities.

**Table 8: Energy use for Cooking (C); Heating (H) and Lighting (L) in the Mossel Bay and George Local Municipalities. Source: Census 2011 (Statistics South Africa, 2015b).**

Energy Source	Mossel Bay LM			George LM		
	% C	% H	% L	% C	% H	% L
Electricity	85	56	93	83.8	56.9	91
Gas	7.6	4.2	0.3	7	3.6	0.2
Paraffin	4.7	8.8	1.9	5.1	10.4	3.8
Solar	0.2	0.6	0.3	0.1%	0.3	0.4
Candles	0	0	3.4	0	0	4.1
Wood	1.1	2.7	0	3.4	9.4	0
Coal	0.1	0.1	0	0.1	0.1	0
Animal Dung	0	0.1	0	0	0.1	0
Other	0.2	0	0	0.1	0	0
None	0.2	27.3	0.3	0.3	19.2	0.4

## 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 (Statistics South Africa, 2014). Tuberculosis and chronic lower respiratory disease were amongst the ten leading causes of death in the Western Cape province 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 has therefore 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 rate of 4% to 5%.

HIV/AIDS accounted for 5.1 percent of deaths in South Africa in 2012, and 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 potentially deliver many benefits in the long term for communities in the Western Cape. Possible negative impacts are also anticipated in the short or long terms, which can be reduced or avoided with management measures.

The potential social impacts are identified and assessed for the EIA in this section. Management measures have been recommended in the Environmental Management Plan to mitigate potential negative impacts or enhance possible 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:

- Loss of assets and disruption in people's lives because of physical displacement, which can arise if residences are located in the same path as the power infrastructure (**during construction**);
- 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**); and
- Reduced quality of life due to changes in visual quality of the landscape. (**during construction and operations**).

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, not all other potential impacts raised by I & APs could 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. However, a Socio-economic impact study was done by the economic specialists and the findings are contained in a separate report. The loss of jobs brought about by 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 Programme (EMPr) 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)**

**Issue:** Job creation.

**Nature of Impact: what causes the effect, who will be affected and how they will be affected:** It is expected that contractors will bring their own workers and it will also 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.

Increased procurement during construction will largely create a relatively low number of jobs for unskilled workers (due to the technical nature of the work). 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. This is because the establishment of transmission lines requires specialized skills and specific infrastructure, which most likely will be procured at a national scale.

**Potential sensitive environment and receptors and how they may be affected:** It is noted that there has been an in migration of people looking for jobs in George. General unemployment rates in Mossel Bay and George was 22.9% and 20.7% respectively, and youth unemployment is 29.9% and 27.6% respectively. Employment in these municipalities therefore will be welcomed. 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

On a national scale, the impact will be also for a short duration (work mostly done during construction phase) but could be cumulative for contract workers as it may mean continuation of work as they secure work on the next contract 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.

**Type of Impact:** Direct job creation, and provision of additional jobs through procurement. Non-cumulative at the local scale; cumulative at the national scale.

**Extent of the impact:** Local and National

**Acceptable Losses:** 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.

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.

### IMPACT ASSESSMENT FOR OPERATIONAL PHASE

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.

**IMPACT ASSESSMENT FOR CONSTRUCTION PHASE: Note: National is a reference to National or**

<b>Regional scales.</b>		
<b>Rating of Impacts</b>	<b>Without mitigation</b>	<b>With mitigation</b>
<b>Probability</b>	Local (3); National (5)	Local (5); National (5)
<b>Duration</b>	Local Short (2); National Short (2)	Local Short (2); National Short (2)
<b>Extent</b>	Local (1); National (1)	Local (2); National (1)
<b>Magnitude/Consequence</b>	Local (4); National (6)	Local (4); National (6)
<b>Significance</b>	<b>Local 21 (low); National 45 (medium)</b>	<b>Local 40 (medium); National 45 (medium)</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; therefore the impact 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 has advised that the construction of a 400kV line is highly specialised and there are a limited number of contractors capable of executing the work. Eskom does not have a specialised unit for this work.</p> <p>Eskom contract conditions should provide for at least unskilled labour to be sourced from the local municipal area affected, with the assistance from local municipalities. Contractors can be required to assess local applicants to identify those with potential to join the skilled and semi-skilled workforce. Skilled and semi-skilled workers could explore the possibility of registering onto a database for contractors to draw their semi-skilled and skilled labour from, in the future.</p> <p>Eskom can identify as many procurement opportunities as possible at the local level to support businesses and job creation locally.</p>		
<b>Cumulative impacts:</b> There is a possibility that cumulative impact will be achieved at regional/national scale		

without management measures, as contract workers can continue working as another contract is secured.
<b>Residual Risks/ Benefits:</b> None, as project work will be on a contract basis.
<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.
<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.
<b>Gaps in knowledge:</b> 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. More than 90% of households in Mossel Bay and George municipalities were using electricity for lighting. At least 12% of households in both municipalities were using gas and paraffin for cooking. It was noted that at least 43% of households in both municipalities did not use electricity for heating their homes. This included 27.3% and 19.2% of households in Mossel Bay and George respectively who were not using any energy source for heating their homes.</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>IMPACT ASSESSMENT FOR CONSTRUCTION PHASE</b>
This impact is expected to be delivered after the construction phase.
<b>IMPACT ASSESSMENT FOR OPERATIONAL PHASE:</b>

Rating of Impacts	Without mitigation	With mitigation
<b>Probability</b>	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; therefore it 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>	

**Mitigation/ Management:** 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.

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.

**Cumulative impacts:** 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

<p>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 that use 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 unbecoming 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>IMPACT ASSESSMENT FOR CONSTRUCTION PHASE</b></p>
<p>This impact is expected to be delivered after the construction phase.</p>

<b>IMPACT ASSESSMENT FOR OPERATIONAL PHASE:</b>		
<b>Rating of Impacts</b>	<b>Without mitigation</b>	<b>With mitigation</b>
<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>	This is a positive impact; therefore it should be promoted. 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.	
<b>No Go Alternative</b>	<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>	
<b>No Go Area</b>	<b>This is a positive impact and a no-go area is not applicable.</b>	
<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.		
<b>Cumulative impacts:</b> Benefits will accrue to beneficiaries of the project over the long term, from use of less harmful energy options.		
<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.		
<b>Statement of potential significance of the identified issues based on the evaluation of the impacts:</b> The		

<p>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 with respect to introduction and maintenance of safer sources of energy.</p>
<p><b>Gaps in knowledge &amp; recommendations:</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 with the Gourikwa MTS. 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>IMPACT ASSESSMENT FOR CONSTRUCTION PHASE</b></p>		
<p>Impacts will occur after the infrastructure is in place, that is, in the operations phase.</p>		
<p><b>IMPACT ASSESSMENT FOR 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>

<b>Significance</b>	Medium (32)	Low (6)
<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></p>		

It is unclear how prevalent this risk is. There is also no information on how access and the condition of energy 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)**

<p><b>Issue:</b> Increased community health risks if workers' camps do not have access to basic services such as clean water and adequate sanitation and waste removal.</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 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 and upgrade (refurbishment) of the Gourikwa MTS. The Blanco (Narina) substation is yet to be constructed, but forms part of another EIA process. Impacts of the works at the proposed Narina substation are therefore excluded from this assessment.</p> <p><b>Potential sensitive environment and receptors and how they may be affected:</b></p> <p>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.</p> <p><b>Type of Impact:</b> Direct impact for workers and an indirect impact for the community</p> <p><b>Extent of the impact:</b> Local</p> <p><b>Acceptable Losses:</b> 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.</p>		
<b>IMPACT ASSESSMENT FOR OPERATIONAL PHASE</b>		
<p>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</p>		
<b>IMPACT ASSESSMENT FOR CONSTRUCTION PHASE:</b>		
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 and workers' health risks from possible increased exposure to HIV/AIDS (during construction)**

<p><b>Issue:</b> Increased community and workers' 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 and workers' health risks from possible increased exposure to HIV/AIDS. This is a direct impact caused by transmission of the disease.</p>
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**Potential sensitive environment and receptors and how they may be affected:**

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 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.

**IMPACT ASSESSMENT FOR OPERATIONAL PHASE**

Transmission is more likely to occur during construction, compared with relatively short periods of maintenance during operations.

**IMPACT ASSESSMENT FOR 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>
<p><b>Mitigation/ Management:</b> 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.</p>	
<p><b>Cumulative impacts:</b> HIV/AIDS Prevalence rates will increase</p>	
<p><b>Residual Risks/ Benefits:</b> Once contracted, a person will have to most probably be on a lifelong course of Anti-Retroviral Therapy to manage the HIV/AIDS.</p>	
<p><b>Statement of potential significance of the identified issues based on the evaluation of the impacts:</b> The significance of the HIV/AIDS impact is high; however, management measures can reduce the risk considerably to a low significance.</p>	
<p><b>Nomination of preferred alternative:</b> There is no preferred alignment, as all alignments will hold the same level of risk.</p>	
<p><b>Gaps in knowledge:</b> It is unclear to what extent this currently constitutes a risk amongst Eskom contractors working on site for extended periods of time.</p>	

**Table 15: Decreased Quality of Life due to Visual Intrusion (during construction and operations)**

<p><b>Issue:</b> Visual intrusion from the introduction of the transmission line infrastructure and associated activities (such as construction activities) can lead to a decreased quality of life. This visual impact was assessed by the Visual Impact Assessment specialist and is used as the basis to assess a change in the quality of life. For a comprehensive assessment of the visual impact, refer to the Visual Impact Assessment.</p> <p><b>Nature of Impact: what causes the effect, who will be affected and how they will be affected:</b> Visual intrusion could result in the negative impact of reducing quality of life. Introducing towers and transmission lines, as well as construction activities into sensitive landscapes such as nature reserves and holiday destinations, will reduce the aesthetic value of the natural environment. The natural environment will lose its appeal for recreation, and people will experience a loss of value in the natural environment. This is a direct impact caused by changes in the quality of the natural environment, and experienced directly by residents or tourists, especially those expecting aesthetically-pleasing coastal and biodiverse landscapes.</p> <p><b>Potential sensitive environment and receptors and how they may be affected:</b> Sensitive receptors like residents and tourists may be affected. Residents in the affected area may be subjected to the impact over a sustained period of time. Tourists visiting the area may also be affected by the changes as they expect certain aesthetics in the area. Sensitive environments such as picturesque coastal towns and nature reserves with high aesthetic appeal may undergo changes that will reduce their recreation appeal and value.</p> <p><b>Type of Impact:</b> Direct</p> <p><b>Extent of the impact:</b> Local</p>
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**Acceptable Losses:** The baseline environment of Alternative 1 is already impacted by the Proteus – Droërvier 400kV transmission line. This reduces the sensitivity of the visual environment on this alignment compared to the other two alignments. Empirical evidence also suggests that by and large, two power lines running parallel are below the visual tolerance threshold. It is also generally more acceptable that two power lines of the same design in one corridor will confine the impact in that corridor, rather than extend the impact over a larger area and impact larger areas of the landscape. A second transmission line in the Alternative 1 alignment therefore is expected to result in an acceptable loss of aesthetic quality.

#### **ASSESSMENT OF IMPACT DURING CONSTRUCTION**

**The assessment of quality of life here is directly related to the impact of visual intrusion. The calculation of the significance of the visual impact as determined by the visual specialist has been used as it appears in the table below.**

The significance of the impact during construction for Alternative 3 for coastal towns has been assessed as moderate or minor, before mitigation. With mitigation, this impact can be managed to cause an impact assessed as moderate or minor.

The significance of the impact during construction for Alternatives 1, 2 and 3 for inland rural areas has been assessed as moderate, before mitigation. With mitigation, this impact can be managed to cause an impact assessed as moderate or minor.

#### **ASSESSMENT OF IMPACT DURING OPERATIONS**

**The assessment of quality of life here is directly related to the impact of visual intrusion. The calculation of the significance of the visual impact as determined by the visual specialist has been used as it appears in the table below.**

All three alternatives will cause impacts for inland rural areas that could be of major significance during operations, before and with mitigation. It is however noted that Alternative 1 could have a lower impact relative to the other two alternatives, as it will run alongside an existing line of similar design.

Landscape Type	Project Alternative	Sensitivity of receptors	Severity of Impact without mitigation	Severity of Impact with mitigation	Significance of Impact without mitigation	Significance of Impact with mitigation
Coastal towns	<b>Construction phase</b>					
	Alt 3	OB: High	Medium	Low	Moderate	Moderate/Minor
		VR: Medium	Medium	Low	Moderate/Minor	Minor
	<b>Operational phase</b>					
	Alt 3	OB: High	High	High	Major	Major
		VR: Medium	High	High	Moderate	Moderate
Inland Rural Landscapes	<b>Construction phase</b>					
	Alt 1	OB: High	Medium	Low	Moderate	Moderate/Minor
		VR: High	Medium	Medium	Moderate	Moderate
	Alt 2	OB: High	Medium	Low	Moderate	Moderate/Minor
		VR: High	Medium	Medium	Moderate	Moderate
	Alt 3	OB: High	Medium	Low	Moderate	Moderate/Minor
		VR: High	Medium	Medium	Moderate	Moderate
	<b>Operational phase</b>					
	Alt 1	OB: High	High	High	Major	Major
		VR: High	High	High	Major	Major
	Alt 2	OB: High	High	High	Major	Major
		VR: High	High	High	Major	Major
	Alt 3	OB: High	High	High	Major	Major
		VR: High	High	High	Major	Major

<p><i>Alternative 1, 2 and 3</i></p>	<p>Alternative 1 impacts the least number of sensitive landscape features and tourist attractions. Alternative 2 is more preferable to Alternative 3, as the latter passes within 1 km of an urban area and therefore has greater viewer exposure.</p>	<p>Mitigation measures during construction can reduce the impact equally on all 3 alternatives. Further, if Alternative 1 is selected, the impact is expected to be less. This is because the proposed 400kV line will run parallel with the existing Proteus – Droërivier 400kV transmission line of similar design.</p>
<p><b>Status (positive or negative)</b></p>	<p>Negative</p>	<p>Negative</p>
<p><b>Reversibility</b></p>	<p>Low</p>	<p>Decreased quality of life from visual disruption during construction activities can be reversed. Once infrastructure is in place, impact cannot be reversed.</p>
<p><b>Irreplaceable loss of resources?</b></p>	<p>High if no mitigation measures are in place to reduce impacts during and after construction. Moderate losses without mitigation during the operations phase.</p>	<p>Loss of socially aesthetic environment can be avoided if impacts from construction activities are reduced through mitigation measures. For operations, it is expected that there will be a moderate loss of aesthetic quality even when mitigation has been considered.</p>
<p><b>Can impacts be mitigated?</b></p>	<p>Yes, impacts can be reduced during the construction phase. However, mitigation is unlikely once the infrastructure is in place during operations. Only major layout or design changes can avoid the potential impacts during operations.</p>	
<p><b>No go Areas</b></p>	<p><b>Direct, cumulative and residual impacts can be reduced if sensitive landscape features and observers within the 2km latitude are avoided as far as possible</b></p>	
<p><b>No Go Alternative</b></p>	<p><b>The No-Go alternative will not change the visual environment and will therefore not cause any negative visual impacts</b></p>	
<p><b>Mitigation/ Management:</b> The impact of reduced quality of life assessed here is related to the visual intrusion from construction and during operations of the transmission infrastructure. The assessment on quality of life has used the visual impact assessed by the visual specialist in determining the impact on quality of life. Accordingly, the mitigation/ management of the negative impact on quality of life will depend on the mitigation/ management of visual intrusions. The Visual Impact Assessment focuses on reducing the impact during construction with measures that will locate construction sites near already disturbed or industrial areas, screen and keep the construction site tidy, and reduce and remediate land disturbances. The mitigation measures are extensively described in the Visual Impact Assessment and are sufficient for addressing the impact. Reference is made to that visual specialist report for comprehensive mitigation measures and measures for inclusion in the Environmental Management Plan.</p>		

**Cumulative impacts:** Cumulative impacts will result for all three 3 alternatives. However, Alternative 1 presents with the least likely cumulative impact, as it will run alongside an existing line of similar design.

**Residual Risks/ Benefits:** Reduction and remediation mitigation will not prevent residual impacts from persisting. The proposed transmission line will be visible unless major design or alignment changes are implemented.

**Statement of potential significance of the identified issues based on the evaluation of the impacts:** The significance of the impact during construction was assessed as largely moderate, and during operations as mainly major. Alignment 1 is expected to have the least visual intrusion during operations. For coastal towns, Alternative 3 is expected to have the greatest impact on quality of life during operations.

**Nomination of preferred alternative:** Alternative 1.

**Gaps in knowledge:**

The proposed project allows for a 2km latitude for locating the towers. It is unclear to what extent sensitive landscapes and observers will be avoided when the final positions of the towers are identified.

## 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 electricity 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 four line alternatives, including Alternative 4 which has not been officially confirmed by Eskom as yet, 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.

**Alternatives 1 and 2** were of concern to some I & APs because of the economic loss it will cause from disruption of pivot farming and on the specialised berry farm. There was also a possibility that workers' could be physical displaced from their accommodation on two properties on these alignments. On examination of the Google Earth maps, it was found that there was a concentration of pivot irrigation infrastructure in a relatively small proportion of Alternative 1, located south east of Jonkersberg. If the alignment can avoid this area, Alternative 1 is feasible. As the line can be placed anywhere within a width of 2 km; it is assumed that workers' homes can be avoided. Individual farms with specific needs such as the berry farm will need specific attention so as to avoid significant economic losses. Alternative 2 had a lower concentration of pivot farming and was therefore regarded as more favourable than Alternative 1. Alternative 1, however, has the potential to cause the least visual intrusion (as assessed by the Visual Impact Assessment specialist).

Stakeholders' main concern from a social perspective for **Alternatives 3 and 4** was for the negative visual intrusion of the towers and lines. They pointed out that there would be reduction in the value of holiday homes directly impacted on by visual intrusion. When examining the Google Earth maps, it was found that tourism facilities in the Mossel Bay/Hartenbos area could be impacted on if there is visual intrusion. These impacts can prove to be negative in the long term for property owners (loss of assets) and the tourism industry (less job creation). A helicopter was used on one of the properties to herd animals. Moreover, it was found that Alternative 4 occupied land with more pivot irrigation. This will require Eskom to exercise more caution on this route so as to avoid the irrigation infrastructure.

**Alternative 2 is therefore considered to be the most favourable option from a social perspective, followed by the Alternative 1 if it can avoid pivot farming infrastructure.** It is important that jobs are not lost on farms because of disruption or loss of economic activity. It is also important to consider the number of lines already present on a farm, so as to avoid further economic (and asset) loss for the landowner. Alternative 1 is recognised from the visual impact assessment to have the least impact on the landscape in the long term, and therefore likely to compromise quality of life from a visual intrusion perspective.

## 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 16: 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	56 (Medium)	12 (Low)

as sanitation and waste removal ( <b>during construction</b> )		
<i>Negative impact:</i> Increased community health risks from possible increased exposure to HIV/AIDS ( <b>during construction</b> ).	72 (High)	20 (Low)
<i>Negative Impact:</i> Decreased Quality of Life from reduced visual quality – as assessed by the visual specialist ( <b>during construction and operations</b> )	<u>Construction:</u> Moderate/Minor  <u>Operations:</u> Medium/ Major (Alt 3 on Coastal)  Major (Alt 1,2 &3 on Inland Rural)	<u>Construction:</u> Moderate/Minor  <u>Operations:</u> Medium/ Major (Alt 3 on Coastal)  Major (Alt 1,2 &3 on Inland Rural)

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 Gourikwa. 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. 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 helicopters 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: 7 September 2016

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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>3</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>3</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
<p>i.e. Disturbance to and loss of indigenous natural vegetation</p>	<p>Discussion of the consequences of the construction of the facility to the issue/impact considered in column 1.</p>	<p>i.e. Local/Regional/National</p>	<p>No-Go areas would include the larger drainage lines, and .....etc.</p>
<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>4</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>4</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/Desktop 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—                      i. as to whether the proposed activity or portions thereof should be authorised; and                      ii. if the opinion is that the</p>		<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>	