environmental affairs
Department:
Environmental Affairs
REPUBLIC OF SOUTH AFRICA

(For official use only)

File Reference Number:	
Application Number:	
Date Received:	

Basic assessment report in terms of the Environmental Impact Assessment Regulations, 2014, promulgated in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended.

Kindly note that:

1. This **basic assessment report** is a standard report that may be required by a competent authority in terms of the EIA Regulations, 2014 and is meant to streamline applications. Please make sure that it is the report used by the particular competent authority for the activity that is being applied for.
2. This report format is current as of **08 December 2014**. It is the responsibility of the applicant to ascertain whether subsequent versions of the form have been published or produced by the competent authority
3. The report must be typed within the spaces provided in the form. The size of the spaces provided is not necessarily indicative of the amount of information to be provided. The report is in the form of a table that can extend itself as each space is filled with typing.
4. Where applicable **tick** the boxes that are applicable in the report.
5. An incomplete report may be returned to the applicant for revision.
6. The use of "not applicable" in the report must be done with circumspection because if it is used in respect of material information that is required by the competent authority for assessing the application, it may result in the rejection of the application as provided for in the regulations.
7. This report must be handed in at offices of the relevant competent authority as determined by each authority.
8. No faxed or e-mailed reports will be accepted.
9. The signature of the EAP on the report must be an original signature.
10. The report must be compiled by an independent environmental assessment practitioner.
11. Unless protected by law, all information in the report will become public information on receipt by the competent authority. Any interested and affected party should be provided with the information contained in this report on request, during any stage of the application process.
12. A competent authority may require that for specified types of activities in defined situations only parts of this report need to be completed.
13. Should a specialist report or report on a specialised process be submitted at any stage for any part of this application, the terms of reference for such report must also be submitted.
14. Two (2) colour hard copies and one (1) electronic copy of the report must be submitted to the competent authority.

15. Shape files (.shp) for maps must be included in the electronic copy of the report submitted to the competent authority.

SECTION A: ACTIVITY INFORMATION

Has a specialist been consulted to assist with the completion of this section?	YES	NO
		X

If YES, please complete the form entitled "Details of specialist and declaration of interest" for the specialist appointed and attach in Appendix I.

1. PROJECT DESCRIPTION

2.

EXPLANATORY NOTE: Please note, the Draft Basic Assessment Report for the above mentioned project was submitted to DEA on the 30th of August 2016. DEA provided formal comment on the Draft Basic Assessment Report on the 5th of October 2016.

Since receipt of DEA's comments on the Draft BAR, the Client (Eskom Distribution, Gauteng Operating Unit), indicated that Activity 27 of Listing Notice 1 (R983) must be included in the Application and in the Basic Assessment Report as over 1 ha of vegetation may be cleared during the construction works. JG Afrika (Pty) Ltd therefore requested an extension of the timeframe for the proposed project. The DEA granted an extension of the timeframe whereby the Draft Basic Assessment Report must be submitted to the DEA within 140 days from the date of lodging the application (31 August 2016).

A Revised Draft Basic Assessment Report which included the additional listed activity (Activity 27 of Listing Notice 1, R983) was made available for public and Commentary Authority review from the 8th of December 2016 until the 30th of January 2017.

a) Describe the project associated with the listed activities applied for

1. Project Name

Proposed construction of the new Eskom Rethabiseng North 132/11 kV Substation and Associated Loop-in and Loop-out Powerlines, in Ekangala, within the City of Tshwane Metropolitan Municipality (Gauteng province) or the Thembisile Hani Local Municipality (Mpumalanga province).

2. Proponent and Project Overview

Eskom Distribution Gauteng Operating Unit are proposing the construction of a new Distribution Substation and associated loop-in and loop-out lines to be situated in Ekangala, within the City of Tshwane Metropolitan Municipality or the Thembisile Hani Local Municipality, Gauteng and Mpumalanga Provinces (the border of the two Provinces splits the 3 Site Alternatives). The proposed new Substation will have a footprint of 1.5 Hectares and will be known as the Rethabiseng North 132/11kV 2x20MVA Substation, and will have four fully equipped 11kV feeder bays for feeder splitting. Two powerlines are proposed which will tie in and out of the proposed new Substation. Details of the proposed lines are provided below:

- The Rethabiseng-Rethabiseng North loop-in line which will be approximately 0.2km in length, and will have a servitude width of 28m. This line will be a 132kV Kingbird line which will tie into the existing Rethabiseng-Gemsbok line; and
- The Rethabiseng North -Gemsbok loop-out line which will be approximately 0.2km in length and will have a servitude width of 28m. This line will be a 132kV Kingbird line which will tie into the existing Rethabiseng-Gemsbok line.

3. Project Location and Alternatives

Three Site Alternatives will be investigated for this project. The Alternative currently preferred by Eskom (Alternative 1), and Alternative 2 are situated on Portion 5 of the Farm Rietfontein 470 JR (T0JR00000000047000005), situated within the Thembisile Hani Local Municipality, within the Mpumalanga Province.

Site Alternatives 3 is situated on Remaining Extent of the Farm Ekangala 610 JR (T0JR00000000610000000), within the City of Tshwane Metropolitan Municipality with the Gauteng Province.

Refer to Figure 1 and 2 below, as well as to the Locality Map, and Cadastral and Study Area Map attached to Appendix A. Centre coordinates of the three alternative Substation sites are provided below:

Substation Site Alternative (Centre Coordinates)		
Eskom's preferred site (Site Alternative 1)	25°39'13.00"S	28°43'5.98"E
Site Alternative 2	25°39'26.14"S	28°43'0.71"E
Site Alternative 3	25°39'33.62"S	28°43'10.10"E

4. Project need and Desirability

The 11kV network fed from the existing Rethabiseng 132/11kV 2x20MVA Substation will experience under voltages and thermal overloading due to load growth from the residential load as well as expected electrification in the area. The network has limited backfeeding and the Ekangala A 11kV feeder exceeds the recommended number of customers for a reticulation feeder. In order to create capacity for expected load growth, create backfeeding capacity, alleviate thermal loading violations, and alleviate voltage violations as well as violations of the reliability guideline; Rethabiseng North Substation is proposed. This proposed new Substation will be situated west of the Ekangala F township. Rethabiseng North will split the Ekangala A and Ekangala B feeders and accommodate the electrification at Ekangala F thereby deloading Rethabiseng Substation, creating capacity and allowing for improved backfeeding.

5. Proposed Powerline Structures:

The lines will be supported by steel guyed monopole structures. These monopoles vary in height between 18.2-24.2m and can span between 350-455m, meaning that the monopoles will be between 350-455m apart, depending on the gradient of the site, and the number of turning points required. However, for the purposes of this project, the Eskom Engineer confirmed that spans of 250m may be used.

Study Corridors / Buffer Areas:
Each of the proposed alternative loop-in and loop-out line servitudes have a 100m wide study corridor which was investigated during the Basic Assessment Process. In addition, a 4ha study area was investigated for each proposed Substation site. The study area is shown in Figure 2 below.

Additional Proposed Infrastructure:
Access to all three Alternative sites is obtained off the R460, via existing dirt roads on site. Eskom confirmed that these dirt roads will remain dirt roads, and that no upgrading of these roads are envisaged.

Construction Camp and Materials Storage Area:

The construction camp and materials storage area will be situated on the site earmarked for development. All construction activities and as well as the construction camp and materials storage area should be confined to areas which have been classified to be of medium to low ecological sensitivity in the Ecological Assessment Report (Attached to Appendix D of this Basic Assessment Report). Therefore, no construction vehicles, workers or material should be allowed in any of the areas adjacent to the study area which was classified as having medium to high ecological sensitivity.

Contractors Camp:

A contractor's site office will be established at the construction camp. A contractor's camp will not be established on site, and all contractors will travel to site on a daily basis.

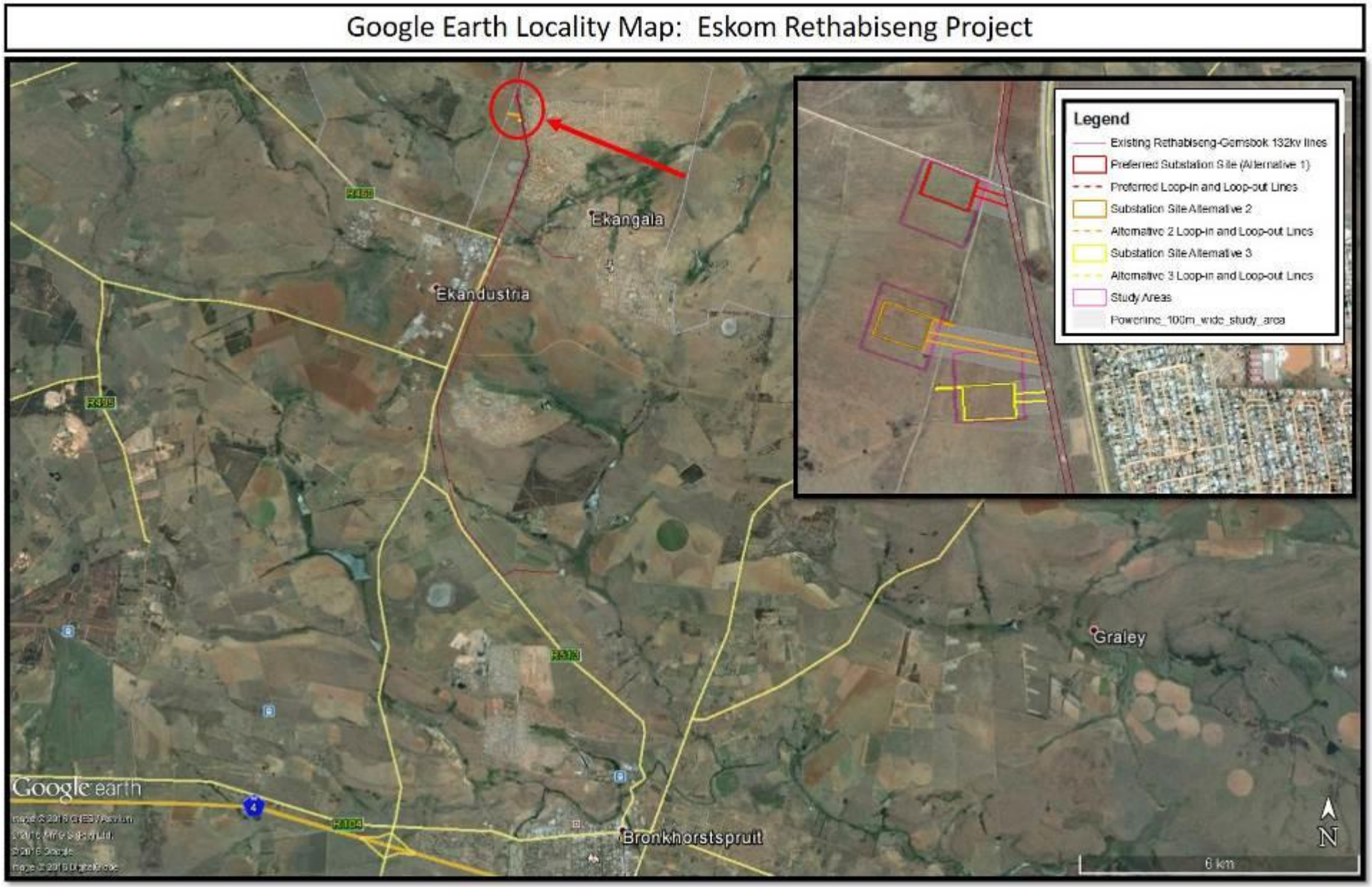
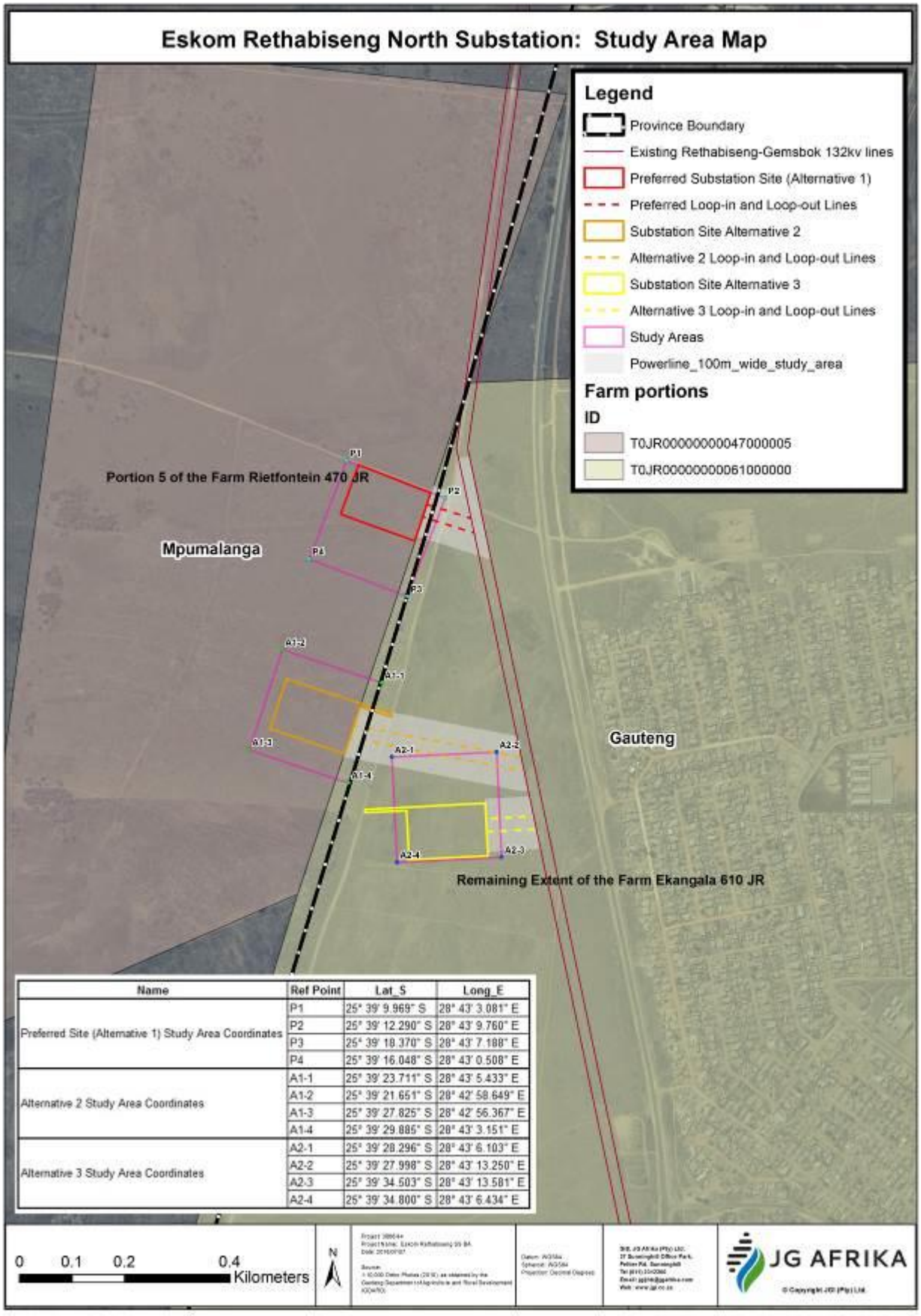


Figure 1: Locality Map



Name	Ref Point	Lat_S	Long_E
Preferred Site (Alternative 1) Study Area Coordinates	P1	25° 39' 9.969" S	28° 43' 3.081" E
	P2	25° 39' 12.290" S	28° 43' 9.760" E
	P3	25° 39' 18.370" S	28° 43' 7.188" E
	P4	25° 39' 16.048" S	28° 43' 0.508" E
Alternative 2 Study Area Coordinates	A1-1	25° 39' 23.711" S	28° 43' 5.433" E
	A1-2	25° 39' 21.651" S	28° 42' 58.649" E
	A1-3	25° 39' 27.825" S	28° 42' 56.367" E
	A1-4	25° 39' 29.885" S	28° 43' 3.151" E
Alternative 3 Study Area Coordinates	A2-1	25° 39' 28.296" S	28° 43' 6.103" E
	A2-2	25° 39' 27.998" S	28° 43' 13.250" E
	A2-3	25° 39' 34.503" S	28° 43' 13.581" E
	A2-4	25° 39' 34.800" S	28° 43' 6.434" E

Figure 2: Cadastral and Study Area Map

b) Provide a detailed description of the listed activities associated with the project as applied for

Listed activity as described in GN 734, 735 and 736	Description of project activity
GN R 983 – Activity 11 The development of facilities or infrastructure for the transmission and distribution of electricity – • Outside urban areas or industrial complexes with a capacity of more than 33 but less than 275 kilovolts; or • Inside urban areas or industrial complexes with a capacity of 275 kilovolts or more.	This project involves the construction of a new 132/11kV Substation and associated 132/11kV loop-in and loop-out powerlines outside urban areas.
GN R 983 – Activity 27 The clearance of an area of 1 hectares or more, but less than 20 hectares of indigenous vegetation, except where such clearance of indigenous vegetation is required for – • The undertaking of a linear activity; or Maintenance purposes undertaken in accordance with a maintenance management plan.	This activity may be triggered as over 1 hectare of vegetation may be cleared during construction of the proposed Substation.

3. FEASIBLE AND REASONABLE ALTERNATIVES

"alternatives", in relation to a proposed activity, means different means of meeting the general purpose and requirements of the activity, which may include alternatives to—

(a) the property on which or location where it is proposed to undertake the activity;
(b) the type of activity to be undertaken;
(c) the design or layout of the activity;
(d) the technology to be used in the activity;
(e) the operational aspects of the activity; and
(f) the option of not implementing the activity.

Describe alternatives that are considered in this application as required by Appendix 1 (3)(h), Regulation 2014. Alternatives should include a consideration of all possible means by which the purpose and need of the proposed activity (NOT PROJECT) could be accomplished in the specific instance taking account of the interest of the applicant in the activity. The no-go alternative must in all cases be included in the assessment phase as the baseline against which the impacts of the other alternatives are assessed.

The determination of whether site or activity (including different processes, etc.) or both is appropriate needs to be informed by the specific circumstances of the activity and its environment. After receipt of this report the, competent authority may also request the applicant to assess additional alternatives that could possibly accomplish the purpose and need of the proposed activity if it is clear that realistic alternatives have not been considered to a reasonable extent.

The identification of alternatives should be in line with the Integrated Environmental Assessment Guideline Series 11, published by the DEA in 2004. Should the alternatives include different locations and lay-outs, the co-ordinates of the different alternatives must be provided. The co-ordinates should be in degrees, minutes and seconds. The projection that must be used in all cases is the WGS84 spheroid in a national or local projection.

a) Site alternatives

Alternative 1 (preferred alternative)		
Description	Lat (DDMMSS)	Long (DDMMSS)
Preferred Substation Site Alternative. The Substation will have a proposed footprint of 1.5ha and will be situated on Portion 5 of the Farm Rietfontein 470 JR (T0JR00000000047000005)	25°39'13.00"S	28°43'5.98"E
Alternative 2		
Description	Lat (DDMMSS)	Long (DDMMSS)
Substation Site Alternative 1. The Substation will have a proposed footprint of 1.5ha and will be situated on Portion 5 of the Farm Rietfontein 470 JR (T0JR00000000047000005)	25°39'26.14"S	28°43'0.71"E
Alternative 3		
Description	Lat (DDMMSS)	Long (DDMMSS)
Substation Site Alternative 2 The Substation will have a proposed footprint of 1.5ha and will be situated on Remaining Extent of the Farm Ekangala 610 JR (T0JR00000000610000000)	25°39'33.62"S	28°43'10.10"E

In the case of linear activities:

Alternative 1 (Preferred):	**Latitude (S):**	**Longitude (E):**
• Starting point of the activity	25° 39' 13.100" S	28° 43' 8.366" E
• Middle/Additional point of the activity	25° 39' 13.544" S	28° 43' 9.978" E
• End point of the activity	25° 39' 14.036" S	28° 43' 11.820" E
Alternative 2 (if any)		
• Starting point of the activity	25° 39' 26.685" S	28° 43' 3.389" E
• Middle/Additional point of the activity	25° 39' 27.721" S	28° 43' 8.993" E
• End point of the activity	25° 39' 28.770" S	28° 43' 14.903" E
Alternative 3 (if any)		
• Starting point of the activity	25° 39' 32.565" S	28° 43' 12.524" E
• Middle/Additional point of the activity	25° 39' 32.453" S	28° 43' 14.197" E
• End point of the activity	25° 39' 32.389" S	28° 43' 15.717" E

For route alternatives that are longer than 500m, please provide an addendum with co-ordinates taken every 250 meters along the route for each alternative alignment.

In the case of an area being under application, please provide the co-ordinates of the corners of the site as indicated on the lay-out map provided in Appendix A of this form.

b) Lay-out alternatives

Alternative 1 (preferred alternative)		
Description	Lat (DDMMSS)	Long (DDMMSS)
None		
Alternative 2		
Description	Lat (DDMMSS)	Long (DDMMSS)
None		
Alternative 3		
Description	Lat (DDMMSS)	Long (DDMMSS)
None		

c) Technology alternatives

Alternative 1 (preferred alternative)
None
Alternative 2
None
Alternative 3
None

d) Other alternatives (e.g. scheduling, demand, input, scale and design alternatives)

Alternative 1 (preferred alternative)		
None		
Alternative 2		
None		
Alternative 3		
None		

e) No-go alternative

The 11kV network fed from the existing Rethabiseng 132/11kV 2x20MVA Substation will experience under voltages and thermal overloading due to load growth from the residential load as well as expected electrification in the area. The network has limited backfeeding and the Ekangala A 11kV feeder exceeds the recommended number of customers for a reticulation feeder. In order to create capacity for expected load growth, create backfeeding capacity, alleviate thermal loading violations, and alleviate voltage violations as well as violations of the reliability guideline; Rethabiseng North Substation is proposed. This proposed new Substation will be situated west of the Ekangala F township. Rethabiseng North will split the Ekangala A and Ekangala B feeders and accommodate the electrification at Ekangala F thereby deloading Rethabiseng Substation, creating capacity and allowing for improved backfeeding.

Paragraphs 3 – 13 below should be completed for each alternative.

4. PHYSICAL SIZE OF THE ACTIVITY

a) Indicate the physical size of the preferred activity/technology as well as alternative activities/technologies (footprints):

Alternative: (Proposed Substation Site)	**Size of the activity:**
Alternative 1[1] (preferred activity alternative)	(1.5ha) 15,000 m^2
Alternative 2 (if any)	(1.5ha) 15,000 m^2
Alternative 3 (if any)	(1.5ha) 15,000 m^2

or, for linear activities:

Alternative: (Proposed Loop-in and Loop-out Lines)	**Length of the activity:**
Alternative 1 (preferred activity alternative)	±100 m
Alternative 2 (if any)	±340 m
Alternative 3 (if any)	±100 m

b) Indicate the size of the alternative sites or servitudes (within which the above footprints will occur):

Alternative: (Proposed Loop-in and Loop-out Lines)	**Size of the site/servitude:**
Alternative 1 (preferred activity alternative)	5,600 m^2
Alternative 2 (if any)	19,040 m^2
Alternative 3 (if any)	5,600 m^2

5. SITE ACCESS

	YES	NO
Does ready access to the site exist?	X	
If NO, what is the distance over which a new access road will be built		m

Describe the type of access road planned:

Access to all three Site Alternatives is obtained off the R460, via existing dirt roads on site. Eskom confirmed that these dirt roads will remain dirt roads, and that no upgrading of these roads are envisaged.

Include the position of the access road on the site plan and required map, as well as an indication of the road in relation to the site.

6. LOCALITY MAP

An A3 locality map must be attached to the back of this document, as Appendix A. The scale of the locality map must be relevant to the size of the development (at least 1:50 000. For linear activities of

[1] "Alternative A.." refer to activity, process, technology or other alternatives.

more than 25 kilometres, a smaller scale e.g. 1:250 000 can be used. The scale must be indicated on the map.). The map must indicate the following:

- an accurate indication of the project site position as well as the positions of the alternative sites, if any;
- indication of all the alternatives identified;
- closest town(s;)
- road access from all major roads in the area;
- road names or numbers of all major roads as well as the roads that provide access to the site(s);
- all roads within a 1km radius of the site or alternative sites; and
- a north arrow;
- a legend; and
- locality GPS co-ordinates (Indicate the position of the activity using the latitude and longitude of the centre point of the site for each alternative site. The co-ordinates should be in degrees and decimal minutes. The minutes should have at least three decimals to ensure adequate accuracy. The projection that must be used in all cases is the WGS84 spheroid in a national or local projection).

7. LAYOUT/ROUTE PLAN

A detailed site or route plan(s) must be prepared for each alternative site or alternative activity. It must be attached as Appendix A to this document.

The site or route plans must indicate the following:

- the property boundaries and numbers of all the properties within 50 metres of the site;
- the current land use as well as the land use zoning of the site;
- the current land use as well as the land use zoning each of the properties adjoining the site or sites;
- the exact position of each listed activity applied for (including alternatives);
- servitude(s) indicating the purpose of the servitude;
- a legend; and
- a north arrow.

8. SENSITIVITY MAP

The layout/route plan as indicated above must be overlain with a sensitivity map that indicates all the sensitive areas associated with the site, including, but not limited to:

- watercourses;
- the 1:100 year flood line (where available or where it is required by DWS);
- ridges;
- cultural and historical features;
- areas with indigenous vegetation (even if it is degraded or infested with alien species); and
- critical biodiversity areas.

The sensitivity map must also cover areas within 100m of the site and must be attached in Appendix A.

9. SITE PHOTOGRAPHS

Colour photographs from the centre of the site must be taken in at least the eight major compass directions with a description of each photograph. Photographs must be attached under Appendix B to this report**.** It must be supplemented with additional photographs of relevant features on the site, if applicable.

10. FACILITY ILLUSTRATION

A detailed illustration of the activity must be provided at a scale of at least 1:200 as Appendix C for activities that include structures. The illustrations must be to scale and must represent a realistic image of the planned activity. The illustration must give a representative view of the activity.

11. ACTIVITY MOTIVATION

Motivate and explain the need and desirability of the activity (including demand for the activity):

1. Is the activity permitted in terms of the property's existing land use rights?	YES **X**	NO Please explain
The three Site Alternatives being investigated for the proposed construction of the Substation are situated on properties owned by National Government of the Republic of South Africa. The current preferred Alternative (Alternative 1) and Site Alternative 2 fall within the jurisdiction of the Mpumalanga Department of Rural Development and Land Reform. Site Alternative 3 falls within the jurisdiction of the Gauteng Department of Rural Development and Land Reform. Therefore, the proposed Substation is permitted in terms of the land use rights of all proposed properties.		

2. Will the activity be in line with the following?			
(a) Provincial Spatial Development Framework (PSDF)	YES **X**	NO	Please explain

Section 2 of the Gauteng Spatial Development Framework, of February 2011 provides details on the drivers that are most likely to affect, and, in most cases, area already affecting the provincial urban system. These drivers include:

1. Resource Scarcity;
2. Migration (in and outward);
3. Water;
4. Energy;
5. Land;
6. Crime;
7. Economic Turbulence;
8. Pollution and environmental degradation; and
9. Infrastructure provision and maintenance.

The proposed project is in line with drivers 4 and 9 above.

The Spatial Development framework for the Mpumalanga Province could not be sourced. The Integrated Development Plan (IDP) (2016/2017) was used to complete this section. Chapter 4 of the IDP makes reference to the Thembisile Hani Local Municipality Spatial Development Framework (SDF). The following development principals and objectives were addressed in the SDF:

- Government investment should be focused on areas with the potential for sustainable economic development;
- Areas with high development potential should receive investment beyond basic services to promote the development potential;
- ***Areas with low development potential should receive investment to provide basic services as well as social transfers, human resource development and labour market information;***
- Future settlement and economic development opportunities should be focused on activity corridors and nodes that are adjacent to or linked the main growth centres;
- Increase and/ or consolidate the existing urban footprints in the Municipality by way of infill development and densification;
- Importance of re-integrating previously segregated areas with areas of opportunity;
- Exploit the development potential along the Moloto Corridor by way of investment beyond basic services (social, technical, and transportation);
- Importance of rail for commuting and transporting goods;
- **Ensure that all future development is environmentally sustainable and promotes biodiversity conservation; and**
- Importance of equipping rural populations (through skills and education, and by providing infrastructure) with a choice and opportunity to uplift themselves.

The project is in line with the development principals provided in bold italic text.

The project is in line with the development principals provided in bold italic text.

In addition to the above, according to Section 2.4 of The Mpumalanga Economic Growth and Development Path (October 2011), the following fundamentals need to be in place in order to achieve meaningful growth and development:

1. Land;
2. Water;
3. Biodiversity;
4. Transport Infrastructure; and
5. Electricity.

The proposed project is in line with Fundamental 5.

(b) Urban edge / Edge of Built environment for the area	YES	NO	Please explain

All three Site Alternatives are situated outside of the municipal urban edge as demarcated by both Municipalities.

(c) Integrated Development Plan (IDP) and Spatial Development Framework (SDF) of the Local Municipality (e.g. would the approval of this application compromise the integrity of the existing approved and credible municipal IDP and SDF?).	YES **X**	NO Please explain

City of Tshwane

The City of Tshwane Development Strategies are discussed in Section 3 of the City of Tshwane Integrated Development Plan (IDP), 2011-2016. The impacts and outcomes of the Development Strategies were used to determine Strategic Objectives. Seven (7) Strategic Objectives were identified for the City of Tshwane in their IDP, of which Strategic Objective 1 is relevant to this project:

- Strategic Objective 1: Provide Basic Services, Roads and Stormwater:
  - The CoT will focus on providing basic services to areas that do not have basic services. The basic services to be provided in this objective are:
    - Water;
    - Sanitation;
    - Waste removal; and
    - Electricity.
  - The Key Outputs for Strategic Objective 1, in terms of electricity provision are:
    - Electricity connections including pre-paid meters;
    - Electricity bulk infrastructure; and
    - Street lights and high mast lights.

Service infrastructure are discussed in Section 3 of the City of Tshwane Spatial Development Framework (SDF), 2013. It is mentioned in Section 3.7.6 that services are concentrated in the established townships in the urban area. The following issues relating to electricity were identified in the SDF as follows:

- There is a lack of electrical supply in remote rural areas; and
- Alternative sources of energy e.g. solar power are not utilised to ease the electrical pressures.

It is further mentioned that Substations need to be upgraded with sufficient capacity to address the current as well as the future demands.

The location and need and desirability for this proposed project are in line with Strategic Objective 1 of the City of Tshwane IDP, as well as in line with the Tshwane SDF.

Thembisile Hani Local Municipality

According to the IDP (2016/2017) the following strategic objectives have been identified:

- To improve the organisational development and capacity of the municipality in order to render effective service delivery;
- To enhance revenue and to ensure financial viability and sustainability;
- ***To reduce infrastructure and service backlogs and to establish a high quality environment with the associated physical infrastructure;***
- To improve the quality of life of the community by providing them, with water supply, sanitation, roads as well as amenities such community halls and basic recreational facilities;
- To improve the quality of life of the community through providing them with community facilities and containing the HIV/Aids epidemic in the area;

- To ensure that residents live within a safe environment by illuminating strategic nodal point;
- To utilise the municipal area's agricultural potential to the maximum;
- To promote local economic development and growth through the identification and facilitation of economic opportunities, tourism and mining; and
- To deepen democracy and strengthen democratic institutions through active public participation.

According to the IDP, the intended outcome of the strategic objective highlighted in italics is *Sustainable basic services to all households and improved infrastructure*. The project can therefore be seen as been in line with the strategic objectives of the IDP.

(d) Approved Structure Plan of the Municipality	YES **X**	NO Please explain

Refer to (c) above

(e) An Environmental Management Framework (EMF) adopted by the Department (e.g. Would the approval of this application compromise the integrity of the existing environmental management priorities for the area and if so, can it be justified in terms of sustainability considerations?)	YES **X**	NO Please explain

City of Tshwane

In terms of the Gauteng Provincial Environmental Management Framework, 2014, site Alternative 2, is situated within Environmental Management Zone 3. A description of Zone 3 is discussed below:

- **Zone 3: High Control Zone (Outside the Urbane Development Zone)**
  - This zone is sensitive to development activities and in several cases also have specific values that need to be protected. Conservation and related tourism and recreation activities should dominate development in this zone.

Based on the findings of the Ecological Assessment undertaken by GIBB, according to the Gauteng Conservation Plan, Alternative 2 is not located within a Critical Biodiversity Area (CBA) or an Ecological Support Area (ESA), although there is a CBA located approximately 800m south of Site Alternative 2. The Mpumalanga Biodiversity Sector Plan, indicates that the preferred Alternative (Site Alternative 1) as well as Alternative 2 are located in "Moderately or Heavily Modified Areas, while areas to the west of the study area were classified as Other Natural Areas. The area associated with all three Site Alternatives including the loop-in / loopout lines was considered to be of low conservation importance and ecological sensitivity. However, the areas surrounding the site Alternatives (and associated lines), were considered to be of medium to high conservation importance and ecological sensitivity due to the presence of floral species of conservation concern and/or provincially protected species. In addition to this, the areas surrounding the study area could also provide suitable habitat for three faunal species of conservation concern. Based on the findings of this ecological assessment, none of the site Alternatives (and associated lines) are likely to have a significant impact on the ecology, although mitigation measures are recommended by the specialist should be considered to prevent impacts on the surrounding areas.

Thembisile Hani Local Municipality

The Spatial Development framework for the Mpumalanga province could not be sourced. The Integrated Development Plan (IDP) (2016/2017) was used to complete this section. Chapter 4 of the IDP makes reference to the Thembisile Hani Local Municipality Spatial Development Framework (SDF). One of the development principals and objectives addressed in the SDF is to:

- ***Ensure that all future development is environmentally sustainable and promotes biodiversity conservation.***

In addition the Mpumalanga Provincial Growth and Development Strategy (PGDS) (2004 – 2014) has identified six priority areas for intervention, namely:

- Economic Development
- Social Development Infrastructure.
- Social Development.
- ***Sustainable Environmental Development.***
- Good Governance.
- Human Resource Development.

In order to align itself with the Mpumalanga (PGDS) the Thembisile Hani Local Municipality has considered the following key priorities

- **Maximising the provincial benefits from the mining and energy sectors while mitigating any environmental impacts**
- Using indigenous resources to create jobs
- Supporting the industrial and service sectors to create jobs
- Reducing impact of poverty through social services
- ***Strengthening sustainable development***
- Governance and Spatial Integration

Based on the Thembisile Hani Local Municipality SDF and the Mpumalanga PGDS the approval of the proposed project will not compromise the existing environmental management priorities for the proposed area.

(f) Any other Plans (e.g. Guide Plan)	YES **X**	NO	Please explain

City of Tshwane

The City of Tshwane Metropolitan Municipality 2055 Vision, makes reference to current and future projects / interventions, as part of the 2055 vision. One of these projects / interventions outlined in the 2055 vision is Energy and CO_2, and the success of this vision will be measured and linked to the National Development Plan (NDP) of 2030, as follows:

Measure of Success	Link to NDP 2030
• Proportion of households with access to electricity (%); • Electricity consumption per capita; • Energy consumption per capita; • CO_2 emissions from electricity consumption per person; • Total CO2 emissions of the city (tonnes); • Proportion of renewable energy available (% of energy mix); and • Proportion of Public Transport on renewable- or biofuel (%).	• Electrification coverage will be at least 90% of households; • Pro-poor electricity tariffs will be better targeted to include all qualifying electricity customers; • Lower carbon and energy intensity; • More than 20,000MW of renewable energy; and • Promote a low carbon economy by offering transport alternatives that minimise environmental harm.

This project involved the provision of electricity to meet future demands, expected as a result of growth and expansion in the study area, and is therefore in line with the Municipality's 2055 vision.

Thembisile Hani Local Municipality

Refer to (c) and (e) above.

3. Is the land use (associated with the activity being applied for) considered within the timeframe intended by the existing approved SDF agreed to by the relevant environmental authority (i.e. is the proposed development in line with the projects and programmes identified as priorities within the credible IDP)?	YES **X**	NO	Please explain

Refer to 2 (c) above.

4. Does the community/area need the activity and the associated land use concerned (is it a societal priority)? (This refers to the strategic as well as local level (e.g. development is a national priority, but within a specific local context it could be inappropriate.)	YES **X**	NO Please explain
The 11kV network fed from the existing Rethabiseng 132/11kV 2x20MVA Substation will experience under voltages and thermal overloading due to load growth from the residential load as well as expected electrification in the area. The network has limited backfeeding and the Ekangala A 11kV feeder exceeds the recommended number of customers for a reticulation feeder. In order to create capacity for expected load growth, create backfeeding capacity, alleviate thermal loading violations, and alleviate voltage violations as well as violations of the reliability guideline; Rethabiseng North Substation is proposed. This proposed new Substation will be situated west of the Ekangala F township. Rethabiseng North will split the Ekangala A and Ekangala B feeders and accommodate the electrification at Ekangala F thereby deloading Rethabiseng Substation, creating capacity and allowing for improved backfeeding. Without the new Substation none of the above issues will be resolved.		
5. Are the necessary services with adequate capacity currently available (at the time of application), or must additional capacity be created to cater for the development? (Confirmation by the relevant Municipality in this regard must be attached to the final Basic Assessment Report as Appendix I.)	YES	NO Please explain
Not Applicable. The proposed development is for the provision of services and does not require any services. No other services, such as ablution facilities, etc, will be constructed at the Substation.		
6. Is this development provided for in the infrastructure planning of the municipality, and if not what will the implication be on the infrastructure planning of the municipality (priority and placement of services and opportunity costs)? (Comment by the relevant Municipality in this regard must be attached to the final Basic Assessment Report as Appendix I.)	YES **X**	NO Please explain
Refer to 2 (c) above.		
7. Is this project part of a national programme to address an issue of national concern or importance?	YES **X**	NO Please explain
Eskom has to strengthen the electricity grid nation-wide in order to address growing electricity demands and needs. The development of this Substation will strengthen the distribution grid of the study area, which in turn will contribute to the strengthening of the National Grid.		

8. Do location factors favour this land use (associated with the activity applied for) at this place? (This relates to the contextualisation of the proposed land use on this site within its broader context.)	YES **X**	NO Please explain

Eskom regularly reviews their electricity network capacities and make predictions on whether current capacities can sustain future growth. Eskom has identified that the current 11kV network fed from the existing Rethabiseng 132/11kV 2x20MVA Substation will experience under voltages and thermal overloading due to load growth from the residential load as well as expected electrification in the area. The Rethabiseng North Substation is therefore proposed in order to to create capacity for expected load growth, create backfeeding capacity, alleviate thermal loading violations, and alleviate voltage violations as well as violations of the reliability guideline. Rethabiseng North will split the Ekangala A and Ekangala B feeders and will accommodate the electrification at Ekangala F thereby deloading Rethabiseng Substation, creating capacity and allowing for improved backfeeding.

The proposed project will include the construction of two powerlines, which will loop in and out of the proposed Substation and tie into the existing Rethabiseng-Gemsbok line.

As this Substation and powerlines will tie into existing networks, the area of investigation is very limited, and only three potential sites where construction of the Substation would be feasible were identified, these include the preferred site, Site Alternative 1 and Site Alternative 2.

9. Is the development the best practicable environmental option for this land/site?	YES **X**	NO Please explain

Based on the findings of the Ecological Assessment undertaken by GIBB, according to the Gauteng Conservation Plan, Site Alternative 2 is not located within a Critical Biodiversity Area (CBA) or an Ecological Support Area (ESA), although there is a CBA located approximately 800m south of Alternative 2. The Mpumalanga Biodiversity Sector Plan, indicates that the preferred Alternative (Site Alternative 1) as well as Site Alternative 2 are located in "Moderately or Heavily Modified Areas, while areas to the west of the study area were classified as Other Natural Areas. The area associated with all three site Alternatives including the loop-in / loopout lines was considered to be of low conservation importance and ecological sensitivity. However, the areas surrounding the site Alternatives (and associated lines), were considered to be of medium to high conservation importance and ecological sensitivity due to the presence of floral species of conservation concern and/or provincially protected species. In addition to this, the areas surrounding the study area could also provide suitable habitat for three faunal species of conservation concern. Based on the findings of this ecological assessment, none of the Site Alternatives (and associated lines) are likely to have a significant impact on the ecology, although mitigation measures are recommended by the specialist should be considered to prevent impacts on the surrounding areas.

10. Will the benefits of the proposed land use/development outweigh the negative impacts of it?	YES **X**	NO Please explain

The proposed properties earmarked for development is owned by the respective Municipalities. The municipal plans as discussed in Section 2 (c) above addresses service infrastructure in their identified priorities. Based on the above mentioned, the proposed project is not expected to have a negative impact on the land use/ development of the area. The positive impact that additional electricity supply will have on the study area and the surrounding area is expected to outweigh the negative social impacts, and future growth and expansion will become possible.

11. Will the proposed land use/development set a precedent for similar activities in the area (local municipality)?	YES **X**	NO	Please explain
The proposed development could set an example to the local municipality, should the Municipality construct a powerline.			
12. Will any person's rights be negatively affected by the proposed activity/ies?	YES	NO **X**	Please explain
The proposed Substation and powerlines will be constructed on municipal owned land, and is currently vacant land. A portion of the land is rented by a local resident for cattle grazing. The Substation and powerlines will only cover a small area of the larger vacant area, and sufficient grazing area will still remain.			
13. Will the proposed activity/ies compromise the "urban edge" as defined by the local municipality?	YES	NO **X**	Please explain
The preferred site, site Alternative 2 site as well as site Alternative 3 are situated out of the urban edge as demarcated by both Municipalities.			
14. Will the proposed activity/ies contribute to any of the 17 Strategic Integrated Projects (SIPS)?	YES **X**	NO	Please explain

The proposed project falls under SIP 10, as listed below.

The 17 Strategic Integrated Projects include the following:

1. SIP 1: Unlocking the Northern Mineral Belt with Waterberg as the Catalyst;
2. SIP 2: Durban- Free State– Gauteng Logistics and Industrial Corridor
3. SIP 3: South Eastern node & corridor development
4. SIP 4: Unlocking the economic opportunities in North West Province
5. SIP 5: Saldanha-Northern Cape Development Corridor
6. SIP 6: Integrated Municipal Infrastructure Project
7. SIP 7: Integrated Urban Space and Public
8. SIP 8: Green Energy in support of the South African economy
9. SIP 9: Electricity Generation to support socio-economic development
10. **SIP 10: Electricity Transmission and Distribution for all Transport Programmes**
11. SIP 11: Agri-logistics and rural infrastructure
12. SIP 12: Revitalisation of public hospitals and other health facilities
13. SIP 13: National school build programme
14. SIP 14: Higher Education Infrastructure
15. SIP 15: Expanding access to communication technology
16. SIP 16: SKA & Meerkat
17. SIP 17: Regional Integration for African cooperation and development

15. What will the benefits be to society in general and to the local communities?	Please explain
The provision of additional electricity supply to the study area will is very important for the future growth and expansion of the study area. Without additional supply, future growth and expansion will not be possible.	

16. Any other need and desirability considerations related to the proposed activity?	Please explain
Refer to 15 above.	
17. How does the project fit into the National Development Plan for 2030?	Please explain

The National Development Plan for 2013 identified the following nine main challenges to be addressed by 2030. These nine challenges include the following:

1. Too few people work;
2. The standard of education for most black learners is of poor quality;
3. Infrastructure is poorly located, under-maintained and insufficient to foster higher growth;
4. Spatial patterns exclude the poor from the fruits of development;
5. The economy is overly and unsustainably resource intensive;
6. A widespread disease burden is compounded by a failing public health system;
7. Public services are uneven and often of poor quality;
8. Corruption is widespread; and
9. South Africa remains a divided society.

Based on the above a list of categories, areas which requires development and upgrading in order to enable sustainable development were developed. These areas include the following:

- Creating jobs and livelihoods;
- Expanding infrastructure;
- Transitioning to a low-carbon economy;
- Transforming urban and rural spaces;
- Improving education and training;
- Providing quality health care;
- Building a capable state;
- Fighting corruption and enhancing accountability; and
- Transforming society and uniting the nation.

The Rethabiseng North Substation is required to supply additional electricity to the network in order to meet current and future electricity demands. Existing and proposed new developments in the study area rely on a steady supply of electricity. Without the new Substation electricity requirements cannot be met. The project therefore fits in with points 3 and 7 as addressed under the challenges above.

18. Please describe how the general objectives of Integrated Environmental Management as set out in section 23 of NEMA have been taken into account.

The general objectives of IEM as set out in Section 23 of NEMA have been taken into account as follows:

- Modes of Environmental Management best suited to ensuring that a particular activity is pursued in accordance with the principles of environmental management as set out in Section 2 of NEMA have been identified and employed. Refer to Section 19 below;
- The actual and potential impacts on the environment, were identified, predicted and evaluated. Refer to the Impact Assessment Methodology and Impact Assessment in Section D of this Report, as well as the Impact Assessment ratings attached to Appendix F of this Report;
- Adequate consideration was given to the effect of activities on the environment through the undertaking of the impact assessment, as well as through the compilation of the Environmental Management Programme (EMPr);
- A Public Participation Process as per the requirements as set out in Section 54 of Regulation 543 on the Environmental Impact Assessment Regulations has been undertaken. The Draft Basic Assessment Report was made available for Public and Commentary Authority review to ensure that appropriate and adequate opportunity will be provided to these parties to provide comment or raise issues and concerns with regards to the effect that the proposed project may have on the environment.

Environmental attributes which may have a significant effect on the environment were considered in the management and decision making process, through the undertaking of the impact assessment, and through the compilation of the EMPr.

19. Please describe how the principles of environmental management as set out in section 2 of NEMA have been taken into account.

The principles of environmental management as set out in Section 2 of NEMA, have been considered during the undertaking of the Impact Assessment, formulation of mitigation measures, as well as during the compilation of the Environmental Management Programme. Some important principles addressed as part of this project are outlined below:

- Section 2(4)(a) of NEMA discusses sustainable development requirements to be considered. The following sustainable development requirements formed a key part of this project:

(i) That the disturbance of ecosystems and loss of biological diversity are avoided, or, where they cannot be altogether avoided, are minimised and remedied; and

(vii) That negative impacts on the environment and on people's environmental rights be anticipated and prevented, and where they cannot be altogether prevented are minimised and remedied.

- Section 2(4)(d) refer to the equitable access to services to meet basic human needs:

Equitable access to environmental resources, benefits and services to meet basic human needs and ensure human well-being must be pursued and special measures may be taken to ensure access thereto by categories of persons disadvantaged by unfair discrimination.

12. APPLICABLE LEGISLATION, POLICIES AND/OR GUIDELINES

List all legislation, policies and/or guidelines of any sphere of government that are applicable to the application as contemplated in the EIA regulations, if applicable:

Title of legislation, policy or guideline	Applicability to the project	Administering authority	Date
National Environmental Management Act No. 107 of 1998 as amended.	NEMA gives effect to Section 24 of the Constitution and in this respect, of particular importance is NEMA's injunction that the interpretation of any law concerned with the protection and management of the environment must be guided by its principles. At the heart of these is the principle of 'sustainable development'.	National & Provincial	27 November 1998
Environmental Impact Assessment Regulations, 4 December 2014	The proposed Substation and powerlines triggers activities 11 and 27 of Regulation 983.	National & Provincial	4 December 2014
National Water Act (Act 36 of 1998)	There are no Watercourses or Wetland areas on or directly adjacent to any of the Substation sites. There is a pan situated approximately 1.5km south of the preferred Substation site.	National	20 August 1998
The Constitution of South Africa (No 108 of 1996)	Section 24 of the Constitutions Bill of Rights states that everyone has the right – (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 secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development.	National	18 December 1996
National Heritage Resources Act (Act 25 of 1999)	The proposed Substation footprint triggers the need for a Heritage Impact Assessment in terms of Section 38 of the Heritage Resources Act.	National & Provincial	28 April 1999
The National Veld and Forest Act (Act 101 of 1998)	Section 12 of this Act renders firebreaks compulsory to landowners from whose land a veldfire may start, burn or spread. If it is determined that the land	Department of Agriculture, Forestry and Fisheries	27 November 1998

Title of legislation, policy or guideline	Applicability to the project	Administering authority	Date
	acquired for the proposed powerlines, may start, burn or spread a veldfire then it would be compulsory for Eskom to implement firebreaks.		
Nature and Environmental Conservation Ordinance (No. 19 of 1974)	Regulates various nature and environmental conservation aspects such as control animals, game and pollution. This ordinance regulates and prohibits the removal or killing of animal or game on site and regulates pollution activities on site.	DEDEAT	1974
Electricity Regulations Act, 2006 (Act No. 4 of 2006)	This act establishes a nationally regulatory framework for the electricity supply industry, and provides for licenses and registrations as the manner in which generation, transmission, distribution, reticulation, trading and the import and export of electricity are regulated. The erection of new electricity distribution infrastructure is thus regulated in terms of this act.	NERSA	2006
National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004)	The Biodiversity Act provides for the management and protection of the country's biodiversity within the framework established by NEMA. It provides for the protection of species and ecosystems in need of protection, sustainable use of indigenous biological resources, and equity in bio-prospecting.	DEA	2004
Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983)	In terms of section 6 of the Act, the Minister may prescribe control measures with which all land users have to comply. The control measure may relate to the regulating of the flow pattern of run-off water, the control of weeds and invader plants, and the restoration or reclamation of eroded land or land which is otherwise disturbed or denuded. This act will regulate construction activities to prevent the spreading of invasive species and to ensure successful rehabilitation of the receiving environment.	DEA	1983

13. WASTE, EFFLUENT, EMISSION AND NOISE MANAGEMENT

a) Solid waste management

Will the activity produce solid construction waste during the construction/initiation phase?	YES	NO
	X	
If YES, what estimated quantity will be produced per month?	0m^3	

How will the construction solid waste be disposed of (describe)?

All construction solid waste that will mainly consist of domestic waste will be placed in waste skips which will be stored in a designated area on site. The skips will be emptied weekly (or more frequently when required) and waste will be taken to the local municipal landfill site.

Where will the construction solid waste be disposed of (describe)?

All construction/domestic waste will be disposed of at the Bronkhorstpruit Municipal Landfill Site

Facility	Type of service rendered	Address	Contact person	Contact number of facility
Bronkhorstspruit	Landfill Site: Domestic & Industrial	Connecting road to R513	Mr Frans Deker	012 658 2339

Will the activity produce solid waste during its operational phase?	YES	NO
		X
If YES, what estimated quantity will be produced per month?		m^3

How will the solid waste be disposed of (describe)?

Not Applicable

If the solid waste will be disposed of into a municipal waste stream, indicate which registered landfill site will be used.

Not Applicable

Where will the solid waste be disposed of if it does not feed into a municipal waste stream (describe)?

Not Applicable

If the solid waste (construction or operational phases) will not be disposed of in a registered landfill site or be taken up in a municipal waste stream, then the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.

Can any part of the solid waste be classified as hazardous in terms of the NEM:WA?	YES	NO
		X

If YES, inform the competent authority and request a change to an application for scoping and EIA. An application for a waste permit in terms of the NEM:WA must also be submitted with this application.

Is the activity that is being applied for a solid waste handling or treatment facility?	YES	NO X

If YES, then the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA. An application for a waste permit in terms of the NEM:WA must also be submitted with this application.

b) Liquid effluent

Will the activity produce effluent, other than normal sewage, that will be disposed of in a municipal sewage system?	YES	NO X
If YES, what estimated quantity will be produced per month?		m^3
Will the activity produce any effluent that will be treated and/or disposed of on site?	YES	NO X

If YES, the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.

Will the activity produce effluent that will be treated and/or disposed of at another facility?	YES X	NO

Temporary chemical toilets will be installed during the construction phase. These toilets will be serviced regularly by the service provider. The appointed contractor will select a service provider.

If YES, provide the particulars of the facility:

Facility name:	[redacted]		
Contact person:			
Postal address:			
Postal code:			
Telephone:		**Cell:**	
E-mail:		**Fax:**	

Describe the measures that will be taken to ensure the optimal reuse or recycling of waste water, if any:

Not Applicable

c) Emissions into the atmosphere

Will the activity release emissions into the atmosphere other that exhaust emissions and dust associated with construction phase activities?	YES	NO X
If YES, is it controlled by any legislation of any sphere of government?	YES	NO

If YES, the applicant must consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.

If NO, describe the emissions in terms of type and concentration:

Not Applicable

d) Waste permit

Will any aspect of the activity produce waste that will require a waste permit in terms of the NEM:WA?	YES	NO X

If YES, please submit evidence that an application for a waste permit has been submitted to the competent authority

e) Generation of noise

Will the activity generate noise?	YES **X**	NO
If YES, is it controlled by any legislation of any sphere of government?	YES	NO **X**

Describe the noise in terms of type and level:

During the construction phase, noise will be limited to machinery and construction vehicles. It will be temporary in nature and will be associated with the following activities:

- Site preparation activities, such as site clearance;
- The establishment of the construction camp and storage yard;
- Earth-moving and stockpiling activities;
- Movement of materials, machinery and equipment;
- Machinery for the installation and stringing of towers; and
- Site rehabilitation activities, such as the movement of stockpiled material, grading and earth scarification.

Construction-related noise will be restricted to normal working hours. Electricity generates a very low level of noise which can be heard when in very close proximity to a Substation. The low noise levels will be negligible.

14. WATER USE

Please indicate the source(s) of water that will be used for the activity by ticking the appropriate box(es):

Municipal	Water board	Groundwater	River, stream, dam or lake	Other	The activity will not use water
X					

If water is to be extracted from groundwater, river, stream, dam, lake or any other natural feature, please indicate the volume that will be extracted per month:		litres
Does the activity require a water use authorisation (general authorisation or water use license) from the Department of Water Affairs?	YES	NO **X**

If YES, please provide proof that the application has been submitted to the Department of Water Affairs.

15. ENERGY EFFICIENCY

Describe the design measures, if any, which have been taken to ensure that the activity is energy efficient:

Not Applicable

Describe how alternative energy sources have been taken into account or been built into the design of the activity, if any:

Not Applicable

SECTION B: SITE/AREA/PROPERTY DESCRIPTION

Important notes:

1. For linear activities (pipelines, etc) as well as activities that cover very large sites, it may be necessary to complete this section for each part of the site that has a significantly different environment. In such cases please complete copies of Section B and indicate the area, which is covered by each copy No. on the Site Plan.

Section B Copy No. (e.g. A): **0**

2. Paragraphs 1 - 6 below must be completed for each alternative.

3. Has a specialist been consulted to assist with the completion of this section?

YES	NO
X	

If YES, please complete the form entitled "Details of specialist and declaration of interest" for each specialist thus appointed and attach it in Appendix I. All specialist reports must be contained in Appendix D.

A. PREFERRED SITE ALTERNATIVE (ALTERANTIVE 1) AND SITE ALTERNATIVE 2:

Property description/physical address:

Province	Mpumalanga Province
District Municipality	Nkangala District Municipality
Local Municipality	Thembisile Hani Local Municipality
Ward Number(s)	Ward 32
Farm name and number	Farm Rietfontein 470 JR
Portion number	Portion 5
SG Code	T0JR00000000047000005

Where a large number of properties are involved (e.g. linear activities), please attach a full list to this application including the same information as indicated above.

Current land-use zoning as per local municipality IDP/records:

Government

In instances where there is more than one current land-use zoning, please attach a list of current land use zonings that also indicate which portions each use pertains to, to this application.

Is a change of land-use or a consent use application required?

YES	NO
	X

B. SITE ALTERNATIVE 3:

Property description/physical address:	**Province**	Gauteng Province
	District Municipality	City of Tshwane
	Local Municipality	City of Tshwane Local Municipality
	Ward Number(s)	Ward 104
	Farm name and number	Farm Ekangala 610 JR
	Portion number	Remaining Extent of the Farm Ekangala 610 JR
	SG Code	T0JR00000000610000000

Where a large number of properties are involved (e.g. linear activities), please attach a full list to this application including the same information as indicated above.

Current land-use zoning as per local municipality IDP/records:	Government

In instances where there is more than one current land-use zoning, please attach a list of current land use zonings that also indicate which portions each use pertains to, to this application.

Is a change of land-use or a consent use application required?

YES	NO
	X

1. GRADIENT OF THE SITE

Indicate the general gradient of the site.

Alternative S1:

Flat	1:50 – 1:20	1:20 – 1:15	1:15 – 1:10	1:10 – 1:7,5	1:7,5 – 1:5	Steeper than 1:5
	X					

Alternative S2 (if any):

Flat	1:50 – 1:20	1:20 – 1:15	1:15 – 1:10	1:10 – 1:7,5	1:7,5 – 1:5	Steeper than 1:5
	X					

Alternative S3 (if any):

Flat	1:50 – 1:20	1:20 – 1:15	1:15 – 1:10	1:10 – 1:7,5	1:7,5 – 1:5	Steeper than 1:5
	X					

2. LOCATION IN LANDSCAPE

Indicate the landform(s) that best describes the site:

2.1 Ridgeline		2.4 Closed valley		2.7 Undulating plain / low hills	X
2.2 Plateau		2.5 Open valley		2.8 Dune	
2.3 Side slope of hill/mountain		2.6 Plain		2.9 Seafront	
2.10 At sea					

3. GROUNDWATER, SOIL AND GEOLOGICAL STABILITY OF THE SITE

Is the site(s) located on any of the following?

	Alternative S1:		**Alternative S2 (if any):**		**Alternative S3 (if any):**	
Shallow water table (less than 1.5m deep)	YES	NO X	YES	NO X	YES	NO X
Dolomite, sinkhole or doline areas	YES	NO X	YES	NO X	YES	NO X
Seasonally wet soils (often close to water bodies)	YES	NO X	YES	NO X	YES	NO X
Unstable rocky slopes or steep slopes with loose soil	YES	NO X	YES	NO X	YES	NO X
Dispersive soils (soils that dissolve in water)	YES	NO X	YES	NO X	YES	NO X
Soils with high clay content (clay fraction more than 40%)	YES	NO X	YES	NO X	YES	NO X
Any other unstable soil or geological feature	YES X	NO	YES X	NO	YES X	NO
An area sensitive to erosion	YES	NO X	YES	NO X	YES	NO X

A Preliminary Geotechnical Investigation for the proposed project was undertaken by JG Afrika (Pty) Ltd for all three Site Alternatives. A copy of the Geotechnical Report is attached to Appendix D of this Basic Assessment Report. The findings of this Report was used to complete this section of the Basic Assessment Report. A description of unstable soils features observed on site is provided below:

Any other unstable soil of geological feature:

- Site Alternative 1:
  The site is underlain by hillwash and sandstone bedrock at the anticipated founding depth of the Substation infrastructure. Sandstone bedrock will provide an adequate founding medium for the Substation infrastructure, as described above. However, sandstone bedrock was only encountered at one test pit position, thus, it is considered highly likely that hillwash will also be encountered at the founding depth of the Substation infrastructure. The test pit logs indicate that the hillwash soils are loose and voided, which is indicative of soils susceptible to collapse settlement. Therefore, the hillwash materials are not considered an adequate founding medium for the Substation infrastructure.
- Site Alternative 2
  The site is underlain by hillwash and residual tillite at the anticipated founding depth of the Substation infrastructure. These materials will not provide an adequate founding medium for the Substation infrastructure, as described above.

- Site Alternative 3
  The site is underlain by hillwash soils and residual tillite at the anticipated founding depth of the Substation infrastructure. These materials will not provide an adequate founding medium for the Substation infrastructure, as described above.

If you are unsure about any of the above or if you are concerned that any of the above aspects may be an issue of concern in the application, an appropriate specialist should be appointed to assist in the completion of this section. Information in respect of the above will often be available as part of the project information or at the planning sections of local authorities. Where it exists, the 1:50 000 scale Regional Geotechnical Maps prepared by the Council for Geo Science may also be consulted.

4. GROUNDCOVER

Indicate the types of groundcover present on the site. The location of all identified rare or endangered species or other elements should be accurately indicated on the site plan(s).

Natural veld - good condition[E]	Natural veld with scattered aliens[E]	Natural veld with heavy alien infestation[E]	Veld dominated by alien species[E]	Gardens
Sport field	Cultivated land **X**	Paved surface	Building or other structure	Bare soil

If any of the boxes marked with an "[E] "is ticked, please consult an appropriate specialist to assist in the completion of this section if the environmental assessment practitioner doesn't have the necessary expertise.

An Ecological Assessment (Flora and Fauna Including Avifauna) was undertaken by GIBB in December 2015. A copy of the Ecological Assessment Report is attached to Appendix D of this Basic Assessment Report. A summary of the site findings is provided below:

The study area consisted of three site Alternatives including the associated loop-in and loop-out lines. The three Site Alternatives were located in close proximity of each other and confined to an area of approximately 37ha (374,604m²). Historical imagery (Google Earth, 2015) indicated that the area associated with the Preferred Site (Site Alternative 1) as well as Site Alternative 2 were ploughed in 2004. However, during the field survey it was clear that the area associated with Site Alternative 3 was also ploughed probably prior to 2004 (Google Earth historical imagery only dates back to 2004). During the field survey, areas surrounding the study area were also verified to determine the impact of the project on a larger scale. The vegetation units within the larger area included secondary grassland (on old ploughed fields), moist grasslands and disturbed natural grasslands. These vegetation units are illustrated in Figure 3 below, and in Figure 5 of the Ecological Assessment Report which is attached to Appendix D of this Basic Assessment Report. A description of the vegetation units is also provided below. All the plant species which were recorded during the study are listed in Appendix A of the Ecological Assessment Report which is attached to Appendix D of this Basic Assessment Report.

1. <u>Secondary Grassland (old ploughed fields)</u>

All three Site Alternatives were located within the secondary grasslands which consisted of historically ploughed fields. These areas were burnt during winter and due to the low rainfall preceding the field survey, the vegetation layer was mostly undeveloped. Despite this, the area appeared to support limited floral species. On the boundary between the secondary grassland and disturbed natural grasslands there was marginally more indigenous herbaceous species, as these species were recolonizing the secondary grassland. These included pioneer species such as *Elephantorrhiza elephantina, Ledebouria* sp., *Seriphium plumosum, Solanum incanum* and *S. panduriforme.* Although threatened plant species including *Boophone disticha* (currently listed as Declining) and *Hypoxis hemerocallidea* (currently listed as Declining) were confirmed in the disturbed natural grasslands

surrounding the secondary grassland, these species were not confirmed in the footprint of the proposed site Alternatives. Table 1 summarizes the species associated with secondary grasslands in the study area.

Table 1: Summary of species associated with the secondary grassland (on old ploughed fields)

Indigenous species at the time of the survey:	**Herbaceous species:** *Elephantorrhiza elephantina* *Ledebouria* sp. *Seriphium plumosum* *Solanum panduriforme* **Grass species:** *Melinis repens* *Eragrostis* sp. *Cynodon dactylon*
Plants of conservation concern confirmed to occur:	None
Plants of conservation concern for which suitable habitat was observed:	None
Provincially protected plants confirmed to occur:	None
Provincially protected plants for which suitable habitat was found:	None
Nationally protected tree species confirmed:	None
Alien species:	*Campuloclinium macrocephalum* *Verbena bonariensis* *Acacia mearnsii*

2. Disturbed Natural Grasslands

Disturbed natural grasslands were recorded north, west and east of the proposed Site Alternatives and associated lines (Figure 3). Since these areas were not historically ploughed, they supported higher floral species diversity including *Protea welwitschii* (White Sugar Bush), *Pygamaethamnus chamaedendrum* and *Senecio* sp.. Six Provincially protected species, *Aloe greatheadii* var. *davyana* (Protected in Mpumalanga), *Boophone disticha* (Protected in Mpumalanga and Gauteng), *Crinum graminicola* (Protected in Mpumalanga), *Gladiolus* sp. (Protected in Mpumalanga), *Protea welwitschii* (Protected in Mpumalanga) and *Hypoxis hemerocallidea* (Protected in Mpumalanga and Gauteng) were confirmed in this vegetation unit. Table 2 summarizes the vegetation associated with the Disturbed Natural Grasslands surrounding the study area.

Table 2: Summary of the vegetation associated with the Disturbed Natural Grasslands surrounding the study area

Indigenous species at the time of the survey:	**Herbaceous species:** *Elephantorrhiza elephantina* *Hypoxis acuminate* *Pygamaethanmus chamaedendrum* **Trees and shrubs:** *Acacia karroo* *Protea welwitschii*
Plants of conservation concern confirmed to occur:	*Boophone disticha* (Declining) *Hypoxis hemerocallidea* (Declining)
Plants of conservation concern for which suitable habitat was observed	*Argyrolobium megarrhizum*
Provincially protected plants confirmed to occur:	**Provincially Protected: Gauteng** *Boophone disticha* *Hypoxis hemerocallidea*

	Provincially Protected: Mpumalanga *Aloe greatheadii* vary. *davyana* *Boophone disticha* *Crinum graminicola* *Gladiolus* sp. *Protea welwitchii*
Additional provincially protected plants for which suitable habitat was found:	**Gauteng:** None **Mpumalanga:** *Cyrtanthus* spp. *Eucomis autumnalis* *Scilla* spp. *Watsonia* spp. Orchidaceae
Nationally protected tree species confirmed:	None
Alien species:	*Acacia mearnsii* *Bidens pilosa* *Campuloclinium macrocephalum* *Verbena bonariensis*

3. Moist Grassland

Moist Grasslands (disturbed) included a seasonal pan. Due to the dry conditions preceding the field survey, the seasonal pan south of the study area was dry at the time of the survey. However, this pan is likely to provide suitable habitat for faunal species of conservation concern including *Tyto capensis* (African Grass Owl; currently listed nationally as Vulnerable) and *Pyxicephalus adspersus* (Giant Bullfrog; currently listed as Vulnerable in Mpumalanga and protected at a national level according to NEM:BA). This pan is furthermore classified as a Critical Biodiversity Area (CBA) according to the latest Gauteng Conservation Plan (C-Plan) data. The moist grasslands west of the study area were disturbed and dominated by alien plant species such as *Acacia mearnsii* and *Populus x canescens*, with the graminoid and herbaceous layers largely dormant. No plant species of conservation concern or provincially protected plant species were recorded in the Disturbed Moist Grassland at the time of the survey. Table 3 summarizes the vegetation associated with the areas classified as Disturbed Moist Grasslands.

Table 3: Summary of plant species associated the Disturbed Moist Grasslands surrounding the study area

Indigenous species at the time of the survey:	**Grasses:** Graminoid layer was dormant at the time of the survey. **Herbs:** None at the time of the survey.
Plants of conservation concern confirmed to occur:	None
Additional plants of conservation concern for which suitable habitat was observed:	None
Provincially protected plants confirmed to occur:	None
Provincially protected plants for which suitable habitat was found:	**Gauteng:** *Crinum bulbispermum* *C. macowanii* **Mpumalanga:** *Crinum* spp.

	Orchidaceae *Eucomis autumnalis* *Cyrtanthus* spp.
Nationally protected tree species confirmed:	None
Alien species:	*Acacia mearnsii* *Populus x canescens* *Campuloclinium macrocephalum*

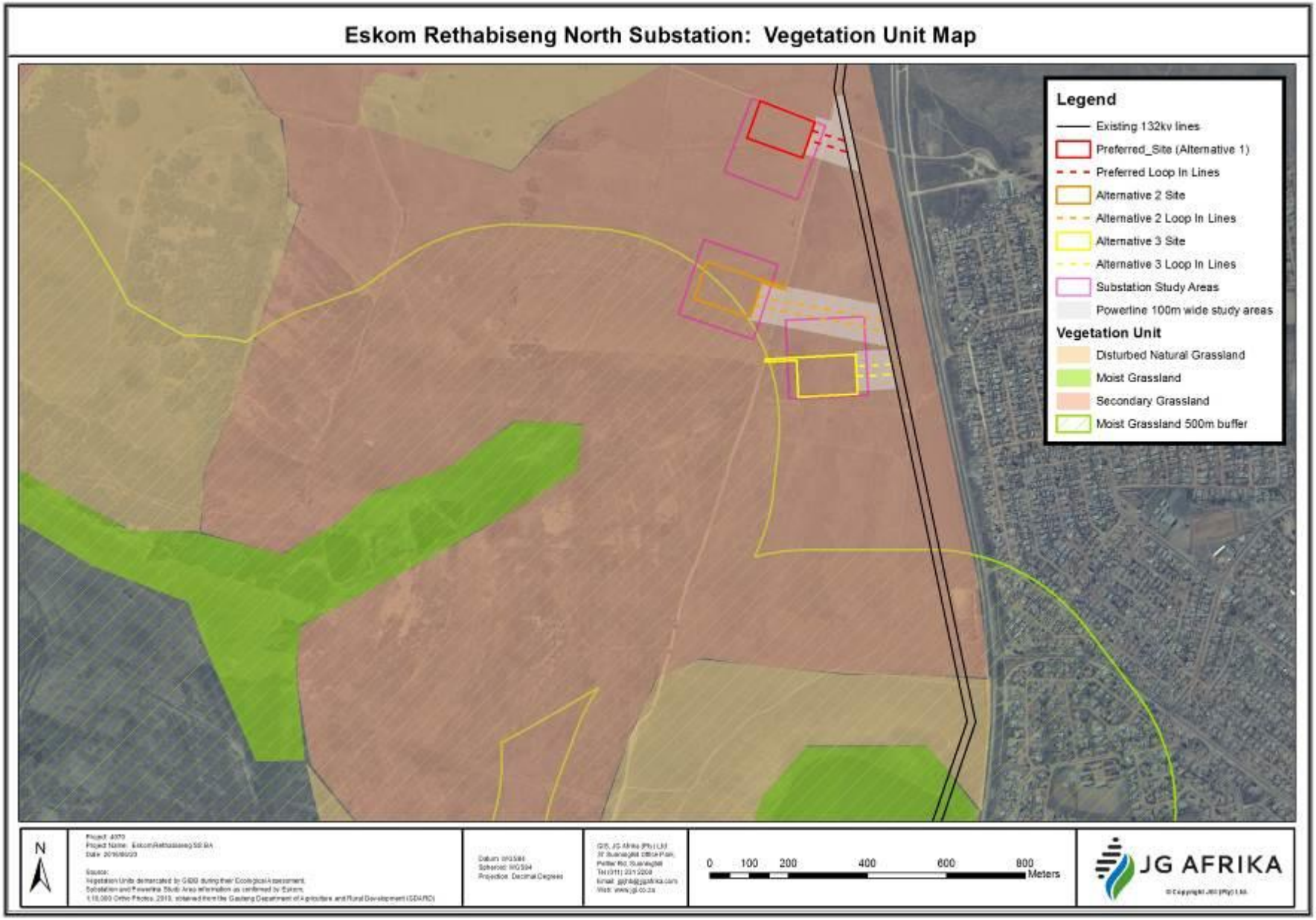


Figure 3: Vegetation Unit Map

5. SURFACE WATER

Indicate the surface water present on and or adjacent to the site and alternative sites?

Perennial River	YES	NO **X**	UNSURE
Non-Perennial River	YES	NO **X**	UNSURE
Permanent Wetland	YES	NO **X**	UNSURE
Seasonal Wetland	YES **X**	NO	UNSURE
Artificial Wetland	YES	NO **X**	UNSURE
Estuarine / Lagoonal wetland	YES	NO **X**	UNSURE

If any of the boxes marked YES or UNSURE is ticked, please provide a description of the relevant watercourse.

There is a seasonal pan situated approximately 1.5km south of the preferred Site Alternative (Site Alternative 1). In terms of the Ecological Assessment undertaken by GIBB, this pan is likely to provide suitable habitat for faunal species of conservation concern including *Tyto capensis* (African Grass Owl; currently listed nationally as Vulnerable) and *Pyxicephalus adspersus* (Giant Bullfrog; currently listed as Vulnerable in Mpumalanga and protected at a national level according to NEM:BA). This pan is furthermore classified as a Critical Biodiversity Area (CBA) according to the latest Gauteng Conservation Plan (C-Plan) data. GIBB demarcated vegetation within this area as Moist Grassland.

The Malanspruit and two small dams are situated to the west of the study area. The Ecological Assessment undertaken by GIBB classified vegetation in this area as Moist Grasslands, that is disturbed and dominated by alien plant species such as *Acacia mearnsii* and *Populus x canescens*, with the graminoid and herbaceous layers largely dormant. No plant species of conservation concern or provincially protected plant species were recorded in this area.

A 500m buffer area was placed around these above areas identified by GIBB as Moist Grassland (Refer to Figure 3 above). Site Alternatives 1 and 3 are situated outside of this 500m buffer area. Site Alternative 2 is located within the 500m buffer zone for "Moist Grasslands". Site Alternative 1 is situated furthest from the Moist Grassland area, approximately 750m north east of this sensitive area.

6. LAND USE CHARACTER OF SURROUNDING AREA

Indicate land uses and/or prominent features that currently occur within a 500m radius of the site and give description of how this influences the application or may be impacted upon by the application:

Natural area X	Dam or reservoir X	Polo fields
Low density residential	Hospital/medical centre	Filling station H
Medium density residential	School	Landfill or waste treatment site
High density residential X	Tertiary education facility	Plantation
Informal residential X	Church	Agriculture X
Retail commercial & warehousing	Old age home	River, stream or wetland X
Light industrial	Sewage treatment plant A	Nature conservation area
Medium industrial AN	Train station or shunting yard N	Mountain, koppie or ridge
Heavy industrial AN	Railway line N	Museum
Power station	Major road (4 lanes or more) N	Historical building
Office/consulting room	Airport N	Protected Area
Military or police base/station/compound	Harbour	Graveyard
Spoil heap or slimes dam A	Sport facilities	Archaeological site
Quarry, sand or borrow pit	Golf course	Other land uses (describe)

If any of the boxes marked with an "N "are ticked, how will this impact / be impacted upon by the proposed activity? Specify and explain:

Not Applicable

If any of the boxes marked with an "An" are ticked, how will this impact / be impacted upon by the proposed activity? Specify and explain:

Not Applicable

If any of the boxes marked with an "H" are ticked, how will this impact / be impacted upon by the proposed activity? Specify and explain:

Not Applicable

Does the proposed site (including any alternative sites) fall within any of the following:

Critical Biodiversity Area (as per provincial conservation plan) *There is a CBA area approximately 700m south of Site Alternative 3, that is classified as an Important Area in terms of the Gauteng Conservation Plan Data.*	YES	NO **X**
Core area of a protected area?	YES	NO **X**
Buffer area of a protected area?	YES	NO **X**
Planned expansion area of an existing protected area?	YES	NO **X**
Existing offset area associated with a previous Environmental Authorisation?	YES	NO **X**
Buffer area of the SKA?	YES	NO **X**

If the answer to any of these questions was YES, a map indicating the affected area must be included in Appendix A.

7. CULTURAL/HISTORICAL FEATURES

Are there any signs of culturally or historically significant elements, as defined in section 2 of the National Heritage Resources Act, 1999, (Act No. 25 of 1999), including Archaeological or paleontological sites, on or close (within 20m) to the site? If YES, explain:	YES	NO (Archaeological Sites) **X**
	Uncertain (Paleontological Sites) **X**	

A Heritage Impact Assessment was undertaken by Dr Johnny van Schalkwyk in March 2016 for the proposed project. A summary of the findings and recommendations made in Dr Schalkwyk's Report is provided below. A copy of the Heritage Impact Assessment Report compiled by Dr van Schalkwyk is attached to Appendix D of this Basic Assessment Report.

- **Findings and Recommendations**

The objective of the study was to locate, identify, evaluate and document sites, objects as well as structures of cultural significance found within the area in which the development is proposed.
The landscape qualities of the area which is very flat, with little resources such as hills, outcrops and open water, that usually drew people to settle a region and as a result it was very sparsely occupied in the past. In addition, due to large scale urbanization of the region over the past 30 to 40 years, as part of the former KwaNdebele homeland, any resources that might have occurred here would have been destroyed. The impact analysis of cultural heritage resources under threat of the proposed development, are based on the present understanding of the development.

- **Preferred Site (Site Alternative 1)**

As no site, features or objects of cultural significance are known to exist in the study area, there would be no impact as a result of the proposed development.

- **Site Alternative 2**

As no site, features or objects of cultural significance are known to exist in the study area, there would be no impact as a result of the proposed development.

- **Site Alternative 3**

As no site, features or objects of cultural significance are known to exist in the study area, there would be no impact as a result of the proposed development.

Based on the findings of the assessment, the specialist recommended that from a Heritage point of view it is recommended that the proposed development be allowed to continue in any of the three Substation sites subject to the following conditions:

- Should archaeological sites or graves be exposed during construction activities, all work must be stopped in the immediate vicinity of the finds and it should immediately be reported to a heritage practitioner so that an investigation and evaluation of it can be made.

Palaeontological Assessment

The revised Draft Basic Assessment Report was submitted to SAHRA via the South African Heritage Resource Information System (SAHRIS) on the 13th of December 2016. SAHRA provided their comments on the 19th of January 2017. The comments provided by SAHRA are given in Table 8 below. One of the comments was that there could be a possibility that the project study area may contain fossils in the recent gravels overlying bedrock. The findings of the Palaeontological Assessment will confirm the existence of such fossils. Eskom has acknowledged the request for a Palaeontological Assessment and Palaeontologist Ms Heidi Fourie has been appointed to undertake an assessment of the proposed study area. The comments provided by SAHRA have been captured in the Draft EMPr, and construction of the proposed development may not commence until the Palaeontological Assessment has been submitted to SAHRA, and SAHRA has provided their final comments on the proposed project. Mitigation measures and recommendations by the Palaeontologist will be addressed in the Final EMPr and submitted to the DEA for approval before any construction activities can commence.

If uncertain, conduct a specialist investigation by a recognised specialist in the field (archaeology or palaeontology) to establish whether there is such a feature(s) present on or close to the site. Briefly explain the findings of the specialist:

The findings of the Heritage Impact Assessment are discussed above.

Will any building or structure older than 60 years be affected in any way?	YES	NO
		X

Is it necessary to apply for a permit in terms of the National Heritage Resources Act, 1999 (Act 25 of 1999)?	YES	NO
		X

If YES, please provide proof that this permit application has been submitted to SAHRA or the relevant provincial authority.

8. SOCIO-ECONOMIC CHARACTER

a) Local Municipality

Please provide details on the socio-economic character of the local municipality in which the proposed site(s) are situated.

Level of unemployment:

Employment information for the City of Tshwane and the Thembisile Hani Local Municipalities was obtained from the Statistics South Africa website. A breakdown of the employment status in terms of the 2011 Census Survey is provided below:

City of Tshwane Local Municipality:
Source: http://www.statssa.gov.za/?page_id=993&id=city-of-tshwane-municipality
During 2011, the City of Tshwane had an unemployment rate of 24.2%. A chart showing the employment status as recorded during the Census Survey 2011 is provided below.

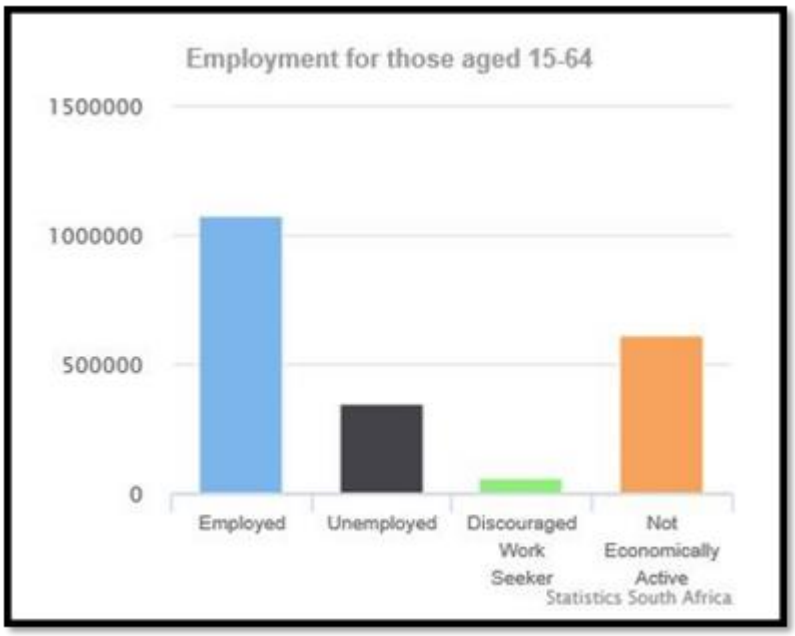


Figure 4: City of Tshwane – Employment Status

Thembisile Hani Local Municipality:
Source: http://www.statssa.gov.za/?page_id=993&id=thembisile-municipality
During 2011, the Thembisile Hani Local Municipality had an unemployment rate of 37%. A chart showing the employment status as recorded during the Census Survey 2011 is provided below.

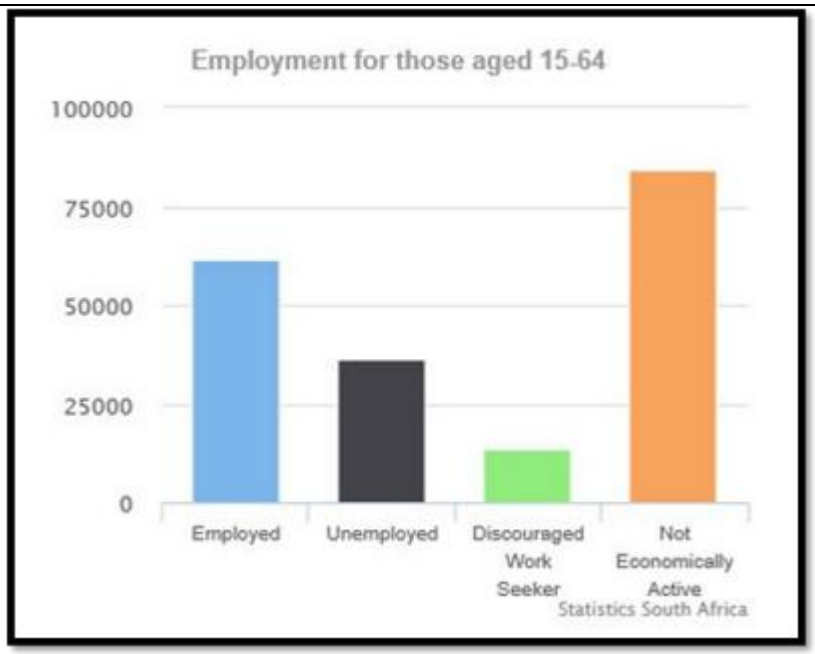


Figure 5: Thembisile Hani Local Municipality - Employment Status

Economic profile of local municipality:

Average household income information for the City of Tshwane and the Thembisile Hani Local Municipalities was obtained from the Statistics South Africa website. Charts providing a breakdown of the average household income per municipality, as per the 2011 Census Survey are provided.

City of Tshwane Local Municipality:
Source: http://www.statssa.gov.za/?page_id=993&id=city-of-tshwane-municipality

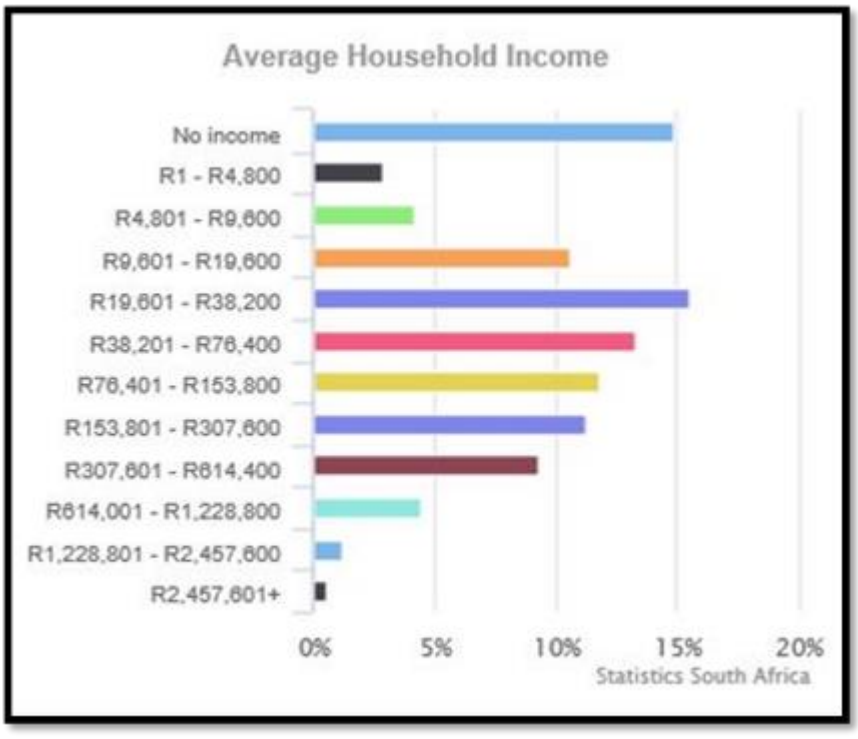


Figure 6: City of Tshwane – Average Household Income

Thembisile Hani Local Municipality:
Source: http://www.statssa.gov.za/?page_id=993&id=thembisile-municipality

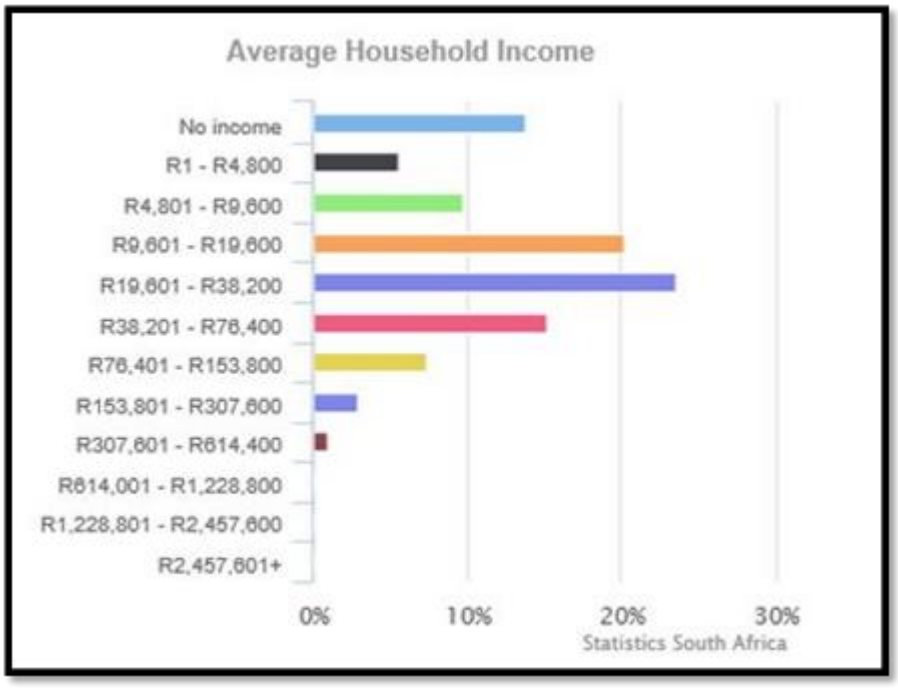


Figure 7: Thembisile Hani Local Municipality - Average Household Income

Level of education:

Level of education information for the City of Tshwane and the Thembisile Hani Local Municipalities was obtained from the Statistics South Africa website. Charts providing a breakdown of the level of education per Municipality as per the 2011 Census Survey is provided below.

City of Tshwane Local Municipality:
Source: http://www.statssa.gov.za/?page_id=993&id=city-of-tshwane-municipality

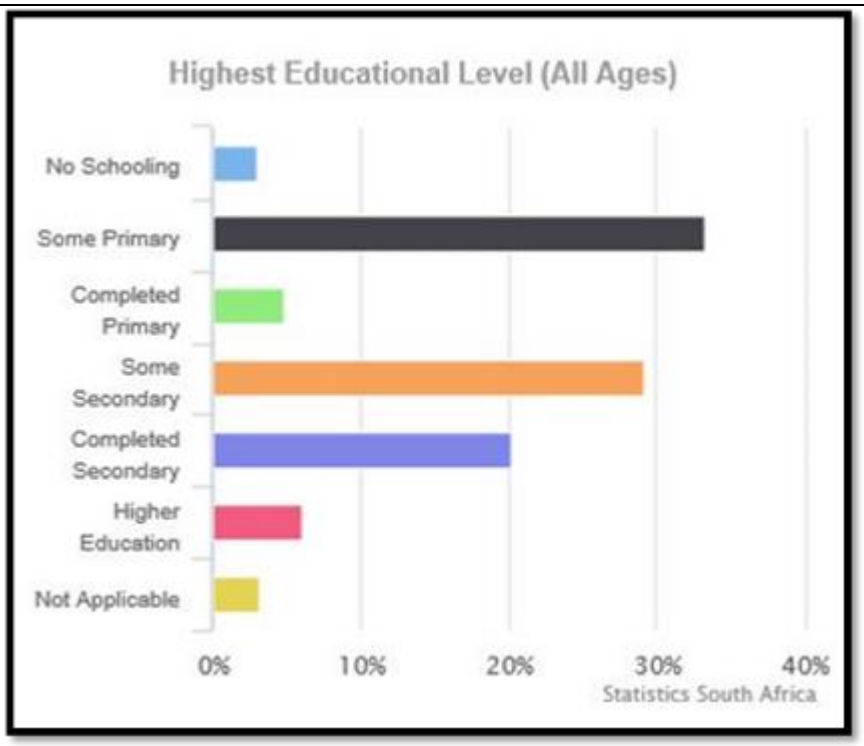


Figure 8: City of Tshwane – Level of Education

Thembisile Hani Local Municipality:
Source: http://www.statssa.gov.za/?page_id=993&id=thembisile-municipality

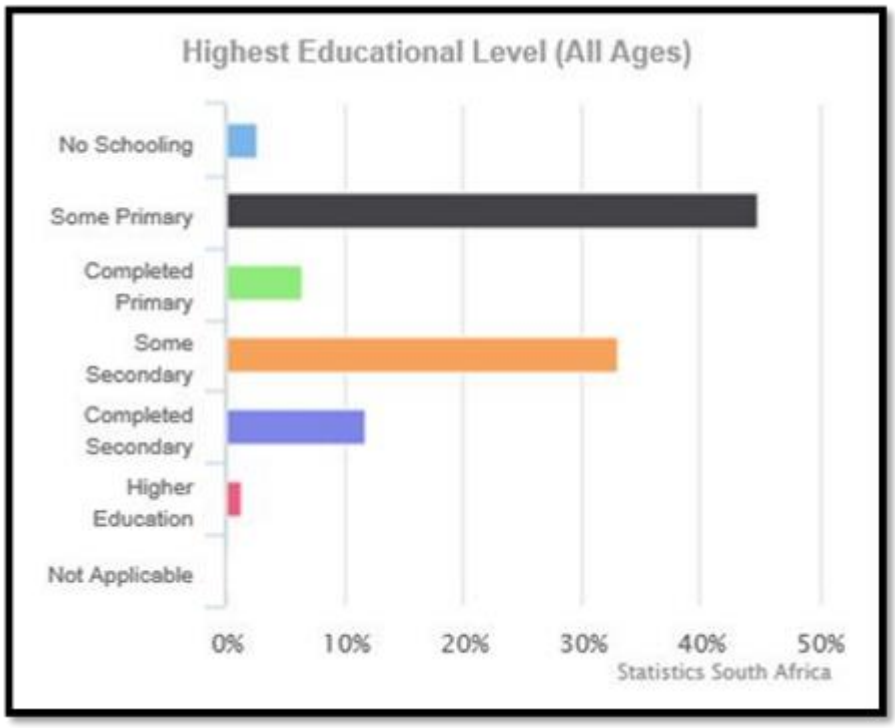


Figure 9: Thembisile Hani Local Municipality – Level of Education

b) Socio-economic value of the activity

What is the expected capital value of the activity on completion?	R +/- 17 Million

What is the expected yearly income that will be generated by or as a result of the activity?	Unknown	
Will the activity contribute to service infrastructure?	**YES X**	NO
Is the activity a public amenity?	**YES X**	NO
How many new employment opportunities will be created in the development and construction phase of the activity/ies?	Eskom undertakes an open tendering process to employ suitable contractors to carry out the construction phase of the development. Contractors are required to employ local unskilled labourers for non-specialized work.	
What is the expected value of the employment opportunities during the development and construction phase?	This can only be established once the contractor is appointed.	
What percentage of this will accrue to previously disadvantaged individuals?	>/= 90 %	
How many permanent new employment opportunities will be created during the operational phase of the activity?	None. Eskom will maintain the powerline once constructed.	
What is the expected current value of the employment opportunities during the first 10 years?	N/A	
What percentage of this will accrue to previously disadvantaged individuals?	N/A	

9. BIODIVERSITY

Please note: The Department may request specialist input/studies depending on the nature of the biodiversity occurring on the site and potential impact(s) of the proposed activity/ies. To assist with the identification of the biodiversity occurring on site and the ecosystem status consult http://bgis.sanbi.org or BGIShelp@sanbi.org. Information is also available on compact disc (cd) from the Biodiversity-GIS Unit, Ph (021) 799 8698. This information may be updated from time to time and it is the applicant/ EAP's responsibility to ensure that the latest version is used. A map of the relevant biodiversity information (including an indication of the habitat conditions as per (b) below) and must be provided as an overlay map to the property/site plan as Appendix D to this report.

a) Indicate the applicable biodiversity planning categories of all areas on site and indicate the reason(s) provided in the biodiversity plan for the selection of the specific area as part of the specific category)

Systematic Biodiversity Planning Category	If CBA or ESA, indicate the reason(s) for its selection in biodiversity plan

Critical Biodiversity Area (CBA) ***Not at any of the three alternative sites, but 800m South***	Ecological Support Area (ESA) ***Not at any of the three alternative sites.***	Other Natural Area (ONA) ***Not at any of the three alternative sites, but west of the study area***	No Natural Area Remaining (NNR) ***Not at any of the three alternative sites***	The study area falls within the Gauteng and Mpumalanga Provinces. Each Province has its own Conservation Plan. According to the Gauteng Conservation Plan, Site Alternative 3 is not located within a Critical Biodiversity Area (CBA) or an Ecological Support Area (ESA), although there is a CBA located approximately 800m south of site Alternative 3. The Mpumalanga Biodiversity Sector Plan, indicates that the preferred Site Alternative (Alternative 1) as well as Site Alternative 2 are located in "Moderately or Heavily Modified Areas, while areas to the west of the study area were classified as Other Natural Areas.

b) Indicate and describe the habitat condition on site

Habitat Condition	**Percentage of habitat condition class (adding up to 100%)**	**Description and additional Comments and Observations (including additional insight into condition, e.g. poor land management practises, presence of quarries, grazing, harvesting regimes etc).**
Natural	0%	N/A
Near Natural (includes areas with low to moderate level of alien invasive plants)	0%	N/A
Degraded (includes areas heavily invaded by alien plants)	0%	N/A
Transformed (includes cultivation, dams, urban, plantation, roads, etc)	100%	The three site Alternatives are located in close proximity of each other and confined to an area of approximately 37ha (374,604m²). The area associated with all three site Alternatives were classified as Secondary Grassland (on old ploughed fields).

c) Complete the table to indicate:

(i) the type of vegetation, including its ecosystem status, present on the site; and

(ii) whether an aquatic ecosystem is present on site.

Terrestrial Ecosystems		**Aquatic Ecosystems**		
Ecosystem threat status as per the National Environmental	Critical Endangered Vulnerable **X**	Wetland (including rivers, depressions, channelled and unchanneled wetlands, flats,	Estuary	Coastline

Terrestrial Ecosystems		Aquatic Ecosystems						
Management: Biodiversity Act (Act No. 10 of 2004)	Least Threatened	seeps pans, and artificial wetlands)						
		YES	NO **X**	UNSURE	YES	NO	YES	NO

d) Please provide a description of the vegetation type and/or aquatic ecosystem present on site, including any important biodiversity features/information identified on site (e.g. threatened species and special habitats)

Vegetation:

Gibb Engineering and Architecture, as independent environmental practitioners and ecological specialists, were appointed by Jeffares and Green (Pty) Ltd to undertake an ecological assessment of the area associated with the proposed Eskom Rethabiseng North Substation and associated power lines. The Ecological Assessment Report compiled by GIBB is attached to Appendix D of this Basic Assessment Report.

The study area is situated within the Savanna and Grassland Biomes, and more specifically within the Rand Highveld Grassland vegetation type, while the Central Sandy Bushveld vegetation type is located immediately west of the study area. Rand Highveld Grassland is listed as Endangered while the Central Sandy vegetation type is currently listed as Vulnerable.

The study area falls within the Gauteng and Mpumalanga Provinces. Each Province has its own Conservation Plan. According to the Gauteng Conservation Plan, Site Alternative 3 is not located within a Critical Biodiversity Area (CBA) or an Ecological Support Area (ESA), although there is a CBA located approximately 800m south of Site Alternative 3. The Mpumalanga Biodiversity Sector Plan, indicates that the preferred Alternative (Site Alternative 1) as well as Site Alternative 2 are located in "Moderately or Heavily Modified Areas, while areas to the west of the study area were classified as Other Natural Areas.

The three Site Alternatives are located in close proximity of each other and confined to an area of approximately 37ha (374,604m²). The area associated with all three Site Alternatives were classified as Secondary Grassland (on old ploughed fields), while the areas surrounding the site Alternatives and associated lines, consisted of Disturbed Natural Grassland as well as Disturbed Moist Grasslands.

The area associated with all three Site Alternatives including the loop-in / loop-out lines was considered to be of low conservation importance and ecological sensitivity. However, the areas surrounding the Site Alternatives (and associated lines), were considered to be of medium to high conservation importance and ecological sensitivity due to the presence of floral species of conservation concern and/or provincially protected species. In addition to this, the areas surrounding the study area could also provide suitable habitat for three faunal species of conservation concern.

Based on the findings of the ecological assessment, none of the site Alternatives (and associated lines) are likely to have a significant impact on the ecology, although mitigation measures are recommended to prevent impacts on the surrounding areas. The mitigation measures proposed by the Specialist is provided below.

Mitigation measures:

- All construction activities should be confined to areas which have been classified to be of medium to low ecological sensitivity in the Ecological Assessment Report. Therefore, no construction vehicles, workers or material should be allowed in any of the areas adjacent to the study area;
- An independent Environmental Control Officer (ECO) should be appointed to oversee all construction activities;
- Access roads should be formalized and should be confined to areas of medium to low sensitivity;
- A rubble clean-up plan must be implemented throughout the duration of the construction phase;

- Construction should be conducted during winter months when adult *Pyxicephalus adspersus* (Giant Bullfrogs) are aestivating since the adults will be more vulnerable to disturbance during the active period (October to February) when they congregate in large numbers in the seasonal pan south of the study area;
- As far as possible, construction should be limited to the daylight hours in order to minimise the need for lights;
- An education programme should be compiled for all contractors, subcontractors and workers to ensure compliance to all aspects of the Environmental Management Programme (EMPr) as well as educating personnel in the safe and proper conduct within areas of natural habitat;
- No wild animal may under any circumstance be handled, removed or be interfered with by construction workers;
- If structures such as jumpers at transformers, T-offs and strain structures are to be constructed, these should be insulated;
- Only pole structures that are approved as "bird friendly" by Eskom's ENVIROTECH Forum should be used; and
- Power lines should be routed alongside existing infrastructure such as existing power lines, roads and buildings.

Aquatic Ecosystems:

In addition, as mentioned in Section 5 of this Basic Assessment Report, there is a seasonal pan situated approximately 1.5km south of the preferred Site Alternative (Alternative 1). In terms of the Ecological Assessment undertaken by GIBB, this pan is likely to provide suitable habitat for faunal species of conservation concern including *Tyto capensis* (African Grass Owl; currently listed nationally as Vulnerable) and *Pyxicephalus adspersus* (Giant Bullfrog; currently listed as Vulnerable in Mpumalanga and protected at a national level according to NEM:BA). This pan is furthermore classified as a Critical Biodiversity Area (CBA) according to the latest Gauteng Conservation Plan (C-Plan) data. GIBB demarcated vegetation within this area as Moist Grassland.

The Malanspruit and two small dams are situated to the west of the study area. The Ecological Assessment undertaken by GIBB classified vegetation in this area as Moist Grasslands, that is disturbed and dominated by alien plant species such as *Acacia mearnsii* and *Populus x canescens*, with the graminoid and herbaceous layers largely dormant. No plant species of conservation concern or provincially protected plant species were recorded in this area.

A 500m buffer area was placed around these above areas identified by GIBB as Moist Grassland (Refer to Figure 3 above). Site Alternatives 1 and 3 are situated outside of this 500m buffer area. Site Alternative 2 is located within the 500m buffer zone for "Moist Grasslands". Site Alternative 1 is situated furthest from the Moist Grassland area, approximately 750m north east of this sensitive area.

SECTION C: PUBLIC PARTICIPATION

1. ADVERTISEMENT AND NOTICE

Initial Public Participation Phase

Publication name	The Daily Sun	
Date published	Thursday, 10 March 2016	
Site notice position	**Latitude**	**Longitude**
	25°41'9.21"S	28°43'3.75"E
	25°40'36.73"S	28°43'26.56"E
	25°39'44.08"S	28°43'36.93"E
	25°40'14.58"S	28°43'43.06"E
	25°40'0.85"S	28°43'40.96"E
	25°39'17.99"S	28°43'17.31"E
Date placed	2 March 2016	

The Revised Draft Basic Assessment Report

Site notices and a newspaper advert were placed during the Public Participation Phase of the Revised Draft Basic Assessment Report.

Publication name	The Daily Sun	
Date published	Thursday, 8th December 2016	
Site notice position	**Latitude**	**Longitude**
	25°41'9.21"S	28°43'3.75"E
	25°40'36.73"S	28°43'26.56"E
	25°39'44.08"S	28°43'36.93"E
	25°40'14.58"S	28°43'43.06"E
	25°40'0.85"S	28°43'40.96"E
	25°39'17.99"S	28°43'17.31"E
Date placed	Tuesday,6th December 2016	

Include proof of the placement of the relevant advertisements and notices in Appendix E1.

2. DETERMINATION OF APPROPRIATE MEASURES

Provide details of the measures taken to include all potential I&APs as required by Regulation 41(2)(e) and 41(6) of GN 733.

Key stakeholders (other than organs of state) identified in terms of Regulation 41(2)(b) of GN 733

Title, Name and Surname	Affiliation/ key stakeholder status	Contact details (tel number or e-mail address)
Mr Colin Cloete	Gauteng Department of Rural Development and Land Reform. The Remaining Extent of the Farm Ekangala 610 JR belongs	E-mail: Colin.Cloete@drdlr.gov.za Tel: 012 432 4252 Fax: 012 432 4205

Title, Name and Surname	Affiliation/ key stakeholder status	Contact details (tel number or e-mail address)
	to Government, and Mr Cloete is the landowner representative.	
Mr Andani Makhado	Gauteng Department of Rural Development and Land Reform. The Remaining Extent of the Farm Ekangala 610 JR belongs to Government, and Mr Makhado is a landowner representative.	E-mail: andani.makhado@drdlr.gov.za Cell: 071 481 1214
Ms Nokuthula Motha	Portion 5 of the Farm Rietfontein 470 JR belongs to Government, and Ms Motha is the landonwers representative.	E-mail: nokuthula.motha@drdlr.gov.za Cell: 072-716-8124
Mr Philemon Mavimbela	Mr Mavimbela rents a portion of Portion 5 of the Farm Rietfontein 470 JR from the Mpumalanga DRDLR.	082 552 3083 082 952 8642
Mr Hermanus Prinsloo	Anglo American (Contact Regarding Endorsement on the Title Deed for the Remaining Extent of the Farm Ekangala 610 JR)	Tel: 011 373 6219 e-mail: hermanus.prinsloo@angloamerican.com
Cllr V P Mabelani Ward 104 Ekangala F	City of Tshwane Local Municipality	072 364 9300 074 595 9505 kolofane@gmail.com
Charlotte Jiyane Office of the Speaker	Thembisile Hani Local Municipality	JiyaneC@thembisilehanilm.gov.za 013 986 9119
Cllr Sarah Malefo Hlungwani Ward 32 KwaMhlangu, Loopspruit, Hokaai, Valspruits,Ikwezi, Skoengesag, Ntetema, Bronkmine,Sybranskraal, Embuzini	Thembisile Hani Local Municipality	malefoh.ward32@gmail.com maleboh.ward32@gmail.com 084 8585 808

Include proof that the key stakeholder received written notification of the proposed activities as Appendix E2. This proof may include any of the following:

- e-mail delivery reports;
- registered mail receipts;
- courier waybills;
- signed acknowledgements of receipt; and/or
- or any other proof as agreed upon by the competent authority.

3. ISSUES RAISED BY INTERESTED AND AFFECTED PARTIES

The initial Draft Basic Assessment Report was made available for Commentary Authority and Public Review from the 29th of August 2016, until the 29th of September 2016. A copy of the Draft Report was placed at the Ekangala F Library situated at Masakhave Hall, Stand No 1108. The Report was also available for review on the JG Afrika website (www.jgafrika.com). All comments received from I&AP's during the initial Public Participation Phase and the Draft Report Review period are provided in the table below 4 below. The Revised Basic Assessment Report was made available for Commentary Authority and Public Review from the 8th of December 2016 until the 30th of January 2017. A copy of the Revised Draft Report was placed at the Ekangala F Library. Comment received during the Revised Draft Report review period is provided in Table 5 below.

Table 4: Comments Received During the initial Public Participation Phase and the Draft Report Review Period

Comment By	Comment Made	Response Provided
Mr Andani Makhado Gauteng Department of Rural Development and Land Reform. E-mail: andani.makhado@drdlr.gov.za Cell: 071 481 1214	The Gauteng DRDLR issued a consent letter for the undertaking of Preliminary Investigations for the proposed project on the Remaining Extent of the Farm Ekangala 610 JR.	JG Afrika acknowledged receipt of the Consent Letter and forwarded the Consent Letter to Eskom.
Ms Nokuthula Motha Mpumalanga Department of Rural Development and Land Reform E-mail: nokuthula.motha@drdlr.gov.za Cell: 072-716-8124	Ms Motha mentioned that Portion 5 of the Farm Rietfontein 470 JR is leased to a local resident for cattle grazing purposes. She requested that a site visit must be undertaken to inform the local resident of the proposed project.	Eskom agreed to the site visit, however, the site visit was never undertaken as a suitable date and time could not be established between all parties. JG Afrika visited the site on the 26th of February 2016, identified the lessee (Portion 5 of the Farm Rietfontein 470 JR) and informed him of the proposed project. The lessee, is Mr Philemon Mavimbela.
Mr Philemon Mavimbela 082 552 3083 082 952 8642	A site meeting was held with Mr Mavimbela on the 26th of February 2016. Mr Mavimbela raised no issues or concerns regarding the project, and made no objections regarding the undertaking of the Specialist Investigations on site.	Comment Noted.
Mr Boella Fourie Anglo American Tel: 011 638 2095	In terms of the Title Deed for the Remaining Extent of the Farm Ekangala 610 JR, Anglo American has an Endorsement on the property. JG Afrika contacted Anglo on the 21st of October 2015 to determine whether they have any mining or	After several e-mail correspondences from different parties at Anglo American, Mr Boella Fourie confirmed on the 27th of October 2015 that Anglo does not have

Comment By	Comment Made	Response Provided
e-mail: boella.fourie@angloamerican.com	exploration rights on the property, or whether they are planning to undertake future mining activities on the property.	mining or exploration rights on the property, and that no future activities are planned for this property.

Table 5: Comment Received During the Revised Draft Report Review Period

Comment By	Comment Made	Response Provided
Mr William Mashapu Email: mashapu5@gmail.com Contact: 0843492275/0723971371	JG Afrika received comment from Mr William Mashapu on the 12th of December 2016. Mr Mashapu indicated he owns a construction company and would like further information on the construction phase of the project, and how can he participate in the construction phase.	• JG Afrika thanked Mr Mashapu for his enquiry and indicated that he will be registered as an Interested and Affected Party. A copy of the Background Information Document was sent to him. Eskom has advised that: • The proposed project will be advertised so that all contractors are given the opportunity to tender. The contractor will then be appointed after meeting the tender requirements. • The appointed contractor will be required to have skilled personnel on his/her project team. The contractor may be required to work through a Community Liaison Officer and will appoint local labourers where appropriate. • The contractor will be required to hire the machinery (TLB's, Tipper trucks, Excavators, etc) from the local companies, before any other companies are contacted.
Mr Reuben Tshamaano Mpumalanga Department of Rural Development and Land Reform (MDRDLR) Contact: 082 352 8986	On the 13th of December 2016 Mr Reuben Tshamaano from the MDRDLR contacted JG Afrika indicating that he received a copy of the Revised Draft Basic Assessment Report and that the department would like to undertake a site visit. As Portion 5 of the Farm Rietfontien 470 JR is owned by the MDRDLR and is currently leased. Mr Tshamaano did not have any	JG Afrika provided the following response to Mr Tshamaano. • JG Afrika has been in contact with Ms Nokuthula Motha from the MDRDLR. Ms Motha has indicated that the Portion 5 of the Farm Rietfontein 470 JR is leased to a local

Comment By	Comment Made	Response Provided
Email: Reuben.Tshamaano@drdlr.gov.za	information regarding the details of the lessee therefore he requested a site visit.	resident for cattle grazing purposes. Ms Motha requested that a site visit must be undertaken to inform the local resident of the proposed project. Eskom agreed to the site visit, however, the site visit was never undertaken as a suitable date and time could not be established between all parties. JG Afrika visited the site on the 26th of February 2016, identified the lessee (Portion 5 of the Farm Rietfontein 470 JR) and informed him of the proposed project. A site meeting was held with Mr Philemon Mavimbela (the lessee) on the 26th of February 2016, Mr Mavimbela raised no issues or concerns regarding the project, and made no objections regarding the undertaking of the specialist investigations on site. JG Afrika provided Mr Tshamaano with the details of Mr Mavimbela as he indicated the department will contact Mr Mavimbela to inform him of the project. JG Afrika sent a follow up email on the 18th of January 2017 to Mr Tshamaano regarding the contact details of the lessee and informing the Department that they have until the 30th of January 2017 to provide their comments. All correspondence is attached to Appendix E2 of this report.

Proof of communication with all Landowners and Key Stakeholders is attached to Appendix E of this Basic Assessment Report.

4. COMMENTS AND RESPONSE REPORT

The practitioner must record all comments received from I&APs and respond to each comment before the Draft BAR is submitted. The comments and responses must be captured in a comments and response report as prescribed in the EIA regulations and be attached to the Final BAR as Appendix E3.

The Comments and Responses Report is attached to Appendix E3.

5. AUTHORITY PARTICIPATION

Authorities and organs of state identified as key stakeholders:

Authority/Organ of State	Contact person (Title, Name and Surname)	Tel No	Fax No	e-mail	Postal address
Gauteng Department of Agriculture and Rural Development	Boniswa Belot	011 355 1212		boniswa.belot@gauteng.gov.za	P.O. Box 8769 Johannesburg 2000
City of Tshwane Environmental Management Division: Open Space Management System	Ms Ridzani Mukheli	012 358 8731		ridzanim@tshwane.gov.za	Private Bag X1454 Pretoria 0001
Thembisile Hani Local Municipality: Waste Management and Environment	Ms Aminah Aphane	013 986 9100		aphanea@thembisilehanilm.gov.za	Stand No. 24 Front opposite Kwaggafontein Police Station, Along the R573 (Moloto road), MPUMALANGA , 0458
Provincial Heritage Resources Authority Gauteng	Grant Botha	011 355 2545		Grant.botha@gauteng.gov.za	Provincial Heritage Resources Authority Gauteng 38 Rissik Street (Cnr Market and Rissik) NSB Building Johannesburg
South African Heritage Resources Agency	Dr Ragna Redelstorfff	(021) 462 4502		rredelstorff@sahra.org.za	

Provincial Heritage Resources Authority Mpumalanga	Mr Benjamin Moduka	013 766519 8		bmoduka@mpg.gov.za	1st and 2nd floor, Building 5 Government complex 7 Government Boulevard Riverside Park Nelspruit 1200
Mpumalanga Department of Economic Development Environment and Tourism	Charity Mthimunye	013 692 6300		cnmthimunye@mpg.gov.za	Midland Centre Cnr Rosemead & Ryan Street Klipfontein eMalahleni 1035
Nkangala District Municipality Department of Social Services	Mr Vusi Mahlangu	Tel: 013 249 2000			2A Walter Sisulu Street Middleburg 1050
Mpumalanga Department of Rural Development and Land Reform	Ms Nokuthula Motha Mr Reuben Tshamaano	013 656084 8 082 352 8986		nokuthula.motha@drdlr.gov.za Reuben.Tshamaano@drdlr.gov.za	23 Corner Rhodes & Botha Streets, Hi-Tech House Witbank

Proof of communication with all organs of state is attached to Appendix E of this Basic Assessment Report.

All comments received from Commentary Authorities and the DEA on the Draft Basic Assessment Report are discussed in Table 6 & 7 below. All comments received from Comemntary Authorities and the DEA on the Revised Draft Basic Assessment Report are provided in Table 8 & 9 below.

Include proof that the Authorities and Organs of State received written notification of the proposed activities as appendix E4.

In the case of renewable energy projects, Eskom and the SKA Project Office must be included in the list of Organs of State.

Table 6: Comment made by Commentary Authorities on the Draft Basic Assessment Report

Comment By	Comment Made	Response Provided
Mr T Mphephu City of Tshwane Metropolitan Municipality Environmental Planning & Open Space Management Section Tel: 012 358 8667 Fax: 012 358 8934 Email: TshinyadzoM@tshwane.gov.za	The following comments were provided by the City of Tshwane of the initial Draft Basic Assessment Report. • According to the Tshwane Open Space Framework the proposed development is not affected by any open space typologies. • According to the Bioregional Plan for the Gauteng Metropolitan Municipalities the proposed site is situated within the Other Natural Area: Natural areas not included in the Protected, Critical Biodiversity and Ecological Support Areas categories. • According to the Provincial Environmental Management Framework (GPEMF) November 2014, the proposed activity is situated within the Zone 4: Normal control zone. This zone is dominated by agricultural uses, outside the urban development zone, as defined in the Gauteng Spatial Development Framework. No listed activities may be excluded from the Environmental Assessment requirements in this zone. Land uses that are compatible with the intention of this zone include the electricity network. • The report indicates that each of the proposed alternative loop-in and loop-out line servitudes has a 100m wide study corridor which were investigated during the Basic Assessment Process. • The report indicates that all construction activities as well as the construction camp and materials storage area should be confined to areas which have been classified to be of medium to low ecological sensitivity in the Ecological Assessment Report. • The Ecological Assessment Report indicates that according to the Gauteng Conservation Plan, Alternative 2 is not located within a Critical Biodiversity Area (CBA) or an	All comments and recommendations provided by the City of Tshwane have been included in the Final Basic Assessment Report. • The final preferred option has been chosen based on the findings of the Specialist Assessments. This has been discussed under Section 2: Environmental Impact Statement of this report. • The recommendation regarding the position of the monopole structures has been acknowledged by Eskom. Eskom has indicated that soils tests are undertaken by Eskom prior to the structures being erected and the slope stability will be assessed by an Eskom engineer. • All other recommendations provided by the City of Tshwane have been included in the EMPr.

Comment By	Comment Made	Response Provided
	Ecological Support Area (ESA), although there is a CBA located approximately 800m south of Alternative 2. • The Ecological Assessment Report indicates that the area associated with the three Substation alternatives including the loop-in/loop-out lines were considered to be of low conservation importance and ecological sensitivity. However, the areas surrounding the Substation alternatives (and associated lines), were considered to be of medium to high conservation importance and ecological sensitivity due to the presence of floral species of conservation concern and/or provincially protected species; • The Ecological Assessment Report indicates that based on the findings of this ecological assessment, none of the Substation alternatives (and associated lines) are likely to have a significant impact on the ecology, although mitigation measures are recommended to prevent impacts on the surrounding areas. • The Preliminary Geotechnical Investigation Report indicates that the alternative sites are suitable for the construction of the proposed new Rethabiseng North Substation. • The Preliminary Geotechnical Investigation Report indicates that Site Alternative 1, Site Alternative 2 and Site Alternative 3 are expected to have similar geotechnical constraints due to the similar geology and topography encountered at the sites. • The Preliminary Geotechnical Investigation Report indicates that from a purely geotechnical perspective, Site Alternative 3 is identified to be the preferred site for the new proposed Rethabiseng North Substation. • The Cultural Heritage Impact Assessment Report indicates that as no site, features or objects of cultural significance	

Comment By	Comment Made	Response Provided
	are known to exist in the study area, there would be no impact as a result of the proposed development. • The Social Impact Assessment Report indicates that from a social perspective there is no clear preference for any of the alternatives, and the impacts will remain similar irrespective of the alternative chosen. • The Social Impact Assessment Report indicates that the project will not cause severe social impacts, and the impacts that will be created can be mitigated and managed. The biggest risk from a social perspective is the potential for community conflict resulting in a delay in the construction of the project if the affected community is not consulted and used. • The Social Impact Assessment Report indicates that Eskom should start to engage with the local community as soon as possible, to ensure that solid relationships are built and issues and expectations are dealt with in good time. • The Social Impact Assessment Report indicates that an operational Substation would be a positive social impact for the community at large, and it is recommended that this project continue, given the mitigation measures are adhered to. • The Visual Impact Assessment Report indicates that the overall visual impact of the proposed Substation and associated infrastructure is perceived to be medium. • The Visual Impact Assessment Report indicates that while the visual intrusion on adjacent sensitive receptors is evident, the visual impact is not expected to infringe on the constitutional rights of these receptors. Furthermore, the visual impacts identified are not a fatal flaw to the proposed project and recommended mitigation measures can be implemented to offset to some extent the visual impacts identified.	

Comment By	Comment Made	Response Provided

	Recommendations:
	• The final preferred option must be chosen based on consideration of the recommendation from the Preliminary Geotechnical Investigation, Visual Impact Assessment and Ecological Assessment Report attached in the report. The applicant should indicate such information in the final report.
	• The position of the monopole structures should:
	  ○ Avoid high erosion hazard sites, particularly in areas where mass erosion is a problem;
	  ○ Avoid mid-slope location on long, steep, unstable slopes, special where bedrock is highly weathered or high clay content soils;
	  ○ Avoid undercutting unstable, moisture loaded slopes when locating tracks nearby valley bottoms and
	  ○ Vary gradients where possible to reduce erosion on the track surfaces
	• All the recommendations and mitigation measures outlined by the report and specialist studies in the attached appendices must therefore be strictly adhered to and implemented as part of the design, planning, construction and operational phase of the development.
	• All areas affected by the proposed activity must be rehabilitated immediately after completion of the proposed activity. The following should be included within the rehabilitation methods within the EMPr:
	  ○ All areas of disturbed and compacted soils to be re-profiled and compaction alleviated and;
	  ○ On-going removal of alien vegetation from the area must take place at least 3 months after completion of the structures to prevent the uncontrollable recruitment of species.	

Comment By	Comment Made	Response Provided
	• Where new gravel access roads need to be constructed, adequate drainage and soil erosion controls must be installed and maintained. As far as possible, access roads must follow the contour on steep slopes, rather than being aligned directly down steep slopes. • Adequate Stormwater Management should be implemented as part of the proposed activity to prevent erosion, and sheet runoff from access roads should be curtailed, and runoff from exposed surface should be slowed down by strategic placement of berms. • All activities on the site must comply with the Tshwane Municipality's By-Laws, should the site be in Tshwane. • The proposed activity must be constructed according to the finalised and approved EMPr. The EMPr should include all the above recommendations. The approved finalised EMPr is a legally binding document. An Environmental Control Officer (ECO) should be appointed for the proposed construction phase of the development to enforce the approved EMPr. The appointed ECO details should be included within the EMPr. <u>Conclusion</u> The Department will provide final comments upon receipt and review of the final Basic Assessment Report with the inclusion of the above-mentioned recommendations.	
Mr Tebogo Molokomme Provincial Heritage Resources Gauteng 35 Rissik Street, Surrey House Johannesburg	The following comments were provided by the Provincial Heritage Resources Authority-Gauteng (PHRA-G): • The application was discussed by the PHRA-G Heritage Impact Assessment (HIA) Committee on Thursday, 29th September 2016. • After reviewing the report, the following recommendations were made: ○ A Heritage Impact Assessment (HIA) must be conducted which amongst other things:	The Heritage Impact Assessment undertaken for the proposed project was sent to the PHRA-G. JG Afrika indicated that the Public Participation Process undertaken for the proposed project can be found on Page 51, Section C on the Draft Basic Assessment Report that was submitted to the Department of Provincial Heritage Resources Gauteng on the 29th of August 2016. JG Afrika followed up with PHRA-G on the 26th of January 2017 regarding their comments on the proposed project. PHRA-

Comment By	Comment Made	Response Provided
	▪ Clearly identify and map the Heritage resources on the earmarked property/area. ▪ Give the historical Background of the area. ▪ Show hoe the proposed work might have an impact on the Heritage Resources. ▪ Outline mitigation measures. ▪ Give a report on the Public Participation Process • The committee kindly requested only the information as explained above, and no other reports that need the other authorities' approval. • The requested information will assist the committee in making an informed decision.	G requested a hard copy of the HIA, which was submitted to PHRA-G on the 27th of January 2017. The proof of delivery and cover letter are provided in Appendix E4 of this report.

Table 7: Comment made by DEA on the Draft Basic Assessment Report

Comment By	Comment Made	Response Provided
Ms Makhosi Yeni Integrated Environmental Authorisations Department of Environmental Affairs Tel: 012 399 9400 Email: MYeni@environment.gov.za	The DEA Integrated Authorisations Directorate provided comment on the initial Draft Basic Assessment Report in a formal letter of comment dated 5th October 2016. A copy of the letter is attached to Appendix E4 of this Final Basic Assessment Report. DEA provided the following comments: **Application Form** • On page 9 of the application form, it is indicated that Department of Water Affairs, SAHRA and DAFF have jurisdiction in respect of any aspects of the activity, however; it is noted that Mpumalanga Department of Economic Development Environment & Tourism (MDEDET) has not been included. Therefore, the Department draws you to the attention that the MDEDET	**Public Participation Process** • All issues and comments received during the circulation of the Draft Basic Assessment Report have been addressed in the Final Assessment Report. All comments received during the circulation of the revised Draft Basic Assessment Report are provided in the Final Basic Assessment Report. • The comment regarding the Public Participation requirements has been noted. **Specialist Reports** • A copy of the Revised Draft Basic Assessment Report will be submitted to the Biodiversity Section of the DEA.

Comment By	Comment Made	Response Provided
	has a jurisdiction and their comments must be included on the final BAR. If no comments have been received, please attach proof of consultation with MDEDET. • It is further noted that you referred Department of Water and Sanitation as Department of Water Affairs, please ensure that the correct name is used. • Furthermore; on page 7 of the application form you referred City of Tshwane Metropolitan Municipality as Local Municipality, please refrain from using incorrect names of the municipality and Departments. • One page 5 of the application form, you only provided the contact details of Gauteng Department of Agriculture and Rural Development (GDARD) and incorrect telephone number, however; it is noted that alternatives 1 and 2 of the proposed development falls within Mpumalanga Province, therefore; MDEDET has the jurisdiction to the activity. Please amend your application to ensure that the information is incorporated. **Basic Assessment Report** **Project Description and Location alternative** • Please note that the project description provided on both the application form and BAR contradicts with the project name; as the project is titled: "the proposed construction of new Eskom Rethabiseng North 132/11 kV Substation and associated loop-in and loop-out power line in the Ekangala area, Gauteng Province", hence; the description talks to alternative 1 and 2 situated on portion 5 of the farm Rietfontein 470JR within Thembisile Hani Local Municipality, Mpumalanga Province. The Department advises that you rephrase you project name to incorporate both Provinces proposed location alternatives.	• A copy of the Heritage Impact Assessment will be submitted to the South African Heritage Resources Agency and the Mpumalanga Provincial Heritage Resources Agency for their comments and recommendations. The comments and recommendations provided will be incorporated into the Final Basic Assessment Report and/ EMPr.

Comment By	Comment Made	Response Provided
	• If the project name is correct, therefore; clarity is required in terms of whether the project transverse two Provinces or not. **Activity Applied For** • The Department has noted that only one activity is applied for, therefore, you are advised to verify if other activities are not triggered by the proposed development and ensure are applied for. You are informed that once an Environmental authorisation is granted, the applicant will be required to apply for those activities which are not applied for. **Project Associated Infrastructure** • Please ensure that all the project associated infrastructures are included in the final BAR. **Public Participation Process** • Please ensure that all issues raised and comments received during the circulation of the draft BAR from registered I&APs and organs of state which have jurisdiction in respect of the proposed activity are adequately addressed in the Final BAR. • Proof of correspondence with the various stakeholders must be included in the final BAR. Should you be unable to obtain comments, proof should be submitted to the Department of the attempts that were made to obtain comments. The Public Participation Process must be conducted in terms of Regulation 39, 40 41, 42 ,43 & 44 of the EIA Regulations 2014. **Specialist Reports** • An Ecological Assessment (Flora and Fauna including Avifauna) Report must be submitted to the Biodiversity Section (within DEA) for comments and their recommendations incorporated in the Final BAR. • The Cultural Heritage Assessment Report that is part of the DBAR must be submitted to the South African Heritage	

Comment By	Comment Made	Response Provided
	Resources Agency and the Mpumalanga Provincial Heritage Resources Agency for comments and their recommendations must be incorporated in the Final BAR. • Recommendations from the Preliminary Geotechnical Investigation, Social Impact Assessment and Visual Impact Assessment must be addressed and incorporated in the Final BAR and/ or EMPr. **General Comments** • You are further reminded that the final BAR to be submitted to this Department must comply with all the requirements in terms of the scope of assessment and content of basic assessment reports in accordance with Appendix 1 and Regulation 19 (1) of the EIA Regulations, 2014. • Further note that in terms of Regulation 45 of the EIA Regulations 2014, this application will lapse if the applicant fails to meet any of the timeframes prescribed in terms of these Regulations, unless an extension has been granted in terms of Regulation 3(7). • You are hereby reminded of Section 24F of the National Environmental Management Act, Act No 107 of 1998, as amended, that no activity may commence prior to an environmental authorisation being granted by the Department.	

Table 8: Comments made by Commentary Authorities on the Revised Draft Basic assessment Report

Comment By	Comment Made	Response Provided
Ms Nokukhanya Khumalo South African Heritage Resource Agency Tel: 021 462 4502 Email: nkhumalo@sahra.org.za	• SAHRA Archaeology, Palaeontology and meteorites (APM) Unit cannot comment on this report (Heritage Impact Assessment) as it does not have a detailed project description with finalised layout plans for the substation and powerlines. The following additional information is required in order for a final comment to be issued:	• The Draft Basic Assessment Report and all appendices have been uploaded on the SAHRIS under additional information. • Eskom has acknowledged the request for a Palaeontological Assessment and a Palaeontologist, Ms Heidi Fourie, has been

Comment By	Comment Made	Response Provided
	○ All the Environmental Assessment documents and appendices compiled for this development; ○ A Palaeontological desktop assessment or a letter of recommendation from the Palaeontological Assessment is required because the project area may contain fossils in the recent gravels overlying the bedrock. The assessment must be conducted by a suitably qualified palaeontologist. ○ SAHRA will comment further on this case once the above mentioned reports and amended Heritage Impact Assessment (HIA) is submitted to the case.	appointed to undertake an assessment of the proposed study area. • The Draft Basic Assessment Report includes a project description and the layout plans for the proposed project, hence SAHRA has indicated that the HIA should not be amended. Proof of correspondence to SAHRA is attached to Appendix E4. • As per the comments provided by SAHRA, there could be a possibility that the project study area may contain fossils in the recent gravels overlying bedrock. The findings of the Palaeontological Assessment will confirm the existence of such fossils. The comments provided by SAHRA will be captured in the Draft EMPr, and construction of the proposed development may not commence until the Palaeontological Assessment has been submitted to SAHRA, and SAHRA has provided their final comments on the proposed project. Mitigation measures and recommendations by the Palaeontologist will be addressed in the Final EMPr and submitted to the DEA for approval before any construction activities can commence.

Table 9: Comment made by DEA on the Revised Draft Basic Assessment Report

Comment By	Comment Made	Response Provided
Ms Makhosi Yeni Integrated Environmental Authorisations	The DEA provided the following comments on the application. Project Associated Infrastructure	Project Associated Infrastructure

Comment By	Comment Made	Response Provided
Department of Environmental Affairs Tel: 012 399 9400 Email: MYeni@environment.gov.za	• Please ensure that all the project associated infrastructures are included in the Final Basic Assessment Report; <u>Public Participation Process</u> • Please ensure that all issues raised and comments received during the circulation of the draft BAR from registered I&APs and organs of state which have jurisdiction in respect of the proposed activity are adequately addressed in the Final Basic Assessment Report; • Mpumalanga Department of Economic Development, Environment and Tourism had been omitted on the list of organs of state which have jurisdiction in respect of the proposed activity, therefore, you are required to submit proof of consultation in the Final Basic Assessment Report • Proof of correspondence with the various stakeholders must be included in the Final Basic Assessment Report. Should you be unable to obtain comments, proof should be submitted to the Department of the attempts that were made to obtain comments. The Public Participation Process must be conducted in terms of Regulations 39, 40 41, 42, 43 & 44 of the EIA Regulations 2014. <u>Specialist Reports</u> • An Ecological Assessment (Flora and Fauna including Avifauna) Report must be submitted to the Biodiversity Section (within DEA) for comments and their recommendations incorporated in the Final BAR.	• All project associated infrastructure has been included in this Final Basic Assessment Report. <u>Public Participation Process</u> • All issues raised and comments received from I&APs and organs of state have been addressed in this Final Basic Assessment Report; • Mrs Charity Mthimunye from the Mpumalanga Department of Economic Development, Environment and Tourism was provided with a copy of the Revised Draft Basic Assessment Report. The proof of delivery is attached to Appendix E4 of this report. On the 6th of December 2016 JG Afrika notified Ms Mthimunye of the proposed project and that a copy of the Revised Draft Basic Assessment Report will be sent to her on the 8th of December 2016. Ms Mthimunye responded on the 7th of December 2016 thanking JG Afrika for informing the Department of the proposed project and indicated that they are awaiting the receipt of the report and will provide their comment. No comment was received from the Department, even after JG Afrika followed up with them on the 27th of January 2017 regarding their comments as commentary authority. All correspondence between JG Afrika and the Mpumalanga Department of Economic Development,

Comment By	Comment Made	Response Provided
	• The Cultural Heritage Assessment Report that is part of the DBAR must be submitted to the South African Heritage Resource Agency and the Mpumalanga Provincial Heritage Resources Agency for comments and their recommendations must be incorporated in the Final BAR. <u>Environmental Management Programme (EMPr)</u> • It has been noted that the content of Appendix G: EMPr refers to Environmental Management Plan (EMP), you are hereby advised to ensure consistency and include EMPr in your abbreviations instead of EMP. <u>General Comments</u> • You are further reminded that the final BAR to be submitted to this Department must comply with all the requirements in terms of the scope of assessment and content of basic assessment reports in accordance with Appendix 1 and Regulation 19 (1) of the EIA Regulations, 2014. • Further note that in terms of Regulation 45 of the EIA Regulations 2014, this application will lapse if the applicant fails to meet any of the timeframes prescribed in terms of these Regulations, unless an extension has been granted in terms of Regulation 3(7). • You are hereby reminded of Section 24F of the National Environmental Management Act, Act No 107 of 1998, as amended, that no activity may commence prior to an environmental authorisation being granted by the Department.	Environment and Tourism are attached to Appendix E4. • All proof of correspondence to the various stakeholders are provided in Appendix E of this report. <u>Specialist Reports</u> • A copy of the Revised Draft Basic Assessment Report was submitted to the DEA's Biodiversity Section on the 6th of December 2016. No comment was received from the Biodiversity Section. On the 1st of February 2017 JG Afrika informed Ms Makhosi Yeni from the Integrated Environmental Authorisations Unit that the Revised Draft Basic Assessment Report was submitted to the Biodiversity Section and no comments were received. Ms Yeni requested that JG Afrika provide her with a proof of delivery that the report was submitted to the Biodiversity Section. JG Afrika provided Ms Yeni with the proof of delivery on the 1st of February 2017. Ms Yeni responded on the 1st of February 2017 thanking JG Afrika for the sending the proof of delivery and indicated that the email has been noted. • The Revised Draft Basic Assessment report was submitted to SAHRA via the SAHRIS on the 12th of December 2016. The comments provided by SAHRA have been addressed in Table 8 above. The Revised Draft Basic

Comment By	Comment Made	Response Provided
		Assessment Report was submitted to the Provincial Heritage Resources Agency. No comment was received by the Department, although JG Afrika followed up again on the 27th of January 2017. All correspondence is attached to appendix E4 of this report. **Environmental Management Programme (EMPr)** • EMP has been changed to EMPr.

6. CONSULTATION WITH OTHER STAKEHOLDERS

Note that, for any activities (linear or other) where deviation from the public participation requirements may be appropriate, the person conducting the public participation process may deviate from the requirements of that sub-regulation to the extent and in the manner as may be agreed to by the competent authority.

Proof of any such agreement must be provided, where applicable. Application for any deviation from the regulations relating to the public participation process must be submitted prior to the commencement of the public participation process.

A list of registered I&APs must be included as appendix E5.

Copies of any correspondence and minutes of any meetings held must be included in Appendix E6.

SECTION D: IMPACT ASSESSMENT

The assessment of impacts must adhere to the minimum requirements in the EIA Regulations, 2014 and should take applicable official guidelines into account. The issues raised by interested and affected parties should also be addressed in the assessment of impacts.

1. IMPACTS THAT MAY RESULT FROM THE PLANNING AND DESIGN, CONSTRUCTION, OPERATIONAL, DECOMMISSIONING AND CLOSURE PHASES AS WELL AS PROPOSED MANAGEMENT OF IDENTIFIED IMPACTS AND PROPOSED MITIGATION MEASURES

Provide a summary and anticipated significance of the potential direct, indirect and cumulative impacts that are likely to occur as a result of the planning and design phase, construction phase, operational phase, decommissioning and closure phase, including impacts relating to the choice of site/activity/technology alternatives as well as the mitigation measures that may eliminate or reduce the potential impacts listed. This impact assessment must be applied to all the identified alternatives to the activities identified in Section A(2) of this report.

Impact Assessment Methodology

The Environmental Impact Assessment Regulations, 2010, promulgated in terms of Section 24(5) of the National Environmental Management Act (Act 107 of 1998) prescribes requirements to be adhered to when undertaking impact assessments. Requirements for undertaking impact assessments for Basic Assessments and full Environmental Impact Assessments are outlined in the following sections of the EIA Regulations:

- Regulation 543, Section 22, 2(i) – Basic Assessment Impact Assessment Requirements: and
- Regulation 543, Section 32, 2(l) – Environmental Impact Assessment Requirements

In terms of these Regulations, the following should be considered when undertaking an impact assessment:

- A description and assessment of the significance of any environmental impacts, including –
  a. Cumulative impacts, that may occur as a result of the undertaking of the activity during project life cycle;
  b. Nature of the impact;
  c. Extent and Duration of Impact;
  d. The Probability of Impact Occurring;
  e. The degree to which the impact can be reversed;
  f. The degree to which the impact may cause irreplaceable loss of resources; and
  g. The degree to which the impact can be mitigated.

In terms of the above legislated requirements a standard impact assessment methodology was compiled. In order to compile the impact assessment methodology a review of existing impact assessment methodologies utilised by consultants in the field was undertaken. Furthermore, the following document as compiled by the former Department of Environmental Affairs and Tourism (DEAT) was utilised during the compilation for the impact assessment methodology:

- *DEAT (2004) Cumulative Effects Assessment, Integrated Environmental Management, Information Series 7, Department of Environmental Affairs and Tourism (DEAT), Pretoria*.

A description of the method for assessing the above criteria as well as the method for determining impact risks are provided in Sections A to I below.

A. Cumulative Impacts

Cumulative impacts can occur over different temporal and spatial scales by interacting, combining and compounding so that the overall effect often exceeds the simple sum of previous effects. The spatial scale can be local, regional or global, whilst the frequency or temporal scale includes past, present and future impacts on a specific environment or region.

Cumulative effects can simply be defined as the total impact that a series of developments, either present, past or future, will have on the environment within a specific region over a particular period of time.

Potential cumulative impacts on all elements of the receiving environment are addressed for all project phases (pre-construction, construction, operational and decommissioning), before and after implementation of mitigation measures.

B. Significance/Magnitude/Nature of Impacts

The significance or magnitude of an impact refers to the importance of an impact. When rating the extent of an impact, it is important to also rate the significance of an impact in order to determine the actual importance of an impact. For example, the size of an area affected by atmospheric pollution may be extremely large, but the significance of this effect is dependent on the concentration or level of pollution. If the concentration is great, the significance of the impact would be High or Very High, but if it is dilute it would be Very Low or Low.

The significance of impacts has been grouped into five classes, as outlined in the Table below

RATING		DESCRIPTION
5	VERY HIGH	Of the highest order possible within the bounds of impacts which could occur. In the case of adverse impacts: there is no possible mitigation and/or remedial activity which could offset the impact. In the case of beneficial impacts, there is no real alternative to achieving this benefit.
4	HIGH	Impact is of substantial order within the bounds of impacts, which could occur. In the case of adverse impacts: mitigation and/or remedial activity is feasible but difficult, expensive, time-consuming or some combination of these. In the case of beneficial impacts, other means of achieving this benefit are feasible but they are more difficult, expensive, time-consuming or some combination of these.
3	MODERATE	Impact is real but not substantial in relation to other impacts, which might take effect within the bounds of those which could occur. In the case of adverse impacts: mitigation and/or remedial activity are both feasible and fairly easily possible. In the case of beneficial impacts: other means of achieving this benefit are about equal in time, cost, effort, etc.
2	LOW	Impact is of a low order and therefore likely to have little real effect. In the case of adverse impacts: mitigation and/or remedial activity is either easily achieved or little will be required, or both. In the case of beneficial impacts, alternative means for achieving this benefit are likely to be easier, cheaper, more effective, less time consuming, or some combination of these.
1	VERY LOW	Impact is negligible within the bounds of impacts which could occur. In the case of adverse impacts, almost no mitigation and/or remedial activity are needed, and any

		minor steps which might be needed are easy, cheap, and simple. In the case of beneficial impacts, alternative means are almost all likely to be better, in one or a number of ways, than this means of achieving the benefit. Three additional categories must also be used where relevant. They are in addition to the category represented on the scale, and if used, will replace the scale.
0	NO IMPACT	There is no impact at all – not even a very low impact on a party or system.

C. Extent of Impacts

The extent or spatial scale of an impact refers to whether an impact will occur at a local, regional, or global scale. The extent of impacts has been grouped into five classes, as outlined in the Table below.

RATING		DESCRIPTION
5	Global/National	The impact could/will occur on a national or global scale.
4	Regional/Provincial	The impact could/will occur at a Regional/Provincial Level
3	Local	The impact will affect an area up to 5 km from the proposed site.
2	Study Area	The impact will affect an area not exceeding the Boundary of the study site
1	Isolated Sites / proposed site	The impact will affect an area no bigger than the development footprint.

D. Duration of Impacts and Degree to which impacts can be reversed

The duration or temporal scale of an impact refers to actual impact timeframe, i.e. how long will impacts to the environment last. The reversibility of impacts is directly linked to the duration of impacts. For e.g. permanent impacts are irreversible impacts, whereas, incidental impacts are immediately reversible. The duration and reversibility of impacts has been grouped into five classes, as outlined in the Table below.

RATING		DESCRIPTION	REVERSIBILITY
1	Incidental	The impact will be limited to isolated incidences that are expected to occur very sporadically.	Immediately reversible
2	Short-term	The environmental impact identified will operate for the duration of the construction phase or a period of less than 5 years, whichever is the greater.	Quickly reversible
3	Medium term	The environmental impact identified will operate for the duration of life of the project.	Reversible over time
4	Long term	The environmental impact identified will operate beyond the life of the project.	Reversible over the long term
5	Permanent	The environmental impact will be permanent.	Irreversible, impact is permanent

E. Probability of Impact Occurring

The probability of an impact refers to the likelihood of an impact occurring. The probability of impacts has been grouped into five classes, as outlined in the Table below.

RATING	DESCRIPTION
1	Practically impossible that impact will occur
2	Unlikely that impact will occur
3	Impact could occur
4	Very Likely that impact will occur
5	Impact will occur or has already occurred

F. Degree to which the impact may cause irreplaceable loss of resources (Intensity or Severity of an Impact)

The degrees to which an impact may cause irreplaceable loss of resources are determined based on the outcome of the impact risk assessment. High risk impacts in sensitive areas are more likely to result in irreplaceable loss of resources compared to low risk impacts.

RATING	DESCRIPTION
High	Disturbance or pristine areas that have important conservation value. Destruction of rare or endangered species.
Medium	Disturbance of areas that have potential conservation value or rare of use as resources. Complete change in species occurrence or variety.
Low	Disturbance of degraded areas, which have little conservation value. Minor change is species occurrence or variety.

G. The degree to which the impact can be mitigated

The degree to which an impact can be mitigated are determined by comparing the impact risk class prior to implementation of mitigation measures to the impact risk class after implementation of mitigation measures. If for e.g. an impact risk class can be reduced from a high to very low, then it is likely that there is a high potential that an impact can be mitigated.

RATING	DESCRIPTION
High	High Potential to mitigate negative impacts to the level of insignificant effects.
Medium	Potential to mitigate negative impacts. However, the implementation of mitigation measures may still not prevent some negative effects.
Low	Little or no mechanism to mitigate negative impacts.

H. Degree of Certainty

As it is not possible to be 100% certain of all facts, a standard "degree of certainty" has been incorporated into this Impact Assessment Methodology to indicate the degree of the EAP's certainty regarding impact ratings. As with all studies it is not possible to be 100% certain of all facts, and for this reason a standard "degree of certainty" scale will be used as outlined in the Table below. When very detailed specialist studies are available or have been undertaken as part of a project, impacts can be more accurately determined.

RATING	DESCRIPTION
Definite	More than 90% sure of a particular fact.
Probable	Between 70 and 90% sure of a particular fact, or of the likelihood of that impact occurring.
Possible	Between 40 and 70% sure of a particular fact or of the likelihood of an impact occurring.
Unsure	Less than 40% sure of a particular fact or the likelihood of an impact occurring.
Can't know	The consultant believes an assessment is not possible even with additional research.
Don't know	The consultant cannot, or is unwilling, to make an assessment given available information.

I. Quantitative Description of Impacts

In order to describe impacts in a quantitative manner in addition to the qualitative description given above, a rating scale of between 1 and 5 has been used for each of the assessment criteria. Thus the total value of the impact is described as the function of significance, spatial and duration scale as described below:

$$\text{Impact Risk} = \frac{(\text{Significance} + \text{Spatial} + \text{Duration})}{3} \times \frac{\text{Probability}}{5}$$

An example of how this rating scale is applied is shown below:

Impact	Significance	Spatial Scale	Duration Scale	Probability	
Impact to air quality – For e.g. construction vehicles travelling on areas where vegetation has been cleared could result in dust impact.	Low	Local	Medium-Term	Could Happen	
	2	3	3	3	

Note: The significance, spatial and temporal scales are added to give a total of 8, that is divided by 3 to give a criteria rating of 2,67. The probability (3) is divided by 5 to give a probability rating of 0,6. The criteria rating of 2,67 is then multiplied by the probability rating (0,6) to give the final rating of 1,6.

The impact risk is classified according to 5 classes as described in the table below.

Impact Risk Classes:

Rating	Impact Class	Description
0.1-1.0	1	Very Low
1.1-2.0	2	Low
2.1-3.0	3	Moderate
3.1-4.0	4	High
4.1-5.0	5	Very High

Therefore with reference to the example used for air quality above, an impact rating of 1.6 will fall in the Impact Class 2, which will be considered to be a low impact.

A complete impact assessment in terms of Regulation 19(3) of GN 733 must be included as Appendix F.

1. PLANNING DESIGN AND CONSTRUCTION PHASE

Activity	Impact summary	Significance		Proposed mitigation
Geology	***Direct impacts:*** No Dolomite occurs on or near any of the three alternative sites. Foundations and footings for Substation and monopole tower construction for the loop-in and loop-out lines may have an impact on the underlying geology depending on the depth of excavations. • **Site Alternative 1:** The site is underlain by hillwash and sandstone bedrock at the anticipated founding depth of the Substation infrastructure. Sandstone bedrock will provide an adequate founding medium for the Substation infrastructure, as described above. However, sandstone bedrock was only encountered at one test pit position, thus, it is considered highly likely that hillwash will also be encountered at the founding depth of the Substation infrastructure. The test pit logs indicate that the hillwash soils are loose and voided, which is indicative of soils susceptible to collapse settlement. Therefore, the hillwash materials are not considered an adequate founding medium for the Substation infrastructure. • **Site Alternative 2** The site is underlain by hillwash and residual tillite at the anticipated founding depth of the Substation infrastructure. These materials will not provide an adequate founding medium for the Substation infrastructure, as described above. • **Site Alternative 3** The site is underlain by hillwash soils and residual tillite at the anticipated founding depth of the Substation infrastructure. These materials will not provide an adequate founding	**Alt 1**	**Moderate**	• Impact to geology is permanent • **Site Alternatives 1:** It is recommended that the poor quality hillwash soils are removed, across the platform footprint, to a minimum depth of 1.50 m below ***the base of the deepest proposed foundations*** (or untill sandstone bedrock is encountered). It is recommended that the base of the excavation is then wetted and heavily compacted. The spoiled material must then be replaced with G6 or better quality material, compacted in layers, to a minimum of 93% of Mod. AASHTO maximum dry density. • **Site Alternatives 2 & 3:** It is recommended that the poor quality hillwash soils and residual tillite are removed, across the platform footprint, to a minimum depth of 1.50 m below ***the base of the deepest proposed foundations***. It is recommended that the base of the excavation is then wetted and heavily compacted. The spoiled material must then be replaced with G6 or better quality material, compacted in 150 mm layers, to a minimum of 93% of Mod. AASHTO maximum dry density. • Site Alternative 1, Site Alternative 2 and Site Alternative 3 are expected to have similar geotechnical constraints due to the similar geology and topography encountered at the sites. • Site Alternative 3 has been assessed to have the lowest potential impact on the soils and geology. • Site Alternative 1 and Site Alternative 2 are expected to have a low potential impact on the soils and geology.
		Alt 2	**Moderate**	
		Alt 3	**Moderate**	

Activity	Impact summary	Significance		Proposed mitigation
	medium for the Substation infrastructure, as described above.			• From a purely geotechnical perspective, Site Alternative 3 is identified to be the preferred site for the new proposed Rethabiseng North Substation.
	Indirect impacts: None expected	**Alt 1**	N/A	None Required
		Alt 2	N/A	
		Alt 3	N/A	
	Cumulative impacts: None expected	**Alt 1**	N/A	None Required
		Alt 2	N/A	
		Alt 3	N/A	
Topography	***Direct impacts:*** The topography over the investigation areas at Site Alternative 1 and Site Alternative 2 slope towards the south west. It is estimated that an 8.00 m drop in elevation will be expected across the footprint of the Substation at Site Alternative 1 and a 7.00 m drop in elevation will be expected across the footprint of the Substation at Site Alternative 2. The topography over the investigation area at Site Alternative 3 slopes towards the north east and an estimated 4.00 m drop may be expected across the Substation footprint in this direction. No rock outcrop was noted to occur at any of the site alternatives during the geotechnical investigation.	**Alt 1**	**Low**	The impact to surface topography is unavoidable. The following mitigation measures for the control of stormwater should be implemented. • Ground improvement should be implemented as described in Section 8.1.8 - 8.1.3 of the Geotechnical Report • It is recommended that surface drainage measures be implemented at all the Site Alternatives due to their sloping nature to ensure that soil erosion around the Substation infrastructure does not occur. • A storm-water management plan should be compiled during the detailed engineering design phase to ensure that adequate storm-water management measures are incorporated into the overall design;
		Alt 2	**Low**	

Activity	Impact summary	Significance		Proposed mitigation
	The construction of the Substation will be undertaken on a levelled platform. Due to the sloping topography and poor founding conditions, large scale earthworks are expected to be required at all three Site Alternatives. Cut to fill operations will alter surface topography and surface water drainage patterns. Excavations for construction of the powerlines will temporality alter surface topography Groundwater seepage was not encountered at any of the Site Alternatives and the instalment of sub-surface drainage measures are not anticipated to be required.	**Alt 3**	**Low**	• Stockpiles will be sited in areas demarcated for such purposes prior to the commencement of construction activities.
	Indirect impacts: None expected	**Alt 1** **Alt 2** **Alt 3**	N/A N/A N/A	None Required
	Cumulative impacts: None expected	**Alt 1** **Alt 2** **Alt 3**	N/A N/A N/A	None Required
Soils and Land Capability	***Direct impacts:*** Clearance of vegetation for Substation construction, and excavations for foundations will leave the soil bare and exposed to wind and water erosion. During the construction phase, activities such as topsoil stripping, removal and stockpiling of subsoil, and soil compaction will impact negatively on soils and will consequently impact on the land capability of the study area. Materials lay down areas as well as heavy vehicle and construction vehicle traffic on site will contribute to soil	**Alt 1**	**Moderate**	• Spread absorbent sand on areas where oil spills are likely to occur, • Oil-contaminated soils are to be removed to a contained storage area and bio-remediated or disposed of at a licensed facility • Ensure that soil is stockpiled in such a way as to prevent erosion by storm water. • Institute wind protection and implement a proper stormwater management plan during the construction phase to prevent soil erosion.

Activity	Impact summary	Significance		Proposed mitigation
	compaction. Areas compacted will lose their soil structure and fertility permanently. Accidental hydrocarbons or oil leaks or spillages from construction vehicles or equipment may contaminate the soils. On site mixing of concrete could lead to soil contamination if no appropriate measures are put in place for the management of such activities. Furthermore, there is a risk of pollution by hydrocarbon spillages. Poor rehabilitation at the end of the construction phase could result in soil erosion.	**Alt 2**	**Moderate**	• Drip trays shall also be provided in construction areas for stationary plant and for "parked" plant. • Drip trays, sumps and bunds must be emptied regularly, especially before a known rain event and after a rain event, and the contents disposed of at a licensed disposal facility. • All vehicles and equipment shall be kept in good working order and serviced regularly. • Leaking equipment shall be repaired immediately or removed from the Site. • Should cement be mixed on site, mixing will take place within a demarcated fenced off concrete batching area which will be located at the fenced off contractor's camp site. Cement must be mixed on an impervious surface, and water from the cement mixing area should be channelled to a conservancy tank for removal from the site to a licensed disposal facility. • All areas disturbed during the construction phase should be rehabilitated as soon as construction activities are completed to prevent erosion issues.
		Alt 3	**Moderate**	
	Indirect impacts: None expected	**Alt 1**	N/A	None Required
		Alt 2	N/A	
		Alt 3	N/A	
	Cumulative impacts: None expected	**Alt 1**	N/A	None Required
		Alt 2	N/A	
		Alt 3	N/A	

Activity	Impact summary	Significance		Proposed mitigation
Land Use	***Direct impacts:*** • All three alternative Substation sites are currently vacant and are used for cattle grazing. None of these sites are fenced off. Access to all three alternative sites is obtained off the R460, via existing dirt roads on site. • Construction activities may disturb the cattle, however, construction activities will be confined to only one area on site, and the remainder of the larger Farm Portions will still be available for grazing. • As the sites are not fenced off, a herder is always present when the cattle are grazing in the study area. • As the sites are not fenced off, the local community can freely access these sites. • Heavy machinery and vehicle traffic on the soil surface during and after construction can lead to soil compaction which impacts on soil fertility. • Humans, especially children, and animals may become injured as a result of open excavations that is not fenced off, or by construction activities. • Risk of livestock theft may increase during the construction phase as uncontrolled access to the farm can occur; Construction activities could further have the following negative impacts on adjacent land uses: • Negative visual impact; • Air quality or nuisance impact due to dust generation; • Damage to access roads to adjacent properties; • Traffic impact due to construction vehicles transporting materials, equipment and machinery;	**Alt 1**	**Moderate**	• As no fences occurs at any of the study sites, it is strongly recommended that the entire construction footprint area be fenced off with an access controlled gate before construction commences; • A night watchman must be present on site during the construction phase; • All vehicle traffic should remain within designated work areas. Vehicle movement outside designated work areas should be prohibited; • During the construction phase, all open excavations must be fenced off. These fenced off areas should be inspected twice a day for damages, and to rescue any animals that may accidentally have fallen into the excavations; • Damage to any access roads caused as a result of construction activities should be repaired to the satisfaction of the relevant roads authority, or landowner. • Mitigation measures for noise impacts, visual impacts, traffic impacts and air quality impacts are addressed under each relevant section below. • Provide enough heavy vehicle storage areas in the proposed contractors camp; • Ensure that vehicle traffic which may obstruct traffic flow is scheduled outside of peak travelling time in the morning or afternoon; • Ensure that heavy / large load traffic is appropriately routed and appropriate safety precautions are taken to prohibit road collisions and traffic incidences; • Ensure that vehicle operators are suitably licensed, have had appropriate environmental and safety induction, are aware of
		Alt 2	**Moderate**	

Activity	Impact summary	Significance		Proposed mitigation
	• Pedestrian safety impact due to construction vehicles travelling to and from site; and • Noise impacts due to trenching, and compacting activities.	**Alt 3**	**Moderate**	specific site procedures, and are well rested and cognisant when operating heavy or unsafe vehicles / machinery; • Appoint traffic flagmen to regulate traffic where necessary; and • Create temporary pedestrian crossings with flagmen during the construction phase.
	Indirect impacts: Heavy vehicles transporting construction materials to site may have an impact on current traffic volumes. In addition, construction vehicles can be a safety hazard for pedestrians, especially children.	**Alt 1**	**Moderate**	• Provide enough heavy vehicle storage areas in the proposed contractors camp; • Ensure that vehicle traffic which may obstruct traffic flow is scheduled outside of peak travelling time in the morning or afternoon; • Ensure that heavy / large load traffic is appropriately routed and appropriate safety precautions are taken to prohibit road collisions and traffic incidences; • Ensure that vehicle operators are suitably licensed, have had appropriate environmental and safety induction, are aware of
		Alt 2	**Moderate**	

Activity	Impact summary	Significance		Proposed mitigation
		Alt 3	**Moderate**	specific site procedures, and are well rested and cognisant when operating heavy or unsafe vehicles / machinery; • Appoint traffic flagmen to regulate traffic where necessary; and • Create temporary pedestrian crossings with flagmen during the construction phase.
	Cumulative impacts: None expected	**Alt 1**	N/A	None required
		Alt 2	N/A	
		Alt 3	N/A	

Activity	Impact summary	Significance		Proposed mitigation
Surface Water and Groundwater	***Direct impacts:*** There are no wetlands or watercourses on any of the three alternative sites. There is a seasonal pan situated approximately 1.5km south of the preferred Alternative site (Alternative 1). Site Alternative 3 is situated approximately 800m north of this seasonal pan. In terms of the Ecological Assessment undertaken by GIBB, this pan is likely to provide suitable habitat for faunal species of conservation concern including *Tyto capensis* (African Grass Owl; currently listed nationally as Vulnerable) and *Pyxicephalus adspersus* (Giant Bullfrog; currently listed as Vulnerable in Mpumalanga and protected at a national level according to NEM:BA). This pan is furthermore classified as a Critical Biodiversity Area (CBA) according to the latest Gauteng Conservation Plan (C-Plan) data. GIBB demarcated vegetation within this area as Moist Grassland. The Malanspruit and two small dams are situated to the west of the study area. The Ecological Assessment undertaken by GIBB classified vegetation in this area as Moist Grasslands, that is disturbed and dominated by alien plant species such as *Acacia mearnsii* and *Populus x canescens*, with the graminoid and herbaceous layers largely dormant. No plant species of conservation concern or provincially protected plant species were recorded in this area.	**Alt 1**	**Low**	**General Mitigation Measures for all Sites:** • All storm water that may potentially be contaminated by fuel or oil spills should be directed to a separator unit prior to exiting the site, as per current standard practice, and in fulfilment of the requirements of the National Water Act (Act 36 of 1998) and SABS 089 current version. • Cement and other material must be mixed in a demarcated area. • Vehicles should be serviced on a regular basis to avoid leaks and spills which will contaminate soils and ultimately contaminate surface water runoff and groundwater; • Solid waste should be removed on a regular basis and chemical toilets should be provided and should be serviced on a regular basis. • Any erosion that is caused by cuttings must be filled immediately to avoid siltation of the nearby river. • The removal of vegetation must be kept to a minimum where possible. The time that soil is exposed must be limited and re-vegetation, or another covering method must be applied during the construction phase. • Vegetation must be removed in sections, as construction is taking place, and should not be removed throughout the extent of the construction area. The removal of woody plants must be avoided as these are usually slow growing in nature. • Roads must be maintained to avoid erosion and the extent of roads must be minimised.

Activity	Impact summary	Significance		Proposed mitigation
	A 500m buffer area was placed around these above areas identified by GIBB as Moist Grassland (Refer to Figure 3 above). Site Alternatives 1 and 3 are situated outside of this 500m buffer area. Site Alternative 2 is located within the 500m buffer zone for "Moist Grasslands". Site Alternative 1 is situated furthest from the Moist Grassland area, approximately 750m north east of this sensitive area. **General Impacts Expected for All Sites:** • Waste generated during the construction phase may enter the environment through surface water runoff i.e. litter or pollution such as hydrocarbons can be washed into aquatic systems, affecting those systems negatively; • Storm water flowing over the site will also mobilise loose sediments, which may enter the surface water environment affecting water quality; and • Storm water can also be contaminated from cement mixing areas, materials storage areas, and excess fertiliser from rehabilitated areas, etc.	**Alt 2**	**Low**	• Erosion protection must be used in all areas where erosion may occur. • Waste is not to be buried on site; • Spill-sorb or similar type product must be used to absorb hydrocarbon spills in the event that such spills should occur. • Demarcated areas where waste can be safely contained and stored on a temporary basis during the construction phase should be provided at the construction camp; • When adequate volumes have accumulated all waste is to be removed from site and disposed of at a licensed facility; • Waste is not to be buried on site; • Hydro-carbons should be stored in a bunded storage area; • All hazardous materials inter alia paint, turpentine and thinners must be stored appropriately to prevent these contaminants from entering the environment; • Care must be taken to ensure that, in removing vegetation, adequate erosion control measures are implemented; • A storm-water management plan, including sufficient erosion-control measures, must be compiled in consultation with a suitably qualified environmental practitioner / control officer during the detailed design phase prior to the commencement of construction. • Should cement be mixed on site, mixing will take place at the fenced off contractor's camp. Cement must be mixed on an

Activity	Impact summary	Significance		Proposed mitigation
		Alt 2	Low	impervious surface, and water from the cement mixing area should be channelled to a conservancy tank for removal from the site to a licensed disposal facility. • Ensure that any hydrocarbons spills are cleaned up as soon as possible; • Provide drip-trays for vehicles that leak hydrocarbons; • Ensure that a proper spill-kit is available at all times where hydro-carbon handling will be undertaken; • Ensure that raw materials stockpiles are enclosed and bunded; • Ensure that hazardous materials are stored on a lined surface and that water runoff from the area is contained; • The construction footprint and works areas should be clearly demarcated, and no construction vehicles or equipment may operate outside the demarcated area. No materials may be stored outside of the demarcated areas; • All construction activities should be confined to areas which have been classified to be of medium to low ecological sensitivity in the Ecological Assessment Report. Therefore, no construction vehicles, workers or material should be allowed in any of the areas adjacent to the study area; and • Construction should be conducted during winter months when adult Pyxicephalus adspersus (Giant Bullfrogs) are aestivating since the adults will be more vulnerable to disturbance during the active period (October to February) when they congregate in large numbers in the seasonal pan south of the study area.
		Alt 3	Moderate	

Activity	Impact summary	Significance		Proposed mitigation
	Indirect impacts: Contaminants and sediments could be carried downstream causing water quality impacts downstream of the construction site. Water contamination could have a negative impact on downstream aquatic fauna and flora. Changes to the water quality could result in changes to the ecosystem structure and function as well as a potential loss in biodiversity. Water quality pollution often leads to modification of the species composition where sensitive species are lost and organisms tolerant to environmental changes dominate the community structure.	**Alt 1**	**Low**	As above
		Alt 2	**Low**	
		Alt 3	**Moderate**	
	Cumulative impacts: None expected	**Alt 1**	N/A	None required
		Alt 2	N/A	
		Alt 3	N/A	
Fauna, Flora and Avifauna	**Direct impacts:** There is a seasonal pan situated approximately 1.5km south of the preferred Alternative site (Alternative 1). Site Alternative 3 is situated approximately 800m north of this seasonal pan. In terms of the Ecological Assessment undertaken by GIBB, this pan is likely to provide suitable habitat for faunal species of conservation concern including Tyto capensis (African Grass Owl; currently listed nationally as Vulnerable) and Pyxicephalus adspersus (Giant Bullfrog; currently listed as Vulnerable in Mpumalanga and protected at a national level according to	**Alt 1**	**Low**	• All construction activities should be confined to areas which have been classified to be of medium to low ecological sensitivity in the Ecological Assessment Report. Therefore, no construction vehicles, workers or material should be allowed in any of the areas adjacent to the study area; • An independent Environmental Control Officer (ECO) should be appointed to oversee all construction activities;

Activity	Impact summary	Significance		Proposed mitigation
	NEM:BA). This pan is furthermore classified as a Critical Biodiversity Area (CBA) according to the latest Gauteng Conservation Plan (C-Plan) data. GIBB demarcated vegetation within this area as Moist Grassland. The Malanspruit and two small dams are situated to the west of the study area. The Ecological Assessment undertaken by GIBB classified vegetation in this area as Moist Grasslands, that is disturbed and dominated by alien plant species such as Acacia mearnsii and Populus x canescens, with the graminoid and herbaceous layers largely dormant. No plant species of conservation concern or provincially protected plant species were recorded in this area. A 500m buffer area was placed around these above areas identified by GIBB as Moist Grassland (Refer to Figure 3 above). Site Alternatives 1 and 3 are situated outside of this 500m buffer area. Site Alternative 2 is located within the 500m buffer zone for "Moist Grasslands". Site Alternative 1 is situated furthest from the Moist Grassland area, approximately 750m north east of this sensitive area. • Ground clearing and construction of the Substation and poles could lead to the destruction of natural vegetation including the destruction of species of conservation concern as well as nationally protected species. However, no such species were found at any of the three alternative sites; • Construction workers, construction activities, and construction vehicles can interfere with faunal species and faunal behavioural activities; and • Live conductors could result in the electrocution of birds and large bat species.	**Alt 2**	**Low**	• Access roads should be formalized and should be confined to areas of medium to low sensitivity; • A rubble clean-up plan must be implemented throughout the duration of the construction phase; • Construction should be conducted during winter months when adult *Pyxicephalus adspersus* (Giant Bullfrogs) are aestivating since the adults will be more vulnerable to disturbance during the active period (October to February) when they congregate in large numbers in the seasonal pan south of the study area; • As far as possible, construction should be limited to the daylight hours in order to minimise the need for lights; • An education programme should be compiled for all contractors, subcontractors and workers to ensure compliance to all aspects of the Environmental Management Programme (EMPr) as well as educating personnel in the safe and proper conduct within areas of natural habitat; • No wild animal may under any circumstance be handled, removed or be interfered with by construction workers; • If structures such as jumpers at transformers, T-offs and strain structures are to be constructed, these should be insulated; • Only pole structures that are approved as "bird friendly" by Eskom's ENVIROTECH Forum should be used; and • Power lines should be routed alongside existing infrastructure such as existing power lines, roads and buildings.
		Alt 3	**Low**	

Activity	Impact summary	Significance		Proposed mitigation
	Indirect impacts: • Disturbance / destruction of indigenous vegetation makes ecosystems vulnerable and can lead to the introduction and spread of alien invasive vegetation. Alien vegetation could eventually spread into the pan and riparian areas situated outside of the study areas.	**Alt 1**	**Very Low**	As above
		Alt 2	**Low**	
		Alt 3	**Moderate**	
	Cumulative impacts: None expected	**Alt 1**	N/A	None required
		Alt 2	N/A	
		Alt 3	N/A	
Archaeological/Cultural/ Palaeontological	***Direct impacts:*** • No sites, features or objects of cultural significance are known to exist in the study area, and therefore there would be no impact as a result of the proposed development. • As per the recommendations by SAHRA, a Palaeontological Assessment is required as the project area may contain fossils in the recent gravels overlying the bedrock. Eskom has acknowledged the request for a Palaeontological Assessment and Palaeontologist Ms Heidi Fourie has been appointed to undertake an assessment of the proposed study area.	**Alt 1**	**Low to Moderate**	• Known sites should be clearly marked in order that they can be avoided during construction activities. • The contractors and workers should be notified that archaeological sites might be exposed during the construction work. • Should any heritage artefacts be exposed during excavation, work in the area where the artefacts were discovered, shall cease immediately and the Environmental Control Officer shall be notified as soon as possible; • All discoveries shall be reported immediately to a museum, preferably one at which an archaeologist is available, so that an investigation and evaluation of the finds can be made. Acting upon advice from these specialists, the Environmental Control Officer will advise the necessary actions to be taken; • Under no circumstances shall any artefacts be removed, destroyed or interfered with by anyone on the site; and • Contractors and workers shall be advised of the penalties associated with the unlawful removal of cultural, historical, archaeological or palaeontological artefacts, as set out in the National Heritage Resources Act (Act No. 25 of 1999), Section 51. (1).
		Alt 2	**Low to Moderate**	
		Alt 3	**Low to Moderate**	

Activity	Impact summary	Significance		Proposed mitigation
				• As per the comments provided by SAHRA, there could be a possibility that the project study area may contain fossils in the recent gravels overlying bedrock. The findings of the Palaeontological Assessment will confirm the existence of such fossils. The comments provided by SAHRA will be captured in the Draft EMPr, and construction of the proposed development may not commence until the Palaeontological Assessment has been submitted to SAHRA, and SAHRA has provided their final comments on the proposed project. Mitigation measures and recommendations are as follows: • The contractor needs to clearly stake or peg-out (survey) the areas affected by the construction and dig representative trenches and if possible supply geological borehole data. • When clearing topsoil, subsoil or overburden and hard rock (outcrop) is found, the contractor needs to stop all work. • A Palaeontologist must then inspect the affected areas and trenches for fossiliferous outcrops / layers. The contractor may be asked to move structures, and put the development on hold. • If the Palaeontologist is satisfied that no fossils will be destroyed or have removed fossils, development and removing of the topsoil can continue. • After this process the same Palaeontologist will have to inspect and offer advice through the Phase 2 Mitigation Process. Bedrock excavations for footings may expose, damage or destroy previously buried fossil material and must be inspected. • When permission for the development is granted, the next layer can be removed, if this is part of the Vryheid Formation, then with the removal of each layer of sediment, the Palaeontologist must do an investigation (a minimum of once every week). • At this stage the Palaeontologist in consultation with the contractor must ensure that a further working protocol and

Activity	Impact summary	Significance		Proposed mitigation
				schedule is in place. Onsite training should take place, followed by an annual visit by the Palaeontologist.
	Indirect impacts: None expected	**Alt 1**	N/A	None required
		Alt 2	N/A	
		Alt 3	N/A	
	Cumulative impacts: None expected	**Alt 1**	N/A	None required
		Alt 2	N/A	
		Alt 3	N/A	
Socio-Economic	***Direct impacts:*** • During construction phase the Eskom appointed contractor will appoint local labour from the surrounding community. As a result, there could be an influx of job seekers and workers to the area. Job creation is viewed as a positive impact, however, only temporary jobs will be created, as no jobs will be created during the operational phase. • Construction camps and construction activities could result in a negative visual impact for the affected landowner and adjacent land uses. • Furthermore, unauthorised movement on private properties can occur during the construction phase.	**Alt 1**	**Moderate**	• The contractor and all staff should attend Environmental Awareness training, to be conducted by the appointed ECO, prior to the commencement of construction activities. During this training session, personnel should be made aware that they are not allowed to trespass onto any other properties, and that machinery and equipment may only be operated in designated working areas. • All conditions requested by the landowner for e.g. access control during maintenance, rehabilitation of impacted areas where maintenance was required, should be included in the Final EMPr.

Activity	Impact summary	Significance		Proposed mitigation
	• Construction activities could impact on current land uses. • During the construction phase, damage to private property can occur. • Crime may become an issue due to an influx of job seekers. • Disruptions of services could occur as a result of construction activities. • Heavy vehicles transporting construction materials to site may have an impact on current traffic volumes. In addition, construction vehicles can be a safety hazard for pedestrians, especially children.	**Alt 2**	**Moderate** *Positive Impact and*	• Prior to commencement of site establishment activities, Eskom and the Contractor should put agreements in place with the affected landowners with regards to compensation for damage to property caused as a result of construction activities (where applicable). • Any damage caused to adjacent properties or infrastructure as a result of construction activities should be fixed by the Contractor to the satisfaction of the landowner. • The ECO should have meetings with affected landowners monthly to ensure that landowner issues and concerns are dealt with according to agreements made between Eskom, the contractor and the landowner. • During the set up phase of the project, the Contractor needs to make contact with those people that are interested or affected by the development (IAPs); • Limit construction activities to daylight hours; • No construction should take place on weekends; • Develop and implement a grievance procedure; • Construction traffic must travel outside peak traveling times; • Road safety events at local schools; • Create and communicate a recruitment strategy; • Get involved in skills development and use local entrepreneurs as far as possible; • Follow necessary steps to identify and manage risks associated with community conflict; • Implement stakeholder engagement strategy.
		Alt 3	**Moderate** *Negative Impact*	
	Indirect impacts: None expected	**Alt 1**	N/A	None required
		Alt 2	N/A	
		Alt 3	N/A	

Activity	Impact summary	Significance		Proposed mitigation
	Cumulative impacts: None expected	**Alt 1**	N/A	None required
		Alt 2	N/A	
		Alt 3	N/A	
Noise	***Direct impacts:*** Noise will be generated by heavy vehicle traffic and construction activities.	**Alt 1**	**Moderate**	• Keep all equipment in good working order • Operate equipment within its specification and capacity and don't overload machines • Apply regular maintenance, particularly with regards to lubrication. • Operate equipment with appropriate noise abatement accessories, such as sound hoods.
		Alt 2	**Moderate**	
		Alt 3	**Moderate**	
	Indirect impacts: None expected	**Alt 1**	N/A	None required
		Alt 2	N/A	
		Alt 3	N/A	
	Cumulative impacts: None expected	**Alt 1**	N/A	None required
		Alt 2	N/A	
		Alt 3	N/A	
Traffic	***Indirect impacts:*** Heavy vehicles transporting construction materials to site may have an impact on traffic travelling on roads in the study area.	**Alt 1**	**Moderate**	• Provide enough heavy vehicle storage areas in the proposed contractors camp; • Ensure that vehicle traffic which may obstruct traffic flow is scheduled outside of peak travelling time in the morning or afternoon; • Ensure that heavy / large load traffic is appropriately routed and appropriate safety precautions are taken to prohibit road collisions and traffic incidences; and • Ensure that vehicle operators are suitably licensed, have had appropriate environmental and safety induction, are aware of specific site procedures, and are well rested and cognisant when operating heavy or unsafe vehicles / machinery.
		Alt 2	**Moderate**	
		Alt 3	**Moderate**	

Activity	Impact summary	Significance		Proposed mitigation
	Indirect impacts: Heavy transporting construction materials to site may have an impact on traffic in the larger study area.	**Alt 1**	**Moderate**	• Ensure that vehicle traffic which may obstruct traffic flow is scheduled outside of peak travelling time in the morning or afternoon;
		Alt 2	**Moderate**	
		Alt 3	**Moderate**	
	Cumulative impacts: None expected	**Alt 1**	N/A	None required
		Alt 2	N/A	
		Alt 3	N/A	
Visual	***Direct impacts:*** The visual impacts associated with the construction phase are considered to be medium, but limited to the construction period. Visual impacts may include: • The loss of vegetation (a valuable visual resource) as a result of clearing for the purposes of construction, although this may be minimal; • Impacts on overall air quality and visibility due to fugitive dust emissions, particularly during windy conditions; and • Night time lighting, which may include lighting from construction equipment (moving visual impact), is expected as there is limited vegetative screening at the site. Given the height of the Substation infrastructure (approximately 20 m), many of the sensitive receptors will only see the construction at later stages as the construction of the Substation progresses in height. However, some of the sensitive receptors will see temporary infrastructure situated at the site during the construction, this includes things like offices, plant and machinery. Visible dust will be present at the construction site due to earth moving equipment and vehicles on the dirt access roads. This will	**Alt 1**	**Moderate**	• Advertising and lighting will be in accordance with the South African National Roads Agency requirements and will not constitute an eyesore / hazard to users of the road. • Lighting will be sufficient to ensure security but will not constitute 'light pollution' to the surrounding areas. • The site will be shielded from the adjacent landowners to minimise the visual impact where this is feasibly possible; and • Site structures, albeit temporary, must be fitted with appropriate cladding and colouring to ensure reduced reflection and visual pollution. Several mitigation measures were provided in the Visual Impact Assessment Report which could be incorporated during the design and construction phases, to offset the visual impacts. **<u>Design Phase:</u>** • The project is currently at the planning phase, and therefore the opportunity exists for integration of visual mitigation techniques before construction commences. It is recommended that screening measures are incorporated into the Substation design. Such measures include: • Limiting the removal of vegetation surrounding the construction site;
		Alt 2	**Moderate**	
		Alt 3	**Moderate**	

Activity	Impact summary	Significance		Proposed mitigation
	temporarily decrease the visual quality of the local area Standard dust control mitigation should be followed as per the site specific EMPr.			• Planting trees as a method of screening the lower structures, and subsequently detracting from the vertical height of the infrastructure; • Using neutral, mat-finish paint colours for any ancillary structures or buildings in order to improve visual absorption in the landscape; and • Highly reflective materials should be avoided, and if this is not possible, a mat-finish paint should be applied to conceal glare and reflection. **Construction Phase:** • The construction area and site camp should be kept tidy and litter-free throughout construction as visible litter is visually unpleasant for adjacent sensitive receptors, i.e. residents, and passing vehicular traffic. All construction materials should be stored on site. Construction sites should be screened in the form of shade cloths at fence level. This will obstruct views of construction elements on site. All substances such as cement which may be toxic to flora and fauna should be strictly controlled to avoid degradation of the surrounding environment. No foreign material generated/deposited during construction shall remain on site. • The colour of building materials should blend into the natural environment. It is suggested that colours similar to the surrounding vegetation be used, such as browns, beiges and greens, in order to blend into the landscape at a distance and be visually neutral. Should construction activities take place at night, it is recommended that construction lighting be directed downward and inward (towards the construction centre). This will limit construction spill light at night time, which can be visually intrusive.
	Indirect impacts:	**Alt 1**	N/A	None required

Activity	Impact summary	Significance		Proposed mitigation
	None expected	**Alt 2**	N/A	
		Alt 3	N/A	
	Cumulative impacts: None expected	**Alt 1**	N/A	None required
		Alt 2	N/A	
		Alt 3	N/A	
Air Quality	***Direct impacts:*** Dust generation from stockpiles and soil stripping and vegetation clearing from the servitude area and Substation construction site during the construction phase, as well as vehicle traffic on dirt roads and construction vehicle fumes will have an impact on air quality.	**Alt 1**	**Moderate**	• Appropriate dust suppression measures or temporary stabilising mechanisms will be used when dust generation is unavoidable (e.g. dampening with water, chemical soil binders, straw, brush packs, chipping), particularly during prolonged periods of dry weather. • Soil stockpiles will be located in sheltered areas to limit the erosive effects of the wind. • Vehicle speeds will not exceed 40km/h along dust roads or 20km/h when traversing unconsolidated / non-vegetated areas. • The Contractor will take preventative measures to minimise complaints regarding dust nuisances (e.g. screening, dust control, timing, and pre-notification of affected parties).
		Alt 2	**Moderate**	
		Alt 3	**Moderate**	
	Indirect impacts: None expected	**Alt 1**	N/A	None required
		Alt 2	N/A	
		Alt 3	N/A	
	Cumulative impacts: None expected	**Alt 1**	N/A	None required
		Alt 2	N/A	
		Alt 3	N/A	

2. OPERATIONAL PHASE

Activity	Impact summary	Significance		Proposed mitigation
Topography	***Direct impacts:*** The construction of the Substation will be undertaken on a levelled platform. Due to the sloping topography and poor founding conditions, large scale earthworks are expected to be required at all three Site Alternatives. Cut to fill operations will alter surface topography and surface water drainage patterns. However, current development in the study area impacted on surface topography and surface water drainage patterns. The proposed loop-in and loop-out lines will not have an impact on surface topography during the operational phase.	**Alt 1**	**Low**	A proper Stormwater Design and Management should form part of the Substation design phase.
		Alt 2	**Low**	
		Alt 3	**Low**	
	Indirect impacts: No Impact	**Alt 1**	N/A	None Required
		Alt 2	N/A	
		Alt 3	N/A	
	Cumulative impacts: No Impact	**Alt 1**	N/A	None Required
		Alt 2	N/A	
		Alt 3	N/A	
Soils and Land Capability	***Direct impacts:*** The Substation will have a hard impacted footprint of 100mx100m, and each monopole will have a concrete foundation. The impact to soils and Land Capability where hard impacted footprint occurs will be a long term impact, as the impact will last for the life of the project.	**Alt 1**	**Low**	All maintenance vehicles should be kept in good working order and serviced regularly, and all equipment or machinery used during maintenance should be checked for leaks. The maintenance team should have spill kits available to clean any accidental leaks and spillages, and all areas disturbed or damaged during maintenance should be rehabilitated.
		Alt 2	**Low**	

Activity	Impact summary	Significance		Proposed mitigation
	After construction of the Substation and proposed loop-in and loop-out lines, existing land uses will continue. Accidental hydrocarbons or oil leaks or spillages from maintenance vehicles or equipment may contaminate the soils. Maintenance vehicles may also compact soils which could cause soil infertility. The maintenance of the Substation will require that transformer oil be routinely replaced. Spillages will contaminate the soils and potentially contaminate surface water resources within the area as well.	**Alt 3**	**Low**	
	Indirect impacts: No Impact	**Alt 1**	N/A	None Required
		Alt 2	N/A	
		Alt 3	N/A	
	Cumulative impacts: No Impact	**Alt 1**	N/A	None Required
		Alt 2	N/A	
		Alt 3	N/A	

Activity	Impact summary	Significance		Proposed mitigation
Land Use	***Direct impacts:*** Existing land uses undertaken at the three alternative sites will remain during the operational phase of the Substation and powerlines. The Substation and powerline may negatively impact on future development on site, however, the landowners provided their consent for the construction of the infrastructure, and therefore future development will be planned around the Substation. Maintenance activities to be undertaken at the Substation and along the powerline will not have a significant impact on adjacent land uses or on the grazing cattle. No damage to properties are expected as the land surrounding the Substation and powerlines will remain vacant land, until such time as the landowners decide to develop the area.	**Alt 1**	**Very Low**	**<u>Alternatives 1 & 2:</u>** All conditions to be requested by the landowners, should be included in the Final EMPr. • Animals may graze underneath powerlines and within the Eskom servitude; • Cultivation may take place underneath powerlines and within the Eskom servitude; • No structures may be built within the Eskom servitude; • Vegetation cover underneath powerlines may only reach a certain height, as this is a fire hazard, therefore, Planting of tall trees for example is a fire hazard; and • Eskom will require access to servitudes during the construction and operational phases of the powerlines.
		Alt 2	**Very Low**	

Activity	Impact summary	Significance		Proposed mitigation
		Alt 3	**Very Low**	
	Indirect impacts: No Impact	**Alt 1**	N/A	None Required
		Alt 2	N/A	
		Alt 3	N/A	
	Cumulative impacts: No Impact	**Alt 1**	N/A	None Required
		Alt 2	N/A	
		Alt 3	N/A	
Surface Water and Groundwater	***Direct impacts:*** **All Alternatives:** Accidental hydrocarbons or oil leaks or spillages from maintenance vehicles or equipment may contaminate the soils, as well as surface and groundwater.	**Alt 1**	**Low**	All maintenance vehicles should be kept in good working order and serviced regularly, and all equipment of machinery used during maintenance should be checked for leaks. The maintenance team should have spill kits available to clean any accidental leaks and spillages, and all areas disturbed or damaged during maintenance should be rehabilitated. All mitigation measures as provided under the construction phase should be implemented.
		Alt 2	**Low**	
		Alt 3	**Moderate**	
	Indirect impacts: Contaminants and sediments could be carried downstream causing water quality impacts downstream of the construction	**Alt 1**	N/A	As Above
		Alt 2	N/A	
		Alt 3	N/A	

Activity	Impact summary	Significance		Proposed mitigation
	site. Water contamination could have a negative impact on downstream aquatic fauna and flora. Changes to the water quality could result in changes to the ecosystem structure and function as well as a potential loss in biodiversity. Water quality pollution often leads to modification of the species composition where sensitive species are lost and organisms tolerant to environmental changes dominate the community structure.			
	Cumulative impacts: No Impact	**Alt 1**	N/A	None Required
		Alt 2	N/A	
		Alt 3	N/A	
Flora, Fauna and Avifauna	***Direct impacts:*** Potential impacts which could occur during the operational phase: • Damage to habitat due to movement of maintenance vehicles on vegetated areas; • Habitat destruction due to risk of Veld fires as a result of line shortages or conductor blowouts. • Bird fatalities due to collision with powerlines; • Damage to habitat due to movement of maintenance vehicles on vegetated areas; and • Habitat destruction due to risk of Veld fires as a result of line shortages or conductor blowouts.	**Alt 1**	**Low**	• During the undertaking of maintenance activities along the powerline and at the Substation, workers and machinery must remain inside the servitude areas. All labourers to be informed of disciplinary actions for the wilful damage to plants and animals; • Fire management forms an integral part of the management of a Substation facility. This requires that vegetation be managed along the perimeter of the Substation boundary. This should be only undertaken within a fixed and confined area. Indiscriminate destruction of vegetation should be avoided. • If structures such as jumpers at transformers, T-offs and strain structures are to be constructed, these should be insulated;
		Alt 2	**Low**	

Activity	Impact summary	Significance		Proposed mitigation
		Alt 3	**Moderate**	• Only pole structures that are approved as "bird friendly" by Eskom's ENVIROTECH Forum should be used; and • Power lines should be routed alongside existing infrastructure such as existing power lines, roads and buildings.
	Indirect impacts: Veld fires as a result of line shortages or conductor blowouts could spread to adjacent properties.	**Alt 1**	**Moderate**	Proper fire maintenance plans should be in place to prevent the spread of veld fires.
		Alt 2	**Moderate**	
		Alt 3	**Moderate**	
	Cumulative impacts: No Impact	**Alt 1**	N/A	None Required
		Alt 2	N/A	
		Alt 3	N/A	
Visual	***Direct impacts:*** There will be a very limited change in the sense of place and the visual quality of the local landscape due to the development of the Substation.	**Alt 1**	**Low**	Stockpiles should be created and sloped to create the least visual impact. In addition to this, some screening techniques can be implemented at the site, such as planting trees and ensuring that the materials and choice of paint colour for any ancillary structures is brown or grey in order to blend in with the landscape. of time (>20 years), therefore maintenance of any painted structures should be conducted. White paint should be avoided. Suggested mitigation measures should be monitored and modified if necessary to ensure there is a minimum visual impact. The operational phase is expected to be over an extended period of time (>20 years), therefore maintenance of any painted structures should be conducted.
		Alt 2	**Low**	
		Alt 3	**Low**	
	Indirect impacts: No Impact	**Alt 1**	N/A	None Required
		Alt 2	N/A	
		Alt 3	N/A	
	Cumulative impacts:	**Alt 1**	N/A	None Required

Activity	Impact summary	Significance		Proposed mitigation
	No Impact	**Alt 2**	N/A	
		Alt 3	N/A	
Socio-Economic	***Direct impacts:*** • Maintenance activities could impact on current land use practises which could result in loss of income or loss of business due to nuisance caused by construction activities. • During maintenance, damage to private property can occur. • Uncontrolled usage of gates to obtain access to the servitude during maintenance could result in unauthorised entry, or loss of livestock where applicable.	**Alt 1**	**Low**	• All conditions requested by the landowners for e.g. access control during maintenance, rehabilitation of impacted areas where maintenance was required, should be included in the Final EMPr; and • Any damage caused to adjacent properties or infrastructure as a result of maintenance activities should be fixed to the satisfaction of the landowner by Eskom as per the EMPr agreements;
		Alt 2	**Low**	
		Alt 3	**Low**	
	Indirect impacts: None expected	**Alt 1**	N/A	None required
		Alt 2	N/A	
		Alt 3	N/A	
	Cumulative impacts: None expected	**Alt 1**	N/A	None required
		Alt 2	N/A	
		Alt 3	N/A	

3. DECOMMISSIONING PHASE

It is not anticipated that the proposed new Rethabiseng 132/11kV Substation and associated powerlines lines will ever be decommissioned. However, should the proposed Substation and lines be decommissioned, the proposed impacts and mitigation measures as provided for the construction phase will be applicable. In addition, a Rehabilitation Plan would have to be compiled by a suitably qualified specialist and should be submitted to DEA for approval, should the Substation and lines ever be decommissioned.

4. NO-GO ALTERNATIVE

The 11kV network fed from the existing Rethabiseng 132/11kV 2x20MVA Substation will experience under voltages and thermal overloading due to load growth from the residential load as well as expected electrification in the area. The network has limited backfeeding and the Ekangala A 11kV feeder exceeds the recommended number of customers for a reticulation feeder. In order to create capacity for expected load growth, create backfeeding capacity, alleviate thermal

loading violations, and alleviate voltage violations as well as violations of the reliability guideline; Rethabiseng North Substation is proposed. This proposed new Substation will be situated west of the Ekangala F township. Rethabiseng North Substation will split the Ekangala A and Ekangala B feeders and will accommodate the electrification at Ekangala F, thereby deloading the existing Rethabiseng Substation, creating capacity and allowing for improved backfeeding.

Without the implementation of this project, the above issues cannot be resolved.

2. ENVIRONMENTAL IMPACT STATEMENT

Taking the assessment of potential impacts into account, please provide an environmental impact statement that summarises the impact that the proposed activity and its alternatives may have on the environment after the management and mitigation of impacts have been taken into account, with specific reference to types of impact, duration of impacts, likelihood of potential impacts actually occurring and the significance of impacts.

A summary of the outcome of the Impact Assessment undertaken is provided in the tables below. A complete impact assessment in terms of Regulations (22)(2)(i) of GN 543 is attached to Appendix F of this Basic Assessment Report.

(a) Pre-Construction and Construction Phase Impacts

Impact Assessment Summary: Pre-Construction and Construction Phase	Impact Ratings Before Mitigation				Impact Ratings After Mitigation	
			Impact Risk		Impact Risk	
Geology	Alt 1	Direct Impact	2.67	Moderate	1.07	Very Low
	Alt 2		2.67	Moderate	1.07	Very Low
	Alt 3		2.67	Moderate	1.07	Very Low
Topography	Alt 1	Direct Impact	1.40	Low	1.00	Very Low
	Alt 2		1.40	Low	1.00	Very Low
	Alt 3		1.40	Low	1.00	Very Low
Soils and Land Capability	Alt 1	Direct Impact	2.13	Moderate	0.80	Very Low
	Alt 2		2.13	Moderate	0.80	Very Low
	Alt 3		2.13	Moderate	0.80	Very Low
Land Use	Alt 1	Direct Impact	2.13	Moderate	1.00	Very Low
	Alt 2		2.13	Moderate	1.00	Very Low
	Alt 3		2.13	Moderate	1.00	Very Low
	Alt 1	Indirect Impact	2.40	Moderate	1.60	Low

Impact Assessment Summary: Pre-Construction and Construction Phase	Impact Ratings Before Mitigation				Impact Ratings After Mitigation	
			Impact Risk		Impact Risk	
	Alt 2		2.40	Moderate	1.60	Low
	Alt 3		2.13	Moderate	1.60	Low
Surface and Ground Water	Alt 1	Direct Impact	1.60	Low	0.80	Very Low
	Alt 2		1.60	Low	0.80	Very Low
	Alt 3		2.20	Moderate	1.20	Low
	Alt 1	Indirect Impact	1.80	Low	0.80	Very Low
	Alt 2		1.80	Low	0.80	Very Low
	Alt 3		2.20	Moderate	1.00	Very Low
Fauna, Flora & Avifauna	Alt 1	Direct Impact	1.40	Low	1.00	Very Low
	Alt 2		1.40	Low	1.00	Very Low
	Alt 3		1.40	Low	1.00	Very Low
	Alt 1	Indirect Impact	0.93	Very Low	0.67	Very Low
	Alt 2		1.60	Low	1.00	Very Low
	Alt 3		2.40	Moderate	1.20	Low
Archaeological, Cultural & Palaeontological	Alt 1	Direct Impact	2.67	Low to Moderate	1.20	Low
	Alt 2		2.67	Low to Moderate	1.20	Low
	Alt 3		2.67	Low to Moderate	1.20	Low
Socio-Economic	Alt 1	Direct Impact	2.13	Moderate	1.40	Low
	Alt 2		2.13	Moderate	1.40	Low
	Alt 3		2.13	Moderate	1.40	Low
Noise	Alt 1	Direct Impact	2.40	Moderate	1.20	Low
	Alt 2		2.40	Moderate	1.20	Low

Impact Assessment Summary: Pre-Construction and Construction Phase	Impact Ratings Before Mitigation				Impact Ratings After Mitigation	
			Impact Risk		Impact Risk	
	Alt 3		2.40	Moderate	1.20	Low
Traffic	Alt 1	Direct Impact	2.40	Moderate	1.20	Low
	Alt 2		2.40	Moderate	1.20	Low
	Alt 3		2.40	Moderate	1.20	Low
	Alt 1	Indirect Impact	2.67	Moderate	1.40	Low
	Alt 2		2.67	Moderate	1.40	Low
	Alt 3		2.67	Moderate	1.40	Low
Visual	Alt 1	Direct Impact	2.67	Moderate	1.20	Low
	Alt 2		2.67	Moderate	1.20	Low
	Alt 3		2.67	Moderate	1.20	Low
Air Quality	Alt 1	Direct Impact	2.13	Moderate	1.20	Low
	Alt 2		2.13	Moderate	1.20	Low
	Alt 3		2.13	Moderate	1.20	Low

(b) Operational Phase Impacts

Impact Assessment Summary: Pre-Construction and Construction Phase	Impact Ratings Before Mitigation				Impact Ratings After Mitigation	
			Impact Risk		Impact Risk	
Topography	Alt 1	Direct Impact	1.40	Low	1.40	Low
	Alt 2		1.40	Low	1.40	Low
	Alt 3		1.40	Low	1.40	Low
Soils and Land Capability	Alt 1	Direct Impact	1.33	Low	0.80	Very Low

Impact Assessment Summary: Pre-Construction and Construction Phase	Impact Ratings Before Mitigation				Impact Ratings After Mitigation	
			Impact Risk		Impact Risk	
	Alt 2		1.33	Low	0.80	Very Low
	Alt 3		1.33	Low	0.80	Very Low
Land Use	Alt 1	Direct Impact	0.93	Very Low	0.80	Very Low
	Alt 2		0.93	Very Low	0.80	Very Low
	Alt 3		0.93	Very Low	0.80	Very Low
Surface Water & Groundwater	Alt 1	Direct Impact	2.00	Low	0.80	Very Low
	Alt 2		2.00	Low	0.80	Very Low
	Alt 3		3.00	Moderate	1.33	Low
	Alt 1	Indirect Impact	1.80	Low	0.80	Very Low
	Alt 2		1.80	Low	0.80	Very Low
	Alt 3		2.20	Moderate	1.00	Very Low
Fauna, Flora and Avifauna	Alt 1	Direct Impact	1.87	Low	0.80	Very Low
	Alt 2		1.87	Low	0.80	Very Low
	Alt 3		2.13	Moderate	0.80	Very Low
	Alt 1	Indirect Impact	2.13	Moderate	0.80	Very Low
	Alt 2		2.13	Moderate	0.80	Very Low
	Alt 3		2.13	Moderate	0.80	Very Low
Visual	Alt 1	Direct Impact	1.60	Low	1.20	Low
	Alt 2		1.60	Low	1.20	Low
	Alt 3		1.60	Low	1.20	Low
Socio-Economic	Alt 1	Direct Impact	1.87	Low	1.00	Very Low
	Alt 2		1.87	Low	1.00	Very Low

Impact Assessment Summary: Pre-Construction and Construction Phase	Impact Ratings Before Mitigation				Impact Ratings After Mitigation	
			Impact Risk		Impact Risk	
	Alt 3		1.87	Low	1.00	Very Low

Alternatives 1 (preferred alternative)

Geotechnical Investigation

From a geotechnical constraints perspective all site Alternatives 1, 2 and 3 are all suitable for the building of the Substation. While these constraints, identified at Site Alternative 1, Site Alternative 2 and Site Alternative 3 can be overcome with standard design and construction procedures, Site Alternative 3 is considered the preferred option from a geotechnical constraints perspective, given the more gentle topography (approximately 4 m variation across the site) the extent of the earthworks will be significantly less than for the other two sites. Alternative 3 has therefore been assessed to have the lowest potential impact on the soils and geology and from a Geotechnical Perspective.

Heritage Impact Assessment

In terms of the Heritage Impact Assessment, the proposed development can be allowed to continue in any of the 3 site Alternatives, as no site features or objects of cultural significance are known to exist in the study area, hence there will be no impact as a result of the proposed development.

Social Impact Assessment

In terms of the Social Impact Assessment there is no clear preference for any of the site Alternatives, and the impacts will remain similar irrespective of the alternative chosen.

Visual Impact Assessment

All three site Alternatives are considered similarly impacted and are suitable for the development of the Substation.

Ecological Assessment

Based on the findings of this ecological assessment, none of the site Alternatives (and associated lines) are likely to have a significant impact on the ecology, although mitigation measures are recommended to prevent impacts on the surrounding areas.

In addition to all of the above specialist findings, a 500m buffer area was placed around these above areas identified by GIBB as Moist Grassland (Refer to Figure 3 above). Site Alternatives 1 and 3 are situated outside of this 500m buffer area. Site Alternative 2 is located within the 500m buffer zone for “Moist Grasslands”. Site Alternative 1 is situated furthest from the Moist Grassland area, approximately 750m north east of this sensitive area.

Based on the above, and based on the outcome of the Impact Assessment undertaken, the Environmental Assessment Practitioner recommends **Site Alternative 1 as the preferred Alternative** for the Substation and powerline construction.

The impact assessment has shown that the impact significance of impacts expected during the pre-construction and construction phase will mainly be of a low risk, with a few being of moderate risk. With the implementation of mitigation measures, the impact risk of all these expected impacts vary from **low to very low.**

Alternative 2

Geotechnical Investigation

From a geotechnical constraints perspective all site Alternatives 1, 2 and 3 are all suitable for the building of the Substation. While these constraints, identified at Site Alternative 1, Site Alternative 2 and Site Alternative 3 can be overcome with standard design and construction procedures, Site Alternative 3 is considered the preferred option from a geotechnical constraints perspective, given the more gentle topography (approximately 4 m variation across the site) the extent of the earthworks will be significantly less than for the other two sites. Alternative 3 has therefore been assessed to have the lowest potential impact on the soils and geology and from a Geotechnical Perspective.

Heritage Impact Assessment

In terms of the Heritage Impact Assessment, the proposed development can be allowed to continue in any of the 3 site Alternatives, as no site features or objects of cultural significance are known to exist in the study area, hence there will be no impact as a result of the proposed development.

Social Impact Assessment

In terms of the Social Impact Assessment there is no clear preference for any of the site Alternatives, and the impacts will remain similar irrespective of the alternative chosen.

Visual Impact Assessment

All three site Alternatives are considered similarly impacted and are suitable for the development of the Substation.

Ecological Assessment

Based on the findings of this ecological assessment, none of the site Alternatives (and associated lines) are likely to have a significant impact on the ecology, although mitigation measures are recommended to prevent impacts on the surrounding areas.

In addition to all of the above specialist findings, Site Alternative 2 falls within the 500m buffer from the delineated edges of the Moist Grassland area.

Based on the above, and based on the outcome of the Impact Assessment undertaken, the Environmental Assessment Practitioner recommends **Site Alternative 1 as the preferred Alternative** for Substation and powerline construction.

The impact assessment has shown that the impact significance of impacts expected during the pre-construction and construction phase will mainly be of a low risk, with a few being of moderate risk. With the implementation of mitigation measures, the impact risk of all these expected impacts vary from **low to very low.**

Alternative 3

Geotechnical Investigation

From a geotechnical constraints perspective all site Alternatives 1, 2 and 3 are all suitable for the building of the Substation. While these constraints, identified at Site Alternative 1, Site Alternative 2 and Site Alternative 3 can be overcome with standard design and construction procedures, Site Alternative 3 is considered the preferred option from a geotechnical constraints perspective, given the more gentle topography (approximately 4 m variation across the site) the extent of the earthworks will be significantly less than for the other two sites. Alternative 3 has therefore been assessed to have the lowest potential impact on the soils and geology and from a Geotechnical Perspective.

Heritage Impact Assessment

In terms of the Heritage Impact Assessment, the proposed development can be allowed to continue in any of the 3 site Alternatives, as no site features or objects of cultural significance are known to exist in the study area, hence there will be no impact as a result of the proposed development.

Social Impact Assessment
In terms of the Social Impact Assessment there is no clear preference for any of the site Alternatives, and the impacts will remain similar irrespective of the alternative chosen.

Visual Impact Assessment
All three site Alternatives are considered similarly impacted and are suitable for the development of the Substation.

Ecological Assessment
Based on the findings of this ecological assessment, none of the site Alternatives (and associated lines) are likely to have a significant impact on the ecology, although mitigation measures are recommended to prevent impacts on the surrounding areas.

Site Alternative 3 is situated just outside of the 500m buffer zone form the Moist Grassland area.

Based on the above, and based on the outcome of the Impact Assessment undertaken, the Environmental Assessment Practitioner recommends **Site Alternative 1 as the preferred Alternative** for Substation and powerline construction.

The impact assessment has shown that the impact significance of impacts expected during the pre-construction and construction phase will mainly be of a low risk, with quote a few being of moderate risk. With the implementation of mitigation measures, the impact risk of all these expected impacts are expected to be of **low risk**.

No-go alternative (compulsory)

Should the Substation and powerlines not be constructed, all impacts identified and rated for construction and operational activities will not occur. Land use will remain unchanged.

Without the new Substation future electricity demands within the study area cannot be met. This will result in a high Socio-Economic Impact Risk for residents in the study area, and also on future growth and expansion of the study area. The impact assessment for the no-go alternative is provided below:

Impact Assessment: No-Go Alternative	Before Mitigation		Mitigation Measure Proposed	After Mitigation	
	Impact Significance	Impact Risk		Impact Significance	Impact Risk
Geology	No Impact	No Impact	None Required	N/A	
Topography	No Impact	No Impact	None Required	N/A	
Soils and Land Capability	No Impact	No Impact	None Required	N/A	
Land Use	No Impact	No Impact	None Required	N/A	
Surface and Ground Water	No Impact	No Impact	None Required	N/A	
Fauna, Flora and Avifauna	No Impact	No Impact	None Required	N/A	
Archaeological/Cultural & Palaeontological	No Impact	No Impact	None Required	N/A	
Socio-Economic	**HIGH**	HIGH	Plan ahead for future electricity demands and ensure that infrastructure are in place to meet future demands	**Very Low**	**Very Low**
Noise	No Impact	No Impact	None Required	N/A	
Traffic	No Impact	No Impact	None Required	N/A	
Visual	No Impact	No Impact	None Required	N/A	
Air Quality	No Impact	No Impact	None Required	N/A	

SECTION E. RECOMMENDATION OF PRACTITIONER

Is the information contained in this report and the documentation attached hereto sufficient to make a decision in respect of the activity applied for (in the view of the environmental assessment practitioner)?	YES ✓	NO

If "NO", indicate the aspects that should be assessed further as part of a Scoping and EIA process before a decision can be made (list the aspects that require further assessment).

Not Applicable

If "YES", please list any recommended conditions, including mitigation measures that should be considered for inclusion in any authorisation that may be granted by the competent authority in respect of the application.

- All recommendations made by the specialists and all mitigation measures proposed by the specialists in their specialist assessments, as incorporated in the EMPr should be implemented and adhered to;
- All other conditions, monitoring and mitigation measures as provided in the EMPr should be adhered to; and
- All conditions requested by the landowner for e.g. access control during maintenance, rehabilitation of impacted areas where maintenance was required, should be included in the Final EMPr, and should be adhered to.

Is an EMPr attached?	YES ✓	NO

The EMPr must be attached as Appendix G.

The details of the EAP who compiled the BAR and the expertise of the EAP to perform the Basic Assessment process must be included as Appendix H.

If any specialist reports were used during the compilation of this BAR, please attach the declaration of interest for each specialist in Appendix I.

Any other information relevant to this application and not previously included must be attached in Appendix J.

Mrs Cecilia Canahai

NAME OF EAP

SIGNATURE OF EAP

07/02/2017
DATE

SECTION F: APPENDIXES

The following appendixes must be attached:

Appendix A: Maps

Appendix B: Photographs

Appendix C: Facility illustration(s)

Appendix D: Specialist reports (including terms of reference)

Appendix E: Public Participation

Appendix F: Impact Assessment

Appendix G: Environmental Management Programme (EMPr)

Appendix H: Details of EAP and expertise

Appendix I: Specialist's declaration of interest

Appendix J: Additional Information

Appendix A: Maps

Appendix B: Photographs

Appendix C: Facility illustration(s)

Not Applicable

Appendix D: Specialist reports (including terms of reference)

Appendix E: Public Participation

Appendix F: Impact Assessment

1. Pre-Construction and Construction Phase

a) Geology

	Impact Ratings Before Mitigation																	
			Significance		Extent		Duration		Probability		Degree of Certainty	Impact Risk		Intensity / Severity	Reversibility	
Geology	Alt 1	Direct Impact	MODERATE	3	Study Area	2	Permanent	5	Very Likely	4	Possible	2.67	Moderate	Low	Irreversible, impact is permanent	5
	Alt 2		MODERATE	3	Study Area	2	Permanent	5	Very Likely	4	Possible	2.67	Moderate	Low	Irreversible, impact is permanent	5
	Alt 3		MODERATE	3	Study Area	2	Permanent	5	Very Likely	4	Probable	2.67	Moderate	Low	Irreversible, impact is permanent	5

		Impact Ratings After Mitigation										
		Significance		Extent		Duration		Probability		Degree of Certainty	Impact Risk		Degree of Mitigation
Geology	Alt 1	LOW	2	Isolated Sites / proposed site	1	Permanent	5	Unlikely	2	Possible	1.07	Very Low	High
	Alt 2	LOW	2	Isolated Sites / proposed site	1	Permanent	5	Unlikely	2	Possible	1.07	Very Low	High
	Alt 3	LOW	2	Isolated Sites / proposed site	1	Permanent	5	Unlikely	2	Possible	1.07	Very Low	High

b) Topography

	Impact Ratings Before Mitigation																	
			Significance		Extent		Duration		Probability		Degree of Certainty	Impact Risk		Intensity / Severity	Reversibility	
Topography	Alt 1	Direct Impact	MODERATE	3	Study Area	2	Short-term	2	Could occur	3	Possible	1.40	Low	Low	Reversible over the long term	4
	Alt 2		MODERATE	3	Study Area	2	Short-term	2	Could occur	3	Possible	1.40	Low	Low	Reversible over the long term	4
	Alt 3		MODERATE	3	Study Area	2	Short-term	2	Could occur	3	Probable	1.40	Low	Low	Reversible over the long term	4

		Impact Ratings After Mitigation											
		Significance		Extent		Duration		Probability		Degree of Certainty	Impact Risk		Degree of Mitigation
Topography	Alt 1	LOW	2	Isolated Sites / proposed site	1	Short-term	2	Could occur	3	Possible	1.00	Very Low	High
	Alt 2	LOW	2	Isolated Sites / proposed site	1	Short-term	2	Could occur	3	Possible	1.00	Very Low	High
	Alt 3	LOW	2	Isolated Sites / proposed site	1	Short-term	2	Could occur	3	Possible	1.00	Very Low	High

c) Soils and Land Capability

	Impact Ratings Before Mitigation																	
			Significance		Extent		Duration		Probability		Degree of Certainty	Impact Risk		Intensity / Severity	Reversibility	
Soils and Land Capability	Alt 1	Direct Impact	MODERATE	3	Study Area	2	Medium term	3	Very Likely	4	Possible	2.13	Moderate	Low	Reversible over time	3
	Alt 2		MODERATE	3	Study Area	2	Medium term	3	Very Likely	4	Possible	2.13	Moderate	Low	Reversible over time	3
	Alt 3		MODERATE	3	Study Area	2	Medium term	3	Very Likely	4	Possible	2.13	Moderate	Low	Reversible over time	3

		Impact Ratings After Mitigation											
		Significance		Extent		Duration		Probability		Degree of Certainty	Impact Risk		Degree of Mitigation
Soils and Land Capability	Alt 1	LOW	2	Isolated Sites / proposed site	1	Incidental	1	Could occur	3	Possible	0.80	Very Low	High
	Alt 2	LOW	2	Isolated Sites / proposed site	1	Incidental	1	Could occur	3	Possible	0.80	Very Low	High
	Alt 3	LOW	2	Isolated Sites / proposed site	1	Incidental	1	Could occur	3	Possible	0.80	Very Low	High

d) Land Use

			Impact Ratings Before Mitigation															
			Significance		Extent		Duration		Probability		Degree of Certainty	Impact Risk		Intensity / Severity	Reversibility	
Land Use	Alt 1	Direct Impact	HIGH	4	Study Area	2	Short-term	2	Very Likely	4	Probable	2.13	Moderate	Medium	Reversible over time	3
	Alt 2		HIGH	4	Study Area	2	Short-term	2	Very Likely	4	Probable	2.13	Moderate	Medium	Reversible over time	3
	Alt 3		HIGH	4	Study Area	2	Short-term	2	Very Likely	4	Probable	2.13	Moderate	Medium	Reversible over time	3
	Alt 1	Indirect Impact	HIGH	4	Local	3	Short-term	2	Very Likely	4	Probable	2.40	Moderate	Medium	Reversible over time	3
	Alt 2		HIGH	4	Local	3	Short-term	2	Very Likely	4	Probable	2.40	Moderate	Medium	Reversible over time	3
	Alt 3		HIGH	4	Study Area	2	Short-term	2	Very Likely	4	Possible	2.13	Moderate	Medium	Reversible over time	3

			Impact Ratings After Mitigation											
			Significance		Extent		Duration		Probability		Degree of Certainty	Impact Risk		Degree of Mitigation
Land Use	Alt 1	Direct Impact	LOW	2	Isolated Sites / proposed site	1	Short-term	2	Could occur	3	Possible	1.00	Very Low	High
	Alt 2		LOW	2	Isolated Sites / proposed site	1	Short-term	2	Could occur	3	Possible	1.00	Very Low	High

	Alt 3		LOW	2	Isolated Sites / proposed site	1	Short-term	2	Could occur	3	Possible	1.00	**Very Low**	**High**
	Alt 1	**Indirect Impact**	MODERATE	3	Local	3	Short-term	2	Could occur	3	Possible	1.60	**Low**	**High**
	Alt 2		MODERATE	3	Local	3	Short-term	2	Could occur	3	Possible	1.60	**Low**	**High**
	Alt 3		MODERATE	3	Local	3	Short-term	2	Could occur	3	Possible	1.60	**Low**	**High**

e) Surface Water and Groundwater

			Impact Ratings Before Mitigation														
			Significance		**Extent**		**Duration**		**Probability**		**Degree of Certainty**	**Impact Risk**		**Intensity / Severity**	**Reversibility**	
Surface and Groundwater	**Alt 1**	**Direct Impact**	MODERATE	3	Local	3	Short-term	2	Could occur	3	Probable	1.60	**Low**	**Medium**	Reversible over time	3
	Alt 2		MODERATE	3	Local	3	Short-term	2	Could occur	3	Probable	1.60	**Low**	**Medium**	Reversible over time	3
	Alt 3		HIGH	4	Local	3	Long term	4	Could occur	3	Probable	2.20	**Moderate**	**Medium**	Reversible over time	3
	Alt 1	**Indirect Impact**	MODERATE	3	Regional/Provincial	4	Short-term	2	Could occur	3	Probable	1.80	**Low**	**Medium**	Reversible over time	3
	Alt 2		MODERATE	3	Regional/Provincial	4	Short-term	2	Could occur	3	Probable	1.80	**Low**	**Medium**	Reversible over time	3
	Alt 3		HIGH	4	Regional/Provincial	4	Medium term	3	Could occur	3	Probable	2.20	**Moderate**	**Medium**	Reversible over time	3

			Impact Ratings After Mitigation													
			Significance		Extent		Duration		Probability		Degree of Certainty	Impact Risk		Degree of Mitigation		
Surface and Groundwater	Alt 1	Direct Impact	LOW	2	Isolated Sites / proposed site	1	Incidental	1	Could occur	3	Possible	0.80	Very Low	High		
	Alt 2		LOW	2	Isolated Sites / proposed site	1	Incidental	1	Could occur	3	Possible	0.80	Very Low	High		
	Alt 3		MODERATE	3	Isolated Sites / proposed site	1	Short-term	2	Could occur	3	Possible	1.20	Low	High		
	Alt 1	Indirect Impact	LOW	2	Isolated Sites / proposed site	1	Incidental	1	Could occur	3	Possible	0.80	Very Low	High		
	Alt 2		LOW	2	Isolated Sites / proposed site	1	Incidental	1	Could occur	3	Possible	0.80	Very Low	High		
	Alt 3		MODERATE	3	Isolated Sites / proposed site	1	Incidental	1	Could occur	3	Possible	1.00	Very Low	High		

f) Fauna, Flora and Avifauna

			Impact Ratings Before Mitigation													
			Significance		Extent		Duration		Probability		Degree of Certainty	Impact Risk		Intensity / Severity	Reversibility	
Fauna, Flora & Avifauna	Alt 1	Direct Impact	LOW	2	Study Area	2	Medium term	3	Could occur	3	Possible	1.40	Low	Low	Reversible over time	3
	Alt 2		LOW	2	Study Area	2	Medium term	3	Could occur	3	Possible	1.40	Low	Low	Reversible over time	3

	Alt 3		LOW	2	Study Area	2	Medium term	3	Could occur	3	Probable	1.40	**Low**	**Low**	Reversible over time	3
	Alt 1	**Indirect Impact**	LOW	2	Study Area	2	Medium term	3	Unlikely	2	Possible	0.93	**Very Low**	**Low**	Quickly reversible	2
	Alt 2		MODERATE	3	Study Area	2	Medium term	3	Could occur	3	Possible	1.60	**Low**	**Medium**	Reversible over time	3
	Alt 3		HIGH	4	Study Area	2	Medium term	3	Very Likely	4	Possible	2.40	**Moderate**	**High**	Reversible over the long term	4

			Impact Ratings After Mitigation											
			Significance		**Extent**		**Duration**		**Probability**		**Degree of Certainty**	**Impact Risk**		**Degree of Mitigation**
Fauna, Flora & Avifauna	**Alt 1**	**Direct Impact**	LOW	2	Isolated Sites / proposed site	1	Short-term	2	Could occur	3	Possible	1.00	**Very Low**	**High**
	Alt 2		LOW	2	Isolated Sites / proposed site	1	Short-term	2	Could occur	3	Possible	1.00	**Very Low**	**High**
	Alt 3		LOW	2	Isolated Sites / proposed site	1	Short-term	2	Could occur	3	Possible	1.00	**Very Low**	**High**
	Alt 1	**Indirect Impact**	LOW	2	Isolated Sites / proposed site	1	Short-term	2	Unlikely	2	Possible	0.67	**Very Low**	**High**
	Alt 2		LOW	2	Isolated Sites / proposed site	1	Short-term	2	Could occur	3	Possible	1.00	**Very Low**	**High**
	Alt 3		MODERATE	3	Isolated Sites / proposed site	1	Short-term	2	Could occur	3	Possible	1.20	**Low**	**Medium**

g) Archaeological ,Cultural or Palaeontological

			Impact Ratings Before Mitigation															
			Significance		Extent		Duration		Probability		Degree of Certainty	Impact Risk		Intensity / Severity	Reversibility	
Archaeological, Cultural & Palaeontological	Alt 1	Direct Impact	MODERATE	3	Isolated Sites / proposed site	1	Permanent	5	Very Likely	4	Possible	2.67	Low to Moderate	Medium	Quickly reversible	2
	Alt 2		MODERATE	3	Isolated Sites / proposed site	1	Permanent	5	Very Likely	4	Possible	2.67	Low to Moderate	Medium	Quickly reversible	2
	Alt 3		MODERATE	3	Isolated Sites / proposed site	1	Permanent	5	Very Likely	4	Probable	2.67	Low to Moderate	Medium	Quickly reversible	2

		Impact Ratings After Mitigation										
		Significance		Extent		Duration		Probability		Degree of Certainty	Impact Risk		Degree of Mitigation
Archaeological, Cultural & Palaeontological	Alt 1	MODERATE	3	Isolated Sites / proposed site	1	Short Term	2	Could occur	3	Possible	1.20	Low	High
	Alt 2	MODERATE	3	Isolated Sites / proposed site	1	Short Term	2	Could occur	3	Possible	1.20	Low	High
	Alt 3	MODERATE	3	Isolated Sites / proposed site	1	Short Term	2	Could occur	3	Possible	1.20	Low	High

h) Socio-Economic

			Impact Ratings Before Mitigation															
			Significance		Extent		Duration		Probability		Degree of Certainty	Impact Risk		Intensity / Severity	Reversibility	
Socio-Economic	Alt 1	Direct Impact	MODERATE	3	Local	3	Short-term	2	Very Likely	4	Possible	2.13	Moderate	Medium	Immediately reversible	1
	Alt 2		MODERATE	3	Local	3	Short-term	2	Very Likely	4	Possible	2.13	Moderate	Medium	Immediately reversible	1
	Alt 3		MODERATE	3	Local	3	Short-term	2	Very Likely	4	Probable	2.13	Moderate	Medium	Immediately reversible	1

		Impact Ratings After Mitigation											
		Significance		Extent		Duration		Probability		Degree of Certainty	Impact Risk		Degree of Mitigation
Socio-Economic	Alt 1	LOW	2	Local	3	Short-term	2	Could occur	3	Possible	1.40	Low	High
	Alt 2	LOW	2	Local	3	Short-term	2	Could occur	3	Possible	1.40	Low	High
	Alt 3	LOW	2	Local	3	Short-term	2	Could occur	3	Possible	1.40	Low	High

i) Visual

	Impact Ratings Before Mitigation							
	Significance	Extent	Duration	Probability	Degree of Certainty	Impact Risk	Intensity / Severity	Reversibility

Visual	**Alt 1**	**Direct Impact**	HIGH	4	Local	3	Medium term	3	Very Likely	4	Probable	2.67	**Moderate**	**Low**	Reversible over time	3
	Alt 2		HIGH	4	Local	3	Medium term	3	Very Likely	4	Possible	2.67	**Moderate**	**Low**	Reversible over time	3
	Alt 3		HIGH	4	Local	3	Medium term	3	Very Likely	4	Probable	2.67	**Moderate**	**Low**	Reversible over time	3

		Impact Ratings After Mitigation											
		Significance		**Extent**		**Duration**		**Probability**		**Degree of Certainty**	**Impact Risk**		**Degree of Mitigation**
Visual	**Alt 1**	LOW	2	Isolated Sites / proposed site	1	Medium term	3	Could occur	3	Possible	1.20	**Low**	**High**
	Alt 2	LOW	2	Isolated Sites / proposed site	1	Medium term	3	Could occur	3	Possible	1.20	**Low**	**High**
	Alt 3	LOW	2	Isolated Sites / proposed site	1	Medium term	3	Could occur	3	Possible	1.20	**Low**	**High**

j) Noise

			Impact Ratings Before Mitigation													
			Significance		**Extent**		**Duration**		**Probability**		**Degree of Certainty**	**Impact Risk**		**Intensity / Severity**	**Reversibility**	
Noise	**Alt 1**	**Direct Impact**	MODERATE	3	Local	3	Medium term	3	Very Likely	4	Possible	2.40	**Moderate**	**Low**	Quickly reversible	2
	Alt 2		MODERATE	3	Local	3	Medium term	3	Very Likely	4	Possible	2.40	**Moderate**	**Low**	Quickly reversible	2

	Alt 3		MODERATE	3	Local	3	Medium term	3	Very Likely	4	Probable	2.40	**Moderate**	Low	Quickly reversible	2

		Impact Ratings After Mitigation											
		Significance		**Extent**		**Duration**		**Probability**		**Degree of Certainty**	**Impact Risk**		**Degree of Mitigation**
Noise	**Alt 1**	LOW	2	Local	3	Incidental	1	Could occur	3	Possible	1.20	**Low**	**High**
	Alt 2	LOW	2	Local	3	Incidental	1	Could occur	3	Possible	1.20	**Low**	**High**
	Alt 3	LOW	2	Local	3	Incidental	1	Could occur	3	Possible	1.20	**Low**	**High**

k) Traffic

			Impact Ratings Before Mitigation														
			Significance		**Extent**		**Duration**		**Probability**		**Degree of Certainty**	**Impact Risk**		**Intensity / Severity**	**Reversibility**	
Traffic	**Alt 1**	**Direct Impact**	MODERATE	3	Local	3	Medium term	3	Very Likely	4	Possible	2.40	**Moderate**	**Medium**	Quickly reversible	2
	Alt 2		MODERATE	3	Local	3	Medium term	3	Very Likely	4	Possible	2.40	**Moderate**	**Medium**	Quickly reversible	2
	Alt 3		MODERATE	3	Local	3	Medium term	3	Very Likely	4	Possible	2.40	**Moderate**	**Medium**	Quickly reversible	2
	Alt 1	**Indirect Impact**	MODERATE	3	Regional/Provincial	4	Medium term	3	Very Likely	4	Possible	2.67	**Moderate**	**Medium**	Quickly reversible	2

	Alt 2		MODERATE	3	Regional/Provincial	4	Medium term	3	Very Likely	4	Possible	2.67	**Moderate**	**Medium**	Quickly reversible	2
	Alt 3		MODERATE	3	Regional/Provincial	4	Medium term	3	Very Likely	4	Possible	2.67	**Moderate**	**Medium**	Quickly reversible	2

			Impact Ratings After Mitigation											
			Significance		**Extent**		**Duration**		**Probability**		**Degree of Certainty**	**Impact Risk**		**Degree of Mitigation**
Traffic	**Alt 1**	**Direct Impact**	LOW	2	Local	3	Incidental	1	Could occur	3	Possible	1.20	**Low**	**High**
	Alt 2		LOW	2	Local	3	Incidental	1	Could occur	3	Possible	1.20	**Low**	**High**
	Alt 3		LOW	2	Local	3	Incidental	1	Could occur	3	Possible	1.20	**Low**	**High**
	Alt 1	**Indirect Impact**	LOW	2	Regional/Provincial	4	Incidental	1	Could occur	3	Possible	1.40	**Low**	**High**
	Alt 2		LOW	2	Regional/Provincial	4	Incidental	1	Could occur	3	Possible	1.40	**Low**	**High**
	Alt 3		LOW	2	Regional/Provincial	4	Incidental	1	Could occur	3	Possible	1.40	**Low**	**High**

l) Air Quality

Impact Ratings Before Mitigation								
	Significance	**Extent**	**Duration**	**Probability**	**Degree of Certainty**	**Impact Risk**	**Intensity / Severity**	**Reversibility**

Air Quality	**Alt 1**	**Direct Impact**	MODERATE	3	Local	3	Short-term	2	Very Likely	4	Possible	2.13	**Moderate**	**Low**	Reversible over time	3
	Alt 2		MODERATE	3	Local	3	Short-term	2	Very Likely	4	Possible	2.13	**Moderate**	**Low**	Reversible over time	3
	Alt 3		MODERATE	3	Local	3	Short-term	2	Very Likely	4	Probable	2.13	**Moderate**	**Low**	Reversible over time	3

		Impact Ratings After Mitigation											
		Significance		**Extent**		**Duration**		**Probability**		**Degree of Certainty**	**Impact Risk**		**Degree of Mitigation**
Air Quality	**Alt 1**	LOW	2	Study Area	2	Short-term	2	Could occur	3	Possible	1.20	**Low**	**High**
	Alt 2	LOW	2	Study Area	2	Short-term	2	Could occur	3	Possible	1.20	**Low**	**High**
	Alt 3	LOW	2	Study Area	2	Short-term	2	Could occur	3	Possible	1.20	**Low**	**High**

2. Operational Phase

a) Geology

No Impact expected

b) Topography

			Impact Ratings Before Mitigation														
			Significance		Extent		Duration		Probability		Degree of Certainty	Impact Risk		Intensity / Severity	Reversibility	
Topography	Alt 1	Direct Impact	LOW	2	Isolated Sites / proposed site	1	Long term	4	Could occur	3	Possible	1.40	Low	Low	Reversible over the long term	4
	Alt 2		LOW	2	Isolated Sites / proposed site	1	Long term	4	Could occur	3	Possible	1.40	Low	Low	Reversible over the long term	4
	Alt 3		LOW	2	Isolated Sites / proposed site	1	Long term	4	Could occur	3	Possible	1.40	Low	Low	Reversible over the long term	4

		Impact Ratings After Mitigation											
		Significance		Extent		Duration		Probability		Degree of Certainty	Impact Risk		Degree of Mitigation
Topography	Alt 1	LOW	2	Isolated Sites / proposed site	1	Long term	4	Could occur	3	Possible	1.40	Low	High
	Alt 2	LOW	2	Isolated Sites / proposed site	1	Long term	4	Could occur	3	Possible	1.40	Low	High
	Alt 3	LOW	2	Isolated Sites / proposed site	1	Long term	4	Could occur	3	Possible	1.40	Low	High

m) Soils and Land Capability

	Impact Ratings Before Mitigation																	
			Significance		Extent		Duration		Probability		Degree of Certainty	Impact Risk		Intensity / Severity	Reversibility	
Soils and Land Capability	Alt 1	Direct Impact	MODERATE	3	Isolated Sites / proposed site	1	Incidental	1	Very Likely	4	Probable	1.33	Low	Low	Quickly reversible	3
	Alt 2		MODERATE	3	Isolated Sites / proposed site	1	Incidental	1	Very Likely	4	Probable	1.33	Low	Low	Quickly reversible	3
	Alt 3		MODERATE	3	Isolated Sites / proposed site	1	Incidental	1	Very Likely	4	Probable	1.33	Low	Low	Quickly reversible	3

		Impact Ratings After Mitigation											
		Significance		Extent		Duration		Probability		Degree of Certainty	Impact Risk		Degree of Mitigation
Soils and Land Capability	Alt 1	LOW	2	Isolated Sites / proposed site	1	Incidental	1	Could occur	3	Possible	0.80	Very Low	High
	Alt 2	LOW	2	Isolated Sites / proposed site	1	Incidental	1	Could occur	3	Possible	0.80	Very Low	High
	Alt 3	LOW	2	Isolated Sites / proposed site	1	Incidental	1	Could occur	3	Possible	0.80	Very Low	High

c) Land Use

	Impact Ratings Before Mitigation																	
			Significance		Extent		Duration		Probability		Degree of Certainty	Impact Risk		Intensity / Severity	Reversibility	
Land Use	Alt 1	Direct Impact	LOW	2	Study Area	2	Medium term	3	Unlikely	2	Possible	0.93	Very Low	Low	Immediately reversible	3
	Alt 2		LOW	2	Study Area	2	Medium term	3	Unlikely	2	Possible	0.93	Very Low	Low	Immediately reversible	3
	Alt 3		LOW	2	Study Area	2	Medium term	3	Unlikely	2	Possible	0.93	Very Low	Low	Immediately reversible	3

		Impact Ratings After Mitigation											
		Significance		Extent		Duration		Probability		Degree of Certainty	Impact Risk		Degree of Mitigation
Land Use	Alt 1	LOW	2	Isolated Sites / proposed site	1	Medium term	3	Unlikely	2	Possible	0.80	Very Low	High
	Alt 2	LOW	2	Isolated Sites / proposed site	1	Medium term	3	Unlikely	2	Possible	0.80	Very Low	High
	Alt 3	LOW	2	Isolated Sites / proposed site	1	Medium term	3	Unlikely	2	Possible	0.80	Very Low	High

d) Surface Water and Groundwater

	Impact Ratings Before Mitigation																	
			Significance		Extent		Duration		Probability		Degree of Certainty	Impact Risk		Intensity / Severity	Reversibility	
Surface and Groundwater	Alt 1	Direct Impact	LOW	2	Local	3	Incidental	1	Will / Has occurred	5	Possible	2.00	Low	Low	Reversible over time	3
	Alt 2		LOW	2	Local	3	Incidental	1	Will / Has occurred	5	Possible	2.00	Low	Low	Reversible over time	3
	Alt 3		HIGH	4	Local	3	Short-term	2	Will / Has occurred	5	Probable	3.00	Moderate	Medium	Reversible over time	3
	Alt 1	Indirect Impact	MODERATE	3	Regional/Provincial	4	Short-term	2	Could occur	3	Probable	1.80	Low	Medium	Reversible over time	3
	Alt 2		MODERATE	3	Regional/Provincial	4	Short-term	2	Could occur	3	Probable	1.80	Low	Medium	Reversible over time	3
	Alt 3		HIGH	4	Regional/Provincial	4	Medium term	3	Could occur	3	Probable	2.20	Moderate	Medium	Reversible over time	3

			Impact Ratings After Mitigation											
			Significance		Extent		Duration		Probability		Degree of Certainty	Impact Risk		Degree of Mitigation
Surface and Groundwater	Alt 1	Direct Impact	LOW	2	Isolated Sites / proposed site	1	Incidental	1	Could occur	3	Possible	0.80	Very Low	High
	Alt 2		LOW	2	Isolated Sites / proposed site	1	Incidental	1	Could occur	3	Possible	0.80	Very Low	High
	Alt 3		MODERATE	3	Isolated Sites / proposed site	1	Incidental	1	Very Likely	4	Possible	1.33	Low	High
	Alt 1	Indirect Impact	LOW	2	Isolated Sites / proposed site	1	Incidental	1	Could occur	3	Possible	0.80	Very Low	High
	Alt 2		LOW	2	Isolated Sites / proposed site	1	Incidental	1	Could occur	3	Possible	0.80	Very Low	High
	Alt 3		MODERATE	3	Isolated Sites / proposed site	1	Incidental	1	Could occur	3	Possible	1.00	Very Low	High

e) Fauna, Flora and Avifauna

	Impact Ratings Before Mitigation																	
			Significance		Extent		Duration		Probability		Degree of Certainty	Impact Risk		Intensity / Severity	Reversibility	
Fauna, Flora & Avifauna	Alt 1	Direct Impact	LOW	2	Local	3	Short-term	2	Very Likely	4	Possible	1.87	Low	Low	Reversible over time	3
	Alt 2		LOW	2	Local	3	Short-term	2	Very Likely	4	Possible	1.87	Low	Low	Reversible over time	3
	Alt 3		MODERATE	3	Local	3	Short-term	2	Very Likely	4	Probable	2.13	Moderate	Low	Reversible over time	3
	Alt 1	Indirect Impact	MODERATE	3	Local	3	Short-term	2	Very Likely	4	Possible	2.13	Moderate	Low	Reversible over time	3
	Alt 2		MODERATE	3	Local	3	Short-term	2	Very Likely	4	Possible	2.13	Moderate	Medium	Reversible over time	3
	Alt 3		MODERATE	3	Local	3	Short-term	2	Very Likely	4	Possible	2.13	Moderate	High	Reversible over time	3

			Impact Ratings After Mitigation											
			Significance		Extent		Duration		Probability		Degree of Certainty	Impact Risk		Degree of Mitigation
Fauna, Flora & Avifauna	Alt 1	Direct Impact	LOW	2	Isolated Sites / proposed site	1	Incidental	1	Could occur	3	Possible	0.80	Very Low	High
	Alt 2		LOW	2	Isolated Sites / proposed site	1	Incidental	1	Could occur	3	Possible	0.80	Very Low	High
	Alt 3		LOW	2	Isolated Sites / proposed site	1	Incidental	1	Could occur	3	Possible	0.80	Very Low	High
	Alt 1	Indirect Impact	LOW	2	Isolated Sites / proposed site	1	Incidental	1	Could occur	3	Possible	0.80	Very Low	High
	Alt 2		LOW	2	Isolated Sites / proposed site	1	Incidental	1	Could occur	3	Possible	0.80	Very Low	High
	Alt 3		LOW	2	Isolated Sites / proposed site	1	Incidental	1	Could occur	3	Possible	0.80	Very Low	Medium

n) Archaeological, Cultural and Palaeontological

No impact expected. No mitigation measures required.

o) Socio-Economic

	Impact Ratings Before Mitigation																	
			Significance		Extent		Duration		Probability		Degree of Certainty	Impact Risk		Intensity / Severity	Reversibility	
Socio-Economic	Alt 1	Direct Impact	MODERATE	3	Study Area	2	Short-term	2	Very Likely	4	Possible	1.87	Low	Low	Quickly reversible	2
	Alt 2		MODERATE	3	Study Area	2	Short-term	2	Very Likely	4	Possible	1.87	Low	Low	Quickly reversible	2
	Alt 3		MODERATE	3	Study Area	2	Short-term	2	Very Likely	4	Probable	1.87	Low	Low	Quickly reversible	2

		Impact Ratings After Mitigation											
		Significance		Extent		Duration		Probability		Degree of Certainty	Impact Risk		Degree of Mitigation
Socio-Economic	Alt 1	LOW	2	Study Area	2	Incidental	1	Could occur	3	Possible	1.00	Very Low	High
	Alt 2	LOW	2	Study Area	2	Incidental	1	Could occur	3	Possible	1.00	Very Low	High
	Alt 3	LOW	2	Study Area	2	Incidental	1	Could occur	3	Possible	1.00	Very Low	High

p) Visual

			Impact Ratings Before Mitigation													
			Significance		Extent		Duration		Probability		Degree of Certainty	Impact Risk		Intensity / Severity	Reversibility	
Visual	Alt 1	Direct Impact	MODERATE	3	Study Area	2	Medium term	3	Could occur	3	Possible	1.60	Low	Low	Quickly reversible	2
	Alt 2		MODERATE	3	Study Area	2	Medium term	3	Could occur	3	Possible	1.60	Low	Low	Quickly reversible	2
	Alt 3		MODERATE	3	Study Area	2	Medium term	3	Could occur	3	Probable	1.60	Low	Low	Quickly reversible	2

		Impact Ratings After Mitigation										
		Significance		Extent		Duration		Probability		Degree of Certainty	Impact Risk		Degree of Mitigation
Visual	Alt 1	LOW	2	Isolated Sites / proposed site	1	Medium term	3	Could occur	3	Possible	1.20	Low	High
	Alt 2	LOW	2	Isolated Sites / proposed site	1	Medium term	3	Could occur	3	Possible	1.20	Low	High
	Alt 3	LOW	2	Isolated Sites / proposed site	1	Medium term	3	Could occur	3	Possible	1.20	Low	High

Appendix G: Environmental Management Programme (EMPr)

Appendix H: Details of EAP and expertise

Appendix I: Specialist's declaration of interest

Appendix J: Additional Information