



# **DIEPSLOOT EAST TO PROPOSED BLUE HILLS SUBSTATION 132kV OVERHEAD POWER LINE**

## **DRAFT BASIC ASSESSMENT REPORT**

**August 2013**

**NEAS Reference: DEA/EIA/0001275/2012  
DEA Reference: 14/12/16/3/3/2/357**

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<b>Date</b>	<b>31 July 2013</b>
<b>Project</b>	Diepsloot East to Blue Hills 132kV
<b>Document Title</b>	Diepsloot East To Proposed Blue Hills Substation 132kV Overhead Power Line
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### ABREVIATIONS

<b>BAR</b>	Basic Assessment Report
<b>CEMPr</b>	Construction Environmental Management Programme
<b>CO<sup>2</sup></b>	Carbon Dioxide
<b>DEA</b>	Department of Environmental Affairs (previously Department of Environmental Affairs and Tourism)
<b>DoE</b>	Department of Energy
<b>EAP</b>	Environmental Assessment Practitioner
<b>EMPr</b>	Environmental Management Programme
<b>EIA</b>	Environmental Impact Assessment
<b>ERA</b>	Electricity Regulation Act (No. 4 of 2006)
<b>GN</b>	Government Notice
<b>ha</b>	Hectares
<b>HIA</b>	Heritage Impact Assessment
<b>I&amp;AP's</b>	Interested and Affected Parties
<b>IPP</b>	Independent Power Producer
<b>MW</b>	Megawatts
<b>NEMA</b>	National Environmental Management Act (No. 107 of 1998) (as amended)
<b>NHRA</b>	National Heritage Resources Act (No. 25 of 1999)
<b>NWA</b>	National Water Act (No 36 of 1998)
<b>OEMP</b>	Operational phase Environmental Management Programme
<b>SAHRA</b>	South African Heritage Resources Agency
<b>SACNASP</b>	South African Council for Natural Scientific Professions
<b>SDF</b>	Spatial Development Framework



**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, 2010, 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, 2010 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 **1 September 2012**. 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.

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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 on 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	<b>NO</b> ✓
-----	-------------

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**

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

Eskom Holdings SOC Ltd is proposing to construct a 132kV overhead distribution power line, approximately 8 kilometres in length, between the Diepsloot East substation and the proposed Blue Hills substation in Gauteng Province. The project aims to strengthen the distribution network, improve the reliability of the network and create capacity for new and existing customers in the region which is located between Blue Hills, Oliewenhoutbos, Centurion and Olifantsfontein.

In terms of the NEMA EIA Regulations, 2010: GN544 promulgated under Chapter 5 of the National Environmental Management Act (Act 107 of 1998) (“NEMA”), and published in Government Gazette 33306 on 18 June 2010; a Basic Assessment Report (BAR) is required for this project. Therefore, in order to be able to construct the proposed 132kV overhead power line and Blue Hills substation, an application for environmental authorisation must again be obtained.

Eskom Holdings SOC Ltd has appointed Envirolution Consulting as independent environmental consultants, to undertake the BAR process. The main objective of the BAR is to identify and assess potential environmental impacts associated with the proposed project, and to compile appropriate mitigation measures. An application was submitted to DEA and acknowledgement of receipt was received on 08 March 2013. The following reference numbers were allocated:

- NEAS Reference: DEA/EIA/0001728/2013
- DEA Reference : 14/12/16/3/3/1/853

**PROJECT BACKGROUND**

The electricity network supplying the Crowthorne area are limited. Lines and substations are required to improve the reliability of the network and create capacity for new and existing customers to the north of the existing Lulamisa substation (North of Dainfern Estate). Eskom Holdings SOC Limited, Distribution Division is Eskom Holdings SOC Limited, Distribution Division is proposing to construct a 132kV overhead distribution power line to strengthen the network supplying the Crowthorne area.

**Important to note. A separate Basic Assessment Process is being completed for the proposed Blue Hills substation to Crowthorne substation 88kV underground distribution line.**

**LOCATION**

The proposed project area is in the Midrand/Blue Hills area, to the east of the R55 road and south of Summit Road. See Figure 1. Location.

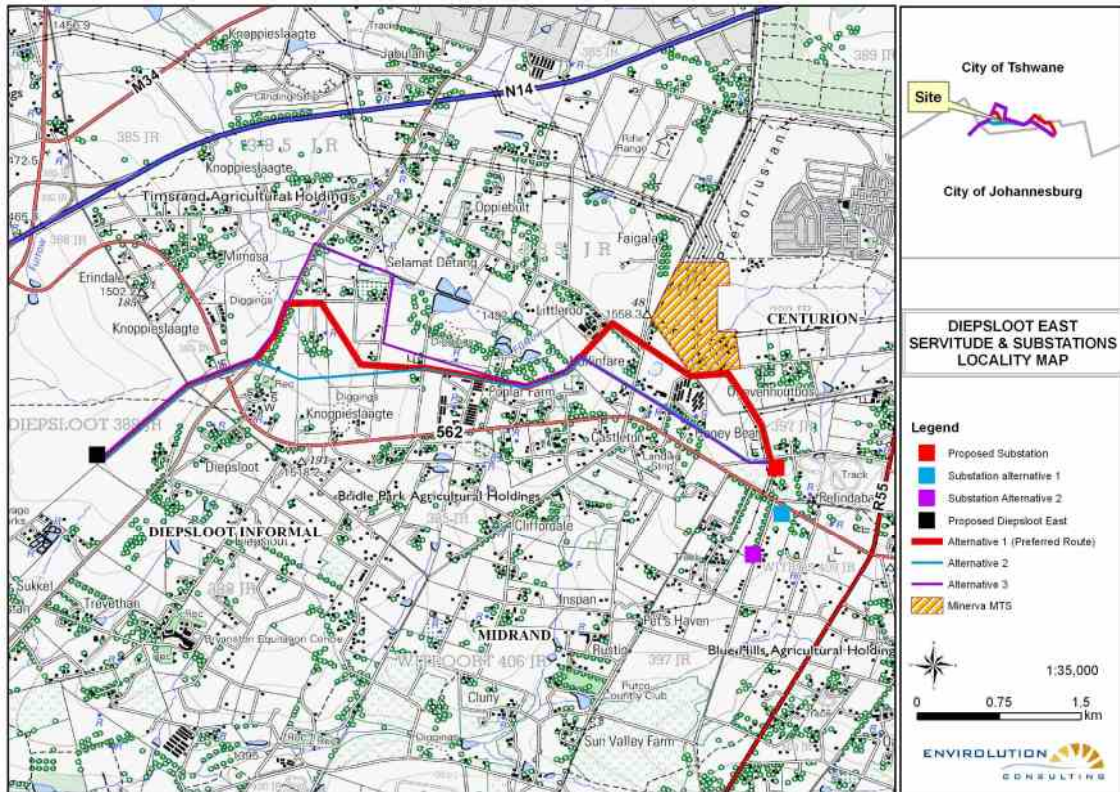


Figure 1. Location

**SPECIALIST STUDIES**

The specialists presented below (Table 1: Specialist Studies), have undertaken relevant specialist studies to provide more detailed information on the environment that may be affected by the proposed project.

Table 1: Specialist Studies

Name	Organisation	Input
Andrew Pearson & Megan Diamond	Endangered Wildlife Trust	Avifauna Assessment
C&T Kneidinger	CEMS	Fauna Assessment
M Jvd Walt	M. J. van der Walt Engineering Geologist CC	Geotechnical Desktop Assessment
Dr J van Schalkwyk	Heritage	Heritage Impact Assessment
Ingrid Snyman	Batho Earth	Social Impact Assessment
Mader vd Berg	iScape	Visual Impact Assessment
Antoinette Eyssell	Dimela Eco Consulting	Vegetation Assessment
Antoinette Bootsma	Limosella Consulting	Wetland and Riparian Functional Assessment and Rehabilitation



## ROUTE SELECTION

A route selection process was undertaken by Eskom and three feasible route alternatives were identified. The route selection criteria to identify potential route alternatives usually includes assessing the following:

- Cadastral Boundaries;
- Physical environment, including terrain, accessibility for construction and maintenance, natural features;
- Land use, including identification of high potential agricultural land, existing buildings and structures;
- Visible heritage resources such as graves; and
- Existing services such as electricity transmission and distribution lines and bulk services infrastructure.

## 132kV DISTRIBUTION LINE INFRASTRUCTURE

The following infrastructure alternatives are being considered.

### 1. Terminal towers

OPTION A: 247C, steel lattice, double circuit terminal tower

OPTION B: 3 – pole steel terminal monopoles

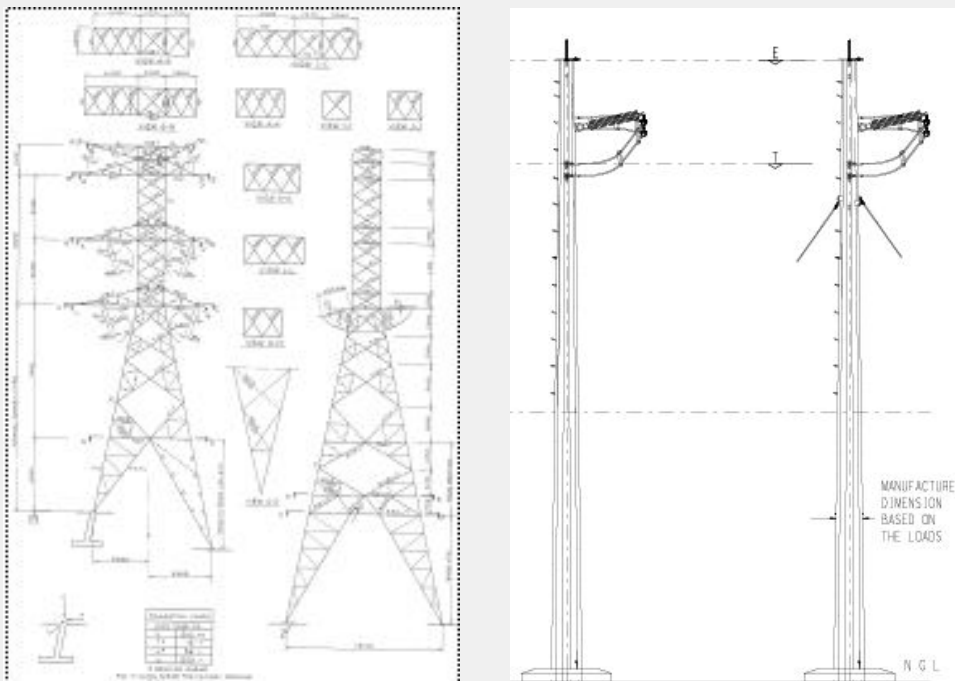


Figure 2. Structures 247C and 3 Pole Steel Terminal Monopole

### 2. Strain (Bend structures)

OPTION A: 247B, steel lattice, double circuit strain structure for 1-40 degree bends

OPTION B: 247C, steel lattice, double circuit strain structure for 40-90 degree bends

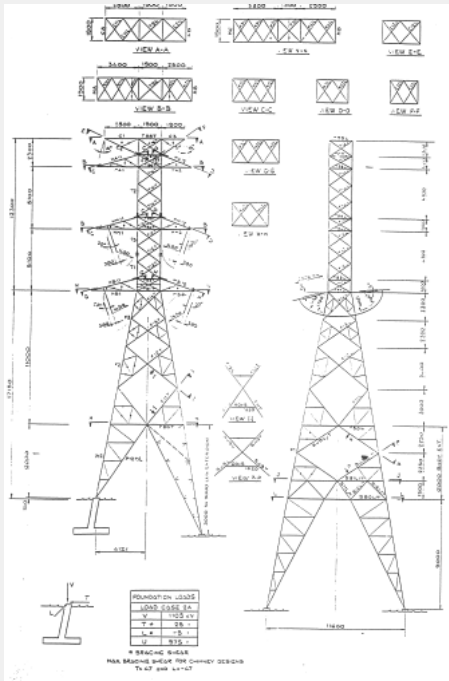


Figure 3. Structure 247B

2. Intermediate

OPTION A: 258C, steel braced monopole, double circuit intermediate structure

OPTION B: 247A, steel lattice, double circuit intermediate tower

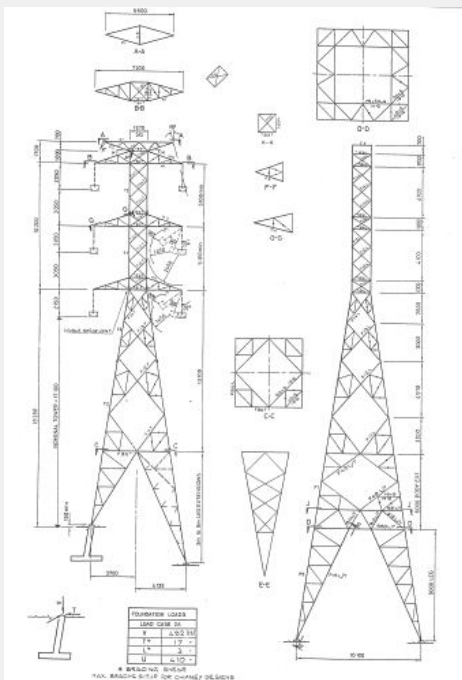


Figure 4. Structure 247A

**SUBSTATION INFRASTRUCTURE**

The substation footprint is 100m x 100m. A telecommunication tower in excess of 15 m could also be

required. The substation will have ablation facilities for staff. Use will be made of municipal water and other bulk services.

**It is important to note that the three proposed site alternatives for the substations are both inside and outside the urban edge. The preferred alternative is within the urban edge.**

**SERVITUDE**

The servitude width required by Eskom for the 132kV overhead distribution line is 31 metres wide. An 8 m-wide strip is generally required to be cleared of all trees and shrubs down the centre of a distribution power line servitude for stringing purposes only. Any tree or shrub in other areas that will interfere with the operation and/or reliability of the distribution power line must be trimmed or completely cleared. Vegetation clearance for the proposed distribution power line will be minimal due to the mainly grassland habitat. The Eskom Standard and specifications for vegetation clearance and invasive alien plant management for new power line construction specifications have been incorporated into the Environmental Management Programme (EMPr), which will guide the construction, operational and maintenance phases of the project. See Appendix J2.

**ASSESSMENT CORRIDOR**

The EAP and Project specialists have evaluated all potential issues in a corridor of approximately 1000 meters wide. This would allow for fine scale adjustments of the tower positions if required (See Figure 5

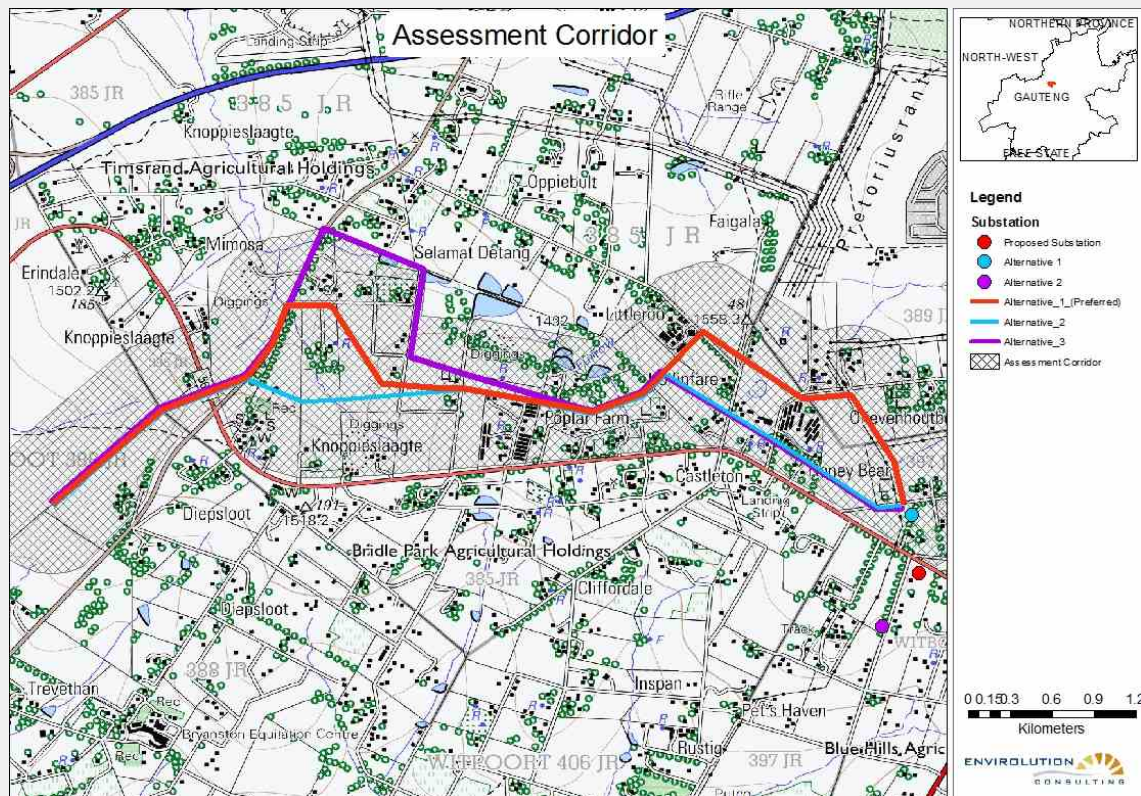


Figure 5. Assessment Corridor

**CONSTRUCTION PHASE**

The following steps are followed during the construction of distribution lines:

- Vegetation clearance and gate erection;
- Establishment of construction camp and pegging of structures (note that a construction camp might not be required, due to proximity to existing housing facilities. A temporary site office and storage area will however be required in the vicinity of the proposed project.)
- Construction of access roads (where required);
- Construction of foundations
- Assembly and erection of structures
- Stringing of conductors
- Rehabilitation of disturbed area and protection of erosion sensitive areas

### **SERVICES REQUIRED DURING CONSTRUCTION PHASE**

#### **Access Roads**

The three routes alternatives are accessible via existing roads. No roads that trigger NEMA Regulations Listed Activities will be required. Vehicles will drive in veld and create tracks in servitude to be registered and the tracks will be used for routine maintenance during the operational phase. As per Eskom Environmental Procedure 32-247 for vegetation clearance and maintenance within overhead powerline servitudes and on Eskom owned land, vehicles are to “remain on all existing roads and tracks and within the servitude area and not deviate there from” (See Appendix J2)

Potential storm water runoff from maintenance tracks will be managed according to the Eskom Guidelines for Erosion Control and Vegetation Management as well as the Environmental Management Programme (EMPr), which will be compiled for the construction phase (See Appendix J3)

#### **Construction Site Camps**

The power line construction contractor would need to set up at least one site camp but this does not necessarily need to be near the power line route. The contractor may however prefer to use a fully serviced site at another location. The contractor will be encouraged to utilise already disturbed areas for construction camp purposes, in order to minimise cumulative impacts.

#### **Sewage**

A negligible sewage flow is anticipated for the duration of the construction period. Chemical toilets will be utilised during construction, and the contractor will ensure regular treatment of these facilities. The toilets will be serviced regularly, as specified by the final site specific EMPr. The proposed substation will connect to municipal sewerage infrastructure.

#### **Solid Waste Disposal**

All solid waste will be collected at a central location at each construction site and will be stored temporarily until removal to an appropriately permitted landfill site in the vicinity of the construction site. The proposed substation will utilize municipal refuse collection services.

#### **Concrete Batching**

Concrete batching will be required for the foundations of the distribution line towers. The following guidelines are contained in the Eskom specification For The Transmission Line Towers and Line Construction:

- a) The Contractor shall be responsible for negotiating the site of his batching plant (if required) and

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the conditions under it may be established, with the landowner. The Contractor shall be responsible for the proper management of the batching plant.

b) Upon completion of works, the ground of the batching plant area shall be rehabilitated and the site cleaned and left as it was found and to the satisfaction of the Supervisor and landowner.

c) The use of local water for concrete must first be negotiated with the landowner and the appropriate authorities. Such water is to be analysed and accepted by the Project Manager before use

### **Foundations**

The excavations shall be kept covered or barricaded in a manner accepted by the Supervisor to prevent injury to people or livestock. Failure to maintain proper protection of excavations may result in the suspension of excavation work until proper protection has been restored.

### **Stringing**

Once towers have been erected, cables will be strung between the towers.

### **Bird Flight Diverters**

If required Bird flight deflectors will be fitted during the construction phase.

### **OPERATIONAL PHASE**

Vegetation will be maintained by Eskom in the operational phase of the project.

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

Listed activity as described in GN R.544, 545 and 546	Description of project activity
GN No. R544 2010 (Listing Notice 1) - Activity 10 (i)	The construction of an overhead distribution line of more than 33 kV outside the urban edge;
GN No. R544 2010 (Listing Notice 1) – Activity 11	Electrical infrastructure covering 50 square metres or more could be positioned within 32 meters of watercourse;
GN No. R544 2010 (Listing Notice 1) – Activity 18	Electrical infrastructure could be positioned within a watercourse;
GN R 546 2010 (Listing Notice 3) – Activity 12 d	The overhead distribution line will be constructed in areas identified as important in the Gauteng C-Plan 3.3; an
GN R 546 2010 (Listing Notice 3) – Activity 13	The overhead distribution line will be constructed in areas identified as important in the Gauteng C-Plan 3.3.

### 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 Regulation 22(2)(h) of GN R.543. 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

**It is important to note that the Eskom Minerva Substation, which is located about 1200metres from the proposed Substation alternative is a 400/275kV Transmission substation. Due to technical/engineering non-compatibility, the Minerva Substation is not considered as an alternative for this Basic Assessment.**

#### ROUTE ALTERNATIVES

Three route alternatives for the proposed distribution line were assessed as part of the Basic Assessment process

**Alternative 1** would exit the proposed substation to the north of Summit Road in a northerly direction where it would follow the alignment of an existing power line. Should Substation Alternative 1 or 2 be preferred, the line would exit the preferred substation to the south of the R562 (Summit Road) and cross over the road to continue in a northerly direction along an existing line.

The proposed line crosses Jakkalsbessie Road and just south of the Minerva MTS and just north of Rainbow Chickens Beehive Breeder Farm it turns in a westerly direction passing the MTS. It

continues to cross an unnamed road and Pigogo Lane which becomes London Lane.

At London Lane, just before Littleroo it crosses the road and turns south where this alignment again meets Alternatives 2 and 3. It runs alongside Alternatives 2 and 3 in a westerly direction through open areas of the smallholdings (Poplar Farm) and passes the Rainbow Chickens Poplar Farm to the north of its facilities. After crossing Pecan Nut Lane it splits from Alternative 2, and after approximately 500 metres turns north where it passes the north eastern section of the Northview Country Estate, but does not traverse the estate. At the last section of Pecan Nut Lane the proposed alignment turns west to link with the Mnandi/Knoppieslaagte Road. After crossing this road it turns south running parallel (on western side of road) to the Mnandi/Knoppieslaagte Road where it crosses the R562 (Summit Road) through an open area where it joins Alternative 2 and 3 to end at the proposed Diepsloot East substation.

**Alternative 2** (blue line) exits the proposed substation to the north of Summit Road in a westerly direction along with Alternative 3 where it crosses Jakkalsbessie Road. Should Substation Alternative 1 or 2 be preferred, the line would exit the preferred substation to the south of the R562 (Summit Road) and cross over the road to continue in a westerly direction.

After crossing Jakkalsbessie Road the line turns in a north westerly direction to pass Rainbow Chickens Beehive Breeder Farm to the south, approximately 100 metres north of Summit Road. It then passes Cadeu Kennels to the north, crosses Pigogo Lane/London Lane to meet up with Alternative 1. It runs alongside Alternative 1 and 3 through the smallholdings at Poplar Farm, passes Rainbow Chickens Poplar Farm to the north, but splits from Alternative 1 at Pecan Nut Lane. It runs further in a westerly direction through the North View Country Estate (middle section) where it meets up with the Mnandi/Knoppieslaagte Road. After crossing this road it turns south running alongside the Mnandi/Knoppieslaagte Road, as well as Alternative 1 and 3 to cross the R562 again and end at the proposed Diepsloot East substation.

**Alternative 3** (purple line) exits the proposed substation to the north of Summit Road in a westerly direction along with Alternative 2 where it crosses Jakkalsbessie Road. Should Substation Alternative 1 or 2 be preferred, the line would exit the preferred substation to the south of the R562 (Summit Road) and cross over the road to continue in a westerly direction.

After crossing Jakkalsbessie Road the line turns in a north westerly direction to pass Rainbow Chickens Beehive Breeder Farm to the south, approximately 100 metres north of Summit Road. It then passes Cadeu Kennels to the north, crosses Pigogo Lane/London Lane to meet up with Alternative 1. It runs alongside Alternative 1 and 2 through the smallholdings at Poplar Farm, passes Rainbow Chickens Poplar Farm to the north, but then splits from Alternative 1 and 2. It runs in a westerly direction, but to the north of Alternative 1 through open areas of the smallholdings. At the second turn of the London Lane gravel road it turns north to pass a property with various dwellings on its eastern border to reach the small dam on the property. Here the line turns in a westerly direction to link up just north of a dwelling with the Mnandi/Knoppieslaagte Road. It crosses the road and runs parallel to the road to meet up with Alternative 1 and then to link with Alternative 2 to cross the R562 again and end at the proposed Diepsloot East substation.

### **SUBSTATION ALTERNATIVES**

**It is important to note that the proposed Diepsloot substation has been assessed in a separate EIA process and has received Environmental Authorisation**

Three alternative sites are being assessed for the Blue Hills substation.

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**Proposed Substation Alternative**

The client assigned the terminology of “proposed substation alternative” to this alternative. This alternative was also found to be the preferred alternative site during the BAR process. This proposed substation alternative site (indicated in red on the project map) is located to the north of the R562 (Summit Road) and approximately 1 km to the west of the R55.

**Substation Alternative 1** which is located directly to the south of the R562 and approximately 1 km to the west of the R55 and just east of Village Road on the Farm Witbos 409 JR. Substation Alternative 1 is indicated in blue on the project map.

**Substation Alternative 2** (indicated in purple on the project map) is proposed further south of the R562 to the east of Village Road and east of the Blue Hills College on the Farm Witbos 409 JR.

**Substation Alternative:**

<b>Proposed Alternative (preferred alternative)</b>		
Substation	Lat (DDMMSS)	Long (DDMMSS)
	25° 55' 57.62"	28° 05' 16.06"
<b>Alternative 1</b>		
Substation	Lat (DDMMSS)	Long (DDMMSS)
	25° 56' 12.32"	28° 05' 15.90"
<b>Alternative 2</b>		
Substation	Lat (DDMMSS)	Long (DDMMSS)
	25° 55' 22.55"	28° 05' 01.54"

In the case of linear activities:

**Distribution Line Alternative:**

**132kV Alternative S1 (preferred)**

- Starting point of the activity
- Middle/Additional point of the activity
- End point of the activity

**Latitude (S):**

**Longitude (E):**

25° 55.957'	28° 1.917'
25° 55.586'	28° 4.013'
25° 56.209'	28° 5.262'

**132kV Alternative S2**

- Starting point of the activity
- Middle/Additional point of the activity
- End point of the activity

25° 55.957'	28° 1.917'
25° 55.586'	28° 4.013'
25° 56.209'	28° 5.262'

**A132 kV Alternative S3**

- Starting point of the activity
- Middle/Additional point of the activity
- End point of the activity

25° 55.957'	28° 1.917'
25° 55.586'	28° 4.013'
25° 56.209'	28° 5.262'

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. See Appendix A



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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.

Please refer to Appendix A for layout map

### b) Lay-out alternatives

The project specialists assessed a route corridor 1 kilometre wide for the route alternatives		
<b>Alternative 1 (preferred alternative)</b>		
Description	Lat (DDMMSS)	Long (DDMMSS)
<b>Alternative 2</b>		
Description	Lat (DDMMSS)	Long (DDMMSS)
<b>Alternative 3</b>		
Description	Lat (DDMMSS)	Long (DDMMSS)

### c) Technology alternatives

The technology alternatives	
<b>Alternative 1 (preferred alternative)</b>	
1. Terminal towers	Technology Option A: 247C, steel lattice, double circuit terminal tower
2. Strain (Bend structures)	Technology Option A: 247B, steel lattice, double circuit strain structure for 1-40 degree bends
3. Intermediate	Technology Option A: 258C, steel braced monopole, double circuit intermediate structure
<b>Alternative 2</b>	
1. Terminal towers	Technology Option B: 3 – pole steel terminal monopoles
2. Strain (Bend structures)	Technology Option B: 247C, steel lattice, double circuit strain structure for 40-90 degree bends
3. Intermediate	Technology Option B: 247A, steel lattice, double circuit intermediate tower
<b>Alternative 3</b>	

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

Alternative 1 (preferred alternative)		
Alternative 2		
Alternative 3		

**e) No-go alternative**

The No-go option implies that the Project does not proceed, and Eskom does not go ahead with the construction of the 132 kV overhead power line. The project is part of Eskom’s implementation of a Master Plan for the extension of electrical infrastructure for the broader area that includes Oliewenhoutbos, The Reeds, Rooihuiskraal, Samrand Business Park, Ranjesfontein and Doornkloof.

The implications of No-go alternative include:

- There is no change to current landscape;
- There will not be sufficient electricity for existing and new users in the area;
- Electricity supply will not be reliable and this can result in blackouts and major disturbances in energy provision to existing users;
- Future development in the broader area between Blue Hills, Centurion and Olifantsfontein will be constrained;
- Proposed objectives of Provincial and Metropolitan Municipality planning initiatives such as IDP’s, SDF,s and Johannesburg Growth Management Strategy will not be achieved.

The No-go option would not solve the current demand for electricity and will constrain the economic environment for the broader area between Blue Hills, Centurion, Olifantsfontein and Oliewenhoutbos.

**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):**

**Substation Alternative:**

Alternative A1<sup>1</sup> (preferred activity alternative)  
 Alternative A2 (if any)  
 Alternative A3 (if any)

**Size of the activity:**

	10000m <sup>2</sup>
	10000m <sup>2</sup>
	10000m <sup>2</sup>

or, for linear activities:

**Overhead 132kV Line Alternative:**

**Length of the activity:**

---

<sup>1</sup> “Alternative A..” refer to activity, process, technology or other alternatives.

## BASIC ASSESSMENT REPORT

Alternative A1 (Alternative 1, Client Preferred)  
 Alternative A2  
 Alternative A3

	7400 m
	6300 m
	7700 m

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

**Overhead 132kV Line Alternative:**

Alternative A1 (Alternative 1, Client Preferred)  
 Alternative A2  
 Alternative A3

Distance x 31 m servitude  
 Distance x 31 m servitude  
 Distance x 31 m servitude

**Size of the site/servitude:**

	229400 m <sup>2</sup>
	195300 m <sup>2</sup>
	238700 m <sup>2</sup>

### 5. SITE ACCESS

Does ready access to the site exist?

<b>YES ✓</b>	NO
--------------	----

If NO, what is the distance over which a new access road will be built

	m
--	---

Describe the type of access road planned:

The route alternatives of the proposed 132kV overhead distribution lines will traverse agricultural small holdings, low density housing estates and vacant erven. All route alternatives are in close proximity to existing roads. The site alternatives for the substations are also adjacent to existing roads.

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 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 DWA);
- 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):

<b>1. Is the activity permitted in terms of the property's existing land use rights?</b>	<b>YES</b> ✓	NO	Please explain
<p>The proposed route and substation alternatives are located on privately owned agricultural smallholdings. Once the proposed overhead line and substation have been constructed, limited impacts are expected. Eskom will acquire servitudes and affected property owners will be permitted to use areas underneath the lines. Other activities, besides the construction of buildings and tall structures and growing of tall trees, may also continue below the lines.</p>			
<b>2. Will the activity be in line with the following?</b>			
<b>(a) Provincial Spatial Development Framework (PSDF)</b>	<b>YES</b> ✓	NO	Please explain
<p>The Gauteng Employment, Growth and Development Strategy (2009) states that the infrastructure network of the Province is a strategic, socio-economic and bulk infrastructure investment and includes: transport and logistics (including roads, rail and air), Information and Communication and e Technologies, schools, hospitals, clinics, libraries, universities (if applicable), <b>electricity services (energy)</b>, water reticulation services, sewage and sanitation services, waste management services, and so forth. Thus the provision of provision of electrical infrastructure is in line with SDF.</p>			
<b>(b) Urban edge / Edge of Built environment for the area</b>	YES	<b>NO</b> ✓	Please explain
<p>The proposed distribution lines fall outside the urban edge, but falls within a peri-urban management area as defined in the Johannesburg 2012 IDP. However, electricity distribution infrastructure is required for existing residential areas outside the urban edge. The project will strengthen the electricity distribution network in the broader area, area between Blue Hills, Centurion, Olifantsfontein and Oliewenhoutbos, which is inside the urban edge.</p>			
<b>(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?).</b>	YES	<b>NO</b> ✓	Please explain
<p>The Tshwane and Johannesburg Metro's acknowledge that the provision of electricity infrastructure is of key importance. This infrastructure facilitates local economic activity and creates an enabling environment for economic growth. Eskom will invest in the local economy by providing the infrastructure, which in turn will then assist the Metropolitan Municipalities in reaching their objectives.</p>			
<b>(d) Approved Structure Plan of the Municipality</b>	<b>YES</b> ✓	NO	Please explain
<p>The proposed project entails electricity infrastructure, which is compatible with the Gauteng Employment, Growth and Development Strategy (2009), the Johannesburg IDP (2012).</p>			

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<p><b>(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?)</b></p>	YES	NO✓	Please explain
<p>No EMF for area in which the route alternatives are located. However the Gauteng Province has identified (2006) Geographical Areas. in terms of section 24 (2) (b) and (c) of the National Environmental Management Act, 1998 (Act 107 of 1998). In addition, The Gauteng C-Plan 3.3 does also guide environmental priorities. All recommendations of the C-Plan have been taken into consideration during the assessment of this project. No environmental management priorities will be compromised by the project.</p>			
<p><b>(f) Any other Plans (e.g. Guide Plan)</b></p>	YES✓	NO	Please explain
<p>No other plans applicable. See C-Plan 3.3 in section 2 (e) above.</p>			
<p><b>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)?</b></p>	YES✓	NO	Please explain
<p>The proposed development is in line with the National Development Plan and the Johannesburg and Tshwane Metropolitan Municipalities SDF's and IDP's, which related to the provision of infrastructure such as electricity supply.</p>			
<p><b>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.)</b></p>	YES✓	NO	Please explain
<p>The provision of electricity to the broader area between Blue Hills, Centurion, Olifantsfontein and Oliewenhoutbos is a priority which could stimulate economic growth.</p>			
<p><b>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.)</b></p>	YES✓	NO	Please explain
<p>The proposed project is the construction of a 132kV overhead distribution. It will not require any capacity for services such as water and sanitation from relevant Municipalities. It will however provide additional electricity capacity to the Diepsloot East and Blue Hills area.</p>			

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<p><b>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.)</b></p>	<p align="center">YES</p>	<p align="center"><b>NO</b> ✓</p>	<p>Please explain</p>
<p>The proposed project is the construction of a 132kV overhead distribution. It will not require any capacity for services such as water and sanitation from relevant Municipalities. It will however provide additional electricity capacity to the Diepsloot East and Blue Hills area.</p>			
<p><b>7. Is this project part of a national programme to address an issue of national concern or importance?</b></p>	<p align="center"><b>YES</b> ✓</p>	<p align="center">NO</p>	<p>Please explain</p>
<p>The upgrading of the electricity network and infrastructure especially the substations and transmission and distribution lines is a strategic priority towards addressing the shortage of electricity in South Africa.</p>			
<p><b>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.)</b></p>	<p align="center"><b>YES</b> ✓</p>	<p align="center">NO</p>	<p>Please explain</p>
<p>Although the proposed development transverse privately owned agricultural lands, the location of the sites is selected such that is within or next to the centre of the load demand</p>			
<p><b>9. Is the development the best practicable environmental option for this land/site?</b></p>	<p align="center">YES</p>	<p align="center"><b>NO</b> ✓</p>	<p>Please explain</p>
<p>The current status quo is the best practicable environmental option. However, the proximity of the area to Johannesburg and Pretoria will necessitate pressure to develop the area for housing. The smallholdings in the study area are not economically viable agriculture units and are used for activities such as dog kennels, chicken broilers and housing. The construction of the 132kV line and substation will not impact significantly on the current land use.</p>			
<p><b>10. Will the benefits of the proposed land use/development outweigh the negative impacts of it?</b></p>	<p align="center"><b>YES</b> ✓</p>	<p align="center">NO</p>	<p>Please explain</p>
<p>The proposed 132kV distribution line will be beneficial to the local economy and the broader area between Blue Hills, Centurion, Olifantsfontein and Oliewenhoutbos</p>			
<p><b>11. Will the proposed land use/development set a precedent for similar activities in the area (local municipality)?</b></p>	<p align="center">YES</p>	<p align="center"><b>NO</b> ✓</p>	<p>Please explain</p>
<p>The preferred alternative is in part adjacent to the existing 275kV power line from Minerva substation. In addition</p>			
<p><b>12. Will any person's rights be negatively affected by the proposed activity/ies?</b></p>	<p align="center">YES</p>	<p align="center"><b>NO</b> ✓</p>	<p>Please explain</p>
<p>The proposed Diepsloot East 132kV line and Blue Hills substation will not negatively affect any persons rights. The servitude rights for the line will be acquired by Eskom and financial compensation will be paid.</p>			

BASIC ASSESSMENT REPORT

<b>13. Will the proposed activity/ies compromise the “urban edge” as defined by the local municipality?</b>	YES	<b>NO</b> ✓	Please explain
The project is the proposed construction of an overhead electricity distribution line and substation. Areas outside of the urban edge and rural areas do require electricity. The urban edge will not be compromised			
<b>14. Will the proposed activity/ies contribute to any of the 17 Strategic Integrated Projects (SIPS)?</b>	<b>YES</b> ✓	NO	Please explain
<p>The project will conform to the objectives of the following SIPS:</p> <p><u>SIP 6: Integrated Municipal Infrastructure Project</u> Develop a national capacity to assist the 23 least resourced districts (17 million people) to address all the maintenance backlogs and upgrades required in water, <b>electricity</b> and sanitation bulk infrastructure.</p> <p><u>SIP 10: Electricity Transmission and Distribution for all</u> Expand the transmission and distribution network to address historical imbalances, provide access to electricity for all and support economic development. Align the 10-year transmission plan, the services backlog, the national broadband roll-out and the freight rail line development to leverage off regulatory approvals, supply chain and project development capacity.</p>			
<b>15. What will the benefits be to society in general and to the local communities?</b>	Please explain		
The provision of a reliable electricity network and provision of capacity for new users.			
<b>16. Any other need and desirability considerations related to the proposed activity?</b>	Please explain		
The proposed project will ensure that economic growth continues in the region.			



## BASIC ASSESSMENT REPORT

17. How does the project fit into the National Development Plan for 2030?	Please explain
<p>The following NDP sections area relevant:</p> <p>ELEMENTS OF A DECENT STANDARD OF LIVING Electricity</p> <p>WOMEN AND THE PLAN Access to safe drinking water, <b>electricity</b> and quality early childhood education, for example, could free women from doing unpaid work and help them seek jobs</p> <p>Due to a reduction in capital spending from effect, South Africa has missed a generation of capital investment in roads, rail, ports, <b>electricity</b>, water, sanitation, public transport and housing. To grow faster and in a more inclusive manner, the country needs a higher level of capital spending.</p> <p>Chapter 4: ECONOMIC INFRASTRUCTURE Objectives The proportion of people with access to the <b>electricity</b> grid should rise to at least 90 percent by 2030, with non-grid options available for the rest.</p> <p>Action 20 of The National Development Plan also considers the Ring-fencing the electricity distribution businesses of the 12 largest municipalities (which account for 80 percent of supply), resolve maintenance and refurbishment backlogs and develop a financing plan, alongside investment in human capital.</p> <p>Actions 21. Revise national <b>electrification</b> plan and ensure 90 percent grid access by 2030 (with balance met through off-grid technologies).</p>	
<p><b>18. Please describe how the general objectives of Integrated Environmental Management as set out in section 23 of NEMA have been taken into account.</b></p>	
<p>This report serves as a Basic Assessment report that will investigate all potential impacts (social, economic and environmental) that may result from the development including alternatives, assess and evaluate and further provide a mitigation plan for all identified potential impacts.</p>	
<p><b>19. Please describe how the principles of environmental management as set out in section 2 of NEMA have been taken into account.</b></p>	
<p>Specialist investigations (fauna, flora, fauna, heritage, geotechnical) were appointed to investigate potential environment impacts. Identified environmental impacts were assessed and mitigation measures provided to control and manage these environmental impacts. Interested and Affected parties, land owners and relevant stakeholder were identified and involved throughout the Basic Assessment process and their comments addressed and recorded as part of this assessment.</p>	

**BASIC ASSESSMENT REPORT**

**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:

<b>Title of legislation, policy or guideline</b>	<b>Applicability to the project</b>	<b>Administering authority</b>	<b>Date</b>
National Environmental Management Act, No. 107 of 1998 (NEMA), as amended & NEMA EIA Regulations, 2010: GN544, published in Government Gazette 33306 on 18 June 2010	a Basic Assessment Report (BAR) is required for this project.	Department of Environmental Affairs (DEA)	1998
National Environmental Management: Biodiversity Act, Act 10 of 2004	The project falls within areas identified by Gauteng C-Plan 3.3 (Ecosystems that are threatened or in need of protection)	Department of Environmental Affairs (DEA)	2004
National Water Act, No. 36 of 1998	The proposed distribution lines are within 500m of wetlands.	Department of Water Affairs (DWA)	1998
National Heritage Resources Act (Act No 25 of 1999)	Resources could be identified during construction phase	South African Heritage Resources Agency	1999

**13. WASTE, EFFLUENT, EMISSION AND NOISE MANAGEMENT**

**a) Solid waste management**

Will the activity produce solid construction waste during the construction/initiation phase?

<b>YES</b> ✓	<b>NO</b>
30 m <sup>3</sup>	

If YES, what estimated quantity will be produced per month?

Small quantities of solid waste will be generated during the construction phase of the project. This waste will be disposed at a licensed waste facility by the contractor.

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

The appointed contractor will dispose solid waste at licensed landfill facility

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

The Municipalities in the study area have many landfill sites. As a mitigatory measure, the contractor responsible for the construction of the overhead line will be responsible to remove waste to a licensed facility.

## BASIC ASSESSMENT REPORT

Will the activity produce solid waste during its operational phase?  
If YES, what estimated quantity will be produced per month?

YES✓	NO
3m <sup>3</sup>	

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

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

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

*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 ✓
-----	------

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 ✓
-----	------

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 ✓
-----	------

If YES, what estimated quantity will be produced per month?

m<sup>3</sup>

Will the activity produce any effluent that will be treated and/or disposed of on site?

YES	NO ✓
-----	------

*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	NO ✓
-----	------

If YES, provide the particulars of the facility:

<b>Facility name:</b>			
<b>Contact person:</b>			
<b>Postal address:</b>			
<b>Postal code:</b>			
<b>Telephone:</b>		<b>Cell:</b>	
<b>E-mail:</b>		<b>Fax:</b>	

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

**c) Emissions into the atmosphere**

Will the activity release emissions into the atmosphere other than exhaust emissions and dust associated with construction phase activities?

YES	NO ✓
-----	------

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:

During the construction phase, dust and vehicular emissions could be released as a result of machinery. However these emissions will have a short term impact on the immediate surrounding area and thus no authorisation will be required for such emissions. If required, appropriate dust suppression measures must be implemented.

Dust emissions during construction phase will not exceed limits proposed in Notice 309 of 2011 National Environmental Management: Air Quality Act, 2004. (Act 39 Of 2004), Draft National Dust Control Regulations.

**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 ✓
-----	------

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	NO ✓
-----	------

If YES, is it controlled by any legislation of any sphere of government?

YES	NO ✓
-----	------

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.

If NO, describe the noise in terms of type and level:

A limited amount of noise would be generated during the construction phase by construction vehicles and construction activities. It will however be short term, localised and will last during the construction phase. In order to minimise the impacts of noise during the construction phase, construction activities should be restricted to between 07H00 and 17H00 Monday to Friday. This is required in order to avoid noise and lighting disturbances outside of normal working hours. All construction equipment must be maintained and kept in good working order to minimise associated noise impacts. If required, adequate noise suppression measures (i.e. screens, etc) must be erected around the point source of construction and/or operational noise pollution to reduce noise to an acceptable level.

BASIC ASSESSMENT REPORT

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**14. WATER USE**

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

Municipal <input checked="" type="checkbox"/>	Water board	Groundwater	River, stream, dam or lake	Other	The activity will not use water
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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:

<b>Zero litres</b>	
<b>YES</b> <input checked="" type="checkbox"/>	NO

Does the activity require a water use authorisation (general authorisation or water use license) from the Department of Water Affairs?

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

**It is to be noted that the proposed 132kV line will be located within 500 metres of a wetland and thus requires a Water Use Licence Application. The application will only be lodged post Environmental Authorisation and once the final alignment of the 132kV line is determined and the servitude registered in the name of the proponent, Eskom.**

**ENERGY EFFICIENCY**

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

The project is the construction of a distribution line and does not use energy. Eskom however has introduced and champions the 49m campaign which aims to reduce National energy usage by 10%, which would be as effective as the construction of a new power station, without the potential carbon emission or cost. .

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

The project is the construction of a distribution line and does not use energy. Eskom however has introduced and champions the 49m campaign which aims to reduce National energy usage by 10%, which would be as effective as the construction of a new power station, without the potential carbon emission or cost. .

**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):

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
------	----

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.

**Property description/physical address:**

<b>Province</b>	Gauteng
<b>District Municipality</b>	Johannesburg and Tshwane Metropolitan Municipalities
<b>Local Municipality</b>	Johannesburg and Tshwane Metropolitan Municipalities
<b>Ward Number(s)</b>	112 and 113
<b>Farm name and number</b>	See Appendix A
<b>Portion number</b>	See Appendix A
<b>SG Code</b>	See Appendix A

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.

**See Appendix A1 Owners**

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

The proposed 132kV overhead line is located inside and outside of the urban edge. Sections outside the urban edge are defined as peri-urban management area as defined in the Johannesburg 2012 IDP.

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✓
-----	-----

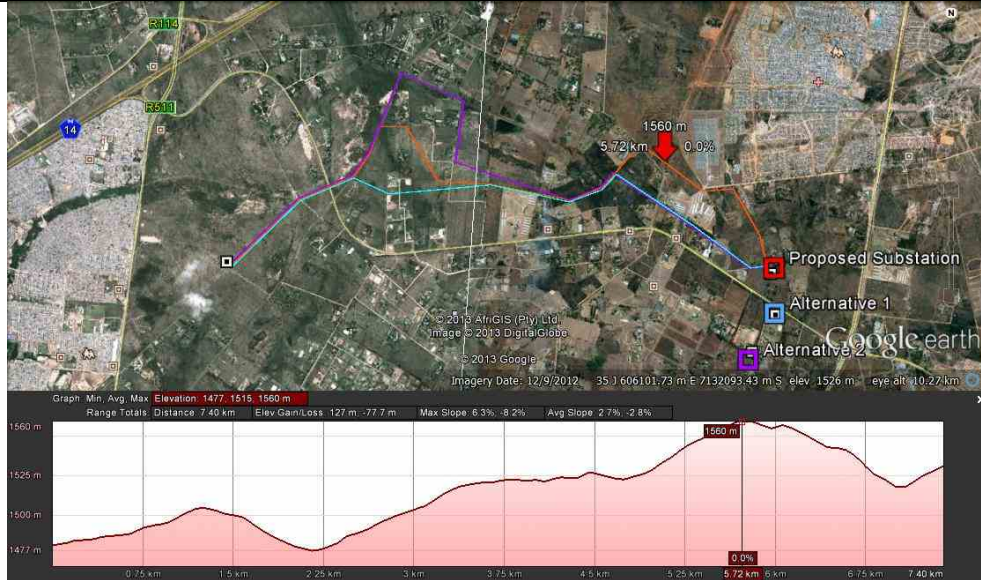
# BASIC ASSESSMENT REPORT

## 1. GRADIENT OF THE SITE

Indicate the general gradient of the site.

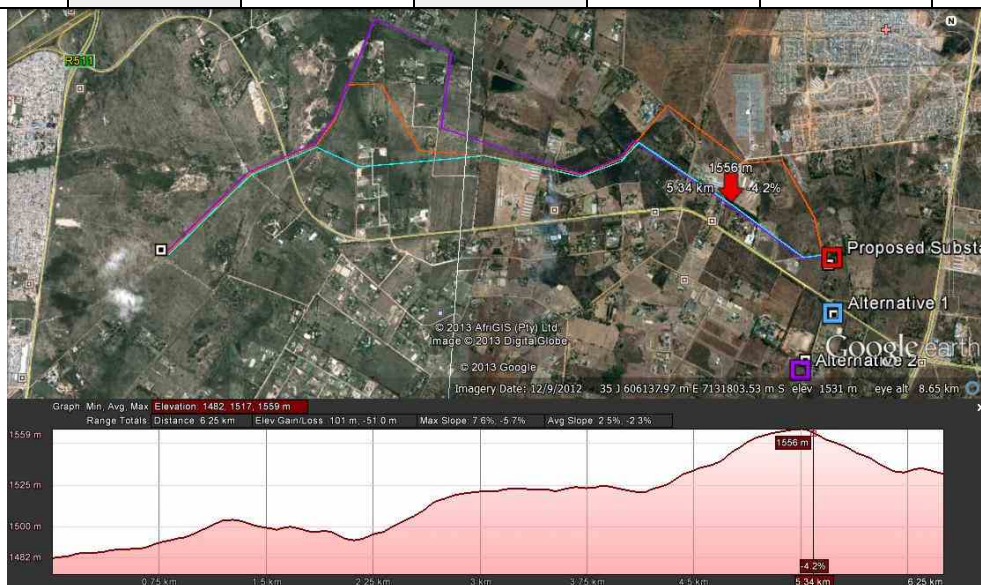
### Alternative S1: 132kV distribution line:

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
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### Alternative S2: 132kV distribution line:

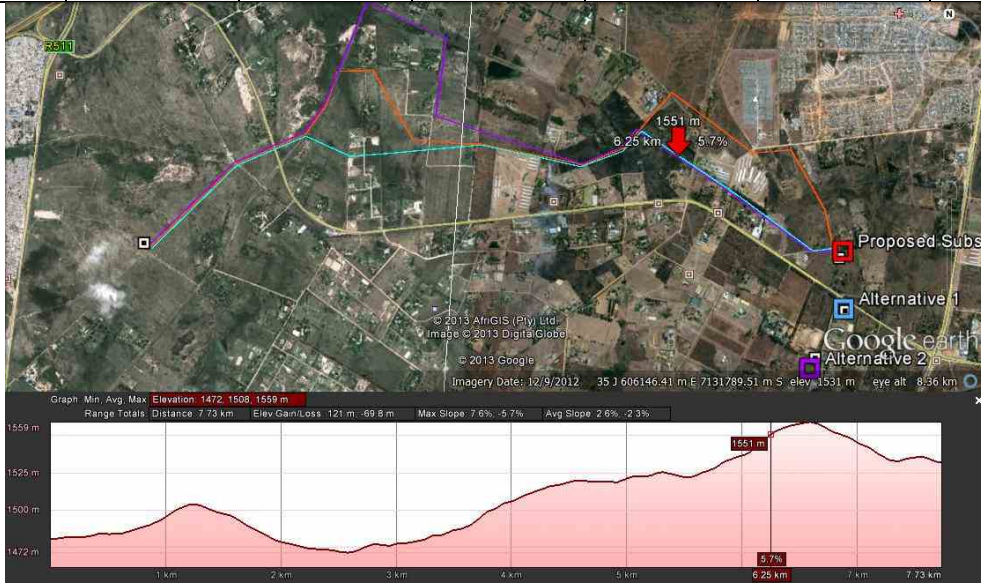
Flat	1:50 – 1:20 ✓	1:20 – 1:15	1:15 – 1:10 ✓	1:10 – 1:7,5	1:7,5 – 1:5	Steeper than 1:5
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# BASIC ASSESSMENT REPORT

## Alternative S3: 132kV distribution line:

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
------	-----------------	-------------	-----------------	--------------	-------------	---------------------



## 2. LOCATION IN LANDSCAPE

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

2.1 Ridgeline	<input type="checkbox"/>	2.4 Closed valley	<input type="checkbox"/>	2.7 Undulating plain / low hills	<input type="checkbox"/>
2.2 Plateau	<input type="checkbox"/>	2.5 Open valley	<input checked="" type="checkbox"/>	2.8 Dune	<input type="checkbox"/>
2.3 Side slope of hill/mountain	<input checked="" type="checkbox"/>	2.6 Plain	<input checked="" type="checkbox"/>	2.9 Seafront	<input type="checkbox"/>

## 3. GROUNDWATER, SOIL AND GEOLOGICAL STABILITY OF THE SITE

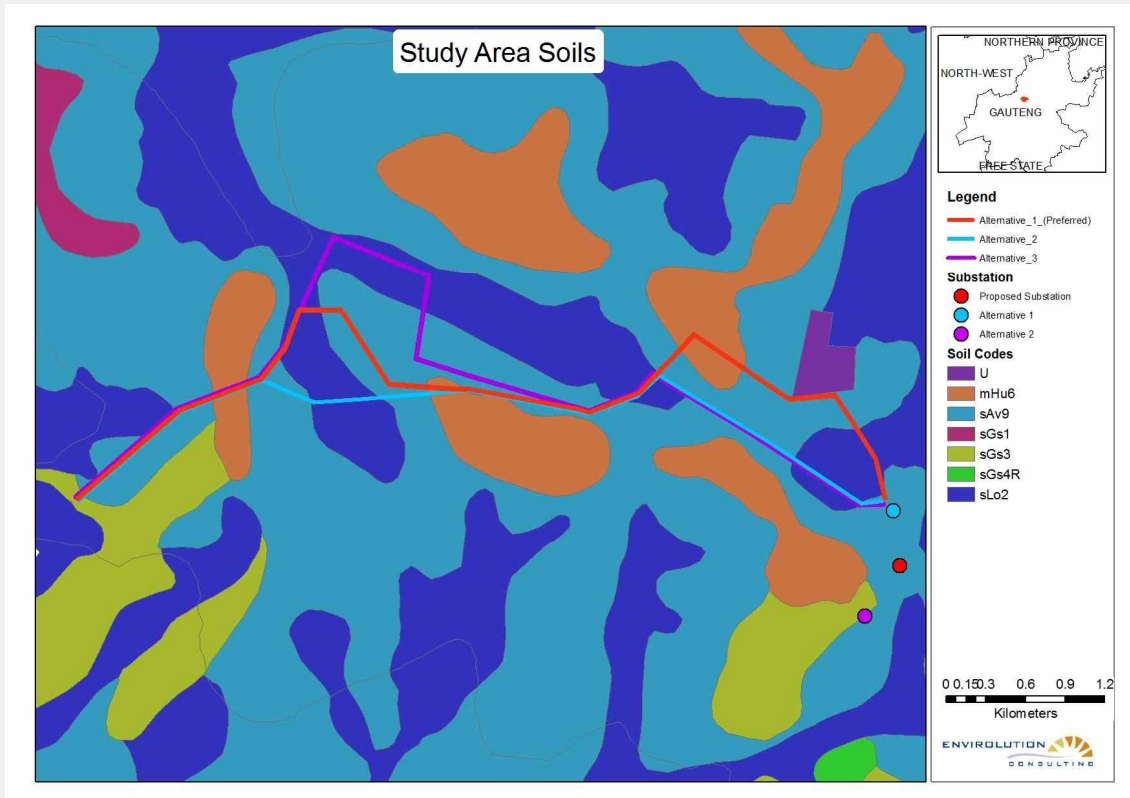
Is the site(s) located on any of the following?

	132kV Route Alternatives					
	Alternative S1:		Alternative S2		Alternative S3:	
Shallow water table (less than 1.5m deep)	YES	NO✓	YES	NO✓	YES	NO✓
Dolomite, sinkhole or doline areas	YES	NO✓	YES	NO✓	YES	NO✓
Seasonally wet soils (often close to water bodies)	YES	NO	YES	NO	YES	NO
Unstable rocky slopes or steep slopes with loose soil	YES	NO✓	YES	NO✓	YES	NO✓
Dispersive soils (soils that dissolve in water)	YES	NO✓	YES	NO✓	YES	NO✓
Soils with high clay content (clay fraction more than 40%)	YES	NO✓	YES	NO✓	YES	NO✓
Any other unstable soil or geological feature	YES	NO	YES	NO	YES	NO
An area sensitive to erosion	YES	NO	YES	NO	YES	NO



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.

**Geology and Soil:**



**Figure 6 Soils**

Limosella Consulting, 2013 (AppendixD8 &D9) describes that the geology underlying the proposed distribution line comprises mainly of Meinhardskraal Granite and Sand River Gneiss (ENPAT, 2001). The AvB soil form dominates the study area and comprises shallow (300 - 500 mm), dystrophic to mesotrophic loam in association with similar soils of the Glencoe form and other shallow, brown, coarse sand on weathering rock of the Glenrosa form. In general, these soils are moderately well-drained, yellow-brown, apedal on soft plinthite soils of the Avalon (Av) form usually overlying hydromorphic, weathering rock. The LoA soil group is also represented along the proposed routes and is shallow to moderately deep (300 - 1000 mm) with coarse sand overlying sand to loam plinthite in the subsoil. In general, the soils are hydromorphic, plinthic soils, somewhat poorly drained, grey, structureless topsoil on soft plinthite of the Westleigh (We) form, on soft plinthite of the Longlands (Lo) form and on hard plinthite of the Wasbank (Wa) form; all profiles overlying gleyed, weathering rock or unconsolidated materials (soils are wet throughout most of the profile for long periods during the year). The distribution of this soil group corresponds well to the areas perceived to be wetlands on the hydrology map. Furthermore, the Gs1R soil form, represented by shallow (<500 mm), coarse sand to loam in complex association with rock outcrops are present just west of the Crowthorne

substation. In general, this soil is shallow, brown and structureless with low base status overlying either weathering rock of the Glenrosa (Gs) form, or hard rock and hard plinthite of the Mispah (Ms) form. The proposed substations are situated on mHu16 comprising well-drained, red, apedal soils of the Hutton form (Hu) overlying weathering and hard rock and various other unconsolidated materials. Large sections of the wetlands on site correspond to the distribution of LoA (Longlands soil) throughout the study area.

The Environmental Potential Atlas (ENPAT), 2001 and C-Plan 2 - Agriculture Potential (from Agricultural Research Council) indicates that the proposed route alternatives are located mainly in area with LOW agriculture potential. This is due to Limited soil depth and impeded internal drainage in subsoil. See Figure 7

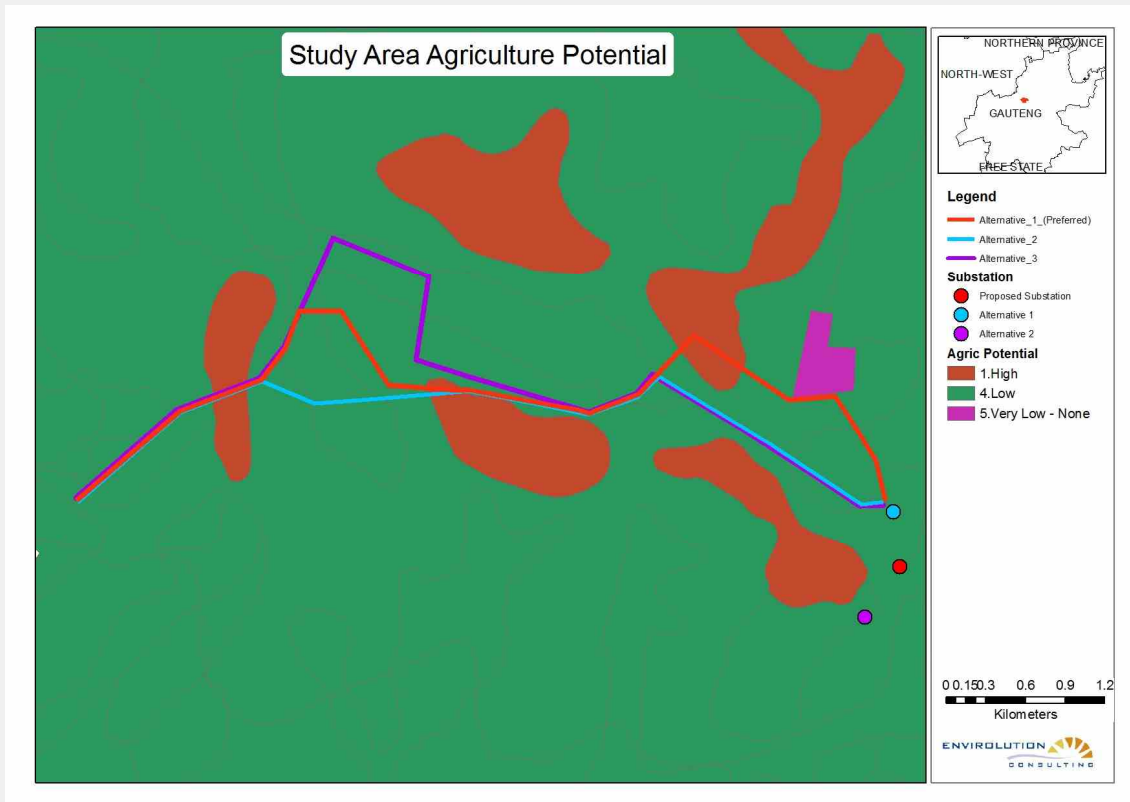


Figure 7. Agriculture Potential

M. J. van der Walt Engineering Geologist CC, 2013 (Appendix D3). States that according to the available geological map sheet 2528 Pretoria, at a scale of 1:250 000 the overhead route alternatives and substations alternatives are underlain by granite and gneiss of Swazian geological age, i.e. rocks of the Basement Complex. Diabase in the form of dykes has intruded into the host rock. A prominent quartz vein that runs north-south might also be encountered

**Engineering Characteristics**

M. J. van der Walt Engineering Geologist CC, (2013) states that residual soils that developed on granites are well-known to exhibit a collapsible grain structure. In this area granites may be decomposed to great depths in which quartz remains unaltered in the form of sand grains, whilst mica particles in the upper portions of the profile are decomposed and the feldspars become thoroughly kaolinised by chemical reaction with water. So fine grained are the particles of colloidal kaolinite that

## BASIC ASSESSMENT REPORT

in areas of high rainfall and in situations conducive to leaching, they are largely removed in suspension by circulating groundwater.

A spongy residuum of micaceous silty sand is left behind and it is this material that is often found to exhibit a high collapse potential. In granites the collapsible grain structure consists of quartz grains held apart by clay bridges (colloidal coatings) that form an open, honeycomb type structure. When dry, these soils appear to have a high strength, however when subjected to simultaneous loading and saturation the clay bridges lose strength and the soil collapses into a denser state resulting in sudden settlement. As a general guide it may be stated that residual granite above the 1500m contour are likely to possess a collapsible grain structure.

Practical solutions to the problem are based mainly on founding at a depth where the collapse phenomenon is either absent or of negligible proportions. This could include piled foundations, pre-collapsing the in-situ soil or excavation and replacing the material in controlled layers.

The presence of core stones of hard granite within the residual granite soil presents special problems in foundation engineering. The problem is particularly acute where the residual soil possesses a collapsible grain structure, and the core stones are too large to be removed by hand from an augered pile hole, piling in such a situation becomes virtually impossible. Core stones are common features in road cuttings and foundation excavations within the homogenous granites. Core stones often have to be drilled and blasted to be removed from service and foundation trenches. Where encountered in foundation trenches differential settlement need to be designed for. (M. J. van der Walt Engineering Geologist CC, 2013).

#### 4. GROUND COVER

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 <sup>E</sup> ✓	Natural veld with scattered aliens <sup>E</sup> ✓	Natural veld with heavy alien infestation <sup>E</sup> ✓	Veld dominated by alien species <sup>E</sup>	Gardens ✓
Sport field✓	Cultivated land✓	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.

Dimela Eco Consulting, 2013 (Appendix D6) conducted a vegetation assessment of the proposed cable route and alternatives and associated infrastructure. The vegetation assessment found that the vegetation sensitivities along the surveyed routes comprised moist grassland, ridge vegetation and to a lesser degree, secondary grassland. A summary of the vegetation communities and their sensitivity to the proposed and alternative routes are presented in **Table 2**. No primary (pristine or climax) Egori Granite Grassland was observed. The grasslands were mostly historically ploughed and now comprise secondary, *Hyparrhenia hirta* dominated grassland

See map representation of vegetation categories in Figure 8 below.

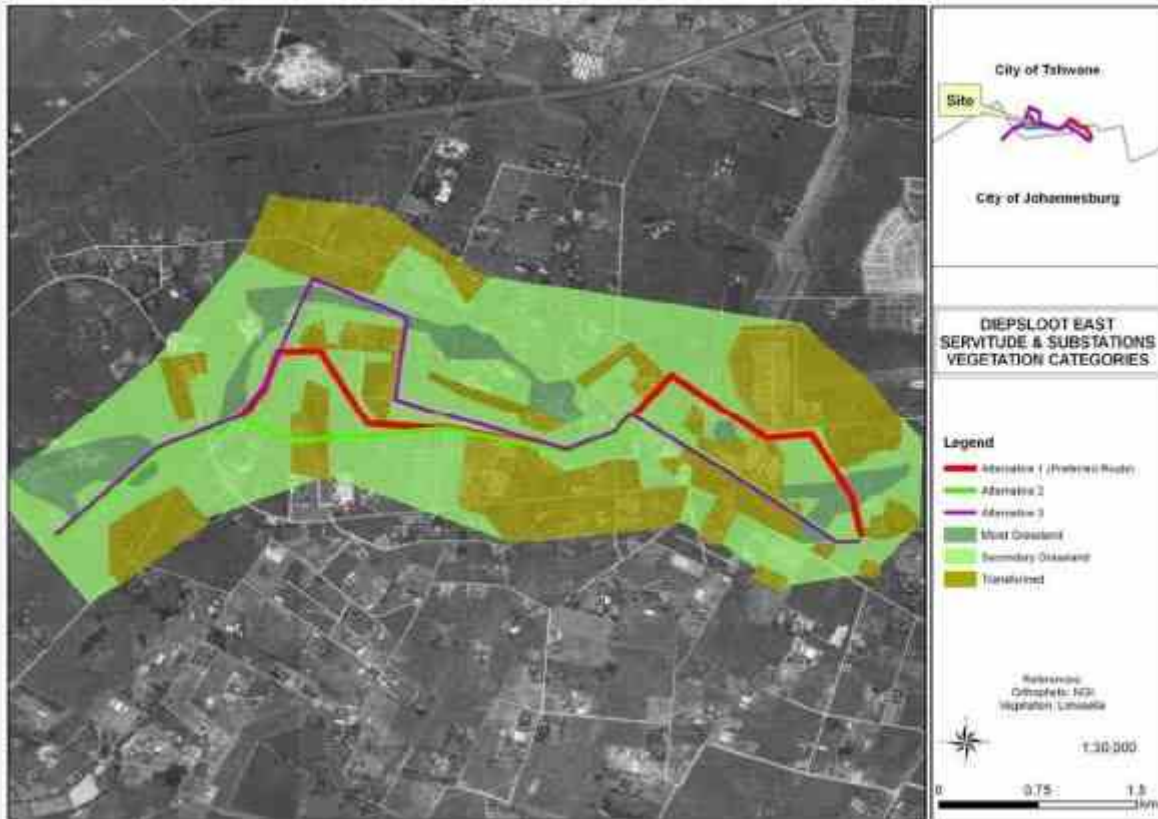


Figure 8. Vegetation Categories (Dimela, 2013)

Table 2 Summary of the vegetation observed along the alternative routes (Dimela 2013).

Vegetation Description	Summary
<b>Transformed grassland</b>	<ul style="list-style-type: none"> <li>Disturbed areas including residential areas, small holdings a equestrian areas, chicken farms, dumping areas or areas transformed by an abundance of alien invasive plants</li> </ul>
<b>Secondary grasslands</b>	<ul style="list-style-type: none"> <li>Fallow lands where cultivation ceased some time ago. Grassland vegetation re-colonised the area successfully. However, the grasslands are now dominated by <i>Hyparrhenia hirta</i>, indicative of transformed Egoli Granite Grassland .It is unlikely that these grasslands will through succession be able to return to primary Egoli Grassland</li> <li>Grasslands where disturbances and the invasion by alien invasive plant species degraded the grassland</li> <li>Some of these areas were confirmed to support plants of conservation concern or provincially protected plants</li> </ul>
<b>Moist grasslands</b>	<ul style="list-style-type: none"> <li>Grasslands where the soil was waterlogged and/or areas where the vegetation observed are known to grow in soils with higher</li> <li>Provide potential habitat to protected plants and plants of conservation concern naturally occurring within wetland areas, although none was observed</li> </ul>

- Some of these moist grasslands were historically ploughed or disturbed in some way and currently include a high number of alien invasive vegetation
- Some of these areas were confirmed to support plants of conservation concern or provincially protected plants

The vegetation sensitivity assessment of Dimella Eco Consulting (2013) indicates that the Moist Grasslands and Natural Grasslands are of high vegetation sensitivity, while the secondary grasslands are classified as being of medium sensitivity and cultivated fields and areas with a high incidence of disturbance are classified as low sensitivity (Figure 9).

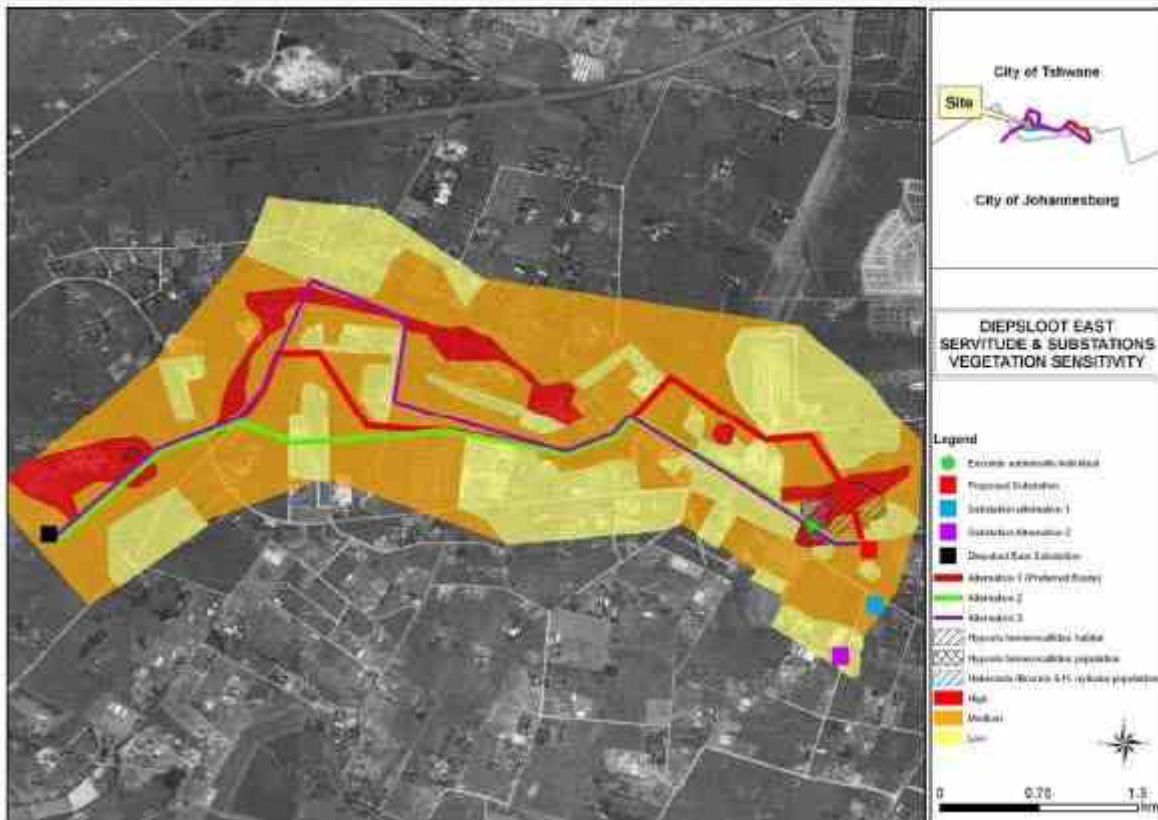


Figure 9. Vegetation Sensitivity (Dimela 2013).

## 5. SURFACE WATER

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

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



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

**Hydrology**

Limosella, 2013 Appendix D8 &D9) discuss that the surface water spatial layers indicate that the route alignments will cross a number of wetland systems as well as non-perennial tributaries to the Swarbooispruit (GDARD, 2011) (Figure 2). Furthermore, the National Freshwater Ecosystems Priority Areas (NFEPA) Wetland Types for South Africa (SANBI, 2010) also reflect wetland systems along the proposed powerline routes.

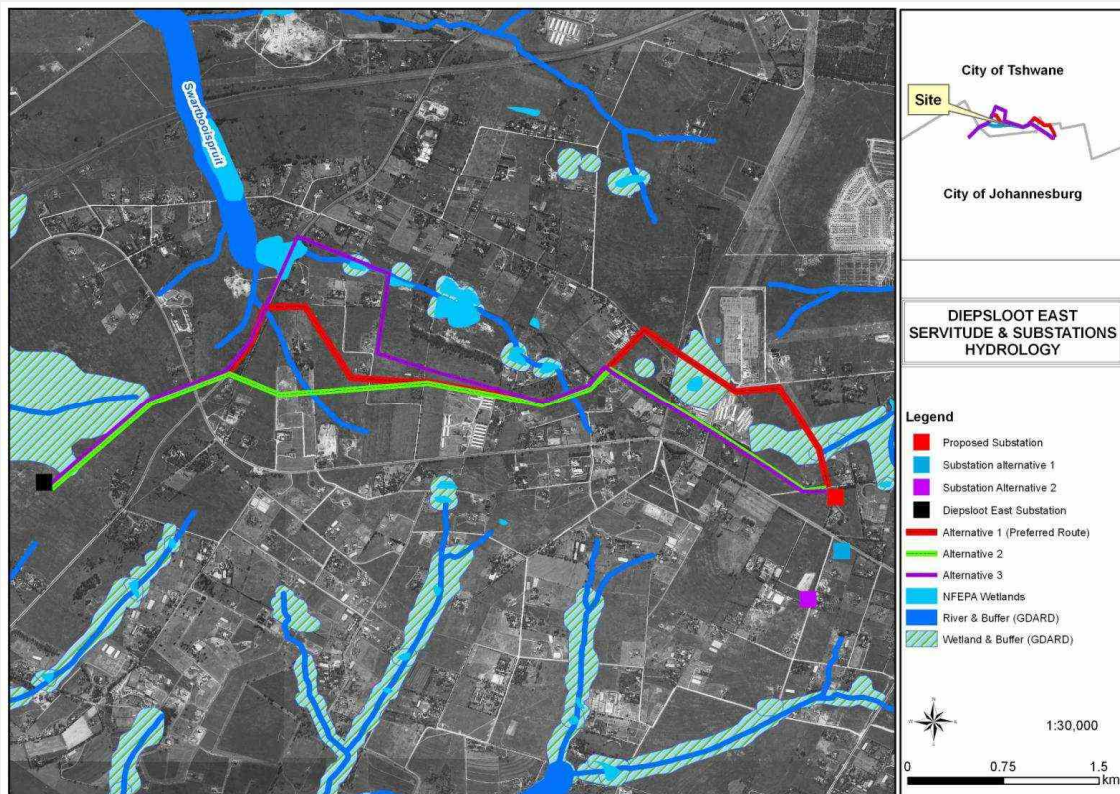
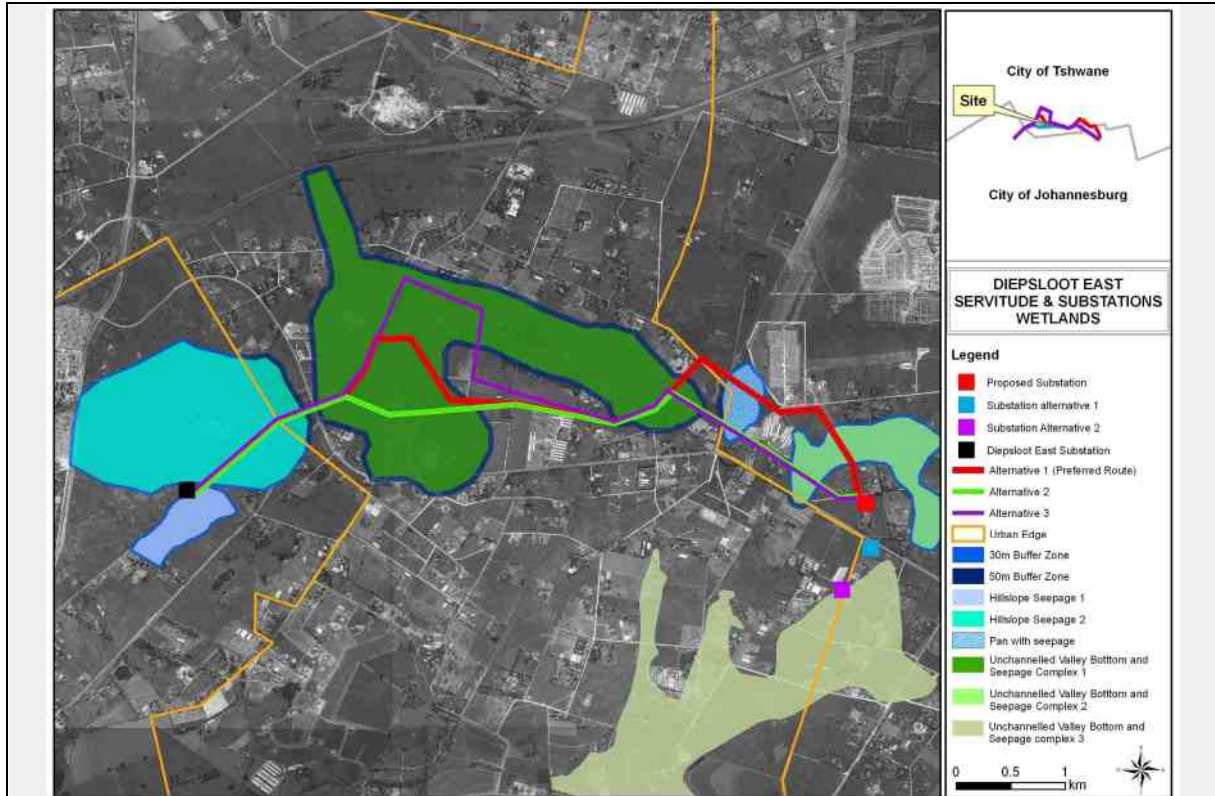


Figure 10. Hydrology (Limosella, 2013)

**Quaternary Catchment:**

The routes investigated falls within Quaternary Catchment A21B. In this catchment, the ratios of Mean Annual Precipitation (MAP) to Potential Evapotranspiration (PET) are 0.29 (Macfarlane et al, 2010). This value indicates that wetlands lose more water through evapotranspiration than they received through precipitation, unless they are associated with surface water input. The functional assessment methodology proposed by Macfarlane et al, (2010) classifies the vulnerability of wetlands in this region, based on these values, as Moderately High, specifically with regards to changes to infiltration rates and surface water flows in the catchment. Consequently, watercourses in this area are sensitive to changes in regional hydrology, particularly where their catchment becomes transformed and the water available to sustain them becomes redirected.



All of the surveyed wetland areas offered some direct or indirect human benefits such as grass harvesting, water use, farming areas as well as various others. The majority of the wetlands have been greatly transformed by various anthropogenic activities such as roads and other infrastructure and wetland vegetation is no longer present throughout all the wetlands. Although the wetlands in the study area have been greatly transformed and have subsequently lost a great deal of functionality they do in their current state provide some protection against erosion and are able to trap sediment in some places.

The wetlands are furthermore likely to degrade further with the pressures of urbanisation unless this trend is actively stopped. On site impacts of the various wetlands include dumping of various material such as building material and general waste, soil compaction from roads and footpaths, soils disturbances such as recent earth works, in addition to these impacts various exotic plants were noted within and/or near the wetlands. Due to the close proximity to roads it is likely that these wetlands are impacted by various foreign inputs into the system such as oil, petrol and sediment. Sand mining within various wetlands is also detrimental to the health and function of the wetland areas particularly by disrupting natural subsurface water flows (Limosella, 2013).

Limosella Consulting (2013) found that although the wetland vegetation in the study area has been impacted on by surrounding anthropogenic activities, it does, in its current state, create some habitat for faunal species such as frogs and avifauna species. These biodiversity elements are considered likely to be of some importance given that the wetlands on site could be a refuge for fauna species in a largely fragmented landscape.

### Present Ecological Status (PES) – WET-Health

The PES (Present Ecological Status) was determined for all the wetlands on the study site using a Level 1 wetland assessment. A level 1 assessment makes provision for scenarios where limited information or time is available.

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The wetlands identified during the site visit were heavily impacted on by a change in the catchment of the wetlands. The changes in the catchment due to roads, houses and other hardened structures has led to an increase in the velocity of water entering wetlands due to the surface roughness being decreased. This in turn can lead to an increase in sediment and other foreign material input into the system. Pathways and roads act as a drain on some parts of the wetlands where the water collects and flows more freely than the other parts of the wetlands.

Dumping of building material and general waste also has an effect on both hillslope seepage wetlands. Sand mining also has also greatly impacted on the various wetlands on site and especially the unchannelled valley bottom and seepage complex 1 wetland and has caused large areas of erosional features as well as various areas becoming incised and eroded. These erosional features should be mapped in detail in future phases of the proposed development. Various areas have become eroded down to bedrock and new channels have been created where water currently flows (Figure 11. Sand Mining).

Description	PES Score
Largely modified. A large change in ecosystem processes and loss of natural habitat and biota has occurred.	D Hillslope Seepage 2 Pan and Seepage
The change in ecosystem processes and loss of natural habitat and biota is great but some remaining natural habitat features are still recognizable.	E Hillslope Seepage 1, Unchannelled Valley Bottom with seepage complex 1, Unchannelled Valley Bottom with Seepage complex 2

### Ecological Importance and Sensitivity (EIS)

Ecological importance is an expression of a wetland's importance to the maintenance of ecological diversity and functioning on local and wider spatial scales. Ecological sensitivity refers to the system's ability to tolerate disturbance and its capacity to recover from disturbance once it has occurred (DWAF, 1999).

Environmental Importance and Sensitivity rating scale used for calculation of EIS scores (DWAF,

Environmental Importance and Sensitivity Categories	Rating
Moderate Wetlands that are considered to be ecologically important and sensitive on a provincial or local scale. The biodiversity of these wetlands is not usually sensitive to flow and habitat modifications. They play a small role in moderating the quantity and quality of water in major river	>1 and <=2
Low/Marginal Wetlands that is not ecologically important and sensitive at any scale. The biodiversity of these wetlands is ubiquitous and not sensitive to flow and habitat modifications. They play an insignificant role in moderating the	>0 and <=1



quantity and quality of water in major river	
--	--



Figure 11. Sand Mining

**Route Alternatives**

**Alternative 1 (client's Preferred route):**

Alternative 1 starts at the Proposed Diepsloot East Substation which is located within a hillslope seepage wetland and then moves through another large hillslope seepage wetland. It then moves through a large wetland characterised by unchannelled valley bottom and seepage wetlands. The line then crosses two other wetland areas, one pan area and another unchannelled valley bottom wetland with seepage where it finally ends at one of the proposed sub stations.

This route extends approximately 4.25Km within various wetlands excluding the buffer zones. This route is the second preferred route in terms of wetland ecology due to less area being located within the various wetland areas

**Alternative 2:**

Alternative 2 follows the same route as Alternative 1 for the first 1.5Km and also moves through 2 Hillslope seepage wetlands before it turns east and moves through the large unchannelled valley bottom and seepage wetland 1. It then exits this wetland and enters it again at another point and shares the same route from this area as Alternative 3 and also moves through the Pan wetland and the unchannelled valley bottom wetland 2.

The route extends approximately 3.41Km within various wetland areas excluding the buffer zones. This route is thus the preferred route in terms of wetland ecology due to the route occupying the least amount of area within the wetland areas.

**Alternative 3:**

Alternative 3 follows the same route as Alternative 1 and 2 for the firsts 1.5Km and follows the same route for the last 2.4Km of the route as Alternative 2. This alternative goes through the same number of wetlands as both Alternative 1 and Alternative 2.

The route extends approximately 4.77Km within various wetland areas excluding the buffer zones. Alternative 3 is thus the least preferred option in terms of wetland ecology due to the length of the route that will occupy the various wetland areas. It also runs parallel with a large part of a wetland instead of crossing it directly. Compaction of soil and loss of vegetation cover will negatively affect this wetland by increasing sediment input and the potential for erosion.

**Proposed substation**

**Preferred Substation Alternative**

The client's Preferred substation is located on a small holding and no wetlands are located within 500m of the area. A large unchannelled valley bottom wetland is however located just over 500m from this site to the north, the construction of the substation is however unlikely to impact on this system. The location of the preferred substation is thus also preferred from a wetland point of view.

**Alternative 1:**

The substation alternative 1 is located on a small holding where signs of historical agriculture remain visible. This alternative is however located closer than 500m to a wetland and is thus more likely to impact on the wetland area. Substation alternative 1 is the second preferred option in terms of wetland ecology.

**Alternative 2:**

Although the substation alternative 2 is located on the most disturbed area with almost no vegetation cover left it is positioned within a large wetland system and construction and operational activities are likely to have an impact on local wetland function. This alternative is thus the least preferred option in terms of wetland ecology.

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

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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?

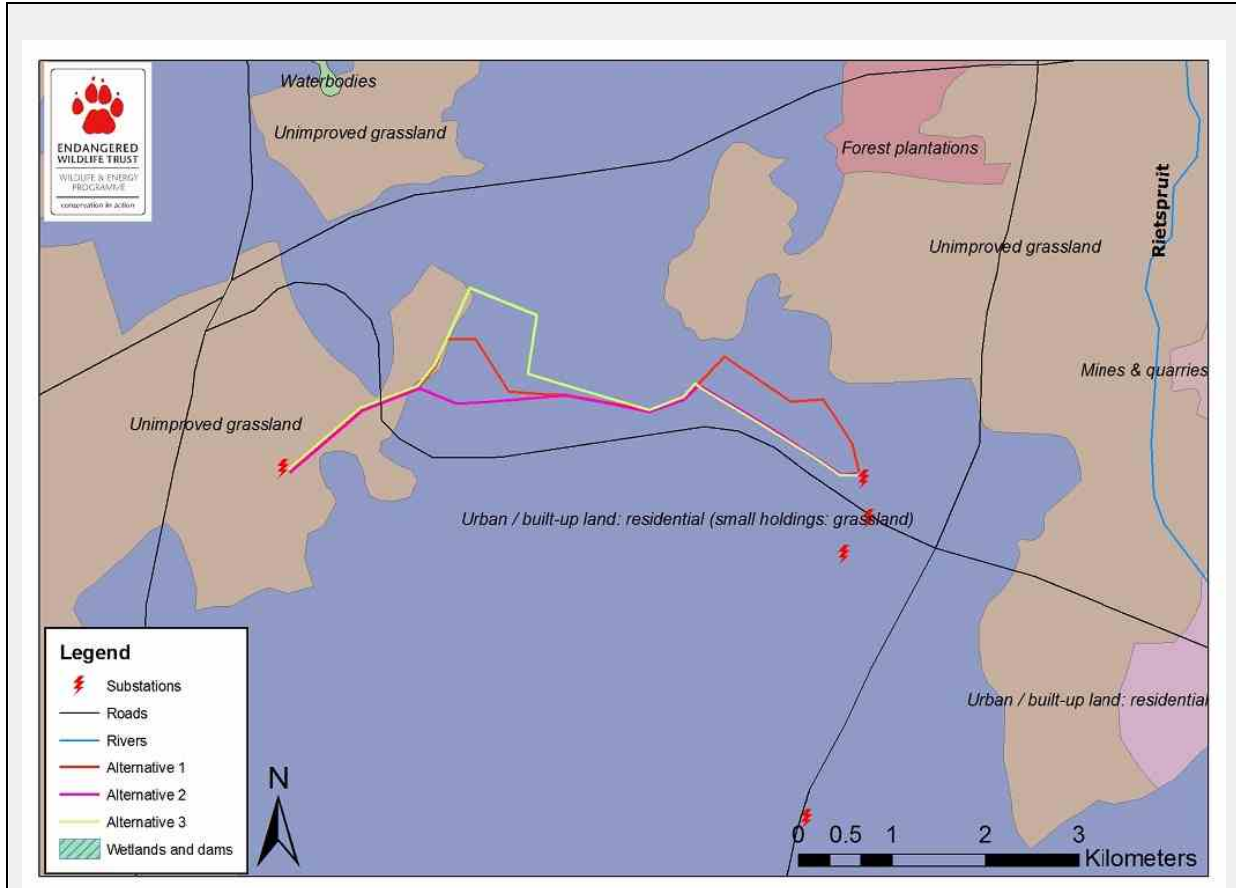


Figure 12. EWT Landuse

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:

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:

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

Critical Biodiversity Area (as per provincial conservation plan)	YES ✓	NO
Core area of a protected area?	YES	NO ✓
Buffer area of a protected area?	YES	NO ✓
Planned expansion area of an existing protected area?	YES	NO ✓
Existing offset area associated with a previous Environmental Authorisation?	YES	NO ✓

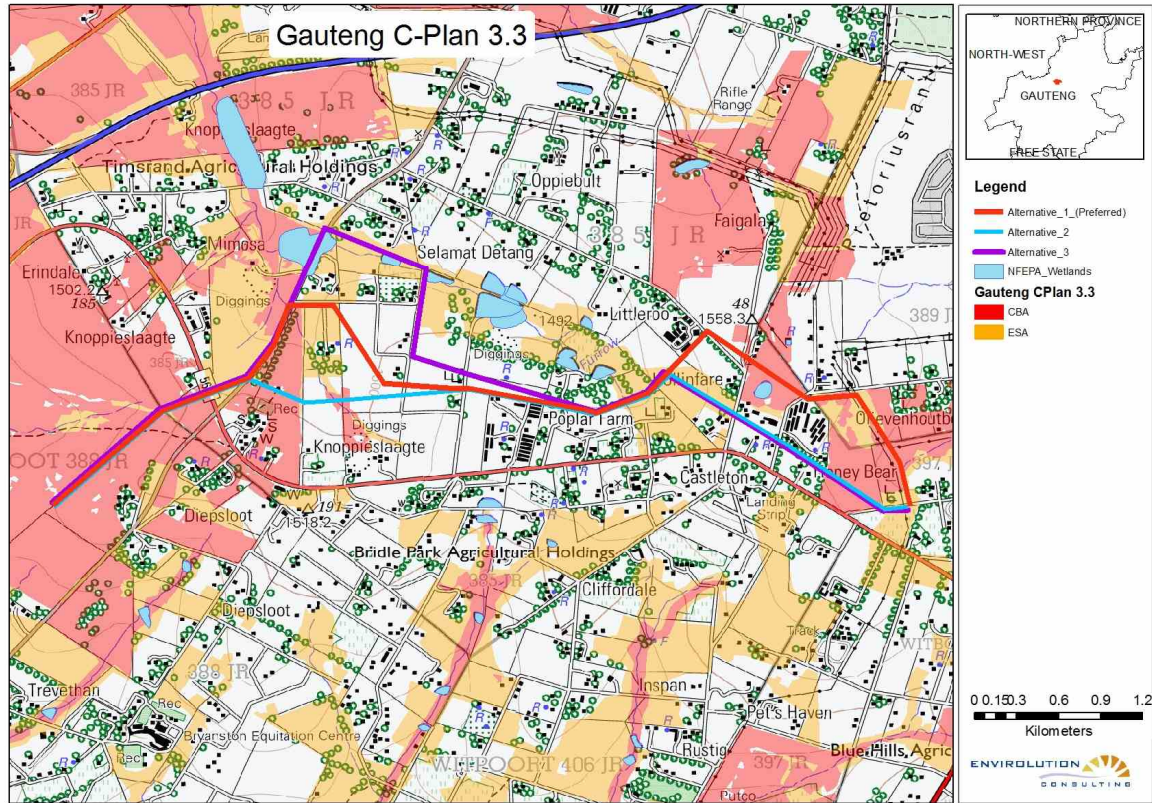
# BASIC ASSESSMENT REPORT

Buffer area of the SKA?

YES

NO ✓

The proposed route alternatives do traverse areas considered to be Critical Biodiversity Areas and Ecological Support Areas as indicated in the Gauteng C-Plan 3.3. See Figure 13. C-Plan 3.3



**Figure 13. C-Plan 3.3**

The Vegetation Specialist report (Dimela, 2013) provides a summary of the route alternatives through the C-Plan area. See Table 3

**Table 3. Routes Alternatives in C-Plan Areas**

Route	C-plan
Client Preferred route	A sections run through ESA's associated with the riparian areas along the route. The Important areas are indicated to historically contain primary grassland and / or plant species that are protected within Gauteng (GDARD, 2011). The preferred route runs within an ESA and Important area, parallel to the non-perennial river (Figure 2).
Alternative 1	Section runs through Important areas and associated ESA's. The area is indicated to include primary grassland.
Alternative 2	Small sections run through an Important area and ESA's. This route traverses through the least of areas of conservation concern.

No protected areas as defined by the Protected Areas Act (Act 57 of 2002) are located in the study area. In addition no protected areas that have other statutory protection, other than the Protected Areas Act are found in the study area. No informal conservation areas such Private Nature Reserves as National Protected Area Expansion Strategy are located in the study area.



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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 ✓
Uncertain	

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:

Dr J van Schalkwyk, 2013 (Appendix D4) found that the study area falls within that zone usually located on the front edge of (city) urban-sprawl where the land previously used for agricultural use (only) have become subdivided into small holdings. What used to be a large single agricultural unit or farm now consists of tens of small properties. These units do not have their economic base in traditional agriculture but are sustained by a variety of land uses and economic activities with strong urban associations. This phenomenon happened in the past forty years. Therefore most of the built fabric, date from this period. The result was that any historic farmsteads older than 60 years that may have existed have either disappeared or have been 'upgraded'. The only real heritage sites known from the region are a number of smaller family cemeteries. Fortunately, **all of these are located well outside** the area of the proposed development

No sites, features or objects of cultural heritage significance were identified in the study area by Dr van Schalkwyk and he found that there would be no impact as a result of the proposed development. Therefore, from a heritage point of view he recommends that the proposed development can continue.

Will any building or structure older than 60 years be affected in any way?

YES	NO ✓
-----	------

Is it necessary to apply for a permit in terms of the National Heritage Resources Act, 1999 (Act 25 of 1999)?

YES	NO ✓
-----	------

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:

The 2011 Census data indicates the following:

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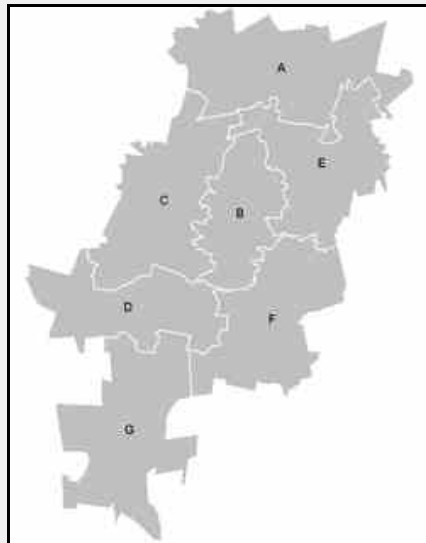
Ward	Employed	Unemployed
Johannesburg Ward 112	59.74%	2.99%
Johannesburg Ward 113	42.06%	16.00%
Tshwane Ward 48	39.20%	17.95%

Economic profile of local municipality:

### City of Johannesburg Metropolitan Municipality

The Social Impact Assessment conducted by Batho Earth, 2013 (Appendix D5) described that the City of Johannesburg Metropolitan Municipality covers an area of 1,645 square kilometres stretching from Orange Farm in the south to Midrand in the north. It manages the local governance of Johannesburg, and is divided into several branches and departments in order to expedite services for the city.

Seven regions have been established which are operationally responsible for the delivery of health care, housing, sports and recreation, libraries, social development, and other local community-based services.



**Figure 14. Johannesburg Metropolitan Municipality**

A section of the study area for the distribution line is situated in Region A (See **Figure 14**), with Diepsloot and Midrand being the two major nodes. Region A is the northern gateway to the city, combining urban and rural living. The western part of the region is characterised by open spaces and is predominantly made up of agricultural holdings and large tracts of undeveloped land, which can be clearly seen in the affected Crowthorn study area.

Region A borders Centurion (part of the Tshwane Metropolitan Municipality) to the north and Mogale City (Krugersdorp) to the west. To the east is the township of Tembisa, part of the Ekurhuleni Metropolitan Municipality and on the south it borders Alexandra, Sandton, Randburg and Roodepoort. Settled areas include Beaulieu Country Estate, Blue Hills Country and Equestrian Estate, Dainfern, Farmall, Fourways Gardens, Bloubosrand, Cedar Lakes and Chartwell at the upper end of the socio-

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economic spectrum, and informal settlements such as Diepsloot at the lower end. Other informally settled areas include Riverbend and Zevenfontein.

Commercial interests are concentrated in Kya Sands, Lanseria and Fourways. Lanseria Airport also forms part of Region A. The eastern part of the region is characterised by townhouse developments and cluster villages, as well as large agricultural holdings. The western part of the region consists of many agricultural holdings and farms, though there has been an increase in business and industrial nodes, as well as formal and informal residential areas.

Within Region A there are still plenty of developmental opportunities to offer investors and with easy access to the Johannesburg inner city, the West Rand, Pretoria central business district and Ekurhuleni. Region A is thus ideally placed for metropolitan economic development. The eastern half of the region includes the fast-growing Midrand central business district, home of one of the city's prime conferencing sites, Gallagher Estate, the seat of the Pan African Parliament and Grand Central Airport. Midrand also offers residents many recently developed areas such as Vorna Valley, Glen Austin, Halfway Gardens, Halfway House Estate and Kyalami. Two substantial townships, Ebony Park and Ivory Park, are situated on the region's western and eastern borders ( Batho Earth, 2013).

### **City of Tshwane Metropolitan Municipality**

The City of Tshwane Metropolitan Municipality (also known as the City of Tshwane) is a metropolitan municipality that forms the local government of northern Gauteng Province, South Africa and includes the city of Pretoria. The Metsweding District Municipality was incorporated into the City of Tshwane Metropolitan Municipality with effect from 18 May 2011 (the date of the 2011 municipal elections). The municipality also controversially sought to incorporate Midrand, which is part of the City of Johannesburg Metropolitan Municipality to offset the costs of absorbing Metsweding, amid a financial crisis in the City of Tshwane Metropolitan Municipality. This is with specific reference to the study area which falls under both Midrand and Centurion. The City of Tshwane Metropolitan Municipality's land area increased from 2,198 km<sup>2</sup> in 2010 to 6,368 km<sup>2</sup> after the incorporation of Metsweding.

	No income	R 800	R 6 400	R 25 600	R 51 200	R 102 400	R 204 800
Johannesburg Ward 112	26.53	0.71	4.34	15.90	13.55	5.70	1.27
Johannesburg Ward 113	40.74	3.03	7.29	0.36	0.12	0.02	0.02
Tshwane Ward 48	40.77	3.20	7.50	1.07	0.58	0.27	0.12

Level of education:

While the formal residential areas in the region (Johannesburg and Tshwane) are home to prosperous and well-educated residents, most of the people living in the townships and informal settlements are poor, with low levels of school education.

### **b) Socio-economic value of the activity**

What is the expected capital value of the activity on completion?

R

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What is the expected yearly income that will be generated by or as a result of the activity?	R	
Will the activity contribute to service infrastructure?	YES✓	NO
Is the activity a public amenity?	YES✓	NO
How many new employment opportunities will be created in the development and construction phase of the activity/ies?	UNKNOWN	
What is the expected value of the employment opportunities during the development and construction phase?	R	
What percentage of this will accrue to previously disadvantaged individuals?	%	
How many permanent new employment opportunities will be created during the operational phase of the activity?	UNKNOWN	
What is the expected current value of the employment opportunities during the first 10 years?	R	
What percentage of this will accrue to previously disadvantaged individuals?	%	

**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](mailto: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)✓	Ecological Support Area (ESA) ✓	Other Natural Area (ONA)	No Natural Area Remaining (NNR)	CBA: Gauteng C-Plan 3.3 Orange list plants occur in area, Primary vegetation occurs.
				ESA: Gauteng C-Plan 3.3 Orange list plants occur in area, Primary vegetation occurs

**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).



**BASIC ASSESSMENT REPORT**

Natural	40%	
Near Natural (includes areas with low to moderate level of alien invasive plants)	30%	Areas transformed to residential estates with alien lawn such as kikuyu.
Degraded (includes areas heavily invaded by alien plants)	15%	Pastures and equestrian facilities
Transformed (includes cultivation, dams, urban, plantation, roads, etc)	15%	Housing and hardened surfaces such as driveways and roads

--

**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						
<b>Ecosystem threat status as per the National Environmental Management: Biodiversity Act (Act No. 10 of 2004)</b>	Critical	Wetland (including rivers, depressions, channelled and unchannelled wetlands, flats, seeps pans, and artificial wetlands)			Estuary		Coastline	
	Endangered ✓							
	Vulnerable							
	Least Threatened							
		YES✓	NO	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)**

**AVIFAUNA**

Numerous microhabitats were identified by the Endangered Wildlife Trust, 2013 (Appendix D1) in the broader area which may attract various bird species, with grassland patches, agricultural land, dams and wetlands being areas present on site, most likely to attract sensitive species. The South African Bird Atlas Project data (SABAP1) recorded a total of 20 Red Data species comprising nine Vulnerable and eleven Near-threatened. The white Stork and Abdim's Stork, which are not listed, but are protected internationally through the Bonn Convention on Migratory species, were also recorded. SABAP 2 data for the study area was also examined, and it was found that 14 of the 20 red-listed

species recorded in SABAP1, had not been recorded by SABAP2, while one additional relevant red listed species (African Open-bill) had been recorded. Following a site visit, and examination of all available data, the following species were identified as Focal Species for this study: Cape Vulture, African Grass Owl, Blue Crane, Secretarybird, Northern Black Korhaan, Melodious Lark and White Stork.

The Endangered Wildlife Trust (EWT, 2013) specialist study determined that in general the site has a moderate sensitivity in terms of avifauna, based on the occurrence of a number of listed species in the study area, as well as the various micro-habitats available to avifauna. In terms of collision, the sensitivity appears medium, in terms of electrocution, the area has a low sensitivity.

Two sensitivity zones are therefore identified, and depicted in Figure 15 below:

- The numerous dams located along Alignment 3 are classified as Medium-High Sensitivity. Within these areas, it is recommended that construction of the power line be avoided.
- All remaining areas on the site are classed as Low-Medium Sensitivity. At this stage, the grassland patches will require mitigation in the form of line marking.

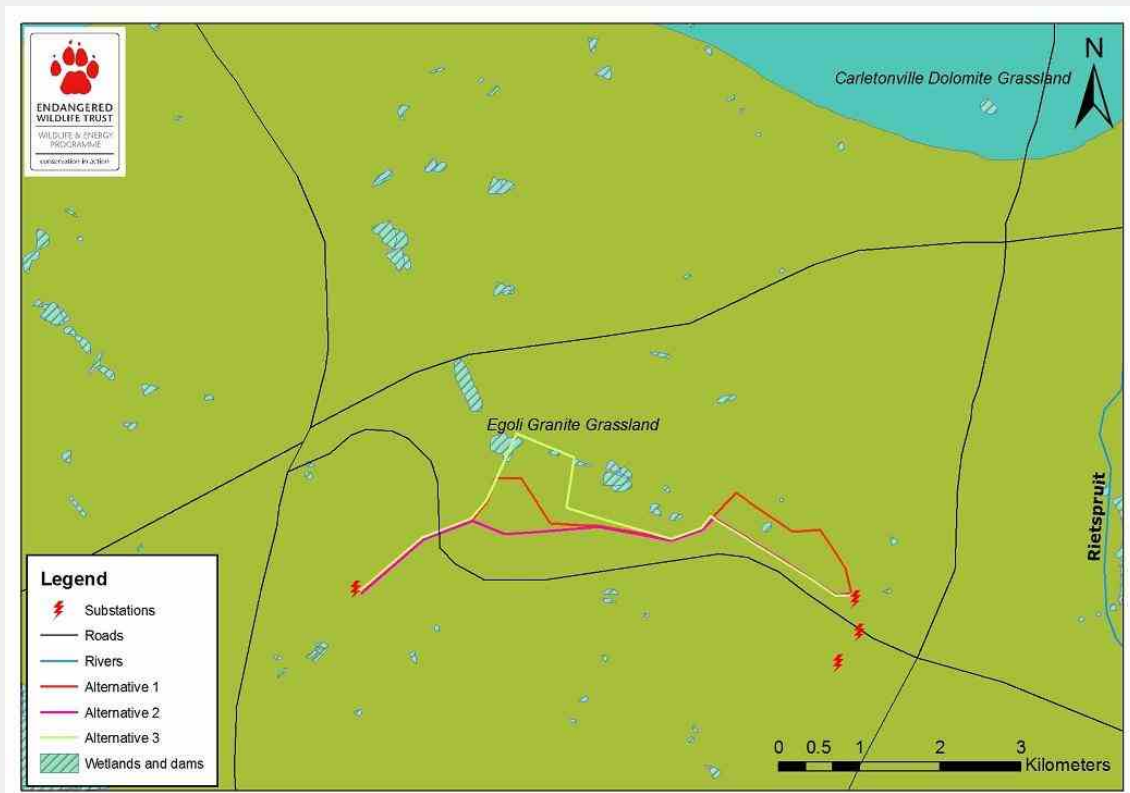


Figure 15. Avifauna Sensitivity

## FAUNA

The Fauna Assessment by CEMS, 2013 (Appendix D2) describes that of the amphibian species expected to occur in the study area, only the African Bullfrog / Giant Bullfrog (*Pyxicephalus*

adpersus) is listed as Near Threatened by Minter et al. (2004) and the Animal Demographic Unit (2013). The Giant Bullfrog is listed as Least Concern on a global level and Near Threatened in South Africa. This frog species spends most of its life underground aestivating (dormant) and emerges after heavy rainfall to begin breeding for approximately a month (Channing, 2001). When breeding is completed the adults and juveniles will migrate up to 150m from the breeding site to find suitable aestivation sites where they will burrow into the ground and wait for favourable conditions. The Giant Bullfrog is therefore most vulnerable during its long dormant phase when they are undetected and harmed during construction works or when breeding habitat is lost due to development.

**Table 4. Possible Construction Phase Impacts**

Possible Impacts	Source of Impact
Loss of faunal habitat / Fragmentation	Vegetation clearance and Grading resulting in fragmentation and alteration of existing habitat
Faunal disturbance	Construction activities (noise); Personnel on site
Persecution/ Hunting	Personnel on site

## FLORA

### Egoli Granite Grassland (Endangered) Vegetation Type

The specialist study by Dimela Eco Consulting (2013) found that although the study area falls within the endangered Egoli Granite Grassland vegetation type. This vegetation type is threatened by urbanisation and development in Gauteng, and therefore primary vegetation that remains is of high conservation value. However, the study found that the grassland along the proposed routes and at the substation alternatives comprised secondary grassland dominated by the grass *Hyparrhenia hirta*. This secondary grassland typically results from prolonged disturbances (e.g. historic cultivation) within Egoli Granite grassland and it is unlikely that grassland will reach the climax state again.

The declining *Eucomis autumnalis* and *Hypoxis hemerocallidea* were observed within seepage areas along the proposed route alignments as well as the provincially protected orchids *Habenaria nyikana* and *H. Filicornis*. The provincially protected *Gladiolus vinosomaculatus* was observed to occur in proximity to the Alternative 1 route

**SECTION C: PUBLIC PARTICIPATION**

**1. ADVERTISEMENT AND NOTICE**

<b>Publication name</b>	Fourways Review	
<b>Date published</b>	20 March 2013 and 31 August 2013	
<b>Site notice position</b>	<b>Latitude</b>	<b>Longitude</b>
	<b>Date placed</b>	Site Notices were placed on 20 <sup>th</sup> March 2013

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 54(2)(e) and 54(7) of GN R.543.

Key stakeholders (other than organs of state) identified in terms of Regulation 54(2)(b) of GN R.543:

<b>Title, Name and Surname</b>	<b>Affiliation/ key stakeholder status</b>	<b>Contact details (tel number or e-mail address)</b>
Mr Vusumzi Joseph Godlo	Tshwane Ward 48 Councillor	0796960471
Leverne Monique Young	Johannesburg Ward 112 Councillor	leverne@ward112.co.za
Dorah Mogano	Johannesburg Ward 113 Councillor	079 696 0139

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**

Summary of main issues raised by I&APs	Summary of response from EAP

**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.

**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

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.

**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, 2010, 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.

Activity	Impact summary	Significance	Proposed mitigation
<b>Alternative 1 (preferred alternative)</b>			
Impacts on Agriculture	<b>Direct impacts:</b> Loss of high potential agricultural land.	Low	No infrastructure to be placed in high potential agricultural land.
	<b>Indirect impacts:</b> Loss of grazing	Low	No mitigation proposed
	<b>Cumulative impacts:</b> Loss of viable agriculture units	Low	No mitigation proposed
Impacts on Avifauna	<b>Direct impacts:</b> Disturbance and habitat destruction	Medium	Strict control should be maintained over all activities during construction, in particular heavy machinery and vehicle movements, and staff. Ensure that the construction Environmental Management Plan is adhered to.
	<b>Indirect impacts:</b> Potential impact on breeding raptors	Medium	Ensure that bird flappers are installed where required.
	<b>Cumulative impacts:</b> Preferred route alternative is located away from potential avifaunal habitat. No significant cumulative impacts anticipated	Low	Ensure that bird flappers are installed where required.
Impacts on Aquatic Habitats	<b>Direct impacts:</b> No direct Impacts anticipated.	Low	Limit towers to be placed in wetlands and buffers
	<b>Indirect impacts:</b> None	Low	Limit towers to be placed in

BASIC ASSESSMENT REPORT

Activity	Impact summary	Significance	Proposed mitigation
	anticipated		wetlands and buffers
	<b>Cumulative impacts:</b> None anticipated	Low	Limit towers to be placed in wetlands and buffers
Impacts on Fauna	<b>Direct impacts:</b> Potential Loss of fauna such as bullfrogs	Low	Ensure that limited amount of towers are placed in wetland
	<b>Indirect impacts:</b>	Low	Ensure that limited amount of towers are placed in wetland
	<b>Cumulative impacts:</b>	Low	Ensure that limited amount of towers are placed in wetland
Impacts on Flora	<b>Direct impacts:</b> Loss of endangered and protected plants. Erosion, and spread of alien invasive plants.	Medium	Search and rescue of protected plants where possible. During construction a search and rescue exercise must be undertaken. If any protected species are to be removed, a permit must be
	<b>Indirect impacts:</b> Potential loss of protected species and associated habitat.		As for Direct Impacts
	<b>Cumulative impacts:</b> Potential loss of protected species and associated habitat.		As for Direct Impacts
Geotechnical Impacts	<b>Direct impacts:</b> None anticipated	Low	None anticipated
	<b>Indirect impacts:</b> None anticipated	Low	None anticipated
	<b>Cumulative impacts:</b> None anticipated	Low	None anticipated
Impacts on Heritage Resources	<b>Direct impacts:</b> No heritage resources identified in proposed route alternatives	Low	No heritage resources identified. However if any resources are found during excavations, the EMPr provides guidance
	<b>Indirect impacts:</b> No heritage resources identified in proposed route alternatives	Low	No heritage resources identified. However if any resources are found during excavations, the EMPr provides guidance
	<b>Cumulative impacts:</b> No heritage resources identified in proposed route alternatives	Low	No heritage resources identified. However if any resources are found during excavations, the EMPr provides guidance
Social	<b>Direct impacts:</b> Inflow of	Low	See detailed mitigation



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Activity	Impact summary	Significance	Proposed mitigation
Impacts	Jobseekers, Impact on Daily Living and Movement Patterns, Impact on land use and future developments, Impact on Sense of Place, Impact on Tourism		measures in Appendix F
	<b>Indirect impacts:</b> Inflow of Jobseekers, Impact on Daily Living and Movement Patterns, Impact on land use and future developments, Impact on Sense of Place, Impact on Tourism	Low	See detailed mitigation measures in Appendix F
	<b>Cumulative impacts:</b> Inflow of Jobseekers, Impact on Daily Living and Movement Patterns, Impact on land use and future developments, Impact on Sense of Place, Impact on Tourism	Low	See detailed mitigation measures in Appendix F
Visual Impacts	<b>Direct impacts:</b>	Low	
	<b>Indirect impacts:</b>	Low	
	<b>Cumulative impacts:</b>	Low	
Activity	Impact summary	Significance	Proposed mitigation
<b>Construction Phase</b>			
<b>Alternative 2</b>			
Impacts on Agriculture	<b>Direct impacts:</b> Loss of high potential agricultural land.	Low	No infrastructure to be placed in high potential agricultural land.
	<b>Indirect impacts:</b> Loss of grazing	Low	
	<b>Cumulative impacts:</b> Loss of viable agriculture units	Low	
Impacts on Avifauna	<b>Direct impacts:</b> Disturbance and habitat destruction	Medium	Strict control should be maintained over all activities during construction, in particular heavy machinery and vehicle movements, and staff. Ensure that the construction Environmental Management Plan is adhered to.
	<b>Indirect impacts:</b> Potential impact on breeding birds	Medium	
	<b>Cumulative impacts:</b> Preferred route alternative is located away from potential avifaunal habitat. No	Medium	

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Activity	Impact summary	Significance	Proposed mitigation
	significant cumulative impacts anticipated		
Impacts on Aquatic Habitats	<b>Direct impacts:</b> No direct Impacts anticipated.	Low	Limit towers to be placed in wetlands and buffers
	<b>Indirect impacts:</b> None anticipated	Low	Limit towers to be placed in wetlands and buffers
	<b>Cumulative impacts:</b> None anticipated	Low	Limit towers to be placed in wetlands and buffers
Impacts on Fauna	<b>Direct impacts:</b> Potential Loss of fauna such as bullfrogs	Low	Ensure that limited amount of towers are placed in wetland
	<b>Indirect impacts:</b>	Low	Ensure that limited amount of towers are placed in wetland
	<b>Cumulative impacts:</b>	Low	Ensure that limited amount of towers are placed in wetland
Impacts on Flora	<b>Direct impacts:</b> Loss of endangered and protected plants. Erosion, and spread of alien invasive plants.	Medium	Search and rescue of protected plants where possible. A few protected species occur in the area If any protected species are to be cut or removed, a permit must be obtained
	<b>Indirect impacts:</b> Potential loss of protected species and associated habitat.		As for Direct Impacts
	<b>Cumulative impacts:</b> Potential loss of protected species and associated habitat.		As for Direct Impacts
Geotechnical Impacts	<b>Direct impacts:</b> None anticipated	Low	None anticipated
	<b>Indirect impacts:</b> None anticipated	Low	None anticipated
	<b>Cumulative impacts:</b> None anticipated	Low	None anticipated
Impacts on Heritage Resources	<b>Direct impacts:</b> No heritage resources identified in proposed route alternatives	Low	No heritage resources identified. However if any resources are found during excavations, the EMPr provides guidance
	<b>Indirect impacts:</b> No heritage resources identified in proposed route alternatives	Low	No heritage resources identified. However if any resources are found during excavations, the EMPr

BASIC ASSESSMENT REPORT

Activity	Impact summary	Significance	Proposed mitigation
			provides guidance
	<b>Cumulative impacts:</b> No heritage resources identified in proposed route alternatives	Low	No heritage resources identified. However if any resources are found during excavations, the EMPr provides guidance
Social Impacts	<b>Direct impacts:</b> Inflow of Jobseekers, Impact on Daily Living and Movement Patterns, Impact on land use and future developments, Impact on Sense of Place, Impact on Tourism	Low	See detailed mitigation measures in Appendix F
	<b>Indirect impacts:</b> Inflow of Jobseekers, Impact on Daily Living and Movement Patterns, Impact on land use and future developments, Impact on Sense of Place, Impact on Tourism	Low	See detailed mitigation measures in Appendix F
	<b>Cumulative impacts:</b> Inflow of Jobseekers, Impact on Daily Living and Movement Patterns, Impact on land use and future developments, Impact on Sense of Place, Impact on Tourism	Low	See detailed mitigation measures in Appendix F
Visual Impacts	<b>Direct impacts:</b>	Low	
	<b>Indirect impacts:</b>	Low	
	<b>Cumulative impacts:</b>	Low	
<b>No-go option</b>			
	<b>Direct impacts:</b>		
	<b>Indirect impacts:</b>		
	<b>Cumulative impacts:</b>		

A complete impact assessment in terms of Regulation 22(2)(i) of GN R.543 must be included as Appendix F.

## 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.

**Alternative A (1) (preferred alternative)**

**AVIFAUNA**

The EWT (2013) concluded that the proposed project can be built provided that the various mitigation measures recommended in this report are implemented. From an avifaunal perspective, route alternative 2, is slightly more preferred over alternative 1, while route alternative 3 is least preferred. For Blue Hills Substation, the proposed substation alternative is preferred due to the fact that it is located very close to an existing power line and the Minerva substation. Alternative 1 may also be suitable because of its location adjacent to the 562 road, while alternative 2 is least preferred.

**FAUNA**

CEMS (2013) states that 3 route alternatives have been considered for the proposed Diepsloot Overhead Power line as shown in Figure 1. The preferred alternative is not considered suitable with regards to fauna as it runs through two large wetland areas in the Olievenhoutbos area as well as crossing two rivers along its route. These areas are considered as high ecological areas due to their possibility of supporting the near threatened African Bullfrog as well as other fauna assemblages either with roosting, foraging or breeding sites. Similarly, alternative 3 is also considered unsuitable as it crosses rivers and ecologically important wetland areas. Alternative 2 is considered the most suitable as it does not cross any wetlands, rather running alongside them and although it does cross a river in two places the pylons can be positioned on either side of the watercourse. The section of the route close to Diepsloot East Substation which runs in close proximity to the "Diepsloot" wetland is not a concern as this wetland is highly degraded and is likely to only support opportunistic fauna assemblages that are likely to be considered pests. .

With regards to the substation alternatives, any of the three alternatives are considered suitable from a fauna perspective and are not expected to impact the fauna assemblages regardless of the chosen position

**HERITAGE**

The heritage specialist report by Dr J van Schalkwyk states that the whole region was subjected to urbanization and industrial activities, which would have destroyed any pre-colonial or early colonial heritage features that might have occurred here in the past. The only heritage sites known from the region are a number of small family cemeteries, all of these are located well outside the area of the proposed development.

As no sites, features or objects of cultural heritage significance have been identified in the study area, there would be no impact as a result of the proposed development. Therefore, from a heritage point of view we recommend that the proposed development can continue. We also recommend that if archaeological sites or graves are exposed during development activities, it should immediately be reported to a museum, preferably one at which an archaeologist is available, so that an investigation and evaluation of the finds can be made.

**SOCIAL**

From a social perspective no negative impacts are foreseen with regards to the last section of the distribution line alignment. All three Alternative corridors run parallel to the proposed Diepsloot East Substation. This section of the farm Diepsloot 388 JR is uninhabited and as far as it known, not used

for any specific agricultural use.

Alternative 1 (Preferred Route) indicated in red on the map is the preferred alignment although the possible negative impacts on sensitive areas, as indicated in the report, should be attended to.

Alternative 2 (indicated in blue on the map) can be pursued even though the impact on dwellings and the residents' quality of life seems to be more than with Alternative 1. Should this option be preferred by other specialist studies, rerouting to avoid traversing the Northview Country Estate should be undertaken.

Alternative 3 (indicated in purple on the map) can be pursued even though the impact on dwellings and the residents' quality of life seems to be more than with Alternative 1. Should this option be preferred by other specialist studies, rerouting to avoid traversing a dwelling situated in the north-eastern section of the study area (where Alternative 3 passes some dams and link in with the Knoppieslaagte/Mnandi Road), should be implemented.

### Substation Alternatives

From a social perspective the Proposed Substation location (red on map) is not preferred due to the proximity of this site to the dwelling and property situated directly to the east of the site. The visual and intrusion impacts are of concern, as well as the negative impact on the property value.

Substation Alternative 1 (Blue) can be pursued. It is however recommended that visual screening (e.g. trees) be implemented to limit the negative visual impact from Summit Road and Village Road. This would also ensure that the visual impact on the property and dwelling to the north of Summit Road, as well as the dwellings to the south of the site would be mitigated.

Substation Alternative 2 (Purple) is not recommended to be implemented due to the possible relocation of dwellings and the proximity of other dwellings and the Blue Hills College. The intrusion on the sense of place is further regarded to be high.

### VEGETATION

Dimela Eco consulting (2013) found that no primary grassland (Egoli Granite Grassland) persists along the proposed route alignments. The vegetation comprised of secondary, *Hyparrhenia hirta* dominated grassland with a medium to low species diversity. However, the grasslands did provide habitat to the provincially protected *Gladiolus vinosomaculatus* and included moist grasslands wherein the Declining *Hypoxis hemerocallidea* and *Eucomis autumnalis* were recorded. Furthermore, provincially protected orchid species (*Habenaria* species) were also recorded in the moist grassland. Therefore, although no primary vegetation was observed to occur, some local sensitivities does exist.

This report found that from a vegetation perspective, the routes and substation alternatives presented more or less the same sensitivities. It is however recommended that Alternative 1 route and substation Alternative 2 or 3 be considered for the development. It is also suggested to combine the western extent of Alternative 2, with the eastern extent of Alternative 1 to limit impact on *Habenaria* species that are unlikely to survive trampling and translocation.

### VISUAL IMPACT ASSESSMENT

#### Overhead distribution line alternatives.

The Visual Impact Assessment conducted by iScape (2013) found that all three alternative routes are very similar in the impacts they cause due to the fact that they follow more or less the same route with

minor deviations. Alternative 1 (proposed route) is however more preferred than the other two alternatives. The main reason is that it is considered to impact on the least number of highly sensitive viewers (residents) as it follows a path through areas where no or very few residents live within the ZMVE. Also it stays clear of the main roads (R562) for the majority of the way besides the first section from the Diepsloot East Substation site to where it turns east from Mnandi Road which is a similar alignment to the other two alternatives. It is also regarded more acceptable if a new power line shares a parallel servitude with an existing power line as is the case in the section of the route between Minerva Substation and the proposed Blue Hills Substation site.

Alternative 2 is the second choice. It traverses Northview Country Estate which is considered a residential cluster in the context of the study area. Although still regarded as small holdings this estate occupies more residents on a smaller property than anywhere along the routes. In addition, a 1 km section of Alternative 2 is within 200 m from the R562. The R562 are considered a high traffic volume road and the risk of increased viewer incidence exists, although motorists are considered receptors of a low sensitivity.

Alternative 3 is the least preferred option. A section of the route is located within the Swartbooispruit valley which is considered an area of high scenic value due to the presence of a few small water bodies and the associated natural character. Also, properties along the stream enjoy views unto the shallow valley which increases the number of residents that will be affected by this route. The remainder of the route are similar than Alternative 2 and has the same risks as discussed in the previous paragraph.

Substations: The proposed Blue Hills Substation site is the most preferred of the three options given. The site is somewhat out of sight due to its low laying location and the presence of some vegetation in the vicinity of the site. A very low number of sensitive receptors will be affected and mitigation in the form of additional screen planting can be very effective. One of the main reasons for rating this site most preferred is the fact that the other two sites are located on the opposite side of the R562 which implies that the overhead power lines will have to cross the road and not only will the distance of the power lines increase but also the viewer incidence, due to the high traffic volumes on this road.

### **WETLAND and AQUATIC**

The assessment found that no riparian areas were present along the proposed route alignments. A number of wetlands were found along the proposed routes; Two (2) Hillslope Seepage wetlands, One (1) Pan and Seepage wetland and two (2) Unchannelled Valley Bottom with Seepage were found. Although the surveyed wetlands offered a number of direct human benefits most of the wetlands have been greatly transformed by various anthropogenic activities and large areas of these wetlands have been completely transformed and offer limited functionality. However, the more intact areas were observed to still perform the important functions of sediment trapping and erosion control

#### **Overhead distribution line alternatives.**

Although all of the proposed lines cross the same amount of wetland areas, the length of the proposed route alignments associated with each route alternative differs. The Proposed route extends approximately 4.25Km within wetland areas, Alternative 2 extends approximately 4.77Km within wetland areas and Alternative 1 extends the shortest distance within the wetlands with an approximate total of 3.77Km and is therefore preferred in terms of wetland ecology.

None of the proposed routes follows existing roads or servitudes for any significant distance. Alternative 2 runs parallel to a large part of a wetland system that remains more natural than the rest of the area and is thus not a preferred alternative due to the expected change to surface flow associated with the powerline infrastructure and access roads.

**Substation Alternatives**

The Proposed Substation does not occur within 500m of any wetland area while Alternative substation 1 comes within 500m of a wetland system and Alternative Substation 2 is located within a wetland. The proposed Substation is thus the preferred option as it is least likely to have a negative effect on the wetland systems in the area.

**Alternative B (2)**

**Alternative C (3)**

**No-go alternative (compulsory)**

The No-go option implies that the project does not proceed, and Eskom does not go ahead with the construction of the 132 kV overhead power line. The project is part of Eskom's implementation of a Master Plan for the extension of electrical infrastructure for the broader area that includes Oliewenhoutbos, The Reeds, Rooihuiskraal, Samrand Business Park, Ranjesfontein and Doornkloof.

The implications of No-go alternative include:

- The is no change to current landscape;
- There will not be sufficient electricity for existing and new users in the broader area between Blue Hills, Oliewenhoutbos, Centurion and Olifantsfontein;
- Electricity supply will not be reliable and this can result in blackouts and major disturbances in energy provision to existing users;
- Future development in the broader area between Blue Hills, Oliewenhoutbos, Centurion and Olifantsfontein will be constrained;
- Proposed objectives of Provincial and Metropolitan Municipality planning initiatives such as IDP's, SDF,s and Johannesburg Growth Management Strategy will not be achieved.

The No-go option would not solve the current demand for electricity and will constrain the economic environment for the broader area between Blue Hills, Centurion, Olifantsfontein and Oliewenhoutbos.

**SECTION E: RECOMMENDATIONS 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)?

<b>YES✓</b>	<b>NO</b>
-------------	-----------

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).

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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.

The preferred alternative for the 132kV overhead line is Alternative 1. Most specialist studies recommended this alternative. It is located adjacent to the existing 275kV transmission from Minerva MTS for approximately 1200 metres. Mitigation measures contained in the draft EMPr must be implemented
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Is an EMPr attached?

<b>YES✓</b>	<b>NO</b>
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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.

\_\_\_\_\_  
NAME OF EAP

\_\_\_\_\_  
SIGNATURE OF EAP

\_\_\_\_\_  
DATE



**SECTION F: APPENDICES**

**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**

