

Eskom Boynton Project
DEA Ref nr 14/12/16/3/3/1/497
NEAS Ref DEA/EIA/0001056/2012
Draft Basic Assessment Report
Executive Summary

1. Background

Texture Environmental Consultants (the Environmental Assessment Practitioner) has been commissioned to undertake an Environmental Impact Assessment for the following project.

The Eskom Boynton Project entails the following:

- Identification of potential alternative corridor routes for a 13.29km 132kV kingbird power line between the existing Lebowakgomo substation to the new Dithabaneng substation;
- Identification of potential alternative corridor routes for a 8.67km 132kV kingbird power line from the Dithabaneng substation to the new Dwaalkop substation;
- Identification of a potential alternative corridor route for a 1.2km 132kV loop-in-loop-out (lilo) line from the Middelpunt-Dithabaneng 132kV line to the proposed Boynton substation;
- The project involves identification of a 100m corridor within which Eskom would be able to locate a 31m servitude for the powerline between Lebowakgomo substation and Dwaalkop substation, and of 52 metres wide for the lilo line to Boynton substation. The servitude is required for maintenance purposes.
- Identification of a site for the establishment of a 2X10MVA 132/22kV Boynton Substation with 4X 22kV feeder bays on a terrain of 200x200m;
- Identification of potential corridors to construct an access/ construction road of 8 meters wide for the line and substation.

The applicant for this project is Eskom Distribution, Limpopo Operating Unit.

1.1 Locality and Regional Context

Eskom intends to construct various new 132 kV power lines, and a substation in the Lebowakgomo and Chuniespoort area in the Limpopo Province of South Africa. The proposed development area is situated approximately fifty kilometres to the east of Mokopane (Potgietersrus) and running to the north and to the east of Lebowakgomo, previous capital of the Lebowa homeland. The Chuniespoort and Strydpoort mountains are to the north. The Tudumo/Chunies River runs in a north-south direction.

The project is discussed as follows:

- **Section 1:** The new 132kV power line between the existing Lebowakgomo substation and the new Dithabaneng substation.
- **Section 2:** The new 132kV power line between the Dithabaneng substation and the new Dwaalkop substation.
- **Section 3:** The 132kV Loop-in-Loop-out (LiLo) line from the Middelpunt- Dithabaneng 132kV line to the proposed Boynton substation.

The **affected properties** for the project are the farms Voorspoed 458 KS (Remainder), Rooiboklaagte 112 KS Ptn 0, Voorspoed 458 KS (Ptns 11, 15, 16, 23, 17, 9 and 4), Locatie van Mphahlele 457 KS (Remainder) in the Lepelle-Nkumpi Local Municipality in the Limpopo Province.

The study area is situated on the 1:50 000 topographical base maps 2429AD & 2429BC.

(Refer to Appendices A1-A7 of the BAR for copies of the Locality map and the route maps). The proposed alternatives for the project are found at approximately:

Section 1: Lebowa Substation to Dithabaneng Substation

Lebowa Substation:

Longitude (Degrees Decimal Minutes)	Latitude (Degrees Decimal Minutes)
29° 27.838' E	24° 16.751' S

Dithabaneng Substation:

Longitude (Degrees Decimal Minutes)	Latitude (Degrees Decimal Minutes)
29° 33.803' E	24° 18.970' S

Proposed Alternative 1 Route (13.29 km):

250m intervals	Longitude (Degrees Decimal Minutes)	Latitude (Degrees Decimal Minutes)
1	29° 27.847' E	24° 16.733' S
2	29° 27.863' E	24° 16.602' S
3	29° 28.011' E	24° 16.602' S
4	29° 28.097' E	24° 16.690' S
5	29° 28.159' E	24° 16.812' S
6	29° 28.306' E	24° 16.812' S
7	29° 28.454' E	24° 16.813' S
8	29° 28.585' E	24° 16.849' S
9	29° 28.685' E	24° 16.948' S
10	29° 28.786' E	24° 17.047' S
11	29° 28.887' E	24° 17.146' S
12	29° 28.999' E	24° 17.221' S
13	29° 29.146' E	24° 17.220' S
14	29° 29.294' E	24° 17.219' S
15	29° 29.442' E	24° 17.218' S
16	29° 29.589' E	24° 17.217' S
17	29° 29.736' E	24° 17.212' S
18	29° 29.875' E	24° 17.165' S
19	29° 30.014' E	24° 17.118' S
20	29° 30.116' E	24° 17.189' S
21	29° 30.207' E	24° 17.295' S
22	29° 30.303' E	24° 17.397' S
23	29° 30.436' E	24° 17.439' S
24	29° 30.584' E	24° 17.441' S
25	29° 30.732' E	24° 17.442' S
26	29° 30.823' E	24° 17.543' S
27	29° 30.908' E	24° 17.653' S
28	29° 31.022' E	24° 17.692' S
29	29° 31.165' E	24° 17.657' S
30	29° 31.307' E	24° 17.622' S
31	29° 31.450' E	24° 17.587' S
32	29° 31.593' E	24° 17.553' S
33	29° 31.736' E	24° 17.518' S
34	29° 31.878' E	24° 17.483' S
35	29° 32.021' E	24° 17.448' S
36	29° 32.164' E	24° 17.413' S
37	29° 32.307' E	24° 17.378' S
38	29° 32.449' E	24° 17.343' S
39	29° 32.569' E	24° 17.407' S
40	29° 32.684' E	24° 17.493' S
41	29° 32.798' E	24° 17.579' S
42	29° 32.913' E	24° 17.664' S
43	29° 33.027' E	24° 17.750' S
44	29° 33.142' E	24° 17.835' S
45	29° 33.256' E	24° 17.921' S
46	29° 33.371' E	24° 18.006' S
47	29° 33.485' E	24° 18.092' S
48	29° 33.551' E	24° 18.207' S
49	29° 33.592' E	24° 18.337' S
50	29° 33.671' E	24° 18.450' S
51	29° 33.758' E	24° 18.560' S

52	29° 33.786' E	24° 18.689' S
53	29° 33.797' E	24° 18.824' S

Proposed Alternative 2 Route (12.59 km):

250m intervals	Longitude (Degrees Decimal Minutes)	Latitude (Degrees Decimal Minutes)
1	29° 27.862' E	24° 16.711' S
2	29° 27.904' E	24° 16.641' S
3	29° 28.016' E	24° 16.730' S
4	29° 28.128' E	24° 16.818' S
5	29° 28.253' E	24° 16.891' S
6	29° 28.379' E	24° 16.961' S
7	29° 28.505' E	24° 17.031' S
8	29° 28.632' E	24° 17.101' S
9	29° 28.758' E	24° 17.171' S
10	29° 28.884' E	24° 17.242' S
11	29° 29.022' E	24° 17.282' S
12	29° 29.168' E	24° 17.297' S
13	29° 29.315' E	24° 17.311' S
14	29° 29.462' E	24° 17.326' S
15	29° 29.609' E	24° 17.341' S
16	29° 29.756' E	24° 17.355' S
17	29° 29.903' E	24° 17.370' S
18	29° 30.050' E	24° 17.385' S
19	29° 30.196' E	24° 17.401' S
20	29° 30.309' E	24° 17.488' S
21	29° 30.442' E	24° 17.531' S
22	29° 30.589' E	24° 17.539' S
23	29° 30.736' E	24° 17.547' S
24	29° 30.884' E	24° 17.556' S
25	29° 31.032' E	24° 17.564' S
26	29° 31.179' E	24° 17.572' S
27	29° 31.326' E	24° 17.581' S
28	29° 31.474' E	24° 17.589' S
29	29° 31.621' E	24° 17.597' S
30	29° 31.769' E	24° 17.606' S
31	29° 31.916' E	24° 17.614' S
32	29° 32.051' E	24° 17.572' S
33	29° 32.180' E	24° 17.505' S
34	29° 32.309' E	24° 17.439' S
35	29° 32.437' E	24° 17.372' S
36	29° 32.556' E	24° 17.409' S
37	29° 32.670' E	24° 17.495' S
38	29° 32.784' E	24° 17.581' S
39	29° 32.898' E	24° 17.667' S
40	29° 33.013' E	24° 17.753' S
41	29° 33.127' E	24° 17.839' S
42	29° 33.241' E	24° 17.925' S
43	29° 33.355' E	24° 18.011' S
44	29° 33.469' E	24° 18.097' S
45	29° 33.536' E	24° 18.212' S
46	29° 33.579' E	24° 18.342' S
47	29° 33.657' E	24° 18.455' S
48	29° 33.744' E	24° 18.565' S
49	29° 33.770' E	24° 18.694' S
50	29° 33.777' E	24° 18.829' S

Section 2: Dithabaneng Substation to Dwaalkop Substation

Dithabaneng Substation:

Longitude (Degrees Decimal Minutes)	Latitude (Degrees Decimal Minutes)
29° 33.803' E	24° 18.970' S

Dwaalkop Substation:

Longitude (Degrees Decimal Minutes)	Latitude (Degrees Decimal Minutes)
29° 30.664' E	24° 21.597' S

Proposed Alternative 1 Route (8.67 km):

250m intervals	Longitude (Degrees Decimal Minutes)	Latitude (Degrees Decimal Minutes)
1	29° 33.768' E	24° 19.102' S
2	29° 33.733' E	24° 19.233' S
3	29° 33.699' E	24° 19.365' S
4	29° 33.664' E	24° 19.497' S
5	29° 33.629' E	24° 19.628' S
6	29° 33.595' E	24° 19.760' S
7	29° 33.484' E	24° 19.827' S
8	29° 33.343' E	24° 19.867' S
9	29° 33.202' E	24° 19.908' S
10	29° 33.061' E	24° 19.948' S
11	29° 32.920' E	24° 19.989' S
12	29° 32.779' E	24° 20.029' S
13	29° 32.638' E	24° 20.070' S
14	29° 32.497' E	24° 20.110' S
15	29° 32.368' E	24° 20.163' S
16	29° 32.314' E	24° 20.289' S
17	29° 32.259' E	24° 20.415' S
18	29° 32.205' E	24° 20.541' S
19	29° 32.150' E	24° 20.666' S
20	29° 32.095' E	24° 20.792' S
21	29° 32.057' E	24° 20.918' S
22	29° 32.113' E	24° 21.043' S
23	29° 32.169' E	24° 21.169' S
24	29° 32.205' E	24° 21.285' S
25	29° 32.061' E	24° 21.314' S
26	29° 31.916' E	24° 21.343' S
27	29° 31.772' E	24° 21.373' S
28	29° 31.628' E	24° 21.402' S
29	29° 31.483' E	24° 21.431' S
30	29° 31.339' E	24° 21.461' S
31	29° 31.195' E	24° 21.490' S
32	29° 31.050' E	24° 21.519' S
33	29° 30.906' E	24° 21.548' S
34	29° 30.762' E	24° 21.577' S
35	29° 30.664' E	24° 21.597' S

Proposed Alternative 2 Route (7.95 km):

250m intervals	Longitude (Degrees Decimal Minutes)	Latitude (Degrees Decimal Minutes)
1	29° 33.637' E	24° 18.981' S
2	29° 33.490' E	24° 18.986' S
3	29° 33.342' E	24° 18.992' S
4	29° 33.194' E	24° 18.998' S
5	29° 33.047' E	24° 19.003' S
6	29° 32.899' E	24° 19.009' S
7	29° 32.815' E	24° 19.097' S
8	29° 32.760' E	24° 19.223' S
9	29° 32.705' E	24° 19.349' S
10	29° 32.649' E	24° 19.474' S
11	29° 32.594' E	24° 19.600' S
12	29° 32.539' E	24° 19.725' S
13	29° 32.484' E	24° 19.851' S
14	29° 32.429' E	24° 19.977' S
15	29° 32.374' E	24° 20.102' S
16	29° 32.318' E	24° 20.228' S
17	29° 32.263' E	24° 20.354' S
18	29° 32.208' E	24° 20.479' S
19	29° 32.153' E	24° 20.605' S

20	29° 32.097' E	24° 20.730' S
21	29° 32.042' E	24° 20.856' S
22	29° 31.921' E	24° 20.929' S
23	29° 31.793' E	24° 20.997' S
24	29° 31.666' E	24° 21.065' S
25	29° 31.538' E	24° 21.133' S
26	29° 31.410' E	24° 21.201' S
27	29° 31.282' E	24° 21.269' S
28	29° 31.154' E	24° 21.337' S
29	29° 31.026' E	24° 21.405' S
30	29° 30.898' E	24° 21.473' S
31	29° 30.770' E	24° 21.541' S
32	29° 30.664' E	24° 21.597' S

Section 3: Boynton lilo line

Boynton Substation:

Longitude (Degrees Decimal Minutes)	Latitude (Degrees Decimal Minutes)
29° 35.959' E	24° 20.239' S

Proposed Alternative 1 Route (1.2 km):

250m intervals	Longitude (Degrees Decimal Minutes)	Latitude (Degrees Decimal Minutes)
1	29° 35.959' E	24° 20.239' S
2	29° 35.961' E	24° 20.121' S
3	29° 35.961' E	24° 19.850' S
4	29° 35.962' E	24° 19.715' S
5	29° 35.962' E	24° 19.579' S

2 Legal Requirements

Application for authorisation, in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended and the Environmental Impact Assessment Regulations, 2010, is submitted to the National Department of Environmental Affairs (DEA). The Environmental Impact Assessment Regulations were published on 18 June 2010 in Government Notice No. R.543 and relevant to this project are the activities which are listed in Listing Notice 1 that require a Basic Assessment (BA) to be conducted.

Relevant to this project is the following listed activities:

Relevant notice:	Activity No:	Description of each listed activity as per project description:
GNR 544 of 18 June 2010	Item 10. The construction of facilities or infrastructure for the transmission and distribution of electricity- (i) outside urban areas with a capacity of more than 33 but less than 275kV or more.	The construction of 132kV distribution lines from the existing Lebowakgomo substation to Dwaalkop substation and a 132kV loop-in-loop-out line to the proposed Boynton substation.
GNR 544 of 18 June 2010	Item 23. The transformation of undeveloped, vacant or derelict land to - residential, retail, commercial, recreational, industrial or institutional use, outside an urban area and where the total area to be transformed is bigger than 1 hectare but less than 20 hectares.	The transformation of undeveloped, vacant or derelict land to institutional use for the construction of the Boynton substation on an area of 200mx200m.

The applicant is Eskom Distribution, Limpopo Operating Unit, Land Development with contact person Mrs. Prudence Khoza, Environmental Management in Polokwane.

3. Study Approach

The approach followed by the consultants was based on the specifications for the undertaking of a Basic Assessment as provided in the document "Companion to the EIA Regulations, Integrated Environmental Management Guideline Series 5, Department of Environmental Affairs, 2010".

The study approach followed by the Consultants, in short, entailed the following steps:

- **Preliminary site investigations** to determine the scope of works of the project and to familiarise with the sites were done by the EAP and Eskom in March 2012.
- An **application** for a Basic Assessment was submitted to DEA and the project was issued with reference number DEA Ref 14/12/16/3/3/1/497 and NEAS Ref DEA/EIA 0001056/2012 on 12 March 2012.
- Specialist **ecological input** was obtained to investigate the flora, fauna and the general biophysical environment in an attempt to identify the potential impacts of the project.
- The proposed development is covered by the National Heritage Resources Act which incorporates heritage impact assessments in the Environmental Impact Assessment process. A Phase 1 **Heritage Impact Assessment** was therefore done by a specialist to identify the potential impact on heritage resources. The National Heritage Resources Act 25 of 1999 in addition requires that all heritage resources, that is, all places or objects of aesthetic, architectural, historical, scientific, social, spiritual, linguistic or technological value or significance be protected. Fossil heritage of national and international significance is found within all provinces of the RSA. Therefore a **Palaeontological Assessment** was also commissioned.
- Input from an **avifauna specialist** was also obtained to determine the impact of the proposed project on birds.
- During the months of March - May 2012 the EAP, the ecologist, the bird impact specialist and the archaeologist/cultural heritage management consultant conducted additional site investigations.
- The **Public Participation Programme (PPP)** started in March 2012 and continued until October 2012. It included the identification of key stakeholders, the distribution of **information letters** with a request for comment, as well as advertising of the project in the local press and on site.
- In addition, notification of an **information meeting** on 16 May 2012 was sent to all IAPs. The purpose of the meeting was to furnish the landowners and other interested parties with information regarding the extent of the project, the proposed alternatives, the process of negotiations for servitudes, and the extent of the Environmental Impact Assessment Process. Project posters with information and maps of the routes were presented at the meeting. Written comment was requested at the meeting.
- **One-on-one meetings** were conducted with all **landowners** to assist in the identification of potential powerline corridors and site locations. In addition to the above, **several meetings** were conducted with the **relevant Tribal Authorities** to address their specific requirements.
- A **draft Basic Assessment Report** was compiled with the main aim to identify issues, potential impacts and potential alternatives associated with this project. It included a description of the status quo of all relevant environmental components as well as the proceedings of the PPP and communication with registered Interested & Affected Parties (IAPs).
- The **draft Basic Assessment Report** was distributed on **12 November 2012** to the following stakeholders for their comment :
 - Department of Water Affairs: Water Resources & Water Quality Management
 - South African Heritage Resources Authority
 - Limpopo Heritage Resource Authority / LIHRA
 - Limpopo Department of Economic Development, Environment and Tourism: Environmental Impact Management
 - Department of Agriculture, Forestry and Fisheries: Land Use and Soil Management
 - Department of Minerals and Energy
 - Road Agency Limpopo
 - Department of Roads and Transport
 - Department of Cooperative Governance Human Settlement and Traditional Affairs: Spatial and Human Settlement Planning
 - Department of Rural Development and Land Reform: State Land Administration
 - Endangered Wildlife Trust
 - Lepelle-Nkumpi Local Municipality
 - Capricorn District Municipality
 - Eskom Transmission
 - Eskom Distribution Northern Region

- Platmin Limited
- Ledwaba Traditional Authority
- Mphahlele Traditional Authority
- Landowners
- The **due date for comment** to the draft Basic Assessment Report is **15 January 2013**.
- Subsequently, a **final Basic Assessment Report (BAR)** will be compiled and submitted to DEA by March 2013. This report will include all concerns raised to the draft BAR and responses thereto. The Consultants (EAP) will ensure that all concerns raised are addressed in appropriate detail in the final Basic Assessment Report.

4. Project description

4.1 Need for the project

The current Environmental Impact Assessment application is part of a broader scope of works to improve Eskom's network performance. The existing Distribution networks are exceeding their maximum power transfer capability. Currently the network is experiencing under voltages and is incapable of handling additional loads due to the contingency restraints of the network. In addition to the above, the Boynton Mphahlele Mine (Platmin SA) requires 46.5MVA supply for underground mining and a concentrator. This current project aims in addition to address the requested supply.

4.2 Project components

The project components are as follows:

1. Construct a 13.29km 132kV kingbird power line between the existing Lebowakgomo substation to the new Dithabaneng substation;
2. Construct a 8.67km 132kV kingbird power line from the Dithabaneng substation to the new Dwaalkop substation;
3. Construct an approximately 1.2km 132kV loop-in-loop-out (lilo) line from the Middelpunt-Dithabaneng 132kV line to the proposed Boynton substation;
4. Obtain a corridor of 100 meters wide within which Eskom will be able to obtain a 31 meters wide servitude for the line between Lebowakgomo substation and Dwaalkop substation, and a 52 metres wide servitude for the lilo line to Boynton substation;
5. Establish a 2X10MVA 132/22kV Boynton Substation with 4X 22kV feeder bays on a terrain of 200x200m;
6. Construct an access/ construction road of 8 meters wide for the line and substation.

1. *Construct a 132kV power line between the existing Lebowakgomo substation to the new Dithabaneng substation*

It is proposed to construct a 132kV line between the above substations. The proposed structure for the 132kV power line, is a monopole steel structure. In general, these pylons could be placed 220-350 meters apart, for the length of the line. The pylons for a power line are between 18 to 30 meters high, depending on the terrain and existing land use. The flatter the terrain, the shorter the pylons to be used. The conductor attachment height on a pole is 13m (for 20m intermediate poles) and more for longer poles, depending on the pole length. Ground clearances will adhere to OSH-Requirements of 6.3m and 7.5m.

Strain poles have a planting depth of 2m but intermediate pole planting depths varies between 2.6m (for 20m poles) and 3m (for 24m poles) or more depending on the pole length. The pole is not planted in a slab - The pole foundation is dependant on the soil type and varies in size and consists of a 8:1 good soil:cement mix that are compacted in 200mm layers. A concrete cap of 1.2m x 1.2m is cast around the pole to "seal" the soil around the pole from oxygen - to control oxidation or rust on the pole.

Should the pylons be 21m high above ground then the planting depth of the pylon could be calculated as follows: For a pylon that need to be 21m above ground, the planting depth will be 0.6 meters plus 10% of the height of the pylon above ground = 0.6 meters plus 2.1 meters = pylon is planted 2.7 meters deep. Should stays be needed then the stays will be at a 45° angle to the pylon and planted 21meters from the pylon into the ground.

Where the site is relatively flat, single pylons without stays will be used, except for where the power line has to change direction. Stays will not be used except at turns in the route.

Clearance between phases on the same side of the pole structure is normally around 2.2m for this type of design, and the clearance on strain structures is 1.8m. This clearance should be sufficient to prevent phase – phase electrocutions of birds on the towers. The length of the stand-off insulators is likely to be about 1.5 meters.

Refer to Appendices C2 and C3 in the BAR for visuals of the monopole steel structure (pylon).

2. *Construct a 8.67km 132kV kingbird power line from the Dithabaneng substation to the new Dwaalkop substation*

The same specifications, as in point 1 above, are relevant.

3. *Construct a 1.2km 132kV loop-in-loop-out (lilo) line from the Middelpunt-Dithabaneng 132kV line to the proposed Boynton substation;*

It is proposed to construct a 132kV (lilo) line from the existing Middelpunt-Dithabaneng 132kV line to the proposed Boynton substation. The two lines will be adjacent and parallel to each other and the separating distance from each other is 21 meters. The same specifications as in point 1 above will apply to this lilo line.

4. *Obtain a 100m corridor within which Eskom would be able to locate a servitude area of 31 meters wide for the line between Lebowakgomo substation and Dwaalkop substation, and a servitude area of 52 metres wide for the lilo line to Boynton substation.*

Eskom relies on the goodwill of landowners and interested and affected parties to obtain rights of way, or servitudes for power lines. Hence, landowners are consulted during the construction of new power lines and existing landowners are notified when vegetation clearance is due to be performed. Eskom obtains right of way by negotiating a right of way or registering a servitude. The difference between these is detailed below: *Servitude:* A servitude is a real right which Eskom obtained in order to construct its infrastructure upon the affected property and it is registered in the Deeds Office against the title deed of the affected property. The affected owner normally gets compensated for this right according to market related values. A servitude stays effective even if a property is transferred to another owner. Rights to obtain a servitude is negotiated for 33kV, 88kV and 132kV power lines.

Way Leave Agreement: A way leave agreement is a personal right, which Eskom obtained in order to construct its infrastructure, such as rural power lines, upon the affected property. The way leave document contains clauses to the effect that the agreement is also binding on the successors in title. These rights are not registered in the Deed Office and Eskom does not pay compensation for these rights. The argument for this is that Eskom normally obtains way leave agreements only for minor reticulation type of power line projects (11kV and 22kV lines) from which a property owner can benefit by utilising the available energy.

The project involves identification of a 100m corridor within which Eskom would be able to locate a 31m servitude for the powerline between Lebowakgomo substation and Dwaalkop substation, and of 52 metres wide for the lilo line to Boynton substation. A servitude area is generally a no building area, except for Eskom structures. Usually, normal farming activities may continue in a servitude with the exception that no trees may be planted or high structures may be erected. In general, the servitude for Eskom 132kV power lines is 31 meters wide, which implies 15,5 meters on either side of the power line. The two lines of the lilo line will be 21 meters apart, which implies a total of 52 meters for an area servitude.

5. *Construct Boynton 2X10MVA 132/22kV Substation on a terrain of 200m X 200m.*

For this project, an area of 200m x 200m will be used as the site for the construction of the Boynton substation. The area of 200m x 200m will therefore be registered as an Eskom servitude. The site is flat and suitable for the construction of the substation. No alternative to the site could be investigated due to the layout of the mine and its associated activities. (Refer to Appendix C1 of the draft BAR for the Eskom scope of work).

6. *Construct an access road for the new line*

Access to properties for the purpose of construction are as a rule arranged with all landowners. The existing roads will be used as far as possible. Relevant is the fact that the proposed alternative 1 is adjacent to

existing impact (roads), or existing servitude areas, for most of the alignment. New access will therefore only be required at the sections away from the roads. Should a temporary construction road be unavoidable, then an area of 8m will be selectively cleared, 4m on either side of the centre line of the power line. The servitude areas receive minimal bush clearance. Indigenous vegetation which does not interfere with the safe operation of the power line is left undisturbed. Further to the above, vegetation is not ploughed, but mowed and therefore no areas are left without vegetation cover. During construction all vehicle movement must be along existing roads, adjacent to the fences of applicable properties, as far as is feasible.

5. Alternatives for the project

Alternatives for the project have been investigated. The purpose of investigating alternatives is to find the most effective way of meeting the need and purpose of the proposal. This can be attained by enhancing the environmental benefits of the proposed activity, through reducing or avoiding potentially negative impacts.

5.1 Alternative Activities

5.1.1 No-Go

It is suggested that to maintain the status quo is not the best option for the macro environment. This project is part of Eskom's implementation of a Master Plan for the extension of electrical infrastructure. Should this application not be approved then the supply to the broader area will not be reliable and this can result in blackouts and major disturbances in energy provision. In the future, new development might cause overloading of the already stressed existing system which can cause major disruptions of power supply to different areas at different times. The No-go option would not solve the current demand for electricity. In addition the Boynton Mphalele mine will not be able to continue with its activities. The No-Go development alternative could therefore not be considered the responsible way to manage the site(s).

5.1.2 Electricity Distribution

In preliminary investigations Eskom identified two alternatives for supplying Boynton substation.

Option 1: To supply Boynton from Voorspoed substation and Lebowakgomo substation.

Option 2: To supply Boynton from the Dithabaneng-Middelpunt 132kV line, by creating a loop-in-loop-out line from Boynton substation.

These options were considered and option 1 was found to be the more expensive option. For this reason, amongst others, option 2 was supported. Option 2 is therefore the alternative that was chosen to be investigated in this current EIA. The proposed project is part of a total solution to supply the network and the Boynton Mphalele Mine with electricity.

5.2 Location Alternatives

The project consists of the construction of approximately 25km of 132kV power lines between the existing Lebowakgomo substation and the existing Dwaalkop substation, and in addition the construction of a new substation to be called Boynton. Alternative routes for the power lines were considered. Specialist input was obtained to investigate the impact of the various alternative routes that could accomplish the purpose of the project. The specialist input is summarised as follows:

5.2.1 Ecological status report

The ecological status report identified the following:

(Refer to the full Ecological Status Report in Appendix D1 of the BAR)

The natural vegetation along the proposed corridors investigated is in a "poor to fair state" with impacts related to grazing, cultivation, erosion, mining and poor infrastructure development.

Section 1: *The new 132kV power line between the existing Lebowakgomo substation and the new Dithabaneng substation.*

- From an ecological perspective, both alternatives are viable. The mountainous terrain to the north of the Lebowakgomo Hospital has steep slopes that will be prone to erosion. The natural vegetation just to the north of the hospital is encroached by *Dichrostachys cinerea* and *Acacias* shrubs with many exotic invasives present.
- The route for Alternative 1 is preferred. It follows the existing power line and this servitude can be used as an access road during construction. This will lower the need for clearing of natural vegetation during construction.
- Alternative 2 follows a route with few roads and is therefore not preferred. More clearing of natural vegetation, especially in the mountainous areas are needed. This can increase the possibility of erosion, especially after construction, when maintenance of the corridor is not enforced.
- The low mountainous areas are prone to erosion, but the current access route must be used to lower the risk of erosion. All stream crossings must be treated as sensitive and existing roads must be used to lower the risk of erosion.
- Regular inspections by the Environmental Control Officer must be carried out and any erosion must be rehabilitated immediately.
- The route between the residential areas of Lebowakgomo and Legwang (south of the hospital) is modified, but a few large *Sclerocarya birrea* are present. Permits are needed for cutting or trimming.
- To the south of the residential areas, the route will cross a low hill (koppie). It is suggested that the crossing point must be near the foot of the outcrop, as this will lower any possible erosion impacts. It will further lower the need to cut many indigenous trees.
- The corridor is near the Tudumo/Chunies River and all pylons must be placed outside the 1:100 year flood line.
- Just to the north of the Seleteng substation the proposed corridor crosses another low outcrop. Clearing of trees are needed, but no red data species or protected trees were observed.
- *Alternative 1 is the preferred route for this section (from an ecological perspective).*

Section 2: *The new 132kV power line between the Dithabaneng substation and the new Dwaalkop substation.*

- Many impacts related to grazing, wood collection and general poor land use practices are present in this section of the proposed corridor.
- Alternative 1 near the road is preferred, as it allows for easier access during construction. The alternative further to the west (Alternative 2) will need the construction of more access roads and crossings of streams without proper bridges. The existing road has proper bridges, lowering the risk of impacts to the stream.
- *From an ecological perspective, Alternative 1 is preferred in this section.*

Section 3: *The 132kV Loop-in-Loop-out (LiLo) line from the Middelpunt- Dithabaneng 132kV line to the proposed Boynton substation.*

- The following protected tree species was seen on the site: *Sclerocarya birrea*.
- Although no *Balanites maughamii*, *Philenoptera violacea* and *Combretum imberbe* were observed during the survey, it must be confirmed.
- Although there are streams, in the broader area, the substation can be constructed to avoid these.
- A walk down study is needed to confirm the presence/absence of all protected trees once the final route is demarcated (pegged). The protected trees must be mapped (GPS) and applications for trimming, cutting and removal must be acquired before the clearing of the servitude can commence.
- In addition, the placement of pylons around all drainage lines, streams and rivers must be confirmed to ensure it is outside the 100m zone for drainage lines and streams and the 1:100 year flood line for larger rivers.

Summary

- Three red book data plant species is recorded for the site. The species listed all occur in habitats not present along the corridor. Habitat severely modified in most areas.
- Although some rare mammals can occur in the area (suitable habitat), no current records or activity on the properties affected.
- During the survey only very little dung of hare and some activity (tracks and burrows) of rodents were observed. Impacts lower the presence of large diversity and numbers.

- The streams, river and drainage lines must be considered as corridors for the limited migration of species. The power lines will not impact on these corridors and therefore will have no large scale effect on the species or area.
- All pylons must be placed at least 100m from small drainage lines or outside the 1:100 flood lines for larger rivers.
- With regard to biodiversity patterns, little if any impacts will occur.
 - The vegetation type occurs over a large area and the narrow corridor for the power line will have no large-scale negative impact on it.
 - No red data plant species observed - no impact. Limited habitat for the species listed (1/4° square) occur in the study area.
 - As stated, some drainage lines occur, but very limited impacts may occur. If activities are limited to the servitude as access roads, impacts will be very low (high confidence).
 - Alien plant infestations observed on the site and in the near vicinity. Clearing of soil can always lead to some infestations. It is suggested that the “maintenance plan” of the site must include regular inspections to ensure no alien or exotic plants establish itself on site.
 - Currently the habitat for the larger part of the study area is in a poor condition with a small area to the east of the Lebowakgomo substation in a fair condition. Historic and current land use is responsible for the modification to the natural vegetation. Apart from roads and the existing power line, the other land-use impacts are grazing, houses and infra structure development, exotic vegetation, erosion and mining.
 - The activity (power line construction and substation) will have no real impact on biodiversity processes. The only possible impact can be oil or fuel spillages that can occur during construction or the installation and maintenance of the transformers. It is suggested that fuel and oil must not be stored on site during the construction phase and that containment dams or berms are constructed around transformers. In addition, a clear plan how to manage accidental spills must be included in the EMP for the site.
 - The impact on the system is low and this development will not have a negative impact on the region with regard to plants, plant communities and water courses.

5.2.2 Bird Impact Assessment

The Bird Impact Assessment indicated the following:

(Refer to the full Bird Impact Assessment Report in Appendix D3 of the BAR)

Section 1: The new 132kV power line between the existing Lebowakgomo substation and the new Dithabaneng substation.

The construction of the new proposed Lebowa-Dithabaneng 132kV line poses a limited threat to the birds occurring in the vicinity of the new infrastructure. The power line poses a **low** collision risk, mostly to non-Red Data species and a **medium** electrocution risk, in particular to vultures. The habitat transformation will have a **low-medium** impact, and should only affect non-Red Data species at a local level, provided the large trees are not extensively destroyed. **Alternative 1** emerged as the first choice from a bird impact perspective.

Section 2: The new 132kV power line between the Dithabaneng substation and the new Dwaalkop substation.

The construction of the new proposed Dithabaneng-Dwaalkop 132kV line poses a limited threat to the birds occurring in the vicinity of the new infrastructure. The power line poses a **low** collision risk, mostly to non-Red Data species and a **medium** electrocution risk, in particular to vultures. The habitat transformation will have a **low** impact, and should only affect non-Red Data species at a local level, provided the large trees are not extensively destroyed. **Alternative 1** emerged as the first choice from a bird impact perspective.

Section 3: The 132kV Loop-in-Loop-out (LiLo) line from the Middelpunt- Dithabaneng 132kV line to the proposed Boynton substation.

The construction of the new proposed Loop-in Loop-out 132 kV lines from Middelpunt-Dithabaneng 132 kV power line to the proposed Boynton Substation will pose a limited threat to the birds occurring in the vicinity of the new infrastructure. The power line poses a **low** collision risk, mostly to non-Red Data species and a **medium** electrocution risk, in particular to vultures. The habitat transformation will have a **low** impact, and should only affect non-Red Data species at a local level, provided the large trees are not extensively destroyed.

The proposed construction of the new substation should have a **low** habitat transformation impact, given the extent of habitat degradation already evident in the area.

Recommendations

- Power lines: The spans that cross major drainage lines and skirt dams should be marked with Bird Flight Diverters on the earth wire of the line, five metres apart, alternating black and white.
- Trees: The removal of large trees should be avoided as much as possible.
- Poles: The poles should be fitted with bird perches on top of the poles to draw birds, particularly vultures, away from the potentially risky insulators.

5.2.3 Heritage Impact Assessment

The main findings of the Heritage Impact Assessment are summarised as follows:-

(Refer to Appendix D2 of the BAR for the full report)

A Phase I Heritage Impact Assessment (HIA) study as required in terms of Section 38 of the National Heritage Resources Act (No 25 of 1999) was done.

The Phase I HIA study for the proposed Eskom Project revealed the presence of the following types and ranges of heritage resources as outlined in Section 3 of the National Heritage Resources Act (No 25 of 1999) in and near the Eskom Project Area, namely:

- The demolished village of Maneeng (next to Makurung village) holds at least eighty seven (87) graveyards and graves which are associated with a hundred and forty four (144) deceased individuals. Approximately ten of the graveyards in the demolished village of Maneeng (No's 78-87) occur near the north-western corner of the village of Makurung where Alternative 1 for the proposed 132kV power line between the Dithabaneng Substation and the proposed Dwaalkop Substation power line will run. Alternative 2 for this power line runs across the demolished village of Maneeng where the majority of graveyards are located. All the graveyards in Maneeng have been geo-referenced and mapped and their coordinates are indicated in the Heritage Impact report.
- A single grave occurs near Alternative 1 and Alternative 2 for the proposed new 132kV Lebowa Dithabaneng power line. The single grave (G01) next to the proposed 132kV power line between the Lebowa Substation and the Dithabaneng Substation is situated at a safe distance from Alternative 01 and Alternative 2 where it will not be affected by these two options. However, the construction of Alternative 2 for the proposed 132kV Dithabaneng Substation to the proposed Dwaalkop Substation may affect a number of graveyards if this alternative is used.

Mitigating the graveyards and grave

If any of the graveyards may be affected by the proposed Eskom Project the following mitigation measures have to be applied:

- If any graveyard is going to be affected directly (e.g. a pylon must be constructed on top of any graveyard) such a graveyard has to be exhumed and relocated. The exhumation of human remains and the relocation of graveyards are regulated by various laws, regulations and administrative procedures. This task is undertaken by forensic archaeologists or by reputed undertakers who are acquainted with the administrative procedures and relevant legislation that have to be adhered to whenever human remains are exhumed and relocated. This process also includes social consultation with a 60 days statutory notice period for graves older than sixty years. Permission for the exhumation and relocation of human remains have to be obtained from the descendants of the deceased (if known), the National Department of Health, the Provincial Department of Health, the Premier of the Province and the local police.

Recommendations

- Alternative 1 and Alternative 2 for the proposed 132kV power line between the Lebowa Substation and the Dithabaneng Substation are situated next to G01 which needs not to be affected by these alternatives. A 'safe' corridor of at least 20m must be maintained between the power line and the grave. The grave must be demarcated with a fence or with red cautionary tape and must be avoided by contractors when the power line is constructed. If a permanent fence is erected around the grave it must be fitted with a gate to ensure access to family members or friends who wished to visit the deceased.

- Alternative 1 is recommended for the proposed 132kV power line between the Dithabaneng Substation and the proposed Dwaalkop Substation as this alternative will not affect any of the graveyards in the demolished Maneeng village.
- If any heritage resources of significance is **exposed during construction** the South African Heritage Resources Authority (SAHRA) should be notified immediately, all development activities must be stopped and an archaeologist accredited with the Association for Southern African Professional Archaeologist (ASAPA) should be notified in order to determine appropriate mitigation measures for the discovered finds. This may include obtaining the necessary authorisation (permits) from SAHRA to conduct the mitigation measures.

5.2.4 Palaeontological Impact Assessment

The main findings of the Palaeontological Impact Assessment are as follows:-

(Refer to Appendix D4 of the BAR for the full report)

The National Heritage Resources Act 25 of 1999 requires that all heritage resources, that is, all places or objects of aesthetic, architectural, historical, scientific, social, spiritual, linguistic or technological value or significance are protected. **Fossil heritage** of national and international significance is found within all provinces of the RSA. Heritage resources may not be excavated, damaged, destroyed or otherwise impacted by any development without prior assessment and without a permit from the relevant heritage resources authority.

Summary of findings

The geology is very complex with the Wonderkop fault (---) present to the east. Rock formations present fall within the Bushveld Complex and the Transvaal Supergroup. The Bushveld Complex is not known to yield any fossils. The Karoo Supergroup is completely absent and therefore the area has a palaeontological sensitivity of possibly LOW. Although the Karoo Supergroup is absent, the Pretoria Group, Time Ball Hill shale formation is known to contain 'algal microfossils' diagenetic in origin. Stromatolites are common in the Malmani dolomites, accepted to be the fossil remnants of the simplest single-celled organisms. The sensitivity value of these fossils, if any, are assumed to be LOW. There is evidence of mining activity past and present.

Section 1: The proposed 132 kV power line between the existing Lebowakgomo and the new Dithabaneng substations close to the Tudumo/Chunies River on the farm Voorspoed 458. Alternative 1 is preferred.

Section 2: The proposed 132kV power line between the new Dithabaneng and the new Dwaalkop substation, general poor land use practices are present on the farm Doornvlei 456. Alternative 1 is preferred.

Section 3: The 132 kV loop-in-loop-out line from Dithabaneng to the proposed Boynton substation. Protected trees and streams are present as well as old agricultural land on farm Mphatlele 457. The building of the Boynton substation is not opposed.

Malmani dolomite (Vmd) is to the north of the new substations and should not be affected by the new development.

Recommendation

- The impact of the development on fossil heritage is LOW and therefore no mitigation or conservation measures should be necessary.
- The following should be conserved: if any palaeontological material is exposed during digging, excavating, drilling or blasting and SAHRA must be notified. All development activities must be stopped and a palaeontologist should be called in to determine proper mitigation measures.

5.3 Conclusion

Alternative routes have been investigated for the project. From a heritage, ecological, bird as well as palaeontological impact viewpoint, Route Alternative 1 is preferred for Section 1 & Section 2 of the project. The final decision between Route 1 or 2 should be made on the accumulative weight of other parameters such as feedback from public participation, land tenure issues, construction costs, etc. **Currently, Alternative 1 is preferred** as the final route alignment due to the above investigations favouring alternative 1.

The **affected properties** for the **proposed Alternative 1** are on the farms Voorspoed 458 KS (Remainder), Rooiboklaagte 112 KS Ptn 0, Voorspoed 458 KS (Ptns 11, 15, 16, 23, 17, 9 and 4), Locatie van Mphahlele 457 KS (Remainder) in the Lepelle-Nkumpi Local Municipality in the Limpopo Province.

6. Impact assessment

The expected **negative impacts** of the proposed project on the environment were identified as follows (evaluated in the BA Report):

1. Impact on natural habitat
2. Social impact
3. Risk of surface and ground water pollution
4. Risk of erosion
5. Impact of solid waste
6. Influx of labourers to the area
7. Impact on safety and security
8. Impact on birds
9. Impact on Cultural Heritage Resources
10. Visual impact
11. Loss of cultivation potential
12. Access to farms/properties
13. Impacts associated with firebreaks and servitude maintenance
14. Impact of alien vegetation

For this project the investigations into these issues confirmed in summary the following:

1. Impact on natural habitat

This impact is associated with the potential for disruption of sensitive floral habitats and fauna populations. The planning regarding the route of the power line should take into account the ecological sensitivity of the site.

Relevant to the project is the following:

- The natural vegetation along the proposed corridors investigated are in a “poor to fair state” with impacts related to grazing, cultivation, erosion, mining and poor infra structure development.

Mitigation for impact on natural habitat

Proper planning will limit the impact of the power lines on the natural habitat and therefore the following is proposed:

- Site specific measures in terms of ecology as identified by the ecologist, Wynand Vlok (Tel 082 200 5312) must be included in the contract with the Contractor and implemented by the Contractor during the construction phase.
- Large *Sclerocarya birrea* are present along the powerline corridor. Permits are needed for cutting or trimming.
- The presence of *Balanites maughamii*, *Philenoptera violacea* and *Combretum imberbe* should be confirmed.
- A walk down study is needed to confirm the presence/absence of all protected trees once the final route is demarcated (pegged). The protected trees must be mapped (GPS) and applications for trimming, cutting and removal must be acquired before the clearing of the servitude can commence.
- In general only one application requesting one permit per power line corridor is necessary. All the protected trees, in this corridor, 2m and above, should be indicated on a map.
- An ongoing management programme to mechanically control alien plant species that invade the disturbed soils around the newly erected pylons is recommended.
- The power line corridor should be inspected every year (before and after the summer rain season) for soil erosion and if found, to rehabilitate; to not use chemicals in the control of weeds; and to remove all left over construction materials, rubble etc. upon completion of the project.

- The mountainous areas/ koppies should be viewed as sensitive although not as “No-Go” zones. It is recommended to use wide spacing of pylons to limit the physical footprint on the actual ground.
- In addition, the placement of pylons around all drainage lines, streams and rivers must be confirmed to ensure it is outside the 100m zone for drainage lines and streams and the 1;100 year flood line for larger rivers.
- Having taken all aspects of the investigation into account the following line variant is recommended - **Alternative Route 1 for the Lebokwagomo - Dithabaneng line and Alternative 1 for the Dithabaneng - Dwaalkop line.**

2. Social Impact

- The construction of new power lines could potentially impact on landowners if not planned and designed to accommodate the needs of the landowners.
- In addition, the possibility exists that a project might impact also upon residents who are not landowners. Land users or lands rights holders could farm on the portion of land affected by the proposed line or rent a house and not own it. The compensation for the servitude is always paid to the landowner and not to the land user.
- Any possible impact on landowners as well as land users should be identified and accommodated before construction of the route.
- The development on State land allocated to a tribe requires the consent of the Minister of the Department of Rural Development and Land Reform as nominal landowner of the land. In terms of the Interim Protection of Informal Land Rights Holders, 1996 (Act 31 of 1996), the Land Rights Holders must be consulted, must participate in the decision making process, and consent to the development in the form of a tribal resolution.

Mitigation for Social Impact

The route of power lines should be designed to accommodate the needs of landowners and landusers.

- The design for the power line route and the placement of structures should be accommodating to existing structures in the alignment of the route.
- Routes with evident visual disturbance caused by existing power lines or roads are in general more acceptable than traversing through pristine area.
 - For the above reasons the Route alternatives had been proposed adjacent to existing disturbance as far as is achievable. (e.g. from the Lebogakomo substation the route follows an existing power line to south of Dithabaneng substation). In other words the proposed power line route follows an existing powerline for more than 70% of the route. For the rest of the route, the alignment was designed to mostly follow existing roads.
 - During the course of the EIA, all affected landowners were identified and consulted with regarding the proposed project. Meetings were conducted with the relevant Tribal Authorities, and one-on-one meetings with affected landowners to address their specific requirements. All landowners indicated their agreement to the route or their willingness to enter into further negotiations.
- The properties in question (servitudes) will not be purchased and the registered owner will receive compensation for the use of the servitude. Further negotiations are taking place to confirm the details for the acquisition of the servitude and compensation therefore.
- A negotiator has been appointed by the applicant to consult with land owners/land rights holders. Further negotiations are taking place to confirm the details for the acquisition of the servitudes and compensation thereof. The negotiator will confirm the specific requests/requirements with each landowner. These will be stipulated in the final document, an option document. The option document is a binding document that reflects all the requirements of the landowner, for example: the exact positions of the pylons on the property; the negotiated compensation for the servitude; specific access arrangements to the property etc.

3. Risk of Surface and Groundwater Pollution

- Hazardous materials and construction equipment will be stored at the campsite and used on site. The pollution of groundwater may result from spillages that may occur. In addition, the campsite may accommodate construction workers, in which case solid and liquid effluents will be produced, including sewage and domestic solid waste.

- Therefore diesel, oil and lubricant spills are the main concern in respect of water pollution during construction together with organic pollution caused by inadequately managed facilities at site camps and at the work sites. The above may result in a change in groundwater quality with the associated negative impact on humans and the natural habitat.
- A management plan must be in place to rehabilitate any such spills. Part of the management strategy must further include the proper storage and removal of any by-products and building rubble.
- Relevant to this project is the following:
- A river (Tudumo/Chunies River) falls within the project area. The proper implementation and management of mitigating measures are crucial.
- There are a few seasonal drainage routes that run across and through the servitudes. During the summer rainy season these are intermittently active.
- The drainage routes (or lines) are not seen as being of any threat to the power line, but they should be kept in mind during construction and care should be taken to avoid them. Concrete foot supports should not be placed directly in or on the banks of these drainage furrows. Neither drainage nor erosion are seen to be significant threats as long as the proper mitigating measures are implemented.

Mitigation of Surface and Groundwater Pollution

Construction camp

- Encourage the construction contractor to employ local people as far as is reasonably practical and encourage the contractor to transport them daily to and from site. This will reduce solid and liquid waste production and water demand at the site camps.
- During the construction phase, camp site, storage facilities and other necessary temporary structures to be erected within the immediate areas demarcated for the Lebowakgomo, the Dithabaneng and the Dwaalkop substations.
- No material or machinery to be stored or placed in the open veld outside the designated area of the power line corridors.
- No camp sites or other temporary structures to be erected outside the designated areas of the power line corridors.
- All construction activities and movement of people and machinery to remain within the designated power line corridor.
- Proper water facilities need to be installed and maintained for construction workers. No water from out of the river may be used for drinking, washing or cooking purposes.
- In all cases, abstraction of water for construction purposes will require a permit from the Department of Water Affairs unless pre-existing rights are purchased from landowners. For this project, water tanks will be provided at the construction site.
- Mixing of cement, concrete, paints, solvents, sealants and adhesive must be done in specified areas on concrete aprons or on protected plastic linings to contain spillage or overflows onto soil to avoid contamination of underground water. The use of pre-mixed cement is recommended. No concrete to be allowed to be mixed in the veld.

Diesel, hydraulic fluid and lubricants

- Minimize on-site storage of petroleum products;
- Build adequate structures (berms and containment structures) to contain any oil spills which might emanate from transformers;
- Bund storage tanks to 120% of capacity;
- Ensure proper maintenance procedures in place for vehicles and equipment.
- Servicing of vehicles to be in designated areas with appropriate spill management procedures in place;
- Ensure measures to contain spills readily available on site (spill kits).

Site camp domestic waste (kitchens, showers)

- Deposit solid waste in containers and dispose regularly at the appropriate landfill site licensed in terms of section 20 (b) of the National Environment Management Waste Act, 2008 (Act No 59 of 2008). Proof thereof to be kept by contractor.
- A copy of the service agreement, to verify the disposal sites that will be accepting the waste, should be submitted to the Dept of Water Affairs.

- Dispose of liquid waste (grey water) with sewerage.

Site camp sewage

- Minimize on-site accommodation.
- Only proper, certified portable chemical toilets to be used in campsites.
- Only certified, portable chemical ablution facilities to be used and these to be positioned only within the 31m power line servitudes.
- Only certified waste disposal companies to be used to regularly clean and empty portable toilets.
- Under no circumstances may any human waste (sewage) be discarded in the open veld. Not even buried.
- No ablution facilities allowed to be placed within 200m of the banks of any river or seasonal stream.
- No ablution facilities allowed to be within 200m of any drainage lines (even during times when they are dry)

Site camp inert waste (waste concrete, reinforcing rods, waste bags, wire, timber etc)

- Ensure compliance with stringent daily clean up requirements on site.
- Any waste that cannot be recycled will be transported to the appropriate landfill site licensed in terms of section 20 (b) of the National Environment Management Waste Act, 2008 (Act No 59 of 2008).

Rivers and drainage lines

- Rivers and drainage lines are always seen as sensitive and should be avoided at all cost. In this instance a water course (Tudumo/Chunies River) is to the east of the powerline corridor and a few seasonal streams and drainage lines cross the corridors for the power lines. These need to be completely avoided and no pylons may be placed directly within any one of these water courses.
- Positioning of any pylons need to be a minimum of 100m from the edge of the river banks or outside of the 1 in 100 year floodline.
- Positioning of the foundation slabs for the pylons must be a minimum of 100m away from the edge of all drainage lines.
- Under no circumstances may a pylon be placed directly in the bed of a river or drainage line.
- During and after construction, storm water control measures should be implemented especially around stockpiled soil, excavated areas, trenches etc. so that export of soil into the watercourse is avoided.

4. Impact of erosion

- Unnecessary clearing of vegetation can result in exposed soil prone to erosive conditions.
- Insufficient soil coverage after placing of topsoil, where large surface areas are applicable, could also cause erosion.
- To cause the loss of soil by erosion is an offence under the Soil Conservation Act (Act No 76 of 1969.)
- The management of surface water runoff during construction is important to prevent soil erosion on the site. If construction takes place during the rainy season, sufficient storm water management will be required to manage water runoff.
- In summary, excavation of foundations for pylons, movement of vehicles and people and the run-off from cleared areas can cause erosion.

Mitigation of Impact of erosion

- The mountainous terrain to the north of the Lebowakgomo Hospital has steep slopes that will be prone to erosion.
- The route for Alternative 1 is preferred. It follows the existing power line and this servitude can be used as an access road during construction. This will lower the need for clearing of natural vegetation during construction.
- Alternative 2 follows a route with less roads and is therefore not preferred. More clearing of natural vegetation, especially in the mountainous areas are needed. This can increase the possibility of erosion, especially after construction when maintenance of the corridor is not enforced.
- The low mountainous areas are prone to erosion, but the current access route must be used to lower the risk of erosion. All stream crossings must be treated as sensitive and existing roads must be used to lower the risk of erosion.
- To the south of the residential areas, the route will cross a low hill (koppie). It is suggested that the crossing point must be near the foot of the outcrop, as this will lower any possible erosion impacts. It will further lower the need to cut many indigenous trees.

- These areas are not seen as “No-Go” areas, but care should still be taken to avoid any unnecessary disturbance of veld or soil. Removal of trees, shrubs and other vegetation should be kept strictly to within the 8m corridor under the power lines.
- Only a single, basic vehicle track to be constructed as an access road under pylons moving through the mountainous areas.
- Access roads need to be kept to an absolute minimum.
- The longest possible distance between pylons should be used in an effort to limit the footprint size on the outcrop area.
- The power line must run as straight as possible through and over these koppies (hills). This in an effort to limit sharp turns that literally create a larger physical footprint on the ground.
- The corridor is near the Tudumo/Chunies River and all pylons must be placed outside the 1:100 year flood line.
- Just to the north of the Seleteng substation the proposed corridor crosses another low outcrop. Clearing of trees are needed, but no red data species or protected trees were observed.
- Neither drainage nor erosion are seen to be significant threats as long as the proper mitigating measures are implemented.
- Unnecessary clearing of flora resulting in exposed soil prone to erosive conditions should be avoided.
- No trees or existing grass strata outside of the power line corridor should be removed to lower any kinetic energy of potential run-off.
- Indigenous vegetation, which does not interfere with the safe operation of the substation/ power line, should be left undisturbed.
- The ground around all foundation slabs for the pylons need to be inspected before and after the summer rainy season for erosion. Any erosion found needs to be fixed and preventative measures put in place to prevent a reoccurrence of the situation.
- Pro-active measures must be implemented to curb erosion and to rehabilitate eroded areas. All areas susceptible to erosion must be installed with temporary and permanent diversion channels and berms to prevent concentration of surface water and scouring of slopes and banks, thereby countering soil erosion.
- Specifications (as identified in the Environmental Management Programme) for topsoil storage and replacement, to ensure sufficient soil coverage as soon as possible after construction activities, must be implemented.
- All cleared areas must be ripped and rehabilitated after construction. The top 200mm layer of topsoil must be removed and stockpiled in heaps not higher than 2m and replaced on the construction areas once the activities have been completed. The affected areas should be replanted with a grass mixture indigenous to the area.

5. Solid Waste

- It is expected that a certain amount of construction waste will be generated during construction.
- Expected waste could be unused steel, conductor cables, cement or concrete and general waste around the construction site (plastic, tins and paper), which may degrade the environment if not disposed in the correct manner.
- Solid waste might remain on site after the completion of construction. This can cause pollution to the environment and be detrimental to animals.

Mitigation of Solid waste

- The construction teams should ensure that all waste is removed from the site and that they recycle the items that can be used again. Unusable waste steel and aluminum will be sold to scrap dealers for recycling at the Eskom stores.
- Any waste that cannot be recycled will be transported to the appropriate landfill site licensed in terms of section 20 (b) of the National Environment Management Waste Act, 2008 (Act No 59 of 2008). A copy of the service agreement, to verify the disposal sites that will be accepting the waste, should be submitted to the Dept of Water Affairs.
- Proper and adequate containers (rubbish bins) to be put in campsites for the temporary disposal of food waste and general litter generated by construction workers. These containers need to close securely to

avoid items (eg. paper and plastic) been blown into the veld, or been pushed over and rummaged through by wild animals such as monkeys. Proper waste management is essential.

- Containers for food and general waste to be removed weekly to avoid bins overflowing their capacity.
- Under no circumstances may any sewage, waste food or general litter be dumped in the veld.
- Stockpiling of construction material should be such that pollution of water resources is prevented and that the materials will be retained in a storm event.
- Once construction is completed, the contractor has to obtain written consent from the relevant landowner that the construction site, construction areas, access routes, etc. are sufficiently and adequately rehabilitated to the landowner's satisfaction.

6. Impact of labourers

An uncontrolled influx of labourers with associated squatter and increased crime problems create pressure on the natural environment (placement of snares, removal of trees for firewood, careless waste disposal, etc.). This could be severe resulting in permanent damage to the environment if not mitigated properly.

Mitigation of impact of labourers

- Mitigation measures to counter impact on the natural environment and limit potential for crime include specifications in terms of control of construction workers (i.e. provision of toilet and cooking facilities, provision of either accommodation facilities or transport facilities, implementation of Environmental Educational Programmes, etc.). Accommodation for labourers must either be limited to guarding personnel on the construction site (with labourers transported to and from existing neighbouring towns) or a separate fenced and controlled area where proper accommodation and relevant facilities are provided.
- Prepare a comprehensive Environmental Management Programme (EMPr) for the control of environmental impacts at the site camps.
- The EMPr is to include specific provision for the management of the following:
 - Site location
 - Solid waste
 - Liquid effluent (sewage)
 - Storm water
 - Litter
 - Nuisance (Noise)
 - Hazardous substances
 - Social pathologies (prostitution, drunkenness, theft)
 - HIV/Aids prevention.
- Develop a HIV/Aids workplace policy.
- Ensure that the contractors develop a comprehensive site camp management plan. This should apply even in the case of the limited accommodation camps recommended above.
- Plan campsites an appropriate distance from any facility where it can cause a nuisance.
- Camp site, storage facilities and other necessary temporary structures to be erected within the immediate areas for Lebowakgomo substation, Dithabaneng substation, Dwaalkop substation and the site of the proposed Boynton substation.

7. Impact on Safety and Security of landowners/land users

A range of safety and security issues could result from the construction of the project. These could be i.e. a threat to the safety of children or individuals in the area; mortality to stock and other farm animals close to the site; an increase in crime, including stock theft and poaching.

In terms of safety, it should be noted that the project involves the excavation of land for the structures of the power lines. The excavated area for the pylons could be approximately 3 meters deep by 1,5 meters wide. Excavations and open trenches can act as a trap for children (and also snakes, small mammals and lizards). Blasting could also create a safety risk in terms of flying objects and damage to properties.

The negative impact of noise and dust, generally associated with construction activities, are temporary, occurring mostly during the construction phase.

Mitigation of Impact on Safety and Security of landowners/land users

Safety mitigation measures

- The existing complaints structure must be revised by Eskom and be updated on a regular basis and communicated with all affected landowners to ensure effective response and service supply (especially in terms of reporting of obvious electrical faults).
- The applicable Emergency telephone numbers should always be available on site. Ms Prudence Khoza Environmental Management, Eskom Distribution Northern Region is the relevant contact person (Tel: 015 299 0592/ Cell: 082 818 2088).
- During construction, the Contractor should, put up a temporary fence around the campsite and work areas.
- All construction activities should take place within fenced or otherwise demarcated areas.
- All excavated areas for pylons must be fenced and barrier tape must be placed around them to prevent humans and animals from falling into them.
- The contractors must appoint their own guards to safeguard their materials.
- Construction workers should wear clearly identifiable clothing that allows landowners to easily identify contract workers on site.
- Once construction is completed, the contractor has to obtain written consent from the relevant landowner that the construction site, construction areas, access routes, etc. are sufficiently and adequately rehabilitated to the landowners' satisfaction.
- Should blasting be deemed necessary, it may only be undertaken by specialists in the field and should be limited to localised areas. All relevant legislation must be adhered to.
- All adjacent landowners have to be informed of the blasting programme prior to any blasting taking place. Contractors must liaise personally with adjacent landowners. All communication in this regard must be documented.
- A Fire Management Plan has to be identified during the pre-construction phase and must be implemented throughout the construction and operational phases of the project.
- No open fires to be allowed in the power line corridors or adjacent areas.
- No open fires to be allowed outside of the substations sites.
- Cooking or fires must be kept to within the demarcated area of the substation. Special care needs to be taken for the prevention of run away veld fires into the adjacent area.
- In the campsite a designated area for camp fires and cooking needs to be made. Should open fires be used then an area of at least 2m by 2m needs to be cleared of any flammable materials such as grass. This is also necessary with the use of portable gas or paraffin burners typically used for cooking.
- No fires to be left unattended or allowed to burn through the night.
- Fire fighting equipment must be readily available on site during welding and cutting operations.
- Branches and other debris resulting from pruning processes should not be left below conductors or in areas where it will pose a risk to infrastructure.
- No fires may be made for the burning of vegetation and waste.
- Fires shall not be made for the purpose of chasing or disturbing indigenous fauna.
- Construction workers should be barred from collecting firewood or any medicinal and protected plant species.
- No firearms should be allowed at the construction sites.

Noise mitigation measures:

- Construction hours will be restricted to specific periods which exclude Sundays and public holidays.
- All construction workers will be allowed only for specified day light hours and will be transported from the site by the contractors.

Dust mitigation measures:

- Sweeping of construction sites and clearing of building rubble and debris must take place regularly.
- According to the applicant and their contractors, dust suppression is not required due to the following reasons:
 - The servitude areas receive minimal bush clearance. Indigenous vegetation which does not interfere with the safe operation of the power line is left undisturbed. Further to the above, vegetation is not ploughed, but mowed and therefore no areas are left without vegetation cover.

- In terms of access roads, existing roads are used and the impact to these roads is insignificant. The reason is that construction material is minimal (a pylon - planted approximately 330m apart, cement - to plant the pylon, and cable - for the overhead wires). Therefore a small number, of construction vehicles deliver the material to the site. Speed of above 30km/hour will not be exceeded. A limited/ insignificant amount of dust is therefore emitted in the atmosphere. In other words, there will be no significant construction, ground-clearing, leveling or grading of soils, moving or compacting of soils which are often associated with other forms of construction, but not with erecting of powerlines.

Risk of Electrocution:

- To prevent the risk of electrocution no structures are allowed in the 31 meters wide servitude area of the power lines.

8. Impact on Birds

Refer to 5.2.2

9. Impact on cultural heritage resources

Refer to 5.2.3

10. Visual impact

The visual impact resulting from the construction of power lines can be substantial in a more rural environment. Should sensitive vegetation clearing as proposed in the mitigation measures be exercised then the visual impact of the power lines should not be significant.

Additional factors to consider regarding the visual impact are the following:

- The ability of the surrounding environment to absorb the visual impact of the power line.
- The structures to be used for the power line.

Mitigation of visual impact

The following is relevant to this project:

- Impact to the natural habitat as a result of the project is to be expected. Construction could cause a significant impact where clearing for construction and access purposes, etc. is required. Insensitive clearing can cause the destruction of habitat.
- It is suggested that any existing servitude roads as well as existing roads must be used during construction and maintenance of the power line.
- The procedures for vegetation clearance and maintenance within overhead power line servitudes and on Eskom owned land, updated September 2009 must be implemented. These procedures includes i.e. the following:
 - Where clearing for an access road is essential, the maximum width to be cleared is 8m.
 - Clearing for pylon positions must be the minimum required for the specific tower, not more than a 5m radius around the structure position.
 - Indigenous vegetation, which does not interfere with the safe operation of the power line, should be left undisturbed.
- In general the recommendations from landowners are that the power line should not traverse any property, but rather run along the public or existing roads. The chosen route should be mostly along primary roads with wide verges or wide gravel roads. Routes with evident visual disturbance caused by existing power lines or roads are more acceptable than traversing through pristine area.
- In line with the above, Route Alternative 1 were designed to run through more "disturbed" corridors, i.e. mostly along an existing powerline, and adjacent to roads.
- In addition, visual impact could generally be mitigated to some extent by constructing the line with monopole steel structures. Visuals of the structure are included in Appendices C2 and C3 of the BAR. From previous experience the steel poles are known to weather and with time blend into the environment.

11. Loss of agricultural land

The construction of power lines with the resulting clearance of servitudes can lead to a loss in agricultural land.

Mitigation of impact on Agriculture

The proposed construction of the power line will not impact significantly on any agricultural activity. The following is relevant to this project:

- Mining is by far the largest contributor to the economy of the local municipality with the role of agriculture fairly insignificant.
- The project area is being transformed by deforestation, overgrazing, mining, effects of human settlements etc.
- In addition, shortage of water is a limiting factor due to lack of major rivers and poor rainfall.
- Should the construction of the power line impact on any agricultural activities, this impact will only be for a limited period during construction. An access road of 8m wide could be cleared to construct the power line. After construction, normal agricultural activities could continue under the power line as usual.
- It is therefore submitted that the servitude area will not interfere with any agricultural activities. In addition, Eskom will not own the servitude but will purchase the rights to construct and maintain the line. A change in land use from agriculture to other land uses is not applicable.
- In addition, in terms of the Subdivision of Agricultural Land Act, 1970 (Act 70 of 1970), Section 2(a) Eskom is a statutory body and therefore it is not subjected to the provisions of the Act.

12. Access to property

Eskom Holdings has a right to enter property in order to maintain plant and obtain meter readings, therefore the manner of access to land, on which Eskom holds servitudes and electrical infrastructure, should be considered by Eskom as well as landowners.

Security is important to landowners who need to ensure that the safety of their family, staff and property is catered for.

Mitigation to establish a protocol for Access to property

Approaches to facilitate access for all Eskom staff and contractors (performing work on behalf of Eskom) is stipulated in the Access to Farms (Distribution, Transmission and Generation) Standard 32-1173.

Protocol measures are i.e. as follows:

- All Eskom staff will carry identity cards containing their photographs, indicating that they are Eskom employees. Landowners may verify presence of Eskom staff telephonically at the Contact Centre, at 08600 37566.
- Eskom contractors will carry identity cards displaying their photographs, indicating that they are contractors. Letters containing contract appointment as well as whom at Eskom to contact will be given to each Contractor. In the case of unplanned activities, the contractor must be in possession of a work order number.
- Eskom vehicles will be clearly marked on the door. Vehicles operating after dark will be fitted with amber rotating lights.
- Vehicles of Eskom contractors must have a magnetic strip on the side containing the words "Eskom contractor", as well as an amber rotating light.
- No person may climb or crawl over or through fences without the owners' permission. No person may damage or remove a fence without the owners' permission.
- Gates should be left in the state the landowner intended. In order to assist with any possible claims, any visitor will keep a log of each gate that is used stating:
 - the position of the gate with reference to towers
 - the state in which it was found (open or closed)
 - the time
 - any other appropriate information (locks, etc.)
- Standard Eskom locks shall be used in all cases and in such a manner that it securely locks the gate. Where dual-use is made of the gate by Eskom Holdings and the land owner, the Eskom lock shall be locked into the chain-link, separate from the farmer's lock as to permit both parties to gain access without inconveniencing either party. No interference with land owners' locks will be tolerated. The cutting of land owners' locks except in extreme emergency will result in disciplinary action.
- Where helicopters are deployed, care should be taken in conjunction with the Line and Servitude Manager and the landowner not to cause any disturbance or harm to livestock such as ostriches or game. The use of

helicopters on lines during line patrols does present its challenges when all the property owners en route need to be informed before the inspection. Notice of such patrols should be communicated via District Agricultural offices a month before.

- Any damage caused to any gate, fence, crop or grazing shall be reported to the Line and Servitude Manager or ECO who will then refer it to the appropriate Eskom Holdings Official for processing. Extreme care must be taken with fires and the use of fires will only be permitted with express approval of the landowner.
- No fauna or flora will be collected or removed from any farm by any visitor without written permission of the Landowner, in which case cognizance will be taken of appropriate provincial legislation pertaining to fauna and flora. Under such cases Eskom Holdings ethical policies and guidelines will be strictly applied.
- Any visitor will at all times refrain from littering and must remove any refuse when leaving.
- Visitors shall as far as possible only use the servitude roads or the roads as determined by the environmental management plan and agreed to with the Land owner. Where this is not possible the landowner's permission shall be obtained for the use of any other roads. In all cases care shall be taken to not cause any damage in the process and driving through the veld must be avoided as far as possible.

Planned outages

- Eskom will notify customers at least 10 days in advance through the appropriate media – either in writing, electronically (SMS) or telephonically. The onus rests on the Customer to ensure that all their contact details are updated on the Eskom system. Should Eskom's best attempts to communicate fail, the work will proceed regardless.

Planned activities such as vegetation control, live-line work and line inspections.

- Eskom will notify customers at least 48 hours in advance through the appropriate media – either in writing, electronically or telephonically. Should Eskom's attempts to communicate fail, the work will proceed.

Unplanned/unscheduled visits

- Rapid power restoration without any delay is in the interest of both Eskom and the customer. This is dependent on free movement.
- All Eskom staff as well as representatives of Eskom contractors will carry identity cards containing their photographs to indicate whether they are Eskom employees or Eskom contractors. In addition, customers may request a work order number to be verified with the Contact Centre. Vehicles must be clearly marked.

13. Impacts associated with fire breaks and servitude maintenance

The servitude areas have to be maintained to ensure the safety of the Eskom hardware, but in particular the safety of the landowner and his property. Should the servitude not be maintained this could result in danger to the power line as well as damage to the property of the landowner.

Mitigation of the impact associated with fire breaks and servitude maintenance

- In the case of 33kV, 88kV and 132kV distribution power lines, Eskom obtains the rights to a servitude.
- A servitude is a real right which Eskom obtained in order to construct its infrastructure upon the affected property and it is registered in the Deeds Office against the title deed of the affected property. The affected owner normally gets compensated for this right according to market related values. The servitude stays effective even if a property is transferred to another owner.
- The National Veld and Forest Fire Act (Act 101 of 1998) places an obligation on the owner to ensure compliance and hence creation of fire-breaks amongst other. The Act defines owner as follows: "owner" has its common law meaning and includes— (a) a lessee or other person who controls the land in question in terms of a contract, testamentary document, law or order of a High Court;.
- The Eskom understanding is that Eskom needs to ensure compliance to the Act where it has purchased a property (hence being the owner) such as a substation. Eskom is not considered as the owner for rights obtained via a wayleave agreement or servitude. Hence, the requirements for creating firebreaks or joining Fire Protection Agencies are applicable as far as where Eskom has a substation and not for power lines. These opinions were reflected in the specifications – thus, the Vegetation Management Standard does not specify requirements for fire breaks.
- Fire Risk Management is dealt with under a procedure titled "Distribution Fire Risk Management", reference SCSASAAJ6. Grass fires are dealt with in this procedure stating that vegetation and equipment must be maintained. A specific procedure deals with fire risk management for substations where the chipped stone needs to be maintained to prevent vegetation growth.

- Eskom Distribution does not make use of the practice to burn fire breaks, since this is not a legal requirement. Rather, it relies on the maintenance of vegetation in accordance to its Vegetation Management Standard to reduce the risk of fires starting from Eskom infrastructure.
- Eskom Distribution Division does not remove the grass below power lines since this does not pose a safety risk and will create the potential for erosion, causing environmental degradation and hence legal liability. It will furthermore be an economically unsustainable exercise for Eskom given the amount of power lines throughout South Africa.

14. Impact of alien vegetation

One of the impacts of concern is the introduction of alien plants and the use of chemical herbicides (weed-killers). This impact needs to be monitored and managed on an ongoing basis.

- The manner in which the right of way was obtained/registered is an important factor in determining the legal requirements for erosion and weed control.
- The Conservation of Agricultural Resources Act (Act 43 of 1983) places a duty on the land user to control erosion and declared weeds and invader plants. Hence, the standard specifies weed control as a requirement for all power lines: The act defines land user as follows:
- 'land user' means the owner of land, and includes-
 - any person who has a personal or real right in respect of any land in his capacity as fiduciary, fideicommissary, servitude holder, possessor, lessee or occupier, irrespective of whether he resides thereon;
 - any person who has the right to cut trees or wood on land or to remove trees, wood or other organic material from land.
- A servitude is a real right which Eskom obtained in order to construct its infrastructure upon the affected property and it is registered in the Deeds Office against the title deed of the affected property. This places a duty on Eskom to control declared weeds and invader plants.

Mitigation of alien vegetation

- Alien vegetation in servitudes shall be managed in terms of Regulation GNR.1048 of 25 May 1984 (as amended) issued in terms of the Conservation of Agricultural Resources Act, Act 43 of 1983. In Terms of these regulations, Eskom shall "control" i.e. combat category 1, 2 and 3 plants to the extent necessary to prevent or to contain the occurrence, establishment, growth, multiplication, propagation, regeneration and spreading such plants within servitude areas or land owned by Eskom. Due to the nature of alien vegetation, a programme for alien vegetation control must be implemented. The implementation thereof is recommended as follows:
- Mechanical control of alien plants around disturbed areas to be implemented within two months of completion of construction. Thereafter every six months. These areas will be predominantly around the erected pylons where the soils were originally disturbed during the construction phase. Mechanical control to be of such a nature as to allow local grasses and other pioneer plants to colonise the previously disturbed areas, thereby keeping out alien invasives.
- No chemical control (herbicides) of alien plants to be used. These chemicals will have a detrimental effect on the surrounding vegetation and habitats.
- Vegetation under pylons and next to pylons to be mowed and not ploughed. This in an effort to avoid disturbing the ground which leaves it open to colonisation by alien weeds.
- Disturbance of the soils must be kept to an absolute minimum to limit the potential introduction of alien plants.

The expected **positive impacts** of the proposed power line project on the environment are as follows:

- Long-term, regional benefits of reliable power supply and the resultant socio-economic benefits.
 - Included in this is the fact that any infrastructure development as a secondary impact will ultimately positively influence the development of the SMME- sector through electricity provision.
 - On the opposite pole the lack thereof will most certainly be to the detriment of SMMEs, especially in rural developing areas, where the lack of, as well as inconsistent, infrastructure could seriously lead to the detriment of economic development directly impacting on social well-being.

- Potential reduction in crime as a result of short-term job creation during construction (providing farm safety and security measures are implemented)
- Possible local growth in the economy of the surroundings towns and others in the sub-region, and for local businesses depending on where the construction camp is.
- Economic benefits for contractors and other suppliers of goods and services.
- The project as proposed would ensure significant capital investment that will contribute to the economical growth of the area.
- Private business opportunities could be stimulated.

It is suggested that to maintain the status quo is not the best option for the macro environment.

- This proposed project is part of the infrastructure to improve the supply of electricity to the broader area. Should this application not be approved then the supply will not be reliable and this can result in major disturbances in the supply of electricity.
- As indicated in this EIA report the impacts that are likely to occur as a result of the proposed power line project are minimal over the medium- to long-term and can be mitigated to acceptable levels. The No-Go development alternative could therefore not be considered the responsible way to manage the site.

An **Environmental Management Plan (EMPr)** was compiled to ensure that

- mitigation measures are identified and implemented to avoid or minimise the expected negative environmental impact and enhance the potential positive impact associated with the project;
- the developer, construction workers and the operational and maintenance staff are well acquainted with their responsibilities in terms of the environment;
- communication channels to report on environment related issues are in place.

7. Conclusion and recommendations

- A draft Basic Assessment Report was compiled with the main aim to identify issues, potential impacts and potential alternatives associated with this project. It includes a description of the status quo of all relevant environmental components as well as the proceedings of the PPP and communication with registered Interested & Affected Parties (IAPs). Notification of the availability thereof was sent to all IAPs on **12 November 2012 with comment requested until 15 January 2013**.
- Subsequently, a final Basic Assessment Report (BAR) will be compiled and **submitted to DEA**. This report will include all concerns raised to the draft BAR and responses thereto. The Consultants (EAP) will ensure that all concerns raised are addressed in appropriate detail in the final Basic Assessment Report.
- Alternative routes have been investigated for the project. From a heritage, ecological, bird as well as palaeontological impact viewpoint, Route Alternative 1 is preferred for Section 1 & Section 2 of the project. The final decision between Route 1 or 2 should be made on the accumulative weight of other parameters such as feedback from public participation, land tenure issues, construction costs, etc. **Currently, Alternative 1 is preferred** as the final route alignment due to all the investigations favouring alternative 1.
- The **affected properties** for the **proposed Alternative 1** are on the farms Voorspoed 458 KS (Remainder), Rooiboklaagte 112 KS Ptn 0, Voorspoed 458 KS (Ptns 11, 15, 16, 23, 17, 9 and 4), Locatie van Mphahlele 457 KS (Remainder) in the Lepelle-Nkumpi Local Municipality in the Limpopo Province.

It is concluded that the construction of the proposed Boynton Project will have an overall positive impact on the socio-economic environment should the necessary mitigation measures be implemented. It is proposed that **Alternative 1** be considered for the construction of the lines.