Eskom Boynton Project
DEA Ref nr 14/12/16/3/3/1/497
NEAS Ref DEA/EIA/0001056/2012
Draft Basic Assessment Report
Appendix F1
Environmental Management Programme

1. DETAILS OF THE PROPOSED ACTIVITIES

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

The construction of the Boynton substation and the associated power lines is one of the solutions to strengthen the network. 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 Lebowakgomo and Chuniespoort 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

1.2 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 that 20 hectares.	The transformation of undeveloped, vacant or derelict land to institutional use for the construction of a 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.

2. OBJECTIVES OF THE EMPr

The Environmental Management Programme has the following objectives:

- To state the standards and guidelines which Eskom will be required to adhere to in terms of environmental legislation;
- To set out the mitigation measures and environmental specifications which Eskom will be required to implement for the construction phase of the project in order to minimize the extent of environmental impacts, and where possible to improve the condition of the environment;
- To provide guidance regarding the method statements which Eskom will be required to compile and implement to achieve the environmental specification;
- To define corrective actions which Eskom must take in the event of non-compliance with the specifications of this EMPr;
- To mitigate potential negative impact associated with the project and ensure optimising of positive impact;
- To prevent long-term or permanent environmental degradation;
- To ensure that the Applicant, construction workers and the operational and maintenance staff are well acquainted with their responsibilities in terms of the environment;
- To ensure that communication channels to report on environment related issues are in place.

3. DETAILS OF THE PERSON WHO PREPARED THE EMPr

This Environmental Management Programme was prepared by Texture Environmental Consultants. Ria Pretorius is the principal member of Texture. Texture has significant experience and is well equipped and qualified to undertake Environmental Impact Assessments and inclusive thereof Environmental Management Programmes.
Texture has access to a variety of skills through association with specialists in their different fields of expertise. These specialist fields include the following: ecologists; archaeologists; architects & historical architects; agricultural specialists; geotechnical engineers; geohydrologists; civil and electrical engineers and social consultants as well as landscapers and contractors. Texture has a broad client base, developed over years of professional services supplied, from both private and government sectors. A company profile is available on request.

4. DETAILS OF PERSONS RESPONSIBLE FOR IMPLEMENTATION OF THE EMPr

The following undertaking must be filled out and signed by the applicant and forwarded to DEA prior to commencement of construction:

AGREEMENT & UNDERTAKING OF THE APPLICANT

I hereby confirm and state that I am aware of the contents of the Environmental Management Programme and the conditions of the Environmental Authorisation (EA) and shall comply with all legislation pertaining to the nature of the work to be done and all things accidental thereto.

Signed on behalf of: _____

Date:_____

Place: _____

Signature: _____

Full Name: _____

Postal Address:_____

Physical Address:_____

Office Telephone Number: _____

AGREEMENT & UNDERTAKING OF THE ECO

The following details of the ECO must be filled out, signed and forwarded to DEA prior to construction:

Company Name: _____

Contact Person(s): _____

Physical Address : _____

Street Address : _____

Office Telephone Number : _____

Cellular phone Number : _____

Fax Number : _____

5. PROPOSED MECHANISM FOR COMPLIANCE

Key impacts generally associated with Eskom construction activities, as confirmed during the course of the Environmental Impact Assessment process are:

- Risk of erosion
- Impact on natural habitat
- Risk of surface and groundwater pollution
- Visual Impact
- Impact on safety and security
- Impact on agriculture
- Impact on birds
- Social impact
- Impact of influx of labourers to the area
- Impact of solid waste
- Impact on cultural heritage resources
- Introduction of alien vegetation

Specifications and conditions are hereby provided to limit and/or prevent impact on these components during all the phases of project development, namely

- Specifications applicable to all Phases of Project Development
- Design & Pre-construction Phase
- Construction Phase
- Post-construction & Operational Phase

6. SPECIFICATIONS APPLICABLE TO ALL PHASES OF PROJECT DEVELOPMENT

Roles and Responsibilities

Eskom

Eskom is the applicant for the project. Eskom will therefore, be the entity monitoring the implementation of the EMPr. The Contractor who wins the tender for the construction, will, in terms of the tender documentation, be responsible to implement the proposed mitigation measures in this EMPr on Eskom's behalf.

Eskom will:

- Be responsible for the overall implementation of the EMPr in accordance with the requirements of the environmental authorization, issued by DEA.
- Ensure that all third parties who carry out all or part of Eskom's obligations under the Contract comply with the requirements of this EMPr.

Environmental and Health Training and Awareness

Eskom will ensure that its employees are adequately trained with regard to the implementation of the EMPr, as well as regarding environmental legal requirements and obligations. All employees should have an induction presentation on environmental awareness. Where possible the presentation will be conducted in the language of the employees. The environmental training should, as a minimum, include the following:

- The importance of conforming with all environmental policies, procedures, plans and systems;
- The significant environmental impacts, actual or potential, which could result from their work activities;
- The environmental benefits of improved personal performance;
- The roles and responsibilities in achieving conformance with the environmental policy and procedures, including emergency preparedness and response requirements;
- The potential consequences of departure from specified operating procedures;
- The mitigation measures to be implemented when carrying out their work activities;
- The importance of not littering;
- The need to use water sparingly;

- Details of, and encouragement to, minimizing the production of waste and re-use, recover and recycle waste where possible;
- Details regarding archaeological and/or historical sites which may be unearthed during construction, and the procedures to be followed should these be encountered;
- The procedures which should be followed should a grave be encountered or unearthed during the construction phase;
- Details regarding flora and fauna of special concern, including protected/endangered plant and animal species, and the procedures to be followed should these be encountered during the construction phase.

Emergency Preparedness

Eskom's environmental emergency procedures ensure that there will be an appropriate response to unexpected or accidental actions or incidents that will cause environmental impacts, throughout the life cycle of the project. Such incidents may include, inter alia:

- Accidental discharges to water and land;
- Accidental exposure of employees to hazardous substances;
- Accidental veld fires;
- Accidental spillage of hazardous substances;
- Specific environmental and ecosystem effects from accidental releases or incidents.

The emergency preparedness plan

- Construction employees shall be adequately trained in terms of incidents and emergency situations.
- An emergency preparedness plan will include details of the organization (manpower) and responsibilities, accountability and liability of personnel.
- The emergency preparedness plan shall include a list of key personnel.
- Details of emergency services (e.g. the fire department, spill clean-up services, etc.) shall be listed.
- Internal and external communication plans, including prescribed reporting procedures shall be listed.
- Actions to be taken in the event of different types of emergencies shall be included.
- Information on hazardous materials, including the potential impact associated with each, and measure to be taken in the event of accidental release shall be listed.
- Training plans, testing exercises, and schedules for effectiveness shall be included.
- Eskom will comply with the emergency preparedness, and incident and accident-reporting requirements, as required by the Occupational Health and Safety Act, 1993 (Act No 85 of 1993), the National Environmental Management Act, 1998 (Act No 107 of 1998) as amended, the National Water Act, 1008 (Act No 36 of 1998) and the National Veld and Forest Fire Act, 1998 (Act No 101 of 1998) as amended, and/or any other relevant legislation.

Spillages

- Streams, rivers and dams will be protected from direct or indirect spillage of pollutants such as refuse, garbage, cement, concrete, sewage, chemicals, fuels, oils, aggregate, wash water, organic materials and bituminous products.
- In the event of a spillage during the construction phase, the responsibility for spill treatment will be with Eskom and Eskom will be liable to arrange for competent assistance to clear the affected area.
- Eskom will compile and maintain environmental emergency procedures, to ensure that there will be an appropriate rapid response to unexpected or accidental environmental related incidents throughout the life cycle of the project.
- The individual responsible for, or who discovers a hazardous waste spill must report the incident to the Engineer.
- The Engineer will assess the situation in consultation with the SECO and act as required in all cases, the immediate response will be to contain the spill. The exact treatment of pollutes soil/water will be determined by die Engineer in consultation with the SECO. Areas cleared of hazardous waste will be re-vegetated.
- Should water downstream of the spill be polluted, and fauna and flora show signs of deterioration or death, specialist hydrological or ecological advice must be sought for appropriate treatment and remedial procedures to be followed. The costs of containment and rehabilitation will be for Eskom's account, including the costs of specialist input.

During an emergency situation, the following will apply

- No person shall be allowed to approach a spill unless he/she is equipped with the personal protective clothing.
- The risk involved shall be assessed before anyone approaches the scene of the incident with the emergency response plan.
- A written report shall be forwarded to the relevant environmental authority within 24 hours of the incident.
- Any known or discovered spillage of toxic substances into a stream or river should be followed by immediate monitoring of the receiving streams and rivers.

Fires

- The adjacent landowners will be informed and/or involved in case of any fire.
- It must be ensured that the basic fire fighting equipment is supplied to all living quarters, site offices, kitchen areas, workshop areas and stores.
- Welding gas cutting or cutting of metal will only be allowed inside the working/demarcated areas and with appropriate fire fighting equipment at hand.

Checking and Corrective Action

Non-compliance

Non-compliance with the specifications of the EMPr constitutes a breach of Contract for which Eskom must be immediately notified accordingly. Eskom will be deemed not to have complied with the EMPr if;

- There is evidence of contravention of the EMPr specifications within the boundaries of the construction site, site extensions and access roads;
- There is contravention of the EMPr specifications which relate to activities outside the boundaries of the construction sites;
- Environmental damage ensues due to negligence;
- Construction activities take place outside the defined boundaries of the site;
- Eskom fails to comply with corrective or other instruction.
- Non-compliance will be dealt with in terms of the contract documentations signed by the various parties.

Monitoring

Monitoring will be undertaken as and when required. Any incidents that might have a detrimental impact on the environment will be investigated and the environmental monitoring will be conducted. Complaints received will be checked through verifiable monitoring.

Inspections

Ongoing visual inspections will be conducted daily by the SECO. The SECO will spend time on site on the lookout for any unsafe acts and activities that transgress the requirements as specified in the EMPr to define what action shall be taken to rectify the problem and prevent its reoccurrence.

Incident Reporting and Remedy

If a leakage or spillage of hazardous substances occurs as a result of activities of Eskom or other users, the local emergency services will be immediately notified of the incident. The following information must be provided:

- The location;
- The nature of the load;
- The status of the site of the accident itself (i.e., whether further leakage is still taking place, whether the vehicle or the load is on fire, etc.).

Written records of the corrective and remedial measures decided upon, and the progress achieved therewith over time, must be kept. Such progress reporting will be important for monitoring and auditing purposes. The written reports may be used for training purposes in an effort to prevent similar future occurrences.

Written instructions

Written reporting will be given following an audit. The written instructions will indicate the source or sources of the problems identified on site and propose solutions to those problems. The implementation to solutions will be assessed in a follow-up audit and further written instructions issued if required.

Maximum allowable response time: 4 working days.

Liaison

Eskom will comply with the requirements for public consultation as required by the EIA Regulations 2010, promulgated in terms of the National Environmental Management Act, 1998 (Act No 107 of 1998).

Throughout the project, ongoing liaison will be maintained with authorities and communities alike to ensure that the following is effected;

- Timeous advanced warning of any project activities that may have some impact on the surrounding communities i.e. blasting.
- Ongoing feedback on the environmental performance of the project.
- A register for comments needs to be opened and maintained by the SECO. The register will contain the contact details of the complainant and information regarding the complaint itself, including the date of submission.

SITE ENVIRONMENTAL CONTROL OFFICER

Eskom will nominate a knowledgeable member of staff on site who will be responsible for the implementation of the Environmental Management Programme as well as the arrangement and maintenance of all traffic accommodation measures required for the duration of the contract. The SECO will oversee the construction phases of the project and will ensure that all environmental specifications and EMPr requirements are met at all times. The SECO will report to the Engineer in an advising capacity.

The SECO will be responsible for monitoring, reviewing and verifying Eskom's compliance with the EMPr. The SECO's duties in this regard will include, inter alia, the following:

- Ensuring that all the environmental authorizations and permits required in terms of the applicable legislation have been obtained prior to construction commencing;
- Monitoring and verifying that the EMPr and environmental authorization are adhered to at all times and taking action if specifications are not followed;
- Monitoring and verifying that environmental impacts are kept to a minimum;
- Assisting Eskom in finding environmentally responsible solutions to problems;
- Keeping accurate and detailed records of all activities on site;
- Inspecting the site and surrounding areas on a regular basis with regard to compliance with the EMPr and environmental authorization;
- Monitoring Eskom's undertaking to provide environmental awareness training for all new personnel on site.

ENVIRONMENTAL CONTROL OFFICER

- An Environmental Control Officer (ECO) must be appointed by Eskom prior to commencement of construction and DEA must be notified of such an appointment.
- The key responsibility of the ECO is to ensure that all the conditions stipulated in the Record of Decision/ Environmental Authorisation (EA) are being adhered to and should monitor project compliance with the conditions of the environmental authorisation, environmental legislation and the recommendations of the revised EMPr.
- The ECO must liaise with the SECO and/or attend site meetings where applicable and where necessary inspect the construction site on a regular basis to ensure that the mitigation and rehabilitation measures are applied.
- The ECO might make reasonable amendments to the EMPr in co-operation with the contractor and the SECO. Penalties for non-compliance must be enforced.
- The ECO will remain employed until all rehabilitation measures, as required for implementation due to construction damage, are completed and the site is handed over to Eskom by the contractor for the operation.
- Any conservation authority/institution as listed in the List of Interested and Affected Parties for the project should be allowed reasonable access to the construction site on request and arrangement with the ECO, the SECO and the Contractor.

SITE SPECIFIC REQUIREMENTS

The following specific requirements as identified during the EIA process need to be taken due cognisance of and proposed mitigating measures should be implemented:

- 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. These measures are included in this EMPr of the BAR.
- Various species of indigenous trees and bush are protected by law in terms of the National Forests Act No 84 of 1998, which stipulates that it is necessary to obtain a permit from the relevant provincial office of the Department of Agriculture, Forestry and Fisheries in order to cut them.
- 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.
- The Tudumo River and various drainage lines are seen as being sensitive. Pylons should not be placed closer than 100m from the edge of river banks or 100m from the edge of drainage lines.
- 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 rocky/mountainous areas should be viewed as sensitive although not as “No-Go” zones. It is recommended to use wide spacing of pylons in the rocky areas to limit the physical footprint on the actual ground.
- **Alternative Route 1 is preferred and submitted as the final proposed route.**
- The site-specific requirements will be updated with reasonable requests for mitigation by the negotiator during meetings and discussion with individual landowners prior to commencement of construction activities.
- A detailed schedule of affected landowners is included in the Register of Landowners on the Route in Appendix E5 of the BA Report.
- The applicable Emergency telephone numbers should always be available on site. Eskom’s Environmental Officer Advisor, Ms. Prudence Khoza, Environmental Management, Eskom Limpopo Operating Unit, is the relevant contact person (Tel: 015 299 0592/ Cell: 082 818 2088).
- A copy of this EMPr must be submitted to relevant landowners should they request it. They can assist Eskom in assuring that the contractor adheres to rules as stipulated and that mitigation and rehabilitation measures are applied.
- The specific measures identified to mitigate the impact of the construction site and workers must be implemented.

The following requirements should be adhered to:

Department of Water Affairs

- It is suggested that the applicant will not need to obtain a water use license or register as a water user in terms of the General Authorisations.
- It should be noted, that If there are any activities which relates to section 21 (c) and (i) water uses of the National Water Act 1998 (Act No. 36 of 1998), the applicant will need to get authorisation from the Department of Water Affairs before such activities commences.

Provincial Department of Roads and Transport

The Provincial Roads R518, R579; and District roads D4100 are affected by the proposed servitudes, should any of the route alternatives be constructed.

In terms of the National Roads Act (Act No 54 of 1971), the requirements of standard conditions applicable to power lines parallel to or across national and provincial roads are as follows:

- Only under exceptional circumstances will crossings within 500m of an intersection be permitted.

- No infrastructure will be allowed within 60m from the edge of the road reserve or within a distance of ninety-five (95) metres from the centre line of a building restriction road.
- Vertical clearance as set out in the Occupational Health and Safety Act No. 85 of 1993 to be maintained.
- The proposed angle of crossing to be as close to 90 degrees as possible.
- When considering an infrastructure site, no direct access from a national road to be permitted.

In addition, the following *general requirements of the Provincial Department of Roads and Transport*: Roads Management could be expected:

- A wayleave will be granted in terms of the Advertising on Roads and Ribbon Development Act (Act 21 of 1940, as amended) and the Roads Ordinance (Ordinance 22 of 1957, as amended) and its Regulations and does not exempt Eskom from the provisions of any other law.
- The Wayleave Application should be supplied to the Dept, with appropriate plans before the commencement of construction.
- The general conditions for the overhead wayleave should be accepted by Eskom in writing as per written notification of the Dept.
- The overhead lines are not to be lower than 10m above the highest point of the road surface.
- At crossings no pylons, poles, anchors or parts thereof may be erected closer than 16 m from the road reserve. Where the routes of the lines are parallel to the road(s), it must not be closer than 15m outside the road reserve.
- Crossing services should be perpendicular to the affected road(s).

It is expected that Eskom Land and Rights will apply for exemption from some of the requirements above. The specific requirements from the Provincial Department of Roads and Transport: Roads Management should be obtained. At the time of submission of this report, comment has not been obtained from the Department.

DESIGN AND PRE-CONSTRUCTION PHASE

ENVIRONMENTAL SUPERVISION

- The SECO (contact person: Mrs. Prudence Khoza, Environmental Management, Eskom Limpopo Operating Unit, Tel: 015 299 0592/ Cell: 082 818 2088 and ECO must inspect the construction site on a regular basis (during pre-construction, construction and post-construction periods) to confirm the current state of the site and to ensure that the mitigation and rehabilitation measures are applied as specified in the EMPr. These officers might make reasonable amendments to the EMPr in co-operation with the contractor.

DESIGN

- The engineering drawings must adhere to any site-specific mitigation measures supplied by the geotechnical engineer for the project in order to accommodate the geotechnical and earth-scientific constraints in terms of founding and construction methods, construction materials, excavation, etc.
- The final design of the powerlines must accommodate any requirements of the landowners as communicated during the Public Participation Process and confirmed in the option document signed by the applicable affected landowner.
- The final design of the power line must accommodate the requirements of the ecologist, Wynand Vlok (Tel 082 200 5312), of which the site-specific details are included in this EMPr. The ecological assessments are included in Appendix D1 of the BA Report.

COMPLIANCE WITH SPECIFICALLY IDENTIFIED LEGAL REQUIREMENTS

The National Water Act (Act No 36 of 1998)

- Of relevance is, that the Alternative Routes run to the west of a water course (Tudumo River) and traverse a few seasonal streams and drainage lines. Whichever route is finally decided upon, crossings will still be necessary and mitigation measures are recommended to prevent any impact on water courses:
- Hence, no construction of any sort should take place within any aquatic and riparian habitats encountered, as these habitats are viewed as sensitive.
- There will therefore be *no impact on any watercourse or waterflow with regards to impeding flow or altering flow, as discussed in Section 21 c & I, or any of the listed water uses of the Water Act and relevant General Authorisations.*
- It is suggested that the applicant is complying with all aspects of the Water Act and General Authorisations, including all of the above points mentioned and there would therefore be **no need to obtain a water use license or register as a water user in terms of the General Authorisations.**
- It should however be noted, that If there are any activities which relates to section 21 water uses of the National Water Act 1998 (Act No. 36 of 1998), the applicant will need to get authorisation from the Department before such activities commences.
- Locality maps that show where the development will affect the watercourse as well as a description of how it would be affected need to be submitted to the relevant office together with the license application to undertake such a development. The likely relevant activity is described in Section 21(i) as “Altering the bed, banks, course or characteristics of a watercourse”. An additional activity that could be relevant and for which authorisation could also be required is Section 21(c) “Impeding or diverting the flow of water in a watercourse”.
- Additional information with the latest requirements for water use applications are supplied on the Department’s website, www.dwae.gov.za.

National Forests Act (Act 84 of 1998)

- Some species of indigenous trees are protected by law in terms of the National Forests Act (Act No. 84 of 1998) that may not be removed unless permission is granted by Department of Agriculture, Forestry and Fisheries (DAFF). Authorisations for cutting, trimming or removing of these protected trees must be obtained prior to commencement of construction in the relevant area. For protected trees on the National list, permits should be obtained from the relevant provincial office of the Department of Agriculture, Forestry and Fisheries (DAFF).
- Relevant to this project is that Red data species and protected species found in the area include large Sclerocarya birrea that 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.
- Enquiries regarding such permit applications can be made to the following addresses:
  Assistant Director
  Izak van der Merwe
  Tel: (012) 336 7731
  Email: 1dq@dwaf.gov.za
  Or
  Assistant Director: Forest Regulation
  Ephraim Monyemoratho
  Tel: (012) 336 7140
  Email: 1ai@dwaf.gov.za
- Due cognisance must be taken of the latest forms and regulations currently available on the following website link : http://www2.dwaf.gov.za/webapp/SustainableProtectedTrees.aspx
  - Application for a license regarding Protected Trees
  - Protected Trees Species list, 2007
  - Criteria & Framework for application of Legislation on Protection of Indigenous Tree Species, 2000

The Limpopo Environmental Management Act (LEMA), 2003 (Act no 7 of 2003)

- The Limpopo Environmental Management Act (LEMA), 2003 (Act no 7 of 2003) took the place of the former Nature Conservation ordinances. The district offices of the Department of Economic Development, Environment & Tourism, Limpopo Province are designated to deal with compliance in terms of LEMA and the protected plants in terms thereof or applicable permits applications.
- For protected trees on the provincial list (specific to each province), permits should be obtained from the relevant provincial nature conservation departments. These departments and permit sections tend to fall under different governing bodies for the different provinces.

COMMUNITY ISSUES

- Eskom representatives must liaise personally with all directly affected landowners prior to any construction activities taking place. The objectives of this liaison will be the following:
- To identify the most effective time schedule for construction activities to take place on the applicable properties;
- To confirm site-specific requirements as identified during the EIA process;
- To identify any additional site-specific issues with reasonable mitigation measures that had not been identified and documented during the Public Participation Procedures of the EIA process undertaken for the project.
- To update the contact details of affected landowners in case that access to properties are required for both maintenance and emergency situations.
- To confirm contact details of the Contractor and Eskom representatives to ensure effective communication during the construction and operational phases of the project.

(Find attached in Appendix E5 of the BAR a register of the affected landowners).

EDUCATIONAL PROGRAMMES

An environmental education programme should be followed to ensure that the construction workers are well aware of relevant issues such as

- The purpose of conservation of the natural environment;
- The restriction on cutting of firewood from the veld;
- Pollution control and waste management;
- Rules to curb social pathologies (prostitution, drunkenness, theft);
- HIV/Aids prevention.

CONSTRUCTION SITE

- Camp site, storage facilities and other necessary temporary structures to be erected within the immediate area demarcated within the Lebowakgomo, Dithabaneng and Dwaalkop substations.
- No camp sites or other temporary structures to be erected outside the designated areas of the powerline corridors. The locations must be negotiated with the relevant landowners and specifications of the landowners must be adhered to.
- Plan campsites an appropriate distance from any facility where it can cause a nuisance.
- 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.
- Contractors should develop a comprehensive site camp management plan. This should apply even in the case of the limited accommodation camps discussed above.
- If at all viable, accommodation for the construction workers should be rented in the nearest town. Sewage disposal will therefore be through the Municipality's main sewer line. Should accommodation in a construction camp be unavoidable, then the measures as stipulated in the EMPr must be adhered to.
- The construction site office and storage areas for material and equipment must be fenced in to prevent impacts and human interference to spread further than the site.
- No material or machinery to be stored or placed in the open veld outside the designated area of the powerline corridors.
- All construction activities and movement of people and machinery to remain within the designated powerline corridor, as far as possible and within reason.
- Temporary access roads for vehicles carrying equipment, materials, etc. into the powerline corridors need to be kept to an absolute minimum. None of these accesss roads may cross through sensitive areas.
- Work corridor to be limited to 20 metres along the route of the servitudes.
- 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.
- Minimize on-site storage of petroleum products.
- 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).
- Proper and adequate containers (rubbish bins) to be placed 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 (e.g. 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 and disposal at municipal waste disposal sites should be regular - at least twice a week.
- Any waste, that cannot be recycled, will be transported to an appropriate landfill site licensed in terms of section 20 (b) of the National Environment Management Waste Act, 2008 (Act No 59 of 2008). The disposal of any construction waste will be the responsibility of the developer and should be done at least twice a week. A letter of agreement between the developer and the Permit Holder of the waste disposal site shall be provided to the DWA.

- Dispose of liquid waste (grey water) with sewerage.
- Under no circumstances may any sewage, waste food or general litter be dumped in the veld.
- No water for drinking or cooking purposes should be used from out of streams, vleis or farm dams in the vicinity. It is important for relevant management or contractors to ensure that staff/workers are supplied regularly with adequate clean drinking and cooking water.
- The water used to supply the site with potable water is sourced/purchased from landowners in the area with pre-existing rights. The contractor should deliver the water to the site in the applicable water tankers. These requirements are included in the EMPr under the headings "*Construction site*" and "*Ground and Surface Water*".
- 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.
- Sufficient ablution and proper cooking facilities must be provided at the site camp.
- Install appropriate facilities at the campsite. Preferably utilize municipal systems (conservancy tanks with periodic removal) or chemical toilets.
- In general, no ablution facilities should be located within 200m of the banks of any watercourse.
- The disposal of chemical toilets should be at a registered or licensed sewage disposal facility. Proof of agreement between the applicant and the sewage disposal facility for such disposal, confirming that there will be enough capacity to accommodate additional waste, should be submitted to the Department of Water Affairs.

FIRE MANAGEMENT PLAN

A fire management plan must be identified, implemented and maintained, commencing prior to construction and maintained throughout the operational phase. The following additional measures must be included :

- No open fires to be allowed outside of the Lebowakgomo, Dithabaneng and Dwaalkop substations sites.
- Collection of wood for fires and cooking from out of the surrounding veld is prohibited.
- In campsites in the substations 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.
- No open fires to be allowed in the powerline corridors or adjacent areas. In such cases proper provision for portable gas stoves should be made. All relevant laws related to flamable substances to be strictly adhered to.
- No fires may be made for the burning of vegetation and waste.
- Fire fighting equipment must be readily available on site during all times.
- Branches and other debris resulting from pruning processes should not be left in areas where it will pose a risk to infrastructure.
- Fires shall not be made for the purpose of chasing or disturbing indigenous fauna.
- 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, 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.

APPOINTMENT OF CONTRACTORS

- Environmental clauses as referred to in this EMPRr, should be included in contract documents of all contractors.
- All identified site-specific measures in terms of community requirements, the ecology and bird impact for the specific property must be included in the contract with the Contractor and implemented by the Contractor during the construction phase.

- The appointment of contractors with proven track records of sound environmental performance should be given priority.
- The contractor must ensure that the majority of unskilled labour is obtained from the local residents in the macro area.
- The contractor must ensure that he is well aware of the implications of and must ensure compliance with the following legal requirements, guidelines and policies:
- To identify the most effective time schedule for construction activities to take place on the applicable properties;
- All relevant Eskom standards, specifications and procedures to manage the significant aspects with regards to oil management, bush clearing, entrance of private property, etc.
- Requirements in terms of removing cutting and/or trimming of protected trees in terms of the National Forests Act (Act 84 of 1998).
- All Sections and Regulations of the National Water Act, 1998 (Act 36 of 1998) must be complied with; specifically specifications as described in Section 19 on Pollution and Waste.
- Environmental Best Practice Guidelines and Specifications, compiled by the Department of Water Affairs.
- Legislation with regard to graves that is included in the National Heritage Resources Act (No 25 of 1999). It should be noted that the Act also distinguishes between various categories of graves and burial grounds. Other legislation with regard to graves includes those which apply when graves are exhumed and relocated, namely the Ordinance on Exhumations (No 12 of 1980) and the Human Tissues Act (No 65 of 1983 as amended).
- The contractor must be aware that all waste material generated during and after construction that cannot be recycled should 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). An agreement letter between the municipality and the contractor should be submitted to the regional office of the Department of Water Affairs regarding the disposal of such waste material. Proof to be kept on site.

CONSTRUCTION PHASE

GROUND AND SURFACE WATER

- Site-specific mitigating requirements as included in the table in the section "Specifications applicable to all Phases of Project Development" must be adhered to.
- No water for drinking or cooking purposes should be used from out of streams, vleis or farm dams in the vicinity. It is important for relevant management or contractors to ensure that staff/workers are supplied regularly with adequate clean drinking and cooking water.
- Water should be sourced/purchased from farmers in the area with existing water rights and delivered to the site in the apllicable water tankers.
- 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 farmers.
- All storm water run-offs must be managed efficiently so as to avoid storm water damage and erosion to adjacent properties.
- During and after construction, storm water control measures should be implemented especially around stockpiled soil, excavated areas, trenches etc. to avoid the export of soil into the watercourse.
- Storm water should not be discharged into the working areas and it should be ensured that storm water leaving the footprint of the proposed development areas is not contaminated by any substance, whether that substance is solid, liquid, vapor or any combination thereof.
- Stockpiling op construction material and soils should be such that pollution of water resources is prevented and that the materials will be retained in a storm event.
- It is strongly recommended that no construction of any sort takes place within aquatic and riparian habitats encountered, as these habitats are viewed as sensitive.

Rivers, seasonal streams and drainage lines

- Of relevance is, that the Tudumo River runs to the west of the proposed powerline corridor along with a few seasonal streams and drainage lines that cross the corridors for the powerlines. These need to be completely avoided and no pylons may be placed directly within any one of these water courses.
- No temporary or other construction facilities to be erected or stored within 200m of the banks of any river or stream.
- Positioning of any pylons need to be a minimum of 100m from the edge of river banks or outside of the 1 in 100 year floodline, whichever is furthest.
- 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.
- No temporary ablution facilities to be placed within 200m of the banks of any river or seasonal stream.
- No temporary ablution facilities to be placed within 200m of any drainage line, even if they are dry.
- All stream crossings are considered as sensitive areas and no traffic are allowed through it (only at properly constructed bridges) during construction or maintenance of the power line.
- No fishing, capture of any water or land animals, or removal of water plants or other vegetation for food to be allowed.

Construction camp

- Camp site, storage facilities and other necessary temporary structures to be erected within the immediate area demarcated for the substations.
- 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.
- According to the applicant and their contractors, accommodation for the construction workers is mostly rented in the nearest town. Sewage disposal will therefore be through the Municipality's main sewer line. Should accommodation in a construction camp be unavoidable, then the measures as stipulated in the EMPr must be adhered to.

- Included as requirement in the EMPr under heading *"Waste Management"* is the following*:* The disposal of chemical toilets should be at a registered or licensed sewage disposal facility. Proof of agreement between the applicant and the sewage disposal facility for such disposal, confirming that there will be enough capacity to accommodate additional waste, should be submitted to the Department of Water Affairs.
- No water for drinking or cooking purposes should be used from out of streams, vleis or farm dams in the vicinity. It is important for relevant management or contractors to ensure that staff/workers are supplied regularly with adequate clean drinking and cooking water.
- The water used to supply the site with potable water is sourced/purchased from farmers in the area with pre-existing rights. The contractor should deliver the water to the site in the applicable water tankers. These requirements are included in the EMPr under the headings "*Construction site*" and "*Ground and Surface Water*".
- 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 farmers. For this project, water tanks will be used during construction.
- 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.
- No material or machinery to be stored or placed in the open veld outside the designated area of the powerline corridors.
- Proper and adequate containers (rubbish bins) to be placed 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 (e.g. Paper and plastic) been blown into the veld, etc. Proper waste management is essential.

<u>Diesel, hydraulic fluid and lubricants</u>

- Minimize on-site storage of petroleum products. Relevant to this project, is that the relevant dangerous goods to be stored on site is diesel. The diesel tank can hold 2000 litres (2 cubic metres). Of relevance is: GNR 544 of 2010, activity nr 13 that states "…storages of dangerous goods with a capacity above 80 cubic metres….". The amount of diesel that will be stored on site is 2 cubic metres and is therefore a relatively small amount and well below the threshold of the listed activity of 80 cubic metres.
- Precautionary methods to be implemented for handling of oil and substances that could impact on the soils, ground- and surface water :
- No hazardous substances may be stored on site for a period exceeding 90 days. (Note that the Department of Water Affairs requires a permit for a waste disposal site in the event that longer storage periods apply).
- All hazardous substances at the site must be adequately stored and accurately identified, recorded and labeled. The storage of any hazardous substances must take place in a secured lock-up building or covered area.
- Build adequate structures (berms and containment structures) to contain any oil spills that 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).
- A container filled with sand to soak up any spillages, as well as an empty container into which the "contaminated" sand could be placed and stored for collection by the supplier of the chemicals or oils must be provided.
- If spills occur it should be reported to the SECO and/or ECO with immediate effect. It should be immediately cleaned up to the satisfaction of the Regional Representative of the Department of Water Affairs by removing the spillage together with the polluted soil and by disposing it at an authorized waste disposal site. The Department should be notified of such spills within 24 hours of the incident.

<u>Site camp domestic waste (kitchens, showers)</u>

- Deposit solid waste in containers and dispose of regularly- at least weekly. 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). Proof to be kept by contractor.
- Under no circumstances may any waste food or general litter be dumped, or buried in the veld.
- Dispose of liquid waste (grey water) with sewerage.

Site camp sewage

- Minimize on-site accommodation.
- Supply, maintain and enforce the use of mobile toilets at the work sites. Only proper portable, chemical ablution facilities to be used and these to be positioned only within the 31m powerline servitudes.
- No temporary ablution facilities to be placed within 200m of the banks of any of the rivers, streams or drainage lines (even those that are dry during the time of construction).
- The following is included as requirement in the EMPr under the heading *"Waste Management*": The disposal of chemical toilets should be on a regular basis and at a registered or licensed sewage disposal facility. Proof of agreement between the applicant and the sewage disposal facility for such disposal, confirming that there will be enough capacity to accommodate additional waste, should be submitted to the Department of Water Affairs.
- Under no circumstances may any effluent or sewage to be dumped (or buried) in the open veld.

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

- Ensure compliance with stringent clean up requirements on site. As a general requirement, disposal should be at least twice a week.
- The solid waste will be transported off site by the contractor and returned to Eskom Stores where the scrap will be handed over to buyers (scrap dealers). Mostly the waste is steel that is recycled and taken to the Eskom stores. Other waste is normally the used cement bags and this is disposed of in the construction hole for the pylon. The bags will be mixed into the cement and used to fill the excavated hole of the pylon. Any other waste that cannot be recycled (this is minimal) will be transported to an appropriate landfill site licensed in terms of section 20 (b) of the National Environment Management Waste Act, 2008 (Act No 59 of 2008). The disposal of any construction waste will be the responsibility of the developer and should be done at least twice a week. A letter of agreement between the developer and the Permit Holder of the waste disposal site shall be provided to the DWA.
- These measures are also included as requirements in the EMPr under the headings *"Appointment of Contractors"* and "*Waste Management*". Also refer to the other mitigation measures under the same headings.

WASTE MANAGEMENT

- Proper and adequate containers (rubbish bins) to be placed 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 (e.g. Paper and plastic) been blown into the veld, etc. Disposal should be regularly- at least twice a week.
- The site camp inert waste shall be transported off site by the contractor and returned to Eskom Stores where the scrap will be handed over to buyers (scrap dealers).
- Any **other waste that cannot be recycled**, shall be transported to an appropriate landfill site licensed in terms of section 20 (b) of the National Environment Management Waste Act, 2008 (Act No 59 of 2008).
- The disposal of any construction waste will be the responsibility of the developer and should be done at least twice a week. A letter of agreement between the developer and the Permit Holder of the waste disposal site shall be provided to the DWA. Proof to be kept on site.
- Dispose of liquid waste (grey water) with sewerage.
- Chemical toilets should be provided for employees on site and their disposal should be at a registered or licensed sewage disposal facility. Proof of agreement between the applicant and the sewage disposal facility for such disposal, confirming that there will be enough capacity to accommodate additional waste, should be submitted to the Department of Water Affairs.
- Minimize on-site storage of petroleum products. Relevant to this project, is that the only relevant dangerous goods to be stored on site is diesel. The diesel tank can hold 2000 litres (2 cubic metres). Of relevance is: GNR 544, activity nr 13 that states "…storages of dangerous goods with a capacity above 80 cubic metres…." is a listed activity. The amount of diesel that will be stored on site is therefore relatively small and well below the threshold of the listed activity of above 80 cubic metres.
- *Precautionary measures* to be implemented for handling of oil and substances that could impact on the soils, ground- and surface water :
- No hazardous substances may be stored on site for a period exceeding 90 days. (Note that the Department of Water Affairs requires a permit for a waste disposal site in the event that longer storage periods apply).

- All hazardous substances, *if any*, at the site must be adequately stored and accurately identified, recorded and labeled. The storage of any hazardous substances must take place in a secured lock-up building or covered area. All these hazardous substances should be disposed of at a licensed Class H site.
- Build adequate structures (berms and containment structures) to contain any oil spills which might emanate from transformers (relevant to this project is that no substation with its applicable transformers will be constructed).
- 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).
- A container filled with sand to soak up any spillages, as well as an empty container into which the "contaminated" sand could be placed and stored for collection by the supplier of the chemicals or oils must be provided.
- In case of a spill, any oil-contaminated waste (soil, cloths used to clean small spills etc.) must be disposed of at a facility that is registered as a hazardous landfill.
- The Regional Representative of the Department of Water Affairs and Forestry (tel 012- 392 1411) should immediately be informed if pollution of any groundwater or soils occurs. They will give instruction on actions to be taken in this regard.

PREPARATION OF SERVITUDE / VEGETATION CLEARANCE

- Site-specific mitigation requirements as included in the section "Specifications applicable to all Phases of Project Development" must be adhered to.
- The procedures for vegetation clearance and maintenance within overhead power line servitudes and on Eskom owned land, updated September 2009 must be implemented.

The minimum standards are summarised as a guideline as follows:

Item	Standard	Follow up
Centre line of proposed powerline	Specification for width of vegetation clearance on new lines (above 33kV) shall be determined based on the EIA and EMP. New power line, 33kV and below, an 8 metre (or as determined per site) wide strip of identified vegetation along the centre line should be cleared. If Required, 5 meter wide strip to be cut close to the ground (50 mm) for access purposes.	Re-growth shall be cut within 50 mm of the ground and/or treated with herbicide as necessary.
Inaccessible valleys (trace line)	If no other alternative, clear a 1 metre strip for access by foot, only for the pulling of a pilot wire by hand, or make use of a helicopter, or other technique, to fly line across.	Vegetation not to be disturbed after initial clearing– vegetation to regrow.
Tower position and support/stay wire position	Clear all vegetation within proposed tower position and within a maximum (depending on the tower type and voltage) radius of 5 m around the position, including destumping /cutting stumps to ground level, treating with an herbicide and re-compaction of soil.	Re-growth to be cut at ground level and treated with herbicide as necessary.
Indigenous vegetation within servitude area (outside of the maximum 8 m strip)	Selective trimming or cutting down of those identified plants interfering or posing a threat to the integrity of the power line.	Selective trimming
Alien species (Declared Weeds ito CARA Reg 229) within servitude area (outside of the maximum 8 m strip)	Control programme to be implemented as per above procedure. Trimming need not be selective.	Cut and treat with appropriate herbicide.

- Indigenous vegetation that does not interfere with the safe operation of the power line should be left undisturbed. No indigenous trees or shrubs outside of the power line corridor of 8m to be removed.
- Existing access roads should be used as far as possible. Where clearing for an access and maintenance road is essential, the maximum width to be cleared is 8m.

- Temporary access roads for vehicles carrying equipment, materials, etc. into the power line corridors need to be kept to an absolute minimum. None of these access roads may cross through sensitive areas.
- Ensure that no trees or existing grass strata outside of the servitude corridor be removed to lower any kinetic energy of potential run-off, that disturbed surface areas in the construction phase be restored and lastly that no open trenches or mounds of soils created during construction be left.
- Clearing for pylon positions must be the minimum required for the specific tower, not more than a 5m radius around the structure position.
- A few rocky/mountainous areas have been identified along the proposed servitude routes. These areas are considered moderately sensitive and should be approached with caution.
- The area is not seen as a "No-Go" area, 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 rocky area.
- Access roads need to be kept to an absolute minimum.
- All exotic plants must be removed during construction and cleared areas must be rehabilitated. Areas where exotic plants are cleared should be rehabilitated and re-planted with approved indigenous species.
- Care must be taken to ensure alien vegetation is not spread as a result of vegetation management processes through the transport of seeds or other vegetative material from one site to another.

CONTROL OF ALIEN VEGETATION

- 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.
- Alien vegetation in servitudes shall be managed in terms of the 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. to 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.
- 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.

PROTECTION OF FAUNA AND FLORA

- No animals or birds may be fed, disturbed, hunted or trapped as well as no plant material removed or stored if not part of identified vegetation clearance.
- Various species of indigenous trees and bush are protected by law in terms of the National Forests Act No 122 of 1984, which stipulates that it is necessary to obtain a permit from the relevant provincial office of the Department of Agriculture, Forestry and Fisheries in order to cut them.
- Protected or endangered plant species that will be affected by the physical footprint of the power lines will require the necessary permits to cut or remove them.
- The ecological survey **observed protected trees** during the site investigations, therefore **permits** for cutting or trimming are envisaged.
- Large Sclerocarya birrea are present along the powerline corridor and 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.
- The rescue of protected and endangered plants that can be replanted should be coordinated by the ECO in consultation with the provincial environmental authorities, and the appropriate post-construction rehabilitation measures must be implemented.
- The harvesting of medicinal plants, which may occur on the site prior to site clearance, should be coordinated by the ECO.

BIRD IMPACT

- The proposed construction of the new power line should have a **low - medium** habitat transformation impact from an avifaunal perspective, depending on how many trees are removed during the construction of the line. The highest impact will be hilly areas where relatively structurally intact woodland persists.
- The proposed construction of the new Boynton substation should have a **low** habitat transformation impact, given the extent of habitat degradation already evident in the area.
- The removal of large trees should be avoided as much as possible.

SOIL EROSION

- Neither drainage nor erosion is seen to be significant threats as long as the proper mitigating measures are implemented.
- Site-specific mitigation requirements as included in the table in the section “Specification applicable to all Phases of Project Development” must be adhered to.
- To cause the loss of soil by erosion is an offense under the Soil Conservation Act, Act No 76 of 1969.)
- Construction activities should be well managed to prevent erosion and the following is relevant:
- A water course (Tudumo River) is to the west of the proposed powerline corridor along with 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. Mitigation measures as previously indicated are relevant:
  - No temporary or other construction facilities to be erected or stored within 200m of the banks of the Tudumo River.
  - 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.
  - Construction must be limited to drier periods.
- 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.
- Only a few mountainous areas have been identified along the proposed servitude routes. These areas are considered moderately sensitive and should be approached with caution.
- 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 rocky area.
- Access roads need to be kept to an absolute minimum.
- No temporary storage facilities, toilets, dwellings, etc. of any kind to take place within this rocky area. Not even within the demarcated power line corridor.
- The longest possible distance between pylons should be used in an effort to limit the footprint size on the mountainous areas.
- The power line must run as straight as possible through these areas. This in an effort to limit sharp turns that literally create a larger physical footprint on the ground.
- 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.
- Construction during the dry months/periods of the year should be considered in order to overcome the problems caused by excessive moisture.
- The eradication of any alien vegetation should be followed up as soon as possible by replacement with indigenous vegetation to ensure quick and sufficient coverage of exposed soil.
- Surface area under powerlines to be mowed and not ploughed.
- Disturbed surface areas in the construction phase to be restored. No open trenches to be left. No mounds of soils created during construction to be left.
- The final design of the power line must accommodate the requirements of the ecologist, Wynand Vlok (Tel 082 200 5312), of which the site-specific details are included in this EMPr. These measures will limit the impact on erosion.

HERITAGE RESOURCES

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 Dithabaneg Substation is situated at a safe distance from Alternative 1 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.

Recommendation

- **Alternative 1** and Alternative 02 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 notify 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.

In addition a desktop Palaeontological Study was conducted to assess the fossil heritage of national and international significance. The impact of the development on fossil heritage is LOW and therefore no mitigation or conservation measures should be necessary.

Recommendation

- 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.
- Alternative 1 and Alternative 2 are therefore suitable for construction.

COMMUNITY ISSUES (SAFETY, SECURITY, NOISE, DUST, ETC.)

- Site-specific mitigatory requirements as included in the table in the section "Specification applicable to all Phases of Project Development" must be adhered to.
- Construction workers must be extremely careful not to damage any property. Should any damage occur it should be reported to the Environmental Officer and repaired to the written satisfaction of the landowner.
- Removal of agricultural products is prohibited.
- No firewood may be collected without the landowner's permission. All cut wood must be left on the property.
- No fires are to be made on private property.
- In order to prevent and/or minimize crime, it is required that all construction workers be supplied with controlled serviced accommodation or be supplied with transport to their homes.

- No wandering on adjacent properties is allowed, unless written consent has been obtained from the relevant landowners.
- All adjacent landowners have to be informed of the blasting programme (if applicable) prior to any blasting taking place. Contractors must liaise personally with adjacent landowners. All communication in this regard must be documented.
- Blasting may only be undertaken by specialists in the field and should be limited to small localized areas. All relevant legislation must be adhered to.
- All contractors and construction workers will be issued with temporary permits to enter the property.
- All construction workers will be allowed only for specified day light hours. Transport should be made available by the Contractor to remove labourers from the site after working hours.
- Secure accommodation facilities must be provided for guarding personnel.
- Supervision of labourers must at all times take place.
- Construction hours will be restricted to specific periods which exclude Sundays and public holidays.
- Sweeping of construction sites, clearing of building rubble and debris (storage areas, roads, etc.) must take place at least once a day.
- All excavated areas must be clearly marked and barrier tape must be placed around them to prevent humans and animals from falling into them.
- All gates into the properties of landowners should be kept closed at all times.
- No squatting to be allowed in the servitude area.

PROTOCOL FOR ACCESS TO PROPERTY

Eskom Holdings has a right to enter property in order to maintain plant and obtain meter readings, therefor the manner of access to land, on which Eskom holds servitudes and electrical infrastructure, should be considered by Eskom as well as landowners. Security on farms is important to landowners who need to ensure that the safety of their family, staff and property is catered for. Coupled to this is the escalating crime rate on farms.
Approaches to facilitate access to farms 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 of which a copy can be obtained from the local organised agriculture structures.
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 duel-use is made of the gate by Eskom Holdings and the landowner, 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 landowners’ locks will be tolerated. The cutting of landowners’ 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 it's 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 its 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 its 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.

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.

- 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 effected 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.
- The existing complaints structure must be revised by Eskom and be updated on a regular basis and communicated with all the affected landowners to ensure effective response and service supply.
- The contact details of all landowners affected as well as relevant Eskom staff must be listed and updated regularly and be communicated with all the stakeholders to ensure effective communication in the case of emergencies such as veldfires.
- 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.
- Debris shall not be burnt under any circumstances
- Fires shall not be made for the purpose of chasing or disturbing indigenous fauna.
- Eskom encourages affected landowners and maintenance staff to participate in the Fire Protection Agency.

POST-CONSTRUCTION & OPERATIONAL PHASE

SOIL EROSION

- Specifications for topsoil storage and replacement to ensure sufficient soil coverage as soon as possible after construction activities as identified in the Environmental Management Programme must be implemented.
- All embankments (if any) must be adequately compacted and planted with grass to stop any excessive erosion and scouring of the landscape.
- After construction, all roads should be rehabilitated.
- The site must be rehabilitated and replanted with suitable, indigenous grass to prevent erosion.
- Vegetation within the powerline corridors to be mowed as a maintenance procedure and not ploughed. Ploughing disturbs the soils, increasing the possibility of soil erosion by water runoff.
- Areas around foundation slabs to be check before and after the summer rainy season for signs of soil erosion due to stormwater run-off. Such sites need to be modified and rehabilitated to prevent ongoing erosion. These sites need to be monitored more closely than other sites which show no or minimal signs of erosion.

ALIEN VEGETATION

- 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. This area is pristine with little to no alien infestation. Alien plants generally get a foothold in an area where the soils have been disturbed.

CONSTRUCTION SITE CLEARANCE

- After construction, any building material, signs of excess concrete, equipment, houses, ablution facilities, building rubble, refuse and litter needs to be removed and cleaned up from the construction site as well as from the store room by the contractor. This within 3 months of completion of the project
- Proper and complete take down and removal of all temporary accommodation sites, storage sites, etc. needs to take place within three months of completion of the project. This includes all litter.
- Items that can be used again should be recycled. Unusable waste steel and aluminum will be sold to scrap dealers for recycling at the Eskom stores.
- Any waste that cannot be recycled should 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).
- 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.
- All disturbed sites and surfaces to be rehabilitated.
- No unused piles of sand, soil or construction materials of any kind whatsoever to be left in the powerline corridors, or at temporary construction or storage sites.

COMMUNITY ISSUES

- All complaints received with regards to poor conduct of Eskom personnel, malfunction of or damage to Eskom structures; bird killings as a result of electrocutions and/or collisions; etc. will be investigated by Eskom in co-operation with all the relevant stakeholders.
- The existing complaints structure must be revised by Eskom and be updated on a regular basis and communicated with all the affected landowners to ensure effective response and service supply.
- A list of all names, telephone numbers and addresses of the relevant Eskom employees, contractors and all affected landowners must be compiled and regularly updated and distributed to everyone to ensure sufficient communication channels in case of emergency and where access is required for maintenance and debushing purposes.
- 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.
- No wandering on adjacent properties is allowed, unless written consent has been obtained from the relevant landowners.

VEGETATION MAINTENANCE OF THE SERVITUDE

- The document "Eskom Environmental Procedure: Procedure for Vegetation Clearing and Maintenance within Overhead Powerline Servitudes and on Eskom owned land", updated September 2007, must be implemented.
- Selective bush clearing must take place. Indigenous vegetation which would not interfere with the safe operation of the new Substation and the power lines should be left undisturbed.
- A minimum rolling three year vegetation management programme should be promoted. This will allow effective identification, management and follow up of problematic vegetation.
- Surface area under powerlines to be mowed and not ploughed.
- 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 control programme for alien vegetation control must be implemented.
- 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. This area is pristine with little to no alien infestation. Alien plants generally get a foothold in an area where the soils have been disturbed.

BIRD IMPACT

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 (see Appendix B Sensitivity map in the Bird impact assessment that is included in Appendix D3 of the BAR, for the area to be marked with Bird Flight Diverters). Appendix C indicates the preferred Bird Flight Diverters to be used.
- 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.

MONITORING PROGRAMMES

- The Environmental officer should inspect the construction site on a regular basis to ensure that the mitigation and rehabilitation measures are applied as specified in the Environmental Management Plan.
- Inspection of the servitude should include monitoring of the servitude during the Post-Construction & Operational Phase to detect any potential erosion problems timely. Mitigation measures should immediately be identified and implemented by Eskom in cooperation with the landowner.
- Any incidents resulting from Eskom structures and operation that might have a detrimental impact on the environment will be investigated and measures, if applicable, will be identified in close cooperation with the affected parties and/or stakeholders and be implemented and monitored accordingly.
- Eskom must at all times follow acceptable maintenance and operational practices to ensure consistent, effective and safe performance of the infrastructure.

DECOMMISSIONING

Should the powerlines have to be decommissioned in the future (it is not envisaged), the structures will generally have to be physically removed. This will entail the reversal of the construction process with potential significant environmental impact if not undertaken in a sensitive manner. It is therefore recommended that Eskom compile an Environmental Management Programme (EMPr) specifically for the decommissioning process at that stage to restrict and prevent potential negative impact on the environment.

It is proposed that this EMPr for Decommissioning includes the following mitigating measures:

- The construction teams will ensure that all waste is removed from the site and that all items are recycled as far as possible at the Eskom stores. Excess waste steel and aluminum can also be sold to scrap dealers for recycling.

- 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).
- The natural habitat within the servitudes will as far as reasonable be rehabilitated to its original state.
- 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.

****