

Eskom Bulge-Toulon 33kV line
DEA Ref nr 12/12/20/2097
Final Basic Assessment Report
Appendix F: Environmental Management Plan
Compiled September 2011

1. DETAILS OF THE PROPOSED ACTIVITIES

Eskom Distribution Northern Region (the Applicant) commissioned Texture Environmental Consultants (the Environmental Assessment Practitioner) to undertake an Environmental Impact Assessment for the proposed project.

The proposed project requires the construction of a ±17km 33kV line from the new Bulgerivier substation to supply Toulon Pumps. Inclusive to this application is the construction of the following:

- Construct a 33kV line from the new Bulgerivier substation to T-off from the Waterberg-Toulon Pumps 132kV line.
- Construct an access/ construction road for the new 33kV line.
- Obtain a servitude area of 31metres wide for the line.

The outcome of this project is to improve the supply to Toulon Pumps substation. The substation provides supply to the pump station that provides water to the Lephalele Municipality as well as Matimba Power Station.

1.1 Locality and Regional Context

Eskom is planning the construction of a 33kV powerline from Bulge River substation to link in on the existing Waterberg-Toulon Pumps powerline. The substation and powerline corridors are to the south of Lephalele (Ellisras) and north-east of Vaalwater in the Limpopo Province. The study area is north of the well-known Waterberg mountain range and the Marakele National Park. (Refer to Appendix A of the BAR for a copy of the Locality map and Route map).

Three route alternatives were considered for this project. The affected properties for the alternative routes investigated are on the farms Bulge Rivier 198 KQ Portions 2, 6; Mooifontein 150 KQ Portions 1,2,3; Hartbeesdrift 189KQ RE; Bulspruit 146 KQ Portion 1; Onverwacht 149 KQ RE, Portion 1; Wolwenfontein 645 LQ Portions 1,2,3; Bultfontein 145 KQ Portions 1,2 in the Lephalele Local Municipality in the Limpopo Province.

The affected properties for the proposed/preferred Route Alternative 3 are on the farms Bulge Rivier 198 KQ Portions 2, 6; Hartbeesdrift 189KQ RE; Mooifontein 150 KQ Portions 1; Bulspruit 146 KQ Portion 1; Onverwacht 149 KQ RE, Portion 1; Wolwenfontein 645 LQ Portions 2, 3; in the Lephalele Local Municipality in the Limpopo Province.

The study area is situated on the 1:50 000 topographical base maps 2327DC, 2327DD, 2427BA, 2427BB, 2629AA, with the alternative routes for the line found at approximately:

Co-ordinates taken every 250 meters along the route for each alternative alignment:

Alternative 1:

250m intervals	Latitude (S) (Degrees Decimal Minutes)	Longitude (E) (Degrees Decimal Minutes)
1	23° 59.024' S	27° 40.813' E
2	23° 59.157' S	27° 40.840' E
3	23° 59.290' S	27° 40.867' E
4	23° 59.423' S	27° 40.894' E
5	23° 59.557' S	27° 40.921' E
6	23° 59.688' S	27° 40.905' E
7	23° 59.813' S	27° 40.923' E
8	23° 59.885' S	27° 41.043' E
9	23° 59.922' S	27° 41.185' E
10	23° 59.958' S	27° 41.327' E
11	23° 59.994' S	27° 41.469' E
12	24° 0.030' S	27° 41.611' E
13	24° 0.066' S	27° 41.753' E
14	24° 0.143' S	27° 41.794' E
15	24° 0.275' S	27° 41.786' E
16	24° 0.386' S	27° 41.871' E
17	24° 0.496' S	27° 41.956' E
18	24° 0.584' S	27° 42.069' E
19	24° 0.707' S	27° 42.072' E
20	24° 0.840' S	27° 42.045' E
21	24° 0.970' S	27° 42.044' E
22	24° 1.096' S	27° 42.100' E
23	24° 1.221' S	27° 42.155' E
24	24° 1.350' S	27° 42.154' E
25	24° 1.480' S	27° 42.114' E
26	24° 1.611' S	27° 42.074' E
27	24° 1.741' S	27° 42.035' E
28	24° 1.872' S	27° 41.996' E
29	24° 2.002' S	27° 41.956' E
30	24° 2.133' S	27° 41.917' E
31	24° 2.263' S	27° 41.877' E
32	24° 2.393' S	27° 41.837' E
33	24° 2.523' S	27° 41.794' E
34	24° 2.652' S	27° 41.751' E
35	24° 2.782' S	27° 41.707' E
36	24° 2.911' S	27° 41.664' E
37	24° 3.041' S	27° 41.621' E
38	24° 3.170' S	27° 41.578' E
39	24° 3.300' S	27° 41.535' E
40	24° 3.430' S	27° 41.493' E
41	24° 3.559' S	27° 41.449' E
42	24° 3.689' S	27° 41.407' E
43	24° 3.818' S	27° 41.364' E
44	24° 3.948' S	27° 41.321' E
45	24° 4.077' S	27° 41.278' E
46	24° 4.190' S	27° 41.197' E
47	24° 4.300' S	27° 41.111' E
48	24° 4.410' S	27° 41.025' E
49	24° 4.541' S	27° 40.995' E
50	24° 4.672' S	27° 41.024' E
51	24° 4.803' S	27° 41.061' E
52	24° 4.934' S	27° 41.098' E
53	24° 5.065' S	27° 41.135' E
54	24° 5.196' S	27° 41.172' E
55	24° 5.327' S	27° 41.210' E
56	24° 5.458' S	27° 41.246' E
57	24° 5.590' S	27° 41.284' E
58	24° 5.721' S	27° 41.321' E
59	24° 5.852' S	27° 41.358' E
60	24° 5.983' S	27° 41.395' E
61	24° 6.114' S	27° 41.432' E
62	24° 6.245' S	27° 41.469' E
63	24° 6.376' S	27° 41.506' E
64	24° 6.507' S	27° 41.543' E
65	24° 6.638' S	27° 41.580' E
66	24° 6.772' S	27° 41.573' E
67	24° 6.905' S	27° 41.552' E
68	24° 7.039' S	27° 41.530' E

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69	24° 7.173' S	27° 41.508' E
70	24° 7.300' S	27° 41.457' E
71	24° 7.424' S	27° 41.399' E
72	24° 7.497' S	27° 41.314' E
73	24° 7.462' S	27° 41.171' E
74	24° 7.426' S	27° 41.029' E
75	24° 7.391' S	27° 40.886' E
76	24° 7.356' S	27° 40.744' E
77	24° 7.321' S	27° 40.602' E
78	24° 7.286' S	27° 40.459' E
79	24° 7.233' S	27° 40.323' E
80	24° 7.126' S	27° 40.286' E
81	24° 6.991' S	27° 40.298' E

Alternative 2:

250m intervals	Latitude (S) (Degrees Decimal Minutes)	Longitude (E) (Degrees Decimal Minutes)
1	23° 59.144' S	27° 40.730' E
2	23° 59.280' S	27° 40.730' E
3	23° 59.415' S	27° 40.729' E
4	23° 59.551' S	27° 40.729' E
5	23° 59.686' S	27° 40.728' E
6	23° 59.821' S	27° 40.728' E
7	23° 59.957' S	27° 40.727' E
8	24° 0.092' S	27° 40.727' E
9	24° 0.228' S	27° 40.726' E
10	24° 0.327' S	27° 40.798' E
11	24° 0.399' S	27° 40.923' E
12	24° 0.472' S	27° 41.047' E
13	24° 0.544' S	27° 41.172' E
14	24° 0.617' S	27° 41.296' E
15	24° 0.690' S	27° 41.420' E
16	24° 0.762' S	27° 41.545' E
17	24° 0.835' S	27° 41.669' E
18	24° 0.907' S	27° 41.794' E
19	24° 0.980' S	27° 41.918' E
20	24° 1.053' S	27° 42.043' E
21	24° 1.125' S	27° 42.167' E
22	24° 1.232' S	27° 42.230' E
23	24° 1.366' S	27° 42.234' E
24	24° 1.496' S	27° 42.192' E
25	24° 1.626' S	27° 42.150' E
26	24° 1.756' S	27° 42.108' E
27	24° 1.886' S	27° 42.066' E
28	24° 2.016' S	27° 42.024' E
29	24° 2.145' S	27° 41.982' E
30	24° 2.275' S	27° 41.940' E
31	24° 2.405' S	27° 41.898' E
32	24° 2.535' S	27° 41.856' E
33	24° 2.665' S	27° 41.814' E
34	24° 2.794' S	27° 41.772' E
35	24° 2.924' S	27° 41.730' E
36	24° 3.054' S	27° 41.688' E
37	24° 3.159' S	27° 41.635' E
38	24° 3.101' S	27° 41.502' E
39	24° 3.043' S	27° 41.368' E
40	24° 2.984' S	27° 41.235' E
41	24° 2.926' S	27° 41.102' E
42	24° 2.867' S	27° 40.969' E
43	24° 2.895' S	27° 40.886' E
44	24° 3.029' S	27° 40.864' E
45	24° 3.163' S	27° 40.843' E
46	24° 3.297' S	27° 40.821' E
47	24° 3.431' S	27° 40.799' E
48	24° 3.565' S	27° 40.777' E
49	24° 3.699' S	27° 40.755' E
50	24° 3.833' S	27° 40.734' E
51	24° 3.967' S	27° 40.712' E
52	24° 4.101' S	27° 40.690' E
53	24° 4.234' S	27° 40.668' E
54	24° 4.369' S	27° 40.646' E
55	24° 4.502' S	27° 40.624' E

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56	24° 4.636' S	27° 40.603' E
57	24° 4.770' S	27° 40.581' E
58	24° 4.904' S	27° 40.559' E
59	24° 5.038' S	27° 40.537' E
60	24° 5.172' S	27° 40.515' E
61	24° 5.306' S	27° 40.494' E
62	24° 5.440' S	27° 40.472' E
63	24° 5.574' S	27° 40.450' E
64	24° 5.708' S	27° 40.428' E
65	24° 5.842' S	27° 40.406' E
66	24° 5.976' S	27° 40.384' E
67	24° 6.110' S	27° 40.362' E
68	24° 6.244' S	27° 40.341' E
69	24° 6.377' S	27° 40.319' E
70	24° 6.511' S	27° 40.297' E
71	24° 6.645' S	27° 40.275' E
72	24° 6.779' S	27° 40.254' E
73	24° 6.913' S	27° 40.232' E
74	24° 6.994' S	27° 40.296' E

Alternative 3:

250m intervals	Latitude (S) (Degrees Decimal Minutes)	Longitude (E) (Degrees Decimal Minutes)
1	23° 59.108' S	27° 40.660' E
2	23° 59.243' S	27° 40.660' E
3	23° 59.379' S	27° 40.660' E
4	23° 59.514' S	27° 40.660' E
5	23° 59.649' S	27° 40.660' E
6	23° 59.785' S	27° 40.661' E
7	23° 59.920' S	27° 40.661' E
8	24° 0.056' S	27° 40.661' E
9	24° 0.191' S	27° 40.661' E
10	24° 0.326' S	27° 40.662' E
11	24° 0.298' S	27° 40.563' E
12	24° 0.226' S	27° 40.438' E
13	24° 0.154' S	27° 40.313' E
14	24° 0.118' S	27° 40.204' E
15	24° 0.250' S	27° 40.172' E
16	24° 0.382' S	27° 40.139' E
17	24° 0.514' S	27° 40.107' E
18	24° 0.646' S	27° 40.075' E
19	24° 0.779' S	27° 40.042' E
20	24° 0.911' S	27° 40.010' E
21	24° 1.043' S	27° 39.978' E
22	24° 1.175' S	27° 39.945' E
23	24° 1.307' S	27° 39.913' E
24	24° 1.439' S	27° 39.881' E
25	24° 1.572' S	27° 39.848' E
26	24° 1.704' S	27° 39.816' E
27	24° 1.836' S	27° 39.784' E
28	24° 1.968' S	27° 39.751' E
29	24° 2.100' S	27° 39.719' E
30	24° 2.232' S	27° 39.687' E
31	24° 2.303' S	27° 39.779' E
32	24° 2.353' S	27° 39.916' E
33	24° 2.402' S	27° 40.054' E
34	24° 2.452' S	27° 40.191' E
35	24° 2.502' S	27° 40.328' E
36	24° 2.551' S	27° 40.465' E
37	24° 2.601' S	27° 40.603' E
38	24° 2.650' S	27° 40.740' E
39	24° 2.732' S	27° 40.815' E
40	24° 2.866' S	27° 40.794' E
41	24° 3.000' S	27° 40.771' E
42	24° 3.134' S	27° 40.749' E
43	24° 3.268' S	27° 40.727' E
44	24° 3.402' S	27° 40.706' E
45	24° 3.536' S	27° 40.684' E
46	24° 3.670' S	27° 40.662' E
47	24° 3.804' S	27° 40.640' E
48	24° 3.938' S	27° 40.618' E
49	24° 4.071' S	27° 40.596' E

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50	24° 4.205' S	27° 40.574' E
51	24° 4.339' S	27° 40.552' E
52	24° 4.473' S	27° 40.530' E
53	24° 4.607' S	27° 40.508' E
54	24° 4.741' S	27° 40.486' E
55	24° 4.875' S	27° 40.464' E
56	24° 5.009' S	27° 40.442' E
57	24° 5.143' S	27° 40.420' E
58	24° 5.277' S	27° 40.398' E
59	24° 5.410' S	27° 40.376' E
60	24° 5.545' S	27° 40.354' E
61	24° 5.678' S	27° 40.332' E
62	24° 5.810' S	27° 40.321' E
63	24° 5.919' S	27° 40.408' E
64	24° 6.044' S	27° 40.426' E
65	24° 6.178' S	27° 40.404' E
66	24° 6.312' S	27° 40.382' E
67	24° 6.446' S	27° 40.360' E
68	24° 6.580' S	27° 40.338' E
69	24° 6.714' S	27° 40.317' E
70	24° 6.848' S	27° 40.295' E
71	24° 6.981' S	27° 40.293' E

Bulgerivier Substation:

Latitude (S) (Degrees Decimal Minutes)		Longitude (E) (Degrees Decimal Minutes)	
24°	6.997' S	27°	40.297' E

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 Notices 1 and 3 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:
R 546 of 18 June 2010	4	The construction of an access and construction road wider than 4 meters (ii) outside urban areas, in (gg) areas within 10 km from national parks or world heritage sites or 5 km from any other protected area identified in terms of NEMPAA or from the core areas of a biosphere reserve.
R 546 of 18 June 2010	14	The clearance of an area of 5 hectare or more of vegetation where 75% or more of the vegetative cover constitutes indigenous vegetation, <u>except</u> where such removal of vegetation is required for (3) the undertaking of a linear activity falling below the thresholds in Notice 544 of 2010, in all areas outside urban areas. <i>This activity is relevant, because the proposed 33kV power line will be constructed to 132kV specifications and is therefore a linear activity falling above the threshold of Notice 544 of 2010.</i>

The applicant is Eskom Distribution Northern Region, Land Development with contact person Ms. Nkateko Msimango, Environmental Management in Polokwane.

2. OBJECTIVES OF THE EMP

The Environmental Management Plan 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 EMP;
- 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 EMP

This Environmental Management Plan was prepared by Texture Environmental Consultants. Ria Pretorius is the principal member of Texture since 2004. In this capacity she has conducted full Environmental Impact Assessments which include the compilation of Environmental Management Plans and has been involved in various projects since.

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 EMP

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 Plan and the conditions of the Record of Decision 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: _____

Cellphone Number: _____

Fax Number: _____

5. PROPOSED MECHANISM FOR COMPLIANCE

Key impacts generally associated with Eskom construction activities as again confirmed during the course of the Environmental Impact Assessment process undertaken for this project 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

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
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Roles and Responsibilities

Eskom

Eskom is the applicant for the project. Eskom will therefore, be the entity monitoring the implementation of the EMP. 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 EMP on Eskom's behalf.

Eskom will:

- Be responsible for the overall implementation of the EMP 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 EMP.

Environmental and Health Training and Awareness

Eskom will ensure that its employees are adequately trained with regard to the implementation of the EMP, 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, 1996 (Act No 36 of 1996) 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 EMP constitutes a breach of Contract for which Eskom must be immediately notified accordingly. Eskom will be deemed not to have complied with the EMP if;

- There is evidence of contravention of the EMP specifications within the boundaries of the construction site, site extensions and access roads;
- There is contravention of the EMP 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 EMP 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:

- Timely 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 complaint register 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 Plan 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 EMP 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 EMP. 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 EMP 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 EMP 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 (ROD) are being adhered to and should monitor project compliance with the conditions of the environmental authorisation, environmental legislation and the recommendations of the revised EMP.
- 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 EMP 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 cognizance of and proposed mitigatory measures should be implemented:

- All three routes pass over watercourses, while Route 1 passes through a "No-Go" Zone. Alternative Routes 2 & 3 are therefore both more ecologically feasible than Route 1. However, Routes 2 & 3 both pass through areas where protected Tamboti trees occur. Therefore, although the impacts of Routes 2 & 3 on the natural environment will potentially be the same it is imperative that all mitigating measures are implemented to reduce these impacts.
- For all of the above reasons, Alternative Route 1 is not an acceptable alternative, while Alternative Routes 2 & 3 are equally acceptable or recommended alternatives.
- Therefore from an ecological perspective the line variant recommendation is: **Alternative Route 2** or **Alternative Route 3** can be used.
- From a bird impact as well as heritage viewpoint there is no preferred alternative route.
- As a result, the final decision between Route 2 or 3 should be made on the accumulative weight of other parameters such as feedback from public participation, land tenure issues, construction costs, etc.
- **Route Alternative 3 is preferred** from the viewpoint of impact on the landowners and agricultural activities.
- 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 and other key stakeholders are included in the Register of Interested and Affected Parties in Appendix E of the BA Report.

- The applicable Emergency telephone numbers should always be available on site. Eskom's Environmental Officer Advisor, Ms Nkateko Msimango (Tel 015 299 0012/ Cell 072 018 5167), is the relevant contact person from Land Development, Eskom Distribution Northern Region.
- A copy of this EMP 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.
- *Eskom Transmission* informs that an *Eskom Transmission (Tx) vacant servitude* is affected by the proposed project. Before any construction work commences in the vicinity of Eskom Tx's services, a formal application must be submitted to Eskom Tx.
- *The Provincial Roads P84/1 (R517); D2132 are affected by the proposed route servitudes.*

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
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ENVIRONMENTAL SUPERVISION

The SECO (contact person: Ms Nkateko Msimango, Environmental Management, Tel 015 299 0012/ Cell 072 018 5167) 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 EMP. These officers might make reasonable amendments to the EMP 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 substation and 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 and substation must accommodate the requirements of the ecologist, Johannes Maree, Tel 082 5641211, of which the site-specific details are included in this EMP. The ecological assessments are included in Appendix D of the BA Report.
- Some of the main mitigating measures included avoiding highly sensitive areas; not setting up campsites or storage facilities outside of substation site; limiting the amount of actual pylons within the rocky area; placing pylons a minimum of 30m from the edge of river banks and 10m from drainage lines; removing all rubble to official dumpsites; implementing soil erosion and weed eradication management measures after construction; and not using chemicals for the control of weeds.
- Tamboti trees were observed in the study area, especially in the rocky ridges and rocky areas close to the Mokolo Dam. The Tamboti is a protected tree and permits need to be obtained from the Provincial Department of Environment Affairs. The following are specific GPS coordinates along Alternative Route 2 where Tamboti trees were observed:
 - S23° 59' 35,9"; E27° 40' 41,2"
 - S23° 59' 37,3"; E27° 40' 41,3"
 - S24° 00' 29,1"; E27° 41' 01,3"
 - S24° 00' 32,6"; E27° 41' 06,6"
 - S24° 00' 31,8"; E24° 41' 05,8"
 - S24° 00' 46,8"; E27° 41' 29,2"
- The rocky area located on Route Alternative 1 with an unusually high concentration of camel thorn trees (*Acacia erioloba*) makes this a highly sensitive and unique micro ecosystem. Furthermore, camel thorn trees are protected by law. It is therefore imperative that this sensitive area be seen as a "No-Go" area and entirely avoided. For this reason, no mitigating measures are seen as been able to reduce the impact on the site, save the one of total avoidance. The localised area of camel thorns is in the vicinity of the entrance to the Mokolo Nature Reserve. General GPS coordinates of red data / protected species:
 - Sensitive area of camel thorn trees: S24° 00.499'; E27° 42.117'
 - Sensitive area of marula trees: S24° 02.188'; E27° 41.835'
- From an ecological perspective the line variant recommendation is: **Alternative Route 2** or **Alternative Route 3**.
- From a bird impact as well as heritage viewpoint there is no preferred alternative route.

- As a result, the final decision between Route 2 or 3 should be made on the accumulative weight of other parameters such as feedback from public participation, land tenure issues, construction costs, etc.
- **Route Alternative 3 is preferred** from the viewpoint of impact on the landowners and agricultural activities.
- The proposed structure for the pylon must be a monopole galvanised structure that has been designed to limit visual intrusion.
- Eskom Transmission informs that an Eskom Transmission (Tx) vacant servitude is affected by the proposed project. Before any construction work commences in the vicinity of Eskom Tx's services, a formal application must be submitted to Eskom Tx.
- *The Provincial Roads P84/1 (R517); D2132 are affected by the proposed route servitudes.*
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.

COMPLIANCE WITH SPECIFICALLY IDENTIFIED LEGAL REQUIREMENTS

The National Water Act (Act No 36 of 1998)

- Two main rivers or streams are in the immediate vicinity of the powerline corridors, namely the Bulspruit and Malmaniersrivier (Malmaniers River). The Malmaniers falls outside of the study area and is therefore not of critical importance. There are however, a few drainage lines (or intermittent streams) that flow across the powerline corridors into the Malmaniers River and need to be avoided. The Bulspruit, however, crosses almost at a right angle through the powerline corridors, on its way into the Mokolo Dam. This stream, and its associated vegetation, is viewed as sensitive.
- 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.

- It should however be noted that if it becomes required that any construction activities do have to take place within the 1:100 year floodline and/or horizontal distance of 100m to a water resource, water use authorisation from the Department of Water Affairs will be required before development may take place. Locality maps that show where the development will affect the watercourse as well as a description of how it will be affected need to be submitted to the relevant office together with the license application to undertake such a development. The relevant activity is described in Section 21(i) as “Altering the bed, banks, course or characteristics of a watercourse”. An additional activity that will be relevant and for which authorisation will also be required is Section 21(c) “Impeding or diverting the flow of water in a watercourse”.
- Procedures prescribed in the National Water Act require that an application for a license for these activities must be lodged with the regional office of the Department of Water Affairs (DWA).
- 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.
- The ecological survey observed three red data and/or protected species. Namely, *Sclerocarya birrea* subsp. *caffra* (Marula), *Combretum imberbe* (Leadwood), *Spirostachys africana* (Tamboti) and *Acacia erioloba* (Camel thorn).
- The rocky area located in Route Alternative 1 in the vicinity of the entrance to the Mokolo Nature Reserve, has an unusually high concentration of camel thorn trees (*Acacia erioloba*). This is a highly sensitive and unique micro ecosystem and should be seen as a “No-Go” area and entirely avoided. For this reason, no mitigating measures are seen as been able to reduce the impact on the site, save the one of total avoidance.
- General GPS coordinates of red data / protected species:
 - Sensitive area of camel thorn trees: S24° 00.499'; E27° 42.117'
 - Sensitive area of marula trees: S24° 02.188'; E27° 41.835'

Limpopo Environmental Management Act (7 of 2003), published 30 April 2004, Provincial Gazette No.997.

Tamboti trees were observed in the study area, especially in the rocky ridges and rocky areas close to the Mokolo Dam. According to the provincial ordinances of the Limpopo Province the Tamboti is a protected tree and permits need to be obtained from the Provincial Department of Environment Affairs. Fines or prison sentences may be imposed on organisations or persons removing such trees without prior permission. For further details see the Limpopo Environmental Management Act (7 of 2003), published 30 April 2004, Provincial Gazette No.997.

The following are specific GPS coordinates along Alternative Route 2 where Tamboti trees were observed:

- S23° 59' 35,9"; E27° 40' 41,2"
- S23° 59' 37,3"; E27° 40' 41,3"
- S24° 00' 29,1"; E27° 41' 01,3"
- S24° 00' 32,6"; E27° 41' 06,6"
- S24° 00' 31,8"; E24° 41' 05,8"
- S24° 00' 46,8"; E27° 41' 29,2"

PROTECTED TREES

- Should any protected trees be encountered that need to be removed or de-limbed, then the relevant permits need to be obtained from the relevant government departments.
- Need to check National List of protected trees as well as relevant provincial lists.
- 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). Previously known as the Department of Agriculture. This function previously fell under the jurisdiction (control) of the Department of Water Affairs and Forestry, now known as the Department of Water Affairs (DWA).
- 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.
- National list - National Forest Act (84 of 1998) plus amendments.
- Provincial list - Provincial ordinances of each province.
- National list and permits take pre-eminence over provincial. In other words, if apply for a permit on a national level for a listed species, then do not have to apply for the same species on a provincial level.

DAFF Offices and Contacts

- Enquiries regarding such permit applications (for nationally protected trees) can be made to the following addresses:

Assistant Director
Izak van der Merwe
Tel: (012) 336 7731 or (084) 910-2604
Email: izakvdm@daff.gov.za

Or

Assistant Director: Forest Regulation
Ephraim Monyemoratho
Tel: (012) 336 7140
Email: 1ai@dwaf.gov.za

Or

Deputy Director: Forestry
Theo van der Merwe
Tel: (012) 336 7669 or (072) 476 5168

Or

The following provincial offices (keeping in mind that permits need to be submitted to provincial offices):

Limpopo (Louis Trichardt)

Olga Ligege (015) 519 3300. Email: olgal@daff.gov.za

Or

Polokwane Office, Ndinanyi Mudau. (015) 290 1279.

Email: ndinanyimu@daff.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](#)

PROVINCIAL LEGISLATION AND OFFICES (Nature Conservation)

Enquiries regarding such permit applications (for nationally protected trees) can be made to the following addresses:

Limpopo

Limpopo is the Limpopo Environment Conservation Act (7 of 2003).

Contact: The HOD: Joyce Shabangu. Tel: 015 293 8648

shabanguin@ledet.gov.za

Due cognisance must be taken of the latest relevant provincial ordinances, forms and regulations currently available. These are obtainable via the internet, using a search engine such as Google, or contact the relevant provincial office as listed above for details.

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 mitigatory 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 E 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

- Accommodation for labourers must either be limited to guarding personnel on the construction site (with labourers transported to and from existing neighbouring towns) or a separate fenced and controlled area where proper accommodation and relevant facilities are provided.
- During the construction phase, campsite and temporary storage facilities to be erected within the demarcated area of the Bulge River substation only. No unnecessary clearing of bush to take place. Only the absolute minimal in terms of access roads to the construction site to be constructed.

- The location of the construction site must be negotiated with the relevant landowner and specifications of the landowner must be adhered to.
- Plan site campsites an appropriate distance from any facility where it can cause a nuisance.
- No temporary or other construction facilities to be erected or stored within 200m of the banks of the Bulspruit.
- 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.
- Storage facilities for construction equipment must be provided for.
- 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 the site. This would 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.
- 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).
- Deposit solid domestic waste in containers and dispose at municipal waste disposal sites regularly.
- Dispose of liquid waste (grey water) with sewerage.
- Sufficient ablution and proper cooking facilities must be provided at the site camp.
- Only proper, certified portable chemical toilets to be used in campsites.
- Only certified waster disposal companies to be used to regularly clean and empty portable toilets.
- Under no circumstances may any human waste (sewage) be discarded in the open veld. Not even buried.
- No ablution facilities allowed to be placed within 200m of the banks of the Bultspruit.
- No ablution facilities allowed to be within 200m of any drainage lines (even during times when they are dry)
- No open fires or ablution facilities to be allowed outside of the site.
- Fire breaks must be constructed on the inside perimeter to prevent fires from spreading from the site as well as fires entering the site from adjacent land in accordance with the Eskom Standard SCSASAAJ6: Rev 0, Distribution of Fire Risk Management.
- Ensure compliance with stringent daily clean up requirements of site camp inert waste (waste concrete, reinforcing rods, waste bags, wire, timber etc) and dispose at municipal waste disposal sites.

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:

- Cooking or fires must be kept to within the demarcated area of the substation. Special care needs to be taken for the prevention of run away veld fires into the adjacent area. This could have disastrous consequences as the area is well wooded and accommodates numerous game farms with wild animals. Not to mention the close proximity of human settlements and agricultural lands.
- The immediate area (minimum of 2m by 2m) surrounding the cooking fire or spot must be cleared of all flammable materials, such as grass. This is also necessary with the use of portable gas or paraffin burners typically used for cooking.
- No fires to be left unattended or allowed to burn through the night.
- No open fires to be allowed outside of the Bulge River substation campsite.
- No open fires to be allowed in the powerline corridors or adjacent areas.
- No firewood to be collected in the adjacent veld.
- No fires may be made for the burning of vegetation and waste.

- 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 fighting equipment must be readily available on site during all times.
- Tamboti trees have a milky sap in the wood that is poisonous to humans. Under no circumstances must any tamboti wood be used for making fires or cooking. Gloves must be used if working with the raw wood or if removing trees.

APPOINTMENT OF CONTRACTORS

- Environmental clauses as referred to in this EMP, should be included in contract documents of all contractors.
- All identified site-specific measures in terms of community requirement, 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 :
 - 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 No. 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.

CONSTRUCTION PHASE**GROUND AND SURFACE WATER**

- Site-specific mitigatory requirements as included in the table in the section “Specification applicable to all Phases of Project Development” must be adhered to.
- 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.
- Under no circumstances must surface or ground water be polluted.
- Adequate oil containment precautions must be taken.
- Minimize on-site storage of petroleum products.
- 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 that measures to contain spills are readily available on site (spill kits).
- All hazardous substance spills must be reported, recorded and investigated.
- If spills occur 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.
- All storm water run-off 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.
- Stormwater should not be discharged into the working areas and it should be ensured that stormwater 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 of 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.
- Drinking water and water for ablution facilities must be provided to all construction workers on the construction site.
- If pollution of any surface or groundwater occurs, the Regional Representative of the Department of Water Affairs as well as the SECO must be informed immediately.

WASTE MANAGEMENT

- Expected construction waste (unused steel, conductor cables, cement or concrete) and general waste around the construction site (plastic, tins and paper) may degrade the environment if not disposed in the correct manner.
- The effective management and handling of waste is of crucial importance. Littering or illegal dumping of any waste material is prohibited. No waste disposal holes may be made on site. Under no circumstances should waste be burnt on site.
- Provision must be made for the collection of all waste materials, keeping in mind that different waste materials require different waste sites.
- Deposit solid domestic waste in containers and dispose at municipal waste disposal sites regularly.
- 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).

- Dispose of liquid waste (grey water) with sewerage.
- Sufficient ablution facilities must be provided at the site camp.
- Only proper, certified portable chemical toilets to be used in campsites.
- Only certified waster disposal companies to be used to regularly clean and empty portable toilets.
- 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 should be submitted to the Department of Water Affairs.
- Under no circumstances may any human waste (sewage) be discarded in the open veld. Not even buried.
- No ablution facilities allowed to be placed within 200m of the banks of the Bultspruit.
- No ablution facilities allowed to be within 200m of any drainage lines (even during times when they are dry)
- 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.
- All hazardous substances at the site must be adequately stored and accurately identified, recorded and labeled. All these hazardous substances should be disposed of at a licensed Class H site.
- Rubbish bags must be provided on the construction site as well as along the route to prevent littering.
- Ensure compliance with stringent daily clean up requirements of site camp inert waste (waste concrete, reinforcing rods, waste bags, wire, timber etc) and dispose at municipal waste disposal sites.

PREPARATION OF SERVITUDE / VEGETATION CLEARANCE

- Site-specific mitigatory requirements as included in the table in the section “Specification 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 powerline.	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.
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- Indigenous vegetation which does not interfere with the safe operation of the power line should be left undisturbed.
- Where clearing for an access and maintenance road is essential, the maximum width to be cleared is 8m. Existing access roads should be used as far as possible.
- Clearing for pylon positions must be the minimum required for the specific tower, not more than a 5m radius around the structure position.

CONTROL OF ALIEN VEGETATION

- 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. Due to the nature of alien vegetation, a control programme for alien vegetation control must be implemented. The implementation thereof can to be more frequent than the three year interval recommended for indigenous vegetation. Alien vegetation can grow at rates significantly faster than 1 meter per year.
- 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.
- Area around foundation slabs to be check before and after the summer rains for signs of soil erosion due to water run-off. Such sites need to be modified and rehabilitated to prevent ongoing erosion.
- Two of the impacts of greatest concern on the environment are the introduction of alien plants and soil erosion. As already mentioned these impacts need to be monitored and managed on an ongoing basis.

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 84 of 1989, which stipulates that it is necessary to obtain a permit from the relevant provincial office of the Department of Agriculture, Forestry and Fisheries (previously referred to as the Department of Water Affairs and Forestry) in order to cut them.

- Protected or endangered plant species that will be affected by the physical footprint of the power line will require the necessary permits to cut or remove them.
- 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** habitat transformation impact from an avifaunal perspective, if **alternative 1** is used. If **alternative 2 or 3** is used, the impact would be **medium**, as it would involve more extensive clearing of undisturbed woodland.
- *Electrocutions*: The risk of phase-earth electrocution is evaluated to be **medium**. The poles should be fitted with bird perches on top of the poles to draw birds, particularly vultures, away from the potentially risky insulators.
- *Collisions*: The collision risk should therefore be regarded as **medium-high** along some sections of the proposed power line alignments. The span of the powerline that crosses drainage lines and old lands should be marked with Bird Flight Diverters on the earth wire of the line, five metres apart, alternating black and white (see Appendix B of the specialist report for the area to be marked with Bird Flight Diverters).

SOIL EROSION

- Site-specific mitigatory 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.) Access roads and site surfaces must be monitored for deterioration and possible erosion.
- Neither drainage nor erosion is seen to be significant threats as long as the proper mitigating measures are implemented. There were no signs of erosion along the investigated routes.
- Construction activities should be well managed to prevent erosion and the following is relevant:
 - It is strongly recommended that no construction of any sort take place within aquatic and riparian habitats encountered, as these habitats are viewed as sensitive.
 - As a minimum measure, positioning of the foundation slabs for pylons must be a minimum of 10m away from the edge of drainage lines.
 - Positioning of foundation slabs and pylons must be a minimum of 30m away from the edge of the banks of the Bulspruit.
 - Construction must be limited to drier periods.
 - Due to the physical nature of the powerlines, their impact will be minimal over the medium to long term. Tree and shrub growth directly below the lines will be cleared and kept permanently so. Clearing of this 8m wide strip has a massive impact on the flora directly within this corridor. However, due to the good condition of the veld and the low negative impacts in the immediate vicinity, the impact on the larger scale is minimal with regards to species destruction.
 - Unnecessary clearing of flora resulting in exposed soil prone to erosive conditions should be avoided.
 - No trees or existing grass strata outside of the powerline 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/ powerline, should be left undisturbed.

- The powerline corridor through the rocky area must be kept as straight as possible as indicated on the maps showing route alternatives. Sharp turns in the line create an actual larger footprint on the ground and in the rocky area care must be taken to keep this footprint as small as possible.
- Great care and thought must be taken into the actual positioning and construction of the foundation slabs. The soils are sandy and this area has the steepest gradient of the study site. There is therefore a real danger of soil erosion and resulting veld degradation in this area.
- The sandy nature of the soils in the area makes it susceptible to soil erosion by water once disturbed, especially in steeper areas. 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.
- 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.
- 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 for topsoil storage and replacement to ensure sufficient soil coverage as soon as possible after construction activities as identified in the Environmental Management Plan 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.

HERITAGE RESOURCES

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

- The Phase I Heritage Impact Assessment for the Eskom Project revealed none of the types and ranges of heritage resources as outlined in Section 3 of the National Heritage Resources Act (No 25 of 1999) for the Eskom Project Area.
- Therefore, from a heritage point of view, both Alternative 1, 2 and 3 are suitable for the construction of the proposed project.

The following mitigation measures are proposed:

- If any heritage resources of significance are exposed during the Eskom Project the South African Heritage Resources Authority (SAHRA) should be notified immediately, all development activities must be stopped and an archaeologist accredited with the Association for Southern African Professional Archaeologist (ASAPA) should be notified in order to determine appropriate mitigation measures for the discovered finds. This may include obtaining the necessary authorisation (permits) from SAHRA to conduct the mitigation measures.

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 and watering of construction sites (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 should be kept closed at all times.
- No squatting to be allowed in the servitude area.

POST-CONSTRUCTION & OPERATIONAL PHASE
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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 Plan 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.

ALIEN VEGETATION

- The eradication of alien vegetation should be followed up as soon as possible by replacement with indigenous vegetation to ensure quick and sufficient coverage of exposed soil.
- 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.
- Area around foundation slabs to be check before and after the summer rains for signs of soil erosion due to water run-off. Such sites need to be modified and rehabilitated to prevent ongoing erosion.

CONSTRUCTION SITE CLEARANCE

- After construction all building material, signs of excess concrete, equipment, houses, ablution facilities, building rubble, refuse and litter must be removed and cleaned up from the construction site as well as from the store room by the contractor.
- 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.

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 line 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. The implementation thereof can be more frequent than the three-year interval recommended for indigenous vegetation. Alien vegetation can grow at rates significantly faster than 1 meter per year.
- Mechanical control of alien plants around disturbed areas to be implemented within two months of completion of construction. Thereafter every six months. These areas are predominantly around the erected pylons where actual soils will be disturbed during construction. Although the area is heavily infested with alien weeds and natural veld is all but non-existent, it is still important to prevent weed growth in case new, more aggressive species have been introduced during the construction phase of the project.
- No chemical control of alien plants to be used. These chemicals (herbicides) will have a detrimental effect on the surrounding vegetation and habitats. Furthermore and of critical importance, the servitudes run next to and through cultivated lands and herbicides (weed killers) will have a negative impact on these crops.
- Vegetation within the powerline corridors to be mowed as a maintenance procedure and not ploughed. Ploughing disturbs the soils creating ideal conditions for alien plant species to invade the area, as well as increasing the possibility of soil erosion by water runoff.

FIRE RISK MANAGEMENT

- 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.
- Fire breaks must be constructed on the inside perimeter to prevent fires from spreading from the site as well as fires entering the site from adjacent land in accordance with the Eskom Standard SCSASAAJ6: Rev 0, Distribution of Fire Risk Management.
- 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.

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 powerline have to be decommissioned in the future (it is not envisaged at this stage), 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 Plan (EMP) specifically for the decommissioning process at that stage to restrict and prevent potential negative impact on the environment.

It is proposed that this EMP for Decommissioning includes the following mitigatory 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 servitude 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.
