

**Eskom Camcoll-Jericho 88kV line**  
DEA Ref nr 12/12/20/2650  
NEAS Ref DEA/EIA/0000846/2011  
**Basic Assessment Report**  
**Appendix F: Environmental Management Programme**  
**Compiled May 2012**

## **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 following:

- Construct an 88 kV chickadee line from the existing Camcoll Substation to the existing Jericho Substation;
- establish 1 x 88Kv feeder bay at Camcoll Substation;
- establish 1 x 88kV feeder bay at Jericho Substation;
- construct an access/ construction road of 8 meters wide for the line;
- obtain a servitude area of 31metres wide for the line.

This EIA application is part of a broader scope of works to improve the network performance. Currently the network is experiencing under voltages and is incapable of handling additional loads due to the contingency constraints of the network.

### **1.1 Locality and Regional Context**

The proposed powerline corridors are situated in the Mpumalanga Province, east of Ermelo, north of Sheepmoor and west of Amsterdam. Two alternative routes are considered for the powerline. The study area for the proposed powerline servitudes runs approximately east-west over a distance of 35-50km and links between the two substations of Camcoll and Jericho. Both substations lay between the public roads of the N2 (to the south) and the R65 (to the north), with Jericho Substation situated at the south end of Jericho Dam.

The affected properties for the **proposed Alternative 1** are on the farms Vlakfontein 269IT portion 2, 3, 4; Vlakfontein 266IT portion 9; Weltevreden 289IT portion 2, 3, 6, 10, 11; Zwartwater 288IT portion 1, 6; Onverwacht 287IT portion 6; Windhoek 291IT portion 8; Waaihoek 286IT portion 3, 4, 5, 6, 11, 12, 13; Vaalbank 285IT portion 2, 4, 6; Vlakplaats 284IT portion 1, 7, 9, 12; Scheepersvley 303IT portion 2, 4, 5, 6; Glen Eland 413IT portion 11/15, 13, Rem; Jericho 304IT portion 1, 2 in the Msukaligwa Local Municipality in the Mpumalanga Province.

**Alternative 2** is on the farms Vlakfontein 269IT portion 1, 4; Vlakfontein 266IT portion 4; Holbank 265IT portion 12; Roodewal 270IT portion 2, 5, 6, 7, 8, 16, 17, 19, 24; Onverwacht 273IT portion 3, 5, 6, 9, 12, RE; Schiedam 274IT portion RE; Vlakplaats 284IT portion 3, 11, 13, 14, 20, 23; Cilliersrust 282IT portion RE; Scheepersvley 303IT portion 2, 6, RE; Glen Eland 413IT portion 11/15, 13, Rem; Jericho 304IT portion 1, 2 in the Msukaligwa Local Municipality in the Mpumalanga Province.

The study area is situated on the 1:50 000 topographical base maps 2630CA and 2630CB. (Refer to Appendices A1-A4 of the BAR for copies of the Locality map and the route maps). The alternative routes for the project are found at approximately:

**Existing Camcoll sub:**

Longitude (Degrees Decimal Minutes)	Latitude (Degrees Decimal Minutes)
30° 10.776' E	26° 34.325' S

**Proposed Alternative 1 (45.08km):**

250m intervals	Longitude (Degrees Decimal Minutes)	Latitude (Degrees Decimal Minutes)
1	30° 10.741' E	26° 34.347' S
2	30° 10.617' E	26° 34.424' S
3	30° 10.493' E	26° 34.501' S
4	30° 10.356' E	26° 34.491' S
5	30° 10.214' E	26° 34.448' S
6	30° 10.071' E	26° 34.404' S
7	30° 9.929' E	26° 34.361' S
8	30° 9.845' E	26° 34.446' S
9	30° 9.779' E	26° 34.568' S
10	30° 9.713' E	26° 34.689' S
11	30° 9.659' E	26° 34.814' S
12	30° 9.636' E	26° 34.948' S
13	30° 9.613' E	26° 35.082' S
14	30° 9.590' E	26° 35.215' S
15	30° 9.568' E	26° 35.349' S
16	30° 9.545' E	26° 35.483' S
17	30° 9.522' E	26° 35.617' S
18	30° 9.499' E	26° 35.751' S
19	30° 9.476' E	26° 35.885' S
20	30° 9.454' E	26° 36.018' S
21	30° 9.431' E	26° 36.152' S
22	30° 9.408' E	26° 36.286' S
23	30° 9.385' E	26° 36.420' S
24	30° 9.361' E	26° 36.553' S
25	30° 9.329' E	26° 36.686' S
26	30° 9.298' E	26° 36.818' S
27	30° 9.265' E	26° 36.950' S
28	30° 9.225' E	26° 37.081' S
29	30° 9.185' E	26° 37.211' S
30	30° 9.144' E	26° 37.341' S
31	30° 9.104' E	26° 37.472' S
32	30° 9.064' E	26° 37.602' S
33	30° 9.024' E	26° 37.733' S
34	30° 8.984' E	26° 37.864' S
35	30° 8.944' E	26° 37.994' S
36	30° 8.904' E	26° 38.124' S
37	30° 8.864' E	26° 38.255' S
38	30° 8.849' E	26° 38.369' S
39	30° 8.999' E	26° 38.379' S
40	30° 9.149' E	26° 38.389' S
41	30° 9.300' E	26° 38.398' S
42	30° 9.447' E	26° 38.424' S
43	30° 9.595' E	26° 38.451' S
44	30° 9.743' E	26° 38.477' S
45	30° 9.891' E	26° 38.503' S
46	30° 10.039' E	26° 38.529' S
47	30° 10.187' E	26° 38.555' S
48	30° 10.334' E	26° 38.581' S
49	30° 10.482' E	26° 38.607' S
50	30° 10.630' E	26° 38.633' S
51	30° 10.778' E	26° 38.659' S
52	30° 10.926' E	26° 38.685' S
53	30° 11.073' E	26° 38.712' S
54	30° 11.220' E	26° 38.742' S
55	30° 11.367' E	26° 38.774' S
56	30° 11.511' E	26° 38.812' S
57	30° 11.655' E	26° 38.851' S
58	30° 11.800' E	26° 38.889' S
59	30° 11.944' E	26° 38.927' S
60	30° 12.089' E	26° 38.966' S
61	30° 12.233' E	26° 39.004' S
62	30° 12.378' E	26° 39.042' S
63	30° 12.522' E	26° 39.081' S
64	30° 12.667' E	26° 39.119' S
65	30° 12.811' E	26° 39.157' S
66	30° 12.956' E	26° 39.196' S

67	30° 13.100' E	26° 39.234' S
68	30° 13.245' E	26° 39.272' S
69	30° 13.389' E	26° 39.311' S
70	30° 13.534' E	26° 39.349' S
71	30° 13.678' E	26° 39.387' S
72	30° 13.823' E	26° 39.426' S
73	30° 13.967' E	26° 39.464' S
74	30° 14.112' E	26° 39.502' S
75	30° 14.257' E	26° 39.539' S
76	30° 14.401' E	26° 39.577' S
77	30° 14.546' E	26° 39.615' S
78	30° 14.691' E	26° 39.653' S
79	30° 14.835' E	26° 39.690' S
80	30° 14.980' E	26° 39.728' S
81	30° 15.125' E	26° 39.766' S
82	30° 15.269' E	26° 39.804' S
83	30° 15.414' E	26° 39.841' S
84	30° 15.560' E	26° 39.864' S
85	30° 15.708' E	26° 39.839' S
86	30° 15.856' E	26° 39.814' S
87	30° 16.004' E	26° 39.788' S
88	30° 16.152' E	26° 39.764' S
89	30° 16.300' E	26° 39.738' S
90	30° 16.450' E	26° 39.741' S
91	30° 16.601' E	26° 39.747' S
92	30° 16.751' E	26° 39.753' S
93	30° 16.902' E	26° 39.759' S
94	30° 17.052' E	26° 39.765' S
95	30° 17.203' E	26° 39.771' S
96	30° 17.353' E	26° 39.777' S
97	30° 17.504' E	26° 39.783' S
98	30° 17.654' E	26° 39.789' S
99	30° 17.805' E	26° 39.795' S
100	30° 17.955' E	26° 39.801' S
101	30° 18.103' E	26° 39.820' S
102	30° 18.246' E	26° 39.862' S
103	30° 18.389' E	26° 39.905' S
104	30° 18.533' E	26° 39.947' S
105	30° 18.676' E	26° 39.989' S
106	30° 18.819' E	26° 40.031' S
107	30° 18.962' E	26° 40.073' S
108	30° 19.105' E	26° 40.116' S
109	30° 19.249' E	26° 40.158' S
110	30° 19.392' E	26° 40.200' S
111	30° 19.535' E	26° 40.242' S
112	30° 19.682' E	26° 40.244' S
113	30° 19.832' E	26° 40.226' S
114	30° 19.981' E	26° 40.209' S
115	30° 20.130' E	26° 40.191' S
116	30° 20.280' E	26° 40.173' S
117	30° 20.429' E	26° 40.156' S
118	30° 20.579' E	26° 40.138' S
119	30° 20.728' E	26° 40.121' S
120	30° 20.878' E	26° 40.103' S
121	30° 21.027' E	26° 40.086' S
122	30° 21.176' E	26° 40.068' S
123	30° 21.326' E	26° 40.050' S
124	30° 21.475' E	26° 40.033' S
125	30° 21.625' E	26° 40.015' S
126	30° 21.774' E	26° 39.997' S
127	30° 21.923' E	26° 39.980' S
128	30° 22.073' E	26° 39.962' S
129	30° 22.222' E	26° 39.945' S
130	30° 22.372' E	26° 39.927' S
131	30° 22.521' E	26° 39.909' S
132	30° 22.670' E	26° 39.892' S
133	30° 22.818' E	26° 39.900' S
134	30° 22.963' E	26° 39.935' S
135	30° 23.109' E	26° 39.970' S
136	30° 23.255' E	26° 40.005' S
137	30° 23.400' E	26° 40.040' S
138	30° 23.546' E	26° 40.075' S
139	30° 23.691' E	26° 40.110' S

140	30° 23.837' E	26° 40.145' S
141	30° 23.982' E	26° 40.179' S
142	30° 24.128' E	26° 40.215' S
143	30° 24.274' E	26° 40.249' S
144	30° 24.421' E	26° 40.277' S
145	30° 24.569' E	26° 40.303' S
146	30° 24.717' E	26° 40.328' S
147	30° 24.865' E	26° 40.353' S
148	30° 25.013' E	26° 40.379' S
149	30° 25.161' E	26° 40.404' S
150	30° 25.309' E	26° 40.429' S
151	30° 25.457' E	26° 40.455' S
152	30° 25.605' E	26° 40.480' S
153	30° 25.753' E	26° 40.505' S
154	30° 25.901' E	26° 40.530' S
155	30° 26.049' E	26° 40.556' S
156	30° 26.197' E	26° 40.581' S
157	30° 26.345' E	26° 40.606' S
158	30° 26.493' E	26° 40.632' S
159	30° 26.641' E	26° 40.657' S
160	30° 26.789' E	26° 40.682' S
161	30° 26.936' E	26° 40.697' S
162	30° 27.067' E	26° 40.631' S
163	30° 27.198' E	26° 40.564' S
164	30° 27.330' E	26° 40.498' S
165	30° 27.461' E	26° 40.432' S
166	30° 27.592' E	26° 40.365' S
167	30° 27.724' E	26° 40.299' S
168	30° 27.855' E	26° 40.233' S
169	30° 27.986' E	26° 40.166' S
170	30° 28.118' E	26° 40.100' S
171	30° 28.249' E	26° 40.034' S
172	30° 28.380' E	26° 39.967' S
173	30° 28.511' E	26° 39.910' S
174	30° 28.619' E	26° 40.004' S
175	30° 28.727' E	26° 40.098' S
176	30° 28.835' E	26° 40.192' S
177	30° 28.930' E	26° 40.097' S
178	30° 29.023' E	26° 39.991' S
179	30° 29.117' E	26° 39.885' S
180	30° 29.210' E	26° 39.779' S
181	30° 29.304' E	26° 39.673' S

#### Alternative 2 (47.43km):

250m intervals	Longitude (Degrees Decimal Minutes)	Latitude (Degrees Decimal Minutes)
1	30° 10.780' E	26° 34.313' S
2	30° 10.649' E	26° 34.379' S
3	30° 10.517' E	26° 34.445' S
4	30° 10.381' E	26° 34.461' S
5	30° 10.241' E	26° 34.413' S
6	30° 10.100' E	26° 34.365' S
7	30° 9.959' E	26° 34.318' S
8	30° 9.955' E	26° 34.219' S
9	30° 10.018' E	26° 34.096' S
10	30° 10.080' E	26° 33.972' S
11	30° 10.142' E	26° 33.849' S
12	30° 10.205' E	26° 33.726' S
13	30° 10.267' E	26° 33.603' S
14	30° 10.329' E	26° 33.480' S
15	30° 10.443' E	26° 33.461' S
16	30° 10.587' E	26° 33.502' S
17	30° 10.730' E	26° 33.543' S
18	30° 10.874' E	26° 33.584' S
19	30° 11.017' E	26° 33.626' S
20	30° 11.160' E	26° 33.667' S
21	30° 11.304' E	26° 33.708' S
22	30° 11.447' E	26° 33.749' S
23	30° 11.590' E	26° 33.790' S
24	30° 11.734' E	26° 33.831' S
25	30° 11.877' E	26° 33.873' S
26	30° 12.021' E	26° 33.914' S
27	30° 12.164' E	26° 33.955' S
28	30° 12.308' E	26° 33.996' S

29	30° 12.451' E	26° 34.037' S
30	30° 12.595' E	26° 34.078' S
31	30° 12.739' E	26° 34.105' S
32	30° 12.887' E	26° 34.081' S
33	30° 13.035' E	26° 34.058' S
34	30° 13.184' E	26° 34.034' S
35	30° 13.332' E	26° 34.010' S
36	30° 13.480' E	26° 33.986' S
37	30° 13.628' E	26° 33.963' S
38	30° 13.777' E	26° 33.939' S
39	30° 13.925' E	26° 33.915' S
40	30° 14.073' E	26° 33.892' S
41	30° 14.221' E	26° 33.868' S
42	30° 14.369' E	26° 33.844' S
43	30° 14.518' E	26° 33.821' S
44	30° 14.666' E	26° 33.797' S
45	30° 14.815' E	26° 33.809' S
46	30° 14.965' E	26° 33.824' S
47	30° 15.115' E	26° 33.838' S
48	30° 15.264' E	26° 33.853' S
49	30° 15.414' E	26° 33.868' S
50	30° 15.563' E	26° 33.883' S
51	30° 15.713' E	26° 33.897' S
52	30° 15.863' E	26° 33.912' S
53	30° 16.012' E	26° 33.927' S
54	30° 16.162' E	26° 33.942' S
55	30° 16.312' E	26° 33.956' S
56	30° 16.461' E	26° 33.971' S
57	30° 16.611' E	26° 33.986' S
58	30° 16.761' E	26° 34.001' S
59	30° 16.910' E	26° 34.015' S
60	30° 17.060' E	26° 34.030' S
61	30° 17.209' E	26° 34.045' S
62	30° 17.359' E	26° 34.060' S
63	30° 17.509' E	26° 34.074' S
64	30° 17.659' E	26° 34.089' S
65	30° 17.808' E	26° 34.104' S
66	30° 17.958' E	26° 34.118' S
67	30° 18.108' E	26° 34.133' S
68	30° 18.257' E	26° 34.148' S
69	30° 18.407' E	26° 34.163' S
70	30° 18.557' E	26° 34.177' S
71	30° 18.706' E	26° 34.192' S
72	30° 18.856' E	26° 34.207' S
73	30° 19.005' E	26° 34.221' S
74	30° 19.155' E	26° 34.236' S
75	30° 19.305' E	26° 34.251' S
76	30° 19.454' E	26° 34.265' S
77	30° 19.604' E	26° 34.280' S
78	30° 19.754' E	26° 34.295' S
79	30° 19.903' E	26° 34.310' S
80	30° 20.053' E	26° 34.324' S
81	30° 20.203' E	26° 34.339' S
82	30° 20.337' E	26° 34.386' S
83	30° 20.454' E	26° 34.471' S
84	30° 20.571' E	26° 34.557' S
85	30° 20.688' E	26° 34.642' S
86	30° 20.804' E	26° 34.728' S
87	30° 20.921' E	26° 34.813' S
88	30° 21.038' E	26° 34.899' S
89	30° 21.154' E	26° 34.984' S
90	30° 21.271' E	26° 35.070' S
91	30° 21.388' E	26° 35.155' S
92	30° 21.505' E	26° 35.241' S
93	30° 21.622' E	26° 35.326' S
94	30° 21.738' E	26° 35.412' S
95	30° 21.855' E	26° 35.497' S
96	30° 21.972' E	26° 35.583' S
97	30° 22.089' E	26° 35.668' S
98	30° 22.205' E	26° 35.754' S
99	30° 22.322' E	26° 35.839' S
100	30° 22.439' E	26° 35.925' S
101	30° 22.556' E	26° 36.010' S

102	30° 22.672' E	26° 36.096' S
103	30° 22.789' E	26° 36.181' S
104	30° 22.875' E	26° 36.277' S
105	30° 22.847' E	26° 36.410' S
106	30° 22.818' E	26° 36.543' S
107	30° 22.790' E	26° 36.676' S
108	30° 22.770' E	26° 36.810' S
109	30° 22.756' E	26° 36.944' S
110	30° 22.724' E	26° 37.075' S
111	30° 22.649' E	26° 37.190' S
112	30° 22.543' E	26° 37.286' S
113	30° 22.436' E	26° 37.382' S
114	30° 22.330' E	26° 37.477' S
115	30° 22.223' E	26° 37.573' S
116	30° 22.116' E	26° 37.668' S
117	30° 22.009' E	26° 37.764' S
118	30° 21.994' E	26° 37.861' S
119	30° 22.096' E	26° 37.961' S
120	30° 22.198' E	26° 38.060' S
121	30° 22.300' E	26° 38.160' S
122	30° 22.403' E	26° 38.259' S
123	30° 22.505' E	26° 38.359' S
124	30° 22.607' E	26° 38.458' S
125	30° 22.709' E	26° 38.557' S
126	30° 22.811' E	26° 38.657' S
127	30° 22.913' E	26° 38.756' S
128	30° 23.015' E	26° 38.856' S
129	30° 23.118' E	26° 38.956' S
130	30° 23.220' E	26° 39.055' S
131	30° 23.322' E	26° 39.154' S
132	30° 23.429' E	26° 39.210' S
133	30° 23.551' E	26° 39.130' S
134	30° 23.672' E	26° 39.050' S
135	30° 23.794' E	26° 38.971' S
136	30° 23.916' E	26° 38.891' S
137	30° 24.038' E	26° 38.811' S
138	30° 24.160' E	26° 38.731' S
139	30° 24.281' E	26° 38.652' S
140	30° 24.403' E	26° 38.572' S
141	30° 24.525' E	26° 38.492' S
142	30° 24.647' E	26° 38.413' S
143	30° 24.768' E	26° 38.333' S
144	30° 24.890' E	26° 38.253' S
145	30° 25.012' E	26° 38.173' S
146	30° 25.080' E	26° 38.202' S
147	30° 25.095' E	26° 38.337' S
148	30° 25.111' E	26° 38.471' S
149	30° 25.127' E	26° 38.606' S
150	30° 25.142' E	26° 38.741' S
151	30° 25.158' E	26° 38.876' S
152	30° 25.173' E	26° 39.010' S
153	30° 25.189' E	26° 39.145' S
154	30° 25.204' E	26° 39.279' S
155	30° 25.220' E	26° 39.414' S
156	30° 25.236' E	26° 39.549' S
157	30° 25.251' E	26° 39.683' S
158	30° 25.296' E	26° 39.805' S
159	30° 25.404' E	26° 39.900' S
160	30° 25.512' E	26° 39.994' S
161	30° 25.620' E	26° 40.089' S
162	30° 25.727' E	26° 40.184' S
163	30° 25.835' E	26° 40.278' S
164	30° 25.943' E	26° 40.373' S
165	30° 26.051' E	26° 40.468' S
166	30° 26.182' E	26° 40.521' S
167	30° 26.330' E	26° 40.546' S
168	30° 26.478' E	26° 40.571' S
169	30° 26.626' E	26° 40.596' S
170	30° 26.775' E	26° 40.621' S
171	30° 26.920' E	26° 40.630' S
172	30° 27.053' E	26° 40.566' S
173	30° 27.186' E	26° 40.503' S
174	30° 27.320' E	26° 40.440' S

175	30° 27.453' E	26° 40.377' S
176	30° 27.586' E	26° 40.313' S
177	30° 27.719' E	26° 40.250' S
178	30° 27.853' E	26° 40.187' S
179	30° 27.986' E	26° 40.124' S
180	30° 28.119' E	26° 40.061' S
181	30° 28.252' E	26° 39.997' S
182	30° 28.385' E	26° 39.934' S
183	30° 28.517' E	26° 39.883' S
184	30° 28.632' E	26° 39.971' S
185	30° 28.746' E	26° 40.059' S
186	30° 28.858' E	26° 40.121' S
187	30° 28.954' E	26° 40.016' S
188	30° 29.049' E	26° 39.912' S
189	30° 29.145' E	26° 39.807' S
190	30° 29.240' E	26° 39.702' S

**Existing Jericho Sub-station:**

Longitude (Degrees Decimal Minutes)	Latitude (Degrees Decimal Minutes)
30° 29.041' E	-26° 39.454' 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 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 544 of 18 June 2010	10	The construction of facilities or infrastructure for the distribution of electricity outside urban areas with a capacity of 88kV.
R 546 of 18 June 2010	4	The construction of an access and construction road wider than 4 meters. (activity to be confirmed)

The applicant is Eskom Distribution Northern Region, Land Development with contact person Ms. Marriam Ngwezi, Environmental Management in Witbank.

## 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 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, 1998 (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 the 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 complaints 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 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, Mr. Johannes Maree of Flori Horticultural Services (Tel 082 564 1211) 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. No permit applications are envisaged for this project.
- From an ecological perspective, taking all sensitivity calculations into account, the significance of the impacts of constructing the powerlines is seen as low. Due to the physical nature of the powerlines, the overall impact is seen to be minimal over the medium- to long-term. The initial (short-term) construction phase will naturally have a higher impact on the environment, but this is still low.
- Mitigating measures to reduce impact to the following are included in this BAR:
  - Eastern Highveld Grassland Plains: Mostly transformed and consists mainly of cultivated lands and plantations. For these reasons the significance of the impacts are seen as low and can be viewed as neutral.
  - Drainage Lines: Generally viewed as sensitive and need to be avoided. All drainage lines are calculated as been of medium/high sensitivity.
  - Wetlands: Are considered sensitive and those found in the study area are no exception. Corridor routes have been adjusted to avoid the larger wetlands, but in cases come within close proximity to some small pans and seasonal waterlogged depressions. Mitigating measures are included in this EMPr to avoid any construction or disturbance of these small water bodies as well. Wetlands are viewed as 'No-Go' zones.
  - Rivers: Are always seen as sensitive and should be avoided, along with their associated riparian vegetation and floodplains. Mitigating measures are necessary, the implementation of which will ensure that almost no negative impact in terms of the ecological environment are felt.
  - Ridges: Rocky ridges are generally seen as sensitive and need to be avoided where possible. There are no typical koppies (rocky outcrops), however, both route alternatives drop off the escarpment, which forms a continual rocky ridge that runs north-south through the study area. The rocky ridge itself is mostly east-facing. The ridge (escarpment) has been calculated as medium/high sensitive and is considered a 'Go-But' zone.
  - Plantations: Are not ecologically sensitive, however, numerous avian raptors such as Long-crested Eagle often nest in the tall trees of such plantations. Care should therefore be taken should any trees need to be removed that none contain active nests of raptors as most are threatened or vulnerable to some degree.
- For the **Camcoll-Jericho 88kv line** currently, **Alternative 1 is preferred and submitted as the final proposed route mainly due to the following:**
  - This *Alternative (1)* is preferred both from an *ecological viewpoint* as well as from a *bird impact perspective*. Both alternatives are suitable from a *heritage point of view*.
  - In addition, Route Alternative 1 can be constructed in an existing Eskom Distribution vacant servitude for approximately 50% of the route.
  - Route Alternative 1 is preferred by landowners above other new corridors of impact due to the existing corridor of powerlines adjacent to this proposed route. Hence Route Alternative 1 will impact less on landowners and their 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 is included in the Register of Landowners on the Route in Appendix E11 of the BA Report.
- The applicable Emergency telephone numbers should always be available on site. Eskom's Environmental Officer Advisor, Ms Marriam Ngwezi (Tel 073 387 1429/ 013 693 3034), is the relevant contact person from Land Development, Eskom Distribution Northern Region, Witbank.
- 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 **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 relate 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 commence.

**South African National Road Agency:**

The National Road N2 is affected by the proposed route servitude, should *Alternative 1* be constructed. SANRAL will require that the nearest poles or structures of the power line be erected at a distance of not less than 60 metres outside the N2 road reserve.

**Department of Roads:**

Approval and requirements of the Department of Roads should be obtained for crossing of the R65 should *Alternative 2* be constructed:

- A Wayleave Application should be supplied to the Dept, with appropriate plans before the commencement of construction.
- The general conditions for an overhead wayleave should be accepted by Eskom in writing, as per written notification of the Dept.

*The conditions are generally (but should be confirmed):-*

- The overhead lines are not to be lower than 10 m above the highest point of the road surface. This free clearance is the minimum distance.
- 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 15 m outside the road reserve.
- This wayleave is 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.
- Crossing services should be perpendicular to the affected road(s).

**Eskom Transmission:**

- A formal application must be submitted to Eskom Transmission with respect to their Transmission (Tx) services, Tx Camden-Edwaleni 400kV powerline, that will be affected by the project.

**Civil Aviation Technical Standards (CATS)**

- Eskom has to adhere to Civil Aviation Technical Standards (CATS) regarding powerlines. Powerlines, overhead wires and cables are considered as obstacles and the detail shall be communicated to the Commissioner at an early planning stage. The Commissioner shall require the route of the power line, the co-ordinates (*latitude and longitude in degree, minute, seconds and tenth of seconds format*) of turning points in the line, the maximum height of the structures above ground level and the name of the power line. The Commissioner shall evaluate the route and require those sections of the line (if any), which is considered a danger to aviation to be marked or rerouted.
- Power lines shall be marked when crossing a river, valley or major highway with marker spheres of a diameter of not less than 60 cm. The spheres shall be of one colour and displayed alternately orange/red and white or a colour that is in sharp contrast to the background as seen from an airborne perspective. The spacing between the spheres and between the spheres and the supporting towers shall not exceed 30m. On lines with multiple cables, the spheres shall be fitted to the highest cable. The marker spheres shall be visible from at least 1000m from an airborne perspective and 300m from the ground.
- Where power lines cross a river or valley, the co-ordinates (*latitude and longitude in degree, minute, seconds and tenth of seconds format*) and the height of the line above the valley or river, shall be communicated to the Commissioner for publication in the appropriate media. The Commissioner may require that supporting towers be marked and lighted.
- There is no specified definite distance between powerlines and runways. The distance depends on various factors such as height of lines, surrounding topography, runway approach, length of airstrip, size of planes landing at aerodrome, etc. A directory of airfields that lists registered airfields around the country ("Airfields Directory for Southern Africa") is available and could be obtained from Aviation Direct cc (Tel 011 465 2669 or 011 465 5291).
- The South African Civil Aviation Authority (SACAA) suggests that Eskom follows the following procedure for each project:

- Send map showing powerline routes with pertinent GPS points (or.kmz points – google earth) along powerline route.
- Highlight any airstrips we are aware of.
- Then SACAA (Contact Mr Chris Isherwood) will then give feedback as to distances from airstrip, possible alterations in routes, etc.
- After evaluating the site position and reviewing the information received, the CAA has no objection to the proposed 88kV line for either Alternative 1 or Alternative 2. The **SACAA therefor approved** the proposed 88kV line.



## **ENVIRONMENTAL SUPERVISION**

The SECO (contact person: Ms Marriam Ngwezi, Environmental Management, Witbank, Tel 073 387 1429/ 013 693 3034) 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, Johannes Maree, Tel 082 5641211, of which the site-specific details are included in this EMPr. The ecological assessments are included in Appendix D1 of the BA Report.

### Grassland Plains

- Any temporary storage and accommodation facilities should be erected in preferably old, previously cultivated lands that are open and not wooded. In other words, no areas of pristine grassland should be selected.
- No area for a campsite or temporary storage site should be selected where it would be necessary to cut down any trees or clear any shrub land whatsoever, not even alien species, as oftentimes contractors do not have the expertise to distinguish between alien and indigenous species.
- Any selected temporary site (accommodation or storage) needs to be within the 100m powerline corridor.
- No site within 300m of a river, stream or major drainage line may be used for temporary accommodation or storage.
- Positioning of the foundation slabs for the pylons must be a minimum of 50m away from the edge of all drainage lines, due to the general flatness and possible overflowing of drainage lines during high rainfall seasons.

### Escarpment Ridge

- The powerline corridor will need to dissect the escarpment ridge. The most sensitive part of the escarpment is the east-facing, rocky ridge, with its steep 'cliff face', which drops approximately 200m over a short distance. More care will need to be taken over this area than on the high plateau. However, even the high plateau (western side of the escarpment) is more sensitive than the grasslands to the west of the escarpment. This is because the plains are not as flat (more strongly undulating) and therefore have more and deeper drainage lines.
- No pylons to be placed inside any drainage lines or kloofs (ravines).
- Pylons need to be placed a minimum of 30m away from the edges of drainage lines.
- In areas where the powerline goes off the escarpment ridge it must stay outside of any kloofs (ravines). Pylons need to be placed a minimum of 50m away from the edge of ravines.
- Powerlines may not cross over the highest point (contour) on top of the escarpment. The highest pylon on the ridge must be a minimum of 50m below the highest point or follow a contour around the highest point. This contour to be at least 50m below the level of the highest contour line. This is to reduce the negative visual impact of high laying powerlines over a long distance.
- The escarpment ridge is calculated to be of Medium/High sensitivity and is therefore seen as a "Go-But" zone. In other words, the powerline corridor can Go there, but only if mitigating measures are adhered to and proper ongoing management measures put in place.
- No temporary storage facilities, toilets, dwellings, etc. of any kind to be erected or take place within the rocky, eastern side of the escarpment ridge. Not even within the demarcated powerline corridor.

- The longest possible distance between pylons should be used in an effort to limit the footprint size down the escarpment ridge.
- The powerline must run as straight as possible over the ridge. This in an effort to limit sharp turns that literally create a larger physical footprint on the ground. However, staying along lower contour lines and out of ravines must take precedence over a straight corridor.

#### Rivers, streams & drainage lines

- A few rivers (Vaal River, Holbanspruit and Mpama River) along with a few seasonal streams and drainage lines cross the powerline corridors. These need to be avoided in the sense that no pylons may be placed directly within the main stream of any one of these watercourses.
- No temporary or other construction facilities to be erected or stored within 200m of the banks of the rivers, streams or main drainage lines.
- Positioning of any pylons need to be a minimum of 50m from the edge of the 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 20m away from the edge of all drainage lines.
- Under no circumstances may a pylon be placed directly in the bed (main flow) of a river or drainage line.
- 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)
- Only proper portable, chemical ablution facilities to be used and these to be positioned only within the 31m powerline servitudes.
- Portable ablution facilities only to be serviced by registered companies and on a regular basis. Under no circumstances may any effluent or sewage to be dumped (or buried) in the open veld.
- Proper water facilities need to be installed and maintained for construction workers. No water from out of the rivers may be used for drinking, washing or cooking purposes.
- No fishing, capture of any water or land animals, or removal of water plants or other vegetation for food to be allowed.

#### Wetlands

- No wetlands occur within the proposed powerline corridors, but some (especially in the lowlands) do occur in the area, or in fairly close proximity. Under no circumstance may any activities directly or indirectly related to the powerline project take place within any wetland area.
- No campsite, temporary storage facility, or any other facility to be erected within 500m of a wetland.

#### Plantations

- Numerous avian raptors such as Long-crested Eagle often nest in the tall trees of plantations. Care should therefore be taken should any trees need to be removed that none contain active nests of raptors as most are threatened or vulnerable to some degree.

#### General

- The placement distance between pylons can be up to 330 meters. Therefore any sensitive areas, with proper planning, could be completely missed.
- It was concluded that, from a vegetation and fauna perspective, if duly mitigated and planned, the overall impact is seen to be minimal over the medium- to long-term.

#### **The additional following requirements should be adhered to:**

##### **• South African National Road Agency:**

The National Road N2 is affected by the proposed route servitude, should *Alternative 1* be constructed. SANRAL will require that the nearest poles or structures of the power line be erected at a distance of not less than 60 metres outside the N2 road reserve.

##### **• Department of Roads:**

Approval and requirements of the Department of Roads should be obtained for the crossing of the R65 should *Alternative 2* be constructed:

- A Wayleave Application should be supplied to the Department, with appropriate plans before the commencement of construction.
- The general conditions for an overhead wayleave should be accepted by Eskom, in writing, as per written notification of the Department.  
The conditions are generally (but should be confirmed):-
- The overhead lines are not to be lower than 10 m above the highest point of the road surface. This free clearance is the minimum distance.

- 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 15 m outside the road reserve.
- This wayleave is 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.
- Crossing services should be perpendicular to the affected road(s).
- **Eskom Transmission:**  
A formal application must be submitted to Eskom Transmission with respect to their Transmission (Tx) services, Tx Camden-Edwaleni 400kV powerline, that will be affected by the project.
- **Civil Aviation Technical Standards (CATS)**  
Eskom has to adhere to Civil Aviation Technical Standards (CATS) regarding powerlines. Powerlines, overhead wires and cables are considered as obstacles and the detail shall be communicated to the Commissioner at an early planning stage. The Commissioner shall require the route of the power line, the co-ordinates (*latitude and longitude in degree, minute, seconds and tenth of seconds format*) of turning points in the line, the maximum height of the structures above ground level and the name of the power line. The Commissioner shall evaluate the route and require those sections of the line (if any), which is considered a danger to aviation to be marked or rerouted.  
Power lines shall be marked when crossing a river, valley or major highway with marker spheres of a diameter of not less than 60 cm. The spheres shall be of one colour and displayed alternately orange/red and white or a colour that is in sharp contrast to the background as seen from an airborne perspective. The spacing between the spheres and between the spheres and the supporting towers shall not exceed 30m. On lines with multiple cables, the spheres shall be fitted to the highest cable. The marker spheres shall be visible from at least 1000m from an airborne perspective and 300m from the ground.  
Where power lines crosses a river or valley, the co-ordinates (*latitude and longitude in degree, minute, seconds and tenth of seconds format*) and the height of the line above the valley or river, shall be communicated to the Commissioner for publication in the appropriate media. The Commissioner may require that supporting towers be marked and lighted.  
There is no specified definite distance between powerlines and runways. The distance depends on various factors such as height of lines, surrounding topography, runway approach, length of airstrip, size of planes landing at aerodrome, etc.  
A directory of airfields that lists registered airfields around the country ("Airfields Directory for Southern Africa") is available and could be obtained from Aviation Direct cc (Tel 011 465 2669 or 011 465 5291).  
The South African Civil Aviation Authority (SACAA) suggests that Eskom follows the following procedure for each project:
  - Send map showing powerline routes with pertinent GPS points (or.kmz points – google earth) along powerline route.
  - Highlight any airstrips we are aware of.
  - Then SACAA (Contact Mr Chris Isherwood) will then give feedback as to distances from airstrip, possible alterations in routes, etc.
 After evaluating the site position and reviewing the information received, the CAA has no objection to the proposed 88kV line for either Alternative 1 or Alternative 2. The **SACAA therefor approved** the proposed 88kV line.

## COMPLIANCE WITH SPECIFICALLY IDENTIFIED LEGAL REQUIREMENTS

### The National Water Act (Act No 36 of 1998)

- It is suggested that the applicant will **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 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 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”.

- Water used during construction is minimal. The cement and ground are compacted in layers around the pylons using a small amount of water. This water is sourced/purchased from farmers in the area with pre-existing rights and/or from the local municipality and transported to site in a water tanker. The compacted ground does not exceed 3m by 1,5m in area per pylon erected.
- Additional information with the latest requirements for water use applications are supplied on the Department’s website, [www.dwae.gov.za](http://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 surveys observed no protected trees during any of the site investigations, therefore no permits for cutting or trimming are envisaged.
- Should protected trees be encountered during construction then the relevant permits should be obtained from the relevant provincial office of the Department of Agriculture, Forestry and Fisheries. Enquiries regarding such permit applications can be made to the following addresses:

Assistant Director  
Izak van der Merwe  
Tel: (012) 336 7731  
Email: [1dg@dwaf.gov.za](mailto:1dg@dwaf.gov.za)

Or

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

#### **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 E11 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 preferably be erected within the confines of the Camcoll and Jericho Substations. With the possibility of another one (maximum two) temporary sites within the powerline corridors due to the distance between the substations.
- The location of the construction sites 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 access 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 (eg. Paper and plastic) been blown into the veld, etc.
- 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.
- 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.
- 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.

## 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.

## FIRE MANAGEMENT PLAN

- 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.
- 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 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, where Eskom controls the access to the site. 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, or other similar areas, 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 firebreaks, 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 as this does not pose a safety risk and will create the potential for erosion, causing environmental degradation and hence legal liability.

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 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 flammable 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.

## **GROUND AND SURFACE WATER**

- Site-specific mitigatory 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 applicable 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-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.
- 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 a few rivers (Vaal River, Holbankspruit and Mpama River) along with a few seasonal streams and drainage lines cross the powerline corridors. Measures to limit impact to any watercourse are supplied and are inter alia
  - The rivers, seasonal streams and drainage lines need to be avoided in the sense that no pylons may be placed directly within the main stream of any one of these watercourses.
  - No temporary or other construction facilities to be erected or stored within 200m of the banks of the rivers, streams or main drainage lines.
  - Positioning of any pylons need to be a minimum of 50m from the edge of the 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 20m away from the edge of all drainage lines.
  - Under no circumstances may a pylon be placed directly in the bed (main flow) of a river or drainage line.
  - 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.

### Wetlands

- No wetlands occur within the proposed powerline corridors, but some (especially in the lowlands) do occur in the area, or in fairly close proximity. Under no circumstance may any activities directly or indirectly related to the powerline project take place within any wetland area.
- No campsite, temporary storage facility, or any other facility to be erected within 500m of a wetland.

### Water Use Licence Applications

- The law (National Water Act (NWA)) sees each river crossing as a Water Use that will either need to be registered (General authorisation) or a water use licence applied for (Water Use Licence Application (WULA)).
- However, a general indication is given in this report as to which river crossings will probably only need to be registered under General Authorisations and which will probably need Water Use Licence Applications (WULA). The water uses are all covered in the NWA. In the case of overhead powerlines, special attention needs to be given to Section 21 (c) and (i) of the NWA, as well as to General Authorisations in regard to Section 21 water uses.



#### Construction camp

- Campsite, storage facilities and other necessary temporary structures to preferably be erected within the confines of the Camcoll and Jericho Substations. With the possibility of another one (maximum two) temporary sites within the powerline corridors due to the distance between 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 (eg. Paper and plastic) being blown into the veld, etc. Proper waste management is essential.

#### Diesel, hydraulic fluid and lubricants

- 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 labelled. 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 which might emanate from transformers.
- Bund storage tanks to 120% of capacity.
- Ensure proper maintenance procedures in place for vehicles and equipment.
- Servicing of vehicles to be in designated areas with appropriate spill management procedures in place.
- Ensure measures to contain spills readily available on site (spill kits).
- 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.

#### Site camp domestic waste (kitchens, showers)

- 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 ablation facilities to be used and these to be positioned only within the 31m powerline servitudes.
- No temporary ablation 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).
- Included as requirement in the EMPr under heading “*Waste Management*” is the following: 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 (eg. Paper and plastic) being 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 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.

- 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 powerline corridor of 8m to be removed, although due to the grassland vegetation of the study area very few occur except along the escarpment ridge.
- 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.
- Only a single, basic vehicle track to be constructed as an access road under pylons in the grassland plains. The track is not to pass directly through any wetlands or pan depression, even those directly under the powerline itself.
- Removal of trees, shrubs and other vegetation on the escarpment ridge should be kept strictly to within the 8m corridor under the powerlines and only where specifically required (due to elevation differences between the actual lines and the ridge and/or existing vegetation) up to 20m in width.
- Only a single, basic vehicle track to be constructed as an access road under pylons moving around rocky areas.
- No straight-line vehicle track may be created down the steep escarpment. Any vehicle track going down steep sections of the escarpment needs to wind and soil mounds need to be placed across the tracks where necessary to prevent soil erosion due to stormwater run-off.
- Temporary access roads for vehicles carrying equipment, materials, etc. into the powerline corridors need to be kept to an absolute minimum. None of these access roads may cross through sensitive areas.
- When foundation holes are dug for the pylons, the topsoil (top 30cm of the ground) needs to be placed aside separately. After construction this topsoil needs to be spread back over the disturbed area. The reason is that there might possibly be bulbs of geophytes in this topsoil and in this way if any where disturbed most would survive in this way, hereby mitigating the impact on the vegetation of the environment.

## 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.
- Patches of exotic trees (especially blackwattle (*Acacia mearnsii*) within the large 100m corridor may be totally removed. This will also have a positive impact on the grassland environment. The stumps of these trees to be treated with the recommended poisons to prevent budding and regrowth, but no poisons to be applied directly to the surrounding soils.
- An ongoing programme to be implemented to mechanically control alien plant species that invade the disturbed soils around the newly erected pylons. This should be done in such a way as to allow the natural grasses and pioneer plants to colonise the disturbed areas. Typically there should not be any, or very little, infestation of weeds under the powerlines where the veld / grass has only been cut. The weeds found in the area typically invade disturbed soils, with the exception of tree species, but these typically invade kloofs, ravines and drainage lines.
- Mechanical control of alien species to be implemented within three (3) months of completion of construction of the powerline. Thereafter every six months. Keeping in mind the project falls in a summer rainfall area and it is during this time plants are growing most actively. Once winter arrives or after veld fires it will be difficult to distinguish between alien and indigenous plant species.
- Surface area under powerlines (where necessary) to be mowed and not ploughed. Thereby avoiding creating a negative impact of allowing weeds to encroach.
- No chemical control (herbicides) to be used in the control of alien plants or indigenous plants, except on tree and bush stumps in 8m corridors directly under powerlines. All control of weeds to be mechanical in nature. That is, physically cut down, pulled out or mowed over.

## 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 no protected trees** during the site investigations, therefore **no permits** for cutting or trimming are envisaged.
- When foundation holes are dug for the pylons, the topsoil (top 30cm of the ground) needs to be placed aside separately. After construction this topsoil needs to be spread back over the disturbed area. The reason is that there might possibly be bulbs of geophytes in this topsoil and in this way if any where disturbed most would survive in this way, hereby mitigating the impact on the vegetation of the environment.
- 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.
- Numerous avian raptors such as Long-crested Eagle often nest in the tall trees of plantations. Care should therefore be taken should any trees need to be removed that none contain active nests of raptors as most are threatened or vulnerable to some degree.
- Care needs to be taken should contractors come across large holes dug in the ground in the grasslands. These potentially could be aardvark or pangolin lares, both are Red Data Species and protected by law. If unsure reposition the necessary pylon at least 20m away from the entrance.

## BIRD IMPACT

- The construction of access roads in sensitive wetland habitat should be avoided.

## SOIL EROSION

- Erosion in the area is low due to the general flatness of the topography.
- 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.) Access roads and site surfaces must be monitored for deterioration and possible erosion.
- Construction activities should be well managed to prevent erosion and the following is relevant:
- 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.
- It is strongly recommended that no construction of any sort take place within aquatic habitats encountered, as these habitats are viewed as sensitive.
- Construction during the dry months/periods of the year should be considered in order to overcome the problems caused by excessive moisture.
- 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 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.
- 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, Johannes Maree, Tel 082 5641211, of which the site-specific details are included in this EMPPr. These measures will limit the impact on erosion:

#### Grassland Plains

- Any temporary storage and accommodation facilities should be erected in preferably old, previously cultivated lands that are open and not wooded. In other words, no areas of pristine grassland should be selected.
- No area for a campsite or temporary storage site should be selected where it would be necessary to cut down any trees or clear any shrub land whatsoever, not even alien species, as oftentimes contractors do not have the expertise to distinguish between alien and indigenous species.
- Any selected temporary site (accommodation or storage) needs to be within the 100m powerline corridor.
- No site within 300m of a river, stream or major drainage line may be used for temporary accommodation or storage.
- Positioning of the foundation slabs for the pylons must be a minimum of 50m away from the edge of all drainage lines, due to the general flatness and possible overflowing of drainage lines during high rainfall seasons.

#### Escarpment Ridge

- The powerline corridor will need to dissect the escarpment ridge. The most sensitive part of the escarpment is the east-facing, rocky ridge, with its steep 'cliff face', which drops approximately 200m over a short distance. More care will need to be taken over this area than on the high plateau. However, even the high plateau (western side of the escarpment) is more sensitive than the grasslands to the west of the escarpment. This is because the plains are not as flat (more strongly undulating) and therefore have more and deeper drainage lines.
- No pylons to be placed inside any drainage lines or kloofs (ravines).
- Pylons need to be placed a minimum of 30m away from the edges of drainage lines.
- In areas where the powerline goes off the escarpment ridge it must stay outside of any kloofs (ravines). Pylons need to be placed a minimum of 50m away from the edge of ravines.
- Powerlines may not cross over the highest point (contour) on top of the escarpment. The highest pylon on the ridge must be a minimum of 50m below the highest point or follow a contour around the highest point. This contour to be at least 50m below the level of the highest contour line. This is to reduce the negative visual impact of high laying powerlines over a long distance.
- The escarpment ridge is calculated to be of Medium/High sensitivity and is therefore seen as a "Go-But" zone. In other words, the powerline corridor can Go there, but only if mitigating measures are adhered to and proper ongoing management measures put in place.
- No temporary storage facilities, toilets, dwellings, etc. of any kind to be erected or take place within the rocky, eastern side of the escarpment ridge. Not even within the demarcated powerline corridor.
- The longest possible distance between pylons should be used in an effort to limit the footprint size down the escarpment ridge.
- The powerline must run as straight as possible over the ridge. This in an effort to limit sharp turns that literally create a larger physical footprint on the ground. However, staying along lower contour lines and out of ravines must take precedence over a straight corridor.

#### Rivers, streams & drainage lines

- A few rivers (Vaal River, Holbankspruit and Mpama River) along with a few seasonal streams and drainage lines cross the powerline corridors. These need to be avoided in the sense that no pylons may be placed directly within the main stream of any one of these watercourses.
- No temporary or other construction facilities to be erected or stored within 200m of the banks of the rivers, streams or main drainage lines.

- Positioning of any pylons need to be a minimum of 50m from the edge of the 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 20m away from the edge of all drainage lines.
- Under no circumstances may a pylon be placed directly in the bed (main flow) of a river or drainage line.

#### Wetlands

- No wetlands occur within the proposed powerline corridors, but some (especially in the lowlands) do occur in the area, or in fairly close proximity. Under no circumstance may any activities directly or indirectly related to the powerline project take place within any wetland area.
- No campsite, temporary storage facility, or any other facility to be erected within 500m of a wetland.

## **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 Alternatives 1 and 2 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 (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 FARMS/ PROPERTIES**

- Eskom Holdings has a right to enter farms in order to maintain plant and obtain meter readings, therefore the manner of access to land, on which Eskom holds servitudes and electrical infrastructure, should be adhered to by Eskom as well as Landowners.
- 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. Some of the measures are as follow:
- 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.
- 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.
- Standard Eskom locks shall be used in all cases and in such a manner that it securely locks the gate. Where dual-use is made of the gate by Eskom Holdings and the land owner, the Eskom lock shall be locked into the chain-link, separate from the farmer's lock as to permit both parties to gain access without inconveniencing either party. No interference with land owners' locks will be tolerated. The cutting of land owners' locks except in extreme emergency will result in disciplinary action.
- 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.

## **ACCESS TO NATURE / GAME RESERVES**

The mushrooming of game farms in all parts of the country brings about new challenges to Eskom Holdings such as restriction of access, safety of Eskom staff and the interaction of game and electrical infrastructure. The same applies to nature reserves and other reserves managed by the state where wild animals occur. Wild animals pose a safety risk to Eskom staff e.g. lions, tigers, leopards, elephants, rhinoceroses, buffaloes, etc and animals that are at risk of electrocution if introduced or kept in camps where unmitigated Eskom assets exist e.g. giraffes, elephants, rhinoceros.

- Access to any type of nature reserve requires specific permission, which should be arranged with the appropriate authority or landowners. Because these reserves have both dangerous as well as very expensive game, a designated guide should always accompany visitors. This will ensure the safety of the visitor as well as prevent any claims against Eskom Holdings in the case of death of expensive game.
- An effort should be made through the Regional task team to convince game farm owners and other influential stakeholders (Government & Game farming and Agricultural Union bodies) to buy into the following:
  - The numbering of gates.
  - The labelling of gates stating the following:
    - That it is a game farm
    - List of dangerous animals within enclosure
    - Contact details
  - That all entry and exit points comply with the Certificate of Adequate Enclosure Fencing Specifications.
  - Entrance areas are to be cleared to improve visibility.



#### Routine Field trips by maintenance staff

- Field Services staff must report all new game fences or game farming activities encountered on routine line patrol or fault repair activities to the Land Development section for mapping and to Customer Services Area Managers to engage the landowner for corrective action if Eskom was not informed or did not agree to such a change. This is seen as an *ad hoc* way of obtaining information of newly created game farms from normal business activities.
- In particular, helicopter line patrols over game farming areas must be preceded by reasonable notifications to affected landowners as they are usually a disturbance to tourists and hunters visiting game farms. There is a great need to inform game farm owners timeously of planned maintenance activities. All notifications and arrangements regarding access should preferably be confirmed in writing as per section 2.6.
- Game farmers are also not in favour of motorised equipment e.g. chain saws due to noise pollution affecting hunting and game viewing activities. It is thus advisable that prior notification be issued and that their usage be restricted to what is absolutely necessary. As this is a sensitive environment, it is advised that bush clearing be done accordingly in terms of the *Standard for Bush Clearance and Maintenance within Overhead Power line Servitudes (ESKASABG3)*. These requirements are identified in the EMPr.

#### Safety of Eskom personnel

- No Eskom employee must endanger his/her life or the life of another staff member by entering a property where there is a reasonable suspicion that dangerous animals such as lions, tigers, leopards, rhinoceroses, buffaloes, etc., are present. Eskom staff should seek to enter such properties accompanied by security staff from the game farm. It is also advised that Eskom staff working in and around game farms be trained on how to identify dangerous animals and how to behave to ensure the safety of his/her life as well as that of another Eskom employee. Whenever any Eskom employee receives knowledge of the introduction of dangerous animals in an area where Eskom infrastructure exists, such knowledge shall be conveyed to Land Development for mapping, investigation and/or measuring and to the Customer Services Area Manager to engage the land- or game farm owner.

#### The identification of areas where game farms occur

- There are various ways to identify game farms or game farming activities e.g. through raising awareness, by engaging government and other game farming bodies, using the EIA process and maintenance activities. Geographical mapping of all information gained from the aforementioned methods will assist in identifying, understanding and comprehending the impact of game farms on the business.
- Communication campaigns: Each region is to engage in a communication campaign to create awareness of the challenges associated with game farms. The target audience is current and potential game farm owners, customers and landowners in general. The central message to this campaign is restriction of access, the safety risk to Eskom employees and the impact on biodiversity especially giraffes, elephants, rhinoceroses, etc. Property owners need to be made aware of Eskom requirements regarding service delivery and legal requirements. This message can be conveyed through customer news letters and media articles and reports which had reportedly been very successful in the Northern Region for communicating the challenges surrounding giraffes. A request can also be made to farmers and other landowners selling off their properties for game farming, to notify Eskom.
- Regions should set up task teams to drive this awareness campaign consisting but not necessary limited to the following sections/designations – Customer Service (Delivery Controller), Programme Management, Field Services (Technical Service Officer, Field Service Officer), Communication, Risk Management (Senior Environmental Advisor, Risk Management Co-ordinator), Land Development, Project Engineering). This task team is to identify key stakeholders to engage in this communication campaign

#### Biodiversity impacts

- Awareness about the issues surrounding game farms might bring about requests to have some lines checked for clearances for giraffes and/or others mitigated to prevent elephants and/or rhinoceroses from being electrocuted. Such requests should be sent through to the Land Development section for screening, evaluation, investigation and/or measuring. The latter could also be performed by Field Services staff. If clearances are insufficient in the case of giraffes and/or measures are required to mitigate for elephants and/or rhinoceroses, the request should be forwarded to the Project Engineering section for an engineering solution to be taken in conjunction with the Environmental function.
- The alternatives with regard to biodiversity mitigation are:
  - The landowner deciding not to go ahead with plans to introduce dangerous animals or removing them from camps where Eskom infrastructure exists.

- Eskom introducing engineering solutions e.g. rerouting, lifting of the line and cabling in the case of giraffes and rerouting, stone packing and planting of dummy poles in cases involving elephants and rhinoceroses.

#### Training

- It is necessary that Eskom staff working in and around game farms be trained on how to identify dangerous animals and how to behave to ensure the safety of his/her life as well as that of another Eskom employee. It is important to note that whilst it might be perfectly fine to run when confronted by a rhinoceros, running when faced by a lion is the most inappropriate behaviour. The wrong behaviour could be fatal and hence identification and behavioural training is necessary.
- Training should include but not be limited to the following:
  - Identification and training on the following dangerous animals; Bees, buffalo, cheetah, elephants, hippopotamus, hyena, leopard, lion, rhinoceros, scorpions, snakes, spider, tiger, wild dog, wildebeest.
  - Behaviour when confronted by dangerous animals
  - General behaviour in parks, game farms; etc.
  - Training Eskom staff on this guide.
  - Training manuals or other reference material to be developed as part of a training package.
  - Training on Eskom rights.
  - Training on the need of certain farms to spray Eskom vehicle tyres; etc for diseases upon entry into e.g. chicken farms.

#### Mapping and GIS by the Land Development Section

- All information gathered from maintenance staff, external sources e.g. government departments, Eskom processes e.g. EIA process, needs to be captured electronically and geographically. This information can be used to identify, fully comprehend and to assist planning in, through and around game farms.

### **FIRE BREAKS AND SERVITUDE MAINTENANCE**

- The servitude areas have to be maintained to ensure the safety of the Eskom hardware, as well as the landowner and his property. Should the servitude not be maintained this can 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 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 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;.
- Hence Eskom needs to ensure compliance to the Act where it has purchased a property (hence being the owner), such as a substation, where Eskom controls the access to the site.
- 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, or other similar areas, and not for power lines.
- 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 firebreaks, since this is not a legal requirement. Rather, it should maintain the vegetation in accordance to its Vegetation Management Standard to reduce the risk of fires starting from Eskom infrastructure.
- Eskom Distribution Division should not remove the grass below power lines as this does not pose a safety risk and will create the potential for erosion, causing environmental degradation and hence legal liability.

### **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.

### **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 checked 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

- 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.
- In terms of the Act, 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.
- An ongoing programme should be implemented to mechanically control alien plant species that invade the disturbed soils around the newly erected pylons, including areas that were disturbed and rehabilitated during the construction phase. This should be done in such a way as to allow the natural grasses to colonise the disturbed area, thereby keeping alien plants at bay.
- Most alien plants in the area are typically annual or bi-annual herbaceous plants and can be effectively controlled by slashing. In other words, not by hoeing which further disturbs the soils. This control is most effective if done early in the summer while the plants are still young and before they go to seed, thereby preventing further spread and infestation for the following growing season.
- Mechanical control of alien species to be implemented within two months of completion of construction of the powerline. Thereafter every six months or preferably late in the spring and then again late in the summer. Keeping in mind the project falls in a summer rainfall area and it is during this time plants are growing most actively. Once winter arrives or after veld fires it will be difficult to distinguish between alien and indigenous plant species.
- Surface area under powerlines to be mowed and not ploughed. Ploughing will disturb soils, creating opportunity for invasive weeds to colonise the area.
- No chemical control to be used in the control of alien plants or indigenous plants.

## 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 include 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.

## BIRD IMPACT

- No electrocution risk is therefore foreseen for the new 88kV lines. The steel mono-pole is not a major electrocution hazard to birds, except in specific instances, and then only for vultures, which do not occur in the study area.
- The most direct impact that the proposed line could potentially have on Red Data birds is collisions with the overhead earth wire. Generally this impact is most likely to occur close to wetlands, where the line skirts a dam or where it is positioned across a drainage line. Another collision hazard exists if the line will cross patches of grassland, as this is the preferred habitat of most of the remaining large terrestrial Red Data species in Mpumalanga. Those sections of line that will require the application of bird flight diverters (BFDs) are indicated on the accompanying sensitivity map (In Appendix C of the Bird Impact Study that is included in Appendix D3 of the BAR). Sensitive sections will include dams, wetlands, waterlogged grassland, drainage crossings and other areas of grassland. The proposed BFD is the Double Loop Bird Flight Diverter. BFDs should be placed on the earthwires, staggered, alternating black and white, 10 metres apart. (Sensitivity map is included in Appendix D3 and Appendix A7 of the BAR for the sections of the alignments to be marked with Bird Flight Diverters).

## 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.

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