

BASIC ASSESSMENT REPORT



environmental affairs

Department:
Environmental Affairs
REPUBLIC OF SOUTH AFRICA

(For official use only)

File Reference Number:

Application Number:

Date Received:

Basic assessment report in terms of the Environmental Impact Assessment Regulations, 2014, promulgated in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended.

Kindly note that:

1. This **basic assessment report** is a standard report that may be required by a competent authority in terms of the EIA Regulations, 2014 and is meant to streamline applications. Please make sure that it is the report used by the particular competent authority for the activity that is being applied for.
2. This report format is current as of **08 December 2014**. It is the responsibility of the applicant to ascertain whether subsequent versions of the form have been published or produced by the competent authority
3. The report must be typed within the spaces provided in the form. The size of the spaces provided is not necessarily indicative of the amount of information to be provided. The report is in the form of a table that can extend itself as each space is filled with typing.
4. Where applicable **tick** the boxes that are applicable in the report.
5. An incomplete report may be returned to the applicant for revision.
6. The use of "not applicable" in the report must be done with circumspection because if it is used in respect of material information that is required by the competent authority for assessing the application, it may result in the rejection of the application as provided for in the regulations.
7. This report must be handed in at offices of the relevant competent authority as determined by each authority.
8. No faxed or e-mailed reports will be accepted.
9. The signature of the EAP on the report must be an original signature.
10. The report must be compiled by an independent environmental assessment practitioner.
11. Unless protected by law, all information in the report will become public information on receipt by the competent authority. Any interested and affected party should be provided with the information contained in this report on request, during any stage of the application process.
12. A competent authority may require that for specified types of activities in defined situations only parts of this report need to be completed.
13. Should a specialist report or report on a specialised process be submitted at any stage for any part of this application, the terms of reference for such report must also be submitted.
14. Two (2) colour hard copies and one (1) electronic copy of the report must be submitted to the competent authority.
15. Shape files (.shp) for maps must be included in the electronic copy of the report submitted to the competent authority.

SECTION A: ACTIVITY INFORMATION

Has a specialist been consulted to assist with the completion of this section? YES NO
 If YES, please complete the form entitled "Details of specialist and declaration of interest" for the specialist appointed and attach in Appendix I.

1. PROJECT DESCRIPTION

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

The Eskom Chemie Project involves the following:

Construction of new substation and power lines within the proposed route corridor

- A new Chemie Substation will be constructed within an area of approximately 150m x 200m (3 hectares). This area includes temporarily laydown areas / site camps during the construction period.
- A new single 132kV power line will be constructed within the route corridor from the new Chemie Substation to where it will connect to the existing 132kV Chemie-Selati Line to the direct east of the proposed Chemie Substation. This new line is approximately 2.2km in length.
- A new Loop In – Loop Out power line will be constructed within the route corridor from the new Chemie Substation to where it will connect to the existing 132kV to the Foskor-Chemie 2 Line south of the proposed Chemie Substation. This new line is approximately 2.8km in length.

Decommissioning of existing substation and power line

- The existing Chemie substation will be decommissioned.
- Approximately 2km of the existing 132kV Foskor-Chemie 2 Line will be decommissioned.
- Areas will be cleared to allow for temporarily laydown areas / site camps during the decommissioning period.

Route Corridors

A 1km wide route corridor was investigated (500m on both sides of the power lines). This route corridor must be approved by the Department of Environmental Affairs, which will allow for slight deviations of the power line within the approved corridor. Please note that Eskom will however only register the required servitude within the route corridor and *not* the entire corridor.

The study site is situated 4 – 5 kilometres to the south-west of the town of Phalaborwa in the eastern part of the Limpopo Province.

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

Listing Notice 1	
<p>GN 983, Dec 2014, Number 11 The development of facilities or infrastructure for the transmission and distribution of electricity-</p>	<p>New 132kV power lines will be constructed.</p>

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<p>(i) outside urban areas or industrial complexes with a capacity of more than 33 but less than 275 kilovolts; or</p> <p>(ii) inside urban areas or industrial complexes with a capacity of 275 kilovolts or more</p>	
<p>GN 983, Dec 2014, Number 19A</p> <p>The infilling or depositing of any material of more than 10 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 10 cubic metres from a watercourse;</p> <p>but excluding where such infilling, depositing, dredging, excavation, removal or moving</p> <p>a) will occur behind a development setback;</p> <p>b) is for maintenance purposes undertaken in accordance with a maintenance management plan;</p> <p>c) falls within the ambit of activity 21 in this Notice, in which case that activity applies;</p> <p>d) occurs within existing ports or harbours that will not increase the development footprint of the port or harbour; or</p> <p>e) where such development is related to the development of a port or harbour, in which case activity 26 in Listing Notice 2 of 2014 applies.</p>	<p>Decommissioning activities will take place within a wetland area. The exact volume of material to be removed has not yet been calculated, but only material associated with the substation (constructed many years ago), its foundations and fencing will be removed. The decommissioning activity will not involve the removal of any undisturbed land within the wetland area.</p> <p>A site visit was undertaken by Eskom and the Department of Water and Sanitation (DWS). DWS confirmed with Eskom that freshwater studies for this project are not required but it is required to complete a Risk Matrix and apply for General Authorisation (GA). This application for a GA is included as a condition in the EMP to be met prior to commencement of construction and decommissioning activities.</p>
<p>GN 983, Dec 2014, Number 27</p> <p>The clearance of an area of 1 hectares or more, but less than 20 hectares of indigenous vegetation, except where such clearance of indigenous vegetation is required for-</p> <p>(i) the undertaking of a linear activity; or</p> <p>(ii) maintenance purposes undertaken in accordance with a maintenance management plan.</p>	<p>The area in which the substation will be constructed contains indigenous vegetation (although not in a pristine state anymore). This area will be larger than 1 hectare.</p>
<p>GN 983, Dec 2014, Number 31</p> <p>The decommissioning of existing facilities, structures or infrastructure for-</p> <p>(i) any development and related operation activity or activities listed in this Notice, Listing Notice 2 of 2014 or Listing Notice 3 of 2014;</p> <p>(ii) any expansion and related operation activity or activities listed in this Notice, Listing Notice 2 of 2014 or Listing Notice 3 of 2014;</p> <p>(iii) any development and related operation activity or activities and expansion and related operation activity or activities listed in this Notice, Listing Notice 2 of 2014 or Listing Notice 3 of 2014;</p> <p>(iv) any phased activity or activities for development and related operation activity or</p>	<p>The existing Chemie Substation will be decommissioned.</p>

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<p>expansion or related operation activities listed in this Notice or Listing Notice 3 of 2014; or (v) any activity regardless the time the activity was commenced with, where such activity: (a) is similarly listed to an activity in (i), (ii), (iii), or (iv) above; and (b) is still in operation or development is still in progress; excluding where- (aa) activity 22 of this notice applies; or (bb) the decommissioning is covered by part 8 of the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) in which case the National Environmental Management: Waste Act, 2008 applies.</p>	
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Listing Notice 3	
<p>GN 985, Dec 2014, Number 4 The development of a road wider than 4 metres with a reserve less than 13,5 metres.</p> <p>e) Limpopo Province i. Outside urban areas: (aa) A protected area identified in terms of NEMPAA, excluding disturbed areas; (bb) National Protected Area Expansion Strategy Focus areas; (cc) Sensitive areas as identified in an environmental management framework as contemplated in chapter 5 of the Act and as adopted by the competent authority; (dd) Sites or areas identified in terms of an international convention; (ee) Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans; (ff) Core areas in biosphere reserves; or (gg) Areas within 10 kilometres from national parks or world heritage sites or 5 kilometres from any other protected area identified in terms of NEMPAA or from the core areas of a biosphere reserve, excluding disturbed areas; or</p> <p>ii. Inside urban areas: (aa) Areas zoned for use as public open space; (bb) Areas designated for conservation use in Spatial Development Frameworks adopted by the competent authority or zoned for a conservation purpose; or (cc) Areas within urban protected areas.</p>	<p>Short sections of new access roads wider than 4m will be constructed in areas identified as</p> <ul style="list-style-type: none"> • Critical Biodiversity Area 2 • Ecological Support Area 1 • Ecological Support Area 2 <p>(The SANBI maps are attached under Appendix A)</p> <p>The western border of the Kruger National Park lies approximately 9km east of the site.</p>
<p>GN 985, Dec 2014, Number 12 The clearance of an area of 300 square metres or more of indigenous vegetation except where such clearance of indigenous vegetation is required for maintenance purposes undertaken in accordance with a maintenance management plan.</p> <p>e. Limpopo i. Within any critically endangered or endangered ecosystem listed in terms of section 52 of the NEMBA or prior to the publication of such a list, within an area that has been identified as critically endangered in the National Spatial Biodiversity Assessment 2004; ii. Within critical biodiversity areas identified in bioregional plans; or iii. On land, where, at the time of the coming into effect of this Notice or thereafter such land was zoned open space, conservation or had an equivalent zoning.</p>	<p>More than 300m² of indigenous vegetation will be cleared in areas that has been identified as</p> <ul style="list-style-type: none"> • Critical Biodiversity Area 2 • Ecological Support Area 1 • Ecological Support Area 2 <p>(The SANBI maps are attached under Appendix A).</p> <p>The Ecosystems Threat Status is not listed for the Limpopo Province on the SANBI website.</p>

2. FEASIBLE AND REASONABLE ALTERNATIVES

“**alternatives**”, in relation to a proposed activity, means different means of meeting the general purpose and requirements of the activity, which may include alternatives to—

- (a) the property on which or location where it is proposed to undertake the activity;
- (b) the type of activity to be undertaken;
- (c) the design or layout of the activity;
- (d) the technology to be used in the activity;
- (e) the operational aspects of the activity; and
- (f) the option of not implementing the activity.

Describe alternatives that are considered in this application as required by Appendix 1 (3)(h), Regulation 2014. Alternatives should include a consideration of all possible means by which the purpose and need of the proposed activity (NOT PROJECT) could be accomplished in the specific instance taking account of the interest of the applicant in the activity. The no-go alternative must in all cases be included in the assessment phase as the baseline against which the impacts of the other alternatives are assessed.

The determination of whether site or activity (including different processes, etc.) or both is appropriate needs to be informed by the specific circumstances of the activity and its environment. After receipt of this report the, competent authority may also request the applicant to assess additional alternatives that could possibly accomplish the purpose and need of the proposed activity if it is clear that realistic alternatives have not been considered to a reasonable extent.

The identification of alternatives should be in line with the Integrated Environmental Assessment Guideline Series 11, published by the DEA in 2004. Should the alternatives include different locations and lay-outs, the co-ordinates of the different alternatives must be provided. The co-ordinates should be in degrees, minutes and seconds. The projection that must be used in all cases is the WGS84 spheroid in a national or local projection.

a) Site alternatives

Alternative 1 (Preferred Alternative)		
Description	Lat (DDMMSS)	Long (DDMMSS)
Substation Site Alternative 1 (Preferred Alternative)	23° 57' 07.78"S	31° 04' 50.14E
Alternative 2		
Description	Lat (DDMMSS)	Long (DDMMSS)
Substation Site Alternative 2	23° 57' 01.78"S	31° 04' 29.14"E
Alternative 3		
Description	Lat (DDMMSS)	Long (DDMMSS)

In the case of linear activities:

Alternative: **Latitude (S):** **Longitude (E):**

Alternative 1 (Preferred Route Alternative): Loop In – Loop Out 132kV Power Lines

<ul style="list-style-type: none"> • Starting point of the activity (Chemie Substation) 	23° 57' 07.78"S	31° 04' 50.14E
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• Middle/Additional point of the activity	23° 57' 43.96" S	31° 04' 43.64" E
• End point of the activity (Connection with the Foskor – Chemie 2 Power Line)	23° 58' 19.60" S	31° 04' 44.87" E

Alternative 1 (Preferred Route Alternative): Single 132kV Power Line

• Starting point of the activity (Chemie Substation)	23° 57' 07.78" S	31° 04' 50.14" E
• Middle/Additional point of the activity	23° 57' 15.74" S	31° 02' 16.09" E
• End point of the activity (Connection with the Chemie - Selati Power Line)	23° 57' 24.74" S	31° 05' 47.86" E

Alternative 2 (Loop In – Loop Out 132kV Power Lines)

• Starting point of the activity (Chemie Substation)	23° 57' 01.78" S	31° 04' 29.14" E
• Middle/Additional point of the activity	23° 58' 19.60" S	31° 04' 44.87" E
• End point of the activity (Connection with the Foskor – Chemie 2 Power Line)	23° 58' 19.60" S	31° 04' 44.87" E

Alternative 3

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

For route alternatives that are longer than 500m, please provide an addendum with co-ordinates taken every 250 meters along the route for each alternative alignment. In the case of an area being under application, please provide the co-ordinates of the corners of the site as indicated on the lay-out map provided in Appendix A of this form.

ROUTE DESCRIPTION

The study site is situated 4 – 5 kilometres to the south-west of the town of Phalaborwa in the eastern part of the Limpopo Province. It falls within a narrow stretch of land which is flanked by large rural settlements to the west and north and the industrial section of Phalaborwa town to the east.

The area sees much pedestrian traffic with a network of paths linking Phalaborwa and the town of Makhushane. The area is also used as communal cattle grazing land much of which is overgrazed. Throughout the survey site there is evidence of tree felling (many trees have been cut up with chainsaws), presumably for the commercial firewood trade. Being so close to human habitation and industrial sites it can be expected that there are illegal dumping activities. Both industrial and household waste are scattered throughout the site.

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There are several power lines in the area, many of which running to and from the Foskor substation further away within the macro study area

The site is located in the northern part of the Savanna Biome, specifically the Phalaborwa-Timbavati Mopaneveld (Least threatened) vegetation unit of the Mopane Bioregion. This vegetation unit is characterised by open savanna on undulating plains with sandy uplands dominated by *Combretum apiculatum*, *Terminalia sericea* and *Colophospermum mopane* trees, with *T. sericea* disappearing and *Combretum apiculatum* becoming less common in the clayey bottomlands, and being replaced by trees such as *Acacia nigrescens* and increased dominance of *C. mopane*.

The open savanna of the project area is dissected by well-vegetated non-perennial tributaries of the Ge-Selati River (itself a tributary of the Olifants River) and dotted by isolated hills. The Selati River is situated slightly less than 1km to the southwest of the survey area. There are agricultural fields in the southern part of the proposed development area.

There are a number of areas with some form of conservation status within 50km from the project site. Formally protected areas includes the Kruger National Park, located approximately 9km to the east while Letaba Ranch and the Hans Merensky Nature reserves are located respectively approximately 40km and 50km to the north-west. A further eight informally protected areas occur in relatively close proximity to the new Chemie project site, most of them bordering the Kruger National Park. The proposed substation site and power lines will however not run across or adjacent to any of these areas and will not impact on these sensitive protected land.

ROUTE CORRIDORS

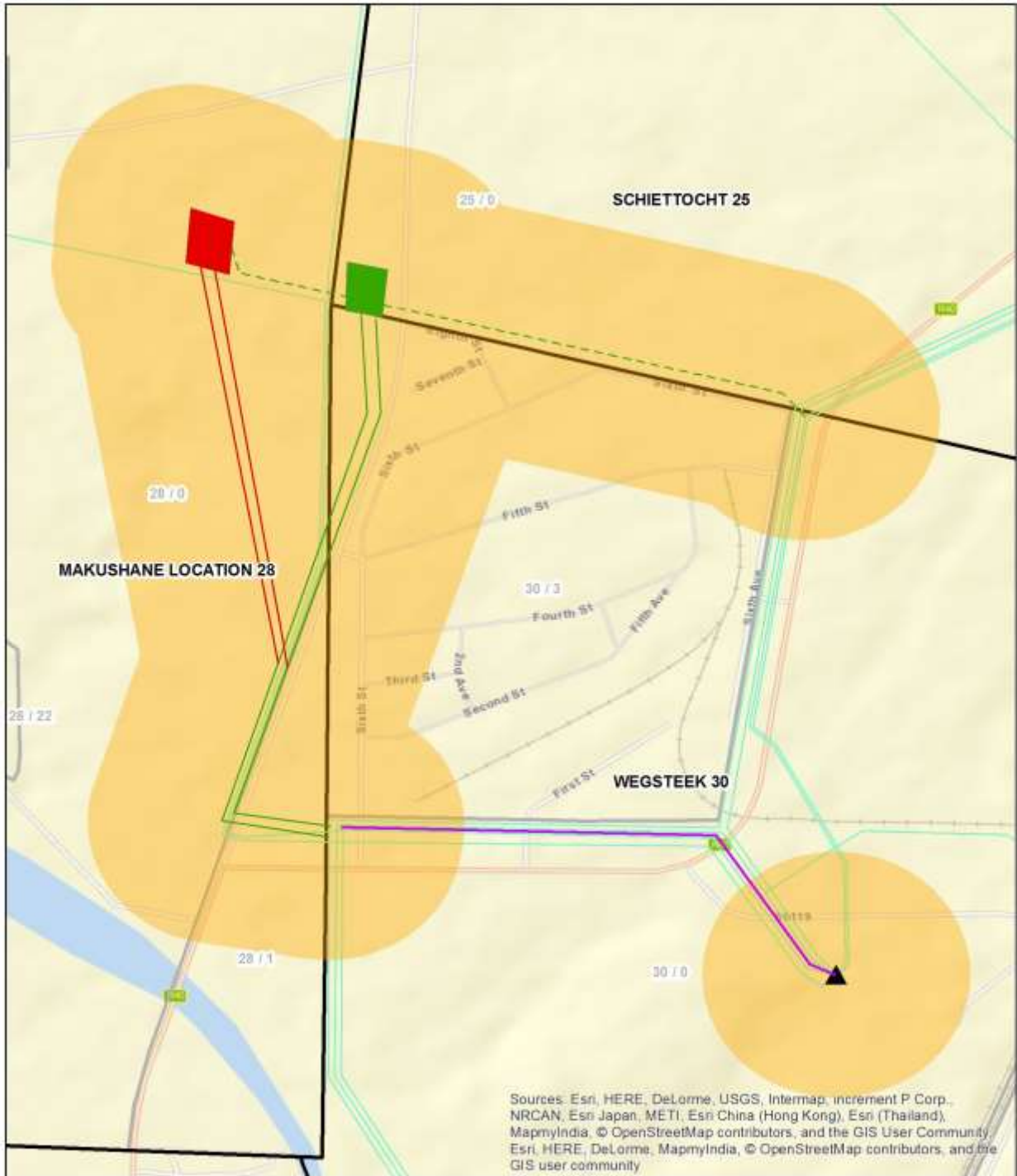
A 1km wide route corridor was investigated (500m on both sides of the power lines). This route corridor should be approved by the Department of Environmental Affairs, which will allow for slight deviations of the power line within the approved corridor. Please note that Eskom will however only register the required servitude within the route corridor and *not* the entire corridor.

SELECTING AN ALTERNATIVE: SUBSTATION and ROUTE CORRIDOR

The map below is also attached in Appendix A



Chemie - Route Alternatives



- ▲ Chemie substation to be decommissioned
- Existing HV network
- Existing 132kV line to be decommissioned
- Substation Alternative 1 - Preferred
- Substation Alternative 2
- Loop-In-Loop-Out 132kV Preferred Route
- Loop-In-Loop-Out 132kV Alternative Route
- Single 132kV power line
- 1km_corridor
- Parent Farms
- Farm Portions

0 0.125 0.25 0.5 0.75 1 Kilometers

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SELECTING AN ALTERNATIVE: PUBLIC PARTICIPATION

Even though the project was widely advertised (refer to Section C, paragraph 2 of this report) and all stipulations in the NEMA Regulations, 2014, as amended, were followed, very little comment was received. No objections to the proposed project and its alternatives were made.

SELECTING AN ALTERNATIVE: SPECIALIST STUDIES

The following studies were undertaken by specialists in their respective fields (also refer to Section B where these studies are described in more detail):

- Baseline Botanical Survey Report
- Avifaunal Basic Assessment
- Heritage Impact Assessment
- Dust Quality Monitoring Study

A concise summary of these studies as well as their selection of an alternative route are given below.

BASELINE BOTANICAL SURVEY REPORT

Vegetation overview

The proposed project falls within the Phalaborwa-Timbavati Mopaneveld (Mucina & Rutherford 2006). Its distribution runs in the form of a band of about 40km west and east of Phalaborwa and south of the Olifants River into the Timbavati and Klaserie Game Reserve and the Kruger National Park. The altitude within this vegetation type ranges between 300 – 600 meters above sea level.

Mucina & Rutherford (2006) describe this unit as open tree savannah on undulating plains with sandy uplands dominated by *Combretum apiculatum*, *Terminalia sericea* and *Colophospermum mopane* trees. The *Terminalia*'s and *Crombretum*'s disappear in the clayey bottomlands and are replaced by species such as *Acacia nigrescens* and increased dominance of Mopane.

The shrub and tree component within the substation sites and along the proposed routes is typical of the Phalaborwa-Timbavati Mopaneveld vegetation type and has a fairly diverse species composition. Two tree species were dominant in the area namely *Mopane Colophospermum mopane* and *Red Bushwillow Combretum apiculatum*.

Unfortunately, many of the larger hard-wood trees including Mopane, Knobthorn and Leadwood have been cut down for firewood. In large portions of the flat areas the vegetation structure has been changed due to the removal of hardwoods resulting in a dense, low shrub layer interspersed by the odd large Marula tree.

Other significant tree species found to occur in the survey area were Jackal Berry *Diospyros mespiliformis*, Scented Thorn *Vachellia nilotica*, Jacket-plum *Pappea capensis*, Velvet-leaved Corkwood *Commiphora mollis* Bushveld False-thorn *Albizia harveyi* and Tamboti *Spirostachys africana*.

Conservation Status

The conservation status of this vegetation unit is considered to be ‘Least Threatened’ with close to 40% of its surface area conserved within the Kruger National Park while a similar proportion falls within the state and private reserves of the Klaserie, Umbabat and Timbavati. Only about 5% of this vegetation unit has been transformed by human settlements and mining mainly around the town of Phalaborwa (Mucina & Rutherford 2006).

Protected species

Although no red listed tree or shrub species were recorded in the survey area, one species namely the Tamboti *Spirostachys africana* is listed under Schedule 12 of the Limpopo Environmental Management Act – Act 7 of 2003 as a protected plant. According to the list of protected tree species of the National Forest Act (Act No 84 of 1998) three nationally protected trees occur in the survey area. These are the *Marula Sclerocarya birrea* subsp. *caffra*, Leadwood tree *Combretum imberbe* and Apple-leaf *Philenoptera violacea*.

Permits are required before any of these protected trees may be cut, disturbed, damaged or destroyed.

Vegetation Sensitivity Zone

The ‘sensitivity’ was gauged according to the extent of ‘unspoiled’ vegetation, the presence of protected or red data plant species and the degree of plant species richness.

Three sensitivity zones were identified (also refer to Appendix A for a copy of the Sensitivity Map):

- Red – High sensitivity
- Orange – Medium sensitivity
- Pink - Low sensitivity (developed and totally transformed areas)

Selecting an Alternative

As can be seen from the comparison table below the alternative route and substation site contains far greater number of protected trees consisting mainly of the protected *Marula Sclerocarya birrea* subsp. *caffra* specimens. The alternative route is also situated closer to sensitive riparian habitats and covers a greater distance through undeveloped land thus potentially causing greater impact on the vegetation than the ‘preferred’ route. The Preferred Route traverses through more disturbed or open (previously cleared) areas and is situated closer to existing infrastructure than the alternative route. It is thus obvious that the Preferred Route would be the more favourable choice from an ecological point of view. Although in smaller densities, this route still houses protected tree species which were plotted during the field survey for purposes of obtaining the necessary permits from the provincial authority.

Criteria	‘Preferred’ Route and Substation Site	Alternative Route and Substation Site
Number of botanically sensitive sites (drainage lines).	Route bisects one (small drainage line near the R40 road)	Route bisects a reasonably large area of medium vegetation sensitivity zone and is fairly close to a high sensitivity zone. It crosses one (medium sized drainage line but runs within 250m of a larger water course which feeds the Selati River)
Extent of pristine vegetation (percentage area of the route that could be considered to be ‘unspoiled’).	<10%	>40%
Presence and extent of disturbed areas.	Three previously ‘cleared’ areas through which route runs for a total of 770m	One previously ‘cleared’ area through which route runs for a total of 160m

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Proximity of excising infrastructure	Substation within 100m of an existing power line. Route travels through undeveloped land for approximately 500m before entering an existing servitude.	Substation within 100m of an existing power line. Route travels through undeveloped land for approximately 1500m before entering an existing servitude.
Density and size of the protected trees.	3 protected tree species. <5 large trees & <10 small and medium sized protected trees	3 protected tree species. >25 large trees & >30 small and medium sized protected trees
Number of protected plant species.	One protected plant species (Tamboti)	One protected plant species (Tamboti)

Conclusion

The fact that the botanical component in the area is far from pristine, that only a few small specimens of protected trees occur along the route and that no red listed or threatened plant species were recorded suggests that the proposed Chemie power line and substation will not have a significant negative impact on the botanical component.

AVIFAUNAL BASIC ASSESSMENT

The habitat of the New Chemie project site consists mostly of open Phalaborwa-Timbavati Mopaneveld savanna dissected by well-vegetated tributaries — with a distinct eastern and western branch — of the Ga-Selati River and dotted by isolated hills. Agricultural fields occur in the south while human settlements occur in the south and west.

Because the major drainage lines and associated vegetation represent movement corridors for waterbirds and other species, it represents a high collision risk zone. Minimising development within a 100m buffer zone around these habitat features will help to reduce the risks involved.

The potential impact of the two alternatives were evaluated and it was concluded that the Preferred Alternative is preferred above Alternative B which passes close to and over more bird collision high risk zones.

Conclusion

From the assessment on the potential impacts on the avifauna, it is concluded that there are no fatal flaws with the proposed Chemie project. The most significant avifaunal impacts associated with the proposed Chemie development, include:

- Impacts associated with the construction activities on the site, including the potential destruction of nests of non-threatened species which may potentially nest on the site at the time;
- Impacts associated with the transformation of the habitat;
- Impacts associated with the proposed substation;
- Impacts associated with power lines, including the electrocution and particularly collision risk it poses to Red Data and other species; and

By using the Preferred Alternative, all impacts can be mitigated to acceptable (low) levels.

It is concluded that there are no fatal flaws with the proposed Chemie project and that it may go ahead provided that the recommended mitigation measures are implemented.

HERITAGE IMPACT ASSESSMENT

The study site was assessed and the following sites of importance were mapped:

- Substantial remains of a farmstead represented by several foundations /floor remains of buildings. This site is however to the north of the proposed substation and route corridors and will not be impacted on.
- Six other sites were found that exemplify cultural landscapes of non-timber forest products (NTFP) harvest.
 - 5x Sites: There is an abundance of Marula trees and the harvest of the fruit is an important economic and cultural activity in the area. There is a scatter of Marula trees in the area of the proposed development, which may be directly or indirectly affected.
 - 1x Site: There is good stands of Mopane trees on the southern limits of the Substation Alternative 2 location. For thousands of years Mopane woodlands have been a seasonal source of Mopane worm which is probably the most important insect in Southern Africa from a cultural perspective.

The following is a risk assessment ranking of the findings:

	Value	Explanation	Found on site ?
1	Very high	Grade 1 Sites (Section 7 of NHRA), graves and burial grounds (Section 36 of NHRA). They must be protected. Stakeholder consultations required before graves can be relocated or other mitigation measures considered.	None
2	High	Grade 2 sites (Section 7 of NHRA), Historic Buildings and substantial archaeological deposits. They must be protected.	None
3	Medium	Finds which have been documented. They shouldn't be disturbed if there is suitable alternative placement of development components. Heritage expert to advise.	Seven
4	Low	Heritage sites deemed of less importance.	None

Conclusion

The occurrence of the stand of Marula trees at the Substation Site Alternative 2 does make the Preferred Alternative a better option for the construction of the new substation.

With careful placement of the pylons as to avoid the identified heritage resources the possibility of the project having a negative impact on heritage resources has been found to be **low**.

However as a precaution should archaeological or other heritage relics be found during the construction phase, heritage authorities will be advised immediately and a heritage specialist will be called to attend to it and advice on the way forward.

DUST QUALITY MONITORING STUDY

The existing Chemie Substation is located adjacent to the Bosveld Phosphates industrial plant outside of Phalaborwa. The pollution emanating from this plant over the years created an unsafe working environment. The badly polluted insulators cause flash overs during rainy seasons and the cost of

maintenance and un-served energy is unacceptably high. The equipment or assets in the substation have almost reached the end of their life span. It is therefore proposed to relocate the substation far from Bosveld Phosphates where pollution will be reduced.

Dust impacts at receptor sites depend on multiple parameters which have to be assessed on a site specific basis. The nature of the material and concentrations arriving at receptor sites has to be evaluated against possible sensitivities of receptor systems, for example:

- aesthetic and nuisance value;
- soiling;
- quality impairment by deposition on fruit and leaf crops;
- soil modification;
- accumulation of dust on pasture;
- smothering of plants;
- visibility impairment in pristine sites; and
- significant deterioration of existing air quality.

In its simplest format dust fall-out monitoring does not provide answers to the above issues, but it is the first and simplest step in quantifying the dust pollution at any site which creates a foundation from which other risks can be identified, quantified and qualified.

Conclusion

The following conclusion was made based on the four Monitoring Points (MP) A - D:

- There is a definite improvement in dust fall out rate for MP B and MP C.
- There was a slight increase in dust fallout at MP D during the month of January 2017. However, the results still fall within the acceptable limits.
- The samples collected comply with the Residential Limit of less than 600mg/m²/day.
- The results for Monitoring Points MP B, MP C and MP D (the bucket at MP A was stolen) are well below the residential limit of 600mg/m²/day (30 day average).

The monitoring results were taken over a period of three months (December, January and February) and the average results were well below the residential limit of 600mg/m²/day. The site for the new proposed Chemie substation will therefore be acceptable in terms of dust deposits and it can therefore be recommended that the site be constructed at this site.

CONCLUSION ON SELECTING AN ALTERNATIVE: SUBSTATION and ROUTE CORRIDOR

ALTERNATIVE 1 IS THE PREFERRED SUBSTATION AND ROUTE CORRIDOR ALTERNATIVE

Public participation

No objection from the public was received to either the Preferred or Alternative Route Corridor options.

Specialist studies

The following specialist studies concluded that the Preferred Alternative as presented in this report would be the best option for this project:

- Baseline Botanical Assessment Report
- Avifaunal Basic Assessment

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- Heritage Impact Assessment
- Dust Quality Monitoring Study

Technical considerations

- The Preferred Route Corridor is slightly shorter than Route Alternative 2
- The Preferred Route Corridor and Substation Alternative are next to the R40 provincial road which ensures easy access.

Alternative 2

Route Alternative 2 is not the preferred route alternative due to the following:

- Route Alternative 2 is slightly longer than the Preferred Alternative
- This route would require the construction of new access roads.
- It is not the preferred option of the specialists appointed for this project.

Conclusion on selecting an alternative

Once mitigation measures have been applied, the Preferred Route Corridor and Substation Site Alternative would have a low and acceptable impact on the environment. The Preferred Route Corridor and Substation Site is therefore the alternative that is recommended for environmental authorisation

b) Lay-out alternatives

Alternative 1 (preferred alternative)		
Description	Lat (DDMMSS)	Long (DDMMSS)
Alternative 2		
Description	Lat (DDMMSS)	Long (DDMMSS)
Alternative 3		
Description	Lat (DDMMSS)	Long (DDMMSS)

c) Technology alternatives

Alternative 1 (preferred alternative)		
Alternative 2		
Alternative 3		

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

Alternative 1 (preferred alternative)		
Alternative 2		
Alternative 3		

e) No-go alternative

The existing Chemie Substation was built 35 years ago and is located adjacent to Bosveld Phosphates industrial plant outside of Phalaborwa. The pollution emanating from this plant over the years created an unsafe working environment. The badly polluted insulators cause flash overs during rainy seasons and the cost of maintenance and un-served energy is unacceptably high. The equipment or assets in the substation have almost reached the end of their life span. It is therefore proposed to relocate the substation far from Bosveld Phosphates where pollution will be reduced.

If the substation is not relocated, the unsafe working environment and failing equipment due to the age of the substation will continue. The no-go option is definitely not the preferred alternative for this project.

Paragraphs 3 – 13 below should be completed for each alternative.

3. PHYSICAL SIZE OF THE ACTIVITY

a) Indicate the physical size of the preferred activity/technology as well as alternative activities/technologies (footprints):

Alternative:

- Alternative A1¹ (preferred activity alternative)
- Alternative A2 (if any)
- Alternative A3 (if any)

Size of the activity:

	m ²
	m ²
	m ²

or, for linear activities:

Alternative:

- Alternative 1 - Preferred Route Alternative: Loop In – Loop Out Power Lines
- Alternative 1 - Preferred Route Alternative: Single 132kV Power Line
- Alternative 2 (Loop In – Loop Out Power Lines)
- Alternative 3

Length of the activity

	±2.8km
	± 2.2km
	±3km
	km

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

Alternative:

- Alternative 1 -Preferred Route Alternative: Loop In – Loop Out Power Lines
- Alternative 1 -Preferred Route Alternative: Single 132kV Power Line
- Alternative 2 (Loop In – Loop Out Power Lines)
- Alternative 3

Size of the site/servitude:

	52m wide servitude will be registered
	31m wide servitude will be registered
	52m wide servitude will be registered

¹ "Alternative A.." refer to activity, process, technology or other alternatives.

4. SITE ACCESS

Does ready access to the site exist?

YES	NO
	m

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

Describe the type of access road planned:

New Power Lines

Loop in – Loop out Lines: This route runs alongside the R40 provincial road which will be used for easy access.

Single 132kV Line: This line runs mostly along an existing jeep track which will be upgraded to allow for operation of the construction vehicles and maintenance vehicles during the operation phase.

New Substation

A new access road approximately 200m will be constructed from the R40 to the substation site.

Decommissioning of the existing route

There is an existing maintenance road that will be utilised during the decommissioning process.

Decommissioning of the Substation

Existing access roads will be used during the decommissioning process.

Include the position of the access road on the site plan and required map, as well as an indication of the road in relation to the site.

5. LOCALITY MAP

An A3 locality map must be attached to the back of this document, as Appendix A. The scale of the locality map must be relevant to the size of the development (at least 1:50 000. For linear activities of more than 25 kilometres, a smaller scale e.g. 1:250 000 can be used. The scale must be indicated on the map.). The map must indicate the following:

- an accurate indication of the project site position as well as the positions of the alternative sites, if any;
- indication of all the alternatives identified;
- closest town(s);
- road access from all major roads in the area;
- road names or numbers of all major roads as well as the roads that provide access to the site(s);
- all roads within a 1km radius of the site or alternative sites; and
- a north arrow;
- a legend; and
- locality GPS co-ordinates (Indicate the position of the activity using the latitude and longitude of the centre point of the site for each alternative site. The co-ordinates should be in degrees and decimal minutes. The minutes should have at least three decimals to ensure adequate accuracy. The projection that must be used in all cases is the WGS84 spheroid in a national or local projection).

6. LAYOUT/ROUTE PLAN

A detailed site or route plan(s) must be prepared for each alternative site or alternative activity. It must be attached as Appendix A to this document.

The site or route plans must indicate the following:

- the property boundaries and numbers of all the properties within 50 metres of the site;
- the current land use as well as the land use zoning of the site;
- the current land use as well as the land use zoning each of the properties adjoining the site or sites;
- the exact position of each listed activity applied for (including alternatives);
- servitude(s) indicating the purpose of the servitude;
- a legend; and
- a north arrow.

7. SENSITIVITY MAP

The layout/route plan as indicated above must be overlain with a sensitivity map that indicates all the sensitive areas associated with the site, including, but not limited to:

- watercourses;
- the 1:100 year flood line (where available or where it is required by DWS);
- ridges;
- cultural and historical features;
- areas with indigenous vegetation (even if it is degraded or infested with alien species); and
- critical biodiversity areas.

The sensitivity map must also cover areas within 100m of the site and must be attached in Appendix A.

8. SITE PHOTOGRAPHS

Colour photographs from the centre of the site must be taken in at least the eight major compass directions with a description of each photograph. Photographs must be attached under Appendix B to this report. It must be supplemented with additional photographs of relevant features on the site, if applicable.

9. FACILITY ILLUSTRATION

A detailed illustration of the activity must be provided at a scale of at least 1:200 as Appendix C for activities that include structures. The illustrations must be to scale and must represent a realistic image of the planned activity. The illustration must give a representative view of the activity.

10. ACTIVITY MOTIVATION

Motivate and explain the need and desirability of the activity (including demand for the activity):

1. Is the activity permitted in terms of the property's existing land use rights?	YES	NO	Please explain
<p>Servitudes will be registered along the powerline route. The servitudes width will be 31m (single line) and 52m respectively (Loop-in-Loop-out lines).</p>			
2. Will the activity be in line with the following?			
(a) Provincial Spatial Development Framework (PSDF)	YES	NO	Please explain
<p>The Limpopo Province Spatial Development Plan identified key sectors in the Province (Agriculture, Mining, Tourism and Manufacturing) combined with opportunities identified by the municipalities which could assist to stimulate economic growth, poverty reduction and overall economic impact. All these activities will need support in supply of energy.</p> <p>Economic development opportunities are the key determinant in the settlement patterns. Economic development, in turn, typically responds to the availability of Environmental Capital (e.g. water, suitable agricultural soil, mining resources, etc.) and Infrastructural Capital (e.g. roads, electricity, bulk engineering services, etc.).</p> <p>The proposed new substation and associated 132kV power lines would ensure more adequate electricity supply within the macro area and local municipality, thereby contributing to the economic growth of the area.</p>			
(b) Urban edge / Edge of Built environment for the area	YES	NO	Please explain
Not applicable			
(c) Integrated Development Plan (IDP) and Spatial Development Framework (SDF) of the Local Municipality (e.g. would the approval of this application compromise the integrity of the existing approved and credible municipal IDP and SDF?).	YES	NO	Please explain
<p>According to the Ba-Phalaborwa Local Municipality's IDP 2016/17– 2017/18, the following applies:</p> <p>The old electricity infrastructure in Phalaborwa town and revenue collection is currently their major challenge and impacts negatively towards the economic growth of the town. The Municipality is faced with developmental challenges in terms of service delivery provision. The state of electricity infrastructure, roads, water and sanitation in Phalaborwa needs their urgent attention.</p> <p>This IDP gives expression to provide a better life for all people through implementation of, amongst other, the refurbishment of electricity infrastructure.</p> <p>The relocation of the 35 year old Chemie substation with associated new powerlines will assist in the upgrade of the municipal electrical network.</p>			

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(d) Approved Structure Plan of the Municipality	YES	NO	Please explain
A Structure Plan for the Ba-Phalaborwa Local Municipality is not available / does not exist.			
(e) An Environmental Management Framework (EMF) adopted by the Department (e.g. Would the approval of this application compromise the integrity of the existing environmental management priorities for the area and if so, can it be justified in terms of sustainability considerations?)	YES	NO	Please explain
<p>According to the Mopani District Municipality's IDP, water pollution, alien invader plants and animals, waste management and soil erosion are, amongst other, some of the environmental challenges the municipality faces.</p> <p>In order to ensure that there is balanced considerations of environmental and socio-economic in municipal projects planning, all infrastructure projects are screened to check if an Environmental Impacts Assessment might be required or not.</p> <p>This study is being conducted according to the NEMA principles and the environment is protected through various mitigation measures as proposed in the Environmental Management Plan which forms part of this Basic Assessment Report.</p>			
(f) Any other Plans (e.g. Guide Plan)	YES	NO	Please explain
Unknown			
3. Is the land use (associated with the activity being applied for) considered within the timeframe intended by the existing approved SDF agreed to by the relevant environmental authority (i.e. is the proposed development in line with the projects and programmes identified as priorities within the credible IDP)?	YES	NO	Please explain
The proposed project provides the area with a long term solution to accommodate the expected increase in electricity demand. The economic sector as well as local communities (distribution of electricity by the municipalities) will benefit from this project. The project will strengthen the electricity network; thereby ensuring less dips and power failures.			
4. Does the community/area need the activity and the associated land use concerned (is it a societal priority)? (This refers to the strategic as well as local level (e.g. development is a national priority, but within a specific local context it could be inappropriate.)	YES	NO	Please explain
The proposed project will contribute to the provision of a long term solution to reliable electricity supply. The economic, private sectors as well as the environment will benefit from this project.			

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<p>5. Are the necessary services with adequate capacity currently available (at the time of application), or must additional capacity be created to cater for the development? (Confirmation by the relevant Municipality in this regard must be attached to the final Basic Assessment Report as Appendix I.)</p>	YES	NO	Please explain
<p>The project is for the distribution of existing available electricity and no additional capacity is required for this Eskom development.</p>			
<p>6. Is this development provided for in the infrastructure planning of the municipality, and if not what will the implication be on the infrastructure planning of the municipality (priority and placement of services and opportunity costs)? (Comment by the relevant Municipality in this regard must be attached to the final Basic Assessment Report as Appendix I.)</p>	YES	NO	Please explain
<p>Municipalities recognise the need for proper engineering infrastructure (e.g. electricity) in its area of jurisdiction and much needed infrastructure (e.g. electricity) is identified as a priority to unlock the economic growth potential of the macro area.</p>			
<p>7. Is this project part of a national programme to address an issue of national concern or importance?</p>	YES	NO	Please explain
<p>This project does ultimately contribute on national level. Eskom is the national electricity utility which generates and distributes electricity to industrial, mining, commercial, agricultural and residential electricity consumers and re-distributors.</p>			
<p>8. Do location factors favour this land use (associated with the activity applied for) at this place? (This relates to the contextualisation of the proposed land use on this site within its broader context.)</p>	YES	NO	Please explain
<p>All impacts can be mitigated to acceptable levels and this activity will not impact negatively on the current landuse along the route.</p>			
<p>9. Is the development the best practicable environmental option for this land/site?</p>	YES	NO	Please explain
<p>Negative impacts that this development may have on the environment can be mitigated to acceptable levels and the protection of the bio-physical environment is therefore not jeopardised. .</p>			
<p>10. Will the benefits of the proposed land use/development outweigh the negative impacts of it?</p>	YES	NO	Please explain
<p>All negative impact associated with this proposed activity can be mitigated to acceptable levels. The positive impact of reliable and adequate electrical supply outweighs possible negative impacts that may occur after mitigation measures have been applied.</p>			
<p>11. Will the proposed land use/development set a precedent for similar activities in the area (local municipality)?</p>	YES	NO	Please explain
<p>Existing electrical infrastructure such as power lines always has the potential for future upgrade and or construction of additional components to the facility and powerlines.</p>			

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12. Will any person's rights be negatively affected by the proposed activity/ies?	YES	NO	Please explain
<p>No person's rights would be affected by the proposed activity. A thorough public participation programme was conducted and issues raised by interested & affected parties are satisfactorily addressed.</p>			
13. Will the proposed activity/ies compromise the "urban edge" as defined by the local municipality?	YES	NO	Please explain
<p>The activity is irrelevant to the urban edge, because it is a linear activity (with associated infrastructure such as the substation) which is required for service provision.</p>			
14. Will the proposed activity/ies contribute to any of the 17 Strategic Integrated Projects (SIPS)?	YES	NO	Please explain
15. What will the benefits be to society in general and to the local communities?	Please explain		
<p>The proposed project provides the area with a long term solution to accommodate the expected increase in electricity demand and it is anticipated that the network performance will improve and the duration and frequency of supply interruptions will therefore be minimal. The positive impact of reliable and adequate electrical supply outweighs possible negative impacts that may occur after mitigation measures have been applied.</p>			
16. Any other need and desirability considerations related to the proposed activity?	Please explain		
<p>An important consideration of the project is to ensure that the proposed solution to enhance the network does not have a negative impact on the environment. Mitigation measures as proposed in this report will ensure the protection of the environment.</p>			
17. How does the project fit into the National Development Plan for 2030?	Please explain		
<p>The National Development Plan aims to eliminate poverty and reduce inequality by 2030. South Africa can realise these goals by drawing on the energies of its people, growing an inclusive economy, building capabilities, enhancing the capacity of the state, and promoting leadership and partnerships throughout society.</p> <p>The Commission's Diagnostic Report, June 2011 set out South Africa's achievements and shortcomings since 1994. It identified a failure to implement policies and an absence of broad partnerships as the main reasons for slow progress, and set out nine <i>primary challenges of which the following is relevant to this project</i>: "Infrastructure is poorly located, inadequate and under-maintained". Given the complexity of national development, the plan sets out six <i>interlinked priorities</i>. <i>Relevant to this project is bringing about faster economic growth.</i></p> <p>The National Development Plan makes a firm commitment to achieving a minimum standard of living. <i>Elements of a decent standard of living include the following relevant to this project</i> :</p> <ul style="list-style-type: none"> • A more efficient and competitive infrastructure. • Infrastructure to facilitate economic activity that is conducive to growth and job creation. <p>An approach will be developed to <i>strengthen key services</i> such as commercial transport, energy, telecommunications and water, while ensuring their long-term affordability and sustainability.</p>			

Economic infrastructure: The proportion of people with access to the electricity grid should rise to at least 90 percent by 2030, with non-grid options available for the rest.

18. Please describe how the general objectives of Integrated Environmental Management as set out in section 23 of NEMA have been taken into account.

Current procedures and/or organisational structures are not necessarily achieving integrated decision-making and/or co-operative governance and, as a result, there is a failure to properly achieve the objectives of IEM as set out in Section 23 of NEMA. EIA's however often focus on the immediate harm a project will cause rather than any benefits it might create in the long term to sustainable development.

The stated objectives of Section 23 are to ensure integrated decision-making and co-operative governance so that NEMA's principles and the general objectives for integrated environmental management of activities can be achieved. The goals are to

- a) promote the integration of the principles of environmental management set out in section 2 into the making of all decisions which may have a significant effect on the environment;
- b) identify, predict and evaluate the actual and potential impact on the environment, socio-economic conditions and cultural heritage, the risks and consequences and alternatives and options for mitigation of activities, with a view to minimising negative impacts, maximising benefits, and promoting compliance with the principles of environmental management set out in section 2;
- c) ensure that the effects of activities on the environment receive adequate consideration before actions are taken in connection with them;
- d) ensure adequate and appropriate opportunity for public participation in decisions that may affect the environment;
- e) ensure the consideration of environmental attributes in management and decision-making which may have a significant effect on the environment; and
- f) identify and employ the modes of environmental management best suited to ensuring that a particular activity is pursued in accordance with the principles of environmental management set out in section 2.

For this project the following actions were taken to reach the general objectives of Integrated Environmental Management as set out in Section 23 of NEMA:

- a) Applicable environmental, economic and social aspects have been assessed, thereby ensuring an integrated approach in order to balance the needs of all whom would be affected by this development.
- b) Impacts have been described and assessed elsewhere in this report. Mitigation measures have been supplied in order to ensure that all identified impacts are mitigated to acceptable levels. Alternatives have been thoroughly assessed and the best possible solution represents this development proposal.
- c) The development proposal has to be evaluated and approved by DEA and no construction may commence prior to the issuing of the Environmental Authorisation.
- d) The procedures which were followed during the public participation programme were based on the NEMA EIA Regulations which came into effect on 14 December 2015.
- e) DEA will take all information as represented in this report into consideration and may request further information should they feel that further studies/information is required before an informed decision can be made.
- f) The mitigation measures as supplied in this report together with the measures as per the Environmental Management Programme are deemed to be the best way to manage anticipated impacts.

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By providing electricity whilst not impacting negatively on the environment, the project would contribute to a sustainable environment.

19. Please describe how the principles of environmental management as set out in section 2 of NEMA have been taken into account.

Chapter 2 of NEMA provides a number of principles that decision-makers have to consider when making decisions that may affect the environment, therefore, when a Competent Authority considers granting or refusing environmental authorisation based on an Environmental Impact Assessment, these principles must be taken into account.

The NEMA principles with which this application conforms are described as follows —

1. Environmental management must place people and their needs at the forefront of its concern, and serve their physical, psychological, developmental, cultural and social interests equitably.
2. Development must be socially, environmentally and economically sustainable.
3. Sustainable development requires the consideration of all relevant factors.

The social, economic and environmental impacts of activities, including disadvantages and benefits, were considered, assessed and evaluated, and informed decision-making by the authority is hereby made possible.

11. APPLICABLE LEGISLATION, POLICIES AND/OR GUIDELINES

List all legislation, policies and/or guidelines of any sphere of government that are applicable to the application as contemplated in the EIA regulations, if applicable:

Title of legislation, policy or guideline	Applicability to the project	Administering authority	Date
National Environmental Management Act (Act 107 of 1998), as amended	Environmental Authorisation is required	Department of Environmental Affairs	
National Heritage Resources Act (25 of 1999)	Comment is required	SAHRA	
National Water Act (Act 36 of 1998)	Comment is required.	Department of Water Affairs	
Section 7(1) and 15(1) of the National Forests Act of 1998 (Act 84 of 1998)	Authorisation may be required if protected trees are being cut or removed	Department of Agriculture	
Environment Conservation Act (Act 73 of 1989)	Authorisation is not required	Department of Environmental Affairs	
National Environmental Management: Biodiversity Act (Act 10 of 2004)	Authorisation is not required	Department of Environmental Affairs	
National Environmental Management: Biodiversity Act (Act 10 of 2004): Threatened & Protected Species Regulations	Authorisation may be required if protected trees are being cut or removed	Department of Environmental Affairs Department of Agriculture, Forestry & Fisheries for permit applications	
National Spatial Biodiversity Assessment (2004)	Authorisation is	Department of	

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	not required	Environmental Affairs	
National Biodiversity Strategy Action Plan	Authorisation is not required	Department of Environmental Affairs	
Conservation of Agricultural Resources Act (43 of 1983)	Authorisation is not required	Department of Agriculture	
Endangered and Rare Species of Fauna and Flora (AN 1643 February 1984)	Authorisation is not required	Lists endangered species in terms of the Nature Conservation Ordinance, 1983 (Ordinance 12 of 1983)	

12. WASTE, EFFLUENT, EMISSION AND NOISE MANAGEMENT

a) Solid waste management

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

YES	NO
Undetermined	

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

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

- Unusable waste will be disposed of at registered waste disposal sites according to the applicable waste classification.
- Hazardous construction waste will be disposed of at a H:H registered waste disposal facility. The waste will be carted away by the Eskom waste contractor.
- Steel (ferrous and non-ferrous) and aluminium will be recovered and sold as scrap for recycling.
- Refuse bags will be supplied to construction personnel for dumping of household waste. Bins with lids will be provided at construction camps for household waste.

For all waste that is disposed of, Eskom shall obtain waste manifests and disposal certificates, which shall be recorded and reported to the Environmental Control Officer (ECO) on a monthly basis.

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

- It will be transported off site by the contractor and returned to Eskom stores where scrap will be handed over to buyers. Any waste that cannot be recycled will be transported to appropriate registered waste disposal sites.
- General household waste generated by the construction team will be removed by the relevant contractor to a registered waste disposal site / municipal waste transfer station.
- The expected volumes of solid waste are small and does not require authorisation in terms of relevant legislation.

For all waste that is disposed of, Eskom shall obtain waste manifests and disposal certificates, which shall be recorded and reported to the ECO on a monthly basis.

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Will the activity produce solid waste during its operational phase?

YES	NO
-----	----

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

m ³

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

--

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

--

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

--

If the solid waste (construction or operational phases) will not be disposed of in a registered landfill site or be taken up in a municipal waste stream, then the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.

Can any part of the solid waste be classified as hazardous in terms of the NEM:WA?

YES	NO
-----	----

 If YES, inform the competent authority and request a change to an application for scoping and EIA. An application for a waste permit in terms of the NEM:WA must also be submitted with this application.

Is the activity that is being applied for a solid waste handling or treatment facility?

YES	NO
-----	----

 If YES, then the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA. An application for a waste permit in terms of the NEM:WA must also be submitted with this application.

b) Liquid effluent

Will the activity produce effluent, other than normal sewage, that will be disposed of in a municipal sewage system?

YES	NO
-----	----

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

m ³

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

YES	NO
-----	----

If YES, the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.

Will the activity produce effluent that will be treated and/or disposed of at another facility?

YES	NO
-----	----

If YES, provide the particulars of the facility:

Facility name:			
Contact person:			
Postal address:			
Postal code:			
Telephone:	Cell:		
E-mail:	Fax:		

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

--

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c) Emissions into the atmosphere

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

YES	NO
YES	NO

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

If YES, the applicant must consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.

If NO, describe the emissions in terms of type and concentration:

--

d) Waste permit

Will any aspect of the activity produce waste that will require a waste permit in terms of the NEM:WA?

YES	NO
-----	----

If YES, please submit evidence that an application for a waste permit has been submitted to the competent authority

e) Generation of noise

Will the activity generate noise?

YES	NO
YES	NO

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

Describe the noise in terms of type and level:

No permanent noise pollution will occur as a result of the proposed activity.

Limited noise will however occur as a result of construction activities during the construction phase. Eskom shall provide all necessary equipment with standard silencers and maintain silencer units on vehicles where required. Equipment must always be in good working order to minimise unnecessary noise levels.

Studies undertaken on behalf of Eskom confirmed that calculations of electric and magnetic field levels created by overhead powerlines / substations where the public may be exposed are well within the ICNIRP guidelines. Note that ICNIRP refers to Non-ionising Radiation Protection which receives world-wide support and is endorsed by the Department of Health in South Africa.

13. WATER USE

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

Municipal (Construction)	Water board	Groundwater	River, stream, dam or lake	Other	The activity will not use water (Operation)
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If water is to be extracted from groundwater, river, stream, dam, lake or any other natural feature, please indicate the volume that will be extracted per month:

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

litres	
YES	NO

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

There are several drainage lines within the study area and a wetland adjacent to the existing Chemie Substation was identified.

Drainage lines

Two tributaries — with a distinct eastern and western branch — of the Ga-Selati River (which in itself is a tributary of the Olifants River) flow in the vicinity of the two proposed substation alternative sites. Several other drainage lines will be crossed by the new power lines. The line to be decommissioned also crosses drainage lines.

Pylon and substation placement will be of such a nature that none is within 32m from any watercourse.

Decommissioning of the substation within a wetland area

The exact volume of material to be removed has not yet been calculated, but only material associated with the substation (constructed many years ago), its foundations and fencing will be removed. The decommissioning activity will not involve the removal of any undisturbed land within the wetland area.

Site visit undertaken by Department of Water & Sanitation and Eskom

A site visit was undertaken by Eskom and the Department of Water and Sanitation (DWS). DWS confirmed with Eskom that freshwater studies for this project are not required but it is required to complete a Risk Matrix and apply for General Authorisation (GA). This application for a GA is included as a condition in the EMP to be met prior to commencement of construction and decommissioning activities.

14. ENERGY EFFICIENCY

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

Not applicable

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

The activity is designed for the distribution of electricity. Energy is not being generated nor consumed by the activity, thus alternative energy has not been considered in this application.

SECTION B: SITE/AREA/PROPERTY DESCRIPTION

Important notes:

1. For linear activities (pipelines, etc) as well as activities that cover very large sites, it may be necessary to complete this section for each part of the site that has a significantly different environment. In such cases please complete copies of Section B and indicate the area, which is covered by each copy No. on the Site Plan.

Section B Copy No. (e.g. A):

2. Paragraphs 1 - 6 below must be completed for each alternative.

3. Has a specialist been consulted to assist with the completion of this section?

YES	NO
-----	----

If YES, please complete the form entitled "Details of specialist and declaration of interest" for each specialist thus appointed and attach it in Appendix I. All specialist reports must be contained in Appendix D.

Property description/physical address:

Province	Limpopo
District Municipality	Mopani District Municipality
Local Municipality	Ba-Phalaborwa District Municipality
Ward Number(s)	
Farm name and number	<ul style="list-style-type: none"> • Remaining Extent of the Farm Ben 26-LU • Portion 0 of the Farm Schiettocht 25-LU • Remaining Extent and Portion 1 of the Farm Makushane Location 28-LU • Remaining Extent of the Farm Wegsteek 30-LU • Portions 1, 2, 3 and 4 of the Farm Ben 26-LU • Portion 3 of the Farm Wegsteek 30-LU
Portion number	
SG Code	

Where a large number of properties are involved (e.g. linear activities), please attach a full list to this application including the same information as indicated above.

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

Agriculture

In instances where there is more than one current land-use zoning, please attach a list of current land use zonings that also indicate which portions each use pertains to, to this application.

Is a change of land-use or a consent use application required?

Landowner consent is required before Eskom can register a servitude for the distribution of electricity across the relevant properties. At this stage of the EIA process all landowners had been communicated with and concerns raised were satisfactorily addressed. As soon as Environmental Authorisation is obtained, the negotiator on behalf of Eskom will have option documents signed and he/she will appoint independent land valuers to determine the compensation amount relevant to each property. A negotiation process will then take place between Eskom and the landowners after which the servitudes will be registered on the relevant property deeds.

YES	NO
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1. GRADIENT OF THE SITE

Indicate the general gradient of the site.

Alternative S1:

Flat	1:50 – 1:20	1:20 – 1:15	1:15 – 1:10	1:10 – 1:7,5	1:7,5 – 1:5	Steeper than 1:5
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Alternative S2 (if any):

Flat	1:50 – 1:20	1:20 – 1:15	1:15 – 1:10	1:10 – 1:7,5	1:7,5 – 1:5	Steeper than 1:5
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Alternative S3 (if any):

Flat	1:50 – 1:20	1:20 – 1:15	1:15 – 1:10	1:10 – 1:7,5	1:7,5 – 1:5	Steeper than 1:5
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2. LOCATION IN LANDSCAPE

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

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

3. GROUNDWATER, SOIL AND GEOLOGICAL STABILITY OF THE SITE

A [Baseline Botanical Survey Report](#) was compiled by Rory Muldoon Projects (refer to paragraph 4 below). The Report refers to the geology as follows:

The geology is characterised by quartz-feldspar rock of the Makhutswi Gneis. The soil consists mainly of the sandy Clovelly soil form on the uplands while Valsrivier and Strekspruit soil forms dominate the bottomlands (Mucina & Rutherford 2006).

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

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

-If you are unsure about any of the above or if you are concerned that any of the above aspects may be an issue of concern in the application, an appropriate specialist should be appointed to assist in the

completion of this section. Information in respect of the above will often be available as part of the project information or at the planning sections of local authorities. Where it exists, the 1:50 000 scale Regional Geotechnical Maps prepared by the Council for Geo Science may also be consulted.

4. GROUNDCOVER

Indicate the types of groundcover present on the site. The location of all identified rare or endangered species or other elements should be accurately indicated on the site plan(s).

Natural veld - good condition^E	Natural veld with scattered aliens^E	Natural veld with heavy alien infestation^E	Veld dominated by alien species^E	Gardens
Sport field	Cultivated land	Paved surface	Building or other structure	Bare soil

If any of the boxes marked with an “E” is ticked, please consult an appropriate specialist to assist in the completion of this section if the environmental assessment practitioner doesn’t have the necessary expertise.

A BASELINE BOTANICAL SURVEY REPORT was compiled by Rory Muldoon Projects. The Report is attached in Appendix D and is summarised below:

Vegetation overview

The proposed project falls within the Phalaborwa-Timbavati Mopaneveld (Mucina & Rutherford 2006). Its distribution runs in the form of a band of about 40km west and east of Phalaborwa and south of the Olifants River into the Timbavati and Klaserie Game Reserve and the Kruger National Park. The altitude within this vegetation type ranges between 300 – 600 meters above sea level.

Mucina & Rutherford (2006) describe this unit as open tree savannah on undulating plains with sandy uplands dominated by *Combretum apiculatum*, *Terminalia sericea* and *Colophospermum mopane* trees. The *Terminalia*'s and *Crombretum*'s disappear in the clayey bottomlands and are replaced by species such as *Acacia nigrescens* and increased dominance of Mopane.

Conservation Status

The conservation status of this vegetation unit is considered to be 'Least Threatened' with close to 40% of its surface area conserved within the Kruger National Park while a similar proportion falls within the state and private reserves of the Klaserie, Umbabat and Timbavati. Only about 5% of this vegetation unit has been transformed by human settlements and mining mainly around the town of Phalaborwa (Mucina & Rutherford 2006).

Grasses

For the most part, the grass component of the survey area is poorly developed mainly as a result of trampling and continuous grazing by cattle. The dominant grasses are weak pioneer species. Along the small drainage lines and below some dense bush thickets the grasses are more diverse with several climax and sub-climax species. No grass species of conservation significance were recorded.

Herbs

Both perennial and annual herb species were fairly well represented throughout the surveyed routes and sites. Perennial species were located along the banks of the drainage line and within the less 'disturbed' parts of the mixed woodland habitats. Most of the annual herbs recorded were found in previously cleared patches.

Alien plants

As far as alien plants are concerned only three species were encountered. Large *Cocklebur Xanthium strumarium*, Black Jack *Bidens pilosa* and Khaki Weed *Tagetes minuta* were recorded in small numbers on an open patch of 'disturbed' land (presumably an old temporary storage facility).

Succulents

No succulent species were recorded and none of the small herbaceous plants found can be considered species of conservation importance.

Shrub and trees

The shrub and tree component within the substation sites and along the proposed routes is typical of the Phalaborwa-Timbavati Mopaneveld vegetation type and has a fairly diverse species composition. Two tree species were dominant in the area namely *Mopane Colophospermum mopane* and *Red Bushwillow Combretum apiculatum*.

Unfortunately, many of the larger hard-wood trees including Mopane, Knobthorn and Leadwood have been cut down for firewood. In large portions of the flat areas the vegetation structure has been changed due to the removal of hardwoods resulting in a dense, low shrub layer interspersed by the odd large Marula tree

Other significant tree species found to occur in the survey area were Jackal Berry *Diospyros mespilliformis*, Scented Thorn *Vachellia nilotica*, Jacket-plum *Pappea capensis*, Velvet-leaved Corkwood *Commiphora mollis* Bushveld False-thorn *Albizia harveyi* and Tamboti *Spirostachys africana*.

The shrub component is well developed and shows good diversity.

The small drainage line that the proposed routes bisect forms deep gullies in places where a variety of riparian shrubs are located.

Protected species

Although no red listed tree or shrub species were recorded in the survey area, one species namely the Tamboti *Spirostachys africana* is listed under Schedule 12 of the Limpopo Environmental Management Act – Act 7 of 2003 as a protected plant. According to the list of protected tree species of the National Forest Act (Act No 84 of 1998) three nationally protected trees occur in the survey area. These are the *Marula Sclerocarya birrea* subsp. *caffra*, Leadwood tree *Combretum imberbe* and Apple-leaf *Philenoptera violacea*.

SELECTING AN ALTERNATIVE

The selection criteria used to determine which one of the two route alternatives would pose the smaller threat to the flora of the area were:

BASIC ASSESSMENT REPORT

- The presence of botanically sensitive communities.
- The degree of pristine vegetation.
- The presence and scale of disturbed areas.
- The proximity of excising infrastructure
- The density and size of the protected trees.
- The number of protected plant species present.

Criteria	'Preferred' Route and Substation Site	Alternative Route and Substation Site
Number of botanically sensitive sites (drainage lines).	Route bisects one (small drainage line near the R41 road)	Route bisects a reasonably large area of medium sensitivity zone and fairly close to a high sensitivity zone. It crosses one (medium sized drainage line but runs within 250m of a larger water course which feeds the Selati River)
Extent of pristine vegetation (percentage area of the route that could be considered to be 'unspoiled').	<10%	>40%
Presence and extent of disturbed areas.	Three previously 'cleared' areas through which route runs for a total of 770m	One previously 'cleared' area through which route runs for a total of 160m
Proximity of excising infrastructure	Substation within 100m of an excising power line. Route travels through undeveloped land for approximately 500m before entering an existing servitude.	Substation within 100m of an existing power line. Route travels through undeveloped land for approximately 1500m before entering an existing servitude.
Density and size of the protected trees.	3 protected tree species. <5 large trees & <10 small and medium sized protected trees	3 protected tree species. >25 large trees & >30 small and medium sized protected trees
Number of protected plant species.	One protected plant species (Tamboti)	One protected plant species (Tamboti)

As can be seen from the comparison table the alternative route and substation site contains far greater number of protected trees consisting mainly of the protected *Marula Sclerocarya birrea* subsp. *caffra* specimens. The alternative route is also situated closer to sensitive riparian habitats and covers a greater distance through undeveloped land thus potentially causing greater impact on the vegetation than the 'preferred' route. The 'preferred' route traverses through more disturbed or open (previously cleared) areas and is situated closer to existing infrastructure than the alternative route. It is thus obvious that the 'preferred' route would be the more favourable choice from an ecological point of view. Although in smaller densities, this route still houses protected tree species which were plotted during the field survey for purposes of obtaining the necessary permits from the provincial authority.

Coordinates of protected tree specimens at the 'preferred' Chemie substation site and along the power line route are as follows:

	Latitude	Longitude
Marula	23° 57.149'S	31° 01.825'E
Leadwood	23° 57.147'S	31° 04.845'E
Apple leaf	23° 57.202'S	31° 04.863'E
Tambotie	23° 57.400'S	31° 04.843'E

VEGETATION SENSITIVITY ZONES

The 'sensitivity' was gauged according to the extent of 'unspoiled' vegetation, the presence of protected or red data plant species and the degree of plant species richness. The following conservation priority / habitat sensitivity categories were used:

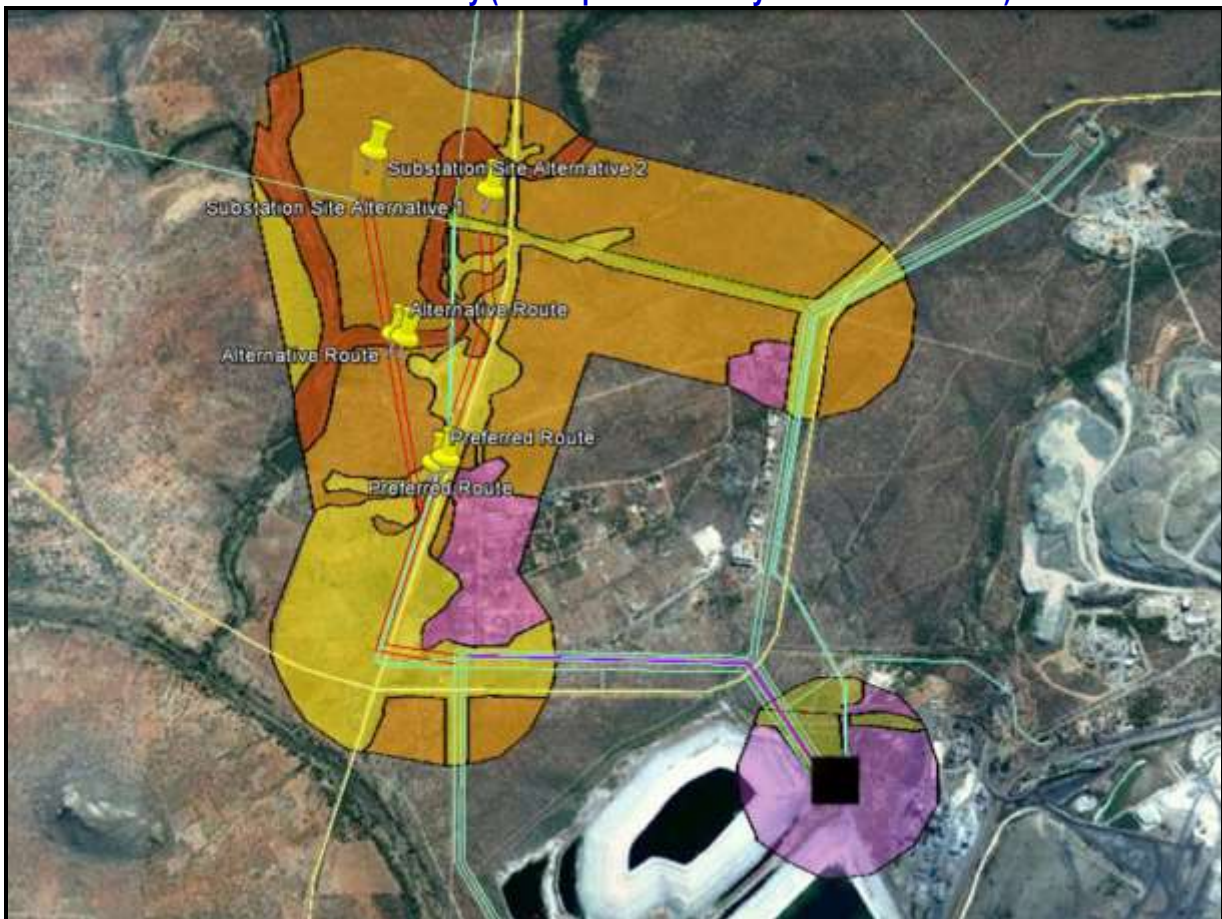
- High:** Ecologically sensitive and valuable land with high species richness and/or sensitive ecosystems that should be conserved and no developed allowed.
- Medium-high:** Land where smaller sections are disturbed but which is in general ecologically sensitive to development/disturbances.
- Medium:** Land that should be conserved but on which low impact development could be considered under exceptional circumstances.
- Medium-low:** Land of which small sections could be considered to conserve but where the area in general has little conservation value.
- Low:** Land that has little conservation value and that could be considered for developed with little to no impact on the vegetation.

Three sensitivity zones were identified (also refer to Appendix A for a copy of the Sensitivity Map):

Red – High sensitivity

Orange – Medium sensitivity

Pink - Low sensitivity (developed and totally transformed areas)



IMPACT ASSESSMENT AND MITIGATION

It is inevitable that development of power infrastructure in natural systems will present negative impacts on the surrounding natural environment to a lesser or greater degree. In order to limit or negate these impacts, the source, extent, duration and intensity of the possible impacts need to be identified. Once the significance of the impacts is understood, the developer can both adequately plan for and mitigate these impacts to a best practise and acceptable level.

The most significant impact of electrical power lines is expected to occur during the construction phase, whereas the new pylons and power lines, once in use, have relatively contained impacts on the vegetation and can successfully be mitigated to limit or even negate the negative impacts. Arguably the greatest threat to the rehabilitation of disturbed areas, are the potential of invasive plant species to colonise the disturbed soil and spread into adjacent natural areas. If remedial measures and monitoring is properly employed, (e.g. Eskom’s erosion guidelines and environmental policies as well as mitigation as set out in this report), the vegetation that will be disturbed during construction should rehabilitate well over time, and long term impacts on vegetation and faunal habitats could thus be minimal.

During construction, the vegetation will be cleared, especially at the position of the pylons and in the footprint area of the substation. Access roads will not be applicable as the planned route is mostly along or very close to current roads. The impacts of the construction of the proposed substation and power line are removal of vegetation and plant species or habitat loss

Threat Risk

Low (<30)	Where this impact would not have a direct influence on the decision to develop in the area
Medium (30 – 60)	Where the impact could influence the decision to develop in the area unless it is effectively mitigated
High (>60)	Where the impact must have an influence on the decision process to develop in the area

Impact 1: Removal of vegetation

Substation Site

Threat Risk	
Before mitigation	After mitigation
Score of 50 (Medium)	Score of 45 (Medium)

Powerline Route

Threat Risk	
Before mitigation	After mitigation
Score of 60 (High - Medium)	Score of 40 (Medium)

Impact 2: Plant species and habitat loss

Substation Site

Threat Risk	
Before mitigation	After mitigation
Score of 55 (High - Medium)	Score of 40 (Medium)

Powerline Route

Threat Risk	
Before mitigation	After mitigation
Score of 55 (Medium)	Score of 36 (Low - Medium)

MITIGATION

Impact 1: Removal of vegetation

Substation Site

- The substation site with the least sensitivity should preferably be implemented (preferred route)
- Prohibit vehicular or pedestrian access into natural areas beyond the demarcated boundary of the construction area.
- Make use of existing roads and tracks where feasible, rather than creating new routes through the woodland areas.
- Keep the construction footprint area as small as possible.
- Position the substation site in a transformed area.
- Avoid the large protected tree specimens such as Marula's.
- Clean up areas around the substation site that have been affected by industrial and dumping.
- Incorporate an alien plant / weed control program during and post construction.

Powerline Route

- The route with the least sensitivity should preferably be implemented (preferred route)
- This route traverses relatively large sections of degraded & transformed vegetation.
- Vehicular and movement of workers on foot should take place within the servitude area only and on existing access roads as far as possible.
- In areas where open woodland occurs the lower herbaceous plants should be kept intact or trimmed down to retain a manageable vegetation layer which will aid in preventing soil erosion.
- Slight deviations of access roads and pylon alignments must be permitted, so as to avoid trees of conservation concern.
- Where possible, protected tree specimens should be trimmed rather than being totally removed.
- Avoid damage to the small drainage line's vegetation by retaining all shrubbery and small trees. This will keep the stream banks stable.
- Pylons should be placed away from the drainage line.
- Alien weeds along the degraded, open areas must be controlled.
- Areas along the route that have been affected by dumping must be cleaned up.

Impact 2: Plant species and habitat loss

Substation Site

- The substation site with the least sensitivity should be implemented (preferred route)
- At this site, there are less protected trees species and no red data species were recorded during the surveys.
- Avoid the large protected tree specimens such as Marula's.
- Where possible trim the large protected tree specimens rather than completely removing them.
- Prohibit vehicular or pedestrian access into natural areas beyond the demarcated boundary of the construction area.
- Make use of existing roads and tracks where feasible, rather than creating new routes through the woodland areas.
- Keep the construction footprint area as small as possible.
- Position the substation site in a transformed area.
- Clean up areas around the substation site that have been affected by industrial and dumping.
- Incorporate an alien plant / weed control program during, and post construction.

Powerline Route

- The route with the least sensitivity should preferably be implemented (preferred route)
- This route traverses relatively large sections of degraded & transformed vegetation.
- Vehicular and movement of workers on foot should be take place within the servitude area only and on existing access roads.
- In areas where open woodland occurs the lower herbaceous plants should be kept intact or trimmed down to retain a manageable vegetation layer which will aid in preventing soil erosion.
- Slight deviations of access roads and pylon alignments must be permitted, so as to avoid trees of conservation concern.
- Where possible, protected tree specimens should be trimmed rather than being totally removed.
- Avoid damage to the small drainage line's vegetation by retaining all shrubbery and small trees. This will keep the stream banks stable.
- Pylons should be placed away from the drainage line.
- Alien weeds along the degraded, open areas must be controlled.
- Areas along the route that have been affected by dumping must be cleaned up.

CONCLUSION

The botanical assessment along the two proposed Chemie substation sites and power line routes revealed that the 'preferred' route, as opposed to the alternative route would be the better choice from an ecological point of view. Taking this option of route into consideration, the vegetation along its course is far from pristine with signs of illegal tree felling and wood cutting, illegal dumping of industrial and suburban waste, overgrazing and trampling by 'free-ranging' livestock and significant areas which were cleared or vegetation in the past.

The route crosses one small drainage line. Along the 100m section of this stream that was surveyed only two small protected tree specimens were recorded and the thin strip of riparian shrubs have already been affected by the effects of woodcutting. It is recommended that the riparian shrubbery and small trees be retained where possible to avoid soil and gully erosion in the future. The drainage line which is relatively narrow can be crossed by the power line, without causing much degradation. The power line can therefore be constructed without harming the vegetation along its banks by placing the pylons at a good distance from the banks. Should any damage occur to the banks during construction, these should be rehabilitated immediately after construction. This is however not anticipated.

Three species of nationally protected tree species and one provincially protected plant were recorded along the route albeit as small to medium sized specimens. The necessary permits should be acquired from the provincial authority for the removal or trimming of these trees depending on their position in relation to the proposed power line. A final walk down must be carried out once the final route is surveyed to ensure that protected tree species are avoided as far as possible. Apart from these trees the vegetation survey did not reveal any other plants of conservation significance. The occurrence of any significant subterranean, dormant species at the site is also highly unlikely.

The fact that the botanical component in the area is far from pristine, that only a few small specimens of protected trees occur along the route and that no red listed or threatened plant species were recorded suggests that the proposed Chemie power line and substation will not have a significant negative impact on the botanical component.

5. SURFACE WATER

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

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

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

There are several drainage lines within the study area and a wetland adjacent to the existing Chemie Substation was identified.

Drainage lines

Two tributaries — with a distinct eastern and western branch — of the Ga-Selati River (which in itself is a tributary of the Olifants River) flow in the vicinity of the two proposed substation alternative sites. Several other drainage lines will be crossed by the new power lines. The line to be decommissioned also crosses drainage lines.

Pylon and substation placement will be of such a nature that none is within 32m from any watercourse.

Site visit undertaken by Department of Water & Sanitation and Eskom

A site visit was undertaken by Eskom and the Department of Water and Sanitation (DWS). DWS confirmed with Eskom that freshwater studies for this project are not required but it is required to complete a Risk Matrix and apply for General Authorisation (GA). This application for a GA is included as a condition in the EMP to be met prior to commencement of construction and decommissioning activities.

6. LAND USE CHARACTER OF SURROUNDING AREA

Indicate land uses and/or prominent features that currently occur within a 500m radius of the site and give description of how this influences the application or may be impacted upon by the application:

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

If any of the boxes marked with an "N" are ticked, how will this impact / be impacted upon by the proposed activity? Specify and explain:

Not applicable

If any of the boxes marked with an "An" are ticked, how will this impact / be impacted upon by the proposed activity? Specify and explain:

The existing Chemie Substation is located adjacent to the Bosveld Phosphates industrial plant outside of Phalaborwa. The pollution emanating from this plant over the years created an unsafe working environment. The badly polluted insulators cause flash overs during rainy seasons and the cost of maintenance and un-served energy is unacceptably high. The equipment or assets in the substation have almost reached the end of their life span. It is therefore proposed to relocate the substation far from Bosveld Phosphates where pollution will be reduced.

A **Dust Quality Monitoring Study** was therefore undertaken Mandara Consulting Solutions (attached in Appendix D) to determine the level of pollution at the new proposed substation site. This report is attached in Appendix D and summarised below.

When dust particles are released into the air they tend to fall back to ground at a rate that is proportional to their size (called the settling velocity) with fine particles being widely dispersed and larger particles settling out in the immediate vicinity of the source. Environmental monitoring of ambient dust levels are primarily done by simple methods for measuring the dust deposition or fall-out rates. Dust deposition is dust that settles out of the air and is measured simply and economically by means of a collection jar (bucket), which catches the dust settling over a fixed surface area over a period of time. The dust is removed from the jar, filtered and weighed, and the results are reported in terms of the weight of dust collected per unit of surface area, and over a fixed period of time.

Dust impacts at receptor sites depend on multiple parameters which have to be assessed on a site specific basis. The nature of the material and concentrations arriving at receptor sites has to be evaluated against possible sensitivities of receptor systems, for example:

- aesthetic and nuisance value;
- soiling;
- quality impairment by deposition on fruit and leaf crops;
- soil modification;
- accumulation of dust on pasture;
- smothering of plants;
- visibility impairment in pristine sites; and
- significant deterioration of existing air quality.

In its simplest format dust fall-out monitoring does not provide answers to the above issues, but it is the first and simplest step in quantifying the dust pollution at any site which creates a foundation from which other risks can be identified, quantified and qualified.

CONCLUSION

The following conclusion was made based on the four Monitoring Points (MP) A - D:

- There is a definite improvement in dust fall out rate for MP B and MP C.
- There was a slight increase in dust fallout at MP D during the month of January 2017. However, the results still fall within the acceptable limits.
- The samples collected comply with the Residential Limit of less than 600mg/m²/day.
- The results for Monitoring Points MP B, MP C and MP D (the bucket at MP A was stolen) are well below the residential limit of 600mg/m²/day (30 day average).

The monitoring results were taken over a period of three months (December, January and February) and the average results were well below the residential limit of 600mg/m²/day. The site for the new proposed Chemie substation will therefore be acceptable in terms of dust deposits and it can therefore be recommended that the site be constructed at this site.

BASIC ASSESSMENT REPORT

If any of the boxes marked with an "H" are ticked, how will this impact / be impacted upon by the proposed activity? Specify and explain:

Not applicable

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

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

If the answer to any of these questions was YES, a map indicating the affected area must be included in Appendix A.

The following Biodiversity Maps as obtained from the SANBI website (<http://bgis.sanbi.org>) are included under Appendix A:

- Limpopo Conservation Plan (CBAs & ESAs): The powerlines and substation will partly be constructed in areas identified as
 - Critical Biodiversity Area 2
 - Ecological Support Area 1
 - Ecological Support Area 2
- National Parks and Protected Areas
- Rivers and Wetlands

- Please note that the "Threatened Terrestrial Ecosystems" map is not available for the Limpopo Province. The vegetation type within the study area, Phalaborwa-Timbavati Mopaneveld, was however identified as *Least Threatened*.

7. CULTURAL/HISTORICAL FEATURES

Are there any signs of culturally or historically significant elements, as defined in section 2 of the National Heritage Resources Act, 1999, (Act No. 25 of 1999), including Archaeological or paleontological sites, on or close (within 20m) to the site? If YES, explain:

YES	NO
Uncertain	

--

If uncertain, conduct a specialist investigation by a recognised specialist in the field (archaeology or palaeontology) to establish whether there is such a feature(s) present on or close to the site. Briefly explain the findings of the specialist:

Heritage Impact Assessment
 A Heritage Impact Assessment was undertaken by Ecorite Consultants and is attached in Appendix D. A concise summary thereof follows below:

The study site was assessed and the following sites of importance were mapped:

- Substantial remains of a farmstead represented by several foundations /floor remains of buildings. No historical information was obtained about the site, but the structures carry the patina of age, possibly more than 60 years. This is however to the north of the proposed substations and will not be impacted on by this project.
- Six other sites were found that exemplify cultural landscapes of non-timber forest products (NTFP) harvest. A cultural landscape is a new and evolving concept of defining heritage in a territorial perspective. In this view, cultural landscapes are spatial entities that represent the “combined works of nature and of man” designated in Article 1 of the World Heritage Convention. They are illustrative of the evolution of human society and settlement over time, under the influence of the physical constraints and/or opportunities presented by their natural environment and of successive social, economic and cultural forces, both external and internal.
 - 5x Sites: There is an abundance of Marula trees (*Sclerocarya birrea*, subspecies *caffra*) and the harvest of the fruit is an important economic and cultural activity in the area. Marula seeds appears in archaeological deposits dating back 10 000 BC. The fruit produces white or grey nuts which are rich in minerals and vitamins. The tree has multiple uses - the wood (carving), bark, leaves (medicinal), fruit, nut and kernel (food). There is a scatter of Marula trees in the area of the proposed development (refer to the map below), which may be directly or indirectly affected.
 - 1x Site: There is good stands of Mopane trees on the southern limits of the Substation Site Alternative 2. For thousands of years Mopane woodlands (*Colophospermum mopane*) have been a seasonal source of Mopane worms (*Gonimbrasia belina*, *mashonzha*). The Mopane worm is probably the most important insect in Southern Africa from a cultural perspective. Its exploitation seems to be largely environmental friendly as a non-timber forest product (NTFP), and has persisted in the same way from time immemorial into the industrial era. Mopane woodland is a prime example of an organically evolved cultural landscape

Sensitive Heritage Sites (Sites 1 – 7)



The following is a risk assessment ranking of the findings:

	Value	Explanation	Found on site ?
1	Very high	Grade 1 Sites (Section 7 of NHRA), graves and burial grounds (Section 36 of NHRA). They must be protected. Stakeholder consultations required before graves can be relocated or other mitigation measures considered.	None
2	High	Grade 2 sites (Section 7 of NHRA), Historic Buildings and substantial archaeological deposits. They must be protected.	None
3	Medium	Finds which have been documented. They shouldn't be disturbed if there is suitable alternative placement of placement of development components. Heritage expert to advise.	Seven
4	Low	Heritage sites deemed of less importance.	None

IMPACT ASSESSMENT AND MITIGATION MEASURES

EVALUATION CRITERIA	RISK ASSESSMENT
Description of potential impact	Negative impacts range from partial to total destruction of surface and under-surface movable/immovable relics.
Nature of Impact	Negative impacts can both be direct or indirect.
Legal Requirements	Sections 34, 35, 36, 38 of National Heritage Resources Act No. 25 (1999)
Stage/Phase	Site preparation and excavation of footings for pylons
Preferred routing of power line	There are no significant negative threats on heritage envisaged at both the proposed locations and routes.
Nature of Impact	Negative, both direct & indirect impacts.
Extent of Impact	Vegetation clearance and excavation can damage archaeological resources above and below the surface and not seen during the survey.
Duration of Impact	Any accidental destruction of surface or subsurface relics is not reversible, but can be mitigated.
Intensity	Uncertain.
Probability of occurrence	Medium.
Confidence of assessment	High.
Level of significance of impacts before mitigation	High
Mitigation measures	<ul style="list-style-type: none"> • Protect Marula and Mopane trees wherever possible. • Should archaeological or other heritage relics be found during the construction phase, heritage authorities will be advised immediately and a heritage specialist will be called to attend. This is standard precaution in view of inherent limitations of archaeological fieldwork.
Level of significance of impacts after mitigation	Low.
Cumulative Impacts	None.
Comments or Discussion	None.

CONCLUSIONS AND RECOMMENDATIONS

The occurrence of the stand of Marula trees at the Substation Site Alternative 2 does make the Preferred Alternative a better option for the construction of the new substation.

With careful placement of the pylons as to avoid the identified heritage resources the possibility of the project having a negative impact on heritage resources has been found to be **low**.

However as a precaution should archaeological or other heritage relics be found during the construction phase, heritage authorities will be advised immediately and a heritage specialist will be called to advice on the way forward.

BASIC ASSESSMENT REPORT

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

YES	NO
YES	NO

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

If YES, please provide proof that this permit application has been submitted to SAHRA or the relevant provincial authority.

8. SOCIO-ECONOMIC CHARACTER

a) Local Municipality

Please provide details on the socio-economic character of the local municipality in which the proposed site(s) are situated.

The following information was obtained from the **Ba-Phalaborwa Local Municipality's Integrated Development Plan, 2016/17– 2017/18**.

Level of unemployment:

Ba-Phalaborwa Municipality is located in Mopani District of Limpopo Province, where unemployment and poverty are rife.

Employed	Unemployed	Unemployed Rate	Youth unemployment rate (15 – 34)
33 695	20 196	37,5%	50.20%

Economic profile of local municipality:

Local Economic Development

Local economic development in Ba-Phalaborwa Municipality has been founded on and guided by the principles and objectives of the National Spatial Development Perspective (NSDP), The National Development Plan (Vision 2030) the Limpopo Employment and Growth Development Plan (LEGDP), the District Local Economic Development (LED) Strategy, recommendations of the District Growth and Development Summit. In order for economic development to be coordinated, it is suggested that development be primarily focused on areas of high population concentration, with Phalaborwa being a primary growth point. A growth point is a high population concentration point and an economic hub in the area. The implication to the Municipality is that infrastructure in the growth points be strengthened in order to support economic development.

Economic Sectors in Ba-Phalaborwa

The Ba-Phalaborwa Municipality LED Strategy identifies the following key economic Sectors for Ba-Phalaborwa:

- Agriculture;
- Mining;
- Manufacturing;
- Tourism and
- Property development.

Mining Sector

Ba-Phalaborwa has the highest concentration of minerals in the Mopani District hence mining is the largest economic sector in the Municipality and is also the largest employer. The most mined resources in the Municipal area are copper and phosphate in the Phalaborwa area, with gold and antimony in the Murchison Greenstone Belt.

Agriculture

A wide variety of agricultural products are currently grown in the area. Fruit and vegetables are mostly destined for fresh consumption by the local and export markets. Farmers and private companies are responsible for some value addition. Value addition includes: manufacture of fruit juices, drying of fruit and vegetables, manufacture of archar.

Manufacturing Sector

The manufacturing activities in the Municipality are mainly focused on the mining sector. There is, however, a potential for the processing and packaging of agricultural related products such as Cattle, poultry, vegetables, eggs, etc.

Tourism Sector

The decline of the mining industry has an indirect effect on business tourists into the Municipality to venture into other economic activities. The geographic position of Ba-Phalaborwa and the abundance of wildlife in the Kruger National Park present an opportunity for diversification into tourism. Tourism is the economic sector with the most potential for development in the Municipality as a result of the Municipality's ideal location and climate.

Level of education:

Educational Facilities

Ba-Phalaborwa municipality has been divided into two (2) educational circuits, namely: Lulekani with 23 Primary Schools, 10 High schools and 1 Special School, and Namakgale circuit with 18 Primary Schools, 7 High Schools and 1 Special School. The two circuits are managed by Circuit Managers, with full staff support component.

Higher Education Services

Ba-Phalaborwa Municipality has one institution for further education, that is, Mopani South East FET College. The college comprises of two campuses and a hotel school.

Schooling aged 20+	Higher education aged 20+	Matric aged 20+
14,6%	12,1%	23,3%

Environmental education

Environmental education and awareness within the municipality is very low. The municipality relies on outside stakeholders to do this function, e.g. the mines.

b) Socio-economic value of the activity

What is the expected capital value of the activity on completion?	Unknown	
What is the expected yearly income that will be generated by or as a result of the activity?	Unknown	
Will the activity contribute to service infrastructure?	YES	NO
Is the activity a public amenity?	YES	NO
How many new employment opportunities will be created in the development and construction phase of the activity/ies?	*Minimal	
What is the expected value of the employment opportunities during the development and construction phase?	Unknown	
What percentage of this will accrue to previously disadvantaged individuals?	Unknown	
How many permanent new employment opportunities will be created during the operational phase of the activity?	None	
What is the expected current value of the employment opportunities during the first 10 years?	Unknown	
What percentage of this will accrue to previously disadvantaged individuals?	Unknown	

* The proposed project involves the experience and expertise of highly skilled labour. All of Eskom's policies encourage the use of local labour where possible. Minimal additional employment opportunity will be available during the construction phase. During the operational phase no additional employment opportunities exist – the project will, however, secure employment for existing Eskom employees.

9. BIODIVERSITY

Please note: The Department may request specialist input/studies depending on the nature of the biodiversity occurring on the site and potential impact(s) of the proposed activity/ies. To assist with the identification of the biodiversity occurring on site and the ecosystem status consult <http://bgis.sanbi.org> or BGIShelp@sanbi.org. Information is also available on compact disc (cd) from the Biodiversity-GIS Unit, Ph (021) 799 8698. This information may be updated from time to time and it is the applicant/EAP's responsibility to ensure that the latest version is used. A map of the relevant biodiversity information (including an indication of the habitat conditions as per (b) below) and must be provided as an overlay map to the property/site plan as Appendix D to this report.

a) Indicate the applicable biodiversity planning categories of all areas on site and indicate the reason(s) provided in the biodiversity plan for the selection of the specific area as part of the specific category)

BASIC ASSESSMENT REPORT

Systematic Biodiversity Planning Category				If CBA or ESA, indicate the reason(s) for its selection in biodiversity plan
Critical Biodiversity Area (CBA)	Ecological Support Area (ESA)	Other Natural Area (ONA)	No Natural Area Remaining (NNA)	<p>The Limpopo Conservation Plan, indicating the CBAs and ESAs within the study area is attached under Appendix A.</p> <p>Critical Biodiversity Areas are regarded as essential areas for the achievement of regional conservation targets, and are designed to ensure minimum land take for maximum result, and Ecological Support Areas (ESAs) are less critical areas that still provide valuable habitat and support the CBAs. Most of the study area is a designated CBA or ESA. This area supports numerous plant species, and provides ecological connectivity. Both these factors are reasons for its selection as a CBA and ESA.</p>

b) Indicate and describe the habitat condition on site

Habitat Condition	Percentage of habitat condition class (adding up to 100%)	Description and additional Comments and Observations (including additional insight into condition, e.g. poor land management practises, presence of quarries, grazing, harvesting regimes etc).
Natural		<p>Please refer to the Baseline Botanical Survey Report compiled by Rory Muldoon Projects and summarised above under Section B, Paragraph 4 (the full report is attached in Appendix D).</p>
Near Natural (includes areas with low to moderate level of alien invasive plants)		
Degraded (includes areas heavily invaded by alien plants)		
Transformed (includes cultivation, dams, urban, plantation, roads, etc)		

c) Complete the table to indicate:

- (i) the type of vegetation, including its ecosystem status, present on the site; and
- (ii) whether an aquatic ecosystem is present on site.

BASIC ASSESSMENT REPORT

Terrestrial Ecosystems		Aquatic Ecosystems									
Ecosystem threat status as per the National Environmental Management: Biodiversity Act (Act No. 10 of 2004)	Critical	Wetland (including rivers, depressions, channelled and Wetland (including rivers, depressions, channelled and unchanneled wetlands, flats, seeps pans, and artificial wetlands)						Estuary		Coastline	
	Endangered										
	Vulnerable										
	Least Threatened										
		YES	NO	UNSURE	YES	NO	YES	NO			

Ecosystem status maps are not available for the Ba-Phalaborwa Local Municipality on the SANBI website. The vegetation was however identified as being *Least Threatened*.

- d) Please provide a description of the vegetation type and/or aquatic ecosystem present on site, including any important biodiversity features/information identified on site (e.g. threatened species and special habitats)

A **Baseline Botanical Survey Report** was compiled by Rory Muldoon Projects and is attached in Appendix D. A summary thereof is provided above under Section B, Paragraph 4.

Aquatic features

There are several drainage lines within the study area and a wetland adjacent to the existing Chemie Substation was identified.

Drainage lines

Two tributaries — with a distinct eastern and western branch — of the Ga-Selati River (which in itself is a tributary of the Olifants River) flow in the vicinity of the two proposed substation alternative sites. Several other drainage lines will be crossed by the new power lines. The line to be decommissioned also crosses drainage lines.

Pylon and substation placement will be of such a nature that none is within 32m from any watercourse.

Decommissioning of the substation within a wetland area

The exact volume of material to be removed has not yet been calculated, but only material associated with the substation (constructed many years ago), its foundations and fencing will be removed. The decommissioning activity will not involve the removal of any undisturbed land within the wetland area.

Site visit undertaken by Department of Water & Sanitation and Eskom

A site visit was undertaken by Eskom and the Department of Water and Sanitation (DWS). DWS confirmed with Eskom that freshwater studies for this project are not required but it is required to complete a Risk Matrix and apply for General Authorisation (GA). This application for a GA is included as a condition in the EMP to be met prior to commencement of construction and decommissioning activities.

An **AVIFAUNAL BASIC ASSESSMENT** was compiled by Dr DJ van Niekerk (for Savanah Environmental Consultants) and is attached in Appendix D. A summary thereof is provided below.

PRIORITY SPECIES

Three groups of priority species can be described, namely Red Data species, the resident avifaunal community, and waterbirds. No range restricted species are known to presently occur in the vicinity of the project site.

RED DATA SPECIES

33 Red Data species have been recorded in the SAC9Q-block during SABAP1 and SABAP2 (refer to the Avifaunal Basic Assessment for a list thereof). They include three Critically Endangered species, 11 Endangered species, nine Vulnerable species, and ten Near-Threatened species. Many of these species are likely to frequent the proposed development area.

RESIDENT AVIFAUNAL COMMUNITY

The habitat in the proposed New Chemie development area consists of open mopani woodland dissected by well-wooded drainage lines, with the southern part consisting of degraded woodland habitat and agricultural fields. Construction activities could lead to the disturbance of resident species associated with these habitats, especially for those species occurring along the power line route of Alternative B, but in most instances the risk is considered to be low. The impact would be most severe if the construction phase overlaps with the breeding season of these birds. During the operation phase, the power line will pose a permanent treat to many others with the risk considered to be high for at least one Red-Data species (Black Stork R084, only for Alternative B; Moderate for Alternative A), and moderate for nine others, including one Red-Data species (Marabou Stork R089)

WATERBIRDS

There are numerous open water sources in and around the proposed New Chemie project site. No waterbirds is expected to experience disturbance during the construction phase.

RECEIVING ENVIRONMENT FROM AN AVIFAUNAL PERSPECTIVE

Woodland

The proposed project site is dominated by woodland habitats.

Forest

In the project site, forest habitats are confined to sections of the main drainage lines.

Montane/Rocky

In the project site this type of habitat is confined to isolated outcrops.

Grassland

No open grassland occurs in the project site.

Scrub

No scrub habitats occur in the project site.

AVIFAUNAL SENSITIVITY MAP



Dark blue: Alternative A (Preferred Alternative)

Red: Alternative B

Green: Connection to existing Chemie-Selati power line

Yellow: Existing power lines

White lines: 1km zone around the proposed developments, including the decommissioning of the old Chemie substation in the south-east;

Light blue: 100m buffer zone around prominent drainage systems.

SENSITIVE AREAS/BUFFER ZONES

Because the major drainage lines and associated vegetation represent movement corridors for waterbirds and other species, it represents a high collision risk zone. Minimizing development within a 100m buffer zone around these habitat features will help to reduce the disturbance and especially collision risks involved.

A very short section of the Preferred Route Alternative 1 runs within the proposed buffer zone. However, it is not foreseen that this section would have an unacceptable impact on the birds in the area.

ASSESSMENT OF POTENTIAL IMPACTS AND MITIGATION MEASURES

NEW CHEMIE SUBSTATION

The impact of substation Alternative A on birds will be similar to that of substation Alternative B.

Construction phase

Construction of the proposed new substation will entail land levelling and complete destruction of existing woodland habitat. During the process it is possible that active nests could be destroyed or that birds breeding in the area could experience disturbance. However, the impacted area is relatively small and if the footprint of all construction related activities are restricted to designated areas and minimized wherever practically possible, the probability of negative impact would be very low. The non-threatened status of the taxa involved does not warrant any other mandatory mitigation measures. However, the impact could be further minimised by scheduling construction to occur during the nonbreeding season of most of the species involved. Examination of the Median Breeding Index suggests that the impact would be least likely if construction occurs between February and August (inclusive) and most likely if it includes the period October to December.

In spite of the application of the foregoing mitigation measures, there will always remain a residual risk that breeding birds could be disturbed.

Change in impact significance:

Without mitigation: **Low**

With mitigation: **Low**

Operational phase

Construction of the new Chemie substation will entail the replacement of mopani woodland with various metal and other structures. Factors which could increase the risk of bird fatalities include the following:

- Fences may pose a collision risk to birds.
- Insects attracted by security lighting could attract birds, and this could lead to collisions with project infrastructure. Relevant mitigation options in this regard include the following:
 - Maintain and increase natural unlit areas;
 - Security lighting should be installed only where it is absolutely essential;
 - Avoid direct illumination of any tall structures;
 - Reduce the trespass of lighting by using luminaires that prevents light from shining beyond the intended area and eliminates light directed upwards or at the horizontal;

- Decreasing light intensity will reduce energy consumption and limit both skyglow and the area impacted by high-intensity direct light;
- Lighting technologies emitting a narrow spectrum of light are likely to have less ecological impact compared to broader spectrum light sources.
- The construction of the access road could also have a negative impact on birds. Dust suppressants other than pure water should be used only as a last resort, and then only after very careful research were conducted as it could potentially have adverse environmental impacts. The access road should also be carefully designed in order to avoid erosion over the long term and minimise the occurrence of areas where water could collect to create pools.
- Wherever possible, grazing or mechanical methods should be used instead of chemical alternatives to keep the vegetation in check where necessary. In this way the possible poisoning of birds and other animals will be avoided.

Change in impact significance:

Without mitigation **Low**

With mitigation: **Low**

CUMULATIVE IMPACTS

Given the low probability of negative impact of the proposed new Chemie substation, no cumulative impacts are foreseen.

Change in impact significance:

Without mitigation: **Low**

With mitigation: **Low**

POSITIVE IMPACTS

This new substation habitat will not be suitable for most of the species which utilise woodland habitats. The following species occurring in the area are known to build their nests on/in man-made structures and they may attempt to do so at the new substation: Speckled Pigeon R349, White-rumped Swift R415, Little Swift R417, Whitethroated Swallow R520, Wire-tailed Swallow R522, Pearl-breasted Swallow R523, Mosque Swallow R525, Greater Striped Swallow R526, Lesser Striped Swallow R527, Rock Martin R529, Cape Wagtail R713, Common Myna R758, Cape Glossy Starling R764, Red-billed Buffalo-Weaver R798, House Sparrow R801, Cape Sparrow R803 and *xaenr*. While the swallows construct their nests from mud underneath horizontal/vertical surfaces, others use grass and other material to construct their nest. In certain cases this may interfere with the normal functioning of the used structures or create a fire risk. The Common Myna R758 and House Sparrow R801 are both Category 3 introduced invasive species (National Environmental Management: Biodiversity Act (10 of 2004): Alien and Invasive Species List (2014)). Mitigation strategies include the following:

- If possible, avoid the use of lattice-type structures in order to minimize perching and nesting opportunities;
- Minimize standing water will help to minimize the risk of large congregations of birds near the substation.
- It is recommended that the new Chemie substation should be inspected for nesting activity at least once a month. This can be accomplished during routine maintenance activities. Observations at substations suggest that the only effective counter measure against small birds nesting in equipment is to remove the nesting material when it appears. The same strategy is recommended for the new Chemie substation, but only if the nest belongs to one of the species indicated above, and if it interfere with the substation's operation and/or creates a fire risk. In cases where a species other than those indicated above are involved, permission should first be obtained from the local nature conservation authorities. If the surveys for nests are done regularly as recommended (at least once a month), then it would help minimize the risk of eggs or nestlings being involved.

NEW CHEMIE POWER LINES

Construction phase

During construction there will be movement of personnel and vehicles along the route of the proposed power line. Building materials and other building equipment will also be placed on the ground along this route. In addition, it is likely that the right-of-way will need to be cleared. These activities will lead to local habitat transformation and disturbance, including disruption of breeding activity, of bird species present. While none of the Red Data species are expected to be impacted by this, many non-threatened taxa are. These disturbances would be most severe if construction coincides with breeding activity. Apart from minimising the footprint of construction activities, the non-threatened status of the taxa involved does not warrant any other mandatory mitigation measures. However, the impact could be minimised by scheduling construction to occur during the non-breeding season of most of the species involved. Examination of the Median Breeding Index indicates that the best period for construction would be between February and August (inclusive) and the worst period during October, November and December.

In spite of having a similar total length (c. 2.6 km), construction activities are more likely to have a negative impact on birds along the route of Alternatives B than along the route of Alternative A because the route followed by Alternative B includes more intact woodland habitat, especially north of the eastern drainage line which it also transverse. In addition, while the eastern 1.6km of the route followed by the proposed single 132 kV power line that will connect the substation to the existing 132 kV Chemie-Selati power line follows the same route for the two alternatives, for Alternative B it additionally need to cross the eastern drainage line, which further increase the risk profile of Alternative B relative to Alternative A.

Change in impact significance:

Alternatives A:

Without mitigation: **Low**

With mitigation: **Low**

Alternative B:

Without mitigation **Low**

With mitigation: **Low**

Operational phase

Power lines represent a permanent collision hazard to birds. Cases of collisions with electrical infrastructure are known for 18 of the 33 Red Data species occurring in the SAC9Q-block. Many of these Red Data species are probably only transient visitors to the project site and or their risk of colliding with new power lines at the site is considered to be low. The risk is considered to be higher for the Black Stork R084 which forages in aquatic habitats. Fatal power line collision and electrocution incidents have been reported for this species. At the New Chemie study site a bird was seen in the western drainage line, and it is expected that they would visit the area frequently. They are considered to be at a high risk of colliding with the new power lines of Alternative B which pass over drainage lines; the risk of Alternative A is considered to be moderate.

Electrocution is also possible for both Alternatives.

The Marabou Stork R089 occurs in both aquatic and terrestrial habitats and appears to be relatively common at the New Chemie study site and environs where soaring flocks and single birds were recorded during the site visit. Fatal power line collision and electrocution incidents have been reported for this species. The risk of collision/electrocution incidents are considered to be moderate at the study site.

Mitigation options considered include the following:

- Mark earth wires and/or conductors in order to make them more visible to birds, e.g. by using bird flight diverters. The recommendation is to use diverters with a sufficiently large marker —i.e. those which thicken the appearance of the line at that point by at least 20cm over a length of at least 10 cm — spaced at regular intervals no greater than 10m apart. This refers to static devices with no moving parts (e.g. pigtailed / spirals).
- Alternative A is the preferred option for the following reasons:
 - Compared to Alternative A, Alternative B additionally entails two crossings of power lines over a major drainage line and the location of power lines in-between two major drainage lines with the proposed route of the power lines running less than 400m from these drainage lines.
 - Only Alternative B crosses major drainage lines, which represents relatively high risk collision zones.
- The proposed new power lines should be of a horizontal design where conductors are all on the same height.
- Electrocutation risk is primarily a function of power line tower design and bird body size and behaviour. Since the best strategy for avoiding bird electrocution is to use low risk power line tower designs, it is recommended that such designs must be used for the proposed project following standard available guidelines.

Change in impact significance:

Alternatives A :

Without mitigation **Medium**

With mitigation **Low**

Alternative B:

Without mitigation **Medium**

With mitigation **Medium**

CUMULATIVE IMPACTS

There are several existing power lines in the area of the proposed New Chemie development. Construction of the New Chemie power lines will add to the total length of power lines in the area. In addition, the new power lines will probably also add to the total number of birds killed by collisions in the area. However, in the absence of any data on the actual impact of the area's power line networks on birds, it is difficult to assess cumulative impacts.

POSITIVE IMPACTS OF POWER LINES

At least 17 of the species occurring in the SACQ9- block are known to breed on power line pylons and wires. Nesting activity on pylons can potentially cause flash-overs. Removal of nests is only recommended as a last resort because the nest owners will frequently return and rebuild the nest. Alternative mitigation strategies include trimming of excessive nesting material, insulation of conductors, and the provision of an artificial nest platform.

CONCLUSION

From the foregoing assessment on the potential impacts on the avifauna, it is concluded that there are no fatal flaws with the proposed New Chemie project. The most significant avifaunal impacts associated with the proposed New Chemie development, include:

- Impacts associated with the construction activities on the site, including the potential destruction of nests of non-threatened species which may potentially nest on the site at the time;
- Impacts associated with the transformation of the habitat;
- Impacts associated with the proposed substation;
- Impacts associated with power lines, including the electrocution and particularly collision risk it poses to Red Data and other species; and
- Cumulative impacts.

By using the Preferred Alternative, all impacts can be mitigated to acceptable (low) levels.

SECTION C: PUBLIC PARTICIPATION

1. ADVERTISEMENT AND NOTICE

Publication name	Letaba Herald	
Date published	24 March 2017	
Site notice position	Latitude	Longitude
At the existing Chemie substation	23° 58' 37.98"S	31° 05' 51.95"E
At the entrance gate to Bosveld Phosphates	23° 58' 29.24"S	31° 06' 07.16"E
On the R40, close to the existing line to be decommissioned	23° 58' 23.98"S	31° 05' 33.37"E
On the R40 at the southern end of the new LILO line	23° 58' 23.63"S	31° 04' 30.45"E
At the Substation Site Alternative 1 and single 132kV line	23° 57' 11.57"S	31° 04' 54.08"E
At the Substation Site Alternative 2 and single 132kV line	23° 57' 08.29"S	31° 04' 37.48"E
Date placed	20 March 2017	

Include proof of the placement of the relevant advertisements and notices in **Appendix E1**.

2. DETERMINATION OF APPROPRIATE MEASURES

Provide details of the measures taken to include all potential I&APs as required by Regulation 41(2)(e) and 41(6) of GN 733.

ACTIONS UNDERTAKEN DURING THE PUBLIC PARTICIPATION PROCESS

Please note

The 1st phase notification for this project (distribution of BIDs and onsite notifications) were done in October/November 2016. Thereafter the project components changed considerably and the project was re-advertised in March 2017. Detail thereof follows in the paragraphs below.

1st Phase Notification: November 2016 (Old Project Components)

- **Notification to the directly affected landowners**
A list of directly affected landowners was compiled and Background Information Documents (BIDs) were emailed and/or posted during November 2016. A 30-day commenting period applied.
- **Notification to Government Departments, Municipalities and other IAPs**
A General I&AP List was compiled and includes municipalities, government departments and other applicable organisations. BIDs were emailed to everyone on this list during November 2016. A 30-day commenting period applied.

- **Onsite notification**

Four English and Afrikaans onsite notices were placed along the powerline routes on 18 October 2016. The notifications were A2 in size and laminated.

Re-advertising of project due to new project components: March 2017

- **Notification to the directly affected landowners**

A list of directly affected landowners was compiled and BIDs were emailed / posted during March 2017 and onwards. A 30-day commenting period applied.

- **Notification to Government Departments, Municipalities and other IAPs**

A General I&AP List was compiled and includes municipalities, government departments and other applicable organisations. BIDs were emailed to everyone on this list during March 2017 and onwards. A 30-day commenting period applied.

- **Onsite notification**

Six English and Afrikaans onsite notices were placed along the powerline routes on 22 March 2017. The notifications were A2 in size and laminated.

- **Newspaper Advertisement**

A newspaper advertisement was placed in the Letaba Herald, a local newspaper, dated 24 March 2017.

- **Distribution of the Draft Basic Assessment Report (this document) for comment**

The Draft BAR is being distributed as follows (a 30-day commenting period applies):

- ❖ Hard copies were delivered to the
 - National Department of Environmental Affairs: Environmental Authorisation
 - National Department of Environmental Affairs: Biodiversity Section
 - Limpopo Provincial Government: Economic Development Environment & Tourism, Environmental Impact Management
 - Department of Water & Sanitation, Mpumalanga Province
 - Limpopo Heritage Resources Agency (LIHRA)
 - Ba-Phalaborwa Local Municipality
- ❖ All registered Interested and Affected Parties received an electronic copy of the Draft BAR via email or notification of its availability via post.
- ❖ The Draft BAR was linked to the SAHRIS website of the South African Heritage Resources Agency (SAHRA) for their perusal and comment.

Public participation to continue

- Based on comment received on the Draft BAR, it will be determined if any further public participation measures (i.e. a public meeting) are deemed necessary;
- Comment received will be responded to in the Final BAR;
- The Final BAR will be submitted to DEA for approval / refusal of the project.
- IAPs will be informed of the DEA's decision and their right to appeal.

Key stakeholders (other than organs of state) identified in terms of Regulation 41(2)(b) of GN 733

Please refer to Appendix E for the contact details of below mentioned IAPs

POTENTIALLY DIRECTLY AFFECTED LANDOWNERS

Ba-Phalaborwa Traditional Authority, care of the Chief Councillor, Mr Malatji (Department of Co-operative Governance, Human Settlements and Traditional Affairs, Mopane District Support Centre)
Department of Public Works, Roads and Infrastructure, For attention: The Director of the Mopani District Office: Mr S B Baloyi & Department of Rural Development Limpopo, Manager of Provincial State Land: For attention: Mr Tinyiko Makamu The Landowner: <ul style="list-style-type: none">• Remaining Extent of the Farm Ben 26-LU• Portion 0 of the Farm Schiettocht 25-LU• Remaining Extent and Portion 1 of the Farm Makushane Location 28-LU• Remaining Extent of the Farm Wegsteek 30-LU
Ba-Phalaborwa Local Municipality, The Municipal Manager, For attention: Dr S S Sebashe (PA: Jacqueline Mohlala) The Landowner: <ul style="list-style-type: none">• Portions 1, 2, 3 and 4 of the Farm Ben 26-LU• Portion 3 of the Farm Wegsteek 30-LU

OCCUPIER OF LAND

Bosveld Phosphates (Remaining Extent of the Farm Wegsteek 30-L), The Plant Manager, For attention: Mr Eugene Stucki

Include proof that the key stakeholder received written notification of the proposed activities as **Appendix E2**. This proof may include any of the following:

- e-mail delivery reports;
- registered mail receipts;
- courier waybills;
- signed acknowledgements of receipt; and/or
- or any other proof as agreed upon by the competent authority.

3. ISSUES RAISED BY INTERESTED AND AFFECTED PARTIES

3.1 Comment received during the Initial Advertising Period: October/November 2016 (old project components) and March 2017 (new project components)

Summary of main issues raised by I&APs and Response from EAP

**DURING THE 1ST PHASE NOTIFICATION DONE IN OCTOBER/NOVEMBER 2016
ONLY THREE COMMENTS WERE RECEIVED**

Transnet Freight Rail: Mphakiseng Matlala

He wanted to know if there are any railway lines (500m) from the proposed activity as the map is not clear enough to see.

Response from Landscape Dynamics

The Google Earth kml map will be forwarded as soon as the routes have been finalised. It should then be very clear as to where the railway lines are situated in relation to the proposed power lines (if any).

Department of Water and Sanitation: Northern Operations: Area Manager: Groblersdal Area Office: Mr Kobus Pretorius

Mr Pretorius directed his email to Tsofelo, asking that contact with Lucky should be made to discuss the matter. Maybe Head Office: Environmental Engineering has input to the study. Mr Pretorius didn't pick up that any of their infrastructure is affected by the project.

Response from Landscape Dynamics

- *No further comment from DWS was received.*
- *Comment noted*

Bosveld Phospates: The Plant Manager: Mr Eugene Stucki

Mr Stucki contacted Landscape Dynamics telephonically and requested further information regarding the project. An email was sent to Mr Stucki stating the following:

We are now in the beginning stages of this project and unfortunately the detail project components have not yet been finalised.

At this stage, it can be confirmed that the existing Chemie Substation on Farm Wegsteek will be decommissioned and a new substation will be constructed adjacent to the R40 (please refer to the attached maps). Powerlines will be rerouted to the new substation and some power lines will be decommissioned.

We unfortunately don't have any clear project description or maps.

Detail regarding the project will be sent to all Interested & Affected Parties as soon as the detail project components are available.

Should you have any concerns during these early stages, it would be appreciated if you can voice your concerns so that it can be addressed as early as possible in the assessment process.

- No further comment from Mr Stucki was made*

DURING THE RE-ADVERTISING OF THE PROJECT (THE NEW PROJECT COMPONENTS) DONE IN MARCH 2017, ONLY TWO COMMENTS WERE RECEIVED

Transnet Freight Rail: Risk Management, Krugersdorp: Phindile Mnguni

They wanted to know if there are any railway lines around the proposed area. Will the project have any potential impacts on their operations (i.e. is there any TFR or railway line activities or line nearer (500m) to the proposed development?

Response from Landscape Dynamics

- To the best of our knowledge we are not aware of any TFR or railway line activities or line within 500m of the proposed development. We would however appreciate it if you could compare our proposed route alignment with your database? The Google Earth map and route map are attached for your perusal.*
- No further comment was received*

Limpopo Department of Economic Development, Environment & Tourism, Capricorn District, M Rogers

M. Rogers forwarded the email to Mr Baloyi who is deployed for projects in the Mopani District, unless Mr Maluleke of our administrative office sent the communication to them already. Baloyi F K and Mthombeni RV were both cc'ed on this email.

Response from Landscape Dynamics

- No further comment was received*

3.1 Comment received on the Draft BAR (to be included in the Final BAR)

4. COMMENTS AND RESPONSE REPORT

The practitioner must record all comments received from I&APs and respond to each comment before the Draft BAR is submitted. The comments and responses must be captured in a comments and response report as prescribed in the EIA regulations and be attached to the Final BAR as **Appendix E3**.

5. AUTHORITY PARTICIPATION

Authorities and organs of state identified as key stakeholders:

Please refer to Appendix E for the contact details of below mentioned IAPs

GOVERNMENT DEPARTMENTS

National Department of Environmental Affairs: Biodiversity Conservation: Deputy-director: Mr Seoka Lekota
Department of Water and Sanitation, Water Regulation and Use, For attention: Ms M M Komape
Limpopo Province Region Department of Water and Sanitation, The Deputy Director : Water Resources Management, For attention: Ms Doris Maumela
Department of Water & Sanitation, Mpumalanga Region, Assistant-director, For attention: Ms Gloria Moloto
Department of Water & Sanitation, Mpumalange Region, Regional Manager, For attention: Mr Kobus Pretorius
Department of Economic Development, Environment and Tourism, The Senior Management, EIA Office Limpopo For attention: Mr Victor Mongwe
Limpopo Provincial Government: Economic Development Environment & Tourism, Environmental Impact Management, The Manager: Ms T P Malungane
Limpopo Department Economic Development & Tourism: EIA Admin Office, Deputy-director, For attention: Mr V Maluleka
Limpopo Department of Economic Development, Environment & Tourism, Capricorn District, The Senior Environmental Officer, Baloyi F K & Mthombeni RV
Limpopo Heritage Resources Agency (LIHRA) Heritage Officer: Mr Donald Lithole
Limpopo Province, Department of Mineral Resources, Deputy Director: Environment Management (Directorate Mineral Development) Mr A Mulaudzi and Thivhulawi Kolani
Department of Mineral Resources, Regional Director, Limpopo Province, Mr Aaron Kharivhe (PA: Tebogo Mangaba)
Department of Cooperative Governance and Traditional Affairs (COGTA), Limpopo Province, Mr Mpho Mogale (CD/Convenor)
Department of Rural Development and Land Reform, Chief Director: Land Restitution Limpopo: Mr Tele Maphoto
Department of Rural Development and Land Reform: Regional Land Claims Commissioner: Mr Harry Maphutha
Department of Rural Development and Land Reform, Limpopo Provincial Shared Service Centre Office (LPSSC), For attention: Director: Property Management Limpopo Provincial Shared Service Centre, Enquiries: M P Ntlhane
Group Capital Department – Eskom Properties, Regional Land Portfolio Managers: Ms Bronwyn Stolp and/or Ms Tinkie Holl

BASIC ASSESSMENT REPORT

Eskom, Environmental Management, Megawatt Park, EIA COE Manager, For attention: Mr Tobile Bokwe
Eskom SOC Limited Wayleave Applications: Limpopo Province: (Thohoyandou, Louis Trichardt, Messina, Tzaneen)
Road Agency Limpopo (RAL) Manager: Land Use Management: Mr Phuti Montjane
South African Roads Agency: Ms Victoria Bota and Khathutshelo Ramavhoya
Limpopo Department of Public Works, Infrastructure Operations; The General Manager: Infrastructure Planning & Design, Mr Patrick Makape
Transnet Freight Rail: The Senior Manager: - Environmental Management: Mr Ezekiel Monyamane
Department of Agriculture, Forestry and Fisheries Land Use and Soil Management, National Land Care Secretariat
Lepelle Northern Water, Acting Chief Executive, For attention: Mr P K Legodi (PA: Minkie)

MUNICIPALITIES

Mopani District Municipality, The Municipal Manager, For attention: Mr Q Kgatla (PA: Mr H Maswanganyi)
Ba-Phalaborwa Local Municipality, The Municipal Manager, For attention: Dr S S Sebashe (PA: Jacqueline Mohlala)
Ba-Phalaborwa Local Municipality, Planning and Development, For attention: Mr H P Maluleke
Ba-Phalaborwa Local Municipality, Director: Technical Services, For attention: Mr K Mpharalala
Ba-Phalaborwa Local Municipality, for attention The Speaker Ms M Malatji (Ward Councillors)

Include proof that the Authorities and Organs of State received written notification of the proposed activities as Appendix E4.

In the case of renewable energy projects, Eskom and the SKA Project Office must be included in the list of Organs of State.

6. CONSULTATION WITH OTHER STAKEHOLDERS

Note that, for any activities (linear or other) where deviation from the public participation requirements may be appropriate, the person conducting the public participation process may deviate from the requirements of that sub-regulation to the extent and in the manner as may be agreed to by the competent authority.

Proof of any such agreement must be provided, where applicable. Application for any deviation from the regulations relating to the public participation process must be submitted prior to the commencement of the public participation process.

A list of registered I&APs must be included as [Appendix E5](#).

Copies of any correspondence and minutes of any meetings held must be included in [Appendix E6](#).

SECTION D: IMPACT ASSESSMENT

The assessment of impacts must adhere to the minimum requirements in the EIA Regulations, 2014 and should take applicable official guidelines into account. The issues raised by interested and affected parties should also be addressed in the assessment of impacts.

1. IMPACTS THAT MAY RESULT FROM THE PLANNING AND DESIGN, CONSTRUCTION, OPERATIONAL, DECOMMISSIONING AND CLOSURE PHASES AS WELL AS PROPOSED MANAGEMENT OF IDENTIFIED IMPACTS AND PROPOSED MITIGATION MEASURES

Provide a summary and anticipated significance of the potential direct, indirect and cumulative impacts that are likely to occur as a result of the planning and design phase, construction phase, operational phase, decommissioning and closure phase, including impacts relating to the choice of site/activity/technology alternatives as well as the mitigation measures that may eliminate or reduce the potential impacts listed. This impact assessment must be applied to all the identified alternatives to the activities identified in Section A(2) of this report.

Please note that a comprehensive Impact Assessment (with detailed mitigation measures) is supplied in Appendix F where the impacts are assessed in terms of the following criteria:

- Nature of the impact (what is being affected and how, is it positive or negative);
- Extent (site specific / local / regional / national / global);
- Duration (short / medium / long / permanent);
- Magnitude or intensity of the impact (would the impact be destructive or benign and rated as low / moderate / severe);
- Probability of impact occurring (unlikely / possible / probable / definite)

The mitigation measures as supplied in this Impact Assessment are also included in the Environmental Management Plan.

The **Significance Rating** of an impact is assessed before and after mitigation measures has been applied and refers to the following:

Significance of impact	Explanation of Significance
None	There is no impact at all
Low	Impact is negligible or is of a low order and is likely to have little real effect
Medium	Impact is real but not substantial
High	Impact is substantial
Very high	Impact is very high and can therefore influence the viability of the project

Please note that detail impact descriptions and mitigation measures are supplied in the Impact Assessment (Appendix F). All mitigation measures are also included in the Environmental Management Plan (Appendix G).

BASIC ASSESSMENT REPORT

Alternative 1 - Preferred Route and Substation Alternative		
Short impact description	Significance before mitigation	Significance after mitigation
<p>Soils / Erosion Concrete foundations will be made for each pylon along the powerline route as well as for the substation. Vegetation will therefore be cleared and there may be an increase in surface water runoff which could lead to soil erosion.</p>	Medium	Low
<p>Botanical Impact (Fauna & Flora) Removal of vegetation and plant species and habitat loss as well as the establishment of declared weeds and alien invasive plants could impact on the flora within the study area. Disturbance to and/or destruction of habitat and illegal placement of snares could impact on the <i>Fauna & Flora</i> within the study area.</p>	Medium	Low
<p>Aquatic Ecosystems There are several drainage lines within the study area and a wetland adjacent to the existing Chemie Substation was identified. Pylon and substation placement will be of such a nature that none is within 32m from any watercourse. <i>Decommissioning of the substation within a wetland area</i> The exact volume of material to be removed has not yet been calculated, but only material associated with the substation (constructed many years ago), its foundations and fencing will be removed. The decommissioning activity will not involve the removal of any undisturbed land within the wetland area. <i>Site visit undertaken by Department of Water & Sanitation and Eskom</i> A site visit was undertaken by Eskom and the Department of Water and Sanitation (DWS). DWS confirmed with Eskom that freshwater studies for this project are not required but it is required to complete a Risk Matrix and apply for General Authorisation (GA). This application for a GA is included as a condition in the EMP to be met prior to commencement of construction and decommissioning activities.</p>	Medium	Low
<p>Avifauna (birds) A risk for electrocution, birds colliding with powerlines and habitat destruction & disturbance could have an impact on the avifauna of the area.</p>	Medium	Low
<p>Cultural / Heritage Impacts Seven sites of heritage importance have been identified within the wider study area. Insensitive pylon placement could have a negative impact on these heritage resources.</p>	Medium	Low to very low

BASIC ASSESSMENT REPORT

<p>Impact of dust on the substation The pollution emanating from Bosveld Phosphates (adjacent to the existing Chemie Substation) over the years created an unsafe working environment. The badly polluted insulators cause flash overs during rainy seasons and the cost of maintenance and un-served energy is unacceptably high.</p> <p>Should the new substation be constructed within an environment with the same pollution / dust levels, the new substation will also become a dangerous place to work in and expensive to maintain.</p>	High	Low to very low
<p>Visual Impacts The visual impact of powerlines can be substantial in a rural environment. One however has to consider the ability of the surrounding environment to absorb the visual impact of the powerline:</p> <ul style="list-style-type: none"> • The new LILO power line will follow the R40 provincial road and there are already existing power lines within the vicinity of this new line. • The single 132kV line will run along an existing gravel road / jeep track within an area which is already disturbed by human activities. • The power lines or substation will not be constructed in a pristine nature area. • No objection to the construction of the substation and powerlines was received during the public participation process followed for this project. <p>It can therefore be concluded that the altering of the sense of place for this project is reasonably acceptable.</p>	Low	Low
<p>Groundwater Potential for groundwater pollution always exists as a result of oil spills, etc. during the construction period.</p>	Medium	Low
<p>Community An influx of workers could result in an increased risk for crime and general safety.</p>	Medium	Low
<p>Air quality Dust created by construction vehicles could impact on air quality during the construction period.</p>	Low	Very Low
<p>Noise Labourers and machinery could result in noise pollution during the construction period.</p>	Low	Very Low

Alternative 2

Short impact description	Significance before mitigation	Significance after mitigation
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BASIC ASSESSMENT REPORT

Impacts as described above for Preferred Route Alternative also apply to Route Alternative 1, with additional impacts as described below		
<p>Botanical Impact (Fauna & Flora) The alternative route and substation site contains far greater number of protected trees consisting mainly of the protected <i>Marula Sclerocarya birrea</i> subsp. <i>caffra</i> specimens. The alternative route is also situated closer to sensitive riparian habitats and covers a greater distance through undeveloped land thus potentially causing greater impact on the vegetation than the 'preferred' route.</p> <p>Recommended mitigation is to use the Preferred Alternative</p>	High-Medium	Low
<p>Impact on Avifauna Construction activities are more likely to have a negative impact on birds along this alternatives route than along the Preferred Route Alternative because the route followed by Alternative 2 includes more intact woodland habitat, especially north of the eastern drainage line which it also transverse. Alternative 2 also has to cross the eastern drainage line, which further increase the risk profile of this route.</p> <p>Recommended mitigation is to use the Preferred Alternative.</p>	Medium	Low

Alternative 3		
Short impact description	Significance before mitigation	Significance after mitigation

Conclusion of Impact Significant Rating

All identified impacts that this Eskom project could have on the environment can be easily and reasonably mitigated to acceptable levels. There are no impacts that could influence the feasibility and viability of this project.

A complete impact assessment in terms of Regulation 19(3) of GN 733 must be included as Appendix F.

2. ENVIRONMENTAL IMPACT STATEMENT

Taking the assessment of potential impacts into account, please provide an environmental impact statement that summarises the impact that the proposed activity and its alternatives may have on the environment after the management and mitigation of impacts have been taken into account, with specific reference to types of impact, duration of impacts, likelihood of potential impacts actually occurring and the significance of impacts.

Please note that a comprehensive Impact Assessment (with detailed mitigation measures) is supplied in Appendix F. The Impact Statement below is a summary of the conclusion of this Impact Assessment. All mitigation measures are also included in the Environmental Management Plan (Appendix G).

Alternative 1 (preferred alternative)

ALTERNATIVE 1 IS THE PREFERRED SUBSTATION AND ROUTE CORRIDOR ALTERNATIVE

Public participation

No objection from the public was received to either the Preferred or Alternative Route Corridor options.

Specialist studies

The following specialist studies concluded that the Preferred Alternative as presented in this report would be the best option for this project:

- Baseline Botanical Assessment Report
- Avifaunal Basic Assessment
- Heritage Impact Assessment
- Dust Quality Monitoring Study

Technical considerations

- The Preferred Route Corridor is slightly shorter than Route Alternative 2
- The Preferred Route Corridor and Substation Alternative are next to the R70 provincial road which ensures easy access.

Conclusion on selecting an alternative

Once mitigation measures have been applied, the Preferred Route Corridor and Substation Site Alternative would have a low and acceptable impact on the environment. No impacts were identified that could not be mitigated to acceptable levels or that could influence the viability and feasibility of the proposed Eskom Chemie Project.

The Preferred Route Corridor and Substation Site is therefore the alternative that is recommended for environmental authorisation

Alternative 2

Alternative 2

Route Alternative 2 is not the preferred route alternative due to the following:

- Route Alternative 2 is slightly longer than the Preferred Alternative
- This route would require the construction of new access roads.
- It is not the preferred option of the specialists appointed for this project.
- All four specialist studies concluded that the Preferred Alternative would be the best option for this project.

Mitigation is the selection of the Preferred Alternative.

Alternative 3

No-go alternative (compulsory)

The existing Chemie Substation was built 35 years ago and is located adjacent to Bosveld Phosphates industrial plant outside of Phalaborwa. The pollution emanating from this plant over the years created an unsafe working environment. The badly polluted insulators cause flash overs during rainy seasons and the cost of maintenance and un-served energy is unacceptably high. The equipment or assets in the substation have almost reached the end of their life span. It is therefore proposed to relocate the substation far from Bosveld Phosphates where pollution will be reduced.

If the substation is not relocated, the unsafe working environment and failing equipment due to the age of the substation will continue. The no-go option is definitely not the preferred alternative for this project.

SECTION E. RECOMMENDATION OF PRACTITIONER

Is the information contained in this report and the documentation attached hereto sufficient to make a decision in respect of the activity applied for (in the view of the environmental assessment practitioner)?

YES	NO
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If "NO", indicate the aspects that should be assessed further as part of a Scoping and EIA process before a decision can be made (list the aspects that require further assessment).

If "YES", please list any recommended conditions, including mitigation measures that should be considered for inclusion in any authorisation that may be granted by the competent authority in respect of the application.

The Environmental Management Plan contains, amongst other, the mitigation measures as supplied in this report. It is therefore recommended that the implementation of the Environmental Management Plan must be a condition in the authorisation of the project.

Route Corridors

A 1km wide route corridor was investigated (500m on both sides of the power lines). This route corridor must be approved by the Department of Environmental Affairs, which will allow for slight deviations of the power line within the approved corridor. Please note that Eskom will however only register the required servitude within the route corridor and *not* the entire corridor.

Is an EMPr attached?

YES	NO
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The EMPr must be attached as Appendix G.

The details of the EAP who compiled the BAR and the expertise of the EAP to perform the Basic Assessment process must be included as Appendix H.

If any specialist reports were used during the compilation of this BAR, please attach the declaration of interest for each specialist in Appendix I.

Any other information relevant to this application and not previously included must be attached in Appendix J.

Susanna Nel

NAME OF EAP



SIGNATURE OF EAP

25 July 2017
DATE

SECTION F: APPENDIXES

Appendix A: Maps

- Locality Map
- Route and Substation Map: Preferred & Alternative Routes
- 250m coordinates of the Preferred Route
- Vegetation Sensitivity Map
- Avifauna Sensitivity Map
- Sensitive Heritage Sites
- SANBI
 - Limpopo Conservation Plan (CBAs & ESAs)
 - National Parks and Protected Areas
 - Rivers and Wetlands

Appendix B: Photographs

- Photo Report

Appendix C: Facility illustration(s)

- Typical 132 kV structures

Appendix D: Specialist reports (including terms of reference)

- Baseline Botanical Survey Report - Rory Muldoon Projects
- Avifaunal Basic Assessment was - Dr DJ van Niekerk (for Savannah Environmental Consultants)
- Heritage Impact Assessment - Ecorite Consultants
- Dust Quality Monitoring Study - Mandara Consulting Solutions

Appendix E: Public Participation

1st Phase Notification (old project components): October / November 2016

- Proof of Placement of Advertisements: Onsite Notices
- Background Information Document
- Proof of distribution of Background Information Document
- Written comment received

Public Participation: New project components

- E1a – Proof of Placement of Advertisements: Newspaper
- E1b – Proof of Placement of Advertisements: Onsite Notices
- E2a – Background Information Document
- E2b – Proof of distribution of Background Information Document
- E2c – Proof of Notification of availability of the Draft BAR to all IAPs *(to be included in the Final BAR)*
- E3 – Comments & Responses Report
- E4 – Complete register of Interested & Affected Parties
- E5 – Copies of Correspondence, notes and minutes of meetings
 - E5.1 Written comment received during the first phase notification period
 - E5.2 Written comment received on the Draft BAR *(to be included in the Final BAR)*

Appendix F: Impact Assessment

- [Impact Assessment](#)

Appendix G: Environmental Management Programme (EMPr)

- [Environmental Management Programme](#)

Appendix H: Details of EAP and expertise

- [Landscape Dynamics Company Profile and Condensed CVs of EAPs](#)

Appendix I: Specialist's declaration of interest

- [Dr van Niekerk, Dr Rory Muldoon, Mr Edward Matenga, Mr Ishmael Phalane](#)

Appendix J: Additional Information

- [None](#)