

Application for amendment of an environmental authorisation in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended, and the Environmental Impact Assessment Regulations 2010

TEXTURE

ENVIRONMENTAL CONSULTANTS

ESKOM PROJECT: Rietfontein loop-in-loop-out lines
DEA REF 12/12/20/2218
NEAS REF DEA/EIA/0000609/2011

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1 AUTHORISATION RECEIVED FOR THE ESKOM RIETFONTEIN PUMP STATION PROJECT, DEA REF 12/12/20/2218

1.1 Authorisation of 21 February 2012

Authorisation was granted on 21 February 2012 for the construction of Alternative 3 as presented in the final Basic Assessment Report that requires the following infrastructure:

- Construct Alternative 3 as presented for the 132kV loop-in-loop-out line (Rietfontein Pumps lilo line) from the existing Rietfontein Substation to Eskom's existing Wildebees-Sublime powerline. Refer to Appendix A2 for the authorised route. (Refer to dotted red lines)

1.2 Project Locality and property descriptions

The authorised route as presented in the final BAR is Alternative 3 on the farms Rietfontein 100 IS Portions 1,4,15; Langsloot 99 IS Portions 8,16; and Zwakfontein 120 IS Portions 1,13,15,23,24,25,29 in the Emalahleni Local Municipality in the Mpumalanga Province.

1.3 Listed activities

A Basic Assessment (BA) was conducted and the following listed activity was authorised:

Listed Activity	Activity/Project Description
GN R544/2010 Item 10 (j) The construction of facilities or infrastructure for the distribution of electricity outside urban areas with a capacity of more than 33kV but less than 275kV.	Construction of a 132kV loop-in-loop-out line (Rietfontein Pumps lilo line) from the existing Rietfontein Substation to Eskom's existing Wildebees-Sublime powerline.

1.4 Need for the project

The Komati Water Scheme (KWSAP) Augmentation Project has at its heart the need to increase the supply of water of sufficient quality and the surety of supply to the power stations on the Mpumalanga Highveld.

The current demand on the KWS exceeds the long term yield, due to increased load factors of the operational power stations; the upgrade of Arnot Power Station and Komati Power Station. As a result, Eskom has had to resort to additional water sources to supply water for these projects.

Rietfontein Pump Station currently supplies water to Matla, Kendal and Kriel when supply from Camden is interrupted. Duvha PS receives 50 to 80 % of its water from the Komati Scheme and 50% to 20% of it water from Witbank Dam. Due to the poor quality of Witbank Dam water a Soda lime plant has been commissioned at Duvha and is temporary until the KWSAP is commissioned. The Hendrina-Duvha Pipeline is deteriorated in condition and is in urgent need of refurbishment. The Camden-Kriel pipeline has sections which bursts and requires weeks to repair.

In future, KWSAP will allow water to move via Matla through Kendal to Kusile and supply Duvha with 50% of its water and 100% when the Hendrina-Duvha pipeline is out, either for maintenance or emergency repairs.

In order to support the Rietfontein Pump Station at the Rietfontein dam, Eskom has to improve power supply to the pump station by means of increasing power supply to the Rietfontein substation. The project is designed to ensure the injection of supply into the Eskom Distribution Network to support the Rietfontein substation. The outcome of this project is hence to increase the supply of electricity to Rietfontein substation.

2 MOTIVATION FOR AMENDMENT

We hereby request to amend this authorisation due to the following:

2.1 Route alignment

A section of the authorised power line corridor needs to be realigned to a corridor south of the authorised route. Eskom relies on the goodwill of landowners and interested and affected parties to obtain servitudes for power lines. Hence, landowners are consulted during the application for environmental authorisation (the EIA phase), during construction of new power lines. Eskom obtains right of way by negotiating and registering a servitude.

Servitude: A servitude is a real right which Eskom obtained in order to construct its infrastructure upon the affected property and it is registered in the Deeds Office against the title deed of the affected property. The affected owner normally gets compensated for this right according to market related values. A servitude stays effective even if a property is transferred to another owner. Rights to obtain a servitude is negotiated for 33kV, 88kV and 132kV power lines.

This project involves identification of a corridor within which Eskom would be able to locate a 52m servitude for the loop-in-loop-out powerlines as described. A servitude area is generally a no building area, except for Eskom structures. Usually, normal farming activities may continue in a servitude with the exception that no trees may be planted or high structures may be erected. In general, the servitude for Eskom 132kV powerlines is 31 meters wide, which implies 15,5 meters on either side of the center line underneath the powerline. The lilo lines will be 21meters apart, which implies an area servitude of 52 meters wide.

Consideration for servitudes:

The process of negotiations can commence as soon as the Environmental Impact Assessment recommend the preferred alternative i.e. route, site etc. for the project. After identification of the preferred alternative, a land valuator is appointed to value the properties. The distance/length of the line affecting each property is measured to calculate the area affected by the line. A process of negotiations follows between landowner(s) and Eskom's appointed negotiator.

It was during this process that some landowners changed their preference for the alignment of the powerline route. Subsequently the alignment had to be reinvestigated and negotiated.

In *Appendix A2* a sketch is attached indicating the difference between the authorised (dotted red lines) and the proposed/to be amended route (solid blue lines).

2.2 Project Locality and property descriptions

The property descriptions of the amended route from the Rietfontein substation to the T-off with the Wildebees-Sublime powerline are:

Riversdale 119 IS portion 2 and 1; Zwakfontein 120 IS portion 15, 23, 1, 26, 6, 7, 18 and 2; and Dieplaagte 123 JS portion 7 in the Emalahleni Local Municipality in the Mpumalanga Province.

(Refer to Appendix C5c for a register of the landowners and property descriptions on the amendment route).

The proposed powerline corridor (study area) starts at the existing Rietfontein Substation. The substation is situated immediately north of the Rietfontein Dam near the dam wall and slightly off to the western side of the dam itself.

The proposed corridor runs for 417m in a westerly direction and then turns 90 degrees south and runs for another 364m. Most of this area can be viewed as low-density urbanisation because it falls within the property of the Rietfontein dam and pumps and the grass is regularly cut and maintained, with exotic poplar trees lining the tarred road and a few houses and other buildings.

From here the corridor continues to travel due south for another 4,7km at which point it makes a 90 degree turn in a westerly direction. This section of the corridor that runs north-south for 4,7km, was historically cultivated and grazing lands. However, a section (the southern most half) is now being open-cast mined for coal. This has had a massive negative impact on the fauna and flora of not just this section, but also on the northern half of the section as well. It has totally transformed and destroyed the natural fauna and flora.

From the point where the corridor turns 90 degrees and runs in a westerly direction, to where it joins into the existing Wildebees-Sublime power line, is approximately 2,5km. It is through this area that the line crosses over a small stream, runs through grassland in good natural condition and crosses over a farm dam near the T-off point. The study area passes through cultivated lands; grazing lands, grasslands and mined areas. At no point does the corridor run through highly sensitive or no-go areas, such as wetlands. The total length of the powerline corridor is approximately 8km in total length.

2.3 Co-ordinates:

The amended route for the 132kV lilo line is found at approximately:

Rietfontein substation:

Longitude (Degrees Minutes Seconds)	Latitude (Degrees Minutes Seconds)
29°12'48.204"E	26°21'20.33"S

Project area:

Description	Longitude (Degrees Minutes Seconds)	Latitude (Degrees Minutes Seconds)
Start Point	29°10'52.651"E	26°23'37.982"S
Mid-point	29°12'24.947"E	26°22'22.755"S
End point	29°12'48.204"E	26°21'20.33"S

Line-in (7.90 km):

250m intervals	Longitude (Degrees Minutes Seconds)	Latitude (Degrees Minutes Seconds)
1	29° 12' 48.54" E	26° 21' 20.98" S
2	29° 12' 39.82" E	26° 21' 19.46" S
3	29° 12' 33.29" E	26° 21' 21.14" S
4	29° 12' 31.76" E	26° 21' 29.14" S
5	29° 12' 31.10" E	26° 21' 37.24" S
6	29° 12' 30.44" E	26° 21' 45.35" S
7	29° 12' 29.30" E	26° 21' 53.40" S
8	29° 12' 28.14" E	26° 22' 1.46" S
9	29° 12' 26.97" E	26° 22' 9.51" S
10	29° 12' 25.81" E	26° 22' 17.57" S
11	29° 12' 24.64" E	26° 22' 25.62" S
12	29° 12' 23.48" E	26° 22' 33.68" S
13	29° 12' 22.31" E	26° 22' 41.73" S
14	29° 12' 21.15" E	26° 22' 49.79" S
15	29° 12' 18.14" E	26° 22' 56.64" S
16	29° 12' 15.12" E	26° 23' 3.47" S
17	29° 12' 13.98" E	26° 23' 11.52" S
18	29° 12' 12.90" E	26° 23' 19.59" S
19	29° 12' 12.23" E	26° 23' 27.69" S
20	29° 12' 11.56" E	26° 23' 35.79" S
21	29° 12' 10.89" E	26° 23' 43.89" S
22	29° 12' 10.22" E	26° 23' 51.99" S
23	29° 12' 4.82" E	26° 23' 53.73" S
24	29° 11' 56.25" E	26° 23' 51.20" S
25	29° 11' 47.68" E	26° 23' 48.67" S
26	29° 11' 39.11" E	26° 23' 46.14" S
27	29° 11' 31.03" E	26° 23' 43.19" S
28	29° 11' 28.80" E	26° 23' 35.32" S
29	29° 11' 23.85" E	26° 23' 31.51" S
30	29° 11' 15.09" E	26° 23' 33.44" S
31	29° 11' 6.33" E	26° 23' 35.37" S
32	29° 10' 57.57" E	26° 23' 37.30" S

Line - out (7.93 km):

250m intervals	Longitude (Degrees Minutes Seconds)	Latitude (Degrees Minutes Seconds)
1	29° 10' 52.65" E	26° 23' 38.00" S
2	29° 11' 1.11" E	26° 23' 35.82" S
3	29° 11' 9.87" E	26° 23' 33.89" S
4	29° 11' 18.63" E	26° 23' 31.96" S
5	29° 11' 27.39" E	26° 23' 30.03" S

6	29° 11' 30.11" E	26° 23' 37.18" S
7	29° 11' 33.77" E	26° 23' 43.85" S
8	29° 11' 42.34" E	26° 23' 46.38" S
9	29° 11' 50.91" E	26° 23' 48.91" S
10	29° 11' 59.48" E	26° 23' 51.44" S
11	29° 12' 8.05" E	26° 23' 53.97" S
12	29° 12' 9.84" E	26° 23' 47.37" S
13	29° 12' 10.51" E	26° 23' 39.27" S
14	29° 12' 11.18" E	26° 23' 31.17" S
15	29° 12' 11.85" E	26° 23' 23.07" S
16	29° 12' 12.73" E	26° 23' 14.99" S
17	29° 12' 13.87" E	26° 23' 6.93" S
18	29° 12' 15.00" E	26° 22' 58.87" S
19	29° 12' 19.88" E	26° 22' 53.25" S
20	29° 12' 21.05" E	26° 22' 45.20" S
21	29° 12' 22.21" E	26° 22' 37.14" S
22	29° 12' 23.37" E	26° 22' 29.09" S
23	29° 12' 24.54" E	26° 22' 21.03" S
24	29° 12' 25.70" E	26° 22' 12.98" S
25	29° 12' 26.87" E	26° 22' 4.92" S
26	29° 12' 28.04" E	26° 21' 56.87" S
27	29° 12' 29.20" E	26° 21' 48.81" S
28	29° 12' 30.06" E	26° 21' 40.73" S
29	29° 12' 30.72" E	26° 21' 32.63" S
30	29° 12' 31.84" E	26° 21' 24.58" S
31	29° 12' 33.91" E	26° 21' 17.17" S
32	29° 12' 42.80" E	26° 21' 18.53" S

2.4 Listed activities

The listed activities remain unchanged:

Listed Activity	Activity/Project Description
GN R544/2010 Item 10 (i) The construction of facilities or infrastructure for the distribution of electricity outside urban areas with a capacity of more than 33kV but less than 275kV.	Construction of a 132kV loop-in-loop-out line (Rietfontein Pumps lilo line) from the existing Rietfontein Substation to Eskom's existing Wildebees-Sublime powerline.

3. STUDY APPROACH

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

- Preliminary site investigations to determine the scope of the amendment, and to familiarise with the sites, were done in September 2013.
- An application for an amendment was submitted to DEA on 30 September 2013.
- Specialist ecological input was obtained to investigate the flora, fauna and the general biophysical environment in an attempt to identify the potential impacts of the project.
- The proposed development is covered by the National Heritage Resources Act which incorporates heritage impact assessments in the Environmental Impact Assessment process. A Phase 1 Heritage Impact Assessment was done by a specialist to identify the potential impact on heritage resources. The National Heritage Resources Act 25 of 1999 in addition requires that all heritage resources, that is, all places or objects of aesthetic, architectural, historical, scientific, social, spiritual, linguistic or technological value or significance be protected.
- Input from an avifauna specialist was obtained to determine the impact of the proposed project on birds.
- Site investigations by the specialists, Eskom and the EAP were done on 16 Oct 2013 and continued into October.
- The first phase of a Public Participation Programme (PPP) commenced in October 2013 and continued until November 2013. It included the identification of the affected landowners, as well as advertising of the proposed amendment in the local press and on site.
- Meetings by the appointed negotiator for the project were conducted with landowners, to assist in the identification of potential powerline corridors.

- An Amendment Report was compiled with the main aim to identify issues, and potential impacts associated with this amendment. It included a description of the status quo of all relevant environmental components as well as the proceedings of the PPP and communication with registered Interested & Affected Parties (I&APs).
- On 12 December 2013 the Amendment Report was submitted for comment to the following:
 - Regional Department of Water Affairs: Water Resources & Water Quality Management
 - Department of Water Affairs: Rietfontein Pump Station
 - South African Heritage Resources Authority (submitted via SAHRIS)
 - Mpumalanga Heritage Resource Authority
 - Mpumalanga Department of Economic Development, Environment and Tourism: Environmental Services
 - Mpumalanga Department of Agriculture: Land Use and Soil Management
 - Mpumalanga Department of Minerals and Energy
 - Mpumalanga Department of Cooperative Governance, Human Settlement and Traditional Affairs
 - Mpumalanga Department of Public Works, Roads And Transport
 - Mpumalanga Department of Rural Development and Land Reform: Land Claims Commissioner
 - Mpumalanga Department of Rural Development and Land Reform: State Land Administration
 - Mpumalanga Tourism and Parks Agency
 - Mpumalanga Landbou
 - Agri Mpumalanga
 - TLU Ermelo
 - SA National Road Agency Agency Ltd
 - Endangered Wildlife Trust
 - Olifantsrivier forum
 - Nkangala District Municipality
 - Emalaheni Local Municipality
 - Eskom Holdings SOC Ltd - Transmission
 - Eskom Holdings SOC Ltd - Distribution
 - Sasol Gas Ltd
 - Exxaro Coal Mpumalanga Ltd
 - BKS Engineers
 - Landowners
- The due date for comment to the Amendment Report is 31 January 2014. This allows for a comment period of more than 30 days. This extended due date is in consideration of the national holiday period in South Africa.
- Subsequently, the final Amendment Report will be submitted to DEA for their review and decision.

4. SPECIALIST STUDIES TO INVESTIGATE THE FEASIBILITY OF THE AMENDMENT

The project consists of the construction of a 132kV loop-in-loop-out line (Rietfontein Pumps lilo line) from the existing Rietfontein Substation to Eskom's existing Wildebees-Sublime powerline.

The specialist input is summarised as follows:

4.1 ECOLOGICAL STATUS REPORT

The ecological status report identified the following:

Natural environment

- The study area is situated in Eastern Highveld Grassland. This vegetation type is typical of the region with open (almost tree-less) grassveld plains. The flora species found along the new proposed power line corridor are the same as those noted in the final draft of the ecological study. This includes alien species as well.
- No wetlands occur within the study area. However, a perennial stream and a few farm dams do occur.
- Rietfontein Substation is situated immediately to the north of the Rietfontein Dam, but the proposed powerline does not impact on this dam at all. There is one manmade impoundment (farm dam) that the powerline crosses over. Fifty metre bufferzones have been demarcated around all farm dams and other water courses and no construction or erection of powerline pylons may take place within these bufferzones.
- No large (major) rivers occur within the study area. The powerline corridor only crosses over one small river (stream). This stream has no associated floodplain or riparian zone. With the implementation of recommended mitigating measures, neither construction nor impacts, will take place within this stream or its immediate embankment areas. A 50m buffer zone from the edge of the stream bank has been implemented in which no construction (including the placement and erection of pylons) may take place.

Fatal Flaw (Go, No-Go Option)

From an ecological point of view no fatal flaw (or flaws) were found with regards to the go-ahead (go, no-go option) of the project. In other words, if all recommendations and mitigating measures are put in place the project can go ahead in terms of the ecological component of the project.

Habitats

1. Grassland plains

The regional vegetation of the study area is that of undulating, grassland plains. These grasslands are predominantly Eastern Highveld Grassland, which is endangered due to the fact that more than 40% has already been transformed and very little formally protected. Historically this transformation has been primarily due to cultivation (agriculture), but in recent years afforestation, mining and general urbanisation has added significantly to the transformation and degradation of the veldtype. As a whole, the grassland plains within the study area are not seen as floristically sensitive with regards to powerline corridors, but it is important for Eskom, contractors and developers to be aware of the increasing and continued pressure on this vegetation type. The grassland portion within the study area is not known to be an area of high floristic endemism and therefore does not constitute a sensitive habitat type.

Most of the grassland in the study area has been totally transformed or highly modified, due to open-cast coal mining, cultivation and grazing. The grassland plains are not seen as faunalistically sensitive, except for the slightly modified grassland areas around the stream and farm dam in the western section of the study site. However, these grasslands are not highly sensitive or 'no-go' zones.

2. Rivers

No large (major) rivers are within the study area. The closest large rivers to the study area are the Trichardtspruit and the Dwars-in-die-Wegspruit. The Trichardtspruit flows into the Rietfontein Dam and then flows out into the Dwars-in-die-Wegspruit. Both rivers flow in a northerly direction and eventually into the Olifants River.

The powerline corridor only crosses over one small river (stream). This stream flows north into a fairly large farm dam that lies to the north of the study area (figure below). With the implementation of recommended mitigating measures, neither construction nor impacts, will take place within this stream or its immediate embankment areas.

A 50m buffer zone from the edge of the stream bank has been implemented in which no construction (including the placement and erection of pylons) may take place.

3. Manmade Impoundments

A few manmade impoundments (farm dams) occur in the study area. Due to their lack of water-associated flora these impoundments are not seen as being floristically sensitive. However, they are still viewed as 'no-go' zones in terms of the holistic environmental picture.

Rietfontein Substation is situated immediately to the north of the Rietfontein Dam. However, the proposed powerline does not impact on this dam at all.

There is one small manmade impoundment (farm dam) that the powerline crosses over, and two that it crosses close to near the T-off point. Fifty metre bufferzones have been demarcated around these dams and no construction or erection of powerline pylons may take place within these bufferzones. The small stream that the powerline crosses over, flows into a fairly large farm dam. This dam is situated to the north of the study area and will not be affected by the project at all.

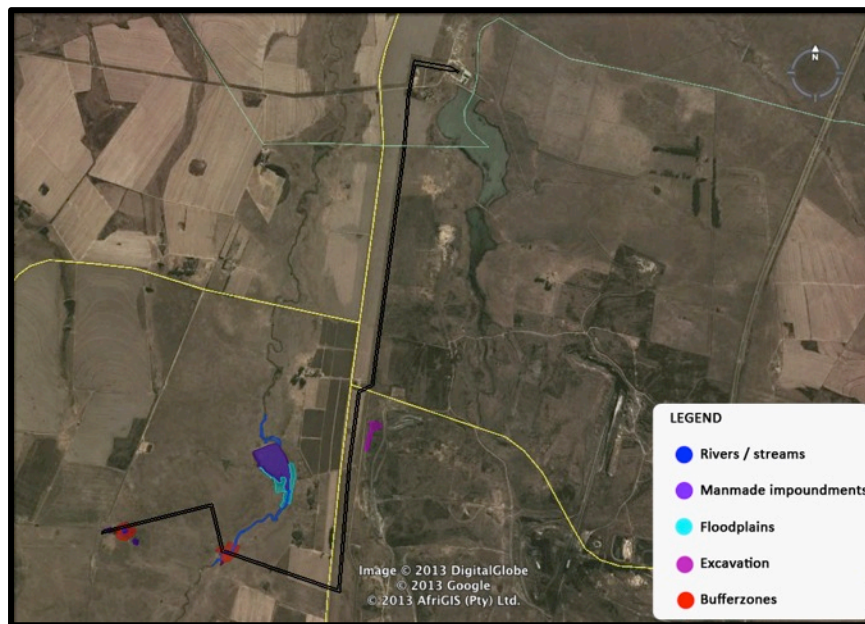


Figure: Overview of watercourses in study area

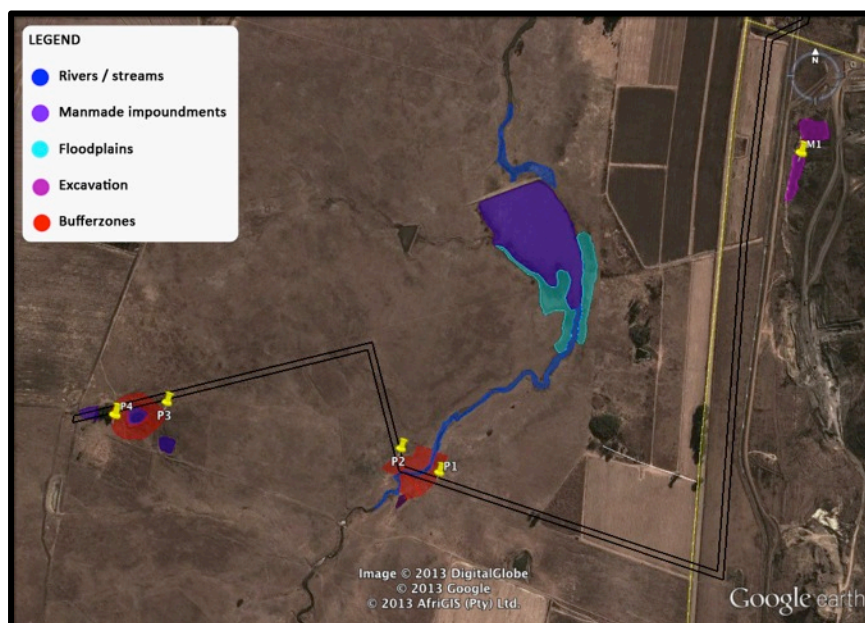


Figure: Affected watercourses with bufferzones

The edges of the 50m bufferzones (closest point at which a pylon may be erected) are shown in the figure above and are designated as P1, P2, P3 & P4. A large coal mine excavation, which fills with stormwater and underground water, is mark by a pin (M1).

No bufferzone has been demarcated around the excavation on the mine grounds. Eskom will have to negotiate directly with the relevant mine as to what their requirements are. From an ecological point of view no bufferzone is required as it will probably be back-filled at a later stage.

Ecological sensitivity





The ecological sensitivity of the study area is determined by combining the sensitivity analyses of both the floral and faunal components. The highest calculated sensitivity unit of the two categories is taken to represent the sensitivity of that ecological unit, whether it is floristic or faunal in nature. The ecological sensitivities of the habitats within the study area are shown in table below.

The transformed areas within the study site are not seen as sensitive. These include areas of regularly cultivated lands, rehabilitated open-cast mines and existing mining areas. These 'habitat types' are viewed as 'Go Zones' with Low sensitivity ratings. A map of the sensitivity ratings of the study area is shown in figure below. The description of the sensitivity ratings and colour codes used are shown in table below.

Table: Ecological sensitivity ratings of habitats in the study area

Ecological Community	Floristic Sensitivity	Faunal Sensitivity	Ecological Sensitivity	Development Go-Ahead
Cultivated Lands	Low	Low	Low	Go
Extensively grazed lands	Low	Low	Low	Go
Grassland Plains	Medium	Medium/Low	Medium/Low	Go-Slow
Rivers	Medium/High	Medium/High	Medium/High	Go-But
Impoundments	Low	Medium	Medium	Go-Slow

Table: Colour codes and descriptions for sensitivity maps and calculations

Colour Code	Description
	Areas of High ecological sensitivity. No-Go areas.
	Areas of Medium / High ecological sensitivity. Go-But areas.
	Areas of Medium ecological sensitivity. Go-Slow areas.
	Areas of Low to Medium / Low ecological sensitivity. Go areas.

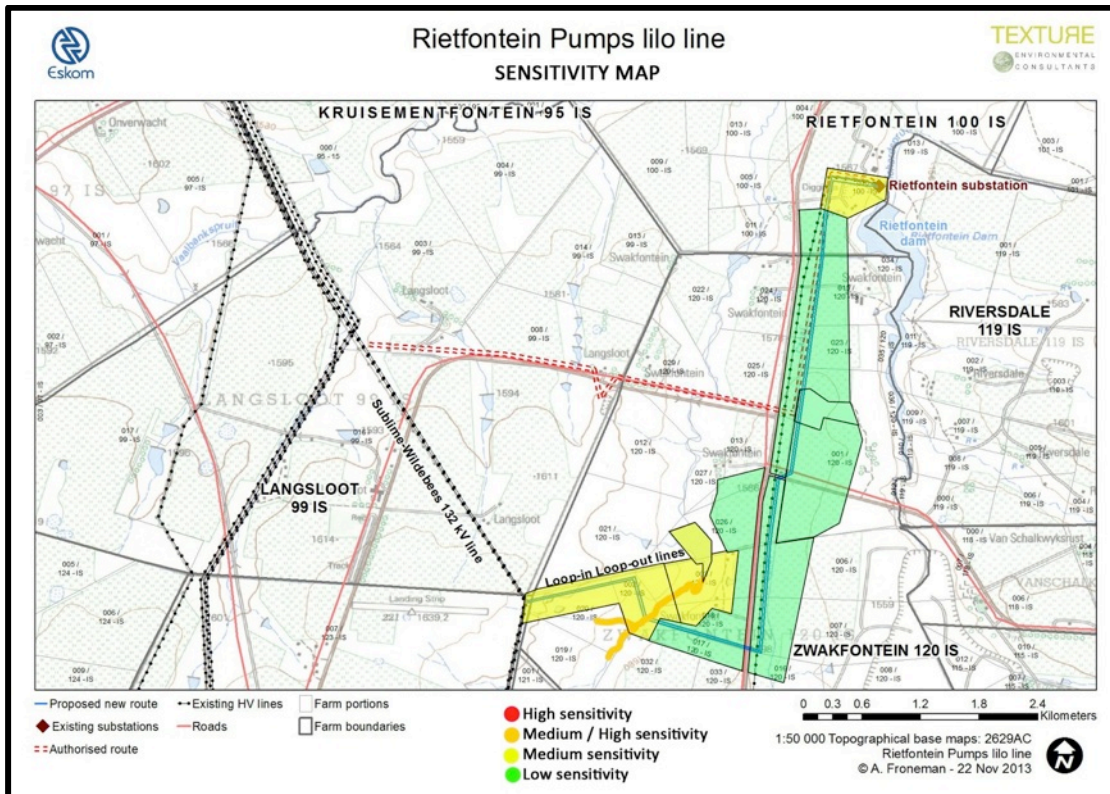


Figure: Sensitivity map of the study area

Impact assessment

1. Nature of impacts

No proposed impacts were identified as possibly being beneficial. The nature of the impacts are such that small, continuous footprints are left on the ground by the pylons of the powerlines. The impacted area is grassveld with no upper layer woody component. Much of the area is transformed vegetation, mainly due to cultivation and opencast coal mining.

The biggest impacts would be during the construction phase of the power line and the threat powerlines pose to birds. Any grasses and herbaceous plants in the effected area will quickly recover and not be disadvantaged in the medium- to long-term. Most fauna disturbed during construction of the power line would return to the area within the short-term.

2. Significance of impacts

2.1. Grassland plains

The Eastern Highveld Grassland is a vegetation type that is endangered and efforts need to be made to protect it as best as possible. Most of the grassland in the study area has being totally transformed and lost. In areas where grassland occurs the impact of the power line will be minimal, as the vegetation recovers quickly after construction.

2.2. Watercourses

Mitigating measures have been put in place to ensure that no construction takes place within watercourses, or within a 50m bufferzone. The impact on watercourses will thus be low, due to the mitigating measures put in place and the nature of the project.

General impacts rated before and after mitigating measures are implemented

Issue	Significance rating before and after mitigation	
	Before	After
Farming related issues		
Limiting of access to properties	Low	Low
Damage to access roads	Low	Low
Loss of agricultural potential	Low	Low
Impacts on seasonal activities	Low	Low
Natural environment		
Erosion	Low	Low
Impact on flora	Low	Low
Impact on fauna	Low	Low
Importation of alien vegetation	Low	Low
Impact of herbicides	Low	Low
Impact on conservation areas	Low	Low

Mitigating measures

1 Construction Phase

The main areas of concern are south of the farm dam where the power line corridor crosses over a small stream and through some grasslands. This is along the section of power line corridor that runs approximately in a NE-SW direction.

- No storage of equipment, vehicles or materials allowed in the natural grasslands or within 200m of any watercourses (including streams, rivers and farm dams). Even if the farm dams are presently completely dry, as is the case with 3 dams near the T-off point at the existing Wildebees-Sublime line.
- All activity around pylons in grasslands to be strictly limited to a 20m radius.
- No movement of any vehicles allowed within the demarcated bufferzones around the farm dams and streams.
- No power line pylons / poles to be erected within the demarcated 50m bufferzones around the farm dams and stream.
- No new roads or vehicle tracks to be constructed to cross the stream where the corridor crosses. Only existing farm roads to be used to move vehicles and materials from one side of the stream to the other.
- No cement allowed to be mixed in the veld or farmlands.
- No movement / transport of vehicles, machinery and materials is allowed on the southern side of the power line corridor that runs in a W-E direction. This area contains the best quality grassland and needs to be preserved as much as possible. All vehicle movement and materials to be kept to the northern side of this area.
- No new roads to be made during the construction phase. The movement of vehicles will create tracks in the grass. These tracks need to be kept to an absolute minimum and all vehicles must remain on these tracks.
- The movement of goods, vehicles and people in and out of grassland areas much be kept to an absolute minimum.
- All waste and excess material must be removed immediately and on a daily basis during construction. Special attention must be given to waste such as cement bags, plastic rapping around cement bags used during delivery of cement bags and excess wire. Construction staff needs to be specifically instructed not to leave/throw plastic drinking bottles, papers, etc. in the surrounding veld.
- The stringing of the power line cable in the area where it crosses over the stream and farm dams must be done by hand. No vehicles to pull the cable through the area (although this would be difficult in any case).
- No construction vehicles or other vehicles such as bakkies are allowed in the grasslands, stream and farm dam areas after rainfall. These areas will become saturated and movement of vehicles will cause damage to the areas.
- Any deep tracks caused by heavy vehicles in wet grass areas must be levelled (rehabilitated) once the area is accessible again. Preferably to be done by hand and not by a TLB or other mechanical vehicle that will cause further damage.
- All waste to be removed on a daily basis.

- All excess materials and waste (including spilled cement in the veld) to be removed immediately on completion of the building of the line (within 1 week of completion).
- All areas to be disturbed during construction to be rehabilitated during and within two (2) weeks after construction. Special attention must be given to areas around erected pylons where erosion due to stormwater run-off is likely to occur.
- All other mitigating measures laid out in the initial study (Maree, 2011) and in other specialist reports needs to be strictly implemented and adhered to.

2 Maintenance Phase

- No new tracks to be created by vehicles during maintenance and inspection visits.
- Areas around pylons to be inspected for erosion. Any erosion to be reported and rehabilitated immediately.
- Any materials obviously left behind during the construction phase to be noted and removed immediately.
- All other mitigating measures laid out in the initial study (Maree, 2011) and in other specialist reports needs to be strictly implemented and adhered to.

Potential Water Uses

There are no wetlands occurring in the study area and therefore no legal issues relating to such in terms of water uses, distances from delineated boundaries, etc.

The power line will need to cross over a small stream in the southern part of the study area. The stream has no riparian zone or naturally occurring floodplain.

No pylons may be erected directly in the main channel of the stream or within the main water body of any farm dam. No pylons may be erected within 32 metres of the edge of the banks of the stream or of farm dams. A buffer zone of 50m has been recommended, inside which no pylons may be erected.

With the implementation of the recommended mitigating and management measures there is no impact or water use on the watercourses in question. There is therefore no need for a water use licence application (WULA) or a registration of the project in terms of a general authorisation (GA).

4.2 BIRD IMPACT ASSESSMENT

The Bird Impact Assessment indicated the following:

Impacts that can be associated with a project of this nature include:

- collision of birds with the overhead cables;
- electrocution;
- destruction of habitat;
- and disturbance of birds.

Collisions pose the biggest potential risk to avifauna while habitat disturbance to avifauna is expected to be the second most important impact of this project.

Assessment of impacts

1 Electrocutions

Electrocution refers to the scenario where a bird is perched or attempts to perch on the electrical structure and causes an electrical short circuit by physically bridging the air gap between live components and/or live and earthed components. Electrocution will not be a major risk in this instance because the steel mono-pole is not a major electrocution hazard to birds, except in specific instances, and then only for vultures, which do not occur in the study area. No electrocution risk is therefore foreseen for the proposed 132kV revised alignment.

2 Collisions

The most direct impact that the proposed line could potentially have on Red Data birds is collisions with the overhead earth wire. Generally this impact is most likely to occur where the line skirts a dam and where the line will cross areas of unfragmented grassland, as this is the preferred habitat for most of the remaining large terrestrial Red Data species in Mpumalanga. Red Data species potentially at risk in grassland habitat are Secretarybird, Blue

Korhaan, Blue Crane, Southern Bald Ibis and Pallid Harrier. Greater Flamingo, African Marsh-Harrier, African Openbill and Caspian Tern could be at risk near dams.

3 Habitat destruction

A degree of habitat destruction and disturbance always takes place when a power line is constructed. In this instance the study area has been moderately transformed through agriculture, which has destroyed parts the original grassland. Direct habitat destruction is not foreseen to be a major impact (provided the construction is done in a sensitive manner), as the vegetation clearing under the new line is likely to be unnecessary, due to the nature of the vegetation (grassland). Damage to the existing grassland during construction should be minimal and temporary provided that sensitive construction methods are employed. Indirect habitat destruction through the fragmentation of grassland is likely to be the bigger impact. It has been shown that fragmentation of natural grassland in Mpumalanga by afforestation has had a detrimental impact on the densities and diversity of grassland species. The fragmentation of grassland in the study area has to some extent happened already through the construction of roads, power lines and agriculture, and the construction of this line could potentially aggravate that, especially if new roads are constructed in sensitive grassland habitat. However, adherence to sensitive construction methods in natural grassland habitat (see section 8 below) and the fact that the line is positioned next to existing power lines will help to prevent the further fragmentation of the remaining grassland habitat in the study area. Species most at risk of habitat destruction and fragmentation are Blue Crane, Secretarybird, Blue Korhaan, Southern Bald Ibis and Pallid Harrier.

4 Disturbance

The potential for disturbance of Red Data species is the biggest in the remaining grassland areas, for potentially breeding Blue Crane and Blue Korhaan. Disturbance during the construction phase is possible, but is to some extent mitigated by the temporary nature of the impact, and can be limited by sensitive construction practices).

Impact Analysis

The environmental significance of each potential impact was assessed using the following formula:

$$\text{Significance Points (SP)} = (\text{Magnitude} + \text{Duration} + \text{Scale}) \times \text{Probability}$$

The maximum value is 100 Significance Points (SP).

Potential environmental impacts were rated as high, moderate or low significance on the following basis:

- More than 60 significance points indicates high environmental significance.
- Between 30 and 60 significance points indicates moderate environmental significance.
- Less than 30 significance points indicates low environmental significance.

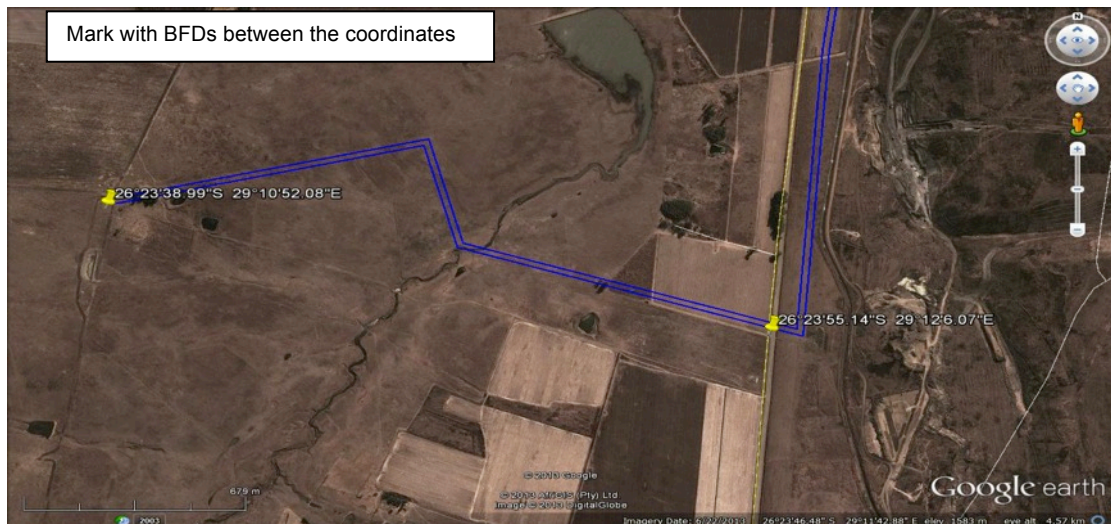
Table: Impact assessment tables

RIETFontein Revised Alternative Pre-Mitigation					
Impact	Probability	Duration	Magnitude	Scale	SP
Collisions with the earthwire	3	4	6	2	36 (moderate)
Habitat destruction (fragmentation)	3	4	6	2	36 (moderate)
Disturbance	3	2	4	1	21 (low)
RIETFontein Revised Alternative Post-Mitigation					
Collisions with the earthwire	2	4	4	2	20 (low)
Habitat destruction (fragmentation)	3	4	4	2	30 (moderate)
Disturbance	2	2	4	1	14 (low)

Mitigations

1 Collisions

Those sections of line that will require the application of bird flight diverters (BFDs) are indicated in the below sensitivity map. The proposed BFD is the Double Loop Bird Flight Diverter. BFDs should be placed on the earthwire, staggered, alternating black and white, 5 metres apart on the section of line between the co-ordinates and 26°23'38.99"S 29°10'52.08"E and 26°23'55.14"S 29°12'6.07"E.



2 Habitat destruction (fragmentation)

In general, all recommendations with regard to construction procedures in sensitive habitat as set out in the Wetland and Ecological Specialist Study must be strictly adhered to. In particular, maximum use of existing roads should be made during the construction phase. The section of the line between the T-off from the existing Wildebees-Sublime power line to the large dam on portion 26 of the Farm Zwakfontein 120-IS (see map above as well as Appendix A6) runs through sensitive grassland, and the following precautions should be taken in this section during the construction phase to prevent excessive habitat destruction and fragmentation of the grassland:

- Vehicle traffic in and out of the area should be restricted to what is absolutely necessary for the construction process;
- Only one vehicle track should be used in and out of the area;
- The construction footprint should be restricted to a 20m radius around the poles;
- Construction should not take place in the wet season, as vehicle traffic would then cause permanent damage to the grassland habitat if the ground is soft and wet.

3 Disturbance

The same as for habitat destruction.

4.3 HERITAGE IMPACT ASSESSMENT

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

The Phase 1 Heritage Impact Assessment study for the proposed Eskom Project revealed presence of heritage resources as outlined in Section 3 of the National Heritage Resources Act 25 of 1999 near the Eskom Project Area.

Site 1 – Grave yard

This is a graveyard containing at least 16 graves. (GPS: 26°23.437'S; 29°11.726'E.) These all have stone or cement dressings. Some have headstones made of stone. No legible information is visible. Therefore no surnames were identified and no dates of death are visible. This means that one of the three categories of graves is present being those with an unknown date of death (to be handled as those older than 60 years, called heritage graves).

However, these graves are about 1 km away from where the line would be. It therefore is too far from the proposed line to be impacted on. During construction activities, the developer should just be aware of the site and steer clear thereof. It is expected that no work will be done close to this site.

Site 2 – Grave yard

This is a graveyard containing at least 3 graves. These all have granite borders and headstones. The dates of death of the three individuals are 1935, 1950 and 1957. Two of the three categories of graves are present being those older than 60 years (called heritage graves) and those younger than 60 years. GPS: 26°23.847'S 29°11.879'E

Due to the sensitivity of this issue, graves are always regarded as having a high cultural significance. These graves are of a local significance and are therefore given a field rating of Grade IIIB. It may therefore be mitigated. There are two options when dealing with graves. The first would be to fence it in and write a management plan for the preservation thereof. This option will come into play if there is no direct impact on the graves. It should be kept in mind that there always is a secondary impact on graves since families may not have access thereto once a development commences.

The second option is to have the graves exhumed and the bodies reburied. This option is preferred when graves cannot be avoided by the development. Before exhumation can be done a process of social consultation is needed in order to find the associated families and obtain permission from them. For graves younger than 60 years only an undertaker is involved in the process, but for those older than 60 years or with an unknown date of death, an undertaker and archaeologist should be involved. Unknown graves are handled similarly to heritage graves.

However, these graves are about 18 m away from where the line would be. There may therefore be a direct impact. The line should therefore be deviated slightly in order to ensure that it is at least 20 m away from the site. As there may still be an impact during construction activities, the site should be demarcated so that construction activities steer clear thereof. It is important that the power line not be allowed to over span the graves and it should stay at least 20 m away thereof.

Recommendations

In conclusion it can be stated that the assessment of the area was conducted successfully. The sites of cultural significance found are indicated in the figure below.

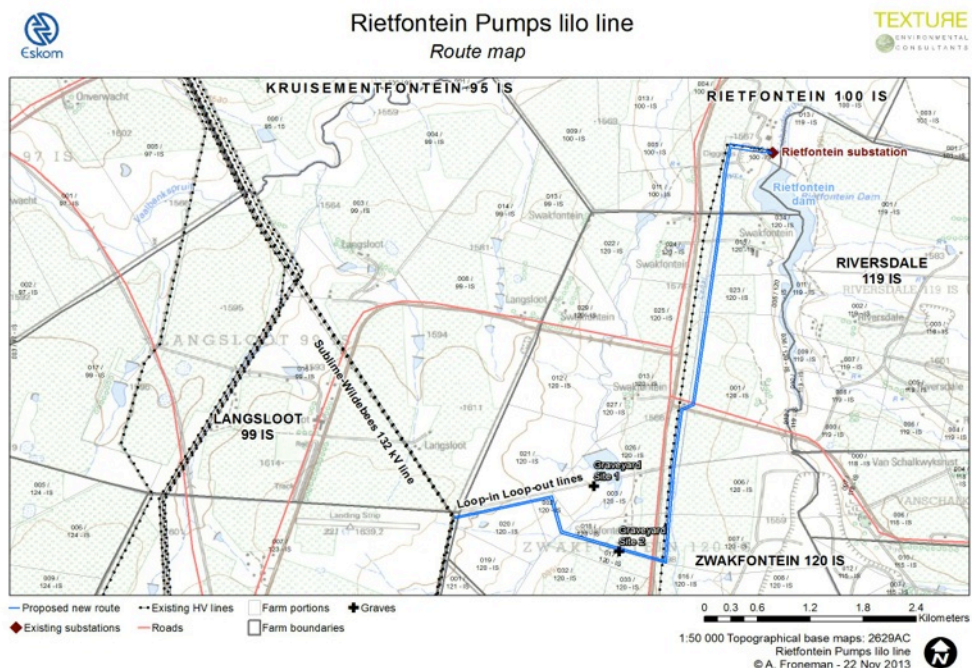


Figure Location of grave sites in the project area

The final recommendations are as follows:

- There will not be an impact on grave site no. 1. It should be left in situ, but the developer needs to ensure that they steer well clear thereof.
- The power line needs to be at least 20 m away from grave site no. 2. It therefore is necessary to do a slight deviation to the route.
- As there may be an impact during construction activities, the grave site should be demarcated during this time.

- The power line may not over span the grave site and should steer at least 20 m clear thereof.
- The proposed amended route may be utilized as long as the above mentioned recommendations are adhered to.
- It should be noted that the subterranean presence of archaeological and/or historical sites, features or artifacts are always a distinct possibility. Care should therefore be taken when development work commences that if any of these are accidentally discovered, a qualified archaeologist be called in to investigate.

5. CONCLUSION

From a heritage, ecological and bird impact viewpoint, the Amended Route is acceptable with the proposed mitigations being implemented. The landowners are in support of this proposed amendment.

The property descriptions of the amended route from the Rietfontein substation to the T-off with the Wildebees-Sublime powerline are:

Riversdale 119 IS portion 2 and 1; Zwakfontein 120 IS portion 15, 23, 1, 26, 6, 7, 18 and 2; and Dieplaagte 123 JS portion 7 in the Emalahleni Local Municipality in the Mpumalanga Province.

6. IMPACT ASSESSMENT

A summary of some of the anticipated **impacts** of the proposed project on the environment (as evaluated in the BA Report of October 2011 but adapted to include the amended route):

6.1. IMPACTS THAT MAY RESULT FROM THE PLANNING AND DESIGN PHASE

The potential impacts that are likely to occur as a result of the planning and design phase are described below. In addition the mitigation measures that may eliminate or reduce the potential impacts are provided:

1. Impact on natural habitat

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

Relevant to the project is the following:

- The transformed areas within the study site are not seen as sensitive. These include areas of regularly cultivated lands, rehabilitated open-cast mines and existing mining areas. These 'habitat types' are viewed as 'Go Zones' with Low sensitivity ratings.
- The ecological sensitivity calculations determined the sensitivity for rivers to be medium/high (Go-But zones) and impoundments to be medium (Go-Slow zones).
- Taking all sensitivity calculations into account along with the implementation of mitigating measures, the significance of the impacts of constructing the powerlines is seen as low.
- No proposed impacts were identified as possibly being beneficial. The nature of the impacts are such that small, continuous footprints are left on the ground by the pylons of the powerlines. The impacted area is grassveld with no upper layer woody component. Much of the area is transformed vegetation, mainly due to cultivation and opencast coal mining.
- The biggest impacts would be during the construction phase of the power line and the threat powerlines pose to birds. Any grasses and herbaceous plants in the effected area will quickly recover and not be disadvantaged in the medium- to long-term. Most fauna disturbed during construction of the power line would return to the area within the short-term.

Mitigation for impact on natural habitat

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

- Site specific measures in terms of ecology as identified by the ecologist, Johannes Maree (Tel 082 564 1211) must be included in the contract with the Contractor and implemented by the Contractor during the construction phase. Full report included in Appendix B1.
- Various species of indigenous trees and bush are protected by law in terms of the National Forests Act No 84 of 1998, which stipulates that it is necessary to obtain a permit from the relevant provincial office of the Department of Agriculture, Forestry and Fisheries in order to cut them. The ecological survey observed no protected tree species on the site.
- In **summary**, the **ecological status report** indicated that the amended powerline route for Rietfontein lilo line will not impact on or pass through any ecologically sensitive areas or No-Go areas.
- It was concluded that, from a vegetation and fauna perspective, **if duly mitigated and planned, the project will not impact significantly on the environment.**

2. Social Impact

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

Mitigation for Social Impact

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

- The design for the powerline route and the placement of structures should be accommodating to existing structures in the alignment of the route.
- Routes with evident visual disturbance caused by existing powerlines or roads are in general more acceptable than traversing through pristine area.
- For the reasons above the alternatives for the Rietfontein Pumps lilo line were designed to impact as minimal as possible on the receiving environment and the affected landowners.
- During the course of this application for amendment, the affected landowners were consulted with regarding the proposed project. Refer to the register of landowners on the route in Appendix C5a.
- The properties in question (servitude) will not be purchased and the registered owner will receive compensation for the use of the servitude. Further negotiations are taking place to confirm the details for the acquisition of the servitude and compensation therefore.
- A negotiator was appointed by the Applicant. The negotiator confirmed the specific requests/requirements with each landowner. These are stipulated in the final document, an option document. The option document is a binding document that reflects all the requirements of the landowner, for example: the exact positions of the pylons on his property; the negotiated compensation for the servitude; specific access arrangements to his property etc.

6.2 IMPACTS THAT MAY RESULT FROM THE CONSTRUCTION PHASE

The potential impacts that are likely to occur as a result of the construction phase are described below. In addition the mitigation measures that may eliminate or reduce the potential impacts are provided:

1. Impact on Wetlands

The Mpumalanga Highveld is known for its numerous wetlands of various types and sizes, spread throughout the region. For this reason, it was imperative to conduct site investigations to determine if any wetlands occur within the

study area. This is important because wetlands are seen as highly sensitive, no-go areas and have some legislation requirements not the same as other watercourses, such as streams or rivers. For example, contrary to streams or rivers, wetlands do not qualify for any General Authorisations (GA).

No wetlands occur within the study area.

2. Impact on rivers, streams, drainage lines and impoundments

No large (major) rivers are within the study area. The closest large rivers to the study area are the Trichardtspruit and the Dwars-in-die-Wegspruit. The Trichardtspruit flows into the Rietfontein Dam and then flows out into the Dwars-in-die-Wegspruit. Both rivers flow in a northerly direction and eventually into the Olifants River.

The powerline corridor only crosses over one small river (stream). This stream flows north into a fairly large farm dam that lies to the north of the study area (figure below). With the implementation of recommended mitigating measures, neither construction nor impacts, will take place within this stream or its immediate embankment areas.

Mitigation

The main areas of concern are south of the farm dam where the power line corridor crosses over a small stream and some grasslands. This is along the section of power line corridor that runs approximately in a NE-SW direction.

- No storage of equipment, vehicles or materials allowed in the natural grasslands or within 200m of any watercourses (including streams, rivers and farm dams). Even if the farm dams are presently completely dry, as is the case with 3 dams near the T-off point at the existing Wildebees-Sublime line.
- All activity around pylons in grasslands to be strictly limited to a 20m radius.
- No movement of any vehicles allowed within the demarcated bufferzones around the farm dams and streams.
- No power line pylons / poles to be erected within the demarcated 50m bufferzones around the farm dams and streams.
- No new roads or vehicle tracks to be constructed to cross the stream where the corridor crosses. Only existing farm roads to be used to move vehicles and materials from one side of the stream to the other.
- No cement allowed to be mixed in the veld or farmlands.
- No new roads to be made during the construction phase. The movement of vehicles will create tracks in the grass. These tracks need to be kept to an absolute minimum and all vehicles must remain on these tracks.
- The movement of goods, vehicles and people in and out of grassland areas much be kept to an absolute minimum.
- All waste and excess material must be removed immediately and on a daily basis during construction. Special attention must be given to waste such as cement bags, plastic rapping around cement bags used during delivery of cement bags and excess wire. Construction staff needs to be specifically instructed not to leave/throw plastic drinking bottles, papers, etc. in the surrounding veld.
- The stringing of the power line cable in the area where it crosses over the stream and farm dams must be done by hand. No vehicles to pull the cable through the area (although this would be difficult in any case).
- No construction vehicles or other vehicles such as bakkies are allowed in the grasslands, stream and farm dam areas after rainfall. These areas will become saturated and movement of vehicles will cause damage to the areas.
- Any deep tracks caused by heavy vehicles in wet grass areas must be levelled (rehabilitated) once the area is accessible again. Preferably to be done by hand and not by a TLB or other mechanical vehicle that will cause further damage.
- All waste to be removed on a daily basis.
- All excess materials and waste (including spilled cement in the veld) to be removed immediately on completion of the building of the line (within 1 week of completion).
- All areas to be disturbed during construction to be rehabilitated during and within two (2) weeks after construction. Special attention must be given to areas around erected pylons where erosion due to stormwater run-off is likely to occur.
- All other mitigating measures laid out in the initial study (Maree, 2011) and in other specialist reports needs to be strictly implemented and adhered to.

With the implementation of recommended mitigating measures, neither construction nor impacts, will take place within this stream or its immediate embankment areas. A 50m buffer zone from the edge of the stream bank has been implemented in which no construction (including the placement and erection of pylons) may take place.

3. Risk of Surface and Groundwater Pollution

- Construction materials and construction equipment will be stored at the campsite and used on site. The pollution of groundwater may result from any spillages that may occur. In addition, the campsite may accommodate construction workers, in which case solid and liquid effluents will be produced, including sewage and domestic solid waste.
- Therefore possible diesel, oil and lubricant spills are the main concern in respect of water pollution during construction together with organic pollution caused by inadequately managed facilities at site camps and at the work sites. The above may result in a change in groundwater quality with the associated negative impact on humans and the natural habitat.
- A management plan must be in place to rehabilitate any such spills. Part of the management strategy must further include the proper storage and removal of any by-products and building rubble.
- The Rietfontein lilo line commences at the Rietfontein Substation that is situated next to the Rietfontein Dam, which is a man-made dam fed by the Trichardtspruit. This is the largest body of open water in the immediate area, but falls outside of the actual study area.
- There is one small manmade impoundment (farm dams) that the powerline crosses over, and two that it crosses close to near the T-off point. Fifty metre bufferzones have been demarcated around these dams and no construction or erection of powerline pylons may take place within these bufferzones.
- The powerline corridor only crosses over one small river (stream). This stream flows north into a fairly large farm dam that lies to the north of the study area. This dam is situated to the north of the study area and will not be affected by the project at all.

Mitigation of Surface and Groundwater Pollution

Construction camp

- Preferably camp sites, storage facilities and other necessary temporary structures to be erected within the grounds of the relevant substations. That is, Rietfontein substation.
- Encourage the construction contractor to employ local people as far as is reasonably practical and encourage the contractor to transport them daily to and from site. This will reduce solid and liquid waste production and water demand at the site camps.
- According to the applicant and their contractors, accommodation for the construction workers is mostly rented in the nearest town. Sewage disposal will therefore be through the Municipality's main sewer line. Should accommodation in a construction camp be unavoidable, then the measures as stipulated in the EMPr must be adhered to.
- Included as requirement in the EMPr, under heading "*Waste Management*" is the following: The disposal of chemical toilets should be at a registered or licensed sewage disposal facility. Proof of agreement between the applicant and the sewage disposal facility for such disposal, confirming that there will be enough capacity to accommodate additional waste, should be submitted to the Department of Water Affairs.
- No water for drinking or cooking purposes should be used from out of streams, vleis or farm dams in the vicinity. It is important for relevant management or contractors to ensure that staff/workers are supplied regularly with adequate clean drinking and cooking water.
- The water used to supply the site with potable water is sourced/purchased from farmers in the area with pre-existing rights. The contractor should deliver the water to the site in the applicable water tankers. These requirements are included in the EMPRr under the headings "Construction site" and "Ground and Surface Water".
- In all cases, abstraction of water for construction purposes will require a permit from the Department of Water Affairs unless pre-existing rights are purchased from farmers. For this project, water tanks will be used during construction.
- Mixing of cement, concrete, paints, solvents, sealants and adhesive must be done in specified areas on concrete aprons or on protected plastic linings to contain spillage or overflows onto soil to avoid contamination of underground water.

Diesel, hydraulic fluid and lubricants

- Minimize on-site storage of petroleum products. Relevant to this project, is that the only dangerous goods to be stored on site is diesel. The diesel tank can hold 2000 litres (2 cubic meters). Of relevance is: GNR 544, listed activity nr 13 that states "...storages of dangerous goods with a capacity above 80 cubic meters...". The amount of diesel that will be stored on site (2 cubic meters) is therefore relatively small and well below the threshold of the listed activity of 80 cubic meters.
- Precautionary methods to be implemented for handling of oil and substances that could impact on the soils, ground- and surface water :
 - No hazardous substances may be stored on site for a period exceeding 90 days. (Note that the Department of Water Affairs requires a permit for a waste disposal site in the event that longer storage periods apply).
 - All hazardous substances at the site must be adequately stored and accurately identified, recorded and labelled. The storage of any hazardous substances must take place in a secured lock-up building or covered area.
 - Build adequate structures (berms and containment structures) to contain any oil spills which might emanate from transformers (relevant to this project is that no substation with its applicable transformers will be constructed).
 - Bund storage tanks to 120% of capacity.
 - Ensure proper maintenance procedures in place for vehicles and equipment.
 - Servicing of vehicles to be in designated areas with appropriate spill management procedures in place.
 - Ensure measures to contain spills readily available on site (spill kits).
 - A container filled with sand to soak up any spillages, as well as an empty container into which the "contaminated" sand could be placed and stored for collection by the supplier of the chemicals or oils must be provided.
 - The Regional Representative of the Department of Water Affairs and Forestry should immediately be informed if pollution of any groundwater or soils occurs. They will give instruction on actions to be taken in this regard.

Site camp domestic waste (kitchens, showers)

- Deposit solid waste in containers and dispose of regularly. Any waste that cannot be recycled will be transported to the appropriate landfill site licensed in terms of section 20 (b) of the National Environment Management Waste Act, 2008 (Act No 59 of 2008). Proof to be kept by contractor.
- Dispose of liquid waste (grey water) with sewerage.

Site camp sewage

- Minimize on-site accommodation.
- Supply, maintain and enforce the use of mobile toilets at the work sites.
- Install appropriate facilities at the campsites. Preferably utilize municipal systems (conservancy tanks with periodic removal) or chemical toilets.
- No ablution facilities, whether portable or not, to be within 200m of the banks of any watercourse.
- Included as requirement in the EMPr under heading "*Waste Management*" is the following: The disposal of chemical toilets should be at a registered or licensed sewage disposal facility. Proof of agreement between the applicant and the sewage disposal facility for such disposal, confirming that there will be enough capacity to accommodate additional waste, should be submitted to the Department of Water Affairs.

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

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

Watercourses

- In general, it is strongly recommended that no construction of any sort takes place within aquatic habitats encountered, as these habitats are viewed as sensitive.
- The watercourses in the area do not have associated riparian vegetation which is a natural occurrence in the grassland ecosystems of the area. This of course helps limit the impact on the environment when servitudes need to cross over any such watercourses.
- Under no circumstances may any pylons be erected directly within a watercourse (i.e. river, stream or seasonal drainage line) when crossing over such.
- Positioning of foundation slabs for pylons must be a minimum of 50m away from the edges (banks) of any perennial or seasonal streams.
- No pylons are to be erected below any ground farm dams directly in line with the water flow (or potential water flow).
- No temporary or other construction facilities to be erected or stored within 200m of the banks or edges of any watercourse, including farm dams.
- There will therefore be no impact on the watercourse or waterflow with regards to impeding flow or altering flow as discussed in Section 21 c & i of the Water Act and relevant General Authorisations. Therefore, there will be no need for Eskom to apply for a water use licence or register in terms of the General Authorisations.

Wetlands and vlei areas

- There are no wetlands or vlei areas within the study area.

4. Impact of erosion

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

Mitigation of Impact of erosion

- Erosion in the area is low due to the flat, low undulating plains with very few steep contours.
- Neither drainage nor erosion are seen to be a significant threat should the mitigation as proposed be implemented.
- Construction activities should be well managed to prevent erosion and the following is relevant:
- It is strongly recommended that no construction of any sort take place within aquatic habitats encountered, as these habitats are viewed as sensitive.
- Under no circumstances may any pylons be erected directly within a watercourse (i.e. river, stream or seasonal drainage line) when crossing over such.
- Positioning of foundation slabs for pylons must be a minimum of 50m away from the edges (banks) of any perennial or seasonal streams.
- No pylons are to be erected below any ground farm dams directly in line with the water flow (or potential water flow).
- No temporary or other construction facilities to be erected or stored within 200m of the banks or edges of any watercourse, including farm dams.
- No ablution facilities, whether portable or not, to be within 200m of the banks of any watercourse.
- As much as possible place pylons along the same perpendicular line as those of nearby powerlines.
- Construction must be limited to drier periods.
- Access roads must be kept to a minimum. These same roads need to be used later for access during site inspections, line maintenance, etc. In other words, proper planning must be done so that on completion of the project there will be no need for the subsequent construction of other access roads. No access roads to be made through temporary or permanent vleis, pans or wetlands at all.
- Unnecessary clearing of flora resulting in exposed soil prone to erosive conditions should be avoided.

- No trees or existing grass strata outside of the powerline corridor should be removed to lower any kinetic energy of potential run-off.
- Indigenous vegetation, which does not interfere with the safe operation of the substation/ powerline, should be left undisturbed.
- The eradication of any alien vegetation should be followed up as soon as possible by replacement with indigenous vegetation to ensure quick and sufficient coverage of exposed soil.
- Pro-active measures must be implemented to curb erosion and to rehabilitate eroded areas. All areas susceptible to erosion must be installed with temporary and permanent diversion channels and berms to prevent concentration of surface water and scouring of slopes and banks, thereby countering soil erosion.
- Specifications for topsoil storage and replacement to ensure sufficient soil coverage as soon as possible after construction activities as identified in the Environmental Management Plan must be implemented.
- All cleared areas must be ripped and rehabilitated after construction. The top 200mm layer of topsoil must be removed and stockpiled in heaps not higher than 2m and replaced on the construction areas once the activities have been completed. The affected areas should be replanted with a grass mixture indigenous to the area.

5. Solid Waste

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

Mitigation of Solid waste

- The construction teams should ensure that all waste is removed from the site and that they recycle the items that can be used again. Unusable waste steel and aluminum will be sold to scrap dealers for recycling at the Eskom stores.
- Any waste that cannot be recycled will be transported to the appropriate landfill site licensed in terms of section 20 (b) of the National Environment Management Waste Act 59 of 2008. A copy of the service agreement, to verify the disposal sites that will be accepting the waste, should be submitted to the Department of Water Affairs.
- Proper and adequate containers (rubbish bins) to be put in campsites for the temporary disposal of food waste and general litter generated by construction workers. These containers need to close securely to avoid items (eg. paper and plastic) been blown into the veld, or been pushed over and rummaged through by wild animals. Proper waster management is essential.
- Containers for food and general waste to be removed weekly to avoid bins overflowing their capacity.
- Under no circumstances may any sewage, waste food or general litter be dumped in the veld.
- Stockpiling of construction material should be such that pollution of water resources is prevented and that the materials will be retained in a storm event.
- Once construction is completed, the contractor has to obtain written consent from the relevant landowner that the construction site, construction areas, access routes, etc. are sufficiently and adequately rehabilitated to the landowner's satisfaction.

6. Impact of labourers

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

Mitigation of impact of labourers

- A small number of construction workers will be on site. A large workforce is thus not expected. Distribution line construction further requires highly skilled individuals but also provide work for semi to lesser skilled labourers. Even if all the required labourers (highly skilled to unskilled) will be sourced from outside the study area (worst case scenario) it is not anticipated that the relatively small construction workforce will have an impact on the population size and density of the local communities within the study area.

- Given the specialists nature of distribution line construction, specialist contractor teams will be appointed by Eskom for the construction phase of the project. These contractor teams will consist of highly skilled specialists, semi-skilled and unskilled workers. The nature, extent and intensity of this impact will thus depend on the number of locals that will form part of the contractor teams and whether construction camps would be set up to house the temporary “outside” workforce within the study area.
- Due to the anticipated size of the construction workforce, it is apparent that the impacts associated with the inflow of temporary workers to the study area are not expected to result in severe negative impacts on the local communities’ social networks even if the majority of the workforce will be from outside the community (worst case scenario). It is furthermore not expected that the inflow of temporary workers will put additional pressure on the current infrastructure and service delivery in the area, as their immediate needs would be provided through the construction camp infrastructure and services provided on site, or by the existing infrastructure and services available in the study area.
- Mitigation measures to counter impact on the natural environment and limit potential for crime include specifications in terms of control of construction workers (ie provision of toilet and cooking facilities, provision of either accommodation facilities or transport facilities, implementation of Environmental Educational Programmes etc). Accommodation for labourers must either be limited to guarding personnel on the construction site (with labourers transported to and from existing neighbouring towns) or a separate fenced and controlled area where proper accommodation and relevant facilities are provided.
- Eskom and the contractors should maximise the use of local labour where possible by developing a strategy to involve local labour in the contractor teams and construction process.
- Before construction commences, representatives from the local authority and community-based organisations, as well as neighbouring and/or affected residents should be informed of the details of the construction company (contractor), size of the workforce and construction schedules.
- Conditions stipulated by property owners in terms of the construction activities should be implemented and monitored.
- Contractors and temporary employees should behave fittingly at all times.
- Workers should receive fines if they do not adhere to the conditions, rules and regulations.
- Workers must be made aware of property owners’ concerns regarding construction work on their properties so that they are familiar with the sensitive issues.
- A specific contact person has to be identified to allow community members and property owners to easily direct their queries and concerns and obtain general information regarding the construction process.
- Prepare a comprehensive Environmental Management Programme (EMPr) for the control of environmental impacts at the site camps.
- The EMPr has to include specific provision for the management of the following:
 - Site location
 - Solid waste
 - Liquid effluent (sewage)
 - Storm water
 - Litter
 - Nuisance (Noise)
 - Hazardous substances
 - Social pathologies (prostitution, drunkenness, theft)
 - HIV/Aids prevention.
- Develop an HIV/Aids workplace policy.
- Ensure that the contractors develop a comprehensive site camp management plan. This should apply even in the case of the limited accommodation camps recommended above.
- Plan campsites an appropriate distance from any facility where it can cause a nuisance.
- Camp-site, storage facilities and other necessary temporary structures to preferably be erected within the confines of the mine area or powerline corridor.

7. Employment Opportunities

Power line construction does not create large scale job opportunities. The type of jobs required could include project and construction managers, contract supervisors, construction foremen and general labourers (skilled and semi-skilled). Opportunities for local labour are thus definitely possible, although limited when the population size is

taken into consideration. Due to the social character of the population within the study area and specifically Secunda, any possible job opportunities for locals should still be viewed as a social benefit as the limited number of job opportunities (even temporary) could still have some positive economic impact on select families. The proposed project could further assist with capacity building through on-site training and skills development opportunities.

Mitigation

The following mitigation measures could be implemented to enhance the positive aspects associated with local job creation:

- It is recommended that the contractor employ local semi-skilled and unskilled labour from the study area to avoid conflict between locals and outsiders with regards to the securing of employment.
- Eskom should stipulate in their contracts with the contractors that local labour should be used for e.g. bush clearing, road construction and fencing.
- Ward councillors could assist in determining available local labourers that could be considered for possible employment.
- Eskom should ensure an equitable process whereby minorities and previously disadvantaged individuals (women) are also taken into account.
- It is recommended that Eskom implements a skills audit and develops a skills database.
- Capacity building and skills transfer should immediately commence to ensure that locals are employable.
- It should be ensured that contractors use local skills, or train semi-skilled people or re-skill appropriate candidates for employment purposes where possible.
- Onsite training should focus on the development of transferable skills (technical, marketing and entrepreneurial skills) to ensure long-term benefits to the individuals involved.

8. Local Procurement

At this stage no information is available with regards to the material and quantity of material required, as well as for consumables (eg fuel for construction vehicles) for the construction of the distribution line. The impact of the project on the procurement of local businesses and previously Historically Disadvantaged South Africans (HDSA's) can therefore not be determined at this stage. It is, however recommended that Eskom commits itself to involving locals (HDSA's and SMME's) in the procurement of capital goods, consumables and services, if these are locally available. Due to the specialised material and equipment used, the intensity of this impact is considered to be of a low magnitude, although moderately probable.

Mitigation

The following mitigation measures are proposed:

- Local procurement should be aimed at as far as possible.
- Local sourcing of materials will assist in providing more economic and employment opportunities for the local people.
- Local procurement could result in indirect economic spin-offs and benefits such as increased income, and expansion of other local economic sectors.

9. Local economic benefits

Local economic benefits during the construction phase will include the temporary employment of local labourers and short term socio-economic spin offs such as increased buying power around the construction sites, and small scale economic advancement of entrepreneurs (eg those selling food and goods to the construction workers). Although the benefits of temporary employment is short lived, it should still be seen as a positive impact due to the high unemployment rates and levels of poverty found in the study area.

Mitigation

The following is recommended to enhance the socio-economic benefits during the construction phase:

- Maximise the use of local labour even if the number of locals that will be employed will be limited.
- Accommodate, but regulate the activities of vendors in the vicinity of the construction areas and at the construction camps.

10. Daily living and movement patterns

The construction timeframe for the distribution line is estimated to be a only a few months. This process will include site preparations, vegetation clearance (where required), excavations for pylon foundations, assembly and erection of the pylons, and stringing of the line. Heavy construction vehicles will be used to transport material to the construction sites but due to the limited number of these, the negative impacts on the residents' daily living and movement patterns are expected to be of a low magnitude. Main Corridors that could be negatively affected, even by a limited number of construction vehicles, include the R547, R548 and the N17.

Where construction work has to be undertaken it could have a negative impact on adjacent land owners' daily living and movement patterns. Impacts on daily living and movement patterns also refer to the increased *noise pollution* during construction activities, especially where construction will take place in close proximity to dwellings and in low ambient noise areas (agricultural land). Right-of-way clearing and construction activities, however, will be short term. Noise will thus only be temporary generated and if construction activities adhere to all relevant legislation in this regard and limit construction activities to normal working hours, the impact is anticipated to be minimal.

Of relevance is that the proposed project is at the Shondoni Mine Project at the Middelbult Colliery where existing mining associated activities are taking place.

The impact of the presence of construction camps on the daily living and movement patterns of residents is discussed in this report. As both of the Route alignments traverse open graasland areas, the anticipated impact on the nearby residents' daily living and movement patterns are anticipated to be similar.

Mitigation

- Property owners that will be affected by the distribution line construction should be consulted prior to the construction phase with regards to the construction schedules, transportation corridors, construction of additional access roads and construction methods to be used.
- Eskom should keep the construction of access roads to a minimum and rather use the existing infrastructure, as the construction and maintenance of these roads are very costly, impact on the residents' daily living and movement patterns, and create a potential for erosion.
- Rehabilitation of new access roads for construction vehicles should be undertaken as soon as the construction process allows.
- There should be strict adherence to speed limits when using local roads and when travelling through residential areas.
- Access Corridors and access points for heavy construction vehicles should be indicated to warn motorists of the movement of these vehicles.
- Limit the movement of construction vehicles to off-peak periods (where possible).
- Limit the movement of construction vehicles in areas where sensitive receptors are situated e.g. schools and pedestrians.

Noise mitigation

- Machinery and vehicles should be in good working order to limit excessive noise pollution.
- Construction hours will be restricted to specific periods which exclude Sundays and public holidays.
- All construction workers will be allowed only for specified day light hours and will be transported from the site by the contractors.

11. Impact on Safety and Security

Safety and security impacts include construction related risks and accidents, vehicular accidents, the perceived increase in crime as a result of outsiders being in the area, a threat to the safety of children or individuals in the area, mortality to stock and other farm animals close to the site, including stock theft and poaching and the possible increased risks of veld fires. This impact will be more severe in the areas where the construction sites are in close proximity to residential neighbourhoods and in areas with high levels of pedestrian movement e.g. in the vicinity of schools.

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

Mitigation of Impact on Safety and Security

Safety mitigation measures

- Personal protective equipment and clothing should be given to workers and enforced to avoid construction related accidents.
- Construction workers should wear clearly identifiable clothing that allows landowners to easily identify contract workers on site.
- It is recommended that Eskom embark on a traffic awareness campaign prior to the construction phase in the high density residential areas focused on schools and pedestrians.
- The movement of construction vehicles through the local communities should be limited to off-peak periods (if possible) to minimise adverse impacts on the movement of pedestrians (individuals walking to and from work and schoolchildren) and to a lesser extent on private vehicular traffic.
- Construction vehicles should keep to the speed limits.
- Signs must be erected at strategic locations throughout the area, warning residents and visitors about the hazards around the construction site and the presence of heavy vehicles.
- The contractor and Eskom should develop safety management plans which should be discussed with construction workers prior to construction.
- Construction workers should preferably not prepare food at the construction sites to limit the risks of veld fires.
- Construction sites should be fenced off to avoid unauthorised entry.
- Local labour should be used as far as possible to limit the influx of an outside work force and potential outside jobseekers.
- Safety and security measures should be discussed with the property owners and local safety and security structures eg the local Community Policing Forums.
- During construction the Contractor should put up a temporary fence around the campsite and work areas.
- All construction activities should take place within fenced or otherwise demarcated areas.
- All excavated areas for pylons must be fenced and barrier tape must be placed around them to prevent humans and animals from falling into them.
- The contractors must appoint their own guards to safeguard their materials.
- Once construction is completed, the contractor has to obtain written consent from the relevant landowner that the construction site, construction areas, access routes, etc. are sufficiently and adequately rehabilitated to the landowners' satisfaction.
- Should blasting be deemed necessary, it may only be undertaken by specialists in the field and should be limited to localised areas. All relevant legislation must be adhered to.
- All adjacent landowners have to be informed of the blasting programme prior to any blasting taking place. Contractors must liaise personally with adjacent landowners. All communication in this regard must be documented.
- A Fire Management Plan has to be identified during the pre-construction phase and must be implemented throughout the construction and operational phases of the project.
 - No open fires to be allowed in the power line corridors or adjacent areas.
 - No open fires to be allowed outside of the substations sites.
 - Cooking or fires must be kept to within the demarcated area of the substation. Special care needs to be taken for the prevention of run away veld fires into the adjacent area.
 - In the campsite a designated area for camp fires and cooking needs to be made. Should open fires be used then an area of at least 2m by 2m needs to be cleared of any flammable materials such as grass. This is also necessary with the use of portable gas or paraffin burners typically used for cooking.
 - No fires to be left unattended or allowed to burn through the night.
 - Fire fighting equipment must be readily available on site during welding and cutting operations.
 - Branches and other debris resulting from pruning processes should not be left below conductors or in areas where it will pose a risk to infrastructure.
 - No fires may be made for the burning of vegetation and waste.
 - Fires shall not be made for the purpose of chasing or disturbing indigenous fauna.
 - Construction workers should be barred from collecting firewood or any medicinal and protected plant species.
 - No firearms should be allowed at the construction sites.

12. Impact on natural habitat

The construction of the powerlines will have impact on the natural environment. This impact is associated with disturbance to and/or destruction of the flora component.

- During construction the project could cause a significant impact where insensitive clearing for construction and access purposes, etc. is required. Insensitive clearing can cause the destruction of habitat. Not only does vegetation removal represent a loss of seed and organic matter, but it is also a loss of protection to plants and small animals. Insensitive vegetation clearance can also cause erosion.
- Pressure on the natural environment will occur as a result of an influx of labourers into the area that could involve the collection of firewood and medicinal plants, as well as uncontrolled veld fires.
- Various species of indigenous trees and bush are protected by law in terms of the National Forests Act No 84 of 1998, which stipulates that it is necessary to obtain a permit from the relevant provincial office of the Department of Agriculture, Forestry and Fisheries in order to cut, trim or remove them. For this project, no permit applications are necessary.

Mitigation of impact on natural habitat

- Site-specific measures for the specific property as identified by the ecologist, must be implemented by the Contractor during the construction phase and by Eskom and the maintenance teams during the operational phase. Refer to mitigation measures provided in the Planning phase.
- Relevant to this project is that no proposed impacts on the ecology of the environment were identified as possibly being beneficial. The natures of the impacts are such that small, continuous footprints are left on the ground by the pylons of the powerlines. The impacted area is grassveld with few to no trees, so there will be no-to-minimal impact on any upper herbaceous layer. Much of the area is transformed vegetation, mainly due to cultivation and to a lesser degree due to buildings (eg. Houses, powerstations, etc.). If drainage lines and other sensitive areas are avoided, along with the proper implementation of all mitigating measures, then the nature of the impacts will be low. The biggest impacts would probably be in the form of a loss of some cultivation land and the threat powerlines pose to birds. Any grasses and herbaceous plants in the effected area will quickly recover and not be disadvantaged in the medium- to long-term.
- The Eastern Highveld Grassland is a vegetation type that is endangered and efforts need to be made to protect it as best as possible. The negative impacts of powerlines on the study areas will not be significant *per se* with regards to the ecology. This is because large areas of the proposed servitudes are already transformed due to cultivation and development such as power stations, mining, urbanisation, etc. Furthermore, the nature of the ecological impact of powerlines is relatively low. However, because of the endangered status of the vegetation type and the serious lack of conservation thereof, it is imperative to still proceed with caution.
- Ensure that no trees, even if they are alien species, or existing grass strata outside of the servitude corridor be removed to lower any kinetic energy of potential run-off, that disturbed surface areas in the construction phase be restored and lastly that no open trenches or mounds of soils created during construction be left.
- The procedures for vegetation clearance and maintenance within servitudes and on Eskom owned land as prescribed by Eskom must be implemented. Selective bush clearing must take place, i.e. indigenous vegetation, which does not interfere with the safe operation of the structure, should be left undisturbed.
- Where clearing of access for construction is essential, the maximum width to be cleared is 8m, 4m on either side of the alignment for the powerline. Clearing for tower positions must be the minimum required for the specific tower.

13. Impact on Birds

The possible impacts of the proposed construction of powerlines on birds are the following:

Loss of breeding, foraging and roosting habitat through habitat transformation

During the construction phase of powerlines, some habitat destruction and alteration inevitably takes place. This happens with the construction of access roads, and the clearing of servitudes. These activities have an impact on birds breeding, foraging and roosting in or in close proximity of the site, through the modification of habitat.

Direct habitat destruction is not foreseen to be a major impact (provided the construction is done in a sensitive manner), as the vegetation clearing under the new line is likely to be unnecessary, due to the nature of the vegetation (grassland). Damage to the existing grassland during construction should be minimal and temporary provided that sensitive construction methods are employed. Indirect habitat destruction through the fragmentation of grassland is likely to be the bigger impact. However, adherence to sensitive construction methods in natural

grassland habitat and the fact that the line is positioned next to existing power lines will help to prevent the further fragmentation of the remaining grassland habitat in the study area. Species most at risk of habitat destruction and fragmentation are Blue Crane, Secretarybird, Blue Korhaan, Southern Bald Ibis and Pallid Harrier.

The potential for disturbance of Red Data species is the biggest in the remaining grassland areas, for potentially breeding Blue Crane and Blue Korhaan. Disturbance during the construction phase is possible, but is to some extent mitigated by the temporary nature of the impact, and can be limited by sensitive construction practices.

Mitigation of impact

In general, all recommendations with regard to construction procedures in sensitive habitat as set out in the Wetland and Ecological Specialist Study must be strictly adhered to. In particular, maximum use of existing roads should be made during the construction phase. The section of the line between the T-off from the existing Wildebees-Sublime power line past the large dam on portion 26 of the Farm Zwakfontein 120-IS up to the district road runs through sensitive grassland, and the following precautions should be taken in this section during the construction phase to prevent excessive habitat destruction and fragmentation of the grassland:

- Vehicle traffic in and out of the area should be restricted to what is absolutely necessary for the construction process;
- Only one vehicle track should be used in and out of the area;
- The construction footprint should be restricted to a 20m radius around the poles;
- Construction should not take place in the wet season, as vehicle traffic would then cause permanent damage to the grassland habitat if the ground is soft and wet.

14. Impact on cultural heritage resources

Construction can destroy heritage resources ('national estate') should it occur in or near the proposed project area. The **Phase 1 Heritage Impact Assessment** study for the proposed Eskom Project revealed a graveyard in the Eskom Project Area. This graveyard (site no. 2) contains at least 3 graves. GPS: 26°23.847'S 29°11.879'E.

Due to the sensitivity of this issue, graves are always regarded as having a **high** cultural significance. However, these graves are about 18 m away from where the line would be and therefore there might be direct impact. As there may be an impact during construction activities, the site should be demarcated so that construction activities steer clear thereof. It is important that the power line not be allowed to over span the graves and it should stay at least 20 m away thereof.

Another site (site no. 1) with at least 16 graves is about 1km away from where the line would be and is too far to be impacted on. During construction activities, the developer should just be aware of the site and steer clear thereof. It is expected that no work will be done close to this site. GPS: 26°23.437'S 29°11.726'E

Mitigation of impact on cultural heritage resources

- There will not be an impact on grave site no. 1. It should be left *in situ*, but the developer needs to ensure that they steer well clear thereof.
- The power line needs to be at least 20 m away from grave site no. 2. It therefore is necessary to do a slight deviation to the route.
- As there may be an impact during construction activities, the grave site should be demarcated during this time.
- The power line may not over span the grave site and should steer at least 20 m clear thereof.
- The proposed amended route may be utilized as long as the above mentioned recommendations are adhered to.
- It should be noted that the subterranean presence of archaeological and/or historical sites, features or artifacts are always a distinct possibility. Care should therefore be taken when development work commences that if any of these are accidentally discovered, a qualified archaeologist be called in to investigate.
- If any heritage resources of significance are exposed during the implementation of this Eskom Project, the South African Heritage Resources Authority (SAHRA) should be notified immediately, all construction activities must be stopped and an archaeologist accredited with the Association for Southern African Professional Archaeologist (ASAPA) should be notified in order to determine appropriate mitigation measures for the discovered finds. This may include obtaining the necessary authorisation (permits) from SAHRA to conduct the mitigating measures.

15. Visual impact

The visual impact resulting from the construction of powerlines can be substantial in a more rural environment.

Should sensitive vegetation clearing as proposed in the mitigating measures, be exercised then the visual impact of the powerlines should not be significant.

Mitigation of visual impact

The following is relevant to this project:

- Impact to the natural habitat as a result of the project is to be expected. Construction could cause a significant impact where insensitive clearing for construction and access purposes, etc. is required. Insensitive clearing can cause the destruction of habitat.
- It is suggested that any existing servitude roads as well as existing roads must be used during construction and maintenance of the powerlines.
- The procedures for vegetation clearance and maintenance within overhead powerline servitudes and on Eskom owned land, updated September 2009 must be implemented. These procedures includes i.e. the following:
 - Where clearing for an access road is essential, the maximum width to be cleared is 8m.
 - Clearing for pylon positions must be the minimum required for the specific tower, not more than a 5m radius around the structure position.
 - Indigenous vegetation, which does not interfere with the safe operation of the powerline, should be left undisturbed.

16. Loss of agricultural land

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

- The land capabilities of the area within which the proposed servitudes fall is that of good arable and grazing capabilities. Ground water potential is however unknown, but the area has good rainfall figures along with deep, good soils.
- The general quality and fertility of the soils is good as well as the presence of palatable grazing grasses. The actual carrying capacity of the open areas is relatively high when compared to many other bushveld areas. Infrastructure for commercial agricultural practices is good.

Mitigation of impact on Agriculture

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

- The land uses are either cultivation (typically dry-land mielies); grazing for cattle; servitudes for Eskom powerlines; mine land; or open grassveld. The predominant land uses are cultivation and grazing.
- The impact to agricultural activities will only be for a limited time during construction. It is not envisaged that any construction roads will be needed. It is recommended to use any existing roads or powerline servitudes during construction. Should it be deemed necessary, an access road of 8m wide could be cleared to construct the powerline. After construction, the access road will be revegetated and normal agricultural activities can continue under the powerline as usual.
- No change in land use from agriculture to other land uses will take place. Eskom will not own the servitude but will purchase the rights to construct and maintain the interconnector lines.
- In addition, in terms of the Subdivision of Agricultural Land Act, 1970 (Act 70 of 1970), Section 2(a) Eskom is a statutory body and therefore it is not subjected to the provisions of the Act.

6.3 IMPACTS THAT MAY RESULT FROM THE OPERATIONAL PHASE

The potential impacts that are likely to occur as a result of the operational phase are described below. In addition the mitigating measures that may eliminate or reduce the potential impacts are provided:

1. Impact on Birds

Two common problems in Southern Africa are the electrocution of birds (and other animals) and birds colliding with powerlines.

Electrocutions: Electrocution of birds happens when they lose their balance and they bridge the clearances.

Collisions: Collisions are when birds collide with the conductors or earth wires of overhead powerlines.

Electrocution

Electrocution will not be a major risk in this instance for the following reasons:

- The steel mono-pole is not a major electrocution hazard to birds, except in specific instances, and then only for vultures, which do not occur in the study area.
- The presence of several existing transmission lines which are higher than the proposed 132kV line (and without any risk of electrocution), will most likely serve as the preferred roosting and perching substrate for birds in the study area.
- No electrocution risk is therefore foreseen for the new 132kV lines.

Collisions

The most direct impact that the proposed line could potentially have on Red Data birds is collisions with the overhead earth wire. Generally this impact is most likely to occur close to wetlands, where the line skirts a dam or where it is positioned across a drainage line. Another collision hazard exists if the line will cross patches of grassland, as this is the preferred habitat of most of the remaining large terrestrial Red Data species in Mpumalanga.

Mitigation of impact on birds

- Those sections of line that will require the application of bird flight diverters (BFDs) are indicated on the accompanying sensitivity map (In Appendix A6). Sensitive sections will include dams, drainage crossings and areas of grassland. The proposed BFD is the Double Loop Bird Flight Diverter. BFDs should be placed on the earthwire, staggered, alternating black and white, 5 metres apart on the section of line between the co-ordinates and 26°23'38.99"S 29°10'52.08"E and 26°23'55.14"S 29°12'6.07"E.
- Generally this impact is most likely to occur where the line skirts a dam and where the line will cross areas of unfragmented grassland. Red Data species potentially at risk in grassland habitat are Secretarybird, Blue Korhaan, Blue Crane, Southern Bald Ibis and Pallid Harrier. Greater Flamingo, African Marsh-Harrier, African Openbill and Caspian Tern could be at risk near dams.
- Should the mitigating measures be implemented then the environmental impact will be limited.

2. Visual impact

Impact on the esthetics of an area is related primarily to the visual impact of the proposed powerlines and secondary to the impact of habitat destruction. Factors to consider regarding the visual impact are the following:

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

Mitigation of Visual Impact

It is not expected that significant additional visual impact will occur as a result of the powerlines due to the following:

- The visual experience of the area can be described as low due to existing disturbance such as mining activities and the infrastructure associated with it.
- High levels of transformed habitat through cultivation, as well as the mining, development and urbanisation of the area exist.
- The Rietfontein Pumps line is proposed mostly adjacent to a dirt road with existing impact. This will limit further impact to habitat.
- In addition, visual impact could generally be mitigated to some extent by constructing the powerlines with monopole steel structures. Strain poles have a planting depth of 2m but intermediate pole planting depths

varies between 2.6m (for 20m poles) and 3m (for 24m poles) or more depending on the pole length. The pole is not planted in a slab - The pole foundation is dependant on the soil type and varies in size and consists of a 8:1 good soil cement mix that are compacted in 200mm layers. A concrete cap of 1.2m x 1.2m is cast around the pole to "seal" the soil around the pole from oxygen - to control oxidation or rust on the pole. From previous experience the steel poles are known to weather and with time blend into the environment.

3. Impact of alien vegetation

One of the impacts of concern is the introduction of alien plants and the use of chemical herbicides (weed-killers).

Mitigation of alien vegetation

- The excessive and incorrect use of herbicides has caused a worldwide problem of the build-up of toxins in ecosystems. It is strongly felt that due to the grassland nature of the study areas there is no need for the use of herbicides.
- The introduction of alien vegetation is always a potential problem. The area has a low infestation of alien plants, but a number of species have the potential to become serious problems. The quickest way most weeds get a foothold in an area is by colonising disturbed soils quicker and more efficiently than many of the indigenous species. To reduce the level of these potential impacts is to ensure that all relevant mitigating and management measures are implemented.
- An ongoing programme should be implemented to mechanically control alien plant species that invade the disturbed soils around the newly erected pylons, including areas that were disturbed and rehabilitated during the construction phase. This should be done in such a way as to allow the natural grasses to colonise the disturbed area, thereby keeping alien plants at bay. Most alien plants in the area are typically annual or bi-annual herbaceous plants and can be effectively controlled by slashing. In other words, not by hoeing which further disturbs the soils. This control is most effective if done early in the summer while the plants are still young and before they go to seed, thereby preventing further spread and infestation for the following growing season.
- Mechanical control of alien species to be implemented within two months of completion of construction of the powerline. Thereafter every six months or preferably late in the spring and then again late in the summer. Keeping in mind the project falls in a summer rainfall area and it is during this time plants are growing most actively. Once winter arrives or after veld fires it will be difficult to distinguish between alien and indigenous plant species.
- Surface area under powerlines to be mowed and not ploughed. Ploughing will disturb soils, creating opportunity for invasive weeds to colonise the area. Furthermore, due to the flat, grassland nature of the area it will be easy enough to mow.
- No chemical control to be used in the control of alien plants or indigenous plants.

4. Impact of dust pollution

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

Mitigation of dust

Dust mitigation measures:

- Sweeping of construction sites and clearing of building rubble and debris must take place regularly.
- According to the Applicant and their contractors, dust suppression is not required due to the following reasons:
 - The servitude areas receive minimal bush clearance. Indigenous vegetation which does not interfere with the safe operation of the power line is left undisturbed. Further to the above, vegetation is not ploughed but mowed and therefore no areas are left without vegetation cover.
 - In terms of access roads, existing roads are used and the impact to these roads is insignificant. The reason is that construction material is minimal (a pylon - planted approximately 330m apart, cement - to plant the pylon, and cable - for the overhead wires). Therefore a small number of construction vehicles deliver the material to the site. Speed of above 30km/hour will not be exceeded. A limited/insignificant amount of dust is therefore emitted in the atmosphere. In other words, there will be no significant construction, ground-clearing, leveling or grading of soils, moving or compacting of soils which are often associated with other forms of construction, but not with erecting of powerlines.

5. Possible Public Health Hazards

Concerns are generally raised during public participation with regards to the impact of the “electrical current” on residents. Drawing on the existing body of research, the World Health Organisation has stated that it is becoming increasingly unlikely that exposure to EMFs constitutes a serious health hazard, although it concedes that some uncertainty remains. The 36m servitude area limits the constant exposure to these EMFs and according to the Eskom regulations no one is allowed to live within the servitude. These health concerns should not be dismissed as irrelevant. As all the Route alignments will traverse for certain sections close to densely populated areas, concerns in this regard remain, should individuals illegally erect dwellings in the servitude area.

Mitigation

- Eskom should undertake regular inspections of the servitude and put a strategy in place together with the Local Municipality, to deal with illegal “squatting” in the servitude areas.
- The safety exclusion zone should be strictly adhered to.

6.4 IMPACTS THAT MAY RESULT FROM THE DECOMMISSIONING AND CLOSURE PHASE

It is not envisaged that the powerlines will be decommissioned. This project is part of the future infrastructure to supply the Eskom Distribution grid with power. Should this application not be approved then the supply of water to the Duvha and Matla Power Stations will not be reliable and this can result in major disturbances in energy provision.

Should there be a need to decommission the powerlines then the following mitigation measures that may eliminate or reduce the potential impact are applicable:

- The powerlines will have to be physically removed which would entail the reversal of the construction process.
- The construction teams will ensure that all waste is removed from the sites and that they recycle the items that can be used again. Unusable waste steel and aluminum will be sold to scrap dealers for recycling at the Eskom stores.
- The disposal of materials will have to be at an approved waste disposal facility.
- The routes of the powerlines will have to be rehabilitated.
- Once the decommissioning is completed, the contractor has to obtain written consent from the relevant landowner that the construction site, construction areas, access routes, etc. are sufficiently and adequately rehabilitated to the landowner’s satisfaction.

6.5 POSITIVE IMPACTS

The positive impacts of the proposed project on the environment are as follows:

- Long-term, regional benefits of reliable power supply and the resultant socio-economic benefits.
 - Included in this is the fact that any infrastructure development as a secondary impact will ultimately positively influence the development of the SMME- sector through electricity provision.
 - On the opposite pole the lack thereof will most certainly be to the detriment of SMMEs, especially in rural developing areas, where the lack of, as well as inconsistent, infrastructure could seriously lead to the detriment of economic development directly impacting on social well-being.
- Potential reduction in crime as a result of short-term job creation during construction (providing farm safety and security measures are implemented)
- Possible local growth in the economy of the surroundings towns and others in the sub-region, and for local businesses depending on where the construction camp is.
- Economic benefits for contractors and other suppliers of goods and services.
- The project as proposed will ensure significant capital investment that will contribute to the economical growth of the area.
- Private business opportunities could be stimulated.
- It is suggested that **to maintain the status quo is not the best option for the macro environment.** As

discussed, the water supply to major Power Stations was under increasing pressure. As a result, alternative water sources to supply water had to be investigated. In future, KWSAP will allow water to move via Matla through Kendal to Kusile and in addition supply Duvha. In order to support the Rietfontein Pump Station at the Rietfontein dam, Eskom has to improve power supply to the pump station by increasing power supply to the Rietfontein substation.

- This proposed project is therefore **part of the infrastructure to improve the supply of electricity to the Rietfontein substation**. Should this application not be approved then the supply will not be reliable and this can result in major disturbances in water provision to Matla, Kendal, Kusile and Duvha Power Stations. This will in turn have massive impact on the generation of power.

6.6. CUMULATIVE IMPACTS

Cumulative effects are caused by the accumulation and interaction of multiple stresses affecting the parts and the functions of ecosystems. For our purpose, cumulative effects are defined as the changes to the environment caused by an activity in combination with other past, present, and reasonably foreseeable human activities. Bearing in mind that the magnitude, extent and duration of environmental effects depend on the characteristics of a development activity in a particular location.

Currently the proposed power line is located in a developing mine area with existing infrastructure, power lines, roads, etc. The cumulative effect for constructing the electricity infrastructure in this will be low. In time the overall cumulative impact on this area is likely to increase, as the mining companies are likely to expand their mining operations in these sections. It is thus critical that major role players in the region's economy create long term strategic plans that will accommodate and enhance a wide range of economic activities.

Equally important is the need for Eskom to align all the projects which are planned for the area in order to minimise the potential negative impacts and enhance potential positive outcomes. It is therefore crucial for Eskom to liaise very closely with the various municipalities to mainstream Eskom projects into the Integrated Development Plans (IDPs) and Spatial Development Frameworks (SDFs) of the respective municipalities.

As indicated in the report, the grassland plains within the study area are not seen as floristically sensitive with regards to powerline corridors. Existing impacts relate to cultivated lands, coal mining, cattle farming, general human activity and movement through them.

In spite of the above, the project could cause a significant impact where clearing for construction and access purposes, etc is required. Insensitive clearing can cause the destruction of habitat. The cumulative impact on this area is likely to increase should various mining companies expand their mining operations in these sections.

It is therefore important that the proposed Eskom project adhere to the stipulated mitigation measures to limit impact to the natural habitat, to surface water, erosion etc.

Should this be implemented, no cumulative impacts on the ecology of the environment are identified as possibly being beneficial.

As mentioned in this report, due to the physical nature (and small footprint) of the powerlines, the overall impact to the natural environment is minimal over the medium- to long-term. This is relative to other impacts in the region such as open-cast coal mining, agriculture and urbanisation. The initial (short-term) construction phase will have a higher initial impact on the environment, but this is still seen as being relatively low.

7. CONCLUSION AND RECOMMENDATIONS

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

- Preliminary site investigations to determine the scope of the amendment, and to familiarise with the sites, were done in September 2013.
- An application for an amendment was submitted to DEA on 30 September 2013.

- Specialist ecological input was obtained to investigate the flora, fauna and the general biophysical environment in an attempt to identify the potential impacts of the project.
- The proposed development is covered by the National Heritage Resources Act which incorporates heritage impact assessments in the Environmental Impact Assessment process. A Phase 1 Heritage Impact Assessment was done by a specialist to identify the potential impact on heritage resources. The National Heritage Resources Act 25 of 1999 in addition requires that all heritage resources, that is, all places or objects of aesthetic, architectural, historical, scientific, social, spiritual, linguistic or technological value or significance be protected.
- Input from an avifauna specialist was obtained to determine the impact of the proposed project on birds.
- Site investigations by the specialists, Eskom and the EAP were done on 16 Oct 2013 and continued into October.
- The first phase of a Public Participation Programme (PPP) commenced in October 2013 and continued until November 2013. It included the identification of the affected landowners, as well as advertising of the proposed amendment in the local press and on site.
- Meetings by the appointed negotiator for the project were conducted with landowners, to assist in the identification of potential powerline corridors.
- An Amendment Report was compiled with the main aim to identify issues, and potential impacts associated with this amendment. It included a description of the status quo of all relevant environmental components as well as the proceedings of the PPP and communication with registered Interested & Affected Parties (I&APs).
- On 12 December 2013 the Amendment Report was submitted for comment to the following:
 - Regional Department of Water Affairs: Water Resources & Water Quality Management
 - Department of Water Affairs: Rietfontein Pump Station
 - South African Heritage Resources Authority (submitted via SAHRIS)
 - Mpumalanga Heritage Resource Authority
 - Mpumalanga Department of Economic Development, Environment and Tourism: Environmental Services
 - Mpumalanga Department of Agriculture: Land Use and Soil Management
 - Mpumalanga Department of Minerals and Energy
 - Mpumalanga Department of Cooperative Governance, Human Settlement and Traditional Affairs
 - Mpumalanga Department of Public Works, Roads And Transport
 - Mpumalanga Department of Rural Development and Land Reform: Land Claims Commissioner
 - Mpumalanga Department of Rural Development and Land Reform: State Land Administration
 - Mpumalanga Tourism and Parks Agency
 - Mpumalanga Landbou
 - Agri Mpumalanga
 - TLU Ermelo
 - SA National Road Agency Agency Ltd
 - Endangered Wildlife Trust
 - Olifantsrivier forum
 - Nkangala District Municipality
 - Emalahleni Local Municipality
 - Eskom Holdings SOC Ltd - Transmission
 - Eskom Holdings SOC Ltd - Distribution
 - Sasol Gas Ltd
 - Exxaro Coal Mpumalanga Ltd
 - BKS Engineers
 - Landowners
- The due date for comment to the Amendment Report is 31 January 2014. This allows for a comment period of more than 30 days. This extended due date is in consideration of the national holiday period in South Africa.
- Subsequently, the final Amendment Report will be submitted to DEA for their review and decision.

From a heritage, ecological as well as bird impact viewpoint, the amended Route is acceptable, with the proposed mitigations implemented.

The proposed location for the amended Route is on the farms Riversdale 119 IS portion 2 and 1; Zwakfontein 120 IS portion 15, 23, 1, 26, 6, 7, 18 and 2; and Dieplaagte 123 JS portion 7 in the Emalahleni Local Municipality in the Mpumalanga Province.