



**PROPOSED DEVELOPMENT OF THE 132 KV WITKOP-
PIETERSBURG ESKOM DISTRIBUTION POWERLINE 3 (18 KM),
CAPRICORN DISTRICT MUNICIPALITY, LIMPOPO, SOUTH AFRICA**

DRAFT BASIC ASSESSMENT REPORT

EIA REFERENCE: *TO BE ASSIGNED*



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Compiled for

Eskom Distribution Limpopo
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October 2022



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Proposed Development of the 132 kV Witkop-Pietersburg Eskom Distribution Powerline (18 km), Capricorn District Municipality, Limpopo, South Africa Draft Basic Assessment Report (Rev 0) for public review	Giles Churchill (ACER)	Nkateko Msimang (Eskom)	Tshifhiwa Matamela (Eskom)
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This draft report is available for public review at the following public venue in the project area for a 30-day comment period (12 October – 11 November 2022).

Venue	Street	Contact details
Polokwane City Library	Library Garden, Cnr Hans Van Rensburg & Jorissen Streets, Polokwane, 0700	Librarian 015 290 2155

The draft report is also available on ACER's web site (www.acerafrica.co.za) under the 'Projects/Current Public Review' link.

YOUR COMMENTS PLEASE

Please submit your comments on the draft report by no later than 11 November 2022 to:

Ashleigh Mckenzie

► P O Box 503, Mtunzini, 3867 ► Tel: 035 340 2715 or 060 948 5164

► E-mail: EskomWP@acerafrica.co.za

Please note that:

- In line with the EIA Regulations of 2014 (as amended), all registered interested and affected parties are required to disclose any direct business, financial, personal or other interest which that party may have in the approval or refusal of the application.**

- In line with the Protection of Personal Information Act (Act No 4 of 2013) (referred to as POPIA), ACER accepts that by submitting your comment as part of this environmental authorisation process, you give consent to publish the information submitted. Please note that your contact details will be submitted to the Competent Authority, as a requirement of the environmental authorisation process. Contact details of Interested and Affected Parties (I&APs) will, however, be removed from the databases published on ACER's website, hard copies or CD copies that are circulated publicly.**

EXECUTIVE SUMMARY**Introduction**

This Basic Assessment Report (BAR) is for the proposed construction and operation of the Witkop-Pietersburg 132 kV distribution powerline 3, located west of Polokwane, Capricorn District Municipality (DM), Limpopo Province, South Africa (Figure 1).

An Environmental Authorisation (EA) for this line¹ was previously issued to Eskom Distribution (Northern Region) in 2011 (12/12/20/2243). The EA has since lapsed and Eskom Distribution Limpopo has appointed ACER (Africa) Environmental Consultants (ACER) as the independent Environmental Impact Assessment Practitioner (EAP) to re-apply for environmental authorisation from the Department of Forestry, Fisheries and the Environment (DFFE).

The proposed project triggers listed activities in Listing Notices 1 and 3 of the Environmental Impact Assessment (EIA) Regulations of 2014 (as amended), published under the National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA) and therefore requires the undertaking of a Basic Assessment. This BAR has been prepared on behalf of Eskom by ACER, in terms of the requirements of the EIA Regulations.

ACER will also apply on Eskom's behalf to the Department of Water and Sanitation (DWS) to authorise water uses (as relevant) in accordance with the National Water (Act 36 of 1998).

Background and purpose of the project

This development is required to assist Eskom to address the backlog of electrification connections to 47 villages from the Moletsi, Chloe and Pietersburg substations in the Capricorn DM. Pietersburg substation is fed via two existing lines which cannot accommodate additional load and are currently N-1 non-compliant. As a result, many household electrification projects have been put on hold. Before the two lines can be upgraded to make them compliant, a third Witkop Line (the line being applied for in this Application) first needs to be built.

Water, sanitation and energy are basic services which the government seeks to provide to all citizens and which, in this project, will specifically contribute to socio-economic upliftment of poor rural households. This project aligns with the goals of the national Strategic Integrated Projects (SIP) 9 and 10, which aim to address the shortfall in demand for energy and ensure the transmission and distribution of energy for all.

Legal Requirements

There are a host of legal requirements to which Eskom must adhere for the construction and operation of the proposed powerline. A review of the applicable legislation and guidelines is provided in Chapter 2 of this report. The main authorisations/licenses/permits required or potentially required for the proposed project are listed below.

#	License/Permit	Authority
1	Environmental Authorisation	DFFE: Integrated Environmental Authorisations
2	Heritage Permit *	South African Heritage Resources Agency
3	Protected Tree Permits*	DFFE: Forestry
4	Protected Plant Permits*	DFFE: Biodiversity
5	Water Use via a General Authorisation	Department of Water and Sanitation

*Only required if the resource is directly impacted

1 It should be noted that the length of line currently proposed is approximately 18 km and not 33 km, as per the original application, as the line will tie into existing infrastructure before reaching Witkop Substation.

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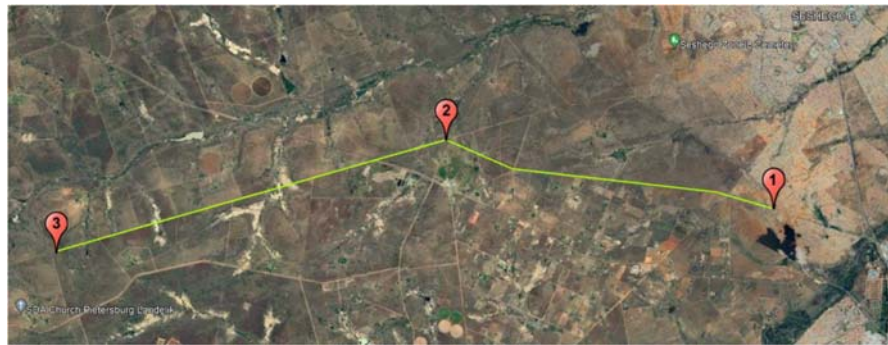
Project location and scope

The project involves the installation and operation of an 18 km long overhead 132 kV electricity distribution line located within Ward 1 of the Capricorn DM, Limpopo. The proposed alignment extends approximately 18 km west/southwest from the Pietersburg substation, which is located off Matlala Road, near Polokwane Ext 44 on the western outskirts of Polokwane City. Near its midpoint, the line crosses the Percy Fyfe Ga Mashashane road. The proposed powerline will run parallel to the existing Pietersburg- Witkop line 2 (132 kV distribution powerline) within a (currently vacant) registered servitude. At its end point, it will tie into the existing Witkop PPRust North 132 kV powerline. Technical specifications are shown below.

Technical specifications of the proposed Witkop-Pietersburg distribution line 3	
Length	18 km
Voltage and Line	132 kV Kingbird power cable
Tower design	steel monopole (Plate 2, Figure 3)
Tower Height	Can vary from 18 m to 26 m depending on terrain/topography
Required clearance	6m
Tower footprint	Approx. 2 m ²
Distance between towers	Approx. 230 m
Permanent Servitude width	15.5 m on either side of the electrical cable
Vehicle access along servitude	Vegetation clearance is required for a distance of 4-8 m either side of the cable to allow for vehicle access under the line.

Relevant GPS co-ordinates (approximate) of the preferred alignment are provided below. Surveyor General (SG) numbers of affected properties are provided with the Application for Authorisation (Appendix 2).

GPS co-ordinates of the proposed Witkop-Pietersburg 132 kV powerline (approximate)		
Location	Latitude (S)	Longitude (E)
(1) Start of powerline at Pietersburg substation	23°53'26.69"	29°24'11.06"
(2) Mid-point of powerline (near Percy Fyfe Rd)	23°54'33.34"S	29°19'30.04"
(3) End point of powerline (tie-in to Witkop PPRust North 132 kV powerline)	23°58'10.03"S	29°15'12.27"
Approximate length of powerline	18 km	
Width of assessed corridor ²	500 m either side of the line	



Further details of project activities may be found in Chapter 5 of this BAR.

² While a 132 kV line requires a permanent servitude of 15.5 m on either side of the electrical cable, ACER was requested by Eskom to investigate a corridor of 500 m either side of the proposed alignment, in case minor deviations are required to accommodate any site specific environmental or technical sensitivities encountered.

Project Alternatives

Three main alternatives apply to this project:

- Technology alternatives:** As the proposed route traverses an area with a high presence of vultures, steel monopoles have been selected as the poles of choice as they are the most bird friendly.
- Route alternatives:** Two route alternatives were investigated during the original BA process. The preferred alignment which was selected and subsequently authorised still remains the preferred alignment and there are no compelling reasons to find new route alternatives, especially as there is an available, registered servitude in which to run the line.
- No Development alternative:** The No Development alternative implies that the proposed Witkop-Pietersburg 132 kV line will not be constructed and operated and there will be no associated impacts. However, this alternative is not preferred, because without this line, the network in this area cannot be developed to the required specifications to handle the demand for additional electrical connections in specific areas.

Description of the Receiving Environment

A detailed description is provided in Chapter 7. Major features are highlighted below.

Land use/socio-economic characteristics

The proposed alignment is located within and adjacent to three distinct types of development, under the administration of the Polokwane Municipality and/or Capricorn District Municipality.

- The eastern end is located immediately adjacent to a major residential area of Polokwane (Extension 44) which largely includes dense residential development.
- For approximately half its length the alignment runs through an urban fringe (Leeuwkuil area). Within this area there are land uses that typically occur on the edges of urban areas such as the Pietersburg substation, town reservoir and numerous overhead power lines. Residential development is typically less dense than main urban areas and consists of small holdings that are surrounded by small scale part-agricultural and part-industrial uses.
- The western section of the proposed alignment is located within a rural agricultural area consisting of large privately owned farms, mostly under grazing livestock and game.

The alignment is located approximately 6 kilometres southwest of the Polokwane International Airport.

Abiotic characteristics

The area has low annual rainfall (345 mm - 655 mm per year) with dry winters. Mean daily maximum and minimum temperatures range from 33.2 °C (October) to 0.5 °C (June). The area falls into Climate Capability Class C7/C8, which has "Severe to Very Severe" limitations for agriculture. The landscape is relatively flat to undulating, with limited but well-defined hydrological features. Soils are known to be freely drained, structureless soils, with areas of significant erosion occurring in parts of the study area.

Terrestrial biodiversity

The alignment occurs within a single national vegetation type, namely Polokwane Plateau Bushveld, with a conservation status of "Least Concern". This is savannah vegetation with a grassland layer and a short open tree layer, although some areas have been encroached with denser, thorny bush. The proposed alignment crosses four categories of habitat viz. natural bushveld, secondary vegetation, watercourses (mostly temporarily inundated) and transformed areas. From a conservation planning perspective, a short length of the alignment skirts the edge of a Critical Biodiversity Area 1 (CBA1).

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Although a number of plant Species of Conservation Concern (SCC), endemic plant species and protected plant species have been recorded within the greater study area, no SCC were observed during the field assessment. However, one (1) protected tree species, namely *Sclerocarya birrea subsp. caffra* (Marula tree), which is listed under the National Forest Act (NFA, 1998) was observed.

Small and large mammals are common, especially on the game farms, but there are very few SCC associated with this area. The vulture restaurant, which has been established in close proximity to the existing Pietersburg-Witkop 132 kV line 2 on the Ibis Piggery property, attracts a variety of scavengers. There is a rich diversity of birdlife in the study area, including numerous powerline sensitive species. Marabou Stork and several types of vultures are attracted to the vulture restaurant. Vultures can be seen in large numbers perching on the existing line and circling overhead.

Aquatic biodiversity

Six National Freshwater Ecosystem Priority Area (NFEPA) wetlands occur in the broader study area, of which three are artificial valley bottom wetlands and the other three are artificial seepage wetlands. Twenty-seven Hillslope Seepage Wetlands occurring within 500 m either side of the proposed alignment were identified on site. Of these, eleven may be impacted by the proposed development. These wetlands were found to be “largely modified” with a “moderate” Ecological Importance and Sensitivity (EIS) score. The African Bullfrog *Pyxicephalus adspersus*, which is on the Threatened and Protected Species (TOPS) and IUCN Red List, has a medium likelihood of occurrence in the study area.

Cultural Heritage

Two sites containing features of cultural heritage significance (formal and informal graves) were identified in proximity to the powerline alignment.

Visual landscape

The landform and development pattern divides the affected landscape into three discrete Landscape Character Areas (LCA), viz. the Urban, Urban Fringe and Rural Agricultural LCAs, none of which are significant from a scenic perspective. Visual receptors most likely to be affected are: Polokwane Extension 44; local farmsteads and homesteads on the urban fringe; and the Percy Fyfe/ Ga Mashashane and Matlala Roads.

Pre-application Screening (DFFE Screening Tool)

Numerous specialist studies were required for this project, according to the DFFE Screening Tool Report. Where the EAP was not in agreement with the tool’s site sensitivity ratings and need for such studies, a clear motivation for the exclusion of certain specialist studies has been provided.

Assessment methodology

The concept of sustainability was applied as the framework within which environmental aspects arising from or influencing the proposed project (and its alternatives) were considered. Issues and potential impacts were identified by a technical process and a public participation process. Specialist studies were conducted in accordance with the Protocols set out by DFFE. Mitigation measures were identified and included in the Environmental Management Programme (EMPr) (Appendix 6). Qualitative assessment conventions were used to assess the significance of each impact both before and after mitigation.

Public Participation Process

The public participation process was designed to comply with the requirements of the 2014 EIA Regulations (as amended) and NEMA and is fully described in Chapter 4 of this report.

Need and Desirability

From an EIA perspective, the need and desirability of any proposed development is a key component of an application for environmental authorisation. In essence, need and desirability are based on the

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principle of sustainability, viz. that a development is ecologically sustainable and socially and economically justifiable. Need and Desirability aspects are considered in Chapter 9 of this report, in accordance with DFFE's Need and Desirability Guidelines.

Environmental Issues and Potential Impacts

The information gathered during this Basic Assessment process resulted in the identification of key issues, which have been formulated as eight key questions:

- What local and regional economic and socio-economic benefits will result from the construction and operation of the proposed Witkop-Pietersburg Line 3?
- What impacts will the construction and operation of the proposed Witkop-Pietersburg Line 3 have on the social and socio-economic environment?
- Will the proposed Witkop-Pietersburg Line 3 result in the loss of use of productive agricultural land and associated economic opportunities?
- What effects will the proposed Witkop-Pietersburg Line 3 have on terrestrial biodiversity?
- What effects will the proposed Witkop-Pietersburg Line 3 have on watercourses and aquatic biodiversity?
- What effects will the proposed Witkop-Pietersburg Line 3 have on avifauna species (birds)?
- What effects will the proposed Witkop-Pietersburg Line 3 have on cultural heritage resources, including palaeontological resources?
- What cumulative impacts are anticipated from construction and operation of the proposed Witkop-Pietersburg Line 3?

Specialist findings

Refer to the table below, which provides site sensitivity verifications, motivations for exclusion of certain specialist studies required by DFFE Screening Tool and a summary of main specialist findings.

Site sensitivity verification, motivation for exclusion of certain specialist studies required by DFFE Screening Tool and summary of specialist findings

Specialist Studies required (DFFE Screening Tool)	Theme sensitivity rating (DFFE)	Site sensitivity verification	Specialist study included/ excluded	Motivation/ comment	Specialist and/or EAP findings (main conclusions)
Agricultural Impact Assessment	High	Low	Included (desktop)	Refer to Agricultural Assessment report in Appendix 5.	The study area has a Low Agricultural Theme Sensitivity, equivalent to a Land Capability Class of LCC VII and VIII, suitable for livestock and game only. The equivalence ATS Rating is 1 to 4 on scale of 1 to 15. The impact of the project on agriculture is of low significance, without mitigation.
Landscape/ Visual Impact Assessment.	N/A	N/A	Included	Refer to the VIA report in Appendix 5.	The Landscape Character Areas identified within the study area are not significant from a scenic perspective. The proposed project will generally result in a relatively limited level of visual impact within an area that is already impacted by electrical infrastructure. The visual impact on possible sensitive receptors is assessed as low significance, both before and after mitigation. From a Landscape and Visual Impact perspective, there is no reason why the proposed project cannot be authorised.
Archaeological and Cultural Heritage Impact Assessment	Low	Two site specific sensitive features (graves) were found along the 18km alignment.	Included	Refer to the HIA report in Appendix 5.	The potential impact of the powerline on heritage resources overall, is of low significance. Provided that the delineated no-go areas are avoided, and the recommended mitigations are applied, the impact would be acceptably Low or could be totally mitigated to the degree that the project could be approved from a heritage perspective.
Palaeontology Impact Assessment.	Medium	Low /Zero	Excluded	Refer to Section 9.3 of the HIA report in Appendix 5.	The HIA report confirmed the following: According to the Palaeo-sensitivity Map available on the South African Heritage Resources Information System database (SAHRIS), the Palaeontological Sensitivity of the proposed development area is rated as Insignificant/Zero. No further palaeontological studies are required.

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Specialist Studies required (DFFE Screening Tool)	Theme sensitivity rating (DFFE)	Site sensitivity verification	Specialist study included/excluded	Motivation/comment	Specialist and/or EAP findings (main conclusions)
Terrestrial Biodiversity Impact Assessment.	Very High	Site Ecological Importance (SEI) assessment found areas of High, Medium and Very Low sensitivity only.	Included	Refer to the Terrestrial Biodiversity Impact Assessment report in Appendix 5.	The proposed development will have an overall impact significance of low, after the careful application of mitigation measures. It is the specialist's opinion that (from a terrestrial biodiversity perspective) the proposed development (preferred alternative) can be authorised, conditional on the application of recommended mitigations.
Aquatic Biodiversity Impact Assessment	Very High	At-risk watercourses (high or medium risk systems) were identified within the study area.	Included	Refer to the Aquatic Biodiversity Impact Assessment report in Appendix 5.	<p>The potential impacts on at-risk watercourses are of a low risk significance. The strict implementation of the recommended mitigation, rehabilitation and monitoring measures will ensure that the proposed development activities will only pose a negligible risk of negative impacts to these watercourses. It is the specialist's reasoned opinion that all of the proposed development activities may continue, provided that recommended mitigation and rehabilitation measures presented within the specialist report and the site-specific EMPr are strictly implemented.</p> <p>The proposed development can be Generally Authorised according to GN 509 of 26 August 2016 for Section 21(c) and (i) water uses, in accordance with Section 39 of the NWA (Act no. 36 of 1998).</p>

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Specialist Studies required (DFFE Screening Tool)	Theme sensitivity rating (DFFE)	Site sensitivity verification	Specialist study included/excluded	Motivation/comment	Specialist and/or EAP findings (main conclusions)
Avian Impact Assessment.	Animal species was indicated as High	Moderate to High	Included	Refer to the Avifauna Impact Assessment report in Appendix 5.	The habitat within which the Witkop-Pietersburg 132kV power line alignment is located is moderately to highly sensitive from a potential bird impact perspective. The impacts of the project on birds can be reduced to low/negligible significance, after mitigation. It is this specialist's opinion that the construction of the 132kV power line will result in acceptable levels of impact on the resident avifauna subject to implementation of the recommended mitigation and management measures.
Civil Aviation Assessment.	Very High	Medium	Compliance Statement included. No further assessment recommended	Refer to Appendix 9.	While the DFFE Screening Tool has assigned a Theme Sensitivity rating of Very High and High along the proposed powerline alignment, after site verification, the EAP has assessed the Civil Aviation theme as Medium Sensitivity. This is due to the nature of the proposed development and its location in relation to other existing powerlines and aerodrome facilities, which makes it evident that there is low potential for negative impacts on the civil aviation installation, and if there are impacts, there is a high likelihood of mitigation. Any mitigation measures required will be identified by the SACAA and Eskom in response to the outcome of the Obstacle Application process, and implemented by Eskom.
RFI Assessment. (Radio Frequency Interference)	Medium	Medium	Compliance Statement included. No further assessment recommended.	Refer to the comment in the adjacent column and to Appendix 9.	According to Zhang et al (2019) the protecting distance between radar stations and ultra-high voltage power transmission lines is at least 2.2 km. The DFFE Screening Tool has assigned a Theme Sensitivity rating of Medium as there is a radar feature within 15-35 km of the proposed powerline alignment. Given that the proposed line is one of several other lines within similar proximity to existing radar facilities 15-35 km away, it is assumed that if there is an impact, it can be mitigated to acceptable levels. Any mitigation measures required will be identified by the SACAA.

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Specialist Studies required (DFFE Screening Tool)	Theme sensitivity rating (DFFE)	Site sensitivity verification	Specialist study included/excluded	Motivation/comment	Specialist and/or EAP findings (main conclusions)
Geotechnical Assessment	N/A	x	Excluded from this BAR. A specialist geotechnical assessment will be undertaken by Eskom on finalisation of the tower positions.	Refer to Appendix 9.	Unlike for substations, where geotechnical studies are undertaken at an early stage of the project, for overhead powerlines, Eskom undertakes a geotechnical assessment only once the tower positions are finalised, after obtaining input from the environmental specialists, Basic Assessment and the Environmental Authorisation. For obvious reasons, it is unfeasible and contra-indicated for Eskom to undertake a generalised geotechnical assessment over a 1 km wide and 18 km long corridor for an overhead powerline, as Eskom requires exact and accurate information at each specific tower position to pinpoint the exact type of foundations required for each tower. The intervening overhead sections of line have no geotechnical impact.
Plant Species Assessment	Medium	Low	Included	Refer to the Terrestrial Biodiversity Impact Assessment report in Appendix 5.	During the field assessment, no plant Species of Conservation Concern (SCC) were observed within the study area. However, based on the data extracted from the South African National Biodiversity Institute's (SANBI) Plants of South Africa (POSA) database, as well as the DFFE Screening Tool, plant, SCC have been recorded within the greater area and a pre-construction walkthrough would still be recommended. One protected tree species was observed within the study area, viz <i>Sclerocarya birrea subsp. caffra</i> which is protected under the National Forest Act, 1998 (Act No. 84 of 1998)
Animal Species Assessment	High	Low (excluding birds, which are separately assessed)	Included	Refer to the Terrestrial Biodiversity Impact Assessment report in Appendix 5.	According to the records available, the study area was likely to have a moderate faunal diversity. However, only five (5) animal SCC have been recorded within the Quarter Degree Square associated with the study area (QDS 2329CD).

Environmental impact Statement

Taking the key issues and the assessment of associated potential impacts into account, a summary of the environmental impacts of the proposed activity, and their significance (after mitigation, where applicable) is provided below.

Social and socio-economic impacts

Overall, the project is expected to contribute positively to local economic and socio-economic development and improvement of livelihoods through the provision of electricity connections and better reliability of supply. This is indeed the purpose of the project, which is in accordance with government policies and their obligations regarding service provision. Limited temporary jobs and other income earning opportunities will also arise during construction. According to the assessment, the various positive economic/socio-economic impacts at a local and regional level during construction and operation are of low and medium significance, without management. With management, the significance of these positive impacts increases to medium and high.

Various negative social and socio-economic impacts will be experienced by landowners, residents, road users and the local community during construction, due to the presence and activities of construction teams and vehicles in the area. Various nuisance impacts, as well as increased health, safety and security risks may occur, but these are temporary and manageable.

While the proposed powerline is within fairly close proximity to the Polokwane International Airport (which also houses a SANDF military base), Eskom will ensure that the line conforms to the required standards. An obstacle application process is being undertaken with the CAA to authorise the line from an aviation perspective.

After mitigation/management, the significance of these negative social and socio-economic impacts is assessed as low.

Impacts on agriculture

Agricultural land traversed by the proposed line is primarily extensive grazing land with a poor carrying capacity. The proposed line will be located in a servitude that has already been registered on these properties for many decades. As such, the agricultural activities currently being conducted within the servitude should be compatible with overhead powerlines and will continue under the line once it is built. The proposed line will, therefore, have negligible impact on productive agricultural land and associated economic opportunities.

Impacts on terrestrial biodiversity

The affected vegetation type viz: Polokwane Plateau Bushveld, has a conservation status of "Least Concern". The alignment will not affect any Protected Areas or Threatened Terrestrial Ecosystems but does traverse a short section classified as CBA1. Although no plant or animal SCC were observed within the study area, they have been previously recorded within the greater area and thus a pre-construction walkthrough is recommended. One tree species protected under the National Forest Act, 1998 (Act No. 84 of 1998), viz. *Sclerocarya birrea subsp. Caffra* is found sporadically within the study area and a permit from the Department of Forestry will be required to cut or remove this tree species.

The specialist assessment identified the main post-mitigation impacts to be the potential fragmentation of habitat, loss of ecosystem function and edge effects. Existing vegetation communities are likely to respond well to rehabilitation, which will encourage any displaced fauna to return back to the study area once completed. Although the vegetation clearance and loss of natural habitat will be unavoidable, the

application of rehabilitation will enable the project to achieve a “no net-loss in biodiversity” status without any further need for offsetting residual impacts. Impacts to CBA 1 areas are manageable, and not deemed to be a fatal flaw as the powerline will be established over an area which is already transformed and will not have a significant impact on any unique features within this section of CBA. After mitigation/management, impacts on terrestrial biodiversity were assessed as having a low significance.

Impacts on watercourses and aquatic biodiversity

Eleven at-risk watercourses (hillslope seep wetlands) were identified along the proposed alignment. Impacts of the project on watercourses include 1) indirect loss of aquatic habitat and ecological connectivity, 2) indirect alteration of water quality, 3) direct alteration to the catchment and hydrological flow, and 4) indirect alteration to ecosystem service provisions. All impacts (catchment and watercourse related) were considered of a low-risk rating if all towers are situated outside of delineated watercourses and associated buffer zones. With strict implementation of the mitigation, rehabilitation and monitoring measures, the proposed development activities will only pose a negligible risk of negative impacts to these watercourses. After mitigation/management, impacts on watercourses and aquatic biodiversity were assessed as having a low significance.

Impacts on avifauna

A total of 342 bird species have been recorded within the Witkop-Pietersburg 132kV power line PAOI pentads. Relevant to the project, 86 species are classified as power line sensitive species. The habitat within which the PAOI is located is moderate to highly sensitive from a potential bird impact perspective. In particular, the vulture restaurant on the Ibis Piggery property is a hotspot for SCC and other powerline sensitive species. In recent years, anthropogenic impacts, mostly in the form of urbanisation, agricultural and pastoral activities have largely transformed the landscape, resulting in a negative impact on avifaunal diversity and abundance with the PAOI. It was concluded by the avifauna specialist that the construction of the Witkop-Pietersburg 132kV power line will result in impacts of medium-low significance to birds occurring in the vicinity of the new infrastructure, which can be reduced through the application of mitigation measures, to low-negligible significance.

Visual impacts

The three LCAs identified in the study area are functional landscape areas, none of which are significant from a scenic perspective. Potential negative visual impacts on receptors include possible landscape change, visual Impact on views from local roads and visual Impact on views from local homesteads. The significance of these impacts is assessed as low, with and without mitigation.

Impacts on cultural heritage

One (1) burial ground (WP01) and one (1) possible grave site (WP02) were identified within the proposed development areas. Burial grounds and graves are protected under Section 36 of the NHRA 25 of 1999. Thus, the sites are provisionally rated as having a high heritage significance with a heritage rating of IIIA. All graves have high levels of emotional, religious and in some cases historical significance. With the implementation of the recommended buffers and management guidelines, the significance of possible pre-construction impacts on the tangible cultural heritage resources is assessed as low negative.

Cumulative impacts

Both positive and negative cumulative impacts relating to those discussed above, are anticipated. Overall, the significance of these negative cumulative impacts is assessed to be medium and low.

Concluding statement and recommendation of the EAP

Based on the findings of the specialists and the assessment of key issues and associated impacts undertaken in this report, it is the professional opinion of the EAP that there are no fatal flaws associated with the proposed project and that the negative impacts resulting from the proposed construction and operation of the Witkop-Pietersburg 132 kV powerline 3 can be mitigated to acceptable levels. Therefore, the project should be granted environmental authorisation by DFFE, conditional on compliance with the mitigation measures as recommended in this report and contained within the EMPr, and including approval from the CAA.

The alignment to be authorised is as shown above. This is the preferred alignment within an existing registered, vacant servitude. However Eskom must be given the leeway to deviate within the assessed corridor (500 m either side of the proposed alignment), in case slight deviations off the main alignment are required, following the findings of the specialist walkdowns and final technical design.

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ABBREVIATIONS AND ACRONYMS

ACER	ACER (Africa) Environmental Consultants
AIPS	Alien invasive plant species
BAR	Basic Assessment Report
BID	Background Information Document
°C	Degrees Centigrade
CA	Competent Authority
CAA	Civil Aviation Authority
CBA	Critical Biodiversity Area
CITES	Convention on International Trade in Endangered Species
CPF	Community Policing Forum
CR	Critically Endangered
CRR	Comments and Responses Report
DEA	Department of Environmental Affairs
DEDTEA	Department of Economic Development, Tourism and Environmental Affairs
DFFE	Department of Forestry, Fisheries and the Environment
DM	District Municipality
DWS	Department of Water and Sanitation
EA	Environmental Authorisation
EAP	Environmental Assessment Practitioner
EAPASA	Environmental Assessment Practitioners Association of South Africa
EIA	Environmental Impact Assessment
ECO	Environmental Control Officer
EMF	Environmental Management Framework
EMPr	Environmental Management Programme
EN	Endangered
ESA	Ecological Support Area
Eskom	Eskom Holdings SOC Limited
EWT	Endangered Wildlife Trust
FEPA	Freshwater Ecosystem Priority Area
GA	General Authorisation
GIS	Geographical Information System
GN	Government Notice
GPS	Global Positioning System
HIA	Heritage Impact Assessment
HIV/AIDS	Human Immunodeficiency Virus/ Acquired Immunodeficiency syndrome
I&APs	Interested and Affected Parties
IAIAsa	International Association of Impact Assessment, South Africa
IEM	Integrated Environmental Management
IBA	Important Bird Area
IDP	Integrated Development Plan
IUCN	International Union for Conservation of Nature
LC	Least Concern
LCA	Landscape Character Area
LM	Local Municipality
LSU	Large livestock unit
MTS	Main Transmission Substation
NDP	National Development Plan
NEMA	National Environmental Management Act
NEMBA	National Environmental Management: Biodiversity Act
NFEPA	National Freshwater Ecosystem Priority Areas
NHRA	National Heritage Resources Act

ESKOM DISTRIBUTION LIMPOPO

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NT	Near Threatened
NWA	National Water Act, 1998 (Act 36 of 1998)
PAOI	Project's Area of Influence
POPIA	Protection of Personal Information Act (Act no 4 of 2013)
QDS	Quarter Degree Square
REDZ	Renewable Energy Development Zone
RFI	Radio Frequency Interference
SACNASP	South African Council for Scientific Professions
SAHRA	South African Heritage Resources Agency
SAHRIS	South African Heritage Resources Information System
SANBI	South African National Biodiversity Institute
SANDF	South African National Defence Force
SCC	Species of Conservation Concern
SDF	Spatial Development Framework
SEI	Site Ecological Importance
SMME	Small, Medium and Micro Enterprises
SIP	Strategic Integrated Projects
SKA	Square Kilometer Array
StatsSA	Statistics, South Africa
TOPS	Threatened or Protected Species
VAC	Visual Absorption Capacity
VIA	Visual Impact Assessment
VU	Vulnerable
WMA	Water Management Area
ZoR	Zone of Regulation

ESKOM DISTRIBUTION LIMPOPO

PROPOSED DEVELOPMENT OF THE 132 KV WITKOP-PIETERSBURG ESKOM DISTRIBUTION POWERLINE 3 (18 KM),
CAPRICORN DISTRICT MUNICIPALITY, LIMPOPO, SOUTH AFRICA

AUTHORS

The author of this draft report is Ms A McKenzie of ACER (Africa) Environmental Consultants (ACER).
An internal review was conducted by Mr G Churchill (ACER).

AFFIRMATION BY THE ENVIRONMENTAL IMPACT ASSESSMENT PRACTITIONER



environmental affairs

Department:
Environmental Affairs
REPUBLIC OF SOUTH AFRICA

DETAILS OF THE ENVIRONMENTAL ASSESSMENT PRACTITIONER, DECLARATION OF INTEREST AND UNDERTAKING UNDER OATH

File Reference Number:	(For official use only)
NEAS Reference Number:	DEA/EIA/
Date Received:	

Application for authorisation in terms of the National Environmental Management Act, Act No. 107 of 1998, as amended and the Environmental Impact Assessment (EIA) Regulations, 2014, as amended (the Regulations)

PROJECT TITLE

**PROPOSED CONSTRUCTION OF WITKOP-PIETERSBURG 132 kV DISTRIBUTION POWERLINE 3,
POLOKWANE LOCAL MUNICIPALITY, LIMPOPO PROVINCE**

Kindly note the following:

1. This form must always be used for applications that must be subjected to Basic Assessment or Scoping & Environmental Impact Reporting where this Department is the Competent Authority.
2. This form is current as of 01 September 2018. It is the responsibility of the Applicant / Environmental Assessment Practitioner (EAP) to ascertain whether subsequent versions of the form have been published or produced by the Competent Authority. The latest available Departmental templates are available at <https://www.environment.gov.za/documents/forms>.
3. A copy of this form containing original signatures must be appended to all Draft and Final Reports submitted to the department for consideration.
4. All documentation delivered to the physical address contained in this form must be delivered during the official Departmental Officer Hours which is visible on the Departmental gate.
5. All EIA related documents (includes application forms, reports or any EIA related submissions) that are faxed; emailed; delivered to Security or placed in the Departmental Tender Box will not be accepted, only hardcopy submissions are accepted.

Departmental Details

<p>Postal address: Department of Environmental Affairs Attention: Chief Director: Integrated Environmental Authorisations Private Bag X447 Pretoria 0001</p> <p>Physical address: Department of Environmental Affairs Attention: Chief Director: Integrated Environmental Authorisations Environment House 473 Steve Biko Road Arcadia</p> <p>Queries must be directed to the Directorate: Coordination, Strategic Planning and Support at: Email: EIAAdmin@environment.gov.za</p>

Details of EAP, Declaration and Undertaking Under Oath

ESKOM DISTRIBUTION LIMPOPO

PROPOSED DEVELOPMENT OF THE 132 KV WITKOP-PIETERSBURG ESKOM DISTRIBUTION POWERLINE 3 (18 KM),
CAPRICORN DISTRICT MUNICIPALITY, LIMPOPO, SOUTH AFRICA

1. ENVIRONMENTAL ASSESSMENT PRACTITIONER (EAP) INFORMATION

EAP Company Name:	ACER (Africa) Environmental Consultants		
B-BBEE	Contribution level (indicate 1 to 8 or non-compliant)		Percentage Procurement recognition
EAP name:	Ms Ashleigh McKenzie		
EAP Qualifications:	MSc Environmental Science		
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Telephone:	0353402715	Fax:	
E-mail:	Ashleigh.mckenzie@acerafrica.co.za		

The appointed EAP must meet the requirements of Regulation 13 of GN R982 of 04 December 2014, as amended.

2. DECLARATION BY THE EAP

I,  , declare that –

- I act as the independent environmental assessment practitioner in this application;
- I have expertise in conducting environmental impact assessments, including knowledge of the Act, Regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the Act, Regulations and all other applicable legislation;
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
- I will take into account, to the extent possible, the matters listed in Regulation 13 of the Regulations when preparing the application and any report relating to the application;
- I undertake to disclose to the applicant and the Competent Authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the Competent Authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the Competent Authority, unless access to that information is protected by law, in which case it will be indicated that such information exists and will be provided to the Competent Authority;
- I will perform all obligations as expected from an environmental assessment practitioner in terms of the Regulations; and
- I am aware of what constitutes an offence in terms of Regulation 48 and that a person convicted of an offence in terms of Regulation 48(1) is liable to the penalties as contemplated in Section 49B of the Act.

ESKOM DISTRIBUTION LIMPOPO

PROPOSED DEVELOPMENT OF THE 132 KV WITKOP-PIETERSBURG ESKOM DISTRIBUTION POWERLINE 3 (18 KM),
CAPRICORN DISTRICT MUNICIPALITY, LIMPOPO, SOUTH AFRICA

Disclosure of Vested Interest (delete whichever is not applicable)

- I do not have and will not have any vested interest (either business, financial, personal or other) in the proposed activity proceeding other than remuneration for work performed in terms of the Regulations;

AMcKenzie

Signature of the Environmental Assessment Practitioner

ACER (Africa) Environmental Consultants

Name of Company:

04 October 2022

Date

3. UNDERTAKING UNDER OATH/ AFFIRMATION

I, Ashleigh McKenzie, swear under oath / affirm that to the best of my knowledge, the information submitted or to be submitted for the purposes of this application is true and correct.

AMcKenzie

Signature of the Environmental Assessment Practitioner

ACER (Africa) Environmental Consultants

Name of Company

04 October 2022

Date

JL de Waal

Signature of the Commissioner of Oaths

Date *04/10/2022*



ADHERANCE TO REGULATORY REQUIREMENTS

Table i Required content of Basic Assessment Report according to GNR 326 (7 April 2017)

		Content of Basic Assessment report according to GNR 326 (7 April 2017)	Reference
1		A basic assessment report must contain the information that is necessary for the competent authority to consider and come to a decision on the application must include	
	A	Details of	
	i	The EAP who prepared the report and	Section 3.2 and Appendix 1
	ii	The expertise of the EAP, including a curriculum vitae	Appendix 1
	B	The location of the activity, including	Section 1.3; Figure 1 Appendix 4
	i	The 21-digit Surveyor General code of each cadastral land parcel	Application (Appendix 2)
	ii	Where available, the physical address and farm name	Not available
	iii	Where the required information in items (i) and (ii) is not available, the coordinates of the boundary of the property or properties	N/A
	C	A plan which locates the proposed activity or activities applied for as well as associated structures and infrastructure at an appropriate scale, or if it is	
	i	A linear activity, a description and coordinates of the corridor in which the proposed activity or activities is to be undertaken, or	Section 1.3 Appendix 4
	ii	On land where the property has not been defined, the coordinates within which the activity is to be undertaken	Section 1.3
	D	A description of the scope of the proposed activity, including	Section 1.3, Chapter 5
	i	All listed and specified activities triggered and being applied for, and	Section 3.4; Table 5
	ii	A description of the activities to be undertaken including associated structures and infrastructure	Chapter 5,
	e	A description of the policy and legislative context within which the development is proposed including	Chapter 2
	i	An identification of all legislation, policies, plans, guidelines, spatial tools, municipal development planning frameworks, and instruments that are applicable to this activity and have been considered in the preparation of the report, and	Chapter 2
ii	How the proposed activity complies with and responds to the legislation and policy context, plans guidelines, tools frameworks and instruments	Section 1.2 & 7.2.1	
f	A motivation for the need and desirability for the proposed development including the need and desirability of the activity in the context of the preferred location	Chapter 9	

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		Content of Basic Assessment report according to GNR 326 (7 April 2017)	Reference
	g	A motivation for the preferred site, activity and technology alternative	Chapter 6
	h	A full description of the process followed to reach the proposed preferred alternative within the site including	N/A
	i	Details of all the alternatives considered	Chapter 6
	ii	Details of the public participation process undertaken in terms of regulation 411 of the Regulations, including copies of the supporting documents and inputs	Chapter 4 Appendix 7
	iii	A summary of the issues raised by interested and affected parties, and an indication of the manner in which the issues were incorporated, or the reasons for not including them.	Section 4.4. Appendix 8
	iv	The environment attributes associated with the alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspect.	Chapter 7 Appendix 5
	v	The impact and risks identified for each alternative, including the nature significance, consequence, extent, duration and probability of the impacts, including the degree to which these impacts	Chapter 10 Appendix 5
	aa	Can be reversed	Chapter 10 Appendix 5
	bb	May cause irreplaceable loss of resources, and	Chapter 10 Appendix 5
	cc	Can be avoided, managed or mitigated	Chapter 10 Appendix 5
	iv	The methodology used in determining and ranking the nature, significance, consequences, extent, duration and probability of potential environmental impacts and risks associated with the alternatives,	Chapter 8 Appendix 5
	vii	Positive and negative impacts that the proposed activity and alternatives will have on the environment and on the community that may be affected focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects	Chapter 10 Appendix 5
	viii	The possible mitigation measures that could be applied and level of residual risk	Chapter 10 Appendix 5 Appendix 6
	ix	The outcome of the site selection matrix	N/a
	x	If no alternative locations for the activity were investigated, the motivation for not considering such, and	Chapter 6
	xi	A concluding statement indicating the preferred alternatives, including preferred location of the activity	Section 1.3 Section 6.1
	i	A full description of the process undertaken to identify assess and rank the impacts the activity will impose on the preferred location through the life of the activity including	Chapter 8 Appendix 5
	ii	A description of all environmental issues and risks that were identified during the environmental impact assessment process, and	Chapter 10 Appendix 5
	ii	An assessment of the significance of each issue and risk and an indication of the extent to which the issue and risk could be avoided or addressed by the adoption of mitigation	Chapter 10 Appendix 5
	j	An assessment of each identified potentially significant impact and risk, including	Chapter 10 Appendix 5
	i	Cumulative impacts	Chapter 10

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		Content of Basic Assessment report according to GNR 326 (7 April 2017)	Reference	
	ii	The nature, significance and consequences of the impacts and risk	Chapter 10 Appendix 5	
	iii	The extent and duration of the impact and risk	Chapter 10 Appendix 5	
	iv	The probability of the impact and risk occurring	Chapter 10 Appendix 5	
	v	The degree to which the impact and risk can be reversed	Chapter 10 Appendix 5	
	vi	The degree to which the impact and risk may cause irreplaceable loss of resources and	Chapter 10 Appendix 5	
	vii	The degree which the impact and risk can be avoided, managed or mitigated	Chapter 10 Appendix 5	
	k	Where applicable, a summary of the findings and impact management measures identified in any specialist's report complying with Appendix 6 to these regulations and an indication as to how these findings and recommendations have been included in the final report	Chapter 10 Appendix 5 Appendix 6	
	l		An environmental impact statement which contains	
		i	A summary of the key findings of the environmental impact assessment	Chapter 11
		ii	A map at an appropriate scale which superimposes the proposed activity and its associated structures and infrastructure on the environmental sensitivities of the preferred site indicating any areas that should be avoided, including buffers and	Figure 1. Appendix 4. Figures in the specialist reports (Appendix 5)
		iii	A summary of the positive and negative impacts and risks of the proposed activity and identified alternatives	Executive Summary
	m		Based on the assessment, and where applicable, impact management measures from specialist reports, the recording of the proposed impact management objectives and the impact management outcomes for the development for the inclusion in the EMPr	Appendix 6 (EMPr)
	n		Any aspects which were conditional to the findings of the assessment either by the EAP or specialist which are to be included as conditions of authorisation	Chapter 12
	o		A description of any assumptions, uncertainties and gaps in knowledge which relate to the assessment and mitigation measures proposed.	Section 3.9 and in the specialist reports (Appendix 5)
p		A reasoned opinion as to whether the proposed activity should or should not be authorised, and if the opinion is that it should be authorised, any conditions that should be made in respect of that authorisation.	Chapter 11 and Chapter 12	
q		Where the proposed activity does not include operational aspects, period for which the environmental authorisation is required, the date on which the activity will be concluded, and the post construction monitoring requirements finalised	N/A	
r		An undertaking under oath or affirmation by the EAP in relation to	Page xxviii	
	i	The correctness of the information provided in the reports	Page xxviii	
	ii	The inclusion of comments and inputs from stakeholders and I&APs	Page xxviii	

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		Content of Basic Assessment report according to GNR 326 (7 April 2017)	Reference
	iii	The inclusion of inputs and recommendations from the specialist reports where relevant, and	Page xxviii
	iv	Any information provided by the EAP to interested and affected parties and any responses by the EAP to comments or inputs made by interested and affected parties, and	Page xxviii
	s	Where applicable, details of any financial provision for the rehabilitation, closure, and ongoing post decommissioning management of negative environmental impacts	N/a
	t	Any specific information that may be required by the competent authority, and	N/a
	u	Any other matters required in terms of section 24(4)(a) and (b) of the Act.	N/a

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Table ii Regulatory requirement for public participation in a Basic Assessment Process according to Chapter 6 of GNR 326 (7 April 2017)

		Public Participation Process (Chapter 6 of GNR 326, 7 April 2017)	Undertaken during the Basic Assessment
41(1)		This regulation only applies in instances where adherence to the provisions of these regulations specifically required.	
2		The person conducting a public participation process must take into account any relevant guidelines applicable to public participation as contemplated in section 24J of the Act and must give notice to all potential interested and affected parties of an application or proposed application which is subjected to public participation by—	
	a	fixing a notice board at a place conspicuous to and accessible by the public at the boundary, on the fence or along the corridor of—	
		i the site where the activity to which the application or proposed application relates is or is to be undertaken; and	Appendix 7b
		ii any alternative site	N/A
	b	giving written notice, in any of the manners provided for in section 47D of the Act to—	
		i the occupiers of the site and, if the proponent or applicant is not the owner or person in control of the site on which the activity is to be undertaken, the owner or person in control of the site where the activity is or is to be undertaken and to any alternative site where the activity is to be undertaken	Section 4.2; Appendix 7
		ii owners, persons in control of, and occupiers of land adjacent to the site where the activity is or is to be undertaken and to any alternative site where the activity is to be undertaken;	Section 4.2; Appendix 7b, 7c, 7e, 7f
		iii the municipal councillor of the ward in which the site and alternative site is situated and any organisation of ratepayers that represent the community in the area;	Section 4.2; Appendix 7d, 7e and 7g
		iv the municipality which has jurisdiction in the area	Section 4.2; Appendix 7d, 7e and 7g
		v any organ of state having jurisdiction in respect of any aspect of the activity; and	Section 4.2; Appendix 7d, 7e and 7g
		vi any other party as required by the competent authority;	Section 4.2;
	c	placing an advertisement in—	
		i one local newspaper; or	Section 4.2; Appendix 7a
		ii any official Gazette that is published specifically for the purpose of providing public notice of applications or other submissions made in terms of these Regulations;	N/a
d		placing an advertisement in at least one provincial newspaper or national	Section 4.2;

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		Public Participation Process (Chapter 6 of GNR 326, 7 April 2017)	Undertaken during the Basic Assessment
		newspaper, if the activity has or may have an impact that extends beyond the boundaries of the metropolitan or district municipality in which it is or will be undertaken: Provided that this paragraph need not be complied with if an advertisement has been placed in an official Gazette referred to in paragraph (c)(ii); and	Appendix 7a
	e	using reasonable alternative methods, as agreed to by the competent authority, in those instances where a person is desirous of but unable to participate in the process due to—	
	i	illiteracy;	
	ii	disability; or	
	iii	any other disadvantage.	
3		A notice, notice board or advertisement referred to in subregulations (2) must—	
	a	give details of the application or proposed application which is subjected to public participation; and	Appendix 7b
	b	state—	
	i	whether basic assessment or S&EIR procedures are being applied to the application;	Appendix 7b
	ii	the nature and location of the activity to which the application relates;	Appendix 7b
	iii	where further information on the application or proposed application can be obtained; and	Appendix 7b
	iv	the manner in which and the person to whom representations in respect of the application or proposed application may be made	Appendix 7b
4		A notice board referred to in subregulation (2) must—	Appendix 7b
	a	be of a size of at least 60cm by 42cm; and	Appendix 7b
	b	display the required information in lettering and in a format as may be determined by competent authority.	Appendix 7b
5		Where public participation is conducted in terms of this regulation for an application or proposed application, subregulation (2)(a), (b), (c) and (d) need not be complied with again during the additional public participation process contemplated in regulations 19(1)(b) or 23(1)(b) or the public participation process contemplated in regulation 21(2)(d), on condition that—	Noted.
	a	such process has been preceded by a public participation process which included compliance with subregulations (2)(a), (b), (c) and (d); and	N/a
	b	written notice is given to registered interested and affected parties regarding where the—	N/a
	i	revised basic assessment report or, EMPr or closure plan, as contemplated in regulation 19(1)(b);	N/a
	ii	revised environmental impact assessment report or EMPr as contemplated in regulation 23(1)(b); or	N/a
	ii	environmental impact assessment report and EMPr as contemplated in regulation 21(2)(d) may be obtained, the manner in which and the person to whom representations on these reports or plans may be made and the date on which such representations are due.	N/a

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		Public Participation Process (Chapter 6 of GNR 326, 7 April 2017)	Undertaken during the Basic Assessment
6		When complying with this regulation, the person conducting the public participation process must ensure that—	
	a	information containing all relevant facts in respect of the application or proposed application is made available to potential interested and affected parties; and	This BAR
	b	participation by potential or registered interested and affected parties is facilitated in such a manner that all potential or registered interested and affected parties are provided with a reasonable opportunity to comment on the application or proposed application.	Section 4.2; Appendix 7
7		Where an environmental authorisation is required in terms of these Regulations and an authorisation, permit or licence is required in terms of a specific environmental management Act, the public participation process contemplated in this Chapter may be combined with any public participation processes prescribed in terms of a specific environmental management Act, on condition that all relevant authorities agree to such combination of processes.	Noted. The public will be given the opportunity in this public review process, to review submissions to Department of Water and Sanitation for registration of water uses under the relevant General Authorisations.

1. INTRODUCTION

1.1 Background

This report is a Basic Assessment Report (BAR) for the proposed construction and operation of the Witkop-Pietersburg 132 kV distribution powerline 3, located to the west of Polokwane, in the Capricorn District Municipality (DM), Limpopo Province, South Africa (Figure 1). The proposed alignment runs parallel to the existing 132 kV Witkop-Pietersburg 132 kV distribution powerline 2 within an existing, registered (currently vacant) powerline servitude.

An Environmental Authorisation (EA) for this line³ was previously issued by the Competent Authority (CA) to Eskom Distribution (Northern Region) on 26 September 2011 (12/12/20/2243). Construction of the authorised project has, however, not yet commenced and the EA has lapsed. Eskom Distribution Limpopo has appointed ACER (Africa) Environmental Consultants (ACER) as the independent Environmental Impact Assessment Practitioner (EAP) to re-apply for environmental authorisation from the Department of Forestry, Fisheries and the Environment (DFFE)⁴.

The proposed project triggers listed activities in Listing Notices 1 and 3 of the Environmental Impact Assessment (EIA) Regulations of 2014 (as amended), published under the National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA) and therefore requires the undertaking of a Basic Assessment. This BAR has been prepared on behalf of Eskom by ACER, in terms of the requirements of the EIA Regulations.

ACER will also apply on Eskom's behalf to the Department of Water and Sanitation (DWS) to authorise water uses (as relevant) in accordance with the National Water (Act 36 of 1998).

1.2 Purpose of the project

This development forms part of the strengthening of Eskom's electrical infrastructure to assist Eskom to address the backlog of electrification connections around the Moletsi, Chloe and Pietersburg substations in the Capricorn DM. The Polokwane Municipality has requested Eskom to create capacity for 47 villages which have household connections that cannot be connected due to capacity challenges on the Witkop-Pietersburg 132kV line 1 and 2.

Pietersburg substation is fed via two existing lines viz. a 32km Wolf line from Witkop Main Transmission Station (MTS) and a 16km Wolf line from Nirvana traction. These two lines cannot accommodate additional load and are currently N-1 non-compliant. The two lines supply Songloed network, Moletsi, Chloe, Pietersburg and Nirvana via Pietersburg substation. Due to the N-1 noncompliance and the overloading of Witkop-Pietersburg Line 2, many household electrification projects have been put on hold. Before the two lines can be upgraded to make them compliant, a third Witkop Line (the line being applied for in this Application) first needs to be built.

Water, sanitation and energy are basic services which the government seeks to provide to all citizens and which, in this project, will specifically contribute to socio-economic upliftment of poor rural households. This project aligns with the goals of the national Strategic Integrated Projects (SIP) 9 and 10, which aim to address the shortfall in demand for energy and ensure the transmission and distribution of energy for all.

³ It should be noted that the length of line currently proposed is approximately 18 km and not 33 km, as per the original application, as the line will tie into existing infrastructure before reaching Witkop Substation.

⁴ In consultation with the Limpopo Department of Economic Development, Tourism and Environmental Affairs (DEDTEA)

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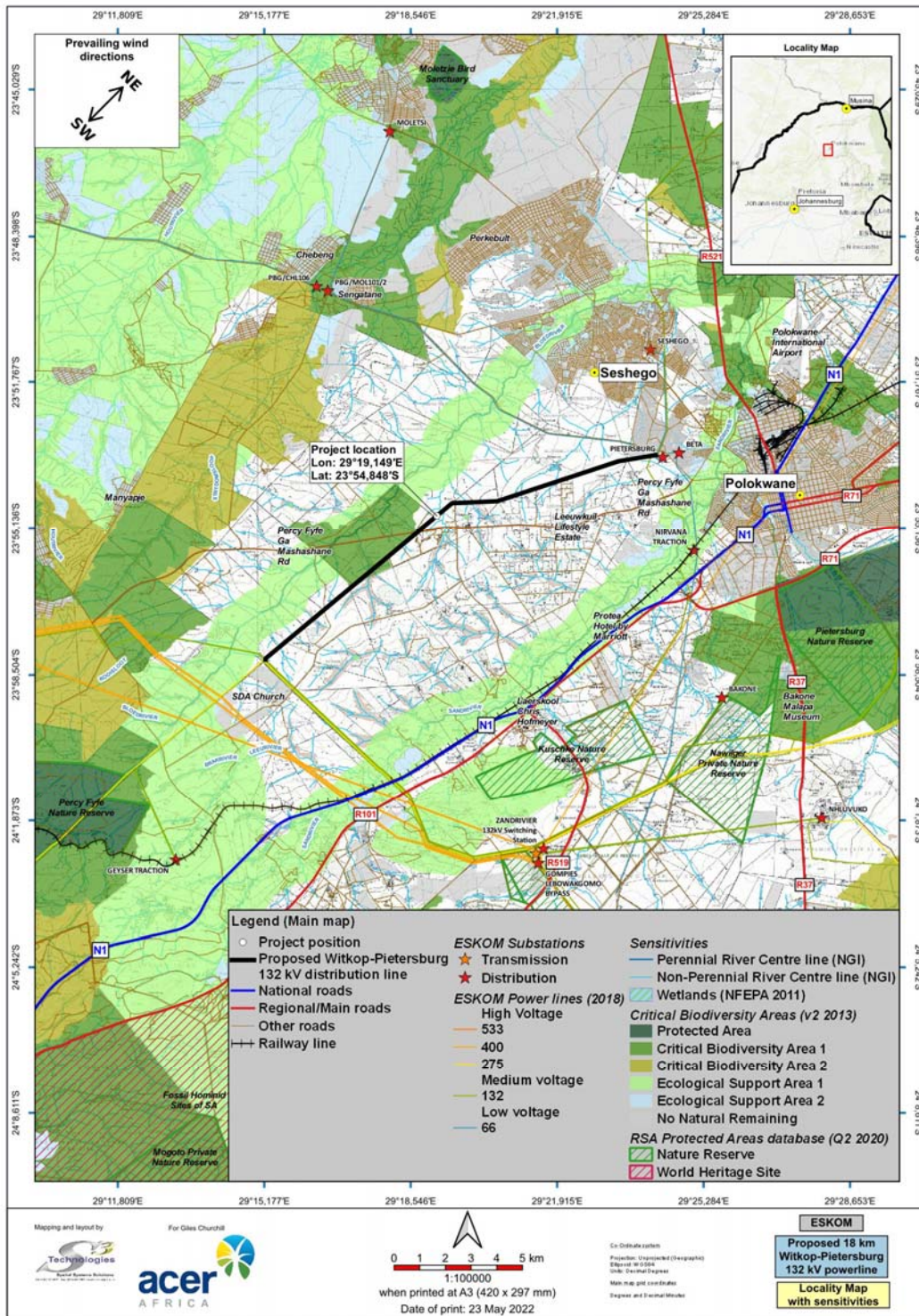


Figure 1 Locality of the proposed 132 kV Witkop Pietersburg distribution line 3

1.3 Project location and scope

The project involves the installation and operation of an 18 km long overhead 132 kV electricity distribution line. This section summarises the salient details of the project, with reference to the preferred alternative. A detailed project description and description of alternatives are provided in Chapter 5 and Chapter 6, respectively.

1.3.1 Location and dimensions

The project falls into Ward 1 of the Capricorn DM, Limpopo province. The proposed alignment extends approximately 18 km west/southwest from the Pietersburg substation, which is located off Matlala Road, near Polokwane Ext 44 on the western outskirts of Polokwane City. Near its midpoint, the line crosses the Percy Fyfe Ga Mashashane road (Figure 1).

The proposed 132 kV distribution line will run parallel to the existing Pietersburg- Witkop line 2 132 kV distribution powerline within a (currently vacant) registered servitude. It will be located approximately 21 m to the north of the existing line. At its end point, it will tie into the existing Witkop PPRust North 132 kV powerline.

A 132 kV line requires a permanent servitude of 15.5 m on either side of the electrical cable. ACER was requested by Eskom to investigate a corridor of 500 m either side of the proposed alignment, in case it is required to deviate from the existing registered servitude for technical reasons, encroachments or to accommodate any environmental sensitivities pinpointed during specialist walkdowns post the EA.

1.3.2 GPS co-ordinates and properties

Relevant GPS co-ordinates (approximate) of the infrastructure are provided in Table 1.

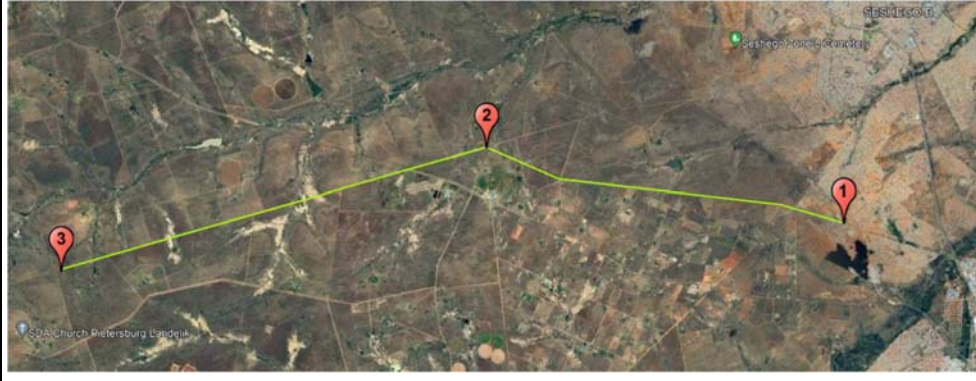
SG numbers of affected properties are provided in the Application for Authorisation (Appendix 2). Cadastral information has been provided in the Application for Authorisation (Appendix 2) and in the supporting map in Appendix 4.

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Table 1 GPS co-ordinates of the proposed Witkop-Pietersburg 132 kV powerline 3 (approximate)

Location	Latitude (S)	Longitude (E)
(1) Start of powerline at Pietersburg substation	23°53'26.69"	29°24'11.06"
(2) Mid-point of powerline (near Percy Fyfe Rd)	23°54'33.34"S	29°19'30.04"
(3) End point of powerline (tie-in to Witkop PPRust North 132 kV powerline)	23°58'10.03"S	29°15'12.27"
Approximate length of powerline	18 km	
Width of assessed corridor	500 m either side of the line	



1.4 Structure of this Basic Assessment Report (BAR)

A BAR must contain the information set out in Appendix 1 of GN No. 326. Table i indicates where in this BAR these various components are covered. This BAR has been structured as follows:

- Chapter 1 Introduction.
- Chapter 2 Legislative Framework.
- Chapter 3 BA process and approach.
- Chapter 4 Public Participation Process.
- Chapter 5 Description of the project.
- Chapter 6 Project alternatives.
- Chapter 7 Description of the receiving environment.
- Chapter 8 Assessment methodology.
- Chapter 9 Integrated description of environmental issues and potential impacts.
- Chapter 10 Assessment of the significance of potential impacts.
- Chapter 11 Need and Desirability from an EIA perspective.
- Chapter 12 Environmental Impact Statement.
- Chapter 13 Recommendation of the EAP.
- Chapter 14 Concluding statement and recommendations.
- Chapter 15 References.

The following documentation is appended to this BAR:

- Appendix 1: EAP *Curriculum Vitae*.
- Appendix 2: Application for Authorisation.
- Appendix 3: DFFE Screening Report.
- Appendix 4: Supporting Maps.

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- Appendix 5: Specialist reports, *Curriculum Vitae* and Declarations.
- Appendix 6: Environmental Management Programme.
- Appendix 7: Public Participation Documentation.
- Appendix 8: Comments and Responses Report.
- Appendix 9: Supporting documentation for exclusion of specialist reports recommended by the DFFE Screening Tool

2. LEGISLATIVE FRAMEWORK

There are many legal requirements (national, provincial and local government spheres) to which Eskom must adhere for the construction and operation of the proposed powerline. Key legislation, policies, conventions and guidelines which may be applicable to this project include (but are not necessarily limited to), those provided hereunder.

2.1 National and provincial legislation

2.1.1 *Constitution of the Republic of South Africa Act, 1996 (Act 108 of 1996) (as amended)*

The Constitution is the supreme law of South Africa, against which all other laws are measured. It sets out a number of fundamental environmental rights.

The Environmental Clause

Section 24 of the Constitution outlines the basic framework for all environmental policy and legislation: It states:

Everyone has the right –

- a) to an environment that is not harmful to their health or well-being; and*
- b) to have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that –*
 - i) prevent pollution and ecological degradation;*
 - ii) promote conservation; and*
 - iii) secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development.*

Access to Information

Section 32 of the Constitution provides that everyone has the right of access to any information held by the State or another juristic person, which is required for the exercise or protection of any rights.

Fair Administrative Action

Section 33 of the Constitution provides the right to lawful, reasonable and procedurally fair administrative action.

Enforcement of Rights and Administrative Review

Section 38 of the Constitution guarantees the right to approach a court of law and to seek legal relief in the case where any of the rights that are entrenched in the Bill of Rights are infringed or threatened.

2.1.2 *National Environmental Management Act, 1998 (Act 107 of 1998)*

NEMA is South Africa's overarching environmental legislation. It provides the legislative framework for Integrated Environmental Management in South Africa. The Act gives meaning to the right to an environment that is not harmful to health or well-being, entrenched in Section 24 of the Constitution. In addition, NEMA provides for equitable access to natural resources, environmental protection and the formulation of environmental management frameworks. The Act is underpinned by the global concept of sustainable development. Section 2 of NEMA provides a set of principles that apply to the actions of all organs of state that may significantly affect the environment.

The interpretation, administration and application of NEMA are guided by fundamental principles of sustainable development, provided in Chapter 1 of the Act. "Development must be socially, environmentally and economically sustainable" and requires the consideration of all relevant factors, which are guided by eight sub-principles, including:

- The sustainability principle.
- The lifecycle, cradle-to-grave principle.
- The 'polluter pays' principle.
- The precautionary principle.
- The duty of care principle.
- Fair and transparent public consultation.

2.1.3 Environmental Impact Assessment (EIA) Regulations, 2014 (as amended) and other associated Regulations affecting the EIA process.

The 2014 EIA Regulations (as amended April 2017), published in terms of Section 24 of NEMA, regulate environmental management in South Africa. Activities that require authorisation from the CA prior to their commencement are listed currently in Government Notices GNR 327, GNR 325 and GNR 324. The procedures dealing with the EIA Regulations are contained in GN R 326. In terms of Section 24F of NEMA, no activity may commence prior to an Environmental Authorisation being granted by the Department.

The Listed Activities applicable to the proposed project and the Basic Assessment process which is required to apply, in terms of the EIA Regulations, for environmental authorisation for this project, are detailed in Chapter 3.

There are other regulated requirements that affect the environmental authorisation process which include:

- The mandatory Screening via a Screening Tool is regulated in terms of Section 24(5)(h) of NEMA and Regulation 16(1)(b)(v) of the 2014 EIA Regulations.
- Procedures for the Assessment and Minimum Criteria for Reporting on identified Environmental Themes in terms of Sections 24(5)(a) and (h) and 44 of the National Environmental Management Act, 1998, when applying for Environmental Authorisation, which were promulgated in Government Notice No. 320 of 20 March 2020 (i.e. "the Protocols"), and in Government Notice No. 1150 of 30 October 2020 (i.e. protocols for terrestrial plant and animal species) have come into effect. Specialist assessments must be conducted in accordance with these protocols.
- In addition to the above, the EMPr must comply with Appendix 4 of the EIA Regulations, 2014, as amended.
- Government Notices 113 and 114 of 16 February 2018 which provide that wind and solar PV projects that take place within a Renewable Energy Development Zone (REDZ) and electricity infrastructure that takes place within a Strategic Transmission Corridor only require a Basic Assessment and do not need to undergo the longer and more comprehensive Scoping and Environmental Impact Reporting process in order to obtain an EA. This is because these areas have already been scoped for environmental risks as part of the SEA process. In addition, DFFE reduced the timeframe for the processing of these applications from 107 days to 57 days to help fast-track EA applications.
- Government Regulation No 435 of March 2019, published under the National Environmental management Act, 1998 (NEMA) provides for a generic Environmental Management Programme relevant to applications for environmental authorisation for

overhead electrical infrastructure that triggers activity 11 or 47 of the EIA Regulations Listing Notice 1 or activity 9 of the EIA Regulations Listing Notice 2 (Northern Corridor).

2.1.4 National Environmental Management: Waste Act, 2008 (Act 59 of 2008)

The National Environmental Management: Waste Act, 2008 (Act 59 of 2008) regulates waste management in order to protect health and the environment by providing reasonable measures for the prevention of pollution and ecological degradation, and for securing ecologically sustainable development. In fulfilling the rights contained in Section 24 of the Constitution, the State, through the organs of state responsible for implementing this Act, must put in place uniform measures that seek to reduce the amount of waste that is generated and, where waste is generated, to ensure that waste is re-used, recycled and recovered in an environmentally sound manner before being safely treated and disposed. By implication, the interpretation and application of the Act must be guided by the national environmental management principles set out in Section 2 of NEMA.

2.1.5 National Environmental Management: Biodiversity Act, 2004 (Act 10 of 2004)

This Act provides for the management and conservation of South Africa's biodiversity, protects species and ecosystems, ensures sustainable use of indigenous biological resources, ensures fair and equitable sharing of benefits arising from the commercial use of these resources, and to establish a South African National Biodiversity Institute. The Act also covers alien and invasive species and genetically modified organisms that pose a threat to biodiversity. As such, it controls and regulates:

- Threatening activities occurring in identified ecosystems.
- Activities which may negatively impact on the survival of identified threatened or protected species.
- Restricted activities involving alien or listed invasive species.
- The Act also provides for regulations and lists regarding Threatened and Protected Species (TOPS).

The following regulations may be of relevance throughout the various phases of the proposed development:

- GNR 324 of Government Gazette No. 37596 of 2014 provides the Amendment to the Threatened or Protected Species Regulations.
- GNR 1002 of Government Gazette No. 34809 of 2011, provides a national list of terrestrial ecosystems that are threatened and in need of protection.
- GNR 151 of Government Gazette No. 29657 of 2007 and GNR 1187 in Government Gazette 30568 of 2007 provides a list of critically endangered, endangered, vulnerable and protected species.
- GNR 988 of Government Gazette No. 41919 of 2018 provides amendments to the alien and invasive species list as well as the critically endangered, endangered, vulnerable and protected species.
- GNR 599 of Government Gazette No. 37886 of 2014 and GNR 864 of Government Gazette No. 40166 of 2016 provides a list of invasive and alien plant species.
- GNR 598 of Government Gazette No. 37885 of 2014 provides the Alien and Invasive Species Regulations. GNR 112 of Government Gazette No. 41445 of 2018 provides the draft alien and invasive species regulations in terms of categories, potential eradication and control techniques and the requirements for the application of permits.

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- GNR 529 of Government Gazette No. 40889 of 2017 provides the most updated amendments to the Regulations on the Convention of International Trade in Endangered Species (CITES) of wild fauna and flora.
 - Section 76 of the NEMBA (Act 10 of 2004) provides guidelines for monitoring, control and eradication plans for species listed as invasive in terms of Section 70 of this Act.

2.1.6 National Environmental Management: Air Quality Act, 2004 (Act 39 of 2004)

This Act regulates all aspects of air quality, including prevention of pollution and environmental degradation; providing for national norms and standards regulating air quality monitoring, management and control; and licencing of activities that result in atmospheric emissions and have or may have a significant detrimental effect on the environment.

This project will not require an air emissions licence. However, construction activities may result in the temporary exposure to dust, which will need to be appropriately controlled.

2.1.7 National Environmental Management: Protected Areas Act (Act 57 of 2003) as amended

The National Environmental Management: Protected Areas Act intends to provide for:

- The protection and conservation of ecologically viable areas representative of South Africa's biological diversity and its natural landscapes and seascapes.
- The establishment of a national register of all national, provincial, and local protected areas.
- The management of those areas in accordance with national norms and standards.
- Intergovernmental co-operation and public consultation in matters concerning protected areas.
- The continued existence, governance and functions of South African National Parks; and
- Matters in connection therewith.

For this project, the proposed powerline route does not directly impact on any protected areas.

2.1.8 Limpopo Environmental Management Act 2003, Act 7 of 2003.

This is the relevant statute in Limpopo Province, which aims to manage the removal and destruction of rare and endangered species. Whilst this act is in need of an update, it provides specialists with a basic tool to highlight both protected and specifically protected species which will require permits to relocate.

2.1.9 National Water Act, 1998 (Act 36 of 1998)

The National Water Act, 1998 (Act 36 of 1998) provides the legal framework for the effective and sustainable management of the country's water resources. The DWS is the overall responsible management authority. In line with the international trend of integrated water resource management, the NWA aims to manage rivers, dams, wetlands, surrounding land, groundwater, as well as human activities that influence them, in an integrated way. It provides for the protection, use, development, conservation, management and control of water resources. Section 21 of the NWA identifies 11 consumptive and non-consumptive water uses which must be authorized under a tiered authorization system.

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In general, a water use must be licensed unless:

- It is listed in Schedule 1 of the Act.
- Is an existing lawful water use.
- It is permissible under a General Authorisation.
- A responsible authority waives the need for a license.

As development or modifications of watercourses or wetlands are not included in Schedule 1, a licence is required to carry out any activity involving modifications to watercourses or wetlands. For this project, the powerline will potentially affect wetlands within 500 m of the alignment and thus will trigger the following water uses:

- Section 21(c)** Impeding or diverting the flow of water in a watercourse.
- Section 21(i)** Altering the bed, banks, course, or characteristics of a watercourse

For this project, as confirmed by the specialist study risk assessment, applications for General Authorisation (GA) of water uses will be required in accordance with DWS General Notice (GN) 509 Government Gazette No. 40229 (2016).

2.1.10 National Forest Act, 1998 (Act 84 of 1998)

In terms of the National Forests Act, 1998 (Act 84 of 1998), trees in natural forests or protected tree species (as listed in Government Gazette Notice 1935 of 25 March 2022) may not be cut, disturbed, damaged, destroyed and their products may not be possessed, collected, removed, transported, exported, donated, purchased or sold, except under licence granted by DFFE. Each application is evaluated on merit before a decision is taken whether or not to issue a licence (with or without conditions). Such decisions must be in line with national policy and guidelines.

For this project, one tree species in the study area has been identified as protected under the Act. If necessary, licenses will be applied for.

2.1.11 Conservation of Agricultural Resources Act, 1983 (Act 43 of 1983)

The Conservation of Agricultural Resources Act, 1983 (Act 43 of 1983) states that no degradation of natural land is permitted. The Act requires the protection of land against soil erosion and the prevention of water logging and salinisation of soils by means of suitable soil conservation works to be constructed and maintained. The utilisation of marshes, water sponges and watercourses are also addressed, as well as protection of vegetation and the combating of weeds and invader plants.

2.1.12 National Heritage Resources Act, 1999 (Act 25 of 1999)

The National Heritage Resources Act (NHRA), 1999 (Act 25 of 1999) aims to promote an integrated system for the identification, assessment and management of the heritage resources of South Africa. Furthermore, it established SAHRA to implement the Act.

Section 38 (1) of the NHRA lists development activities that would require authorisation by the responsible heritage resources authority. Activities considered applicable to the proposed project include the following:

- (a) *The construction of a road, wall, powerline, pipeline, canal or other similar form of linear development or barrier exceeding 300 m in length.*
- (c) *Any development or other activity which will change the character of a site; and*
 - (i) *exceeding 5 000 m² in extent. or*
 - (ii) *involving three or more existing erven or subdivisions thereof; or*
 - (iii) *involving three or more erven or divisions thereof which have been consolidated within the past five years*

The NHRA requires that a person intending to undertake such an activity must notify the relevant national and provincial heritage authorities at the earliest stages of initiating such a development. The relevant heritage authority would then, in turn, notify the person whether a Heritage Impact Assessment Report should be submitted.

As graves have been encountered along the proposed alignment, Section 36 of the Act, which makes provision for the care of burial grounds and graves, will apply to this project.

2.1.13 Civil Aviation Act, 2009 (Act No. 13 of 2009)

The Civil Aviation Act, 2009 (Act No. 13 of 2009) governs civil aviation in South Africa. The Act provides for the establishment of a stand-alone authority mandated with the controlling, promoting, regulating, supporting, developing, enforcing and continuously improving levels of safety and security throughout the civil aviation industry. This mandate is fulfilled by the South African Civil Aviation Authority (CAA), an agency of the Department of Transport. The CAA achieves the objectives of the Act by complying with the Standard and Recommended Practices of the International Civil Aviation Organisation, while considering the local context when issuing the South African Civil Aviation Regulations. All proposed developments or activities in South Africa that potentially could affect civil aviation must be assessed by CAA in order to ensure civil aviation safety.

For this project, an Obstacle Application will be submitted to the CAA.

2.1.14 Occupational Health and Safety Act, 1993 (No. 85 of 1993)

This Act provides for the health and safety of persons at work and the protection of persons other than persons at work against hazards to health and safety arising out of or in connection with the activities of persons at work. Every employer shall provide and maintain, as far as is reasonably practicable, a working environment that is safe and without risk to the health of his employees.

Eskom and its appointed Contractors/Sub-Contractors will need to adhere to the requirements of this Act as it relates to construction and operation of the proposed powerline.

2.1.15 National Road Traffic Act, 1996 (Act No. 93 of 1996), and National Traffic Regulations, 2000

The National Road Traffic Act, 1996 (Act No. 93 of 1996), and National Traffic Regulations, 2000, provide certain limitations on vehicle dimensions as well as axle and vehicle masses that a vehicle using a public road at any given time must comply with. Certain vehicles and loads cannot be moved on public roads without exceeding the limitations in terms of the dimensions and/or mass as prescribed. Where such a vehicle or load cannot be dismantled, without disproportionate effort, expense, risk, or damage, into units that can travel or be transported

legally. Such load is classified as an abnormal load and is permitted to be transported on public roads under an exemption permit issued in terms of Section 81 of the Act.

Eskom (or its appointed contractors) are responsible for procuring permits for abnormal loads of large materials/components that need to be transported to site.

2.2 National, provincial and local policies and plans

Applicable to the context of the proposed Witkop-Pietersburg 132 kV distribution line 3, are the following policies and plans:

- National Development Plan 2030 (NDP).
- Capricorn District Municipality Integrated Development Plan 2020/2021 (IDP)
- Polokwane IDP
- Polokwane Spatial Development Framework, 2010 (SDF).
- The Limpopo Conservation Plan V2 (LCPv2, 2013).

2.3 Guidelines

National Guidelines relevant to the project include:

- Department of Environmental Affairs (DEA) Integrated Environmental Management (IEM) Guidelines Series (2010).
- DEA Companion Guideline on the Implementation of the Environmental Impact Assessment Regulations (2014).
- DEA Public Participation Guideline (2017).
- DEA Guideline on Need & Desirability (2017).

Eskom protocols⁵ relevant to this project include:

- Environmental Impact Assessment Directive ESKADABE9.
- EIA Procedure for Reticulation and Sub Transmission Lines SCSPCABP7.
- EMP Procedure ESKPVAAZ1.
- Farm Access Protocol.

2.4 Authorisations, permits and licenses

The main authorisations/licenses/permits required or potentially required for the proposed project are summarised in Table 2.

⁵ Note that Eskom was unable to provide ACER with the latest versions of these protocols.

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Table 2 Environmental licenses/permits required (or potentially required) for the proposed Witkop - Pietersburg 132 kV powerline

#	License/Permit	Authority
1	Environmental Authorisation	DFFE: Integrated Environmental Authorisations
2	Heritage Permit	South African Heritage Resources Agency
3	Protected Tree Permits	DFFE: Forestry
4	Protected Plant Permits	DFFE: Biodiversity
5	Water Use License/ General Authorisation	Department of Water and Sanitation

3. BA PROCESS AND APPROACH

3.1 Applicant

The Applicant for this project is Eskom, trading as Eskom Holding SOC LTD. Eskom is a South African electricity public utility. This project is overseen by the office of Limpopo Eskom Distribution under Limlanga cluster, based in Polokwane (92 Hans van Rensburg Street, Polokwane, 0700).

3.2 Qualifications and experience of the Environmental Assessment Practitioner

ACER (Africa) Environmental Consultants is a well-established company with wide ranging expertise in environmental management and assessment processes. ACER has twice won the International Association of Impact Assessment, South Africa (IAIASa) National Premium Award for excellence in environmental management and assessment. The qualifications and experience of the ACER team working on this project are listed in Table 3 and *curriculum vitae* are provided in Appendix 1.

Table 3 Qualifications and experience of the Environmental Assessment Practitioner (EAP) Team

Name	Academic Qualification	Relevant Work Experience and registrations
Ms A McKenzie (Pr. Sci. Nat). Project Manager, Public Participation and Author.	MSc	More than 21 years' experience in the field of environmental management. Registered with the Environmental Assessment Practitioners Association of South Africa (EAPASA) (2019/1337) and the South African Council for Natural Scientific Professions (SACNASP) in the field of environmental science (Registration No 400026/05).
Mr Giles Churchill (Pr. Sci. Nat). Internal Review)	MSc	More than 15 years' experience in environmental management, impact assessments and the monitoring of compliance with specifications contained in Environmental Management Programmes. Registered with EAPASA (2019/1687) and SACNASP in the field of environmental science (Registration No 116348).

3.3 Details of the specialist team

Details of the specialist team are shown in Table 4.

Table 4 Details and experience of the specialists

Specialist Field	Specialist	Organisation	Registration
Avifauna	Megan Diamond	Feathers Environmental Services	SACNASP Pr.Sci.Nat. 300022/14
Heritage	Nikki Mann	PGS Heritage	Professional Archaeologist with the Association of Southern African Professional Archaeologists.
Riparian/Wetland	Suheil Hoosen	ENVASS	SACNASP (Pr.Sci.Nat. – 120680)
Social	Lloyd McFarlane	ACER (Africa) Environmental Consultants	Botswana EAP Board (Ref. No. BEAPA/2018/0085)
Vegetation	Wayne Westcott	ENVASS	SACNASP (Pr.Sci.Nat. – 117334)
Visual	Jon Marshall	Environmental Planning and Design	Professional Landscape Architect (SACLAP) Chartered Member of the Landscape Institute (United Kingdom)

3.4 Listed activities triggered by the project

Activities from Listing Notice 1 (GN R.327) and Listing Notice 3 (GN. R. 324) are triggered by the project and are detailed in Table 5. Relevant co-ordinates of the proposed linear infrastructure have been provided in Table 1 and the location in Figure 1. Since an EA authorises only the listed activities included in the Application for Authorisation (Appendix 2), a precautionary approach is followed when identifying listed activities that could potentially be triggered by the development.

Table 5 Listed activities triggered by the proposed Witkop-Pietersburg 132 kV powerline 3

Activity Number and Description (Listing Notice 1 - GN.R 327)		Portion of the proposed project to which the applicable listed activity relates
11 (i)	The development of facilities or infrastructure for the transmission and distribution of electricity— outside urban areas or industrial complexes with a capacity of more than 33 but less than 275 kilovolts;	An approximately 18 km long, 132 kV distribution line is proposed to be constructed west of Polokwane. The proposed corridor extends from the substation situated on the urban fringe and crosses rural farmlands.
12 (ii) (c)	The development of— (i) (ii) infrastructure or structures with a physical footprint of 100 square metres or more; where such development occurs— (a) ... (b) (c) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse; —	The 132 kV distribution line will be strung on single steel pole structures. Each single steel pole structure will have a footprint of approximately 2 m ² . There will be no hard structures placed in watercourses or within 32 m of watercourses. However, the servitude under the line will be cleared of large shrubs and trees 4-8 m either side of the line. The naturally occurring grasses and low-lying vegetation will remain growing under the line.
28	Residential, mixed, retail, commercial, industrial or institutional developments where such land was used for agriculture, game farming, equestrian purposes or afforestation on or after 01 April 1998 and where such development: (i) will occur inside an urban area, where the total land to be developed is bigger than 5 hectares; or (ii) will occur outside an urban area, where the total land to be developed is bigger than 1 hectare; excluding where such land has already been developed for residential, mixed, retail, commercial, industrial or institutional purposes.	The EAP has requested confirmation from DFFE as to whether DFFE considers a powerline to be an industrial land use, in order to determine whether this activity will be triggered or not. A response has not been provided to date and therefore, as a precaution, this listed activity will be applied for. The 18 km line with a servitude of 15.5 m either side of the line constitutes a development footprint of 55.8 ha. No mapping is as yet available to indicate the urban/rural divide in the Capricorn District Municipality. The eastern section of the 132 kV distribution line, which extends from Pietersburg Substation, is on the edge of Polokwane urban area. The urban fringe is under smallholdings. As the proposed line moves west, the area is rural farmland with much larger farms used for livestock, including game. Note that the current land use (primarily grazing and access roads) will continue unrestricted within the servitude.
Activity Number and Description (Listing Notice 3 - GN.R 324)		Portion of the proposed project to which the applicable listed activity relates
12 (e) (ii) and (iii)	The clearance of an area of 300 square metres or more of indigenous vegetation except where such clearance of indigenous vegetation is required for maintenance purposes undertaken in accordance with a maintenance management plan e. Limpopo	The proposed powerline route intersects with a CBA1 area. As such the clearing of more than 300 square meters of vegetation triggers this listed activity.

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	<ul style="list-style-type: none"> i. ii. Within critical biodiversity areas identified in bioregional plans; or iii. On land, where, at the time of the coming into effect of this Notice or thereafter such land was zoned open space, conservation or had an equivalent zoning. 	
15 (c)	<p>The transformation of land bigger than 1000 square metres in size, to residential, retail, commercial, industrial or institutional use, where, such land was zoned open space, conservation or had an equivalent zoning, on or after 02 August 2010.</p> <p style="text-align: center;">C Limpopo</p> <p>Inside urban areas.</p>	<p>Should DFFE consider a powerline to be an industrial land use, this activity may be triggered.</p> <p>At this stage, relevant zonation information is not available. In the absence of this information, this activity is being applied for, as a precaution, as there is open space on the west urban fringe.</p>

3.5 Basic assessment process and timeframes

The application for environmental authorisation requires a Basic Assessment to be undertaken in accordance with regulations 19 and 20 of GN No. 326 (07 April 2017) as shown in Figure 2. Public participation is to be undertaken in accordance with Chapter 6 of GN No. 326 (refer to Table ii). A detailed description of public participation undertaken for this project is provided in Chapter 4 of this BAR.

Based on the current regulations, the EAP must complete the Basic Assessment within 90 days of acceptance of the Application for Authorisation by DFFE.

It is important to note that timeframes in the EIA Regulations are based on calendar days and the following conditions apply:

- 15 December to 5 January are excluded from the calculation.
- No Public Participation between 15 December and 5 January unless justified by exceptional circumstances.
- Organs of State to comment within 30 days from the date on which it was requested to submit comments.
- For this project, which falls within a Strategic Transmission Corridor, the CA must issue a decision within 57 days.
- Notification of decision by CA within 5 days of date of decision.
- An appeal period of twenty days is allowed for, whereby any person wishing to lodge an appeal against the decision must submit the appeal within 20 (twenty) days from the date of notification of the decision.

3.6 Pre-application consultation

ACER submitted a Request for a Pre-application meeting, along with a proposed Plan for Public Participation, to DFFE on 26 May 2022. ACER was advised by DFFE that a Pre-application meeting would not be required for this project and that as of May 2022, DFFE no longer comments on Plans for Public Participation.

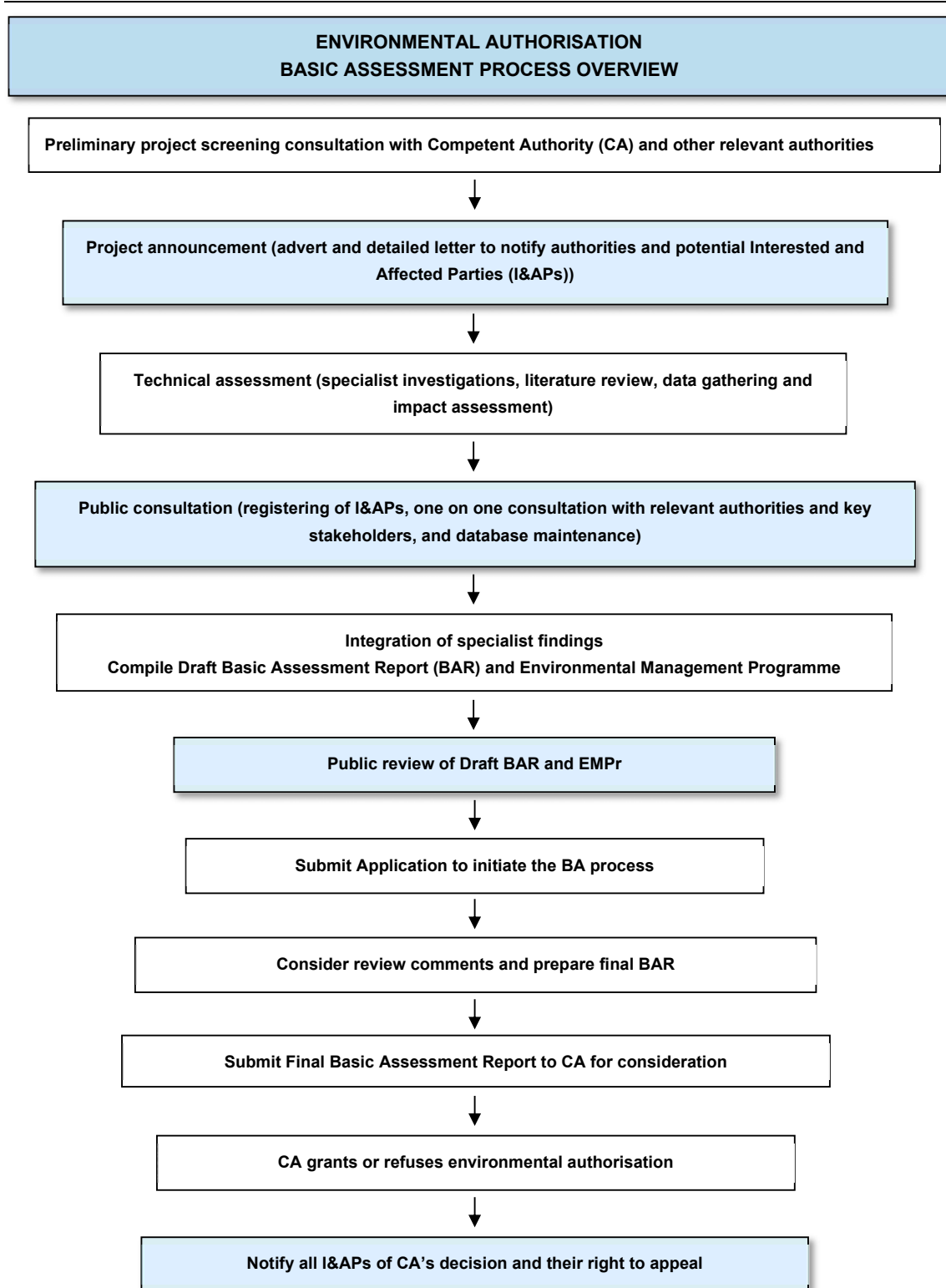


Figure 2 The phases of a Basic Assessment

3.7 Pre-application screening and specialist studies

A mandatory Environmental Screening Report (Appendix 3) was generated using the *pro-forma* provided on the national Department of Environmental Affairs' website (<https://screening.environment.gov.za/screeningtool/#/pages/welcome>). The footprint for Screening was provided as the length of the powerline with a 500 m buffer on either side (note that the servitude width is 15.5 m either side). The output of the Screening Tool Assessment is outlined below.

3.7.1 Development footprint sensitivities

3.7.1.1 EMF areas, wind and solar developments

The linear development infrastructure does not intersect with EMF areas, wind or solar developments. The 500 m buffer does fall within 13.7 km and 7 km of approved solar PV developments, respectively.

3.7.1.2 Strategic transmission corridor for bulk electricity

The linear development is located within a strategic transmission corridor for bulk electricity. The Screening Report identifies the applicability of various Government Regulations viz:

- (Please refer to Appendix 4 (Supporting Maps), for a map showing the location of the proposed project in relation to the strategic transmission corridor).

3.7.1.2.3 Theme sensitivities

Footprint sensitivities identified in the auto-generated report included the following themes:

- Agriculture (high sensitivity).
- Animal species (high sensitivity).
- Aquatic Biodiversity (very high sensitivity).
- Archaeological and Cultural Heritage (low sensitivity).
- Civil Aviation (very high sensitivity).
- Defence (high sensitivity).
- Paleontology (medium sensitivity).
- Plant Species (medium sensitivity).
- Terrestrial Biodiversity (very high sensitivity).

The screening tool recommends various Specialist Assessments (see Table 6) to be undertaken; with a proviso that the footprint sensitivities are identified on site by a suitably qualified person before the specialist assessments identified can be confirmed. It is the responsibility of the EAP to confirm this list and to motivate in the assessment report, the reason for not including any of the identified specialist studies, including the provision of photographic evidence of the site situation. This is dealt with in the following section.

3.7.2 Specialist studies recommended by Screening and EAP motivation for inclusion/exclusion

Specialist studies recommended by Screening, and a motivation for their inclusion or exclusion from the Basic Assessment, are outlined in Table 6.

Table 6 Recommended specialist studies, site sensitivity verification and motivation for inclusion/exclusion of specialist studies

Specialist Studies recommended (DFFE Screening Tool)	Theme sensitivity rating (DFFE)	Site sensitivity verification	Specialist study included/excluded	Motivation/ comment
Agricultural Impact Assessment	High	Low	Included (desktop)	Refer to Agricultural Assessment report in Appendix 5.
Landscape/ Visual Impact Assessment.	N/A	N/A	Included	Refer to the VIA report in Appendix 5.
Archaeological and Cultural Heritage Impact Assessment	Low	Two site specific sensitive features (graves) were found along the 18km alignment.	Included	Refer to the HIA report in Appendix 5.
Palaeontology Impact Assessment.	Medium	Low /Zero	Excluded	Refer to Section 9.3 of the HIA report in Appendix 5. The HIA report confirmed that, according to the Palaeo-sensitivity Map available on the South African Heritage Resources Information System database (SAHRIS), the Palaeontological Sensitivity of the proposed development area is rated as Insignificant/Zero and no further palaeontological studies are required.
Terrestrial Biodiversity Impact Assessment.	Very High	Site Ecological Importance assessment found areas of High, Medium and Very Low sensitivity	Included	Refer to the Terrestrial Biodiversity Impact Assessment report in Appendix 5.

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Specialist Studies recommended (DFFE Screening Tool)	Theme sensitivity rating (DFFE)	Site sensitivity verification	Specialist study included/ excluded	Motivation/ comment
Aquatic Biodiversity Impact Assessment	Very High	At-risk watercourses (high or medium risk systems) were identified	Included	Refer to the Aquatic Biodiversity Impact Assessment report in Appendix 5.
Avian Impact Assessment.	Animal species was indicated as High	Moderate to High	Included	Refer to the Avifauna Impact Assessment report in Appendix 5.
Civil Aviation Assessment.	Very High	Medium	Compliance Statement included. No further assessment recommended	While the DFFE Screening Tool has assigned a Theme Sensitivity rating of Very High and High along the proposed powerline alignment, after site verification, the EAP has assessed the Civil Aviation theme as Medium Sensitivity. This is due to the nature of the proposed development and its location in relation to other existing powerlines and aerodrome facilities, which makes it evident that there is low potential for negative impacts on the civil aviation installation, and if there are impacts, there is a high likelihood of mitigation. Any mitigation measures required will be identified by the SACAA and Eskom in response to the outcome of the Obstacle Application process, and implemented by Eskom.
RFI Assessment. (Radio Frequency Interference)	Medium	Medium	Compliance Statement included. No further assessment recommended.	According to Zhang et al (2019) the protecting distance between radar stations and ultra high voltage power transmission lines is at least 2.2 km. The DFFE Screening Tool has assigned a Theme Sensitivity rating of Medium as there is a radar feature within 15-35 km of the proposed powerline alignment. Given that the proposed line is one of several other lines within similar proximity to existing radar facilities 15-35 km away, it is assumed that if there is an impact, it can be mitigated to acceptable levels. Any mitigation measures required will be identified by the SACAA.

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Specialist Studies recommended (DFFE Screening Tool)	Theme sensitivity rating (DFFE)	Site sensitivity verification	Specialist study included/ excluded	Motivation/ comment
Geotechnical Assessment	N/A	x	Excluded from this BAR. A specialist geotechnical assessment will be undertaken by Eskom on finalisation of the tower positions.	Unlike for substations, where geotechnical studies are undertaken at an early stage of the project, for overhead powerlines, Eskom undertakes a geotechnical assessment only once the tower positions are finalised, after obtaining input from the environmental specialists, Basic Assessment and the Environmental Authorisation. For obvious reasons, it is unfeasible and contra-indicated for Eskom to undertake a generalised geotechnical assessment over a 1 km wide and 18 km long corridor for an overhead powerline, as Eskom requires exact and accurate information at each specific tower position to pinpoint the exact type of foundations required for each tower. The intervening overhead sections of line have no geotechnical impact.
Plant Species Assessment	Medium	Low	Included	Refer to the Terrestrial Biodiversity Impact Assessment report in Appendix 5.
Animal Species Assessment	High	Low (excluding birds, which are separately assessed)	Included	Refer to the Terrestrial Biodiversity Impact Assessment report in Appendix 5.

3.8 Environmental Management Programme (EMPr)

An Environmental Management Programme (EMPr) has been prepared as part of this assessment (Appendix 6) in accordance with GN 435 and incorporates generic as well as site specific mitigation and management measures.

3.9 Assumptions, limitations and gaps in knowledge

Key assumptions, limitations and/or gaps in knowledge applying to the EAP are listed below. Additional discipline specific ones are listed in the individual specialist reports contained in Appendix 5.

- This BAR has drawn on primary and secondary information from various sources including the client; engineering team; national, provincial and municipal databases; municipal planning documents; specialist studies and input from Interested and Affected Parties. It is assumed that this information from these sources was true and correct at the time of writing this report.
- It is assumed that the project scope and information, including maps, GPS co-ordinates and kml files, provided by the client and the engineering/survey team to the EAP and specialists, are accurate.
- It is assumed that the existing access provided by the parallel 132 kV powerline servitude will be used as far as possible to access the new alignment, during construction and operation, in order to minimise further damage to wetlands under the proposed line.

4. PUBLIC PARTICIPATION PROCESS

Public participation can be defined as the identification of issues in the public domain. The objectives of public participation in an environmental assessment are to provide sufficient and accessible information to I&APs, in an objective manner, to assist them to:

- Identify issues of concern and provide suggestions for enhanced benefits and alternatives.
- Contribute local knowledge and experience.
- Verify that their issues have been considered.
- Comment on the findings of the assessment, including the measures that have been proposed to enhance positive impacts and reduce or avoid negative ones.

The public participation process was designed to comply with the requirements of the 2014 EIA Regulations (as amended) as referenced in Table (ii). Public participation documentation is provided in Appendix 7.

4.1 Identification and registration of Interested and Affected Parties

Key stakeholders and other I&APs were identified, and their contact details incorporated into a project database (Appendix 7). They included representatives of a variety of sectors, as shown in Table 7.

Table 7 Sectors of society represented by I&APs on the direct mailing list

Government (National, Provincial and Local)
Parastatals
Civil Aviation
Property owners and local residents
Non-Governmental Organisations/Community Based Organisations
Conservation/Environmental Groups

In particular, the following commenting authorities were requested to comment, in order to determine relevant environmental sensitivities and /or permit requirements.

- Polokwane Municipality.
- Capricorn District Municipality.
- Limpopo Department of Economic Development, Environment and Tourism.
- Limpopo Department of Agriculture and Rural Development.
- Department of Forestry, Fisheries and the Environment (Biodiversity and Conservation Directorate).
- Department of Mineral Resources.
- South African Heritage Resources Agency (SAHRA).
- Civil Aviation Authority.
- Department of Defence.

While consultation has taken place with representatives of different sectors of society, special efforts have been made to obtain the contributions of all people who may be directly affected by the proposed project.

4.2 Project announcement and invitation to participate

Notification of the project and the opportunity for I&APs to participate in the Basic Assessment process⁶ was announced as follows:

- Onsite notices (English and Sepedi) were placed at strategic public locations along and/or nearby the proposed alignment, notifying I&APs of the proposed development and BA process (14 July 2022).
- Advertisements (English and Sepedi) were placed in the provincial newspaper, Seipone (15 July 2022).
- A letter, inclusive of a Background Information Document (BID) and Comment Sheet, was compiled and emailed to I&APs on the database (12 July 2022).
- Electronic copies of the notification letter, BID and comment sheet were sent to relevant Government departments and commenting authorities (12 July 2022 and additional on 20 July 2022).
- All I&APs who registered following the project announcement, were sent the letter and BID.
- Telephonic and/or email engagement with I&APs was undertaken as and when required. (As far as possible, affected landowners along the proposed alignment were contacted directly, before the project went public.)
- Direct correspondence and/or meetings with the local Ward Councillor, relevant Polokwane officials and commenting authorities.
- Where possible, community forums were notified of the BA process, by their representatives.
- Public documents were made available on ACER's website (<https://acerafrica.co.za/>).

4.3 Obtaining and dealing with comments from I&APs

The following opportunities have been provided to I&APs to contribute comments:

- Completing and returning Registration and Comment Sheets.
- Providing comments telephonically, by email and/or by way of onsite meetings and/or meetings conducted over Zoom (or similar remote technology).

4.4 Comments and Responses Report and summary of issues raised

Issues and concerns raised by I&APs have been captured in a Comments and Response Report (CRR) (see Appendix 8). Responses have been provided as applicable. To date, comments received from I&APs and relevant authorities relate to the following topics:

- Stakeholder registration and provision of information and mapping.
- Correspondence between ACER and DFFE on various process issues.
- Uploading of the project case to SAHRIS.
- The need to submit an obstacle application (CAA).
- Forwarding of project announcement information to community forums.
- Servitude compensation arrangements.

⁶ All relevant project documents were loaded onto ACER's website at the applicable time and were available for public review.

4.5 Circulation of the Draft BAR for public review and comment

Notification of the availability of the Draft BAR and request for comment will be undertaken as follows:

- Notification of registered I&APs via email.
- Uploading of the BAR to ACER's website.
- Lodging of the document at the Polokwane City Library and/or other suitable public venue.
- Telephonic engagement with I&APs who do not have access to the internet, as required, in order to:
 - Disseminate information regarding the proposed project.
 - Receive input regarding the public participation process and the proposed development.
 - Provide I&APs not previously registered on the project database with an opportunity to be formally registered and, thereafter, be informed of progress for the remainder of the project.
- ACER will also make provision for the possibility of virtual meetings / posting of executive summaries, as reasonable alternative methods of public participation, if requested by I&APs.

4.6 Notification of submission of the Final BAR

The draft BAR will be finalised after consideration and incorporation of I&AP comments (as relevant). The Final BAR will be compiled and submitted to DFFE.

Registered I&APs will be notified of the Final BAR as follows:

- Notification letters will be sent to all registered I&APs by email.
- The Final BAR will be uploaded to ACER's website, where members of the public can download the report for review and comment.
- ACER will also make provision for the possibility of virtual meetings / posting of executive summaries as reasonable alternative methods of public participation, if requested by I&APs.

4.7 Public and authority review comments incorporated into the final BAR

- Comments submitted on the draft BAR will be recorded and responded to in the DBAR CRR, and matters raised will be addressed in the Final BAR, where appropriate.
- Registered I&APs will be notified by email when the Final BAR is submitted to DFFE.
- A copy of the Final BAR will be made available on ACER's website.

4.8 Notification of DFFE's decision

- Registered I&APs will be notified by email once DFFE has made a decision, and notified of their right to appeal the Environmental Authorisation (EA).

5. DESCRIPTION OF THE PROJECT

5.1 Route and location



The proposed distribution line will be located in an existing, registered and currently vacant servitude to the west of Polokwane, running west/southwest of the Pietersburg substation (Plate 1). Refer to Section 1.3 for details of the location.

5.2 Technical specifications

Refer to Table 8 for technical specifications.

Table 8 Technical specifications of the proposed Witkop-Pietersburg distribution line

Length	18 km
Voltage and Line	132 kV Kingbird power cable
Tower design	steel monopole (Plate 2, Figure 3)
Tower Height	Can vary from 18 m to 26 m depending on terrain/topography
Required clearance	6m
Tower footprint	Approx. 2 m ²
Distance between towers	Approx. 230 m
Permanent Servitude width	15.5 m on either side of the electrical cable
Vehicle access along servitude	Vegetation clearance is required for a distance of 4-8 m either side of the cable to allow for vehicle access under the line. Vegetation in the wider servitude that does not grow high enough to cause interference with overhead power lines, or cause a fire hazard is not cut or trimmed unless it is growing in the vehicle access area.

	
<p>Plate 1 Existing powerline line extending from the Pietersburg substation.</p>	<p>Plate 2 Typical 18m high 132kV self-sustaining steel monopole tower.</p>

ESKOM DISTRIBUTION LIMPOPO
 PROPOSED DEVELOPMENT OF THE 132 KV WITKOP-PIETERSBURG ESKOM DISTRIBUTION POWERLINE 3 (18 KM),
 CAPRICORN DISTRICT MUNICIPALITY, LIMPOPO, SOUTH AFRICA

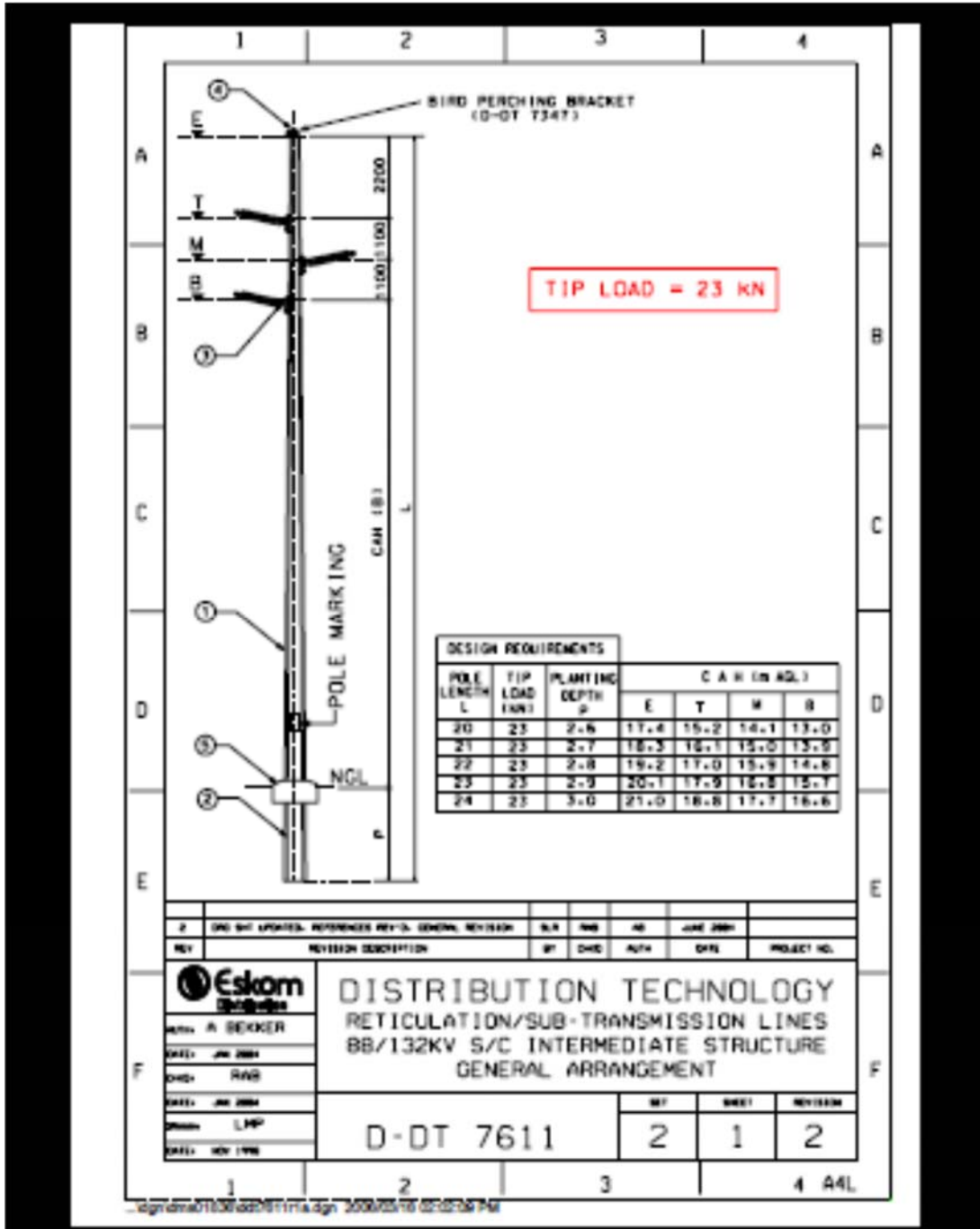


Figure 3 General specifications of steel monopoles for sub-transmission lines

5.3 Construction activities

5.3.1 Details of the construction process

The construction of the proposed power line will typically entail the following process:

- ❑ *Access negotiations:* negotiations between the landowner, contractor and Eskom will be undertaken in order to determine access methods to the tower positions. (Note for the Witkop-Pietersburg powerline 3, access will be from the servitude of the existing parallel powerline).
- ❑ *Establishment of construction camps:* the establishment of construction camps will be done in accordance with the stipulations of the EMPr and conditions set through negotiations with the affected landowners.
- ❑ *Tower pegging:* Eskom will appoint a surveyor to peg the central line of the power line servitude and to set out the location of the tower footprints. This work will be undertaken in two phases as follows:
 - Marking and pegging of the centre line of the proposed 132 kV power line route.
 - Marking and pegging the position of the tower positions.
- ❑ *On-site verification:* the surveyed line and tower positions will be inspected by relevant specialists (for example, avifauna and vegetation specialists) who will undertake their inspections before construction commences. If there is a problem with the alignment or tower site in their professional opinion, the surveyor is recalled to find a suitable alternative.
- ❑ *Vegetation clearance:* A 4-8 m wide strip directly under the position of the powerline will be cleared of all vegetation for construction access purposes. Any plants that could interfere with the construction, maintenance or operation of the powerline, will be removed or trimmed in accordance with relevant legislation and the EMPr.
- ❑ *Selection of best-suited structures and foundations:* a geotechnical and soil assessment is undertaken at each tower position to establish the type of foundation required according to the soil and rock type at each tower position.
- ❑ *Gate installation:* gates are installed where it is necessary to breach existing fence lines.
- ❑ *Excavation of foundations:* foundation holes (each approximately 2 m² in size) for each tower will be excavated to a depth of between 1.5 m and 2.0 m and filled with concrete once the monopole has been placed in position. During construction, fences will be temporarily erected around holes and working areas as a safety precaution.
- ❑ *Foundation of steelwork:* the foundation structures will be positioned into the excavated holes and tied together for support.
- ❑ *Concrete filling/foundation pouring:* a “ready-mix” truck, which contains 6 m³ of concrete will be utilised to pour concrete into the foundation holes. If there are difficulties in gaining access for the truck, concrete will be mixed on site by hand or using mobile “mini mixers”.
- ❑ *Delivery of steel to tower site:* the steelwork is usually delivered to the site approximately one month after the foundation has been poured. Where possible, the steel is transported to the site by truck. If access is difficult by truck or sensitive environments prevent ground access, helicopters will be utilised to transport material to site.
- ❑ *Assembly team, punch and paint:* the tower is assembled whilst it is lying on the ground. Every nut is screwed into the framework and painted with a non-corrosive paint (“punch and paint”).
- ❑ *Erection of towers:* using cranes, the construction team will lift the towers into place. If the cranes cannot access a site, a helicopter is used to lift the tower into position.
- ❑ *Stringing, sag and tension:* large equipment is utilised during this activity. Two cable drums, with a winch in-between, are placed approximately 5 km apart. A pilot tractor lays

the cable, which is then pulled up to the towers with the use of pulleys. Once the tension has been exacted, the conductor cables are strung, never touching the ground. In mountainous areas, the pilot cables are flown in by helicopter or shot across valleys, to create the correct tension to pull through the conductors. A small team of people, with survey equipment, conducts the sag and tension process. Tension is then created, the conductors clamped into place at the tower, and the excess cable is cut off.

- *Rehabilitation*: this is a continuous process, conducted throughout the construction phase. Any bladed temporary access roads (considered unlikely) will be ploughed over, contoured and replanted with endemic grasses.

5.3.2 Construction camp and stockpile areas

A suitable site for a construction camp and stockpiling areas will be identified by the Contractor, taking into account compliance with recommendations and environmental protection measures stipulated in the EMPr.

5.3.3 Access roads

Access will be via existing tar and gravel roads (district and farm roads) to the existing servitude. The parallel servitude will allow for access to all areas along the new alignment.

5.3.4 Water use

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 an applicable water tanker. The contractor should be able to provide a written document detailing where the water is sourced from.

5.3.5 Effluent management

The project is not expected to generate effluent, other than domestic waste. It is likely that ready-mix cement or pre-cast will be used for concrete structures, rather than mixing of cement on site. Chemical toilets will be provided for construction workers. These chemical toilets will be serviced by an appointed service provider and all waste will be disposed at a licensed waste treatment works within the area.

5.3.6 Solid waste management

Waste generated during construction activities will be removed from site and disposed of at an authorised landfill site(s) suited to the category of waste. It is anticipated that small volumes of waste will be generated including unused steel, conductor cables, cement or concrete and general domestic waste. Disposal will be undertaken by the contractor, in separate waste streams (for recycling) where possible and to authorised waste disposal sites.

5.3.7 Storm water management

Stormwater during construction will be managed to ensure that no contaminated water enters the surrounding natural environment.

5.3.8 Emissions

During construction, exhaust emissions will be generated from construction machinery and vehicles. No other emissions are envisaged.

5.3.9 Noise

Noise will be generated during construction due to movement of vehicles and plant, excavations and other construction activities. Provided construction activities are confined to daylight hours, noise during construction is not anticipated to cause significant disturbance.

5.4 Job creation and procurement

As a result of the proposed project there will be both direct and indirect employment opportunities created during construction. The number of staff employed (skilled and unskilled) depends on the contractor. Unskilled labour is usually sourced from local communities and trained by the contractors. Skilled labour for cable stringing will be in the employ of the contractor appointed to construct the powerline.

5.5 Anticipated construction dates and programme

The construction dates and program will be finalised once an EA is issued. However, Eskom anticipates that construction will commence June 2024 and will take a period of approximately 12 months to complete.

5.6 Operation and maintenance activities

Ongoing maintenance is required for the lifespan of the cable. Line inspections are usually undertaken once or twice per year, via vehicle inspections along the servitude. Defects on the line and towers which could have a detrimental effect on future line operation are identified and corrected as required. Servitude management also includes checking for bird mortalities and installing bird flight diverters or other mitigation as required, controlling soil erosion, periodic clearing and pruning of vegetation, and periodic clearing of the centre line track to ensure vehicle access. This entails Eskom personnel and vehicles gaining access to and traversing private properties.

5.7 Decommissioning activities

Decommissioning is not envisaged in the foreseeable future. Should decommissioning be required, it would need to be undertaken in accordance to the applicable environmental legislation at the time.

6. PROJECT ALTERNATIVES

Alternatives are different means of achieving the purpose and need of a proposed development. They include alternative sites, layouts or designs, technologies and the “No Development” alternative. This chapter describes the various alternatives considered for the proposed installation and operation of the Witkop-Pietersburg 132 kV Line 3.

6.1 Technology alternatives

As the proposed route traverses an area with a high presence of vultures, steel monopoles have been selected as the poles of choice as they are the most bird friendly. Further technical specifications have been recommended by the bird specialist in terms of flight diverters, etc. to be added to the line (refer to Section 10.6.8).

6.2 Route alternatives

Two route alternatives were investigated during the original BA process (a route to the west and an alternative route to the east). The route to the east was discarded as an option due to technical (electrical supply) issues, impacts on arable land and impacts on private properties and developments. The route to the west was selected as the preferred alignment and subsequently authorised. The current line proposed is situated along the same preferred alignment and is intended to be located in the existing registered and vacant servitude running parallel to the existing PTB Witkop 132 kV powerline. The area surrounding Polokwane City is traversed by numerous powerlines, and it is increasingly difficult to find suitable vacant land for new servitudes. For this project, the proposed alignment has been previously investigated, assessed and approved by the route planners and environmental authority. There are currently no compelling reasons to find new route corridors.

6.3 No Development alternative

The No Development alternative implies that the proposed Witkop-Pietersburg 132 kV line 3 will not be constructed and operated. This would imply that no construction impacts will occur nor impacts due to the physical presence of the line once built. However, this alternative is not preferred, because without this line, the network in this area cannot be developed to the required specifications to handle the demand in rural areas.

The No Development Alternative will form the baseline against which all other options are assessed.

7. DESCRIPTION OF THE RECEIVING ENVIRONMENT

This section describes characteristics of the receiving environment that may affect or be affected by the proposed Witkop-Pietersburg 132 kV overhead distribution line. Where relevant, information has been sourced directly from the specialist reports which are contained in Appendix 5 and listed under Chapter 13 (References). Citations are only provided where information has been obtained from other sources.

Photographs of important elements of the study area can be found in the text below as well as in the specialist reports.

7.1 Project area

The portion of land under assessment in this study falls primarily within the City of Polokwane Local Municipality (LM) within the Capricorn (DM).

The project will have direct and indirect impacts on the biophysical and socio-economic environment. The limits or boundaries of the study area can be divided into the project's Direct Area of Influence and Indirect Area of Influence.

A corridor of 500 m either side of the line was investigated. The Direct Area of Influence, which is the area directly affected by project activities, includes:

- The physical footprint of the towers to be placed between 200-250 m apart, along the route alignment (each tower has a footprint of approximately 2m²).
- The area of clearance and construction underneath the cable within the permanent servitude (31 m).
- The area where vegetation will be permanently kept clear of any large trees or other vegetation that obstructs vehicle access (4-8 m directly under the line).
- Road access for construction, which will be along Percy Fyfe as well as district roads and smaller farm roads, including the servitude access underneath the existing 132kV line running parallel to the proposed line.
- The construction camp site (an existing disturbed site will be selected by the contractor, in accordance with recommendations from the EAP).

The Indirect Area of Influence includes areas impacted by secondary effects, cumulative effects, and induced effects, which are not confined to areas directly adjacent to the infrastructure or within 500 m either side (for example, economic benefits from job creation).

7.2 Socio-economic characteristics

7.2.1 Planning and development context

The delivery of services such as water, electricity and sanitation are key concerns for many communities in the Capricorn DM. The availability of these basic services to communities has a direct impact on the quality of life of the population. The NDP and SIP laid out by the National Planning Commission identifies electricity provision as a necessity for development. District and local IDP and SDF are in alignment with national goals. The Polokwane IDP indicates that progress has been made to connect households to electricity with only 5% of households yet to be connected. This project will allow for greater distribution to accommodate the backlog as well as meet demand for the future.

At site level, stakeholder consultation revealed that there is planning underway to develop the Scarlett Ibis housing and lifestyle estate. This will include housing, roads, recreational facilities, educational facilities and potentially businesses on the Morgenzon property near the east end of the powerline. This development will need to take into account the registered servitude and planned powerline.

7.2.2 Land use

Socio-economic characteristics of the site-specific project area can be described as peri-urban. There are several small holdings and small to medium size businesses that lie adjacent to the servitude of the powerline. The area is characterised by lower population densities and less infrastructure, hence lower access to services such as refuse removal, formal housing and electricity than what is usually expected for an urban area. Larger privately owned farms are predominantly used for livestock grazing such as cattle, goats, pigs or game. There are some instances of crop cultivation on some of the surrounding land parcels in the broader study area, although it is mostly small scale.

7.2.3 Institutional environment and role players

The institutional environment is largely driven by local community organisations and forums which do communicate with government but not regularly. It was evident from discussion with landowners that these organisations were created to address slow infrastructure roll out and general lack of services. Some of the key project role players identified are listed below:

- Capricorn DM and Polokwane LM.
- Eskom Distribution.
- Local residents.
- Larger landowners adjacent to the project such as the Ibis piggeries.
- The local Community Policing Forum (CPF).

7.2.4 Population demographics

The Polokwane LM, one of four local municipalities forming the Capricorn DM, covers an area of approximately 3,766 km² with a total population of approximately 797,127 which equates to a population density of 212 people per km². Approximately 60% of the district population resides within the Polokwane LM boundaries. The Polokwane IDP (2021, cited in McFarlane, 2022) indicates that people are moving towards the city in search of more opportunities associated with economic activities within the city. This trend of urbanisation is likely to continue, as opportunities are scarce in rural areas. The population is characterised by a high proportion of people under the age of 35, with 65% of the population aged between 0 and 34 years (31% under the age of 15 and 39% between 15 and 34) (StatsSA, 2011, cited in McFarlane, 2022).

7.2.5 Employment

Table 9 indicates the sectors of employment in the Polokwane LM. Unemployment in the Polokwane LM is reported to be 15.6%, well below unemployment levels for the Capricorn DM, reported to be 24.13%. It is highly likely that the recent economic downturns have increased these levels of unemployment as well as increased the dependency ratio.

Table 9 Employment composition by economic sector in the Polokwane Municipality

Sector	Percentage
Agriculture	4
Mining	1
Manufacturing	7
Electricity	1
Construction	9
Trade	27
Transport	5
Finance	13
Community Services	26
Household	7

7.2.6 Household income

South Africa experiences serious challenges in terms of poverty, inequality and unemployment. The majority of households (62%) within the Polokwane LM are reported to be living in the low income category of between R1 and R 76 800 per annum, which can be described as living under conditions of poverty in relation to the World Bank threshold. Comparatively, within the study area, there is a lower percentage of middle income and upper income households. This is likely attributable to Ward 1 being on the urban periphery of the City of Polokwane, where there would be less economic activity and lower wages.

7.2.7 Access to services (water, sanitation and electricity)

7.2.7.1 Water and sanitation

Access to piped water has decreased in the study area, signalling a deterioration of municipal infrastructure and services. Many households in Ward 1 obtain water from a borehole. Regarding sanitation, 48% of households in the Polokwane LM have access to flush or chemical toilets, in the Capricorn DM this figure drops to 29% (and further drops to 23% at provincial level. In Ward 1, 33% of the population has access to flush or chemical toilets.

7.2.7.2 Electricity

Although a high percentage of households have access to electricity, there remains a high demand for electrical connections. With reference to this project specifically, the Witkop-Pietersburg 132kV line 2(Nirvana) is overloading during normal conditions and both Witkop-Pietersburg 132kV lines 1 & 2 are above the loading limit during the N-1 contingency scenario, which is in violation of the Grid Code. The Witkop-Pietersburg 132kV lines 1 & 2 currently supply a total of 55171 customers. The Polokwane Municipality has requested Eskom to create capacity for a total of 47 Villages, which have household connections that cannot be connected due to capacity challenges on the Witkop-Pietersburg 132kV line 1 and 2. The estimated total household projects that have been put on hold from the municipality priority list amount to 4077 connections.

7.2.7.3 Summary

In summary, services are available, but largely in the urban areas of the Capricorn DM and Polokwane LM. Further away from the City of Polokwane, there are noticeably less services available. This was supported by the qualitative data collected, where all landowners interviewed stated that they do not make use of municipal services at all.

7.2.8 Civil Aviation facilities

No airfields are located along the proposed alignment. However, the Pietersburg substation is located approximately 6 kilometres from the Polokwane International Airport. This would place the eastern section of the proposed powerline underneath the flight paths of aircraft making their landing approach or taking off.

7.2.9 Military bases

The South African National Defence Force operates a military base from the Polokwane International Airport. No known defence facilities are located along the proposed alignment.

7.2.10 Crime and security risks

South Africa has a high crime rate due, inter alia, to high levels of inequality, poverty and unemployment, and a culture of general lawlessness and corruption. Contractors should also be aware of the “construction mafia” operating in South Africa, who have interfered with and delayed many government construction contracts, with serious negative consequences (<https://globalinitiative.net/analysis/extortion-construction-mafia-south-africa/>). As such, contractors working in the area need to be alert to the risks and take sensible precautions. Crime prevention and law enforcement are the domain of the South African Police Services. However, private security firms play a prominent role in protection of people and property, for those that can afford to pay for this service. The local CPF is very active in the study area. Should construction plant or materials need to be left on site, 24-hour security will likely be required.

7.3 Abiotic characteristics

7.3.1 Climate

The area has a low Mean Annual Rainfall which can fluctuate between 345 mm and 655 mm. Winters are dry and most of the rain falls in the summer months (October, January, February), with the highest rainfall being experienced in November (average of 85mm). Mean daily maximum and minimum temperatures range from 33.2 °C (October) to 0.5 °C (June). There are an average of 11 frost days per year.

With the notable peaks in rainfall, flash floods can occur and construction in the summer months is not advised, especially within close proximity to watercourses. Further consideration should be given to the timing of rehabilitation on site, and the implementation of search and rescue events. Dry, cold winters will cause grassland and bushveld to become dormant, and certain grassland species (specifically bulb bearing) to appear to be absent within the study area at certain times of the year.

7.3.2 Climate change

The need to plan and adapt, in a multi-disciplinary way, to the challenges of climate change (specifically for this project, more extreme weather events) is by now well recognised. For this project, taking into account erosion control and stormwater drainage during flood events, will be of relevance.

7.3.3 Geology, soils and topographic setting

The study area is situated within a relatively flat undulating landscape, with limited but well-defined hydrological features.

The geology associated within this landscape include migmatites and gneisses of the Hout River Gneiss and the Turfloop Granite (both of Randian Erathem) are dominant. Some ultramafic and mafic metavolcanics, quartzite and chlorite schist of the Pietersburg Group (Swazian Erathem) are also found.

Soils found within the study area are known to be freely drained, structureless soils, often being red or yellow in colour, with low to medium base status. Erosion gullies / dongas are common sight within the study area and therefore soil erosion management will be important in this area.

7.4 Terrestrial environment

7.4.1 Threatened Ecosystems (national)

The listing of Threatened or Protected ecosystems are categorised into Critically Endangered (CR), Endangered (EN), Vulnerable (VU) or Protected. According to the "Schedule of Threatened Terrestrial Ecosystems in South Africa" (promulgated under NEMBA Government Notice 1002 of 2011) the proposed development does not occur within any threatened ecosystems.

7.4.2 Provincial and municipal conservation planning

The Limpopo Province Map of Critical Biodiversity Areas and Ecological Support Areas (2018) encompasses the updated district municipality data and has the following CBA map categories:

- PA: Protected Area.
- CBA1: Critical Biodiversity Area 1.
- CBA2: Critical Biodiversity Area 2.
- ESA1: Ecological Support Area 1.
- ESA2: Ecological Support Area 2 .
- ONA: Other Natural Area.
- NNR: No Natural Remaining.

Figure 4 shows that the route intersects with CBA; ONA and NNR.

7.4.3 Protected Areas and Important Bird and Biodiversity Areas (IBAs)

No protected areas are located along the proposed powerline route, however as shown in Figure 5, the following observations are made within the 5 km and 10 km radius established around the site.

- The Kuschke Nature Reserve (>5km).
- The Percy Fyfe Nature Reserve (>5km).
- The Limpopo Central Bushveld FPAES Focus Area (>5km).
- Pietersburg Nature Reserve (>5km).

ESKOM DISTRIBUTION LIMPOPO

PROPOSED DEVELOPMENT OF THE 132 KV WITKOP-PIETERSBURG ESKOM DISTRIBUTION POWERLINE 3 (18 KM), CAPRICORN DISTRICT MUNICIPALITY, LIMPOPO, SOUTH AFRICA

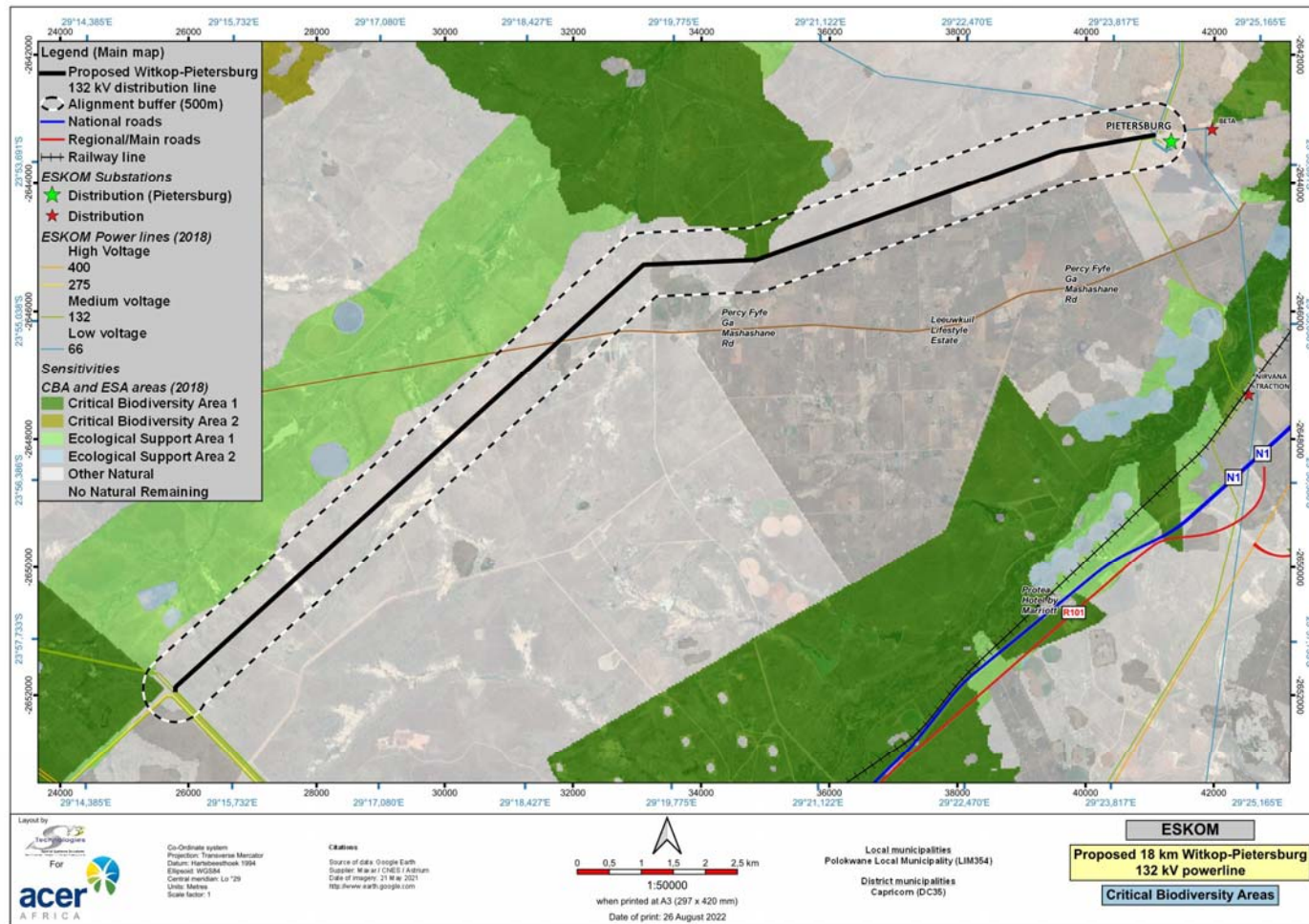


Figure 4 Critical Biodiversity Areas (CBA) occurring in the study area

ESKOM DISTRIBUTION LIMPOPO
PROPOSED DEVELOPMENT OF THE 132 KV WITKOP-PIETERSBURG ESKOM DISTRIBUTION POWERLINE 3 (18 KM),
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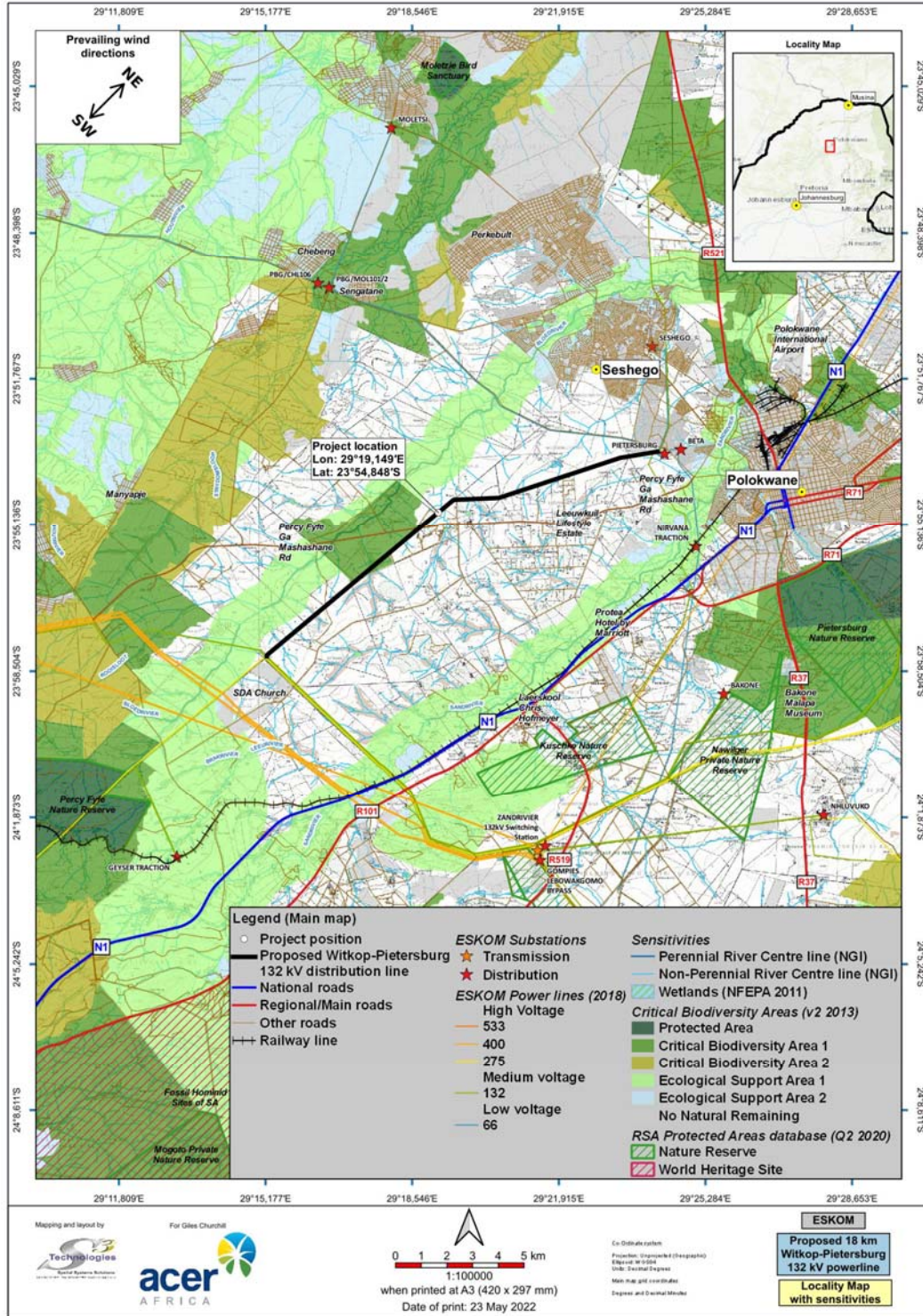


Figure 5 Protected Areas closest to the proposed powerline

Important Bird and Biodiversity Areas (IBAs), as defined by BirdLife International, constitute a global network of over 13 500 sites, of which 112 sites are found in South Africa. IBAs are sites of global significance for bird conservation. No IBAs are found within a 10km radius of the site.

7.4.4 Vegetation types and terrestrial habitat

As shown in Figure 6, the study area occurs within a single national vegetation type, namely the Polokwane Plateau Bushveld, with a conservation status of “Least Concern”. This vegetation type contains moderately undulating plains with a short open tree layer to grass plains with occasional trees at higher altitudes. Although outside of the study area, the Mamabolo Mountain Bushveld is embedded within this vegetation unit and can often overlap.

The field assessment indicated that the proposed powerline alignment crosses four categories of habitat (Plate 3):

- **Potential watercourses:** showed signs of either being permanently or temporarily wet at different times of the year (e.g. ephemeral rivers). Watercourses offer habitat heterogeneity to a fairly homogenous landscape and will ensure connectivity not only between other micro-habitats present within the study area, but also between outlying areas which may depend on the seasonal availability of water within one or more of these ecosystems. Furthermore, fossorial (burrowing) species are common within the Limpopo climate, and therefore impacts to watercourses and their associated transition areas (riverbanks and adjacent grasslands) may have a significant impact on these species, without the Contractors knowledge.
- **Secondary Vegetation:** Secondary habitat loosely refers to habitat which is not considered primary vegetation, and is often low in species diversity. Examples are secondary grassland habitat found adjacent to main roads, driveways or intersections. Other examples include fallow fields, fields with crops or areas which have historically been disturbed, but which have been allowed to naturally regenerate, often recruiting pioneering or invader species. Portions of the study area which fall within this landcover category offer limited habitat, and are expected to be associated with a limited level of ecological connectivity and function. However, in some cases, secondary vegetation can be found adjacent to more natural intact areas or include artificial systems (e.g. artificial wetland and dams) with higher connectivity and therefore should receive the same precautionary approach as working within sensitive habitat, such as riverbeds or natural wetlands.
- **Polokwane Plateau Bushveld:** The majority of the study area consists of both open and closed bushveld habitat, with a well established grass layer and woody layer dominated by *Vachellia sp.*. Species composition varies in areas along the route, but consists of a mixture of dense stands of *Dichrostachys cinerea* in more disturbed areas closer to the start of the route in the east, to more natural habitat consisting of *Senegalia caffra*, *Vachellia tortilis*, *Ziziphus mucronata* and *Searsia pyroides*, a common species along the well vegetated river lines.
- **Transformed areas:** This landcover category represents areas which contain the least amount of natural habitat, are currently fully transformed and contain no ecological value e.g. buildings, roads and causeways.

7.4.5 Plant Species of Conservation Concern (SCC)

A number of plant SCC, endemic plant species and protected plant species have been recorded within the greater study area. During the field assessment, no plant SCC were observed, however, one (1) protected tree species, *Sclerocarya birrea subsp. caffra* (Marula tree), which is listed under the National Forest Act (NFA, 1998) was observed within the Project Area of Influence (PAOI).





	
<p>Vegetation found in watercourses in the study area</p>	<p>Secondary Vegetation in the study area.</p>
	
<p>Polokwane Plateau Bushveld</p>	<p>Transformed areas found within the study area.</p>

Plate 3 Examples of vegetation/habitat categories found within the study area

ESKOM DISTRIBUTION LIMPOPO

PROPOSED DEVELOPMENT OF THE 132 KV WITKOP-PIETERSBURG ESKOM DISTRIBUTION POWERLINE 3 (18 KM), CAPRICORN DISTRICT MUNICIPALITY, LIMPOPO, SOUTH AFRICA

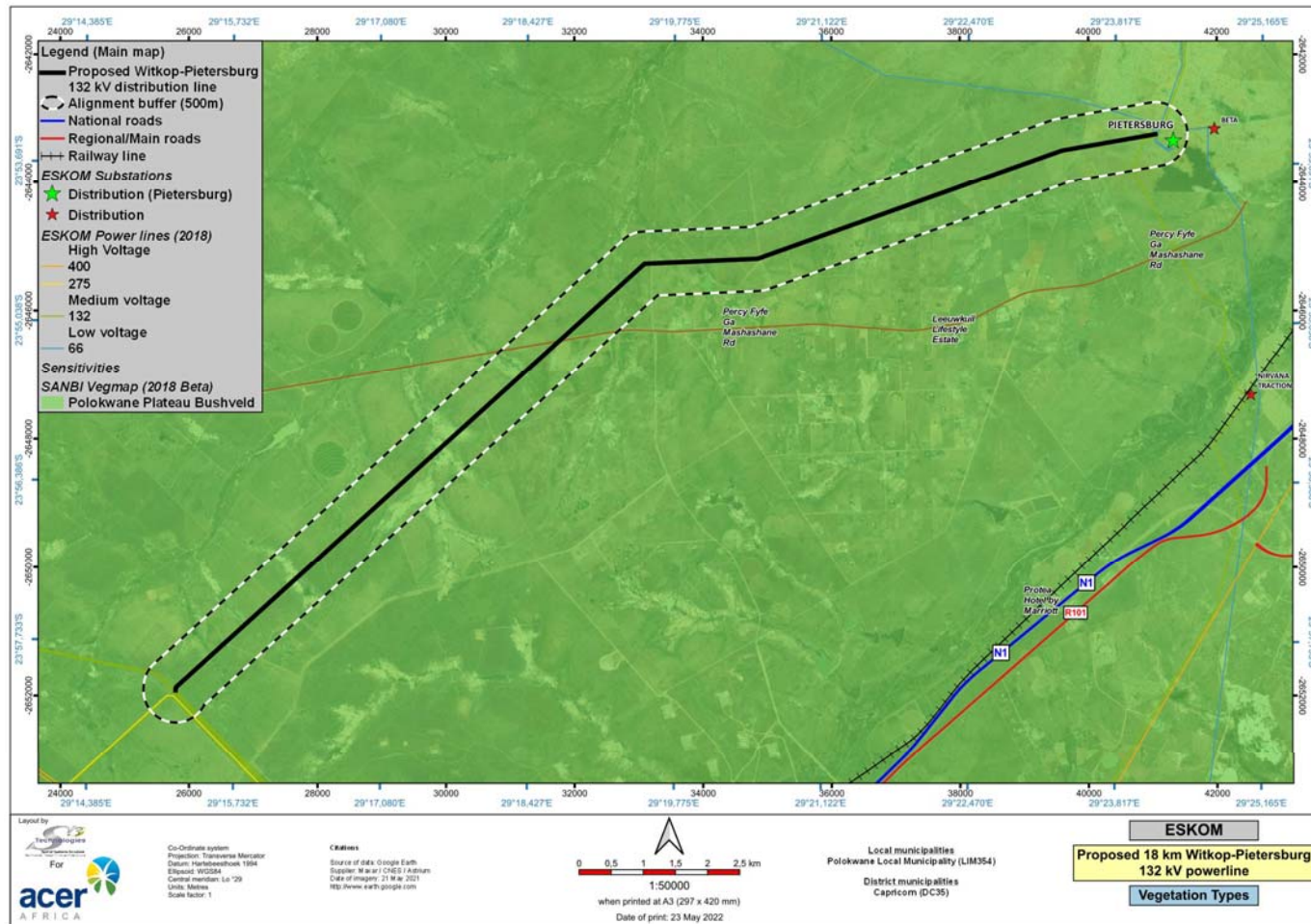


Figure 6 Vegetation Types in the study area

7.4.6 Terrestrial fauna

According to the records found on the Animal Demography Unit (2022) database for Quarter Degree Square (QDS) 2329CD, a total of 44 mammal species have been recorded. Of these, only four (4) were reported to be mammal SCC (Table 10). No additional mammal species were identified within the DFFE environmental screening report produced for this application. For full species lists, refer to the Terrestrial Biodiversity Assessment in Appendix 5.

During the field work, several mammal species were observed, including jackal and various antelope. The frequency of these observations were influenced by the presence of game farms along the route and the presence of a waste disposal / dumping site associated with Ibis Piggery. This facility dumps carcasses out in the open for scavengers to feed on and is commonly referred to as the Vulture Restaurant. The proposed alignment does not directly traverse game farms but skirts the boundaries of some game farms. It should be noted that some game farms stock buffalo, which can be dangerous to people if encountered unexpectedly.

Table 10 Red List mammal species likely to occur within Quarter Degree Square 2329CD

Name	Conservation status (IUCN and TOPS)	Likelihood of occurrence
<i>Atelerix frontalis</i> (South African Hedgehog)	NT	Medium
<i>Damaliscus lunatus</i> (Tsessebe)	VU	Low
<i>Neamblysomus julianae</i> (Juliana's Golden Mole)	EN	Low but probable
<i>Otomys auratus</i> (Vlei Rat)	NT	Lo

7.4.7 Herpetofauna

The study area is expected to have a moderately high herpetofauna diversity, with approximately 82 (65 reptiles and 17 amphibians) individual species known to occur within the QDS 2329CD. Of the species recorded within this QDS, only one (1) TOPS species was recorded (African Bullfrog, *Pyxicephalus adspersus*).

7.4.8 Ecological drivers

The study area has undergone limited landcover changes and has largely remained constant over the past decade or more, due to the fact that much of the land over which the study area traverses is privately owned, and has been registered as a powerline servitude, which does not permit encroachment or urban expansion. As a whole, the study area is expected to function as, or as close as possible, to a natural savannah bushveld habitat. A number of key processes continue to take place within this habitat and these include fire and vegetation-animal interactions.

7.5 Hydrology and aquatic habitat (freshwater)

7.5.1 Water Management and Catchment Areas

The general study area falls into the Limpopo Water Management Area (WMA) and Sand sub-WMA. The project falls within the Sub Quaternary Catchment A71A-239 (Bloed Rivier) and A71A-249 (Sand Rivier).

7.5.2 NFEPA rivers and wetlands

There are no National Freshwater Ecosystem Priority Area (NFEPA) Rivers traversed by the proposed alignment. Six NFEPA wetlands occur in the study area, of which three (3) are artificial valley bottom wetlands and the other three (3) are artificial seepage wetlands (Figure 7).

7.5.3 Wetlands within 500 m either side of the proposed alignment

Twenty-seven (27) Hillslope Seepage Wetlands within 500 m either side of the proposed alignment were identified on site. Photographs of some of these wetlands are shown in Plate 4. Of the 27 wetlands, eleven (11) may be directly impacted by the proposed development (Figure 8 and Figure 9).





	
<p>Seep wetland (burned)</p>	<p>A dam constructed within the extent of a wetland,</p>
	
<p>Major erosional feature and sporadic <i>Themeda triandra</i> vegetation within wetland</p>	<p>Dirt road, bare areas and fence constructed through wetland</p>

Plate 4 Examples of wetland areas found within the study area

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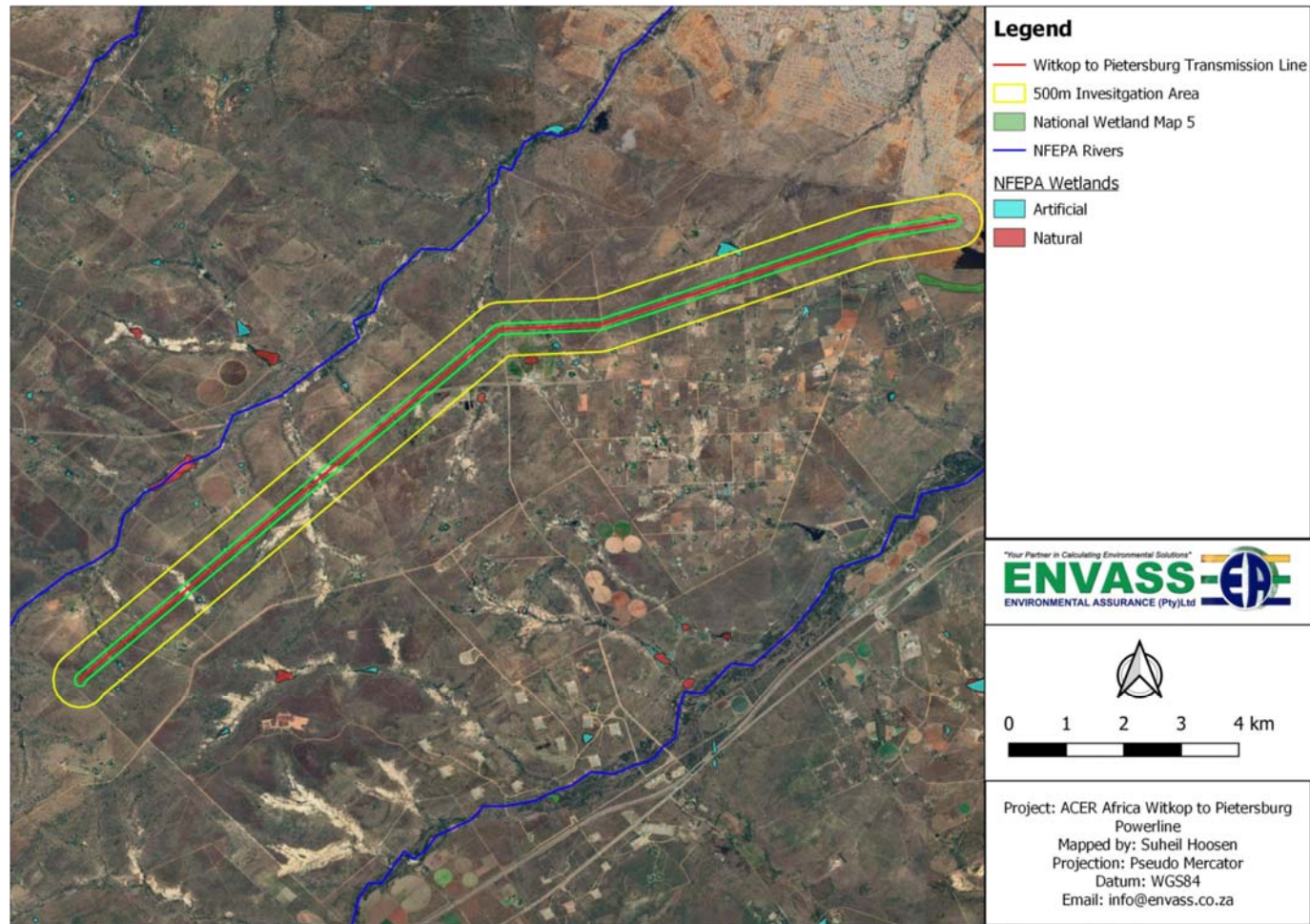


Figure 7 National Freshwater Ecosystem Priority Area (NFEPA) rivers and wetlands near or in the study area

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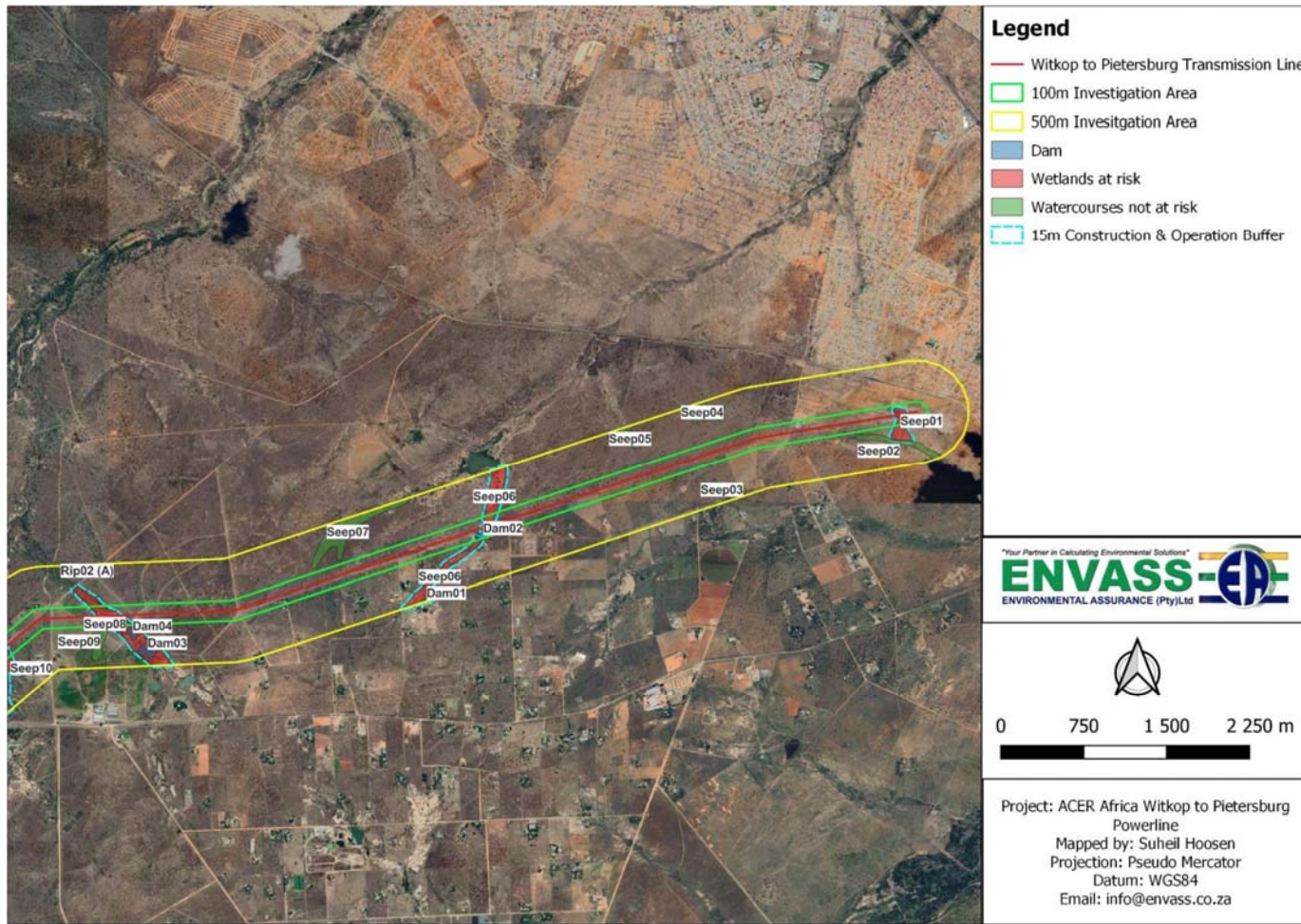


Figure 8 Freshwater aquatic habitat occurring in the study area (eastern side of the alignment)

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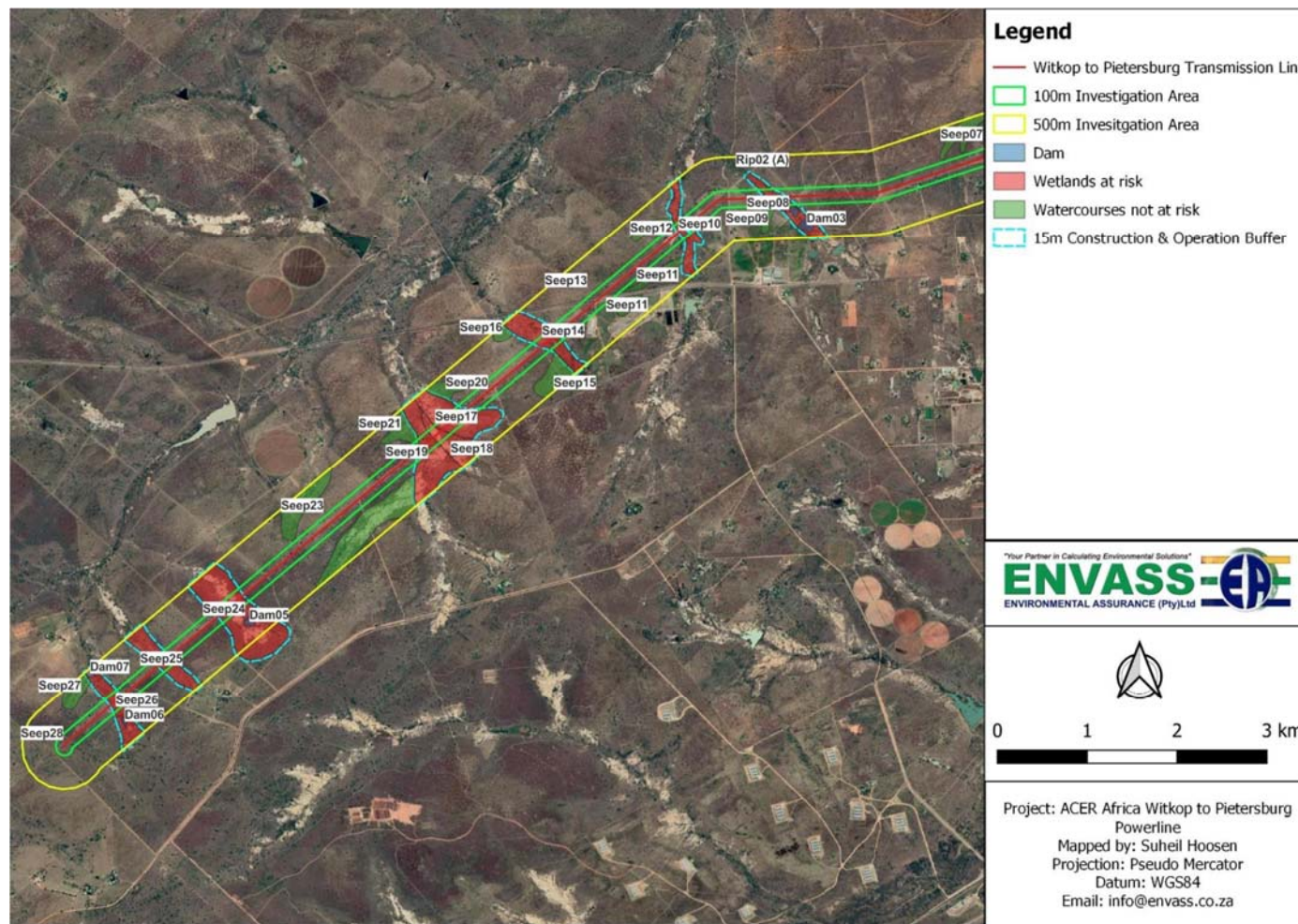


Figure 9 Freshwater aquatic habitat occurring in the study area (western side of the alignment)

7.5.4 Delineation and classification of at-risk watercourses

The risk categories of the watercourses in the study area (Table 11) were determined by the wetland specialist, under the assumption that a corridor along the powerline would need to be cleared for access purposes⁷. The eleven (11) at-risk watercourses within the study area were delineated on-site using ‘A Practical Field Procedure for Identification and Delineation of Wetland and Riparian Areas’ (DWAF, 2008). They were classified as intermittently and seasonally saturated hillslope seepage wetlands (Table 12).

Table 11 The risk categories of each watercourse.

PROPOSED DEVELOPMENT	WATERCOURSE	RISK RATING
<p>Seep01, Seep06</p> <p>Seep08, Seep10</p> <p>Seep14, Seep17</p> <p>Seep18, Seep19</p> <p>Seep24, Seep25</p> <p>Seep26.</p>	<p>Eleven (11) hillslope seepage wetlands that are positioned within the extent of the proposed development. Thus, these wetlands will be directly and indirectly impacted upon by the proposed development and will require further assessment in terms of its integrity, services and importance. Furthermore, the proposed development is situated within the 500 m Zone of Regulation (ZoR) (GN 509 of 2016) of these eleven (11) wetlands.</p>	<p>High</p>
<p>Seep02, Seep03</p> <p>Seep04, Seep05</p> <p>Seep07, Seep09</p> <p>Seep11, Seep12</p> <p>Seep13, Seep15</p> <p>Seep16, Seep20</p> <p>Seep21, Seep22</p> <p>Seep23, Seep27</p>	<p>Sixteen (16) hillslope seepage wetlands that occur > 25 m from the proposed development and will not be impacted by the proposed construction activities and do not require further assessment in terms of integrity, services and importance. Furthermore, the proposed development is situated within the 500 m ZoR (GN 509 of 2016) of these sixteen (16) wetlands.</p>	<p>Low</p>

⁷ Note however, that due to the existing parallel powerline, access will largely be from the parallel servitude.

Table 12 Presentation of the classification of each watercourse to level 5 of Ollis et al. (2013) (cited in ENVASS, 2022).

HGM UNIT	LEVEL 2: REGIONAL SETTING	LEVEL 3: LANDSCAPE UNIT	LEVEL 4: HGM UNIT			LEVEL 5: HYDROLOGICAL REGIME	
			A-HGM Unit	B- Longitudinal Zonation / Landform	C- Landform / Inflow Drainage	A- Perenniality / Inundation	B- Non-perennial subgroups / Saturation
SEEP01 , SEEP06	WetVeg: Central Bushveld Group 6 (CR)	Slope	Seep	Without channelled outflow	N/A	Intermittently inundated	Intermittently saturated
SEEP08 , SEEP10 , SEEP14 , SEEP25 , SEEP26	WetVeg: Central Bushveld Group 6 (CR)	Slope	Seep	Without channelled outflow	N/A	Seasonally and intermittently inundated	Seasonally and intermittently saturated
SEEP17 , SEEP18 , SEEP19 , SEEP24	WetVeg: Central Bushveld Group 6 (CR)	Slope	Seep	With channelled outflow	N/A	Seasonally and intermittently inundated	Seasonally and intermittently saturated

KEY: CR- Critically Endangered, SEEP – Hillslope Seepage Wetland

7.5.5 Ecological Importance and Sensitivity (EIS) of at-risk watercourses

A detailed WET-Health, WET-EcoServices and Ecological Importance and Sensitivity (EIS) assessment was undertaken for each of the 11 wetlands (refer for details to the Aquatic Biodiversity specialist report in Appendix 5). The scores are shown in Table 13.

Table 13 Wet-Health and Ecological Importance and Sensitivity (EIS) scores of wetlands that may be impacted by the project

#	Wetland No	Overall Wet-Health Score	Overall EIS Score
1	Seep 01	4.8 D (largely modified)	1.19 (moderate)
2	Seep 06	5.1 D (largely modified)	1.19 (moderate)
3	Seep 08	5.4 D (largely modified)	1.31 (moderate)
4	Seep 10	4.7 D (largely modified)	1.31 (moderate)
5	Seep 14	5.1 D (largely modified)	1.31 (moderate)
6	Seep 17	6.5 E (seriously modified)	1.00 (moderate)
7	Seep 18	6.5 E (seriously modified)	1.00 (moderate)
8	Seep 19	6.5 E (seriously modified)	1.00 (moderate)
9	Seep 24	6.5 E (seriously modified)	1.00 (moderate)
10	Seep 25	3.0 C (moderately modified)	1.31 (moderate)
11	Seep 26	3.3 C (moderately modified)	1.31 (moderate)

7.5.6 Buffer Zone determination and management objectives for at-risk watercourses

Based on the above findings, the wetland specialist determined a buffer zone of 15 m for these wetlands and recommended that management objectives should be to maintain the current integrity.

7.5.7 DWS Risk Assessment Matrix and water use licensing requirements

The Risk Assessment Matrix undertaken by the wetland specialist (refer for more detail to the Aquatic Biodiversity specialist report in Appendix 5). concluded that all aspects associated with the proposed development were a low-risk rating and could be further mitigated to a negligible risk rating. Thus, in terms of Section 21 (c) and (i) of the NWA (Act no. 36 of 1998), the proposed development should undergo water use authorisation via a General Authorisation (GA) process, due to the proposed development occurring with the 500 m Zone of Regulation which still poses a minor risk to the surrounding watercourses.

7.6 Avifauna

The proposed PAOI is rich in birdlife. While parts of the PAOI are subject to fairly significant levels of disturbance, suitable avifaunal habitats are present along the alignment that support a diversity of power line sensitive species. This is particularly relevant to the habitats present on the Ibis Piggery properties. The vulture restaurant on this property (Figure 10) is a drawcard for the various vulture species and Marabou Stork observed and recorded in the PAOI. It is one of at least five vulture restaurants which have been established within a 50km radius of the PAOI (Figure 11).

In addition, the dams and wetlands support a diversity and abundance of power line sensitive waterfowl, with large terrestrial species i.e. Secretary bird *Sagittarius serpentarius*, Northern Black Korhaan *Afrotis afraoides*, Red-crested Korhaan *Lophotis ruficrista*, Abdim's Stork *Ciconia abdimii* and the PAOI's raptors inhabiting the grassland type habitat, open woodland and cultivated lands.

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Figure 10 Ibis Piggery vulture restaurant

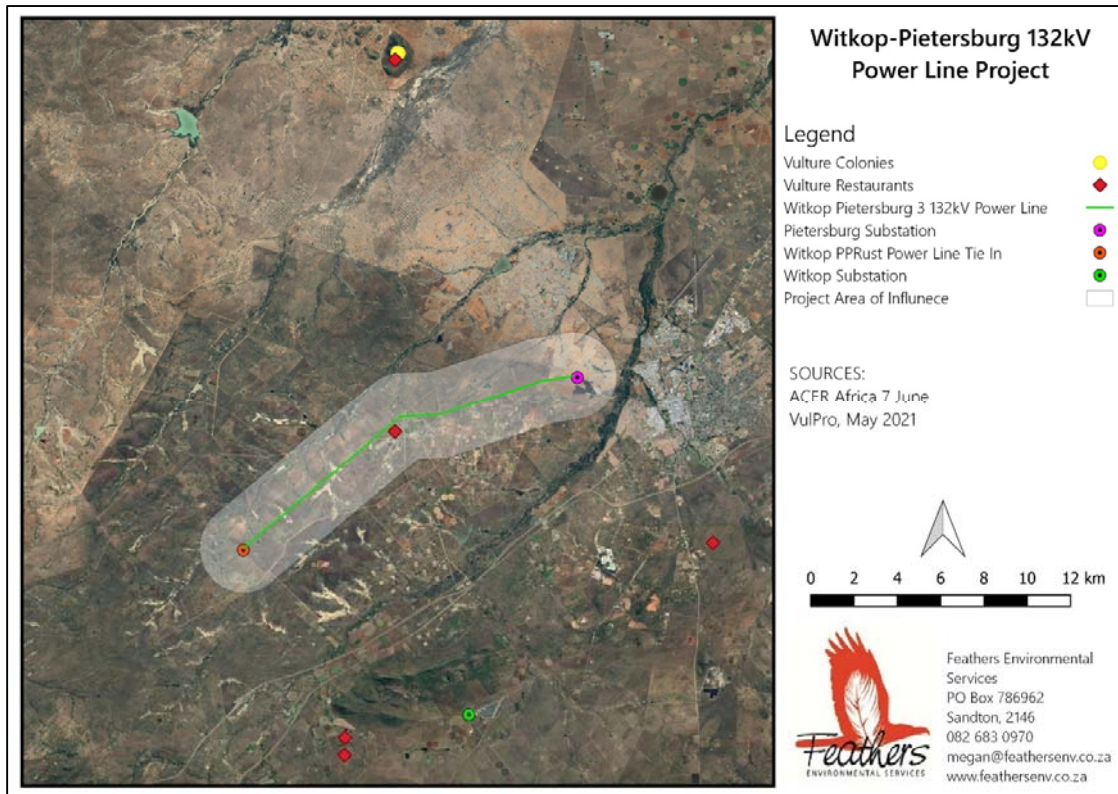


Figure 11 Cape Vulture Colonies and active Vulture Restaurants in relation to the Witkop-Pietersburg 132kV power line 3

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PROPOSED DEVELOPMENT OF THE 132 KV WITKOP-PIETERSBURG ESKOM DISTRIBUTION POWERLINE 3 (18 KM), CAPRICORN DISTRICT MUNICIPALITY, LIMPOPO, SOUTH AFRICA

A total of 342 bird species have been recorded within the Witkop-Pietersburg 132kV power line PAOI pentads. The presence of these species in the broader area provides an indication of the diversity of species that could potentially occur along the route alignment. Of the 342 species, 17 are regional SCC. Relevant to this development, 86 species are classified as power line sensitive species. Of the power line sensitive species, 47 are likely to occur regularly at the primary and broader areas and immediate surrounding area, with the remaining 39 occurring sporadically. It is important to note that with the exception of Cape Vulture (n=104), Short-clawed Lark (n=86), Marabou Stork (n=45) and Secretarybird (n=32), the remaining SCC have been recorded in very low numbers, with less than twenty individual birds being recorded over the fourteen-year survey period. This is an accurate reflection of the diversity and abundance of SCC that are likely to be found within the area surrounding the Witkop-Pietersburg 132kV power line alignment, given the habitat present and the existing disturbance in the PAOI. Cape Vulture, White-backed Vulture and Marabou Stork were observed during the field survey.

The single winter survey conducted on 21 June 2022 focused effort on the areas through which the three route deviations traverse, and produced a combined list of 57 species. The majority of observations were of passerine species (small perching birds) that are common to this area. Full species lists can be obtained from the Avifauna Specialist Assessment in Appendix 5.

Collisions are the biggest single threat posed by power lines to birds in southern Africa. Most heavily impacted upon are the heavy-bodied birds with limited manoeuvrability, which makes it difficult for them to take the necessary evasive action to avoid colliding with power lines. From incidental record keeping by the Endangered Wildlife Trust (EWT): Wildlife & Energy Programme, it is possible to give a measure of what species are likely to be impacted upon (see Figure 12). This only gives a measure of the general susceptibility of the species to power line collisions, and not an absolute measurement for any specific line.

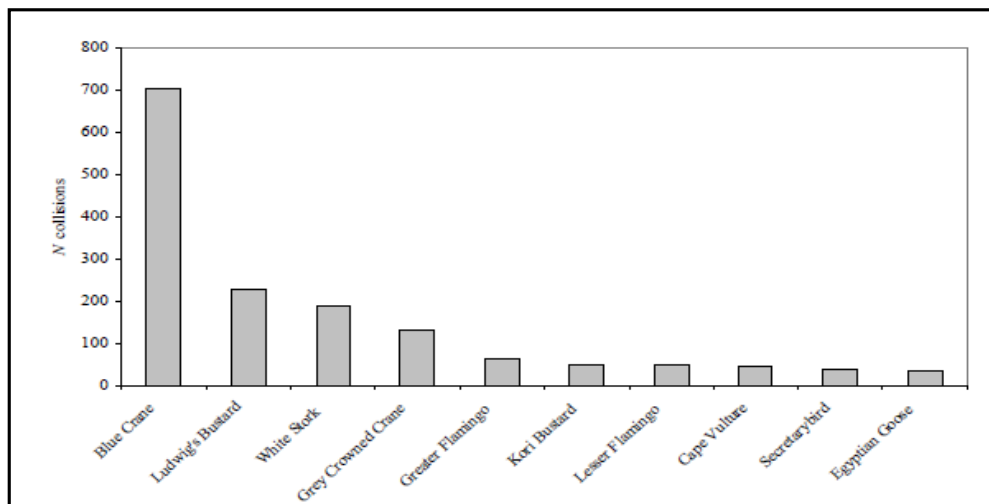


Figure 12 The top ten collision prone bird species in South Africa, in terms of reported incidents contained in the Eskom/Endangered Wildlife Trust Strategic Partnership central incident register 1996 - 2007 (Jenkins et al. 2010, cited in Feathers Environmental Services, 2022)

7.7 Land capability and agricultural use

7.7.1 Agricultural land uses

The land traversed directly by the proposed alignment is open rangeland consisting of Polokwane Plateau Bushveld of the Central Bushveld Bioregion of the Savanna Biome. Large private farms under extensive grazing (beef cattle, goats and game) are traversed. One of the farms (Ibis Piggeries) also runs a large-scale piggery. The smaller plot subdivisions on the south side of the alignment (Leeuwkuil) are under mixed use with limited, small-scale agriculture. There is some irrigated farmland occurring in or near the proposed powerline corridor (near watercourses), however land under irrigation will not be unduly impacted by the powerline.

7.7.2 Climate capability

The area of interest falls into Climate Capability Class C7/C8, which has Severe to Very Severe limitations for agriculture. This climatic data indicates there is insufficient rainfall to grow arable crops without a material element of risk. This classification also indicates that the focus should be on crops that can tolerate rainfall of typically 500mm per annum. Importantly, in this particular ecosystem there is virtually no rainfall at all during the winter months, the 500mm thus being spread over 8 months instead of 12 months.

7.7.3 Carrying capacity

Polokwane Plateau Bushveld has a typical carrying capacity of one large livestock unit (LSU, an ox of 450kg) per 8 to 10 ha. This is a poor carrying capacity but the norm for many thornveld habitats.

7.8 Cultural heritage

7.8.1 Archaeological overview

Archaeological information provided in the Heritage Impact Assessment (HIA) can be summarised as follows:

- No Early Stone Age (2.5 million to 200 000- years ago) or Middle Stone Age (300 000 to 40 000 years ago) sites are known from the Capricorn district.
- Later Stone Age (40 000 to historic past (<2000BP)) sites have been identified at an area to the south of Polokwane and at Makabeng.
- By the beginning of the Later Stone Age, uniquely human traits, such as rock art and purposeful burials with ornaments, became regular practice. Four areas known from the northern part of the country where rock art clusters are found, comprise the Limpopo River Valley, the Makabeng-Blouberg Mountains, the Soutpansberg Mountains and the Waterberg.
- Only a few Early Iron Age (AD 400-AD 1200) sites have been identified near Polokwane, located either on the southern side of Blouberg or on the northern side of the Makgabeng Plateau.
- Late Iron Age sites are found in abundance throughout the Limpopo Province. The Late Iron Age settlements are characterised by stone-walled enclosures situated on defensive hilltops c. AD 1640 - AD 1830). Copper smelting and iron working sites have been identified between Tzaneen and Polokwane.

7.8.2 Historical overview

Historical aspects relative to the Polokwane area are outlined in the HIA, in chronological sequence from the early 1600's to 2002, reflecting the groups who settled in the area and the tensions and wars that arose between such groups. The town of Pietersburg, named after *Kommandant-Generaal Pieter Jacobus Joubert*, was established around 1883. In February 2002, the city of Pietersburg became one of the first places in South Africa to change its name after the fall of apartheid, and was renamed Polokwane, which in Northern Sotho means "Place of Safety".

7.8.3 On site heritage

Possible heritage sensitive areas around the proposed development area include:

- Cluster of dwellings (farmsteads).
- Homesteads ("huts").
- Structures/Buildings.

Table 14 rates these structures/areas according to age and thus their level of protection under the NHRA. Sites identified during the field survey are listed in Table 15, with their site co-ordinates and heritage significance.

Table 14 Tangible heritage sites in the study area

Name	Description	Legislative protection
Architectural Structures/Dwellings	Possibly older than 60 years	NHRA Sect 3 and 34
Archaeological sites	Artefacts and/or structures/sites	NHRA Sect 3 and 35 and Sect 27

Table 1 Heritage resources noted during the field assessment

Site Nr	Site Co-ordinates		Time Period	Brief Site Description	Grading	Heritage Significance
	X (Lon)	Y (Lat)				
WP01	29.38945	-23.89294	Historical Period/ Recent	Burial ground located within an overgrown bushy environment. Both formal and informal graves (Plate 5)	Grade 3 - A (IIIA)	High
WP02	29.34228	-23.9085	Historical Period	Possible Graves located within an overgrown bushy environment. The site was recorded out of caution because the piles of rocks resemble a grave.	Grade 3 - A (IIIA)	High
WP03	29.27202	-23.95349	Iron Age	Pottery Cluster exposed by erosion. Undecorated pieces.	NCW	No research potential or other cultural significance
WP04	29.271598	-23.953724	Stone Age	Low Density Surface Scatter of Lithics (findspot) exposed by erosion. Fine grained quartzite and vein quartz flakes.	NCW	No research potential or other cultural significance



Plate 5 Photographic evidence of formal (left) and informal (right) graves observed at WP01

7.9 The visual and aesthetic environment

7.9.1 Landscape Character

The landscape character of the area is largely a product of landform, drainage patterns, nature and density of development, and vegetation patterns.

7.9.1.1 Landform and drainage

The proposed alignment is located between two south-west to north-east running perennial water courses, the Sand to the north and the Bloed to the south. The main ridgelines follow these water courses and are indented by numerous secondary streams that flow to the north and south into these main watercourses. This drainage pattern has produced a series of minor ridgelines that rise approximately 100 – 130m above valley floors. These minor ridgelines are likely to provide significant Visual Absorption Capacity⁸ (VAC), creating screening or at least partial screening for the proposed power line.

⁸ Visual Absorption Capacity (VAC) is *defined* as the landscape's ability to absorb physical changes without transformation in its visual character and quality. Where elements that contrast with existing landscape character are proposed, VAC is dependent on elements such as landform, vegetation and other development to provide screening of a new element. The scale and texture of a landscape is also critical in providing VAC, for example; a new large scale industrial development located within a rural small scale field pattern is likely to be all the more obvious due to its scale.

7.9.1.2 Existing development

The proposed alignment is located within and adjacent to three distinct types of development:

- The eastern end is located immediately adjacent to a major residential area of Polokwane (Extension 44) which largely includes dense residential development.
- For approximately half its length the alignment runs through an urban fringe area. Within this area there are elements that typically occur on the edges of urban areas such as the Witkop MTS, numerous overhead power lines, reservoirs, large scale factory farming and logistics operations. Residential development is typically less dense than main urban areas and consists of small holdings that are surrounded by small scale part-agricultural and part-industrial uses.
- The western section of the proposed alignment is located within a relatively cohesive rural agricultural landscape. Development is comprised solely of individual homesteads and farm buildings that are surrounded by a large scale open field pattern.

7.9.1.3 Existing vegetation

Natural vegetation, where it exists between smallholdings and steeper land within the rural agricultural landscape, consists of Polokwane Plateau Bushveld with grassland and tree layers.

Within rural agricultural areas, the landscape is relatively open with relatively fewer trees. Natural vegetation has either been cleared for grazing or perhaps intense grazing has resulted in removal of woody vegetation.

Within urban areas, vegetation is dominated by alien woody trees and shrubs as well as remnant natural vegetation.

Where natural vegetation remains, it is likely to provide a degree of VAC, as trees often extend above eye level. Within rural agricultural areas, where the majority of natural vegetation has been removed, little VAC or screening will be provided by vegetation.

7.9.2 Landscape Character Areas and sensitivity

Landscape Character Areas (LCAs) are defined as “single unique areas which are the discrete geographical areas of a particular landscape type”. The overriding character differentiating factors within the subject landscape appear to be landform /drainage and development. The landform and development pattern divides the affected landscape into three discrete LCAs:

- The Urban LCA.
- The Urban Fringe LCA.
- The Rural Agricultural LCA.

All of these LCAs are functional landscape areas, none of which, according to the Visual Impact Assessment (VIA) (Appendix 5) are significant from a scenic perspective.

7.9.3 Sensitive receptors

Visual Receptors are defined as “individuals and / or defined groups of people who have the potential to be affected by the proposal”. The significance of a change in a view for a visual receptor is likely to relate to use.

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- ❑ Area Receptors may include:

The western urban edge of Polokwane particularly Extension 44 which is located approximately 0.25km to the north of the proposed eastern end of the proposed power line at the Polokwane MTS. Due to the extent of infrastructure including the Polokwane MTS and other power lines and the fact the views from the current urban edge are likely to change in the near future due to the extent of future development that is planned to the west of Polokwane Extension 44, receptors in this area are unlikely to be sensitive to landscape change associated with the proposed power line.

- ❑ Point Receptors include:
 - **Local Farmsteads and Homesteads** located both within the Urban Fringe LCA and the Rural Agricultural LCA. Local homesteads and farmsteads are generally screened from the existing 132kV power line which means that they will also be screened from the proposed line. They are therefore highly unlikely to be sensitive to the proposed development.

- ❑ Linear Receptors or routes through the area include:
 - **The Percy Fyfe Ga Mashashane Road and the Matlala Road.** Both of these roads are local distributor routes that are used primarily by local people. They have little if any tourism or recreational importance. The section of the proposed power line within the Rural LCA and the Urban Fringe LCA are likely to be visible to these roads. However, they will be visible in the context of other power lines and infrastructure. They will not be sensitive to a small change in the view that will be imposed by the proposed development.

7.9.4 *Limit of visibility*

The VIA determined that while the theoretical distance from which a 132kV power line may be visible is 15.2 km, in reality and in the majority of conditions, it is unlikely to be obvious at distances greater than 2-3 km due to the colour and character of the powerline. The Limit of Visual Effect was determined to be 3 km.

It is noted that the proposed alignment runs close to the existing Pietersburg - Witkop line 2 132 kV distribution powerline. This provides a useful reference in assessing likely visibility of the proposed power line. Plate 6 is a view along an existing overhead 132kV power line, similar in scale to the proposed overhead power line. The images indicate the types of impact that might be expected from the proposed project.

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Plate 6 A view along the line of a 132kV overhead power line with monopole towers

8. ASSESSMENT METHODOLOGY

8.1 Concept of sustainability

The framework (Figure 13) within which environmental aspects arising from or influencing the proposed project (and its alternatives) are considered is the concept of sustainability. This considers the inter-related dimensions of the environment, viz. the social, economic and biophysical dimensions, underpinned by a system of sound governance through the legal/statutory requirements of South Africa (particularly NEMA).

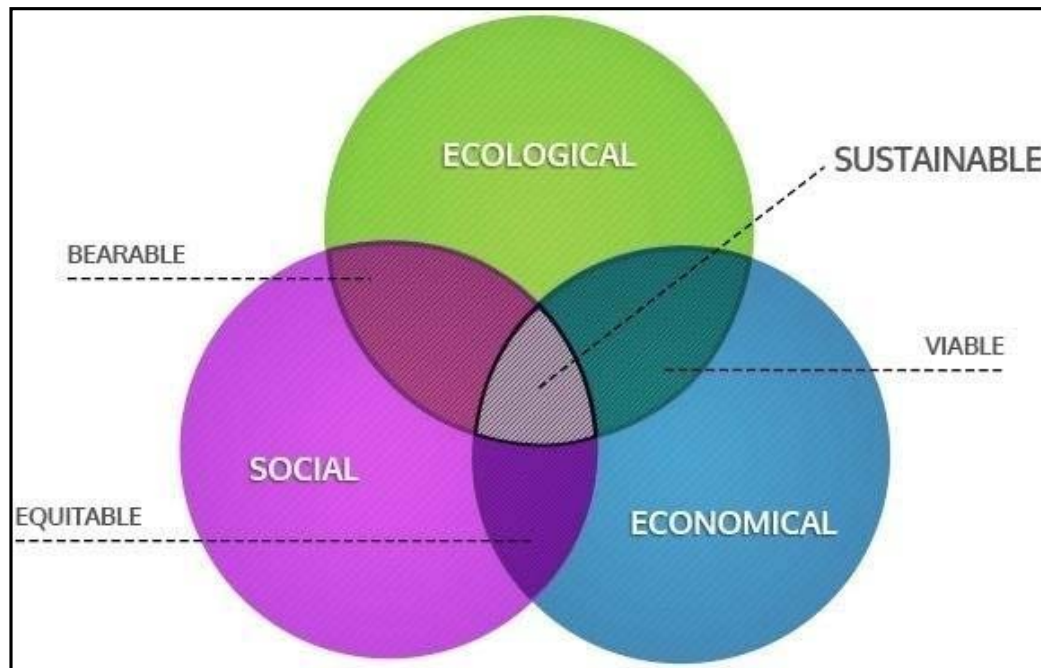


Figure 13 Assessment framework based on the concept of sustainability

All three dimensions of the environment, and the interactions between them (two- and three - dimensional), contribute to achieving sustainability and, therefore, each dimension, individually and its combined interaction with the other two dimensions, needs to be taken into account when assessing a proposed option or project, taking due cognisance that the three dimensions are seldom in perfect balance, with optimised solutions often being dictated by local circumstances, and requiring trade-offs between the dimensions.

In terms of sustainability and the assessment framework, key principles included:

- Development must not irretrievably degrade the natural, built, social, economic and governance resources on which it is based.
- Current actions should not cause irreversible damage to natural and other resources, as this potentially precludes sustainable options.
- Where there is uncertainty about the impact of activities on the environment, caution should be exercised in favour of the environment.
- Land-use and environmental planning need to be integrated.

- Immediate and long-term actions need to be identified and planned for, so that urgent needs can be met while still progressing towards longer-term sustainable solutions.

8.2 Identification and assessment of significance of key issues and impacts

Issues and potential impacts of the project on the environment (and vice versa) were identified by way of field investigations, desktop studies and interaction with I&APs.

Key issues and impacts were addressed by specialist studies and/or further detailed input from the environmental and technical teams. Specialist studies were conducted in accordance with the Protocols for specialist studies set out by DFFE.

Mitigation measures (site specific and general) were identified with inputs from I&APs, the specialists, Eskom personnel and the EAP team. All relevant mitigation measures are included in the EMPr (Appendix 6), noting that many generic mitigations applying to substations and powerlines are already contained in DFFE's Generic EMPr.

Information was collated, evaluated and integrated. Thereafter, the significance of each impact was assessed using the assessment conventions outlined below. The assessment conventions are applied qualitatively by the EAP, based on an understanding of the receiving environment, the proposed project components and activities, and the information gathered from different sources, including specialists and the public.

8.3 Assessment conventions

Taking into account the specialist findings and information from other sources, the EAP assessed all identified impacts (positive and negative), using the following assessment conventions to determine their significance:

- Direct impacts** are impacts that are caused directly by the activity and generally occur at the same time and at the place of the activity. These impacts are usually associated with the construction, operation or maintenance of an activity and are generally obvious and quantifiable.
 - Indirect impacts** of an activity are indirect or induced changes that may occur as a result of the activity. These types of impacts include all the potential impacts that do not manifest immediately when the activity is undertaken, or which occur at a different place as a result of the activity.
 - Cumulative impacts** are impacts that result from the incremental impact of the proposed activity on a common resource when added to the impacts of other past, present or reasonably foreseeable future activities. Cumulative impacts can occur from the collective impacts of individual minor actions over a period of time and can include both direct and indirect impacts.
 - Nature** – the evaluation of the nature of the impact. Most negative impacts will remain negative, however, after mitigation, significance should reduce:
 - **Positive.**
 - **Negative.**
 - Spatial extent** – the size of the area that will be affected by the impact:
 - **Site specific.**
 - **Local** (limited to the immediate areas around the site; <2 km from site).
-

-
- **Regional** (would include a major portion of an area; within 30 km of site).
 - **National or International.**
- **Duration** – the timeframe during which the impact will be experienced:
 - **Short-term** (0-3 years or confined to the period of construction).
 - **Medium-term** (3-10 years).
 - **Long-term** (the impact will only cease after the operational life of the activity).
 - **Permanent** (beyond the anticipated lifetime of the project).
 - **Intensity** – this provides an order of magnitude of whether or not the intensity (magnitude/size/frequency) of the impact would be negligible, low, medium or high):
 - **Negligible** (inconsequential or no impact).
 - **Low** (small alteration of systems, patterns or processes).
 - **Medium** (noticeable alteration of systems, patterns or processes).
 - **High** (severe alteration of systems, patterns or processes).
 - **Frequency** – this provides a description of any repetitive, continuous or time-linked characteristics of the impact:
 - **Once off** (occurring any time during construction).
 - **Intermittent** (occurring from time to time, without specific periodicity).
 - **Periodic** (occurring at more or less regular intervals).
 - **Continuous** (without interruption).
 - **Probability** – the likelihood of the impact occurring:
 - **Improbable** (very low likelihood that the impact will occur).
 - **Probable** (distinct possibility that the impact will occur).
 - **Highly probable** (most likely that the impact will occur).
 - **Definite** (the impact will occur).
 - **Irreplaceability** – of resource loss caused by impacts:
 - **High** irreplaceability of resources (the project will destroy unique resources that cannot be replaced).
 - **Moderate** irreplaceability of resources (the project will destroy resources, which can be replaced with effort).
 - **Low** irreplaceability of resources (the project will destroy resources, which are easily replaceable).
 - **Reversibility** – the degree to which the impact can be reversed/the ability of the impacted environment to return/be returned to its pre-impacted state (in the same or different location):
 - Impacts are **non-reversible** (impact is permanent).
 - **Low** reversibility.
 - **Moderate** reversibility of impacts.
 - **High** reversibility of impacts (impact is highly reversible at end of project life).
 - **Significance** – the significance of the impact on components of the affected environment (and, where relevant, with respect to potential legal infringement) is described:
Please note that this excludes positive impacts on the environment. In these cases, the level of significance should be denoted as Low**, Moderate** or High**.
 - **Low** (the impact will not have a significant influence on the environment and, thus, will not be required to be significantly accommodated in the project design).

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- **Medium** (the impact will have an adverse effect or influence on the environment, which will require modification of the project design, the implementation of mitigation measures or both).
 - **High** (the impact will have a serious effect on the environment to the extent that, regardless of mitigation measures, it could block the project from proceeding).
- ☐ **Confidence** – the degree of confidence in predictions based on available information and specialist knowledge:
- **Low.**
 - **Medium.**
 - **High.**

9. NEED AND DESIRABILITY

The need and desirability of a proposed development, from an EIA perspective, is a key consideration of an application for environmental authorisation and differs from the Developer’s aims and purpose of the development (as described in Section 1.2). The Guideline on Need and Desirability in terms of the EIA Regulations (DEA, 2017) states that “consistent with national priorities, environmental authorities must support “increased economic growth and promote social inclusion” while ensuring that such growth is “ecologically sustainable”. In essence, need and desirability are based on the principle of sustainability, viz. that a development is ecologically sustainable and socially and economically justifiable.

Table 16 and Table 17 are derived directly from the Guideline and contain the “questions to be engaged with when considering need and desirability”. Responses pertaining to the proposed project are provided in the Comments column.

Table 16 Need and desirability aspects considered for securing ecological sustainable development and use of natural resources

Ref #	Description	Comment
1	How will this development (and its separate elements/aspects) impact on the ecological integrity of the area?	The findings of the relevant ecological specialist studies indicate that impacts will be of low significance after mitigation.
1.1	How will the following ecological integrity considerations be taken into account?	
1.1.1	Threatened ecosystems.	No threatened terrestrial ecosystems are impacted.
1.1.2	Sensitive, vulnerable, highly dynamic or stressed ecosystems, such as coastal shores, estuaries, wetlands, and similar systems which require specific attention in management and planning procedures, especially where they are subject to significant human resource usage and development pressure.	The findings of the specialist study on watercourses and aquatic biodiversity indicate that impacts of the project will be of low significance after mitigation. Mitigation measures are contained in the EMPr to be implemented as a condition of the Environmental Authorisation.
1.1.3	Critical Biodiversity Areas and Ecological Support Areas.	The short section of CBA1 along the proposed alignment will not be significantly impacted.
1.1.4	Conservation targets.	The proposed alignment is along an existing registered servitude, does not affected protected areas and will not affect conservation targets.
1.1.5	Ecological drivers of the ecosystem.	The main ecological drivers are fire and vegetation-animal interactions. The proposed development is unlikely to have an impact on these processes.
1.1.6	Environmental Management Frameworks (EMF).	The project does not intersect with any EMFs.
1.1.7	Spatial Development Frameworks (SDF).	The proposed development is compatible with the SDF for Polokwane.
1.1.8	Global and international responsibilities relating to the environment (e.g. RAMSAR sites, climate change, etc).	There are no RAMSAR sites, and the project activities will not significantly influence climate change.
2	How will this development disturb or enhance ecosystems and/or result in the loss or protection of biological diversity? What measures were explored to firstly avoid these negative impacts, and where these negative impacts could not be avoided altogether, what measures were explored	Specialist studies have been undertaken to identify and assess the risks to biological diversity (terrestrial and aquatic) and to recommend mitigation to avoid or minimise

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Ref #	Description	Comment
	to minimise and remedy (including offsetting) the impacts? What measures were explored to enhance positive impacts?	negative impacts, and to enhance positive impacts (as relevant).
3	How will this development pollute and/or degrade the biophysical environment? What measures were explored to firstly avoid these impacts, and where impacts could not be avoided altogether, what measures were explored to minimise and remedy (including offsetting) the impacts? What measures were explored to enhance positive impacts?	Potential pollution is limited to hydrocarbon spills and light industrial and domestic waste during construction. The EMPr contains specifications for the handling of waste and dealing with incidents.
4	What waste will be generated by this development? What measures were explored to firstly avoid waste, and where waste could not be avoided altogether, what measures were explored to minimise, reuse and/or recycle waste? What measures have been explored to safely treat and/or dispose of unavoidable waste?	Waste will be limited to light industrial waste (and general construction and domestic waste. Where possible, waste will be recycled. Waste management specifications are provided in the EMPr.
5	How will this development disturb or enhance landscapes and/or sites that constitute the nation's cultural heritage? What measures were explored to firstly avoid these impacts, and where impacts could not be avoided altogether, what measures were explored to minimise and remedy (including offsetting) the impacts? What measures were explored to enhance positive impacts?	A specialist cultural heritage impact assessment has been undertaken and recommendations for avoidance and management of potentially affected cultural heritage resources are contained in the EMPr.
6	How will this development use and/or impact on non-renewable natural resources? What measures were explored to ensure responsible and equitable use of the resources? How have the consequences of the depletion of the non-renewable natural resources been considered? What measures were explored to firstly avoid these impacts, and where impacts could not be avoided altogether, what measures were explored to minimise and remedy (including offsetting) the impacts? What measures were explored to enhance positive impacts?	The powerline is not, in itself, anticipated to significantly impact on non-renewable natural resources. However, the production of electricity which will be distributed by the powerline is generated using non-renewable resources and cannot be avoided at this time.
7	How will this development use and/or impact on renewable natural resources and the ecosystem of which they are part? Will the use of the resources and/or impact on the ecosystem jeopardise the integrity of the resource and/or system taking into account carrying capacity restrictions, limits of acceptable change, and thresholds? What measures were explored to firstly avoid the use of resources, or if avoidance is not possible, to minimise the use of resources? What measures were taken to ensure responsible and equitable use of the resources? What measures were explored to enhance positive impacts?	The powerline is to be aligned along an existing servitude set aside for the purpose. Land use (agriculture and grazing) will continue as before underneath the overhead powerline and thus there will be no significant impact on renewable natural resources and the ecosystem of which they are part.
7.1	Does the proposed development exacerbate the increased dependency on increased use of resources to maintain economic growth or does it reduce resource dependency (i.e. de-materialised growth)? (Sustainability requires that settlements reduce their ecological footprint by using less material and energy demands and reduce the amount of waste they generate, without compromising their quest to improve their quality of life).	The provision of electricity to poor rural households may reduce harvesting of wood for energy.
7.2	Does the proposed use of natural resources constitute the best use thereof? Is the use justifiable when considering intra- and inter-generational equity and are there more important priorities for which the resources should be used	N/A

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Ref #	Description	Comment
	(i.e. what are the opportunity costs of using these resources for this proposed development?).	
7.3	Do the proposed location, type and scale of development promote a reduced dependency on resources?	Yes, the location is in an existing vacant servitude already set aside for an electrical powerline and will not require a new footprint.
8	How will a risk-averse and cautious approach be applied in terms of ecological impacts?	The recommendations of the specialist studies will be taken into account and their recommendations taken across to the EMPr.
8.1	What are the limits of current knowledge (the gaps, uncertainties and assumptions must be clearly stated)?	These are stated in this BAR and in the specialist studies.
8.2	What is the level of risk associated with the limits of current knowledge?	Given that the study area is well known, the technology is well known and that the proposed powerline is to run parallel to an existing line, there is negligible risk in terms of a lack of current knowledge.
8.3	Based on the limits of knowledge and the level of risk, how and to what extent will a risk-averse and cautious approach be applied to the development?	Refer to Item 8.
9	How will the ecological impacts arising from this development impact on people's environmental rights in terms of the following:	
9.1	Negative impacts, e.g. access to resources, opportunity costs, loss of amenity (e.g. open space), air and water quality impacts, nuisance (noise, odour, etc), health impacts, visual impacts, etc. What measures will be taken to firstly avoid negative impacts, but if avoidance is not possible, to minimise, manage and remedy negative impacts?	The powerline servitude is already in place and land use will continue as before, under the overhead line.
9.2	Positive impacts, e.g. improved access to resources, improved amenity, improved air or water quality, etc. What measures will be taken to enhance positive impacts?	N/A
10	Describe the linkages and dependencies between human wellbeing, livelihoods, and ecosystem services applicable to the area in question and how the development's ecological impacts will result in socio-economic impacts (e.g., on livelihoods, loss of heritage sites, opportunity costs, etc).	Refer to item 9.1
11	Based on the above, how will this development positively or negatively impact on ecological integrity objectives/targets/considerations of the area?	No significant negative impacts are anticipated.
12	Considering the need to secure ecological integrity and a healthy biophysical environment, describe how the alternatives identified (in terms of all the different elements of the development and all the different impacts being projected) will result in the selection of the "best practicable environmental option" in terms of ecological considerations.	Refer to item 9.1
13	Describe the positive and negative cumulative ecological/biophysical impacts bearing in mind the size, scale, scope, and nature of the project in relation to its location and existing and other planned developments in the area.	The cumulative impacts have been assessed as having low significance after mitigation (see Section 10.9).

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Table 17 Need and desirability aspects considered for promoting justifiable economic and social development

Ref #	Description	Comment
1	What is the socio-economic context of the area, based on, amongst other considerations, the following considerations?	
1.1	The Integrated Development Plan (IDP) (and its sector plans' vision, objectives, strategies, indicators, and targets) and any other strategic plans, frameworks or policies applicable to the area.	The proposed development aligns with the IDP. Refer to Section 7.2.1.
1.2	Spatial priorities and desired spatial patterns (e.g., need for the integration of segregated communities, need to upgrade informal settlements, need for densification, etc.).	N/A
1.3	Spatial characteristics (e.g., existing land uses, planned land uses, cultural landscapes, etc.)	The powerline will be located in an existing registered servitude.
1.4	Municipal Economic Development Strategy.	Provision of electrical connections will enhance local economic development opportunities.
2	Considering the socio-economic context, what will the socio-economic impacts be of the development (and its separate elements/aspects) and specifically also on the socio-economic objectives of the area?	As above. This is particularly important for the poorer rural communities currently with less access to services. Refer to Section 10.1
2.1	Will the development complement the local socio-economic initiatives (such as local economic development initiatives), or skills development programs?	As above.
3	How will this development address the specific physical, psychological, developmental, cultural and social needs and interests of the relevant communities?	As above.
4	Will the development result in equitable (intra- and inter-generational) impact distribution, in the short- and long-term? Will the impact be socially and economically sustainable in the short- and long-term?	The project will assist in addressing inequality of services between urban and rural customers.
5	In terms of location, describe how the placement of the proposed development will:	
5.1	Result in the creation of residential and employment opportunities in proximity to or integrated with each other.	Temporary employment for local people will be created during construction. Local economic opportunities will be enhanced during operation. Refer to Section 10.1.
5.2	Reduce the need for transport of people and goods.	N/A
5.3	Result in access to public transport or enable non-motorised and pedestrian transport (e.g., will the development result in densification and the achievement of thresholds in terms of public transport?).	N/A
5.4	Complement other uses in the area.	N/A
5.5	Be in line with the planning for the area.	The proposed development aligns with the IDP. Refer to Section 7.2.1.
5.6	For urban related development, make use of under-utilised land available within the urban edge.	An existing registered servitude will be used.
5.7	Optimise the use of existing resources and infrastructure.	An existing registered servitude will be used.
5.8	Opportunity costs in terms of bulk infrastructure expansions in non-priority areas (e.g., not aligned with the bulk infrastructure planning for the settlement that reflects the spatial reconstruction priorities of the settlement).	N/A
5.9	Discourage urban sprawl and contribute to compaction/densification.	N/A

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Ref #	Description	Comment
5.10	Contribute to the correction of the historically distorted spatial patterns of settlements and to the optimum use of existing infrastructure in excess of current needs.	The project will serve previously disadvantaged, poorer, rural areas.
5.11	Encourage environmentally sustainable land development practices and processes.	Electrical connections may reduce wood harvesting in the rural areas.
5.12	Take into account special locational factors that might favour the specific location (e.g., the location of a strategic mineral resource, access to a port, access to rail, etc.).	An existing registered servitude is available.
5.13	The investment in the settlement or area in question will generate the highest socio-economic returns (i.e., an area with high economic potential).	N/A
5.14	Impact on the sense of history, sense of place and heritage of the area and the socio-cultural and cultural-historic characteristics and sensitivities of the area.	The Heritage Impact Assessment has identified sensitive sites and associated mitigation measures. Mitigation measures are contained in the EMPr, as applicable.
5.15	In terms of the nature, scale, and location of the development, promote or act as a catalyst to create a more integrated settlement.	Provision of electricity to these areas is likely to lead to future densification.
6	How will a risk-averse and cautious approach be applied in terms of socio-economic impacts?	A Social Impact Assessment has been undertaken to identify key issues and impacts, and associated mitigation. Mitigation measures are contained in the EMPr, as applicable.
6.1	What are the limits of current knowledge? (The gaps, uncertainties and assumptions must be clearly stated).	The type of proposed development and the receiving environment are both well known. The proposed powerline was previously granted an Environmental Authorisation; however it has lapsed and hence a new application process is being undertaken.
6.2	What is the level of risk? (Related to inequality, social fabric, livelihoods, vulnerable communities, critical resources, economic vulnerability, and sustainability) associated with the limits of current knowledge).	Risk is low. See above.
6.3	Based on the limits of knowledge and the level of risk, how and to what extent will a risk-averse and cautious approach be applied to the development?	Refer to Item 6.
7	How will the socio-economic impacts resulting from this development impact on people's environmental right in terms following?	
7.1	Negative impacts: e.g., health (HIV/AIDS), safety, social ills, etc. What measures will be taken to firstly avoid negative impacts, but if avoidance is not possible, to minimise, manage and remedy negative impacts?	Anticipated impacts are of low significance. Relevant management of health and safety aspects will be specified in the EMPr.
7.2	Positive impacts. What measures will be taken to enhance positive impacts?	Eskom needs to build the line and maintain it in the most efficient manner possible.
8	Considering the linkages and dependencies between human wellbeing, livelihoods, and ecosystem services, describe the linkages and dependencies applicable to the area in question and how the development's socio-economic impacts will result in ecological impacts (e.g., over utilisation of natural resources, etc.).	Current land use will continue almost unchanged below the powerline.
9	What measures will be taken to pursue the selection of the "best practicable environmental option" in terms of socio-economic considerations?	It is proposed to place the powerline in an existing registered servitude.
10	What measures will be taken to pursue environmental justice so that adverse environmental impacts shall not be distributed in such a manner as to unfairly discriminate	It is proposed to place the powerline in an existing registered servitude.

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Ref #	Description	Comment
	against any person, particularly vulnerable and disadvantaged persons (who are the beneficiaries and is the development located appropriately)? Considering the need for social equity and justice, do the alternatives identified allow the “best practicable environmental option” to be selected or is there a need for other alternatives to be considered?	
11	What measures will be taken to pursue equitable access to environmental resources, benefits, and services to meet basic human needs and ensure human wellbeing, and what special measures will be taken to ensure access thereto by categories of persons disadvantaged by unfair discrimination?	The project will provide connections in previously disadvantaged, poorer, rural areas.
12	What measures will be taken to ensure that the responsibility for the environmental health and safety consequences of the development have been addressed throughout the development’s life cycle?	Refer to the EMPR (Appendix 6)
13	What measures will be taken to:	
13.1	Ensure the participation of all interested and affected parties.	The regulated public participation process is designed to share information and facilitate public comment. Refer to Chapter 4 and Appendix 7 and Appendix 8.
13.2	Provide all people with an opportunity to develop the understanding, skills and capacity necessary for achieving equitable and effective participation.	The regulated public participation process is designed to share information and facilitate public comment. Refer to Chapter 4 and Appendix 7 and Appendix 8.
13.3	Ensure participation by vulnerable and disadvantaged persons.	ACER staff make themselves available to discuss the project telephonically and respond to queries throughout the duration of the project.
13.4	Promote community wellbeing and empowerment through environmental education, the raising of environmental awareness, the sharing of knowledge and experience and other appropriate means.	The regulated public participation process is designed to share information and raise awareness. Refer to Chapter 4 and Appendix 7 and Appendix 8.
13.5	Ensure openness and transparency, and access to information in terms of the process.	As above.
13.6	Ensure that the interests, needs and values of all interested and affected parties will be taken into account, and that adequate recognition is given to all forms of knowledge, including traditional and ordinary knowledge.	This is being undertaken throughout the environmental authorisation process as per the regulations. It is the EAP’s responsibility to consider all issues raised by all IA&Ps and respond to their concerns in an objective and unbiased manner.
13.7	Ensure that the vital role of women and youth in environmental management and development were recognised and their full participation therein is promoted.	The regulated public participation process is designed to share information and raise awareness amongst all interested and affected parties. No additional efforts were made to engage with women and youth, specifically.
14	Considering the interests, needs and values of all the interested and affected parties, describe how the development will allow for opportunities for all the segments of the community (e.g., a mixture of low-, middle-, and high-income housing opportunities) that are consistent with the priority needs of the local area (or that are proportional to the needs of an area).	The project targets areas with a backlog of electrical connections.

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Ref #	Description	Comment
15	What measures will be taken to ensure that current and/or future workers will be informed of work that potentially might be harmful to human health or the environment or of dangers associated with the work, and what measures have been taken to ensure that the right of workers to refuse such work will be respected and protected?	None to date; however, an EMPr will be compiled, and environmental awareness training will be provided to staff once construction commences.
16	Describe how the development will impact on job creation in terms of, amongst other aspects:	
16.1	The number of temporary versus permanent jobs that will be created.	Limited temporary employment will be created during construction . The project is, however, expected to promote local socio-economic development during operation.
16.2	Will the labour available in the area be able to take up the job opportunities (i.e., do the required skills match the skills available in the area?).	Local unskilled labour can be used during construction.
16.3	The distance from where labourers will have to travel.	N/A
16.4	The location of job opportunities versus the location of impacts (i.e., equitable distribution of costs and benefits).	N/A
16.5	The opportunity costs in terms of job creation (e.g., a mine might create 100 jobs but impact on 1,000 agricultural jobs, etc.).	N/A
17	What measures will be taken to ensure:	
17.1	That there is inter-governmental coordination and harmonisation of policies, legislation and actions relating to the environment.	Local, provincial, and national Government departments were requested for comment with the purpose of aligning requirements.
17.2	That actual or potential conflicts of interest between organs of state are resolved through conflict resolution procedures.	N/A
18	What measures will be taken to ensure that the environment will be held in public trust for the people, that the beneficial use of environmental resources will serve the public interest, and that the environment will be protected as the people's common heritage?	The environmental authorisation process will be undertaken as per the prescribed environmental legislation and associated regulations. Impacts will be mitigated to promote the long-term sustainability of the proposed development.
19	Are the mitigation measures proposed realistic and what long-term environmental legacy and managed burden will be left?	Realistic and achievable mitigation measures have been identified and incorporated in an EMPr. Eskom is responsible for the long-term maintenance of the servitude.
20	What measures will be taken to ensure that the costs of remedying pollution, environmental degradation, and consequent adverse health effects and of preventing, controlling or minimising further pollution, environmental damage or adverse health effects will be paid for by those responsible for harming the environment?	No significant impacts in this regard are expected. Refer to the EMPr for management of waste.
21	Considering the need to secure ecological integrity and a healthy biophysical environment, describe how the alternatives identified (in terms of all the different elements of the development and all the different impacts being proposed), will result in the selection of the best practicable environmental option in terms of socio-economic considerations.	An existing registered servitude is available.
22	Describe the positive and negative cumulative socio-economic impacts bearing in mind the size, scale, scope, and nature of the project in relation to its location and other planned developments in the area.	Cumulative impacts are assessed in Section 10.9.

10. DESCRIPTION OF ENVIRONMENTAL ISSUES AND POTENTIAL IMPACTS AND ASSESSMENT OF SIGNIFICANCE

The information gathered during this Basic Assessment process resulted in the identification of key issues, which have been formulated as eight key questions:

- What local and regional economic and socio-economic benefits will result from the construction and operation of the proposed Witkop-Pietersburg Line 3?
- What impacts will the construction and operation of the proposed Witkop-Pietersburg Line 3 have on the social and socio-economic environment?
- Will the proposed Witkop-Pietersburg Line 3 result in the loss of use of productive agricultural land and associated economic opportunities?
- What effects will the proposed Witkop-Pietersburg Line 3 have on terrestrial biodiversity?
- What effects will the proposed Witkop-Pietersburg Line 3 have on watercourses and aquatic biodiversity?
- What effects will the proposed Witkop-Pietersburg Line 3 have on avifauna species (birds)?
- What effects will the proposed Witkop-Pietersburg Line 3 have on cultural heritage resources, including palaeontological resources?
- What cumulative impacts are anticipated from construction and operation of the proposed Witkop-Pietersburg Line 3?

Potentially significant impacts associated with each of the above issues are discussed and assessed in the sections below, incorporating a summary of specialist findings where applicable. For more detail, refer to the relevant specialist reports in Appendix 5.

Where relevant, significance ratings have been assigned to impacts, according to the assessment conventions (Section 8.3), and presented in Impact Assessment tables (Table 18 to Table 26). The tables assess the significance of expected impacts before mitigation, as well as after application of the recommended mitigation measures, as applicable. Mitigation measures from the specialist reports and from other sources, as applicable, have been included in the sections below.

10.1 What local and regional economic and socio-economic benefits will result from the construction and operation of the proposed Witkop-Pietersburg Line 3?

According to the assessment, the various positive economic/socio-economic impacts at a local and regional level during construction and operation are of low and medium significance, without management. With management, the significance of these impacts increases to medium and high (Table 18).

10.1.1 *Boost to local economic development and improvement in socio-economic conditions (during operation)*

A lack of electricity, or unreliable and inconsistent electricity, is severely detrimental to socio-economic development. The project will reduce overloading of the existing Witkop-Pietersburg lines and assist Eskom to address the backlog of electrical connections to settlements around Polokwane. The provision of a more reliable energy supply and the provision of new connections to settlements will help to improve many facets of peoples' lives at home and at work. Access to electricity has many direct and indirect impacts as it enables people to implement and maintain, for example, local economic and business activities, community health and education facilities and makes most aspects of daily living easier.

10.1.2 Increased employment opportunities (construction)

As a result of the proposed project there will be both direct and indirect employment opportunities created during construction. New employment opportunities will be limited and of a temporary nature, mostly for unskilled positions (which will be available for members of local communities). Skilled labour is likely to be brought in by the contractors. In addition, the proposed project may lead to indirect employment opportunities in the informal sector, for example, in terms of food stalls for the convenience of construction workers. Considering the high level of unemployment within the local community, it is likely that any formal or informal employment, even for a short period of time, will be beneficial.

10.1.3 Increased opportunities for local business and SMMEs (construction)

There are likely to be opportunities created for local SMMEs providing various goods and services such as transport, security, accommodation, catering, etc. Such opportunities will have knock-on effects, which will likely lead to secondary impacts, such as increased employment opportunities and more disposable income.

10.1.4 Mitigation measures

10.1.4.1 Boost to local economic and socio-economic development (operation)

- ❑ Eskom to efficiently and diligently manage and maintain the infrastructure, in order to optimise on the investment and the socio-economic benefits arising from the electrical connections to communities that this project will enable.

10.1.4.2 Increased employment opportunities (construction)

- ❑ Contractor/s to employ local people wherever possible during construction.
- ❑ Where possible, promote labour-intensive construction methods, in order to increase local employment.
- ❑ Eskom should consult the local Department of Labour as well as neighbouring business to determine if they would be willing to make their skills registers/ databases available for use by the Project; especially in cases where any employees have been retrenched.
- ❑ It is recommended that recruitment during the construction phase should not take place on site but should be coordinated through the appropriate institutions such as the local DoL or institutions recommended by the local authorities (if applicable). Care must be taken that recruitment practices are fair and transparent.
- ❑ A monitoring system should be established to ensure that contractors honour the local employment policy.
- ❑ Once construction is completed, local persons employed on a contract/temporary basis during construction should be provided with reference letters that they can submit to gain employment elsewhere. Also, certificates of completion should be provided for in-house (on-the-job) training provided during employment.

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10.1.4.3 *Increased opportunities for SMMEs (construction)*

- If subcontractors are appointed, the project should give preference to suitable subcontractors/SMEs located in the surrounding communities (Ward 1) then in the Polokwane municipal area, and then only to subcontractors located elsewhere in, or outside the province.
- Procurement practices of construction contractors should be monitored, and they must reinforce the preference to procure locally. Where contracts are awarded to non-local service providers, contractors must demonstrate that reasonable action was taken to identify a local service provider.

Table 18 Assessment of potential local and regional economic and socio-economic benefits resulting from the construction and operation of the proposed Witkop-Pietersburg Line 3

Impact	Mitigated /Managed	Nature	Spatial Extent	Duration	Intensity	Frequency	Probability	Irreplaceability	Reversibility	Significance	Confidence
Boost to socio-economic development (operation)	Unmitigated	Positive	Local	Medium-term	Medium	Periodic	Probable	N/A	Moderate	Medium	High
	Mitigated	Positive	Local and Regional	Long-term	Medium	Continuous	Highly Probable	N/A	Moderate	High	Medium
Increased employment opportunities (construction)	Unmitigated	Positive	Local	Short term	Low	Once off	High	N/A	N/A	Low	High
	Mitigated	Positive	Local	Short term	Medium	Once off	High	N/A	N/A	Medium	High
Increased opportunities for local SMMEs (construction)	Unmitigated	Positive	Local and Regional	Short term	Low	Periodic	High	N/A	N/A	Low	Medium
	Mitigated	Positive	Local and Regional	Medium-to Long - term	Medium	Intermittent	High	N/A	N/A	Medium	Medium

10.2 What potential impacts will the construction and operation of the proposed Witkop-Pietersburg Line 3 have on the social and socio-economic environment?

According to the assessment, the potential negative impacts of the construction and operation of the proposed line on the social and socio-economic environment are of medium significance, without management. With management, the significance of these impacts is reduced to low (Table 19).

10.2.1 Social impacts arising from demographic change (during construction)

Demographic processes relate to the movement and composition of people in the region. Changes will occur in this regard, mainly due to the new presence of construction teams and possible influx of job seekers and other opportunists into the study area, during construction. This may result in the following social impacts:

- Increased spread of disease.
- Increased criminal activity.
- Tension/competition between newcomers and local residents/communities.

10.2.2 Social impacts resulting from changes in geographical and/or environmental processes (during construction)

Geographical and/or environmental processes are processes that relate to the environment where people reside. The proposed powerline may cause slight changes in the environment which can potentially result in the following social impacts:

During construction:

- Increased dust and noise.
- Reduced safety in and around the construction sites (due to construction vehicles and activities).
- Increased fire hazard.
- Site specific social sensitivities:
 - o Disturbances to the Vulture Restaurant on the Ibis Piggery property.
 - o Potential health hazard and adverse working conditions for the construction team, due to presence of rotting carcasses at the Vulture Restaurant on the Ibis Piggery property.
 - o Disturbances to farming activities and farm staff.
 - o Disturbances to irrigated land.
 - o Increased risks to livestock (including game) due to disturbance, or gates being left open.
 - o Negative effect on Sense of Place and aesthetics, for local residents- caused by different elements such as noise, movement of strangers, poor housekeeping at construction sites, possible littering and dumping.
- Unintended damages to private property.

During operation and maintenance:

- Increased vulture mortalities at the site of the vulture restaurant, due to the additional powerline.
- Possible damage to gates, fences and other infrastructure during maintenance activities.
- Disruption to farming activities during maintenance.

- Increased risks to livestock (including game) due to disturbance, or gates being left open, during maintenance activities.

10.2.3 Socio-economic impacts arising from economic change

Economic processes are processes that affect the economic activity in a given area. Potential economic losses that may occur as a result of the proposed powerline include:

During construction:

- Unintended damage to private property such as farm roads, gates, fences and other farm infrastructure.
- Loss of livestock or game due to vehicle collisions or gates left open.
- Possible theft of private property.

During operation:

- Unintended damage to private property during maintenance activities.
- Loss of livestock or game due to vehicle collisions or gates left open during maintenance activities.
- Reduced property values. (In this regard, it should be noted that property owners were already compensated for the servitude around 1970 and it is unlikely that new negotiations would be undertaken).

10.2.4 Impacts on Civil Aviation

The proximity of the proposed line to the Polokwane Airport must be considered, in case the height and position of the line interfere with flight paths.

In terms of risk to aviation, the proposed Witkop-Pietersburg line 3 must be seen in context. The line will run within approximately 25 m of the existing, parallel Witkop-Pietersburg line 2 which functions in the same proximity to the airport. Furthermore, there are approximately 30 existing high voltage powerlines and significantly more distribution and reticulation lines totalling hundreds of kilometres within a 30km radius of the proposed line.

Eskom will ensure that the line conforms with the necessary height and visibility standards. Furthermore, an Obstacle Application will be submitted to the CAA to obtain permission to construct and operate the proposed powerline, prior to construction of the line.

Subject to the required permission from the CAA, the risk to civil aviation is assessed as low.

10.2.5 Impacts on defence facilities

The South African National Defence Force operates a military base from the Polokwane International Airport. This is unlikely to be negatively impacted by the project, for the same reasons given for Civil Aviation. No known defence facilities lie along the alignment and no comment on the proposed line has been received from the SANDF.

10.2.6 Mitigation measures

10.2.6.1 Spread of disease (preconstruction, construction)

- Staff showing symptoms of highly infectious or notifiable diseases should stay at home or disclose their symptoms and maintain social distance accordingly.
- All construction staff should go through an HIV and AIDS education awareness course prior to the project commencing.
- Education material regarding general hygiene, HIV and AIDS and sexually transmitted diseases, including Monkey Pox, should be easily available.
- The Contractor should ensure condoms are easily available at the construction camp.
- Only construction workers should be allowed within the accommodation areas/units.

10.2.6.2 Increased criminal activity (preconstruction, construction)

- All Eskom employees and subcontractors should be easily identifiable by wearing uniforms and/or identification cards that should be exhibited in a visible place on their body.
- Contractor's and subcontractors' vehicles should be identifiable.
- Implement strict site camp management and keep non-staff away from contractor's staff accommodation (where ever it is located).
- Instant dismissal and prosecution of any staff caught in criminal activities of any kind.
- Inform local crime protection and law enforcement agencies of the possibilities of increased criminal activity in the area.
- Affected landowners should be consulted well in advance prior to anyone entering their land.
- Security personnel should be employed on the construction sites as required.
- Access to farms where construction is taking place should be controlled.
- All affected landowners should be consulted and, if deemed necessary, additional security staff placed at access points to the land. The cost of this should be carried by Eskom.

10.2.6.3 Tension/competition between newcomers and local residents (pre-construction, construction)

- The recruitment process should give preference to job seekers from the local study area where possible and practical.
- Ensure that the intention of giving preferential employment to locals is clearly communicated, so as to discourage an influx of job-seekers from other areas.
- Involve local community structures (e.g. ward councillors and/or ward committees) to assist in communicating the intention to give preference to local labour, and also to assist in identifying the local labour resources.

10.2.6.4 Increased dust and noise (construction)

- Rehabilitate areas of exposed soils as soon as possible.
- Implement dust suppression measures (e.g. spraying with water tankers), on site as well as on access roads.
- Ensure all soil stockpiles exposed to wind are wet or covered.
- Strict speed limits should be applied on any gravel roads so as to reduce dust levels.
- Ensure noise levels remain within prescribed levels set by the local noise standards.
- Avoid undertaking construction activities after daylight hours.

10.2.6.5 Safety risks in construction areas and access routes (construction)

- The contractor must communicate with the farmers to ensure their labourers are briefed on safety risks associated with the project
- Where applicable, the site camp and stockpiles should be fenced off.
- Strict speed restrictions must be applied and enforced on local and farm roads.
- All vehicles on site and transporting materials to site must be in a roadworthy condition.
- Road and warning signs should be placed in suitable areas, in particular, high danger zones.

10.2.6.6 Increased fire hazard (construction and maintenance)

- No open fires are to be allowed on site.
- Firefighting equipment must be available on all construction sites and in all construction vehicles.
- The Contractor must liaise with tenants and property owners on existing protocols used in the prevention and management of fire on properties, and brief all Contractors staff accordingly.
- A form of fire insurance may be required. This is the responsibility of the Contractor.

10.2.6.7 Unintended damage to private property (construction and maintenance)

- Contractors must adhere to Eskom's Farm Access Protocol.
- Contractor to establish protocols and/or communication channels with all affected parties to reduce the risk of damage occurring.
- The Contractor(s) must maintain close liaison with farm managers during the construction period.
- Ensure a photo record is kept of all areas where private property will be affected.
- Ensure that any unintended damages to private property are repaired immediately.
- Ensure that all farm gates are left as found when working between construction areas. This should be double checked and confirmed by the landowner, once construction work stops at the end of each day.
- In the event of security being compromised because of unintended damages to control measures, arrangements should be made to ensure suitable security is provided until repairs have been made.
- In the event that damages are caused to private property of any kind and if there is sufficient evidence to suggest this is a result of project activities, compensation should be paid to the landowner.

10.2.6.8 Impacts on site specific social sensitivities (construction, operation)

- Ensure communication protocols are established to manage liaison between Eskom, landowners and the contractor regarding construction activities and measures to ensure disruption and risks to farming activities and property are prevented and/or minimised.
- Appropriate mitigation measures are to be implemented to ameliorate the biophysical, visual and cultural heritage related impacts, as stipulated in the specialist reports undertaken as part of the BA for the proposed project.
- Eskom must approach the Ibis piggery to discuss working in the vicinity of the pig carcass dump, with a suggestion that carcasses are temporarily dumped elsewhere during construction in that area.
- Staff on site must be briefed on hygiene measures to adhere to in relation to the vulture restaurant.

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- ❑ Measures to address the impact of the project on the area's sense of place include ensuring a neat appearance of the site, during construction and operation.

10.2.6.9 Reduced property values

- ❑ As the servitude was registered and paid for in 1970, property owners have already been compensated. No mitigation is likely for a perceived or real reduction in current property values due to the proposed powerline.

10.2.6.10 Risks to Civil Aviation and Defence

- ❑ An obstacle application process must be undertaken with the Civil Aviation Authority (CAA) to authorise the line from an aviation perspective.

Table 19 Assessment of potential impacts of construction and operation of the proposed Witkop-Pietersburg Line 3 on the social and socio-economic environment

Impact	Mitigated /Managed	Nature	Spatial Extent	Duration	Intensity	Frequency	Probability	Irreplaceability	Reversibility	Significance	Confidence
Increased spread of disease	Unmitigated	Negative	Regional	Short term	Medium	Once off	Definite	N/A	Moderate	Medium	High
	Mitigated	Negative	Regional	Short term	Low	Once off	Highly Probable	N/A	High	Low	Medium
Increased criminal activity	Unmitigated	Negative	Local	Short term	Medium	Periodic	Highly Probable	N/A	High	Medium	High
	Mitigated	Negative	Local	Short term	Low	Intermittent	Probable	N/A	High	Low	High
Conflict/competition between newcomers and incumbent population	Unmitigated	Negative	Local	Short term	Medium	Periodic	Highly Probable	N/A	High	Medium	High
	Mitigated	Negative	Local	Short term	Low	Intermittent	Probable	N/A	High	Low	High
Increased dust & noise	Unmitigated	Negative	Local	Short term	Low	Intermittent	Highly probable	N/A	High	Medium	High
	Mitigated	Negative	Local	Short term	Low	Once off	Probable	N/A	High	Low	High
Reduced safety in construction and access areas	Unmitigated	Negative	Local	Short term	High	Periodic	Highly probable	N/A	High	Medium	High
	Mitigated	Negative	Local	Short term	Medium	Periodic	Probable	N/A	High	Low	Medium
Increased fire hazard	Unmitigated	Negative	Local	Short term	Medium	Continuous	Highly probable	Moderate	High	Medium	Medium
	Mitigated	Negative	Local	Short term	Low	Periodic	Probable	Moderate	High	Low	Medium
Impacts on site specific social sensitivities	Unmitigated	Negative	Local	Long-term	High	Intermittent	Probable	Low	Low	Medium	Medium
	Mitigated	Negative	Local	Medium-term	High	Once off	Improbable	Low	Low	low	Low
Unintended damages to private property	Unmitigated	Negative	Local	Long-term	High	Intermittent	Probable	Low	Low	Medium	Medium
	Mitigated	Negative	Local	Short term	High	Once off	Improbable	Low	Low	low	Low
Risks to Civil Aviation and Defence	Unmitigated	Negative	Local	Long-term	Medium	Periodic	Probable	Low	Moderate	Medium	Medium
	Mitigated	Negative	Local	Long-term	Low	Intermittent	Improbable	Low	Low	Low	Low

10.3 Will the proposed Witkop-Pietersburg Line 3 result in the loss of use of productive agricultural land and associated economic opportunities?

The agricultural land traversed by the proposed line is of poor carrying capacity and is considered to have a Low Agricultural Theme Sensitivity contrary to the broad categorisation of High Sensitivity provided in the DFFE Screening Tool (refer to the Agricultural Assessment in Appendix 5). Grazing (livestock and game), which is the primary activity within the servitude, will be allowed to continue under the line and the footprint of the towers in this open rangeland is insignificant in terms of loss of grazing land. Should any localised irrigated fields be traversed, these will be close to watercourses and the towers will be placed to avoid these areas.

Furthermore, it should be borne in mind that the line is proposed to run in a registered servitude that already exists and, as such, the agricultural activities currently being conducted within the servitude should be compatible with overhead powerlines.

The proposed line will, therefore, have no significant negative impact on productive agricultural land and associated economic opportunities (Table 20).

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Table 20 Assessment of potential impacts of the proposed Witkop-Pietersburg Line 3 on loss of productive agricultural land and associated economic opportunities

Impact	Mitigated /Managed	Nature	Spatial Extent	Duration	Intensity	Frequency	Probability	Irreplaceability	Reversibility	Significance	Confidence
Negative impact on productive agricultural land	Unmitigated	Negative	Local	Long-term	Negligible	N/A	Improbable	N/A	N/A	Low	High
	Mitigated	Negative	Local	Long-term	Negligible	N/A	Improbable	N/A	N/A	Low	High
Negative impact on the agricultural economy	Unmitigated	Negative	Regional	Long-term	Negligible	N/A	Improbable	N/A	N/A	Low	High
	Mitigated	Negative	Regional	Long-term	Negligible	N/A	Improbable	N/A	N/A	Low	High

10.4 What effects will the proposed Witkop-Pietersburg Line 3 have on terrestrial biodiversity and natural areas worthy of protection and conservation?

According to the assessment, the potential negative impacts of the construction and operation of the proposed line on terrestrial biodiversity are of medium significance, without management. With management, the significance of these impacts is reduced to low (Table 21).

10.4.1 Loss of vegetation communities

The study area was found to contain a fairly homogenous landscape, on average represented natural veld with only small portions of the route being transformed and invaded by alien vegetation. Due to the nature of the development, although linear, it will not result in the permanent loss of vegetation communities throughout, rather only within the immediate vicinity of the powerline towers. The implementation of mitigation measures along the route, in conjunction with the application of meaningful rehabilitation, will ensure the continuation of natural vegetation communities within the study area, without causing irreversible impacts to the receiving environment.

10.4.2 Loss of Plant Species of Conservation Concern (SCC)

A number of plant SCC, endemic plant species and protected plant species have been recorded within the greater study area. Whilst none of these were found during the field assessment, they should still be considered when implementing site clearing. The proposed alignment is unlikely to have any direct impact to the specimen's observed infield, if a pre-construction walkthrough is conducted prior to construction. It must be noted that *Sclerocarya birrea subsp. caffra* is a very common species within the vicinity of Polokwane, and it is not under threat within this part of the species geographical range.

10.4.3 Loss of faunal Species of Conservation Concern (SCC)

During the field assessment, no observations were made of any Faunal SCC (excluding bird species), although according to the desktop assessment, there are five faunal SCC that may occur within the study area (low or medium probability of occurrence).

Based on the overall lack of unique habitat along the proposed powerline route, faunal species impacted upon during the project will mostly be as a result of construction activities and on a temporary basis (0 to 3 years). Impacts to species such as *Pyxicephalus adspersus* (African bullfrog) and *Otomys auratus* (Southern Africa Vlei Rat) may be avoided by establishing towers outside of any wetland or riparian habitat, and through the adequate application of mitigation techniques within suitable habitat. It is envisioned that once the construction phase has been completed, and all rehabilitation activities have been successfully implemented, the aforementioned species will return to the study area and continue to benefit from the same ecological resources offered prior to the implementation of the proposed project.

10.4.4 Fragmentation, loss of ecosystem function and edge effects

As the study area contains habitat associated with moderate levels of connectivity (rivers and bushveld), uncontrolled construction activities within the study area may result in the

fragmentation of habitat, which would result in decreased connectivity and ecosystem function. Due to the site's proximity to CBA and ESAs, this could potentially affect provincial conservation goals associated with these features, as a result of the following risks:

- Loss of seed dispersal.
- Loss of pollination.
- Reduction in gene pool diversity, and limitations in breeding opportunities.
- Reduced access to water resources (especially during winter).
- Cessation of ecological drivers and processes (e.g. fire).

However, connectivity in the study area is already affected by the presence of multiple farm fences, including game fences, which restrict connectivity and movement of fauna, often preventing medium to large sized game from accessing important habitat nearby. However, the overhead powerline will not significantly restrict terrestrial movement corridors, and the impacts of the proposed powerline on connectivity and ecosystem function may be successfully managed/ mitigated.

Edge effects may result from proposed development, as there will be a need to clear and maintain portions of the route. If rehabilitation is not adequately implemented, species composition along these disturbed sections of the study area may influence nearby natural habitat. Influencing factors may be due to the introduction of woody invaders into grasslands or the introduction of alien plant species into nearby veld. Prompt rehabilitation, control of alien plant species and avoiding the introduction of exotic species and / or species not found within the surrounding plant communities, will eliminate possible edge effects.

10.4.5 Invasion of Alien Plant Species

Construction activities and establishment of laydown areas and site camps will result in the influx of seeds from outlying disturbed areas and disturbance of existing seedbanks of alien invasive plant (AIP) species, forcing the proliferation of AIPs within the study area. As the study area is currently not heavily invaded by alien vegetation, the introduction of AIPs to the area could have a significant influence on existing fauna and flora species and the ecological processes that may be linked to each species. The resultant impact may be the loss of key plant and /or faunal species within the study area. However, implementation of a well formulated AIP Management Plan should provide sufficient mitigation of these impacts.

10.4.6 Effects on ecological drivers

The proposed development is unlikely to have any significant impact on ecological drivers as they currently operate. The plant-animal interactions are expected to have reduced significantly in the study area with the reduction of small to large game and increase in domestic livestock, although within game enclosures, animal-plant interactions will be high. Dispersion of seeds via avifauna activity will remain unaffected by the powerline, and the insect-plant interaction will be temporally impacted within the vicinity of the development footprint. The overall impact will be reduced by the fact that the powerline route will track existing areas of disturbance, and the powerline can avoid highly sensitive habitats by careful tower placement. Furthermore, the general height of the powerline above ground contributes greatly to not having a permanent impact on ecological processes. However, if rehabilitation is not successfully achieved within the cleared servitude, impacts to natural processes may be more significant, especially if alien vegetation is introduced and if portions of the route remain unvegetated and barren.

10.4.7 Mitigation measures

10.4.7.1 Loss of vegetation communities (preconstruction, construction and operation)

- ❑ The construction and operational footprint of the development must not extend past the assessment area (approximately 500m).
- ❑ All access to the proposed development must be limited to existing access roads and parallel servitude. No *ad hoc* roadways should be permitted, without first being authorised by the ECO.
- ❑ All highly sensitivity habitat (e.g. artificial dams and wetlands) must be sign-posted both during construction and the operational phase of the development. Signposts must be suitably positioned to prevent both staff and visitors from entering these sensitive ecosystems.
- ❑ A Rehabilitation Plan, encompassing an alien vegetation control plan, must be compiled prior to construction, and implemented to ensure that all rehabilitation and operational management regimes are well coordinated and budgeted for.

10.4.7.2 Loss of Plant Species of Conservation Concern (SCC) (pre-construction and construction)



- ❑ A pre-construction walkthrough must be completed by a suitably qualified botanist / ecologist to determine the frequency and exact location of protected species and/ or SCC before construction is commenced with on site.
- ❑ If any protected plant species are found within the proposed development footprint, and they need to be cut, trimmed, transplanted or removed, permits must be applied for and received before construction commences on site (if applicable). If a protected species is destroyed, an offset of 1:3 should be applied (e.g. 1 protected tree species destroyed will be offset with 3 being planted within the PAOI).
- ❑ No plant species (SCC or common) must be harvested or removed from site without approval from the ECO or Applicant in writing.

10.4.7.3 Loss of Faunal Species of Conservation Concern (SCC) (design, pre-construction, construction and operation)

- ❑ No powerline towers must be constructed within 30m of a watercourse.
- ❑ The Contractor must conduct a brief faunal sweep prior to the clearance of vegetation and excavation activities at each new tower location.
- ❑ Walking and/ or driving vehicles within river beds or wetlands must not be permitted, unless critical for construction.
- ❑ The killing of any fauna must not be tolerated.
- ❑ Environmental awareness training must be conducted by the ECO before any new staff commence with work activities on site. The awareness training must include teaching staff how to identify the following species which may be encountered during construction and are prone to being affected by construction activities:
 - *Pyxicephalus adspersus* (African Bullfrog).
 - *Atelerix frontalis* (South African Hedgehog).

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<i>Atelerix frontalis</i> (South African Hedgehog) (photo sourced from Google)	<i>Pyxicephalus adspersus</i> (African Bullfrog). (photo sourced from Google)

- Excavations should be cordoned off and kept open for the minimum period as practically possible.
- Construction should not take place during the evening.
- Any lighting must not point outwards toward any natural habitat and should be focused downwards or towards the development.

10.4.7.4 *Fragmentation, loss of ecosystem function and edge effects*

- The development footprint must be kept as small as possible and ensure that all non-operational areas are rehabilitated to a suitable condition.
- The construction of additional access roads must not be tolerated, unless authorised by the ECO and Engineer.
- Rehabilitated sections of the route should be cordoned off from grazers and/ or livestock to prevent overgrazing of newly sprouted shoots and trampling of rehabilitated areas.
- Connectivity within rivers and wetlands must be maintained throughout the construction phase. Construction activities must not restrict faunal movement within these ecosystems, nor prevent fauna from access to critical resources nearby, such drinking water or grasslands.

10.4.7.5 *Invasion of Alien Plant Species (construction and operation)*

- An Alien Invasive Plant Species Control Plan must form part of the rehabilitation plan developed for the project. This plan must be developed to include both construction and operational phase requirements.
- No dumping of cleared alien vegetation must be allowed on site. All cleared material must be appropriately disposed of at a registered landfill.
- Alien invasive plant control regimes must be executed in accordance with Eskom's servitude maintenance plan.

10.4.7.6 *Recommendations for conditions of authorisation*

The following mitigations are recommended by the specialist ecologist specifically for inclusion as conditions of the EA. They have been included in the EMPr (Appendix 6), the implementation of which will be a condition of the EA.

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- ❑ An ECO must be appointed during both the pre-construction and construction phase to ensure that the conditions of the EA are sufficiently complied with.
- ❑ The appointed Contractor responsible for constructing the proposed project must be legally responsible for complying with the approved EMPr and EA.
- ❑ The Contractor must include environmental topics within toolbox talks at least once a month and should be made aware of any protected plant species (if applicable) located nearby, the presence of nearby sensitive habitats (such as wetlands) and the possibility of faunal species being found within development footprint.
- ❑ All natural habitat found outside the development footprint must remain untouched, and listed as a no-go area, unless for management and maintenance purposes (e.g. IAPS control).
- ❑ A plant search and rescue process must be completed before any construction activities takes place on site. The location of each plant, and translocated specimen should be monitored for impacts caused by trampling and overgrazing by stock animals. Management measures should evolve with the findings of these monitoring activities.
- ❑ No construction activities should take place during the evening, and construction should take place between 07h00 and 17h00 to avoid periods where fauna are most active.
- ❑ All lighting must be focused inward and not towards sensitive habitat.
- ❑ If any wetland systems are directly impacted upon by tower structures, a frog and reptile survey must be completed by an ecologist, during an appropriate season for this region.
- ❑ Where possible, towers should avoid being placed within CBA1 areas.
- ❑ All cleared areas must be adequately rehabilitated immediately after construction has been completed, and not only at the end of construction. Rehabilitation activities must be season appropriate and make use of plant species already associated with the vegetation type occurring within the development footprint.
- ❑ A speed limit of 20 kilometres per hour (km/hr) is recommended within 100m of the piggery waste disposal site.
- ❑ Any faunal SCC mortalities (regardless of the nature of the incident) must be reported to the DFFE and ECO to be investigated.
- ❑ If the Contractor and / or ECO observe any significant breeding activity by a known SCC, this must be reported to the Applicant, who must in turn report it to the CA. A faunal specialist may be required to conduct a follow-up investigation and guide the development according to specific mitigation techniques.

Table 21 Assessment of the potential impacts of the proposed Witkop-Pietersburg Line 3 on terrestrial biodiversity

Impact	Mitigated /Managed	Nature	Spatial Extent	Duration	Intensity	Frequency	Probability	Irreplaceability	Reversibility	Significance	Confidence
Loss of Vegetation Communities	Unmitigated	Negative	Site Specific	Long Term	Medium	Once off	Definite	Moderate	Low	Medium	High
	Mitigated	Negative	Site Specific	Medium Term	Small	Once off	Definite	Moderate	High	Low	Medium
Loss of plant SCC as a result of clearing activities.	Unmitigated	Negative	Local	Permanent	Medium	Once off	Probable	Low	Medium	Medium	Medium
	Mitigated	Negative	Site Specific	Short Term	Low	Once off	Probable	Low	High	Low	High
Loss of faunal SCC as a result of clearing, excavation and maintenance activities.	Unmitigated	Negative	Local	Medium-term	Medium	Once off	Highly probable	Moderate	Medium	Medium	Medium
	Mitigated	Negative	Site Specific	Medium-term	Low	Once off	Probable	Low	Medium	Low	Medium
Establishment and operation of the newly proposed power line leading to the fragmentation of habitat, loss of ecosystem function and edge effects.	Unmitigated	Negative	Local	Long-term	Medium	Periodic	Highly probable	Moderate	Low	Medium	Medium
	Mitigated	Negative	Site Specific	Short-term	Low	Once off	Probable	Low	Medium	Medium	Medium
Introduction and proliferation of alien plant species as a result of construction and operational activities.	Unmitigated	Negative	Local	Long-term	High	Periodic	Highly probable	Moderate	Low	Medium	High
	Mitigated	Negative	Site Specific	Medium	Small	Intermittent	Probable	Low	Medium	Low	High

10.5 What effects will the proposed Witkop-Pietersburg Line 3 have on watercourses and aquatic biodiversity?

According to the assessment, the potential negative impacts of the project on water courses and aquatic biodiversity are of low significance, both without and with management/mitigation (Table 22).

10.5.1 Indirect loss of aquatic habitat and ecological connectivity (construction)

A total of eleven (11) wetlands were determined to be at a low risk of being impacted on by the proposed development, provided the towers are placed outside of any watercourses and the 15 m buffer. However, a loss of ecological connectivity from terrestrial to aquatic habitat will probably occur, which can indirectly reduce biodiversity and ecosystem functionality of watercourses in the area. Furthermore, in a catchment that is susceptible to erosion, construction within this area will further present an opportunity for erosion to occur if not managed appropriately.

10.5.2 Indirect alteration of water quality (construction)

Excess bare soil and sedimentation created from construction activities within the catchment may enter adjacent watercourses and deteriorate the water quality, in comparison to baseline conditions. In addition to this, the introduction of hydrocarbon sources and concrete mix poses a risk of contamination occurring, if mitigation measures are not implemented.

10.5.3 Direct alteration to the catchment and hydrological flow (construction)

The hardened surfaces created by construction will reduce the area of vegetation and infiltration surface, as well as alter the current hydrological flow regime within the catchment area. This could lead to erosion features developing downslope of the structures, which are situated on moderately steep hillocks, if adequate flow management systems are not integrated into the overall design of the proposed development.

10.5.4 Indirect alteration to ecosystem service provisions (construction)

The indirect disturbance of freshwater ecosystems as a result of construction activities and associated infrastructure may alter the ability of the freshwater ecosystems to provide valuable regulating and supporting, as well as cultural and provisioning, benefits to the surrounding anthropogenic and natural environments.

10.5.5 Improvement of aquatic habitat and ecological structure (rehabilitation)

Subsequent to the end of the construction phase, the disturbed areas around the proposed development footprint will be rehabilitated to pre-construction (or better) condition. This may result in an improvement of the condition of the downstream watercourses, if the recommended mitigation is strictly implemented and subsequently monitored.

10.5.6 Indirect alteration of water quality (operation)

Maintenance activities will result in hydrocarbons and construction equipment being brought onto site and potentially utilised in areas in close proximity to watercourses. In addition to this, should leakages from construction vehicles occur, this may enter watercourses as a contaminant, which can reduce the integrity of the watercourse.

10.5.7 Direct alteration to the catchment and hydrological flow (operation)

Potential new service roads, servitudes and structures within the catchment have the ability to alter the hydrological flow regime within the catchment area, as well as reduce flow to downslope watercourses. This could result in alterations of flow to watercourses and the flow patterns within watercourses.

10.5.8 Indirect alteration to ecosystem service provisions (operation)

Indirect disturbance of watercourses may result in AIPS encroaching into the disturbance footprint during the operational phase of the proposed development. This will reduce biodiversity within the catchment area and alter the current water balance within the systems. The aforementioned will reduce the ability of the watercourses to provide ecosystem services to the natural and anthropogenic environments.

10.5.9 Mitigation measures

10.5.9.1 Pre-construction Phase

- Site Layout
 - All existing roads must be utilised as far as possible. No new roads should be cleared/constructed through watercourses unless authorised. In the case where access roads will be through watercourses, adequate stormwater infrastructure that can accommodate a 1:20year flood event should be installed, guided by a suitably qualified engineer or hydrologist, and the area surrounding the direct footprint landscaped to near-natural topography, tilled and revegetated with indigenous grass species for soil stability. Gravel tracks are the preferred road type as this will reduce the direct impact and potential for contamination to occur.
 - Locate site camps, laydown areas, stockpile areas, construction material, equipment storage areas, vehicle parking areas, bunded vehicle servicing areas and re-fuelling areas in designated areas outside of the prescribed buffer zones and watercourses. These areas should preferably be located on level ground in a previously disturbed area of vegetation approved by the Environmental Officer (EO) or Environmental Control Officer (ECO). Cut and fill must be avoided where possible during the set-up of the construction site camp.
 - Fuel, chemicals and other hazardous substances should preferably be stored offsite, or at least 100 m away from watercourses
 - These substances must be stored in suitable secure weather-proof containers with impermeable and bunded floors to limit pilferage, spillage into the environment, flooding or storm damage.
 - Design a stormwater management plan which details how stormwater runoff from cleared and compacted surfaces will be controlled. This should include mitre drains and other stormwater infrastructure on all access and maintenance roads.

Clearly defined clean and dirty systems must be developed and maintained around the site camp.

- Restrict the movement of construction vehicles and personnel to designated access roads. The indiscriminate movement of construction vehicles and personnel through watercourses during the establishment of the site camp, laydown areas etc must be strictly prohibited.

10.5.9.2 Construction

- Disturbance of aquatic habitat due to the edge effect
 - Clearly demarcate no go areas with orange hazard tape, fencing or similar prior to the commencement of development activities, and strictly prohibit the movement of construction vehicles and personnel in these areas. Watercourses and associated buffer areas that are located outside of the demarcated construction footprint must be designated as no-go areas. In addition to this, no monopoles are to be situated directly within watercourses or their associated buffer zones.
 - Vegetation clearing should not occur throughout the proposed development corridor to avoid direct disturbance of watercourses and adjacent terrestrial land. Only those species greater than 6 m in high should be trimmed where required to maintain the integrity of the infrastructure.
 - All existing roads must be utilised as far as possible during the construction to reduce the disturbance to the receiving environment. Areas where the proposed new line will cross watercourses and associated buffer, should utilise existing access roads and not create new access roads, where possible.
 - Demarcation of the construction footprint must be signed off by an EO or ECO. Demarcations onsite should not be removed until the proposed development activities are complete.
 - The position of the monopoles must be located outside of the watercourses and associated buffer zones.
 - A map of all sensitive and no-go areas, including watercourses and buffer zones, must be included in the induction material to be presented to all site personnel.
 - Strictly avoid any damage to natural vegetation cover or soils within surrounding watercourses and their associated buffer zones during construction activities. An EO or ECO must inspect the construction footprint on a weekly basis and must take immediate action to address unforeseen disturbances to surrounding aquatic habitat. Any disturbed / compacted areas falling outside of the demarcated development footprint must be immediately rehabilitated to the satisfaction of the EO or ECO as per the relevant EMP to be composed.
 - Prohibit the dumping or temporary storage of gravel / building materials / spoil material / within watercourses and their associated buffer areas. Building material must be stored at the designated storage area located outside of the no-go areas and spoil material must be appropriately disposed of at a registered waste disposal facility.
 - Immediately clear and remove any gravel or sediment that may have been accidentally deposited into the watercourses and their associated buffer areas during the construction activities (by hand).
 - The control of AIPS must be guided by an AIPS control management plan to ensure compliance with the NEMBA (Act no. 10 of 2004). This act states that all landowners must control listed AIPs on their property according to the NEMBA: Alien and Invasive Regulations (2014) and associated Alien Species List (2020).
 - Alien and Invasive species control:

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- The construction footprint, site camps, laydown areas, stockpile area and any additional bare areas must be checked by a suitably qualified professional. AIPS must be removed on a weekly basis.
 - AIPS removal is to take place manually, by hand as far as possible. The use of herbicides should be avoided. Should the use of herbicides be required, only herbicides which have been certified safe for use in aquatic environments by an independent testing authority may be considered (e.g.: Fusilade and Glyphosate). The EO or ECO must be consulted in this regard.
 - Care must be taken in order to avoid the disturbance of indigenous species during the removal of AIPS.
 - Dispose of removed AIPS material at a registered waste disposal site or burn on a bunded surface where no stormwater runoff is expected.
 - Remove vegetation before seed is set and released.
 - Cover removed AIPS material properly when transported, to prevent it and seeds from being blown from vehicles.
 - Once construction has been completed, all material utilised for the demarcation of the construction footprint as well as all construction waste, rubble, and equipment must be removed from the construction footprint and disposed of at a registered landfill facility.
- Erosion and sedimentation of aquatic habitat
- Construction activities adjacent to any watercourse must take place within the dry season, where possible (i.e. April to mid-September) to reduce the risk of erosion and sedimentation of the watercourses during construction.
 - Design a Stormwater Management Plan prior to the commencement of construction related activities, which details how stormwater runoff from the construction footprint (specifically roads) will be controlled in order to prevent the erosion and sedimentation of watercourses.
 - Construct silt fences / traps in areas prone to erosion, to retain sediment-laden runoff:
 - Place silt fences / traps strategically on the periphery of the construction footprint area, the site camp, cleared areas, storage areas, soil stockpile areas and laydown areas.
 - Silt fences/traps must be installed downslope of all of the at-risk watercourse to reduce the risk of sediment entering the downstream systems. The EO or ECO must be consulted on the number and location of silt fences, and silt fences must not result in any unnecessary disturbance to wetland, riparian or instream habitat.
 - All sediment trapping devices should be checked weekly by the appointed contractor / EO / ECO and cleared as needed.
 - Ensure silt fences / traps are adequately maintained.
 - Stormwater, sediment and erosion control measures must be installed before construction activities are initiated.
 - Care must be taken to prevent additional disturbance to watercourses during the implementation of stormwater, sediment trapping and erosion control measures.
 - Excess dust observed in the vicinity of the proposed development must be noted and the appropriate dust suppression techniques implemented to ensure no excess sediment input into the surrounding watercourses.
 - Erosion control measures including silt fences, low soil berms and/or shutter boards must be put in place around the stockpiles to limit sediment runoff from stockpiles.
 - The contractor / EO / ECO must check the watercourses and buffer areas for erosion damage and sedimentation weekly and directly after every heavy rainfall
-

event. Should erosion or sedimentation be noted, immediate corrective measures must be undertaken. Care must be taken to prevent additional disturbance to the watercourses during the implementation of these measures.

- Contamination of aquatic habitat
 - A method statement must be developed indicating how the contractor will minimise the passage of contaminants such as fuel and gravel into the watercourses. This method statement must be included with the environmental applications for approval.
 - Inspect all storage facilities and vehicles daily for the early detection of mechanical deterioration or leaks.
 - The placement of drip trays must be conducted under vehicles that are stationary on site.
 - Mixing and transferring of chemicals or hazardous substances must take place on drip trays, shutter boards or other impermeable surfaces within bunded areas and should only be mixed or transferred by suitably trained personnel.
 - Drip trays must be utilised at all fuel dispensing areas.
 - Vehicles and machinery should preferably be cleaned off site. Should cleaning be required on site it must only take place within designated areas away from the prescribed buffer zone and watercourses, and should only occur in areas that have been previously disturbed and bunded areas.
 - Dispose of used oils, wash water from cement and other pollutants at an appropriate licensed waste facility.
 - All construction material brought onto site must be non-reactive to prevent contamination.
 - Clean up any spillages immediately with the use of a chemical spill kit and dispose of contaminated material at an appropriately registered facility.
 - The digging of pit latrines is not allowed under any circumstances.
 - None of the open areas or the surrounding environment may be used as ablution facilities.
 - Provide portable toilets where work is being undertaken (1 toilet per 10 workers). These toilets must be located within an area designated by the EO / ECO outside of the watercourses and their associated buffer areas and must be located on level ground. Portable toilets must be regularly serviced and maintained.
 - Provide an adequate number of bins on site and encourage construction personnel to dispose of their waste responsibly. Responsible waste management must form part of the induction process for all site personnel.
 - Waste generated by construction personnel must be removed from the project footprint and disposed of at a registered waste disposal facility on a weekly basis.

10.5.9.3 *Rehabilitation*

- The rehabilitation of the site camp should be guided by the EMPr.
- All construction waste materials must be removed from site and disposed of at an appropriate waste disposal facility, and temporary structures (e.g. offices, workshops, storage containers, ablution facilities) must be dismantled and removed. This will need to be checked by the EO / ECO and the responsible contractors.
- Any temporary access roads (legal or illegal) which were created must be decommissioned and rehabilitated (ripped and revegetated) to reinstate the natural vegetation, increase the surface roughness and resultantly increase infiltration (e.g. tillage and revegetation) post-construction. It must be noted that rehabilitation specialist should provide guidance with revegetation process.

ESKOM DISTRIBUTION LIMPOPO

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- ❑ The control of AIPS must be guided by a AIPS control plan to ensure compliance with the NEMBA (Act no. 10 of 2004). This act states that all landowners must control listed AIPS on their property according to the NEMBA: Alien and Invasive Regulations (2014) and associated Alien Species List (2020).
- ❑ Slopes that have been altered due to construction must be reshaped to replicate the original condition and contours and revegetated. All disturbed slopes must be landscaped to no more than a ratio of 1 (vertical): 3 (horizontal) to reduce surface flow velocity and thus erosion potential downslope.
- ❑ Any bare and unstable slopes must be stabilised with a biodegradable cover such as Geojute which must be secured to the steep slope with wooden (biodegradable) pegs. This will reduce soil erosion potential.
- ❑ Remove any gravel or sediment that may have been accidentally deposited into the watercourses and their associated buffer areas (by hand).
- ❑ Any disturbed / compacted outside the development footprint that were caused during the pre-construction and construction phases of this project, must be rehabilitated (ripped and revegetated) to the satisfaction of the EO / ECO as per the relevant EMPr to be composed.
- ❑ Erosion features that have developed as a result of construction-related disturbances are required to be stabilised. This may also include the need to deactivate any erosion head cuts/rills/gullies that may have developed by either compacted soil infill, rock plugs, gabions or any other suitable measures.

10.5.9.4 Operation

- ❑ Domestic waste must be cleared from the access roads, including watercourses therein, on a monthly basis to reduce the contamination potential within the study areas.
- ❑ The control of AIPS must be guided by a AIPS control plan to ensure compliance with the NEMBA (Act no. 10 of 2004). This act states that all landowners must control listed AIPS on their property according to the NEMBA: Alien and Invasive Regulations (2014) and associated Alien Species List (2020). A contractor must be appointed by Eskom to control all AIPS within the proposed development sites. The clearing should take place in a phased manner, starting within the initial clearing and then follow-up and lastly maintenance clearing. The clearing processes typically take 3 years with annual updates of the site-specific AIPS control plan.

Table 22 Assessment of the potential impacts of the proposed Witkop-Pietersburg Line 3 on watercourses and aquatic biodiversity

Impact	Mitigated /Managed	Nature	Spatial Extent	Duration	Intensity	Frequency	Probability	Irreplaceability	Reversibility	Significance	Confidence
Indirect loss of aquatic habitat and ecological connectivity (construction)	Unmitigated	Negative	Local	Short-term	Low	Once off	Probable	Moderate	Low	Low	Medium
	Mitigated	Neutral	Site specific	Short-term	Negligible	Negligible	Improbable	Low	High	Low	Low
Indirect alteration of water quality (construction)	Unmitigated	Negative	Local	Short-term	Low	Once off	Probable	Moderate	Low	Low	Medium
	Mitigated	Neutral	Site specific	Short-term	Negligible	Negligible	Improbable	Low	High	Low	Low
Direct alteration to the catchment and hydrological flow (construction)	Unmitigated	Negative	Local	Short-term	Low	Once off	Probable	Moderate	Low	Low	Medium
	Mitigated	Neutral	Site specific	Short-term	Negligible	Negligible	Improbable	Low	High	Low	Low
Indirect alteration to ecosystem service provisions (construction)	Unmitigated	Negative	Local	Short-term	Low	Once off	Probable	Moderate	Low	Low	Medium
	Mitigated	Neutral	Site specific	Short-term	Negligible	Negligible	Improbable	Low	High	Low	Low
Improvement of aquatic habitat and ecological structure (rehabilitation)	Unmitigated	Positive	Local	Short-term	Low	Once off	Probable	Moderate	Low	Low	Medium
	Mitigated	Positive	Local	Medium-term	Negligible	Intermittent	Improbable	Low	High	Low	Low

ESKOM DISTRIBUTION LIMPOPO

PROPOSED DEVELOPMENT OF THE 132 KV WITKOP-PIETERSBURG ESKOM DISTRIBUTION POWERLINE 3 (18 KM), CAPRICORN DISTRICT MUNICIPALITY, LIMPOPO, SOUTH AFRICA

Indirect alteration of water quality (operation)	Unmitigated	Negative	Local	Short-term	Low	Once off	Probable	Moderate	Moderate	Low	Medium
	Mitigated	Neutral	Site specific	Short-term	Negligible	Negligible	Improbable	Low	High	Low	Low
Direct alteration to the catchment and hydrological flow (operation)	Unmitigated	Negative	Local	Short-term	Low	Once off	Probable	Moderate	Low	Low	Medium
	Mitigated	Neutral	Site specific	Short-term	Negligible	Negligible	Improbable	Low	High	Low	Low
Indirect alteration to ecosystem service provisions (operation)	Unmitigated	Negative	Local	Short-term	Low	Once off	Probable	Moderate	Low	Low	Medium
	Mitigated	Neutral	Site specific	Short-term	Negligible	Negligible	Improbable	Low	High	Low	Low

10.6 What impacts will the proposed Witkop-Pietersburg Line 3 have on avifauna species (birds) and vice-versa?

According to the assessment, the potential negative impacts of the construction and operation of the proposed line on avifauna are of low, medium and high significance, without management. With management/mitigation, the significance of these impacts is reduced to low (Table 23).

10.6.1 Displacement as a result of habitat loss or transformation (preconstruction and construction)

During preconstruction and construction, clearance of vegetation (habitat) (4m to 8m on either side of the power line) will reduce the amount of habitat available to birds for foraging, roosting and breeding. The effect of the vegetation clearing is always more marked in woodland areas, where construction necessitates the removal of woody plants, and especially large trees. Given the low report rates for the majority of the SCC, the loss of habitat may potentially be more significant for the more common power line sensitive species and passerine species with small home ranges, as entire territories could be removed during construction activities. While these species have the potential to be displaced by the construction of the power line infrastructure within the PAOI, identical habitat features prominently in the surrounding areas, providing alternate foraging, roosting and breeding areas for the species observed.

10.6.2 Displacement as a result of disturbance (construction)

Excavation and other construction activities are a source of significant disturbance particularly as a result of the machinery and construction personnel that are present on site. For most bird species, construction activities are likely to be a cause of temporary disturbance impacting on foraging, and roosting behaviours. However, in more extreme cases, construction may impact on the breeding success of certain species, particularly if the disturbance happens during a critical part of the breeding cycle, resulting in temporary breeding failure or permanent nest abandonment. The route alignment is already subjected to a degree of disturbance in the form of settlement, agricultural and pastoral activities, and the existing power line network, in addition to vehicle and pedestrian traffic. Construction activities within the PAOI are likely to result in the temporary displacement (as opposed to permanent displacement) of species from the area.

Each of the power line sensitive species has the potential to be displaced by the construction of Witkop-Pietersburg 132kV power line as a result of disturbance. However, many of these species have persisted despite existing disturbance within the PAOI. This resilience, coupled with the fact that similar habitat is available throughout the broader area, means that the displacement impact will not be of regional or national significance.

In contrast, the Ibis Piggery property is a hotspot for SCC and other powerline sensitive species owing to the number of surface waterbodies on this property, land under cultivation and of course the vulture restaurant (established after the construction of the existing power line network). The disturbance impact associated with construction activities on this property is likely to be more significant, albeit temporary.

10.6.3 *Direct mortality as a result of construction activities*

Bird mortality as a result of construction activities is improbable because birds are incredibly mobile and able to move out of harm's way. If mortality does occur, it is likely to be confined to a localised area and restricted to immobile species e.g. nestlings. No terrestrial bird species (ground) nest locations were observed during the site survey.

10.6.4 *Mortality due to collisions with the 132kV power line conductors (operation)*

Collisions are the biggest single threat posed by power lines to birds in southern Africa. Most heavily impacted upon are the heavy-bodied birds with limited manoeuvrability, which makes it difficult for them to take the necessary evasive action to avoid colliding with power lines. Relevant to this development, collisions are likely to occur within at least 2km either side of the vulture restaurant, sections of power line that traverse across or close to waterbodies, cultivated lands and open woodland areas. The collision impact for the remainder of the power line alignment remains moderate.

10.6.5 *Mortality due to electrocutions on the 132kV power line infrastructure (operation)*

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 risk is strongly influenced by the power line voltage and design of the tower/pole structure and mainly affects larger, perching species that are capable of spanning the spaces between energized components. The clearance distances between the live components and/or live and earthed components of the 132kV tower structure should be sufficient to reduce the risk of electrocutions for most raptor species. However, this is not the case for the vulture species and Marabou Stork observed on the Ibis Piggery property.

The best possible mitigation is the construction of the power line using an Eskom approved bird friendly pole/tower design (DT 7641/7649) in accordance with the Distribution Technical Bulletin relating to bird friendly structures. Additional mitigation in the form of insulating sleeves on jumpers present on strain poles and terminal poles is also required, alternatively all jumpers must be suspended below the crossarms. It is important to note that the existing transmission and sub-transmission power lines currently serve as a roost for vultures. This will create a shielding effect for the new line in that the birds are most likely to continue to roost on the existing Witkop-Pietersburg 132kV 2 power line, as this is an established roost and is designed in such a way that the birds can roost comfortably in numbers on the self-support towers. This should further reduce the risk of electrocution on the new power line.

Note that the avifauna specialist, who has in depth knowledge of avifauna-powerline interactions in the study area, does **NOT** recommend moving the vulture restaurant on the Ibis property, as this is not a simple exercise and can result in worse impacts if the restaurant is established in an area with smaller reticulation (22kV powerlines).

10.6.6 *Impact on the quality of electrical supply (operation)*

Both bird streamers and bird pollution occur as a result of birds perching and defecating on the pole tops and often directly above live conductors, causing electrical faults on power lines. This

impact will be more marked on those towers within close proximity to the towers that will be constructed on the Ibis piggery property. The more faults that occur on a line, the poorer the quality of electrical supply to the end users. The construction of the power line using the steel monopole structure will minimise this impact, in that limited perching space on the structure is available to the vultures and storks that will readily utilise the power line towers to roost on. Site specific mitigation (e.g. anti-perching devices) can be applied reactively, should this impact occur post construction.

Bird nests may also cause faults through nest material, protruding into the air gap between live components on the power line infrastructure. Crows in particular often incorporate wire and other conductive material into their nests. When nests cause flashovers, the nesting material may catch fire. This in turn can lead to equipment damage or a general veld fire. Apart from the cost of replacing damaged equipment, the resultant veld fire can lead to claims for damages from landowners. Power line poles in turn provide nesting substrate for certain bird species, some of which might benefit through the increased availability of nesting substrates on the power line infrastructure. Site specific mitigation (i.e. bird guards) can be applied reactively should this impact occur.

10.6.7 Displacement as a result of disturbance (decommissioning)

The PAOI is already subjected to a degree of disturbance associated with settlement, agricultural and pastoral activities. While the decommissioning of the Witkop-Pietersburg 132kV power line in this area will undoubtedly displace some species, the bird species likely to occupy this area, and the fact that similar habitat is available within the broader PAOI, displacement as a result of disturbance is unlikely to be permanent and of national significance.

10.6.8 Mitigation measures

10.6.8.1 Pre-construction and Construction

- Displacement as a result of habitat loss
 - Avoid removal of sensitive vegetation types. The recommendations of the botanical study must be strictly implemented, especially as far as limitation of the construction footprint and rehabilitation of disturbed areas is concerned.
 - Construction activity should be restricted to the immediate footprint of the infrastructure.
 - All construction activities should be strictly managed according to generally accepted environmental best practice standards, so as to avoid any unnecessary impact on the receiving environment.
 - All temporary disturbed areas should be rehabilitated according to the site's rehabilitation plan, following construction.
 - Maximum use should be made of existing access roads and the construction of new roads should be kept to a minimum.

 - Displacement as a result of disturbance
 - Access to the remainder of the site should be strictly controlled to prevent unnecessary disturbance of priority species.
 - Measures to control noise should be applied according to current best practice in the industry.

 - Mortality as a result of electrocutions on the 132kV power line infrastructure
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- The 132kV power line must be constructed using a bird friendly structure (i.e. (DT 7641/7649).
 - Additional mitigation in the form of insulating sleeves on jumpers present on strain poles and terminal poles is also required, alternatively all jumpers must be suspended below the crossarms.
- ☐ Mortality as a result of collision with the overhead conductors and/or earth wires of the 132kV power line
- Conduct a pre-construction inspection (avifaunal walk-through) of the final power line alignment, prior to construction, to identify any species that may be breeding on the site or within the immediate surrounds and to ensure that any impacts likely to affect breeding species (if any) are adequately managed and to identify the exact sections of power line requiring collision mitigation. As a minimum these sections of power line will include the Ibis Piggery property, rivers, drainage lines, dams and cultivated lands
 - Power line marking in the form of bird flight diverters must be installed on the full span length on the earth wires, according to the applicable Eskom Engineering Instruction (Eskom Unique Identifier 240 – 93563150: The utilisation of Bird Flight Diverters on Eskom Overhead Lines). Light and dark colour devices must be alternated so as to provide contrast against both dark and light backgrounds respectively. These devices must be installed as soon as the conductors are strung.

10.6.8.2 Operation

- ☐ Mortality as a result of electrocutions on the 132kV power line infrastructure
- Eskom line and servitude managers as well as Ibis Piggery representatives are requested to report all bird electrocutions encountered during routine line patrols of the Witkop-Pietersburg 132kV power line to the Eskom-Endangered Wildlife Trust Strategic Partnership.
 - Insulating material (if applied) to be maintained during the operational life span of the Witkop-Pietersburg 132kV power line.
- ☐ Mortality as a result of collision with the overhead conductors and/or earth wires of the 132kV power line
- Eskom line and servitude managers are requested to report all bird collisions encountered during routine line patrols of the Witkop-Pietersburg 132kV power line to the Eskom-Endangered Wildlife Trust Strategic Partnership.
 - Bird flight diverters to be maintained on sections of power line during the operational life span of the Witkop-Pietersburg 132kV power line 3.
- ☐ Nest building on the 132kV power line infrastructure
- If on-going impacts are recorded once the Witkop-Pietersburg 132kV power line 3 is operational, it is recommended that these impacts be assessed by Eskom-Endangered Wildlife Trust Strategic Partnership and site-specific mitigation be applied reactively.
 - While it is not illegal to remove an unoccupied nest that is posing a quality of supply risk, the removal of nests that contain eggs or chicks will require a permit to do so. Nest management strategies to be identified and implemented reactively, if required.

Table 23 Assessment of the potential impacts of the proposed Witkop-Pietersburg Line 3 on avifauna species and vice-versa

Impact	Mitigated /Managed	Nature	Spatial Extent	Duration	Intensity	Frequency	Probability	Irreplaceability	Reversibility	Significance	Confidence
Displacement of Red List species as a result of habitat loss (construction)	Unmitigated	Negative	Site Specific	Short Term	Medium	Once Off	Highly Probable	Moderate	Low	Low	High
	Mitigated	Negative	Site Specific	Short Term	Low	Once Off	Probable	Low	High	Low	High
Displacement of Red List species as a result of disturbance (construction)	Unmitigated	Negative	Local	Short Term	Medium	Intermittent	Highly probable	Moderate	Medium	Medium	High
	Mitigated	Negative	Site Specific	Short Term	Low	Intermittent	Probable	Low	High	Low	High
Mortality: electrocution on the 132kV power line infrastructure (operation)	Unmitigated	Negative	Regional	Long Term	High	Periodic	Highly probable	High	Low	High	High
	Mitigated	Negative	Local	Short Term	Low	Once Off	Improbable	Low	High	Low	High
Mortality: collision with the 132kV power line infrastructure (operation)	Unmitigated	Negative	Regional	Long Term	High	Periodic	Highly probable	High	Low	High	High
	Mitigated	Negative	Local	Medium Term	Low	Once Off	Improbable	Low	High	Low	High
Displacement of Red List species as a result of habitat loss (decommissioning)	Unmitigated	Negative	Local	Short Term	Medium	Once Off	Probable	Moderate	Medium	Medium	High
	Mitigated	Negative	Site Specific	Short Term	Low	Once Off	Probable	Low	High	Low	High

10.7 How will the visual changes to the landscape as a result of the proposed Witkop-Pietersburg Line 3 affect the social and socio-economic environment?

Given the LCAs affected, the characteristics and visibility of the powerline, and the nature of the most sensitive receptors in the area, the significance of the visual impacts as a result of the proposed line is assessed as low, both before and after mitigation (Table 24).

10.7.1 General degradation or change of landscape character

The proposed powerline may result in degradation of the LCAs identified in the study area, due to 1) general landscape change or degradation caused by the introduction of new elements into the landscape and/or 2) change in specific views within the affected area due to visual intrusion or visual obstruction.

Due to the nature of the proposed development, visual impacts are expected to relate largely to visual intrusion.

10.7.2 Landscape changes

The proposed development could change the character and sense of place of the general landscape setting, viz:

- The Urban Landscape.
- Urban Fringe Landscape.
- Rural Landscape.

The significance of these changes was assessed to be low.

10.7.3 Visual impact on road users

The proposed development could change the character of the landscape as seen from the local roads, viz:

- Roads in urban areas.
- Roads in urban fringe areas.
- Roads in rural areas.

The significance of these changes was assessed to be low.

10.7.4 Visual impact on residents

The proposed development could change the character of the landscape as seen from local homesteads and urban areas, viz:

- Residents in urban areas.
- Residents in urban fringe areas.
- Residents s in rural areas.

The significance of these changes was assessed to be low.

10.7.5 Mitigation measures

Mitigation measures should include:

- Minimising disturbance during construction.
- Undertaking landscape rehabilitation of disturbed areas following construction.
- Removing all infrastructure on decommissioning.

Whilst these mitigation measures are good practice and will make a difference immediately adjacent to the proposed power line, due to the height of structures, they are unlikely to have a significant effect in reduction of levels of impact.

Table 24 Assessment of potential visual impacts on the social and socio-economic environment, as a result of the proposed Witkop-Pietersburg Line 3

LANDSCAPE IMPACT											
Impact	Mitigated /Managed	Nature	Spatial Extent	Duration	Intensity	Frequency	Probability	Irreplaceability	Reversibility	Significance	Confidence
Urban Landscape Change	Unmitigated	Negative	Local	Long-term	Negligible	Continuous	Improbable	Low	Moderate	Low	High
	Mitigated	Negative	Local	Long-term	Negligible	Continuous	Improbable	Low	Moderate	Low	High
Urban Fringe Landscape Change	Unmitigated	Negative	Local	Long-term	Negligible	Continuous	Improbable	Low	Moderate	Low	High
	Mitigated	Negative	Local	Long-term	Negligible	Continuous	Improbable	Low	Moderate	Low	High
Rural Landscape Change	Unmitigated	Negative	Local	Long-term	Low	Continuous	Probable	Low	Moderate	Low	High
	Mitigated	Negative	Local	Long-term	Low	Continuous	Probable	Low	Moderate	Low	High
VISUAL IMPACT ON ROAD USERS											
Roads in Urban areas	Unmitigated	Negative	Local	Long-term	Negligible	Continuous	Improbable	Low	Moderate	Low	High
	Mitigated	Negative	Local	Long-term	Negligible	Continuous	Improbable	Low	Moderate	Low	High
Roads in Urban Fringe areas	Unmitigated	Negative	Local	Long-term	Negligible	Continuous	Improbable	Low	Moderate	Low	High
	Mitigated	Negative	Local	Long-term	Negligible	Continuous	Improbable	Low	Moderate	Low	High
Roads in Rural areas	Unmitigated	Negative	Local	Long-term	Low	Continuous	Probable	Low	Moderate	Low	High
	Mitigated	Negative	Local	Long-term	Low	Continuous	Probable	Low	Moderate	Low	High

ESKOM DISTRIBUTION LIMPOPO

PROPOSED DEVELOPMENT OF THE 132 KV WITKOP-PIETERSBURG ESKOM DISTRIBUTION POWERLINE 3 (18 KM), CAPRICORN DISTRICT MUNICIPALITY, LIMPOPO, SOUTH AFRICA

VISUAL IMPACT ON RESIDENTS											
Impact	Mitigated /Managed	Nature	Spatial Extent	Duration	Intensity	Frequency	Probability	Irreplaceability	Reversibility	Significance	Confidence
Residents in Urban areas	Unmitigated	Negative	Local	Long-term	Low	Continuous	Probable	Low	Moderate	Low	High
	Mitigated	Negative	Local	Long-term	Low	Continuous	Probable	Low	Moderate	Low	High
Residents in Urban Fringe areas	Unmitigated	Negative	Local	Long-term	Negligible	Continuous	Improbable	Low	Moderate	Low	High
	Mitigated	Negative	Local	Long-term	Negligible	Continuous	Improbable	Low	Moderate	Low	High
Residents in Rural areas	Unmitigated	Negative	Local	Long-term	Low	Continuous	Probable	Low	Moderate	Low	High
	Mitigated	Negative	Local	Long-term	Low	Continuous	Probable	Low	Moderate	Low	High

10.8 What effects will the proposed Witkop-Pietersburg Line 3 have on cultural heritage resources, including palaeontological resources?

The significance of impacts on heritage resources as a result of the proposed line is assessed as medium, without mitigation. With mitigation, the significance is reduced to low (Table 25).

10.8.1 Disturbance, damage or destruction of burial grounds and graves

Construction activities may potentially result in the disturbance, damage or destruction of the **burial ground WP01** and the **possible grave WP02** identified in the vicinity of the route alignment.

Site	Longitude	Latitude	Description
WP01	29.38945	-23.89294	Burial ground located within an overgrown bushy environment. Both formal and informal graves.
WP02	29.34228	-23.9085	Possible Graves located within an overgrown bushy environment. The site was recorded out of caution because the piles of rocks resemble a grave.

These sites are rated as having high local heritage significance and had a heritage grading of IIIA. Without mitigation, the significance of this impact is assessed as medium. However, with mitigation, the significance of this impact is assessed as low.

10.8.2 Disturbance of Iron Age and Stone Age sites

The pottery cluster (Iron Age) and Low-density surface scatter of lithics (Stone Age) were considered to have no research potential or other cultural significance and are not assessed further.

10.8.3 Impact on palaeontology

The Palaeontological Sensitivity of the proposed development area is rated as Insignificant/Zero. In accordance with specialist recommendations, no assessment of impacts on palaeontological resources is required.

10.8.4 Chance finds

It is possible that cultural material will be exposed during pre-construction and construction activities, and may be recoverable, keeping in mind delays can be costly during construction and as such must be minimised. Powerline foundation holes do offer a window into the past and it thus may be possible to rescue some of the data and materials. With implementation of a chance find procedure, it will be possible to implement a suitable mitigation strategy on a case by case basis.

10.8.5 Mitigation measures

- ❑ **Chance find procedure** must be implemented to deal with possible heritage finds during work on site:
 - An appropriately qualified heritage practitioner/archaeologist must be identified to be called upon if any possible heritage resources or artefacts are identified.
 - Should an archaeological site or cultural material be discovered during construction (or operation), the area should be demarcated, and construction activities halted.
 - The qualified heritage practitioner/archaeologist will then need to come out to the site and evaluate the Heritage resources and make the necessary recommendations for mitigating the find and the impact on the heritage resource.
 - The contractor therefore should have some sort of contingency plan so that operations could move elsewhere temporarily while the materials and data are recovered.
 - Construction can commence as soon as the site has been cleared and signed off by the heritage practitioner/archaeologist.

- ❑ **Burial ground WP01:**
 - The site should be demarcated with a 50-meter no-go-buffer-zone and the graves should be avoided and left in situ.
 - A Grave Management Plan should be developed for the graves, to be implemented during the construction and operation phases (which needs approval by SAHRA).
 - If the site is going to be impacted directly and the graves need to be removed, a grave relocation process for these sites is recommended as a mitigation and management measure. This will involve the necessary social consultation and public participation process before grave relocation permits can be applied for with SAHRA under the NHRA and National Health Act regulations.

- ❑ **Possible grave WP02**
 - Until such time that the presence of a grave at the site has been tested, the stone concentration must be viewed as containing a grave.
 - The possible grave should be demarcated with a 50-meter buffer and should be avoided and left in situ.
 - **If the grave cannot be avoided:**
 - A Grave Management Plan should be developed for the grave, which also need to be approved by SAHRA BGG.
 - If the site cannot be avoided and the site is going to be impacted, then an application to SAHRA, will be required for a test excavation and/or GPR permit to determine if the site contains graves.
 - If human remains are discovered, a grave relocation process is recommended as a mitigation and management measure. This will involve the necessary social consultation and public participation process before grave relocation permits can be applied for with the SAHRA BGG, under the NHRA and National Health Act regulations.
 - If, during test excavations, it is determined that the site does not contain graves, no further mitigation will be required.

- ❑ **Timeframes**
 - It must be kept in mind that mitigation and monitoring of heritage resources discovered during construction activity will require permitting for collection or

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excavation of heritage resources and lead times must be worked into the construction time frames. Guidelines for lead times on permitting are provided below.

Lead times for permitting and mobilisation

ACTION	RESPONSIBILITY	TIMEFRAME
Preparation for field monitoring and finalisation of contracts	The contractor and service provider	1 month
Application for permits to do necessary mitigation work	Service provider – Archaeologist and SAHRA	3 months
Documentation, excavation, and archaeological report on the relevant site	Service provider – Archaeologist	3 months
Handling of chance finds – Graves/Human Remains	Service provider – Archaeologist and SAHRA	2 weeks
Relocation of burial grounds or graves in the way of construction	Service provider – Archaeologist, SAHRA, local government and provincial government	6 months

Table 25 What effects will the proposed Witkop-Pietersburg Line 3 have on cultural heritage resources, including palaeontological resources?

Impact	Mitigated /Managed	Nature	Spatial Extent	Duration	Intensity	Frequency	Probability	Irreplaceability	Reversibility	Significance	Confidence
Disturbance, Damage, or destruction to burial ground (WP01).	Unmitigated	Negative	Regional	Permanent	Medium	Once-off	Probable	High	Non-reversible	Medium	High
	Mitigated	Negative	Local	Permanent	Low	Once-off	Improbable	High	Non-reversible	Low	High
Disturbance, Damage, or destruction to possible grave (WP02).	Unmitigated	Negative	Regional	Permanent	Medium	Once-off	Probable	High	Non-reversible	Medium	High
	Mitigated	Negative	Local	Permanent	Low	Once-off	Improbable	High	Non-reversible	Low	High
Palaeontological resources	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

10.9 What cumulative impacts are anticipated from construction and operation of the proposed Witkop-Pietersburg Line 3?

A cumulative impact is an incremental impact upon the environment that results from the impact of a proposed action when added to past, existing, and reasonably foreseeable future actions which can be both positive and negative in nature.

Of relevance to cumulative impacts for this study is the following:

- The broad study area is on the periphery of the City of Polokwane and has numerous existing powerlines of all sizes traversing the landscape.
- The proposed line is to run parallel to an existing 132 kV powerline.
- Because the servitude has been registered and lying vacant for many years, it has prevented other development occurring within the servitude. It is assumed that it has been factored into the planning of future developments, including the proposed Scarlet Ibis Housing Development to the north of the eastern end of the proposed powerline.

As discussed below, both positive and negative cumulative impacts are anticipated. Overall, the significance of negative cumulative impacts is assessed to be low. Refer to the subsections below and to Table 26.

10.9.1 Cumulative social and socio-economic impacts

The construction and operation of the proposed Witkop-Pietersburg 132 kV line can potentially add to the following social and socio-economic impacts as a result of other developments in the area:

- Facilitation of socio-economic development and improved quality of life associated with more available and/or reliable electricity supply (positive).
- Increased opportunity for criminal activities (negative).
- Reduction in property values (negative).

The significance of the above impacts is assessed as medium.

10.9.2 Cumulative impacts on terrestrial biodiversity

Due to the requirement for maintaining a cleared servitude under the powerline, with attendant impacts on plant communities and natural habitat, this project can add to the cumulative negative impacts on terrestrial biodiversity resulting from other developments in the area. The significance of this impact is assessed as medium (without mitigation) and as low (with mitigation).

10.9.3 Cumulative impacts on watercourses and aquatic biodiversity

Provided the development of towers is kept outside of the watercourses and associated buffers, and the other recommended mitigations for protection of watercourses are implemented, the contribution of this project to the loss of watercourse habitat and disturbance of watercourses will not add significantly to cumulative impacts. The cumulative impact on watercourses and aquatic biodiversity is considered to be of low significance.

10.9.4 Cumulative impacts on avifauna

The proposed Witkop-Pietersburg 132kV Line 3 alignment equates to a maximum length of approximately 18km. There are approximately 30 existing high voltage powerlines and significantly more distribution and reticulation lines, totalling hundreds of kilometres within the 30km radius around the Witkop-Pietersburg 132kV power line PAOI. The proposed power line will increase the total number of existing and planned high voltage lines by a small percentage, therefore the contribution of the proposed 132kV power line to the cumulative impact of all the high voltage lines on avifauna is deemed to be of low significance. The combined cumulative impact of the existing power lines, the Witkop-Pietersburg 132kV power line 3 and all future proposed power lines on avifauna within a 30km radius is considered to be medium.

10.9.5 Cumulative impacts on cultural heritage resources

Given the improbability of this project impacting on heritage resources and the low significance of the impacts (with mitigation), the proposed project will not contribute significantly to cumulative impacts on heritage resources in the area. The significance is assessed as low.

10.9.6 Cumulative visual impacts

The proposed overhead power line is likely to have differing cumulative effects within the three Landscape Character Areas in the study area:

- ❑ In the **Urban LCA** it is likely to be visible in the context of other electrical infrastructure. It will add another element that will increase the urban fringe / industrial ethos. However, due to its relatively short length and likely limited visibility, the cumulative influence is likely to be small.
- ❑ In the **Urban Fringe LCA** it will be aligned beside the existing Pietersburg Witkop 132kV 2 power line. Where both lines are visible, it is likely to double the extent of electrical infrastructure that is visible. However, the existing power line is relatively well screened as it runs through this area. The additional cumulative effect of the new overhead power line is therefore likely to be relatively limited.
- ❑ In the **Rural Agriculture LCA** it will also be aligned beside the existing Pietersburg Witkop 132kV 2 power line. In this area however, the existing power line is relatively obvious. Therefore the proposed new powerline will also be obvious beside the existing line. Whilst this will double the extent of electrical infrastructure that is likely to be visible, the fact that the proposed line will run parallel with the existing line should mean that it will not impact on additional areas.

The significance of cumulative visual impacts is assessed as low

Table 26 Assessment of potential cumulative impacts of the proposed Witkop-Pietersburg Line 3

Impact	Mitigated /Managed	Nature	Spatial Extent	Duration	Intensity	Frequency	Probability	Irreplaceability	Reversibility	Significance	Confidence
Cumulative positive socio-economic impacts	Unmitigated	Positive	Regional	Long-term	Low	Continuous	Probable	N/A	N/A	Medium	Medium
	Mitigated	Positive	Regional	Long-term	Low	Continuous	Highly Probable	N/A	N/A	Medium	Medium
Cumulative negative socio-economic impacts	Unmitigated	Negative	Local	Short to long term	Low	Intermittent	Probable	N/A	N/A	Low	Low
	Mitigated	Negative	Local	Short to long term	Low	Intermittent	Probable	N/A	N/A	Low	Low
Cumulative impacts on terrestrial biodiversity	Unmitigated	Negative	Local	Medium - term	Low	Continuous	Probable	Moderate	High	Medium	Low
	Mitigated	Negative	Site specific	Medium - term	Low	Continuous	Probable	Low	High	Low	High
Cumulative impacts on watercourses and aquatic biodiversity	Unmitigated	Negative	Local	Short-term	Low	Once off	Probable	Moderate	Low	Low	Medium
	Mitigated	Neutral	Site specific	Short-term	Negligible	Negligible	Improbable	Low	High	Low	Low
Cumulative impacts on avifauna	Unmitigated	Positive	Local	Short-term	Low	Once off	Probable	Moderate	Low	Low	Medium
	Mitigated	Positive	Local	Medium-term	Negligible	Intermittent	Improbable	Low	High	Low	Low
Cumulative visual impacts	Unmitigated	Negative	Local	Long-term	Low	Continuous	Probable	Low	Moderate	Low	High
	Mitigated	Negative	Local	Long-term	Low	Continuous	Probable	Low	Moderate	Low	High
Cumulative impacts on cultural heritage	Unmitigated	Negative	Regional	Permanent	Moderate	Once off	Improbable	High	Non-reversible	Low	Medium
	Mitigated	Negative	Regional	Permanent	Moderate	Once off	Improbable	High	Non-reversible	Low	Medium

11. ENVIRONMENTAL IMPACT STATEMENT

Taking the key issues and the assessment of associated potential impacts into account, a summary of the environmental impacts of the proposed activity, and their significance (after mitigation, where applicable) is provided below.

Social and socio-economic impacts

Overall, the project is expected to contribute positively to local economic and socio-economic development and improvement of livelihoods through the provision of electricity connections and better reliability of supply. This is indeed the purpose of the project, which is in accordance with government policies and their obligations regarding service provision. Limited temporary jobs and other income earning opportunities will also arise during construction. According to the assessment, the various positive economic/socio-economic impacts at a local and regional level during construction and operation are of low and medium significance, without management. With management, the significance of these impacts increases to medium and high.

Various negative social and socio-economic impacts will be experienced by landowners, residents, road users and the local community during construction, due to the presence and activities of construction teams and vehicles in the area. Various nuisance impacts, as well as increased health, safety and security risks may occur, but these are temporary and manageable.

While the proposed powerline is within fairly close proximity to the Polokwane International Airport (which also houses a SANDF military base), Eskom will ensure that the new proposed line conforms to the required standards. An obstacle application process will be undertaken with the CAA to authorise the line from an aviation perspective.

After mitigation/management, the significance of these negative social and socio-economic impacts is assessed as low.

Impacts on agriculture

The agricultural land traversed by the proposed line is primarily extensive grazing land with a poor carrying capacity. The proposed line will be located in a servitude that has already been registered on these properties for many decades. As such, the agricultural activities currently being conducted within the servitude should be compatible with overhead powerlines and will continue under the line once it is built. The proposed line will, therefore, have negligible impact on productive agricultural land and associated economic opportunities.

Impacts on terrestrial biodiversity

The affected vegetation type viz: Polokwane Plateau Bushveld, has a conservation status of "Least Concern". The alignment will not affect any Protected Areas or Threatened Terrestrial Ecosystems but does traverse a short section classified as CBA1. Although no plant or animal SCC were observed within the study area, they have been previously recorded within the greater area and thus a pre-construction walkthrough is recommended. One tree species protected under the National Forest Act, 1998 (Act No. 84 of 1998), viz. *Sclerocarya birrea subsp. Caffra* is found sporadically within the study area and a permit from the Department of Forestry will be required to cut or remove this tree species.

The specialist assessment identified the main post-mitigation impacts to be the potential fragmentation of habitat, loss of ecosystem function and edge effects. It was determined that the present vegetation communities are likely to respond well to rehabilitation, which will encourage any displaced fauna to return back to the study area once completed. Although the vegetation clearance, and loss of natural habitat will be unavoidable, the application of rehabilitation will enable the project to achieve a “no net-loss in biodiversity” status without any further need for offsetting residual impacts. Impacts to CBA 1 areas are manageable, and were not deemed to be a fatal flaw as the powerline will be established over an area which is already transformed, and will not have a significant impact on any unique features within this section of CBA. After mitigation/management, impacts on terrestrial biodiversity were assessed as having a low significance.

Impacts on watercourses and aquatic biodiversity

Eleven at-risk watercourses (hillslope seep wetlands) were identified along the proposed alignment. Impacts of the project on watercourses include 1) indirect loss of aquatic habitat and ecological connectivity, 2) indirect alteration of water quality, 3) direct alteration to the catchment and hydrological flow, and 4) indirect alteration to ecosystem service provisions. All impacts (catchment and watercourse related) were considered of a low-risk rating if all towers are situated outside of delineated watercourses and associated buffer zones. With strict implementation of the mitigation, rehabilitation and monitoring measures, the proposed development activities will only pose a negligible risk of negative impacts to these watercourses. After mitigation/management, impacts on watercourses and aquatic biodiversity were assessed as having a low significance.

Impacts on avifauna

A total of 342 bird species have been recorded within the Witkop-Pietersburg 132kV power line PAOI pentads. Relevant to the project, 86 species are classified as power line sensitive species. The habitat within which the PAOI is located is moderate to highly sensitive from a potential bird impact perspective. In particular, the vulture restaurant on the Ibis Piggery property is a hotspot for SCC and other powerline sensitive species. In recent years, anthropogenic impacts, mostly in the form of urbanisation, agricultural and pastoral activities have largely transformed the landscape, resulting in a negative impact on avifaunal diversity and abundance with the PAOI. It was concluded by the avifauna specialist that the construction of the Witkop-Pietersburg 132kV power line will result in impacts of medium-low significance to birds occurring in the vicinity of the new infrastructure, which can be reduced through the application of mitigation measures, to low-negligible significance.

Visual impacts

The three LCAs identified in the study area are functional landscape areas, none of which are significant from a scenic perspective. Potential negative visual impacts on receptors include possible landscape change, visual Impact on views from local roads and visual Impact on views from local homesteads. The significance of these impacts is assessed as low, with and without mitigation.

Impacts on cultural heritage

One (1) burial ground (WP01) and one (1) possible grave site (WP02) were identified within the proposed development areas. Burial grounds and graves are protected under Section 36 of the NHRA 25 of 1999. Thus, the sites are provisionally rated as having a high heritage significance with a heritage rating of IIIA. All graves have high levels of emotional, religious and in some

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cases historical significance. With the implementation of the recommended buffers and management guidelines, the significance of possible pre-construction impacts on the tangible cultural heritage resources is assessed as low negative.

Cumulative impacts

Both positive and negative cumulative impacts relating to those discussed above, are anticipated. Overall, the significance of these negative cumulative impacts is assessed to be medium and low.

The No Development Alternative


The No Development alternative implies that the proposed Witkop-Pietersburg 132 kV line will not be constructed and operated. This would imply that no construction impacts will occur nor impacts due to the physical presence of the line, once built. However, this alternative is not preferred, because without this line, the network in this area cannot be developed to the required specifications to handle the demand for more electrical connections in rural areas and no related social and socio-economic benefits of the project will be realised.

12. CONCLUDING STATEMENT AND RECOMMENDATION OF THE EAP

Based on the findings of the specialists and the assessment of key issues and associated impacts undertaken in this report, it is the professional opinion of the EAP that there are no fatal flaws associated with the proposed project and that the negative impacts resulting from the proposed construction and operation of the Witkop-Pietersburg 132 kV powerline 3 can be mitigated to acceptable levels. Therefore, the project should be granted environmental authorisation by DFFE, conditional on compliance with the mitigation measures as recommended in this report and contained within the EMP, and including approval from the CAA.

The alignment to be authorised is as shown in the table below. This is the preferred alignment within an existing registered, vacant servitude. However Eskom must be given the leeway to deviate within the assessed corridor (500 m either side of the proposed alignment), in case slight deviations off the main alignment are required, following the findings of the specialist walkdowns and final technical design.

GPS Co-ordinates of the proposed Witkop-Pietersburg 132 kV powerline (approximate)		
Location	Latitude (S)	Longitude (E)
(1) Start of powerline at Pietersburg substation	23°53'26.69"	29°24'11.06"
(2) Mid-point of powerline (near Percy Fyfe Rd)	23°54'33.34"S	29°19'30.04"
(3) End point of powerline (tie-in to Witkop PPRust North 132 kV powerline)	23°58'10.03"S	29°15'12.27"
Approximate length of powerline	18 km	
Width of assessed corridor	500 m either side of the line	



13. REFERENCES

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APPENDIX 1: EAP *CURRICULUM VITAE*

APPENDIX 2: APPLICATION FOR AUTHORISATION

APPENDIX 3: DFFE SCREENING TOOL REPORT

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APPENDIX 4: SUPPORTING MAPS

APPENDIX 5: SPECIALIST REPORTS, *CURRICULUM VITAE* AND DECLARATIONS

- Agricultural Impact Assessment, CV and Declaration
- Aquatic Biodiversity and Wetlands Impact Assessment (including CV) and Declaration
- Avifauna Impact Assessment (including CV) and Declaration
- Heritage Impact Assessment (including CV) and Declaration
- Social /Socio Economic Impact Assessment, CV and Declaration
- Terrestrial Biodiversity/fauna/flora, CV and Declaration
- Visual Impact Assessment (including CV) and Declaration

APPENDIX 6: ENVIRONMENTAL MANAGEMENT PROGRAMME.

- DFFE Generic EMPr
- EMPr Part B Section 2 (Project Details and Sensitivity map)
- EMPr Part C (Site Specific Specifications)

APPENDIX 7: PUBLIC PARTICIPATION DOCUMENTS

Project announcement

- Media adverts
- On site notice
- Letter and Background Information Document (BID)
- Database
- Proof of emails sent
- Stakeholder correspondence
- Meeting records

APPENDIX 8: COMMENTS AND RESPONSE REPORT

**APPENDIX 9: SUPPORTING DOCUMENTATION FOR EXCLUSION OF SPECIALIST
REPORTS RECOMMENDED BY THE DFFE SCREENING TOOL**

- Compliance Statement Civil Aviation and RFI Themes
- Letter regarding Geotechnical study