SITE SENSITIVITY VERIFICATION REPORT

PROPOSED DEVIATIONS OF ± 14 KM OF THE PLUTO-MAHIKENG 400KV POWERLINE WITHIN THE JB MARKS LOCAL MUNICIPALITY UNDER DR KENNETH KAUNDA DISTRICT MUNICIPALITY AND MAHIKENG LOCAL MUNICIPALITY WITHIN THE NGAKA MODIRI MOLEMA DISTRICT MUNICIPALITY, NORTH WEST PROVINCE

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DOCUMENT CONTROL

Report Name:	Site Sensitivity Verification Report for the proposed deviations of ± 14 km of the Pluto-Mahikeng 400kV Powerline within the JB Marks Local Municipality under Dr Kenneth Kaunda District Municipality and Mahikeng Local Municipality within the Ngaka Modiri Molema District Municipality, North West Province
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DISCLAIMER

Although compiled by the EAP, this Site Sensitivity Verification Report is based solely on verifications and assessments conducted by qualified specialists. The document should therefore be read as a summary of the technical findings included in the respective specialist reports. It must also be noted that the verification has been done per the respective theme's Protocol.

APPROVAL SCHEDULE		
Rev	Vhubvo Consultancy	
	Compiler	Reviewer
00	 Brenda Makanza 01.10.2026 Date	 Frank Mhandu 01.10.2026 Date

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ABBREVIATIONS

AGA	Astronomy Geographic Advantage Act, 2007 (Act No. 21 of 2007)
AIS	Alien and Invasive Species
ATNS	Air Traffic and Navigation Services
CBA	Critical Biodiversity Areas
CRR	Conservation Resources Register
DFFE	Department of Forestry, Fisheries and the Environment
EA	Environmental Authorisation
EAP	Environmental Assessment Practitioner
EIA	Environmental Impact Assessment
ESA	Ecological Support Area
GNSS	Global Navigation Satellite System
HPTB	High Power Terrestrial Broadcasting
NFA	National Forests Act
NPAES	National Protected Areas Expansion Strategy
NTCSA	National Transmission Company of South Africa
PAOI	Project Area of Influence
RNAV	Area Navigation
RFI	Radio Frequency Interference
SACAA	South African Civil Aviation Authority
SANS	South African National Standard
SARAO	South African Radio Astronomy Observatory
SAWS	South African Weather Services
SCC	Species of Conservation Concern
SIA	Social Impact Assessment
STR	Screening Tool Report
SWSA	Strategic Water Source Areas
TOPS	Threatened or Protected Species
VOR/DME	VHF Omnidirectional Range/Distance Measuring Equipment

1 INTRODUCTION

Eskom Holdings SOC Ltd and its subsidiary, the National Transmission Company South Africa (NTCSA), are mandated to provide reliable and affordable electricity to consumers across South Africa. To fulfil this mandate, NTCSA must continuously plan, develop, and expand its transmission infrastructure to keep pace with growing electricity demand. The Watershed MTS supply area is currently experiencing technical constraints. The Watershed MTS is fed by two 275kV powerlines from the Pluto MTS. The Watershed MTS is strained as it supplies the greater Lichtenburg area all the way to Mahikeng and Vryburg with power. The integration of the Mookodi and Ngwedi MTS, coupled with the Watershed Strengthening project will provide limited alleviation of the said constraints. A sizable amount of load (approximately 180MVA) will be shifted from Watershed MTS and shared between Mookodi and Ngwedi MTSs. While Watershed strengthening will create sizeable transformation capacity at Watershed and relieve the 275kV voltage constraints, this will last for only a limited time.

In response, NTCSA proposed the development of a 400 kV power line from the Pluto Main Transmission Substation (MTS) to the proposed Mahikeng MTS in the Gauteng and North West Provinces. The broader Pluto-Mahikeng project was subjected to a full Environmental Impact Assessment (EIA) process, and an Environmental Authorisation (EA) was granted on 4 February 2019 under reference number 14/12/16/3/3/2/1051. The authorised infrastructure comprises a 400 kV transmission power line between Pluto MTS and Mahikeng MTS within an approved 2 km-wide corridor, the Mahikeng MTS, and associated infrastructure. The validity period of this EA has since been extended, with the amended authorisation lapsing on 4 February 2029.

However, during the line design process, adjustments were required to accommodate landowner requirements. Consequently, two sections of the required 55 m servitude extend beyond the approved 2 km corridor and fall outside the area assessed during the original EIA process. An authorisation is therefore required for these two deviations. NTCSA has therefore appointed Vhubvo Consultancy cc (Vhubvo) as the independent Environmental Assessment Practitioner (EAP) to undertake a Basic Assessment for the two deviations.

2 LOCATION

The proposed deviations span across several farm portions of the two local municipalities, JB Marks and Mahikeng under the jurisdiction of two District Municipalities; Dr Kenneth Kaunda and Ngaka Modiri Molema of North West Province. The first deviation which is approximately 14km is located 24 km north west of Pluto Main Transmission Substation (MTS) while the second deviation, 45m is approximately 15 km south east of Mahikeng and 3km east of Mafikeng Nature Reserve. The proposed powerline deviations traverse various land-uses such as residential built-up (farmsteads), natural areas, agricultural areas and areas bordering conservation areas. Villages such as Mahikeng, Klerkskraal, Merindol, Rentse and Roodepoort are within a 20km radius of the proposed deviations. Reference is made to Figure 1.

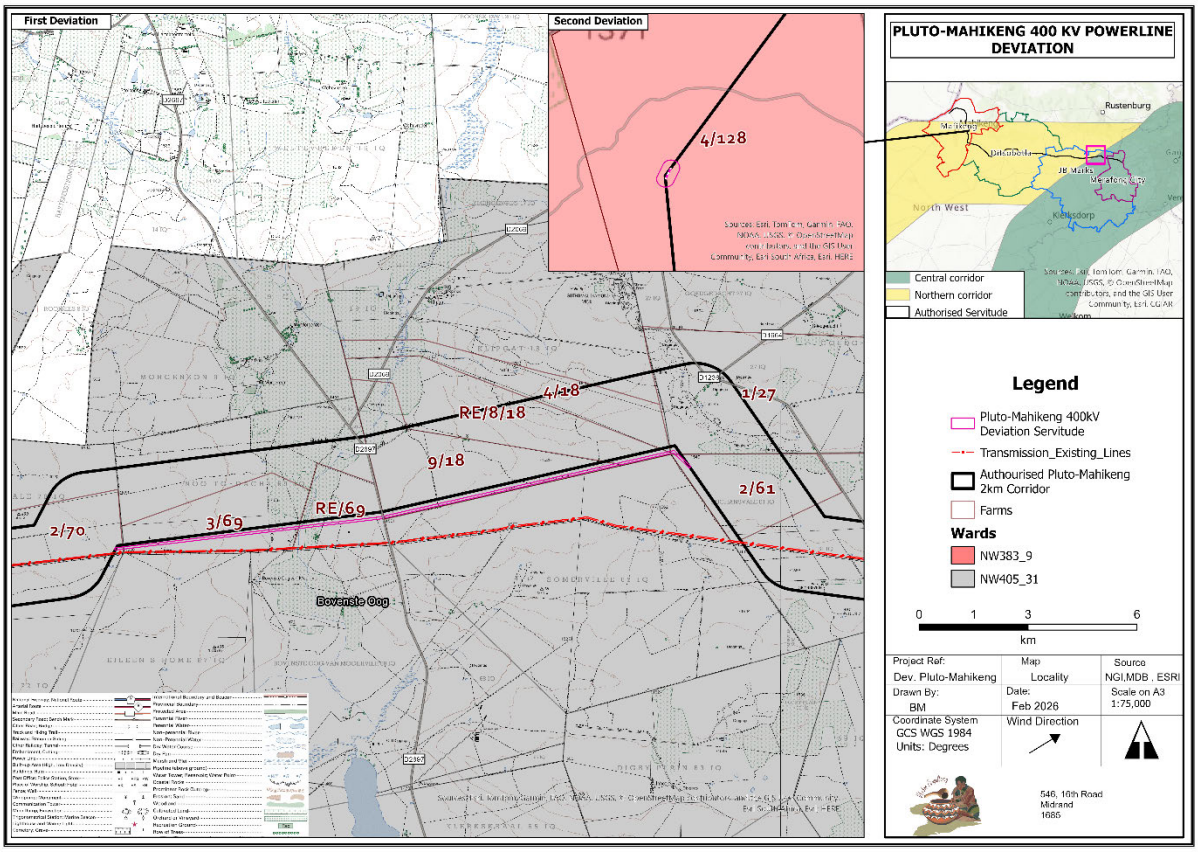


Figure 1: Project Location

3 REQUIREMENT OF A SCREENING TOOL REPORT

Regulation 16(1)(b)(v) of the Environmental Impact Assessment (EIA) Regulations, 2014, as amended, indicates that a report generated from the national web-based environmental screening tool must be submitted with an application for Environmental Authorisation in terms of Regulation 19 and 21 of the EIA Regulations, 2014. Therefore, Vhubvo generated a Screening Tool Report (STR) for the proposed project, which indicated theme sensitivities and recommended specialist studies.

4 REQUIREMENT OF SITE SENSITIVITY VERIFICATION

The Minister for the Department of Forestry, Fisheries and the Environment (DFFE) gazetted Protocols for various themes for national implementation purposes in March and October 2020. These protocols provide the criteria for specialist assessment and minimum report content requirements for impacts across various themes, including animal and plant species, agriculture, terrestrial biodiversity, and civil aviation, for activities requiring environmental authorisation. Theme-specific protocols replace the requirements of Appendix 6 of the EIA Regulations, 2014 (as amended). However, where there is no theme-specific protocol, specialist assessments must adhere to the requirements of Appendix 6 of the EIA Regulations. The protocols require a site sensitivity

verification to validate or dispute the sensitivity assigned to the different themes in the STR. The verified sensitivity will inform the level of assessment required.

5 TERMS OF REFERENCE

The Terms of Reference for undertaking site sensitivity verification and the compilation of the report thereof are:

(i) To undertake a desktop analysis using satellite imagery.
(ii) To undertake a preliminary on-site inspection.
(iii) To utilise any other available and relevant information.
(iv) Compile a report confirming or disputing current land use and environmental sensitivity, including motivation and evidence.

6 METHODOLOGY

6.1 Desktop Study

A comprehensive desktop study was undertaken to assess the environmental baseline conditions of the project area. This involved:

- Spatial data analysis from the national environmental screening tool (DFFE Web-GIS Portal) and SANBI databases.
- Review of satellite imagery (Google Earth Pro).
- Review of the South African Heritage Resources Information System (SAHRIS) for heritage and palaeontological data.
- Review of the land use records.
- Literature review of applicable DFFE theme-specific protocols (Government Notices 320 and 1150).
- Review of the original 2018 EIA documentation and Environmental Authorisation (Ref: 14/12/16/3/3/2/1051).

6.2 Site Assessment

A site assessment was undertaken by the appointed specialists in March and April 2026. The assessment involved physically traversing the powerline deviation Project Area of Influence (PAOI), including tower locations, to ground-truth desktop findings, assess existing land-use and habitat conditions, and verify the sensitivities assigned by the STR.

6.3 Report Compilation

This report consolidates information from the generated STRs, the literature review, GIS mapping, and the site assessments conducted by the specialists. Where a specialist's verified sensitivity differs from the STR-assigned sensitivity, this is recorded and motivated in the relevant verification summary table.

7 SCREENING RESULTS

The table below presents the overall theme sensitivities identified in the Screening Tool Reports (STRs) generated by Vhubvo for the powerline deviation servitudes. It should, however, be noted that the specialists verified the sensitivity classes traversed by the power line alignments, rather than relying solely on the overall sensitivity ratings.

Table 1: Theme Sensitivities per the STR

Theme	First Deviation (±14km)	Second Deviation (±45m)
Agriculture Theme	High	Medium
Animal Species Theme	High	Low
Aquatic Biodiversity Theme	Very High	Very High
Archaeological and Cultural Heritage Theme	Low	Low
Civil Aviation Theme	Low	Medium
Defence Theme	Low	Low
Palaeontology Theme	Very High	High
Plant Species Theme	Low	Low
Terrestrial Biodiversity Theme	Very High	Very High

In addition to assigning theme sensitivities, the STR indicates that the following studies should also be undertaken:

i. Agricultural Impact Assessment
ii. Landscape/Visual Impact Assessment
iii. Archaeological and Cultural Heritage Impact Assessment
iv. Palaeontology Impact Assessment
v. Terrestrial Biodiversity Impact Assessment
vi. Aquatic Biodiversity Impact Assessment
vii. Avian Impact Assessment
viii. Civil Aviation Assessment
ix. RFI Assessment
x. Geotechnical Assessment
xi. Plant Species Assessment
xii. Animal Species Assessment

Apart from Civil Aviation, RFI and Geotechnical Assessments, the specialist studies listed above were also undertaken during the EIA phase (2018).

8 SITE SENSITIVITY VERIFICATION

The motivation for undertaking some of the specialist studies indicated in the STRs, and why some have not been undertaken, is given below.

8.1 Agriculture (Soil and Land Capability)

According to the STR, the agricultural theme sensitivity within the study area is predominantly rated as high, primarily due to the rainfall received within the first deviation ranging between 601 and 800 mm which is deemed sufficient for dryland cultivation (rain-fed); a wide range of adapted crops can receive good yields if planted on time. However, the site sensitivity verification undertaken by Enviro-Solum Consultants assessed the majority of the deviation servitudes as having low agricultural sensitivity, with only localised areas associated with rainfed annual crop cultivation.

MAP OF RELATIVE AGRICULTURE THEME SENSITIVITY



Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
	X		

Sensitivity Features:

Sensitivity	Feature(s)
High	Rainfed Annual Crop Cultivation / Planted Pastures
High	10. Moderate-High
High	09. Moderate-High
High	08. Moderate
Low	05. Low
Medium	06. Low-Moderate
Medium	07. Low-Moderate

Figure 2: STR Agricultural Sensitivity

Based on observations made by Enviro-Solum Consulting during the site assessment, the dominant soil forms within the study area comprise Mispah/Glenrosa, Katspruit (associated with the watercourse), and Lichtenburg soils. Most of these soils do not meet the key requirements for high agricultural suitability, including adequate soil depth (>60 cm) for root development, favourable soil structure for root penetration and water retention, sufficient extent of high-quality soils to support a viable agricultural unit, and optimal climatic conditions for a wide range of crops. Consequently, the study area is generally characterised by low agricultural potential. A

summary of the identified soil forms, together with their respective land capability and agricultural potential classifications, is provided in the Table below.

Table 2: Summary of Soil and Land Capability Characteristics

Soil Forms	Area (Ha)	Percentage (%)	Land Capability	Agricultural Potential	DAFF (2017) Classification
First Deviation					
Lichtenburg	13.39	3.1	Arable (Class III)	High	10. Moderate to High
Katspruit	1.35	0.3	Watercourse (Class V)	Low	3. Very Low to Low
Mispah/Glenrosa	410.91	96.5	Grazing (Class VI)	Moderately Low	6. Low to Moderate
Second Deviation					
Mispah/Glenrosa	8.4	100	Grazing (Class VI)	Moderately Low	6. Low to Moderate

Table 3 summarises the findings of the site sensitivity verification.

Table 3: Summary of Agricultural Site Sensitivity Verification

Specialist Protocol	Protocol for the specialist assessment and minimum report content requirements for environmental impacts on agricultural resources, Government Notice 320 of 20 March 2020
Screening Report Sensitivity	Deviation 1: High Deviation 2: Medium
Verified Sensitivity	Low
Motivation	Although the Screening Tool Report identified localised areas of high agricultural sensitivity associated with rainfed annual crop cultivation, the site sensitivity verification confirmed that the broader powerline deviations are characterised by low agricultural sensitivity. The study area is predominantly underlain by shallow soils that are more suitable for grazing than intensive crop production. The proposed overhead powerline is expected to have a negligible impact on agricultural land use and productivity, including within the limited areas containing more arable soils. As the transmission infrastructure occupies only a small physical footprint, it will not materially restrict or interfere with existing farming operations. Agricultural activities, including grazing and cultivation where applicable, can continue beneath the powerline with minimal disruption throughout the operational life of the project.

Consultant and Reference	Enviro-Solum Consulting, Appendix D-7

8.2 Landscape/ Visual Impact Assessment

The STR does not assign a sensitivity rating to the landscape or visual resource. The study area is considered to have medium landscape character sensitivity due to its extensive open grasslands, limited settlements, moderate visual quality, and low tourism value. Existing powerlines, roads, and other infrastructure constitute landscape disturbances, although the original landscape character remains largely intact. The Somerville Private Nature Reserve and Fred Coetzee Private Nature Reserve, located directly south of the proposed powerline, protect areas of grassland vegetation.

The flat topography and low-growing vegetation result in a low Visual Absorption Capacity (VAC), providing limited screening of large-scale infrastructure. Consequently, the proposed 400 kV powerline would be visually prominent, resulting in high visual sensitivity. The potential visual impact on the broader landscape is, however, expected to be moderate, particularly over longer viewing distances.



Intersection at N14 and secondary road – view towards north to site



Landscape character – grassland and small shrubby trees



Existing powerlines in grassland landscape 700m south of proposed line



Proposed crossing of deviation line on secondary road

Figure 3: Land use within the Project Area of Influence (Outline Landscape Architects, 2026)

The landscape/visual verification summary is provided below.

Table 4: Summary of Landscape/ Visual Site Sensitivity Verification

Specialist Protocol	No DFFE theme-specific protocol is currently gazetted for the Landscape/Visual theme. The assessment has accordingly been conducted in accordance with Appendix 6 of the EIA Regulations, 2014 (as amended).
Screening Report Sensitivity	Not rated.
Verified Sensitivity	Medium
Motivation	Although the open, gently sloping landscape and low Visual Absorption Capacity (VAC) will make the proposed 400 kV powerline and substations visually prominent, the overall visual sensitivity is considered medium. This is primarily due to the relatively low number of sensitive visual receptors, as the route predominantly traverses agricultural land and open grassland. Residential and tourist receptors are limited, while motorists are generally transient receptors. Roads closest to the proposed deviation are mainly secondary dirt roads with low traffic volumes. Consequently, despite the limited capacity of the landscape to screen the proposed infrastructure, the relatively low receptor exposure supports a medium visual sensitivity rating.
Consultant and Reference	Outline Landscape Architects, 2026; Appendix D-10

8.3 Archaeological and Cultural Heritage Impact Assessment

The sensitivity of the archaeology/cultural theme per the STRs generated for the deviations were overall low. Refer to Figure 4.

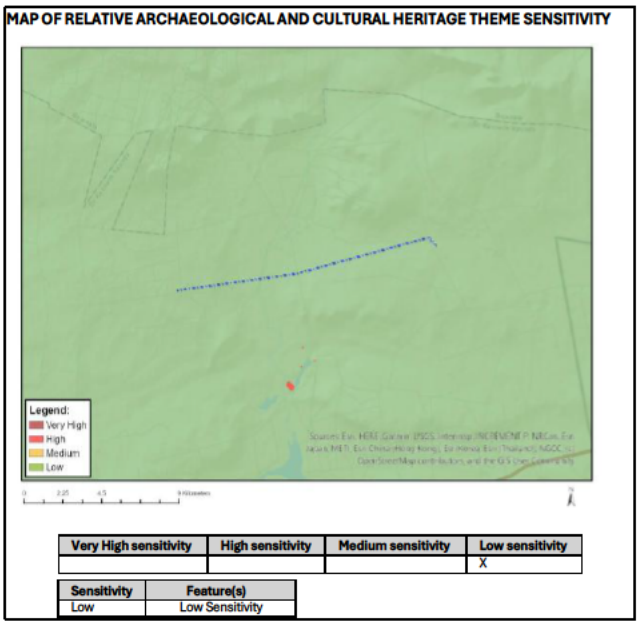


Figure 4: STR Map of the Archaeological theme sensitivity for Deviation 2

The table below summarises the findings of the site sensitivity verification undertaken by AfroConserva Intergration.

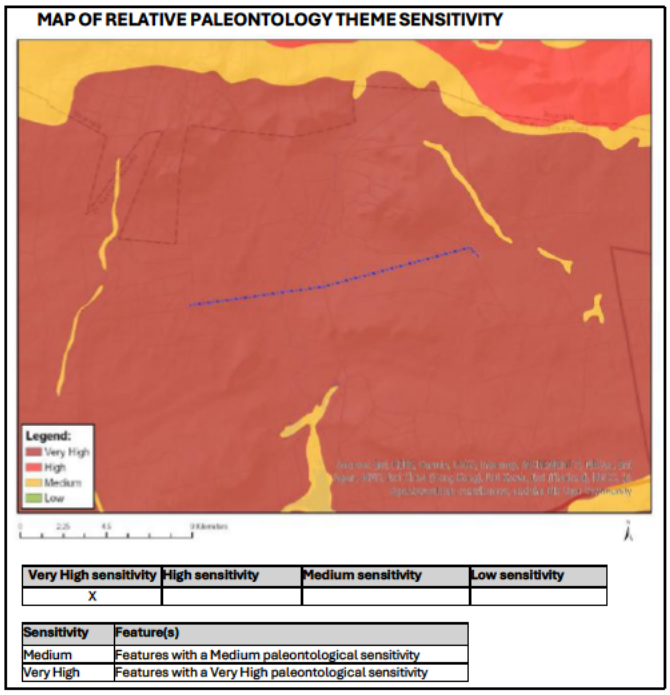
Table 5: Summary of Archaeological Site Sensitivity Verification

Specialist Protocol	Guidance on the Preparation of a Heritage Impact Assessment and Minimum Standards: Archaeological and Palaeontological Components of Impact Assessment Reports.
Screening Report Sensitivity	Low
Verified Sensitivity	Low
Motivation	The probability of encountering archaeological resources within the deviation servitudes is considered low due to historical land uses within the area. This conclusion is further supported by several previous studies undertaken in the surrounding area, including the assessment conducted by Integrated Specialist Services (Pty) Ltd during the EIA for the broader corridor in 2018. The South African Heritage Resources Agency (SAHRA) have been notified of the Environmental Authorisation application through the SAHRIS platform. Comments have been received and are attached in Appendix I.
Consultant and Reference	AfroConserva Intergration, Appendix D-2

8.4 Palaeontology Impact Assessment

According to the STR map shown in Figure 5, the overall palaeontological sensitivity of Deviation 1 (the longer deviation) is rated as Very High. As illustrated in Figure 6, the palaeosensitivity map indicates Very High sensitivity for Deviation 1 and High sensitivity for Deviation 2.

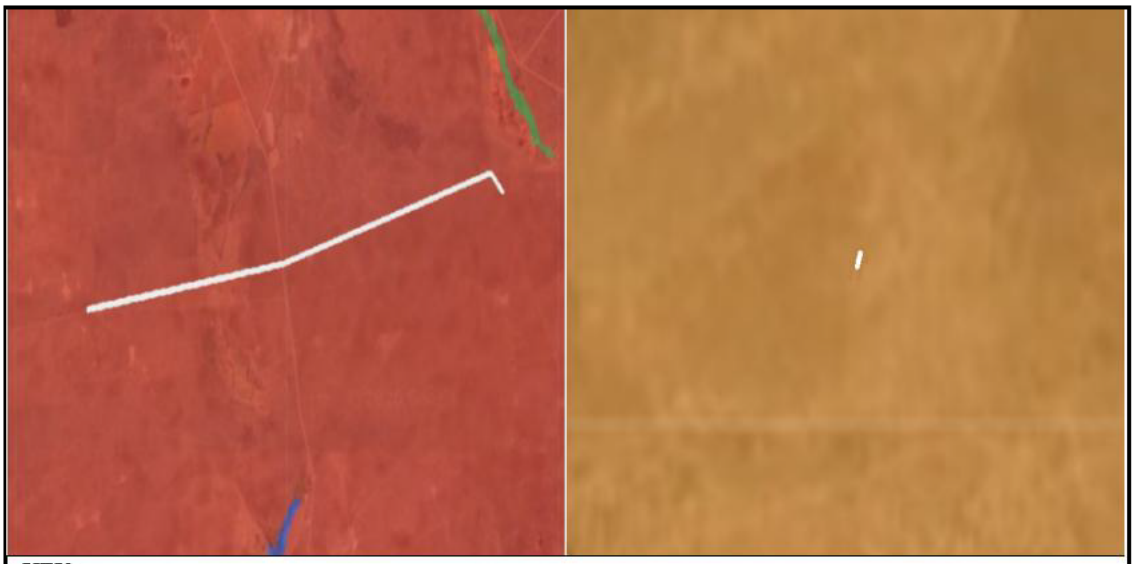
According to Durand (2026), the Very High sensitivity assigned to Deviation 1 is attributed to the dolomite of the Malmani Subgroup of the Chuniespoort Group, which underlies the proposed alignment. Stromatolitic formations are common within this geological unit, and isolated pockets containing significant Plio-Pleistocene fossil assemblages have been recorded. Deviation 2 is underlain by Tertiary-aged calcrete. Although this geological unit has the potential to contain fossil material, the likelihood of encountering fossils within the proposed development footprint is considered exceptionally low, owing to the limited extent of the deviation (approximately 45 m), the nature of the proposed development, and the scarcity of fossil occurrences associated with this unit.



Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
X			

Sensitivity	Feature(s)
Medium	Features with a Medium paleontological sensitivity
Very High	Features with a Very High paleontological sensitivity

Figure 5: STR Map for the Palaeontology Theme



KEY		
COLOUR	**SENSITIVITY**	**REQUIRED ACTION**
Red	Very High	Field assessment and protocol for finds are required.
Orange	High	Desktop study is required and based on the outcome of the desktop study, a field assessment is likely.
Green	Moderate	Desktop study is required.
Blue	Low	No palaeontological studies are required however a protocol for finds is required.

Figure 6: Paleo Maps as per SAHRIS

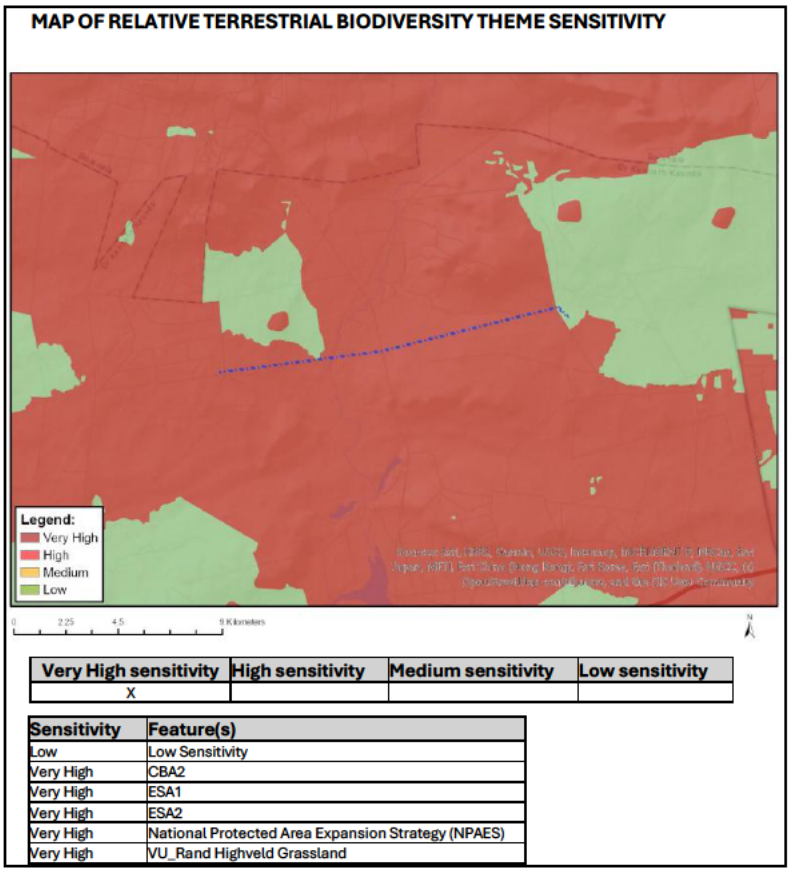
The verification summary is shown in the Table below.

Table 6: Summary of Palaeontological Site Sensitivity Verification

Specialist Protocol	Guidance on the Preparation of a Palaeontological Impact Assessment and Minimum Standards: Archaeological and Palaeontological Components of Impact Assessment Reports.
Screening Report Sensitivity	Very High-High
Verified Sensitivity	Low
Motivation	Based on the palaeontologist's experience and the absence of any previously recorded fossil occurrences within the study area, it is considered extremely unlikely that cave fills with Plio Pleistocene fossils will be found due to its scarcity and it is also unlikely that intact stromatolite structures will be found in the study areas when development occurs due to the limited depth of the excavations, the deep soils at the study area and the chemical weathering of subsurface dolomite. Deviation 2 is underlain by Tertiary-aged calcrete and it is unlikely that well-preserved vertebrate bones, termitaria, ostrich shells fragments and mollusc shells will be found at this site, due to its scarcity and sparse distribution Nonetheless, a Fossil Chance Find Protocol has been added to the EMPr. The Palaeontological Report will be submitted to SAHRA.
Consultant and Reference	Durand, (2026). Appendix D-6

8.5 Terrestrial Biodiversity Assessment

Terrestrial Biodiversity Theme sensitivity is Very High for the proposed power line, due to it overlapping with a Critical Biodiversity Areas (CBA1 and 2), Ecological Support Areas (ESA1), National Protected Areas Expansion Strategy (NPAES) and the vulnerable Rand Highveld Grassland. See the figure below.



Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
X			

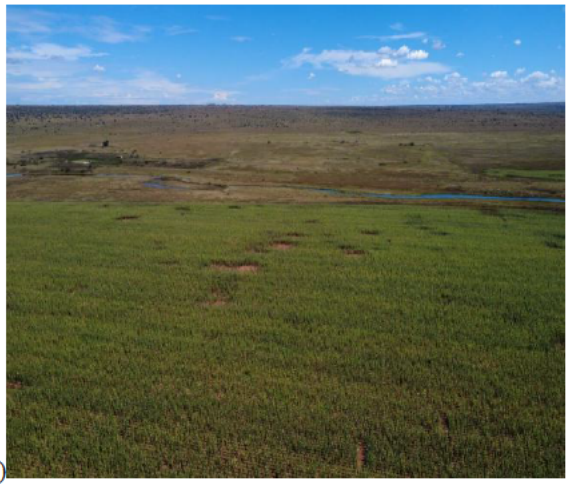
Sensitivity	Feature(s)
Low	Low Sensitivity
Very High	CBA2
Very High	ESA1
Very High	ESA2
Very High	National Protected Area Expansion Strategy (NPAES)
Very High	VU_Rand Highveld Grassland

Figure 7: STR Map of the Terrestrial Biodiversity theme sensitivity

The specialist's sensitivity verification included a literature review, aerial imagery, and a site assessment. The habitats identified and assessed correspond to those identified within the initial 2018 study by Naledzani Environmental Consultants.

(a) 

(b) 

(c) 

(a) Klerksdorp grassland (b) Carletonville Dolomite Grassland (degraded) (c) Modified - Agricultural areas associated with the Mooi River

The table below summarises the findings of the site sensitivity verification undertaken by Naledzani Environmental Services.

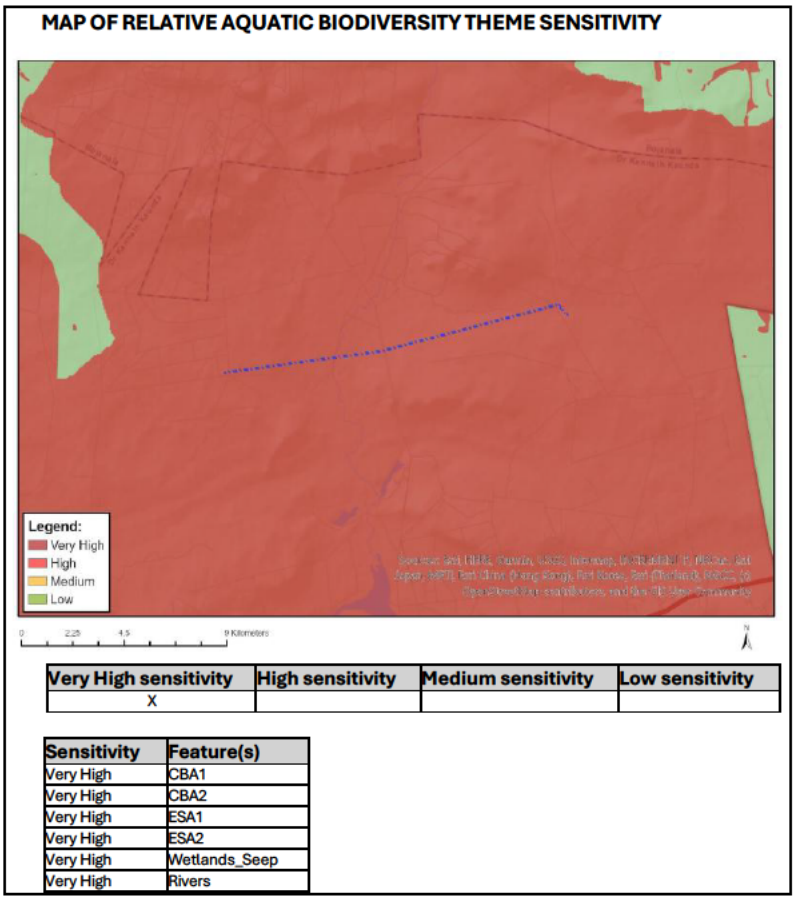
Table 7: Summary of Terrestrial Biodiversity Site Sensitivity Verification

Specialist Protocol	Protocol for the Specialist Assessment and Minimum Report Content Requirements for Environmental Impacts on Terrestrial Biodiversity, Government Notice No. 320 of 2020.
Screening Report Sensitivity	Very High
Verified Sensitivity	Low- High

Motivation	The project area was delineated into four ecological sensitivity units: i. Intact Carletonville Dolomite Grassland within CBA and NPAES areas, including rocky outcrops and SCC geophytes; ii. The Mooi River and associated riparian habitat; iii. Secondary grassland, old cultivated lands, and transformed or alien-dominated areas; and iv. Klerksdorp Thornveld within ESA areas. Based on ecological condition, conservation importance, and the presence of sensitive biodiversity features, Site Ecological Importance (SEI) ranges from High to Low across the project area. CBAs are generally rated as having Medium-High ecological importance, while the highest ecological importance is associated with the Mooi River watercourse and riparian corridor. Transformed and previously cultivated areas are of lower ecological importance. Accordingly, the first deviation is assigned a High sensitivity, while the second deviation is assigned a Medium sensitivity.
Consultant and Reference	Naledzani Environmental, (2026) Appendix D-8

8.6 Aquatic Biodiversity Assessment

Although the STR assigns a Very High Aquatic Biodiversity sensitivity to both deviations (Figure 8), the underlying sensitivity triggers differ substantially. The first deviation is associated with CBA1, CBA2, ESA1, ESA2, mapped seep wetlands, and rivers, indicating a broader and more extensive concentration of aquatic sensitivity features (Figure 10). The second deviation (Tower 110–111 span), however, is classified as Very High solely on the basis of the ESA1 trigger.



Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
X			

Sensitivity	Feature(s)
Very High	CBA1
Very High	CBA2
Very High	ESA1
Very High	ESA2
Very High	Wetlands_Seep
Very High	Rivers

Figure 8: STR Map of the Aquatic Biodiversity theme sensitivity

Field verification confirmed that the aquatic sensitivity identified by the STR is not uniformly represented within the two deviation footprints. The Towers 491–522 deviation is predominantly dryland but includes a seasonal wetland near Tower 493 and a perennial river and associated valley-bottom wetland between Towers 500–501 (Figure 10), supporting a Very High sensitivity in these areas. Conversely, no functional aquatic habitat, wetlands, riparian areas, or surface watercourses were identified within the second deviation footprint, despite its location within a broader FEPA drainage basin.

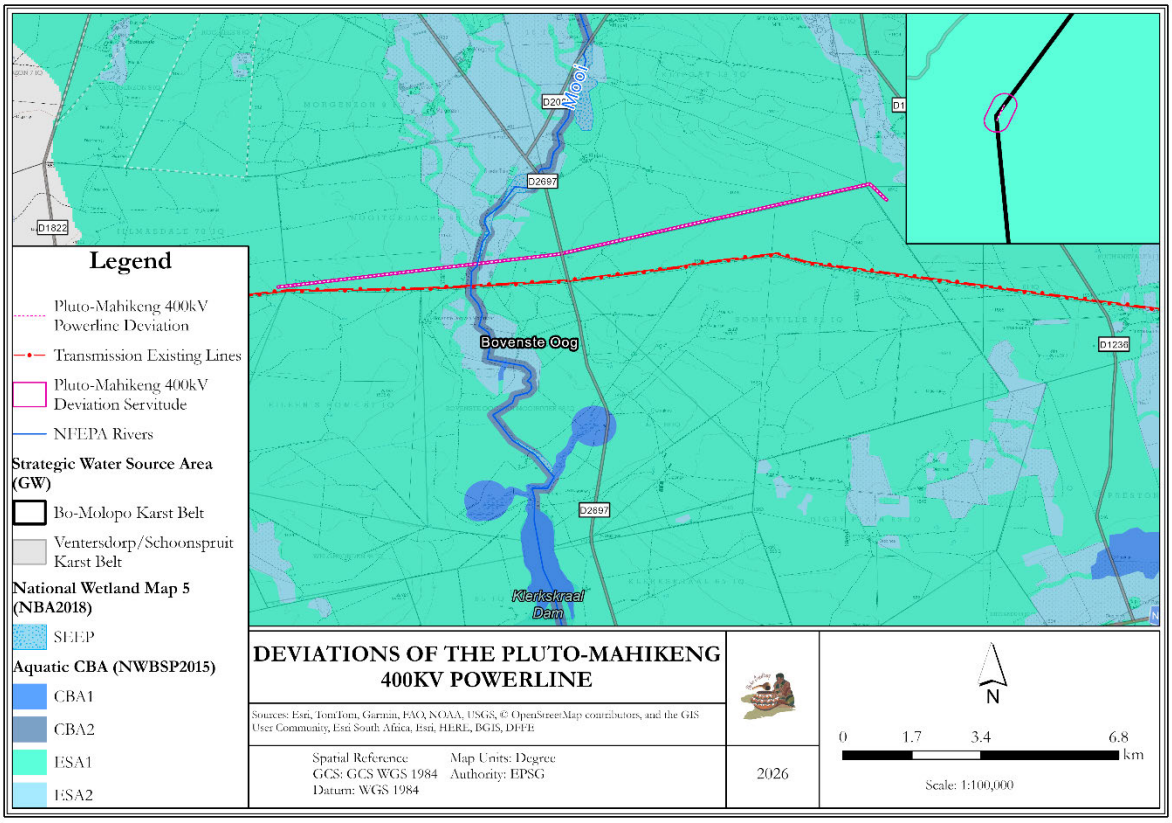


Figure 9: Water Resources within the Project Area



Figure 10: UAV aerial view of the Mooi River crossing (Towers 500-501), showing the perennial channel within its valley-bottom wetland, bordered by cultivated land.

The table below summarises the findings of the site-sensitivity verification

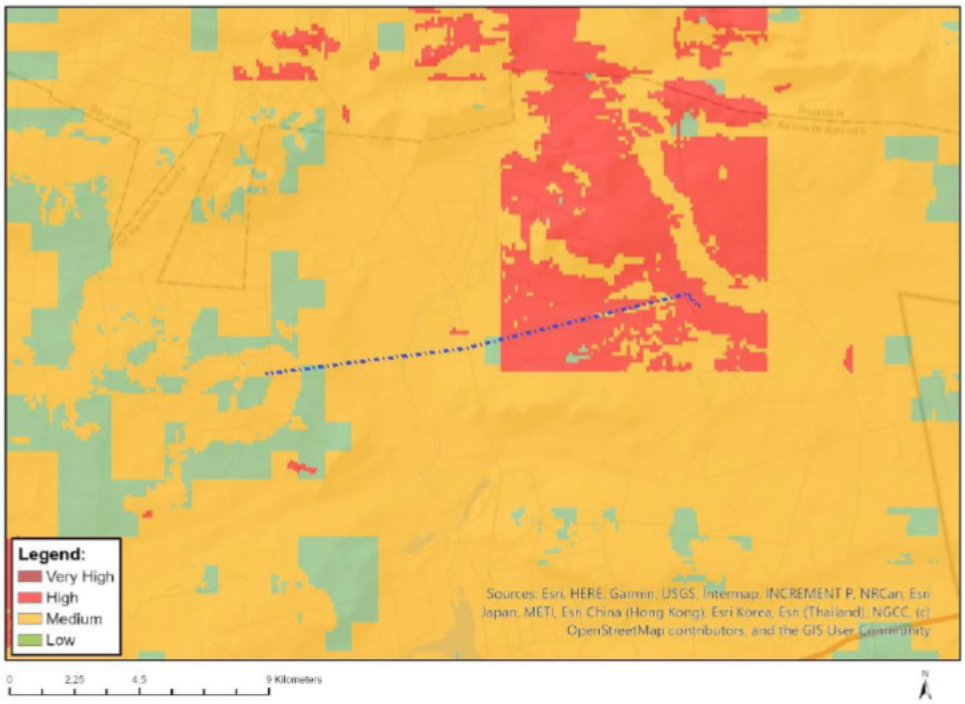
Table 8: Summary of Aquatic Biodiversity Site Sensitivity Verification

Specialist Protocol	Protocol for the specialist assessment and minimum report content requirements for environmental impacts on Aquatic Biodiversity, Government Notice 320 of 20 March 2020.
Screening Report Sensitivity	Deviation 1: Very High Deviation 2: Very High
Verified Sensitivity	Deviation 1: High Deviation 2: Low
Motivation	The Very High aquatic sensitivity rating assigned to the first deviation (Towers 491 – 522) is primarily attributable to the presence of the perennial Mooi River and its associated broad valley-bottom wetland. Although the river is moderately modified (Present Ecological State [PES] Category C), it continues to perform important ecological and hydrological functions, including the provision of habitat, maintenance of biodiversity, and support of ecosystem connectivity. Field verification, including a UAV survey, confirmed the presence of a sinuous, channelled river system with strong ecological and hydrological functioning. The associated broad valley-bottom wetland is classified as having High sensitivity Ecological Importance and Sensitivity/Hydrological Importance Assessment (EIS/HIA) rating, reflecting its significance in maintaining catchment-scale ecological processes. Based on these characteristics, the Very High aquatic sensitivity rating is reduced to high for this section of the proposed powerline deviation. The very high sensitivity assigned to the second deviation is disputed as there is no functional aquatic habitats, wetlands, riparian zones, or surface watercourses.
Consultant and Reference	Tshilimo Consulting Services, Appendix D-5

8.7 Terrestrial Animal Species Assessment

The Animal Species Theme classifies portions of deviation 1 as High sensitivity, primarily due to the confirmed occurrence of Martial Eagle Polemaetus bellicosus and White-bellied Korhaan Eupodotis senegalensis. The remainder of the development footprint is classified as MEDIUM sensitivity as the development area is considered to contain habitat for White-bellied Korhaan. The STR indicates that two mammal SCC are predicted to occur within the Project Area of Influence (PAOI).

MAP OF RELATIVE ANIMAL SPECIES THEME SENSITIVITY



Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
	X		

Sensitivity	Feature(s)
High	Aves-Polemaetus bellicosus
High	Aves-Eupodotis senegalensis
Low	Subject to confirmation
Medium	Aves-Eupodotis senegalensis
Medium	Mammalia-Crocidura maquassiensis
Medium	Mammalia-Hydrictis maculicollis

Figure 11: STR Map of the Terrestrial Animal Species theme sensitivity

Site sensitivity verifications were undertaken by Feathers Environmental Consultants and Naledzani Environmental Services through a combination of desktop assessment and field-based observations The table below summarises the findings of the site sensitivity verification undertaken.

Table 9: Summary of Animal Site Sensitivity Verification

Specialist Protocol	Protocol for the specialist assessment and minimum report content requirements for environmental impacts on terrestrial animal species, Government Notice No. 1150 of 30 October 2020.
Screening Report Sensitivity	Deviation 1: High Deviation 2: Low
Verified Sensitivity	*Avifauna*: Medium-High *Other Animals*: Low-Medium

Motivation	*Avifauna* Based on the range of habitats present within the assessment area, including rivers and grasslands as well as the proximity of regionally important avifaunal areas i.e. vulture roosts, the DFFE screening sensitivity of high and medium within deviation 1 is considered appropriate and defensible. Areas of high sensitivity are supported by the confirmed and likely presence of SCC, particularly large-bodied and power line-vulnerable species such as Cape Vulture and White-backed Vulture as well as the likely presence of Lappet-faced Vulture, Secretarybird, White-bellied Korhaan and various water-dependent species, in combination with habitat features that facilitate their use of the landscape (e.g. Mooi River, open grassland and vulture roost sites). In contrast, areas classified as medium sensitivity are primarily informed by the availability of suitable habitat for SCC based on historical records, rather than confirmed recent occurrences. The assessment area retains ecological characteristics that may support SCC intermittently or opportunistically, even if such species were not recorded during recent surveys. Collectively, this reflects a landscape that supports both confirmed and potential SCC presence, thereby justifying the assigned high and medium sensitivity ratings within the development area. *Other animals* The terrestrial animal species assessment confirmed an overall Medium sensitivity within deviation 1 based on the potential presence of SCC mammal species, including Crocidura maquassiensis, Hydrictis maculicollis, and Mystromys albicaudatus. The listed mammal species are generally associated with wetland habitats within savanna and grassland ecosystems, where habitat loss and degradation constitute the primary threats to their persistence. Although suitable habitat for these species is present within the study area, the extent and quality of such habitat are limited. Consequently, taking into account the likelihood of occurrence of these SCCs, the availability of suitable habitat, and the findings of the field assessment, the terrestrial animal species theme for Deviation 1 is confirmed as Medium sensitivity. The Low sensitivity rating assigned to Deviation 2 is confirmed. The deviation comprises a relatively small area with limited habitat diversity and lacks the range of habitat features necessary to support a

	diverse assemblage of terrestrial fauna, including SCCs. Consequently, the likelihood of supporting significant populations of sensitive terrestrial animal species is considered low.
Consultant and Reference	*Avifauna*: Feathers Environmental Consultant, Appendix D-3 *Other:* Naledzani Environmental Services, (2026), Appendix D-8

8.8 Civil Aviation Assessment

The Screening Tool identifies the civil aviation theme as low sensitivity for the deviation sections (Figure 12). The proposed 14km deviation ends 23.75km west of Watershed substation in the North-West Province, as it passes through rural farming areas, more than 15km from any aerodromes or other aviation infrastructure (Figure 13). The 45m deviation (Figure 14) is approximately 46.8km from the proposed Mahikeng MTS where the line is very close to the edge of the approved corridor and has thus been slightly re-aligned.

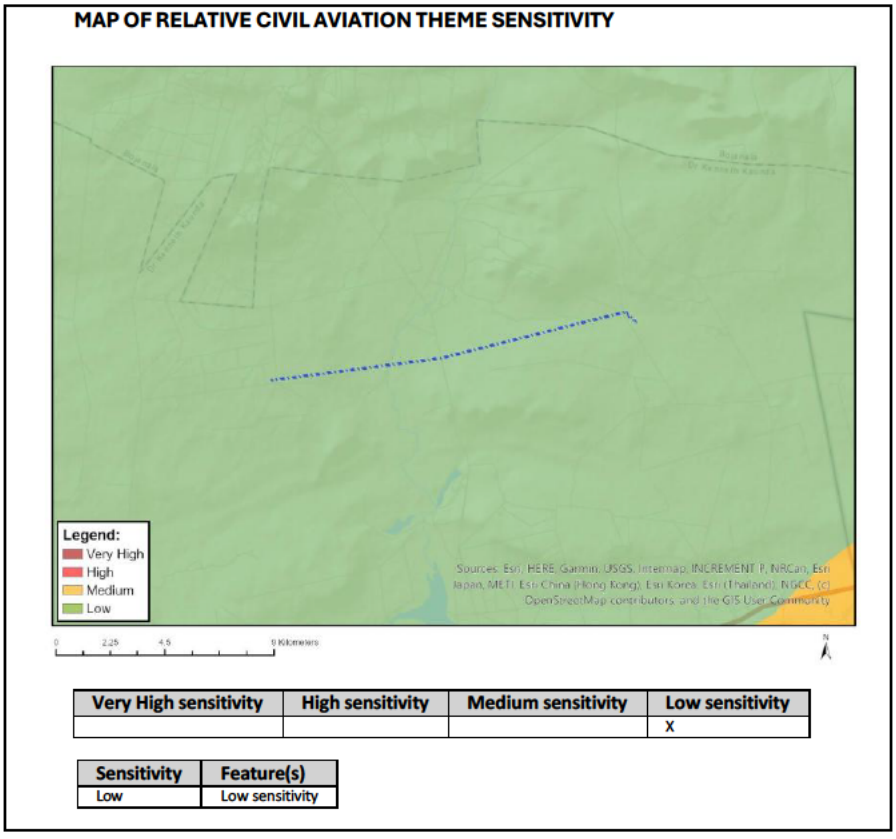


Figure 12: STR Map of the Civil Aviation theme sensitivity

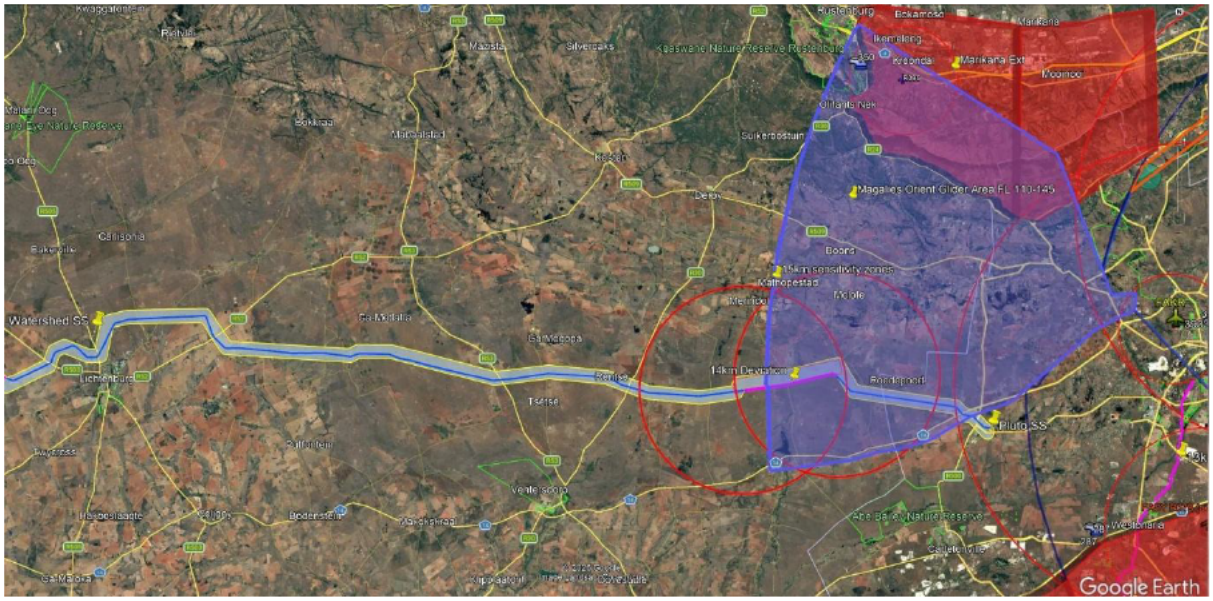


Figure 13: Transmission Line Route from Pluto SS- Mahikeng showing 14km Deviation (GWI Aviation Advisory, 2026)

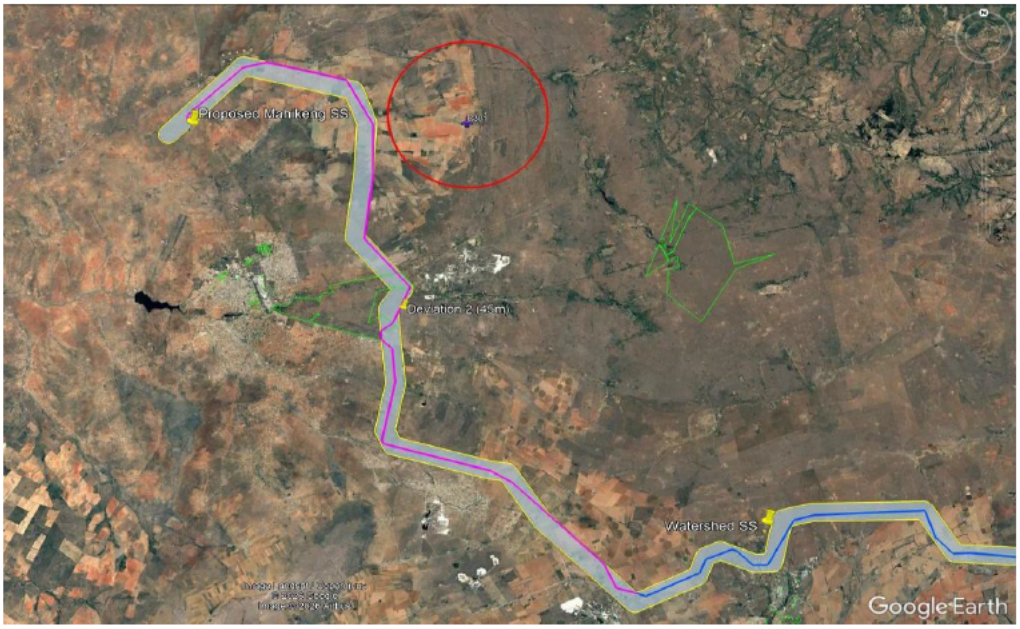


Figure 14: Deviation 2 of 45m near Wondergat (GWI Aviation Advisory, 2026)

The table below summarises the findings of the site sensitivity verification undertaken by GWI Aviation Advisory.

Table 10: Summary of Civil Aviation Installations Site Sensitivity Verification

Specialist Protocol	Protocol for the specialist assessment and minimum report content requirements for environmental impacts on Civil Aviation Installations, Government Notice No. 320 of 20 March 2020.

Screening Report Sensitivity	Deviation 1:Low Deviation 2: Medium
Verified Sensitivity	Both Deviations: Low
Motivation	The Civil Aviation Site Sensitivity Verification (CASSV) concluded that the proposed transmission line deviations present a low civil aviation sensitivity and are unlikely to result in significant impacts on aviation operations or infrastructure. No aerodromes, obstacle limitation surfaces, or significant ground-based aviation infrastructure will be affected, and the only nearby aviation feature is the Magalies-Orient Glider advisory area, where the proposed infrastructure will not penetrate the applicable advisory airspace. The assessment also confirmed that the deviations will not affect civil aviation radar, navigation aids, communication systems, or established flight routes, with all aviation infrastructure located well beyond the minimum separation distances recommended by the SACAA and international guidelines. Overall, environmental sensitivity on the civil aviation theme is considered low, negating the need for a SACAA Compliance Statement; however, once environmental authorisation is granted, an Obstacle Approval Application must be submitted to the SACAA to finalise marking and illumination requirements for specific infrastructure.
Consultant and Reference	GWI Aviation Advisory, Appendix D-4 The Draft Basic Assessment Report and attachments including the Civil Aviation SSVR will be submitted to SACAA for comments.

8.9 Radio Frequency Interference (RFI) Assessment

The STR has not assigned a sensitivity rating, however, the infrastructure that may be impacted by the 400 kV powerline are the telecommunication infrastructure indicated in Figures 15 and 16.

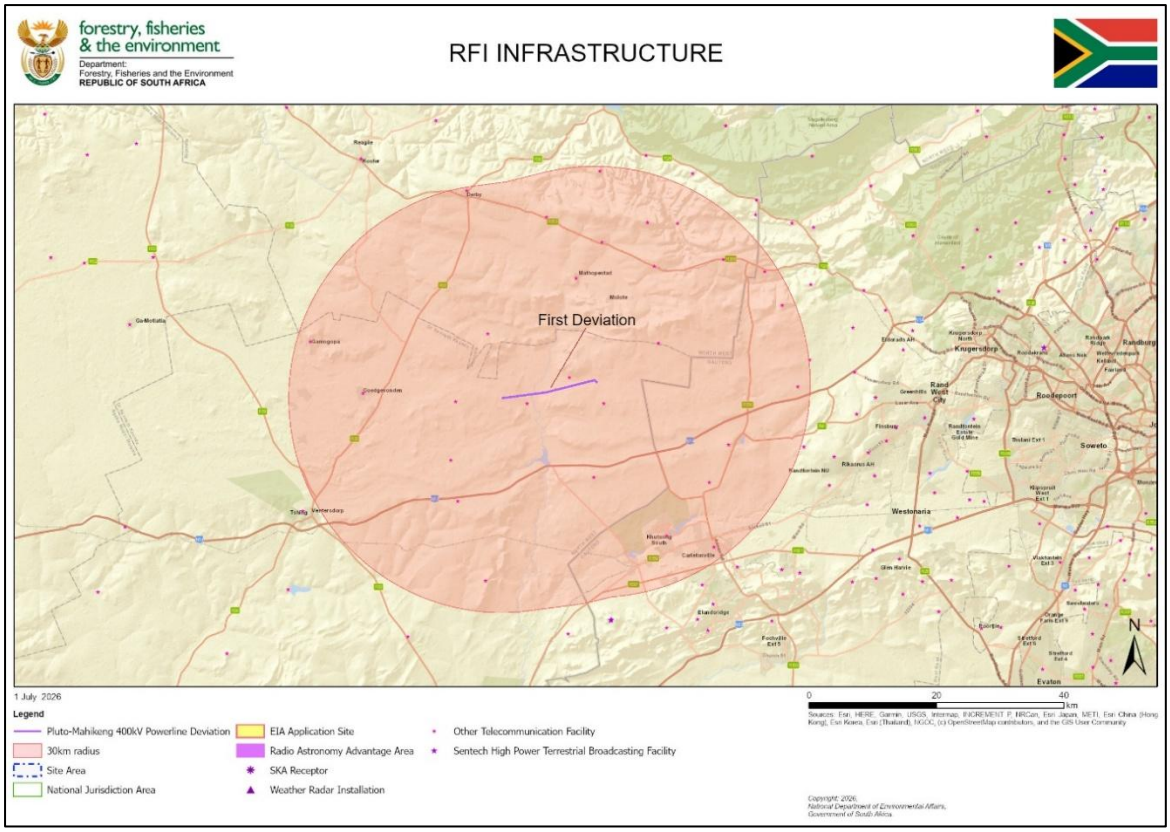


Figure 15: RFI Infrastructure within the second deviation

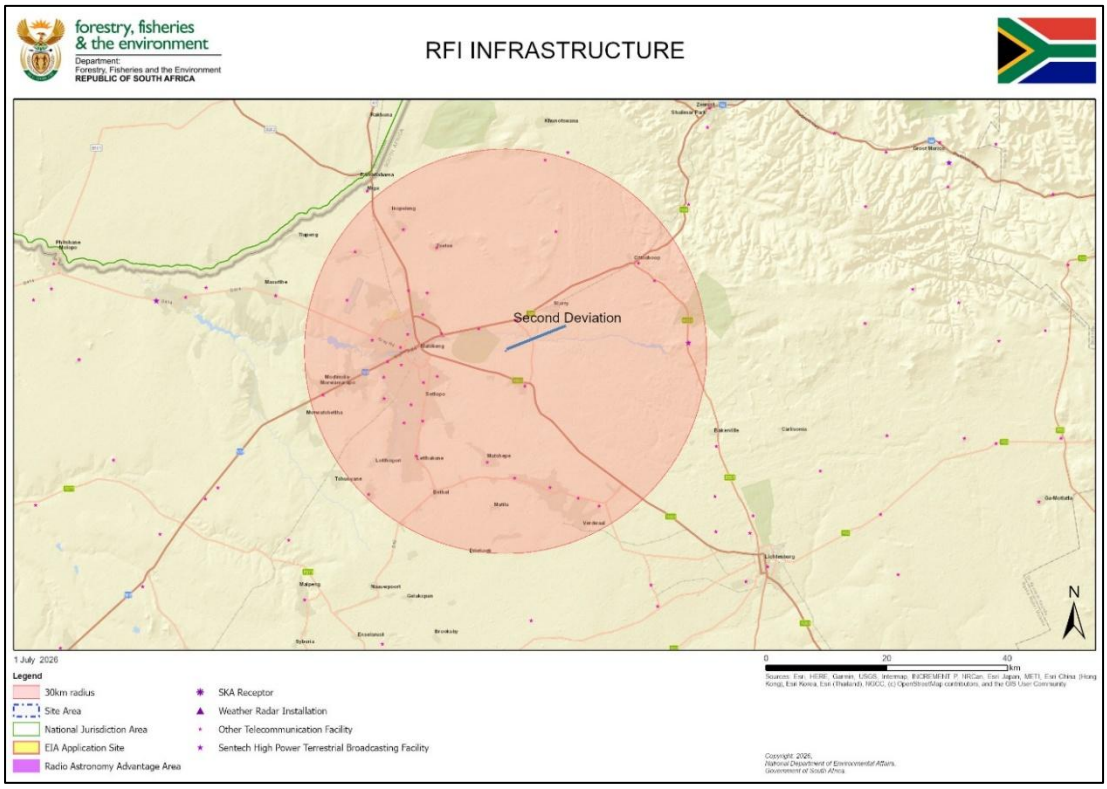


Figure 16: RFI Infrastructure within the second deviation

The infrastructure is discussed below:

South African Weather Service (SAWS) Infrastructure: Based on the spatial data on the STR, no SAWS synoptic weather station or automatic weather station (AWS) have been identified within a 60km radius of the deviations. The distances of the nearest SAWS stations from the deviations, combined with the design-level corona control measure, indicate that meteorological infrastructure is not a sensitive receptor for this project.

Civil Aviation Infrastructure: The proposed project will not materially impact civil aviation radar, navigational, or communications infrastructure in the environs, nor present any material additional risk to operations. Additionally, it is assumed that the deviations are located within corridors that comply with Eskom guidelines 240 –125383428 and 240-170000623 relating to powerline servitudes, none of which encroach close enough to the aerodrome to constitute a material risk to civil aviation operations (GWI Aviation Advisory, 2026)

Mobile Network Operation (MNO) Infrastructure: Several mobile network operator (MNO) base station masts were identified adjacent to the proposed deviations through satellite imagery, the Screening Tool, and field assessments. These structures may be subject to minor shielding effects or induced voltages from the energised transmission line conductors; however, these effects are addressed through standard earthing and bonding design for infrastructure in proximity to high-voltage lines and do not constitute an RFI impact.

Sentech High-Power Terrestrial Broadcasting Facilities (HBTB): From the Screening Tool data, no Sentech transmission sites have been identified within the 25 km of the deviations. The distances from the deviations to the Sentech facilities, combined with the design-level control of corona through the adopted audible noise criterion, indicate that interference with Sentech HPTB facilities is not a significant risk.

Square Kilometer Array (SKA): The proposed development area is located more than 600 km from the Square Kilometre Array (SKA) core infrastructure and falls outside the designated Astronomy Advantage Areas (AAAs). Given this separation distance, the risk of radio frequency interference (RFI) from a 400 kV powerline primarily associated with corona discharge and related electromagnetic emissions is considered negligible. The receiving environment is therefore not expected to influence, or be influenced by, the operational requirements of the SKA, which are highly sensitive to electromagnetic disturbance. In this context, the development does not conflict with the provisions of the Astronomy Geographic Advantage Act, and no specific constraints or additional mitigation measures related to radio astronomy infrastructure are considered necessary. Accordingly, the site is assigned a low sensitivity in terms of potential impacts on astronomical infrastructure.

The table below summarises the findings of the site sensitivity verification.

Table 11: Summary of RFI Site Sensitivity Verification

Specialist Protocol	No DFFE theme-specific protocol is currently gazetted for RFI.
Screening Report Sensitivity	Not rated
Verified Sensitivity	Low
Motivation	Radio frequency interference from 400 kV transmission lines is generated by corona discharge, the same mechanism responsible for audible noise. Sensitive receptors identified within and adjacent to the servitudes include scattered farm

	homesteads, Sentech HPTB facilities (the nearest of which is located more than 25 km from the deviations), and mobile and fixed telecommunications infrastructure (which operates in frequency bands not susceptible to 400 kV RFI), and aviation navigation aids. None of these receptor categories presents a sensitivity that cannot be adequately managed through the adopted design criterion. NTCSA has adopted a binding audible noise design criterion of 53.1 Db(A) L50 wet at the servitude edge for 400 kV transmission lines. Compliance with this criterion, to be demonstrated through corona performance calculations at the detailed design stage, constitutes the primary and sufficient control measure for RFI impacts. A standalone specialist RFI assessment is accordingly not required.
Consultant and Reference	NTCSA Design Standards, Desktop assessment by EAP (Vhubvo, 2026); Stakeholders: SARAO, SENTECH, SAWS.

8.10 Geotechnical Investigation

The Screening Tool does not assign a sensitivity rating to geotechnical or geological features; accordingly, no theme-specific site sensitivity verification is required for this theme and no relevant DFFE protocol is currently gazetted. Geotechnical investigations (soil nominations) will be conducted during the construction phase.

The proposed deviations are underlain by two distinct geological units. The longer deviation is entirely underlain by the Malmani Subgroup of the Chuniespoort Group (Transvaal Supergroup), comprising predominantly dolomitic rocks. These dolomites are characteristic of karst terrain, with the potential for solution features and significant groundwater storage, and are associated with the dolomite grassland vegetation occurring across the area. The consistent occurrence of the Malmani Subgroup along this alignment indicates a relatively uniform geological setting throughout the deviation. In contrast, the shorter deviation is underlain by andesitic lavas and tuffs, representing a different geological unit with contrasting lithological characteristics (Figure 17).

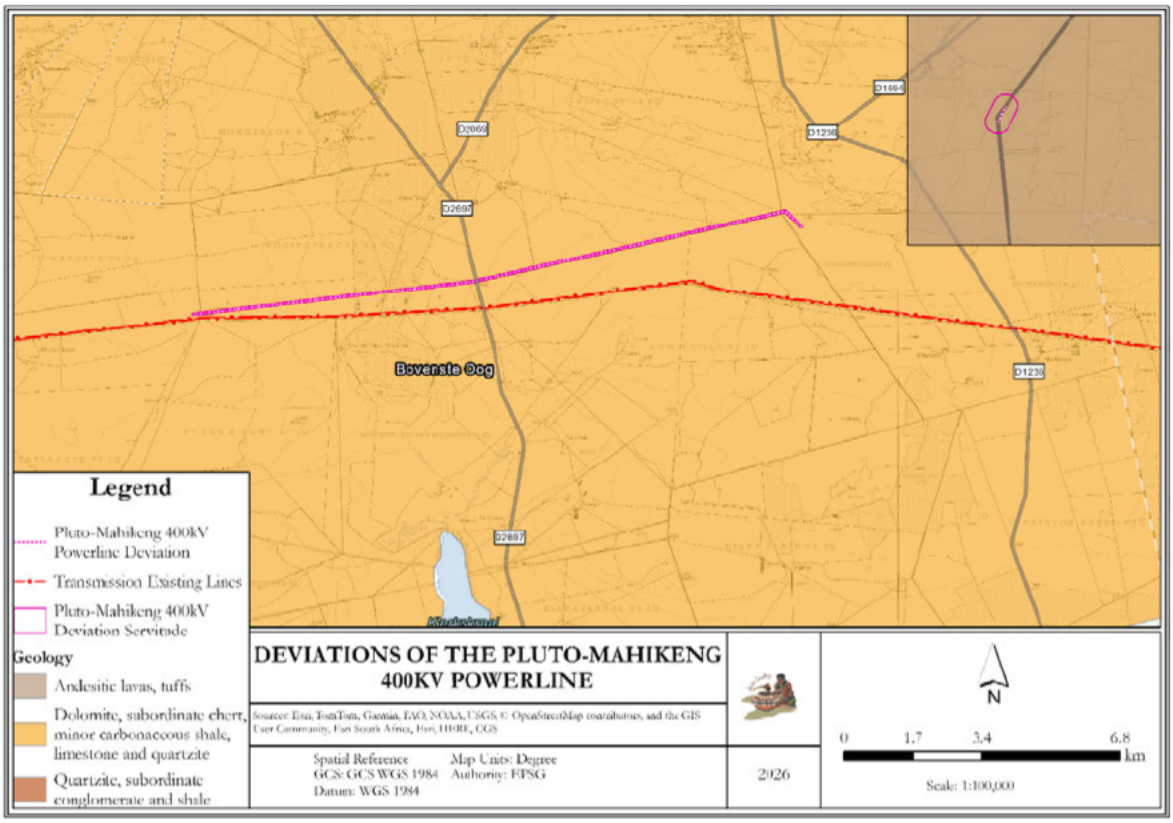


Figure 17: Geology of the site

The summary for Geotechnical investigations is given in Table 12.

Table 12: Summary of Geotechnical Site Sensitivity Verification

Specialist Protocol	No DFFE theme-specific protocol is currently gazetted for geotechnical investigations.
Screening Report Sensitivity u	Not Rated
Verified Sensitivity	Not Verified at this stage - to be addressed during construction phase through soil nominations
Rationale	The STR does not assign a sensitivity to geotechnical features. Formal geotechnical investigations (soil nominations) are planned for the construction phase in accordance with standard NTCSA/Eskom practice. The geological data from the Council of Geoscience confirms the presence of dolomitic rocks which may present geotechnical risk during foundation construction.

8.11 Terrestrial Plant Species Assessment

The STR indicates an overall low sensitivity for both deviations for the potential occurrence of plant SCCs (Figure 18).

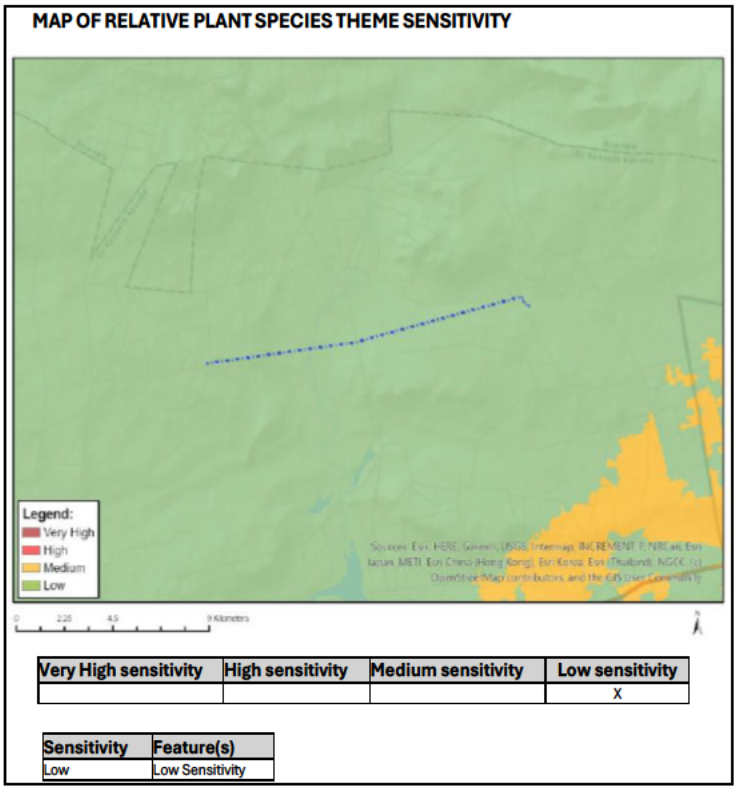


Figure 18: STR Map of the Terrestrial Plant Species theme sensitivity

The site survey undertaken by the specialist elevates the low sensitivity for the deviation to medium sensitivity due to the presence of three provincial protected plant species, *Boophane disticha* (Figure 19), *Gladiolus sericeovillosus* (Figure 20) and *Hypoxis hemerocallidea* which were recorded within the servitude. *Boophane disticha* is regarded as declining by the South African National Biodiversity Institute (SANBI) Red List of South African Plants and the North West Provincial Orange list indicates that the *Gladiolus sericeovillosus* and *Hypoxis hemerocallidea* are classified as declining and protected in the province



Figure 19: *Boophane disticha*

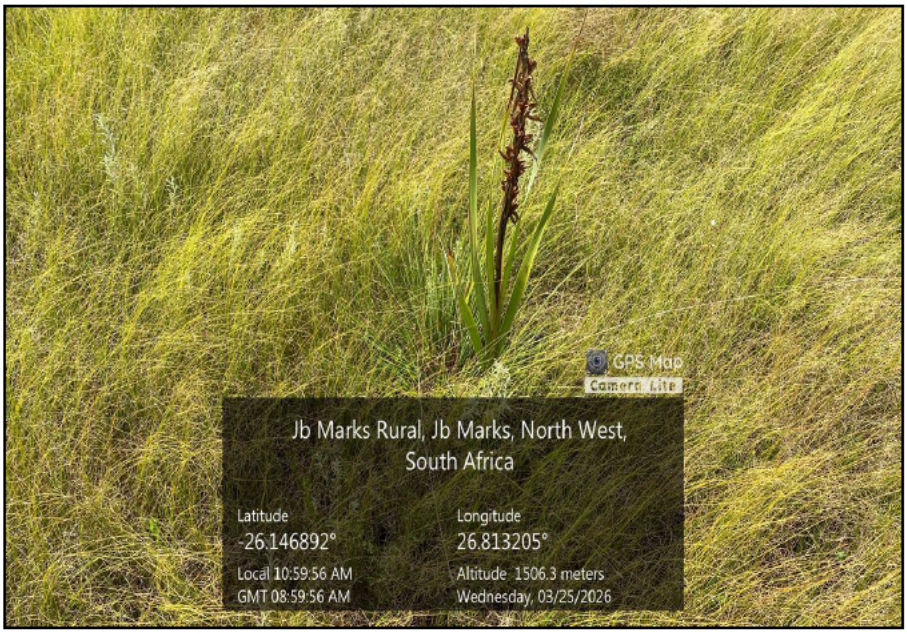


Figure 20: Gladiolus sericeovillosus

The results of the site sensitivity verification undertaken by Naledzani are discussed in Table 13 below

Table 13: Summary of Terrestrial Plant Species Site Sensitivity Verification

Specialist Protocol	Protocol for the Specialist Assessment and Minimum Report Content Requirements for Environmental Impacts on Terrestrial Plant Species, Government Notice No. 1150 of 30 October 2020
Screening Report Sensitivity	Deviations 1 & 2: Low

Verified Sensitivity	Deviation 1: Medium Deviation 2: Low
Motivation	No floral SCCs were recorded during the site assessment. However, three provincially protected geophytes were identified within Deviation 1. Although these species are classified as Declining rather than Threatened under the provincial conservation legislation, their protected status and conservation importance warrant additional consideration. Consequently, the presence of these provincially protected species elevates the floral species theme for Deviation 1 to Medium sensitivity. The verified sensitivity for deviation 2 is maintained at low. The plant species assessment has been included in the Terrestrial Biodiversity Assessment Report.
Consultant and Reference	Naledzani Environmental Consultants, (2026), Appendix D-8

8.12 Defence

The Screening tool identifies the proposed development servitudes falling within an area of low sensitivity in respect of the Defence theme. Refer to Figure 21.

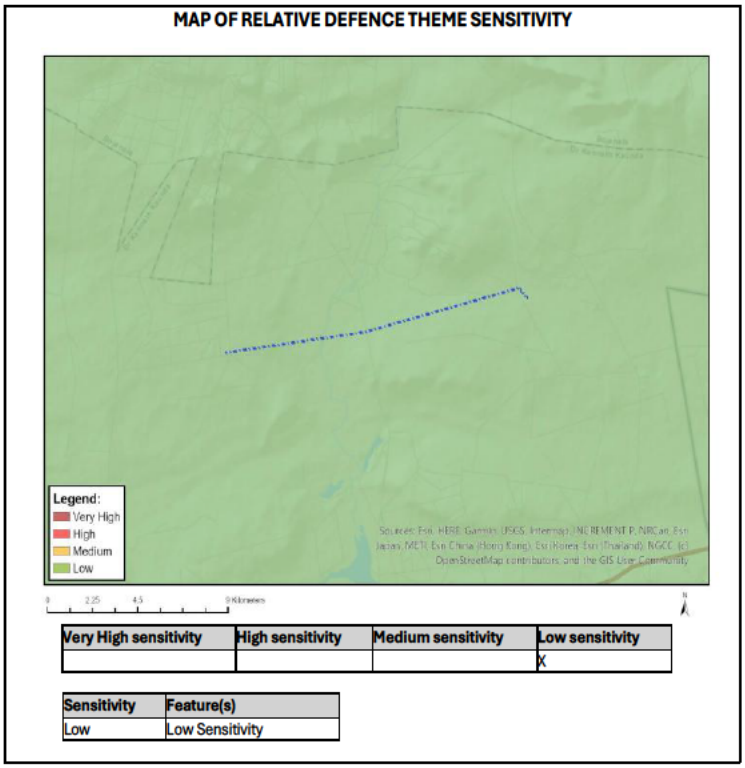


Figure 21: STR Map of the Defence theme sensitivity

The verification was undertaken through:

- A desktop analysis, including review of current satellite imagery, topographic data, and available cadastral information for the deviation servitudes and surrounding area.
- Review of the original EIA documentation (2018), and the Environmental Authorisation.

The table below summarises the site sensitivity verification.

Table 14: Summary of Defence Theme Site Sensitivity Verification

Specialist Protocol	Protocol for the Specialist Assessment and Minimum Report Content Requirements for Environmental Impacts On Defence Installations, Government Notice No. 320, 20 March 2020
Screening Report Sensitivity	Low
Verified Sensitivity	Low
Motivation	No defence installations occur within or adjacent to the proposed deviation areas. Consequently, the proposed powerline deviations are not expected to impact any defence infrastructure, activities, or operational requirements.

9 CONCLUSION

The site sensitivity verification confirms that the Screening Tool Report (STR) sensitivities have been reviewed, ground-truthed, and updated by qualified specialists across all applicable themes. The consolidated findings are presented in Table 15 below.

Table 15: Consolidated Summary – STR Sensitivity vs Verified Sensitivity (All Themes)

Theme	STR Sensitivity	Overall Verified Sensitivity	Specialist / Reference
Agriculture	Medium-High	Low	Enviro-Solum Consulting – Appendix D-7
Landscape/Visual	Not Rated	Medium	Outline Landscape Architects – Appendix D-10
Archaeological & Cultural Heritage	Low	Low	Afro Conserva Intergration – Appendix D-2
Palaeontology	Very High-High	Low	Prof. JF Durand – Appendix D-6
Terrestrial Biodiversity	Very High	Low-High	Naledzani – Appendix D-8
Aquatic Biodiversity	Very High	Low-High	Tshilimo Consultants– Appendix D-5
Terrestrial Animal Species (Avifauna)	Medium-High	Medium-High	Feathers Environmental Consultants – Appendix D-3
Terrestrial Animal Species (Other Fauna)	Low-Medium	Low-Medium	Naledzani – Appendix D-8
Civil Aviation	Low - Medium	Low	GWI Aviation Advisory – Appendix D-4

RFI	Not Rated	Low	Desktop – Vhubvo / NTCSA (design stage)
Geotechnical	Not Rated	Not Verified	Detailed assessment done during construction.
Terrestrial Plant Species	Low	Low-Medium	Naledzani – Appendix D-8
Defence	Low	Low	Desktop – Vhubvo (2026)

In addition, the following will be addressed outside the current application:

- Geotechnical investigations (soil nominations) – to be conducted during construction;
- RFI/corona and field-effect assessment – to be determined at final line design stage by NTCSA;
- Obstacle Assessment (Civil Aviation) – to be conducted after Environmental Authorisation has been issued and towers have been determined.
- SACAA and SAHRA -engagement throughout the Basic Assessment Process and prior to construction.

10 EAP DECLARATION

I, **Brenda S. Makanza,** declare that:

- The report has been prepared in accordance with the Environmental Impact Assessment Regulations, 2014 (as amended) under the National Environmental Management Act, 1998 (Act No. 107 of 1998).
- The report incorporates relevant specialist site sensitivity verifications (including, where applicable, biodiversity, agricultural, heritage, and other environmental themes identified by the screening tool).
- I have no vested financial or other interest in the proposed activity, aside from fair remuneration, and I have no conflicts of interest that may compromise my objectivity.
- The information presented is true, accurate, and based on available data and specialist input.

EAP Name: Brenda S. Makanza

Signature: 

Date: 01.10.2026

Company: Vhubvo Consultancy cc

11 REFERENCES

AfroConserva Intergration. (2026). *Phase I Cultural Heritage Impact Assessment (HIA) for the Proposed Deviation of the Pluto-Mahikeng 400 kV Powerline within The JB Marks and Mahikeng Local Municipalities in the North-West.* Midrand: AfroConserva Intergration.

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ANNEXURE I SAHRA INTERIM COMMENTS

an agency of the
Department of Arts and Culture

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P.O. Box 4637 | Cape Town | 8001
www.sahra.org.za

Enquiries: [redacted]
Tel:
Email [redacted]
Case ID: 28574

Date: Monday, 8 June, 2026

Interim Comment

In terms of Section 38(3) of the National Heritage Resources Act (Act 25 of 1999)/In terms of Section 38(8) of the National Heritage Resources Act (Act 25 of 1999)

Sebenzile Vilakazi
National Transmission Company South Africa SOC Ltd
Megawatt Park, Maxwell Drive,
Sunninghill
Sandton
2191

Vhubvo Consultancy has been appointed by the National Transmission Company South Africa SOC Ltd to conduct an Environmental Authorisation (EA) Application for the proposed two deviations of ± 14 km of the Pluto-Mahikeng 400kv Powerline with Deviation 1 on Buchansvale 61 IQ/2, Goedgedacht 27 IQ /1, Klipgat 18 IQ /4, Klipgat 18 IQ /8, Klipgat 18 IQ /9, Nooitgedacht 69 IQ /0, Nooitgedacht 69 IQ /3, Illmasdale 70 IQ /2 the JB Marks Local Municipality Dr Kenneth Kaunda District Municipality, and Deviation 2 on Bauwel 128 JO/4 in Mahikeng Local Municipality, Ngaka Modiri Molema District Municipality, North West Province

A Background Information Document (BID) has been submitted in terms of the National Environmental Management Act, no 107 of 1998 (NEMA) and the NEMA Environmental Impact Assessment (EIA) Regulations. The proposed two deviations are from the approved Pluto-Mahikeng Substation and Power Line Project (DFFE ref. no.: Ref No. 14/12/16/3/3/2/1051; SAHRIS case ID 11004), which includes the Mahikeng Main Transmission Substation, a ±250 km long 400kV transmission powerline in a 2 km-wide approved corridor for the powerline alignment; and associated infrastructure. Two sections of the required 55 m servitude fall outside the approved 2 km corridor. These sections were not assessed in the original Environmental Impact Assessment (EIA), and as a result, they are not covered by the existing Environmental Authorisation. The first deviation is ±14 km in length is 24 km North West of Pluto MTS while the second deviation, ±45 m is approximately from 15 km south east of Mahikeng between span for Tower 110 to 111.

The proposed development is located in an area of Very High palaeontological sensitivity as per the SAHRIS PalaeoSensitivity map. Therefore, a field-based PIA is required.

Interim Comment

DEVIATION OF THE PLUTO-MAHUKENG 400KV POWERLINE

an agency of the
Department of Arts and Culture

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Enquiries: [redacted]
Tel:
Email: [redacted]
Case ID: 28574

Date: Monday, 8 June, 2026

The SAHRA Development Applications Unit (DAU) notes the submitted Background Information Document.

The SAHRA DAU requests that an assessment of the impact to heritage resources that complies with section 38(3) of the NHRA as required by section 38(8) of the NHRA must be conducted as part of the EA process. The HIA must include an archaeological component.

The field-based archaeological component of the HIA must be conducted by a qualified archaeologist and must comply with the SAHRA 2007 Minimum Standards: Archaeological and Palaeontological Components of Impact Assessment Reports (see www.asapa.co.za or www.aphp.org.za for a list of qualified archaeologists). The Minimum Standards refer to a Letter of Recommendation for Exemption for further studies should the specialist deem it appropriate. SAHRA reserves the right to insist on a field-based assessment should the Letter of Recommendation not provide ample information to make an informed comment.

Any other heritage resources as defined in section 3 of the NHRA that may be impacted, such as built structures over 60 years old, sites of cultural significance associated with oral histories, burial grounds and graves, graves of victims of conflict, and cultural landscapes or viewscapes must also be assessed.

Since the development is located in an area of Very High palaeontological sensitivity a field-based PIA is required. The assessment must be undertaken by a qualified palaeontologist and the report must comply with the 2012 Minimum Standards: Palaeontological Components of Heritage Impact Assessments.

Further comments will be issued upon the submission of the draft Scoping Report (DSR), Heritage Impact Assessment (HIA), and Palaeontological Impact Assessment (PIA).

Should you have any further queries, please contact the designated official using the case number quoted above in the case header.

Yours faithfully



DEVIATION OF THE PLUTO-MAHUKENG 400KV POWERLINE

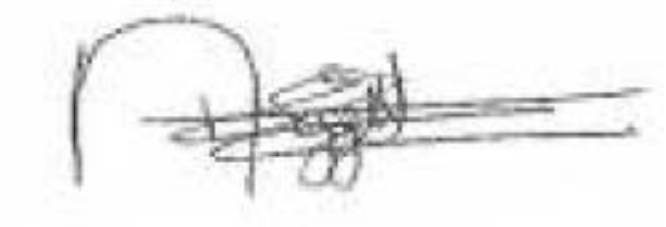
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Case ID: 28574

Date: Monday, 8 June, 2026

Stephen van der Heever
Heritage Officer
South African Heritage Resources Agency



Natasha Higgitt
Manager: Development Applications Unit
South African Heritage Resources Agency

ADMIN:
Direct URL to case: https://sahris.org.za/node/398592