TERRESTRIAL BIODIVERSITY IMPACT ASSESSMENT STUDY

TERRESTRIAL IMPACT ASSESSMENT REPORT FOR THE PROPOSED MAHIKENG MAIN TRANSMISSION SUBSTATION AND 1X400kV PLUTO-MAHIKENG POWERLINE WITHIN THE MERAFONG, DITSOBOTLA, RAMOTSHERE MOILAO, JB MARKS AND MAHIKENG LOCAL MUNICIPALITIES IN NORTH WEST AND GAUTENG PROVINCES.

THOMATREE FAMILY
The Last Standing Tree



Prepared by: **ThomaTree Family (Pty)Ltd**

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DOCUMENT CONTROL	
Date	April 2026
Document Title	Terrestrial Impact Assessment report for the proposed Mahikeng main transmission substation and 1x400kv Pluto-Mahikeng powerline within the Merafong, Ditsobotla, Ramotshere Moilao, JB Marks and Mahikeng Local Municipalities in North West and Gauteng provinces.
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Prepared for	Vhubvo Consultancy cc

DECLARATION

I, Pogisho Kgasago declare that:

- I act as the independent wetland specialist in this application;
- I do not have and will not have any vested interest (either business, financial, personal or other) in the undertaking of the proposed activity, other than remuneration for work performed in terms of the Environmental Impact Assessment Regulations, 2014;
- 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 declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting the specialist report relevant to this application, including knowledge of the National Environmental Management Act (Act 107 of 1998), (NEMA), regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the NEMA Act, regulations and all other applicable legislation;
- As a registered member of the South African Council for Natural Scientific Professions in terms of the Natural Scientific Professions Act, 2003 (Act No. 27 of 2003), I will undertake my professional duties in accordance with the Code of Conduct of the Council, as well as any other societies of which I am a member; and
- As a registered member of the South African Council for Natural Scientific Professions in terms of the Natural Scientific Professions Act, 2003 (Act No. 27 of 2003), I will undertake my professional duties in accordance with the Code of Conduct of the Council, as well as any other societies of which I am a member; and
- 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; all the particulars furnished by me in this report are true and correct.



Signature

SACNASP NO: 168587 01/05/2026

DECLARATION

I, Khantshi Ndivhuho declare that:

- I act as an independent Terrestrial ecology specialist in this application;
- I do not have and will not have any vested interest (either business, financial, personal or other) in the undertaking of the proposed activity, other than remuneration for work performed in terms of the Environmental Impact Assessment Regulations, 2014;
- 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 declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting the specialist report relevant to this application, including knowledge of the National Environmental Management Act (Act 107 of 1998), (NEMA), regulations and any guidelines that have relevance to the proposed activity;
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- 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; all the particulars furnished by me in this report are true and correct.



Khantshi Ndivhuho (SACNASP 122250)

01 /05 / 2026

DECLARATION OF INDEPENDENCE (Reviewer)

I, Mpho Ramalivhana, declare that I:

- I act as an independent review specialist in this application;
- I have performed the review 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 declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in reviewing the specialist relevant to this application, including knowledge of the Act, regulations and any guidelines that have relevance to the proposed activity;
- I have complied with the Act, regulations and all other applicable legislation;
- I have no, and will not engage in, conflicting interests in the undertaking of the activity;
- 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;
- All the details furnished by me in this report are true and correct; and
- I realise that a false declaration is an offence in terms of Regulation 71 and is punishable in terms of Section 24F of the Act.
- As a registered member of the South African Council for Natural Scientific Professions, will undertake my profession in accordance with the Code of Conduct of the Council, as well as any other societies to which I am a member.



Mpho Ramalivhana Pri Sci. Nat (Hons. Bot.; SAAB; SACNASP)

DISCLAIMER

The information and opinions presented in this report are based on data provided to Thoma Tree Family (Pty) Ltd (Pty) Ltd. While due care has been exercised in reviewing the information supplied, the accuracy of the results and conclusions is dependent upon the accuracy and completeness of such information.

Thoma Tree Family (Pty) Ltd does not accept responsibility for any errors or omissions in the data provided, nor for any consequential loss or liability arising from decisions or actions taken based on this information.

The opinions expressed in this report are based on the conditions and features observed at the site at the time of the investigation, as well as those reasonably foreseeable. These opinions therefore reflect only the circumstances prevailing at the time of assessment. Thoma Tree Family (Pty) Ltd cannot be held responsible for any changes in site conditions occurring after completion of this report, particularly where such changes were not disclosed prior to the investigation and could not reasonably have been anticipated or evaluated.

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1 INTRODUCTION

1.1 Background

ThomaTree Family (Pty)Ltd was commissioned by Vhubvo Consultancy cc on behalf of the National Transmission Company South Africa SOC Ltd (NTCSA) to conduct an ecological walkdown for the Pluto–Mahikeng 400 kV Powerline and Mahikeng Main Transmission Substation (MTS) in the Gauteng and North West Provinces. The project includes the construction of transmission line support structures, pylons, associated access routes for construction and maintenance, and Mahikeng MTS.

In accordance with the Environmental Authorisation (EA) and Environmental Management Programme (EMPr), an ecological walkdown of the approved pylon and substation locations was undertaken from 16–27 March 2026. The survey assessed the development footprint for sensitive habitats, protected and threatened plant species, and fauna of conservation concern. It also informed the final placement of infrastructure and identified any required mitigation measures. Recorded protected and listed species are documented in this report and may support permit applications required prior to construction.

This report presents only the findings of the ecological walkdown and should be read alongside the avifauna and aquatic specialist reports, which collectively identify ecological constraints across the project area.

1.2 Terms of reference

The Terms of Reference (ToR) for this assessment include the following:

- Review of existing information, including the previous ecological report related to the development.
- Conduct an ecological walkdown for the planned footprint areas.
- Detail ecological constraints identified for the planned infrastructure.
- Present information on the presence of any Species of Conservation Concern (SCC).
- Provide information and recommendations for the micro-siting of relevant infrastructure.
- Compilation of a report detailing the results of the walkdown.

1.3 Assumptions and limitations

The following limitations should be noted for the assessment:

i. Pylon and stay positions were supplied by the client. The precise locations of each pylon was visited and used as guidelines during the walkdown and ecosystem evaluation phase. GPS accuracy during the field surveys varied from 2 to 5 m. The findings of the pylon and stay locations are discussed in the subsequent sections, and the approximate areas influenced by this infrastructure. A basic map of the general project area and PAOI is presented in Figure 1.

ii. Geophyte detectability is seasonal. Boophone disticha, Eucomis autumnalis, Hypoxis hemerocallidea and Gladiolus sericeovillosus are all dormant for part of the year and individuals not in leaf or flower at the

time of the walkdown will not have been detected. The 23 records reported here must therefore be treated as a confirmed minimum, not as a complete census.

1.4 Project location and description

The proposed project traverses the Gauteng and the North West Province running through the Merafong City Local Municipality of the Gauteng Province and the Ditsobotla, JB Marks and Mafikeng Local Municipalities of the North West Province (Figure 1). The project entails the following:

- Communication tower at the Mahikeng MTS.
- Construction of access roads.
- Establishment of an approximately 250km 400kV transmission powerline from Pluto MTS to the proposed Mahikeng MTS.

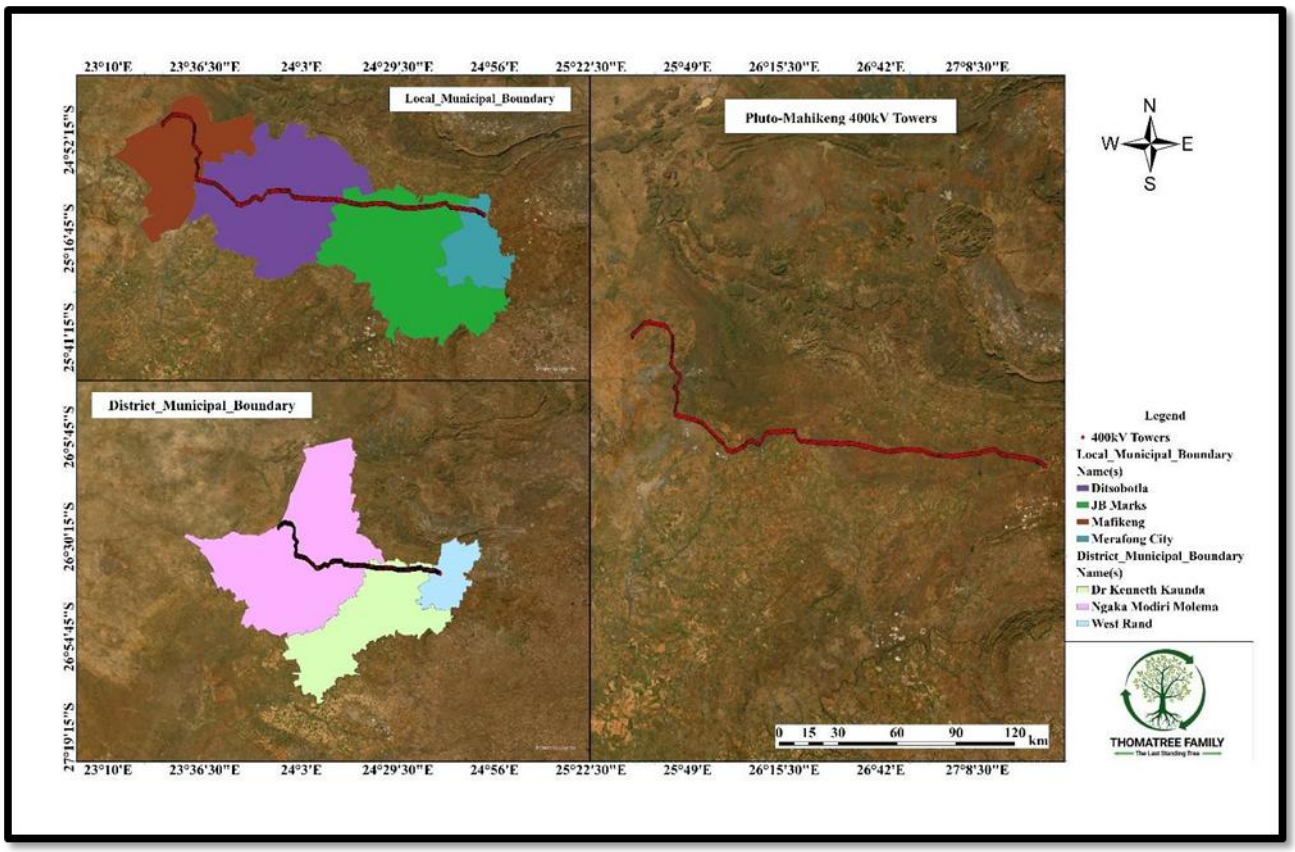


Figure 1: Locality map for the project area

2 KEY LEGISLATIVE REQUIREMENTS

The legislation, policies and guidelines listed below in Table 1 are applicable to the current project. The list below, although extensive, may not be complete and other legislation, policies and guidelines may apply in addition to those listed below.

Table 1: Applicable legislation

Region	Legislation / Guideline
International	Convention on Biological Diversity (CBD)
National	Constitution of the Republic of South Africa (Act No. 108 of 1996)
	The National Environmental Management Act (NEMA) (Act No. 107 of 1998)
	The National Environmental Management: Biodiversity Act (NEM:BA) (Act No. 10 of 2004)
	The National Environmental Management: Protected Areas Act (Act No. 57 of 2003)
	National Forests Act, 1998 (Act No. 84 of 1998)
	National Veld and Forest Fire Act, 1998 (Act No.101 of 1998)
	Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983) (CARA)
	The National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008)
	Threatened or Protected Species Regulations and lists (No. R. 152 of Government Gazette No. 29657 of 23 February 2007, and No. R. 1187 of Government Gazette No. 30568 of 14 December 2007)
	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, GNR 320 of Government Gazette 43110 (March 2020); and GNR 1150 of Government Gazette 43855 (October 2020)
	List of Ecosystems that are Threatened or in need of Protection, 2022
	Alien and Invasive Species Regulations and Alien and Invasive Species List 2020, published under NEM:BA
	World Heritage Convention Act (Act No. 49 of 1999)
Provincial	Transvaal Nature Conservation Ordinance 12 of 1983
	North West Biodiversity Management Act, 2016

3 METHODOLOGY

The walkdown was conducted over ten field days between 16 and 25 March 2026, covering the servitude from the proposed Mahikeng MTS eastwards to the Pluto MTS. Each accessible tower position was located from the GPS and walked, together with the connecting access track.

At each position the ecologist recorded the vegetation community, the dominant and characteristic species, the condition and degree of transformation, and the presence of any nationally protected tree, provincially protected species or Species of Conservation Concern (SCC). Every protected individual encountered was recorded on a handheld GPS receiver and assigned a size class and a stem diameter or circumference range. Where a species could not be identified with confidence in the field, a georeferenced photographic record was taken for subsequent verification. The full set of protected species records is presented in Annexure II.

The methodology is detailed below:

i. **Document Review:** Documentation prepared during the Environmental Impact Assessment (EIA) phase

was reviewed, including the Ecological Assessment, Scoping Report, Environmental Impact Report (EIR), specialist reports, Environmental Management Programme (EMPr), and Environmental Authorisation (EA). The review informed the assessment by confirming the environmental baseline, identified sensitivities, approved mitigation measures, and applicable authorisation conditions relevant to the walkdown.

ii. **Geographic Information Systems (GIS) Mapping:** Existing data layers were incorporated into GIS software to establish how the proposed project might interact with any ecologically important entities. The guideline provides a spatial overview of threatened ecosystems and guidance on mitigating biodiversity impacts from the different phases of the proposed activity.

iii. **Vegetation survey:** Homogeneous vegetation units identified during the desktop assessment were surveyed on foot and, where access was restricted due to ponding, by vehicle. The floristic composition of each vegetation unit within the servitude was recorded, and plant species were identified using recognised field guides and botanical checklists. Particular attention was given to the identification of plant Species of Conservation Concern (SCCs). Where necessary, plant specimens and/or photographs were collected to confirm species identification

iv. **Faunal assessment (Mammals, Reptiles and Amphibians):** The faunal assessment comprised a desktop review supported by field observations during the walkdown survey. No faunal trapping or quantitative sampling was undertaken. The desktop review considered available species distribution records, habitat suitability, and conservation status to identify fauna with the potential to occur within the study area. Records from the Animal Demography Unit (ADU) Virtual Museum were reviewed for mammals, reptiles, and amphibians. During the field survey, potential faunal habitats and any signs of faunal activity were recorded to identify environmentally sensitive areas along the proposed powerline servitude.

4 BASELINE ENVIRONMENT

The following regional information is summarised from the Ecological Assessment Report prepared by Naledzani Environmental Services in 2018 during the EIA process.

4.1 Climatic conditions

The proposed powerline and substation are situated in the Gauteng and the North West Province, with the longest section and Mahikeng MTS within the North West Province. The eastern part of the proposed site receives less than 300mm of rain per annum, the central part around 550mm, while the eastern and south-eastern parts receive over 600mm. The highest rainfall occurs in the summer months between October and April; rainfall is very low in winter. A large proportion of rain occurs as thunderstorms with heavy gusts of wind, lightning, hail and flash-floods (Climate Change Vulnerability: North West Province, 2015).

The area is considered to be semi-arid (annual rainfall totals approximately 539mm). Droughts and floods occur regularly at both provincial and local scales, and play a significant role in almost every aspect of the social, economic and ecological environment within the province. Evaporation exceeds rainfall in most parts of the province, and as a result the North West province relies heavily on ground water resources to meet its needs.

There are wide seasonal and daily variations in temperature; with very hot weather in summer (daily average high temperatures of 32ºC in January) and mild to cold weather in winter (average daily minimum in July is 0.9ºC). There is a high variance between minimum and maximum temperatures; daily maximums range from 17 to 31ºC in the summer (October to April) and 4 to 20ºC in the winter (May to September) (Climate Change Vulnerability: North West Province, 2015.

4.2 Land Use

Land use within the Project Area of Influence (PAOI) comprises natural vegetation, agricultural land, vacant land, and small-scale mining activities. Vacant land is predominantly used for grazing, with some areas historically cultivated or currently planted with crops such as maize, sunflower, and soybeans. Agricultural holdings include cultivated fields, pasture, farmsteads, and scattered alien invasive plant species.

4.3 Vegetation

The proposed transmission line traverses two biomes: Savanna and Grassland (Figure 2), and six national vegetation types (Mucina & Rutherford, 2006). The biome and vegetation type descriptions below are per Naledzani (2018) and have been condensed from the ecological baseline and verified against the Red List Ecosystem (RLE) 2021.

4.3.1 Savanna Biome

The largest biome in South Africa, covering roughly a third of the country, and the largest in southern Africa, best developed over the Lowveld and Kalahari. It is structurally defined by a continuous grassy ground layer beneath a discontinuous woody layer referred to locally as shrubveld, bushveld or woodland depending on canopy height and density. The delimiting factors are complex (altitude from sea level to approximately 2 000 m, rainfall approximately 235–1 000 mm/yr, frost 0–120 days/yr), but the principal control is rainfall insufficient for the tree

layer to dominate, reinforced by fire and grazing that keep the grass layer dominant. Most species are fire adapted and re-sprout from the stem base after burning. Biome level conservation is comparatively good although roughly half of the Savanna vegetation types remain poorly conserved (less than 5% protected), with much of the estate under game farming.

4.3.2 Grassland Biome

The biome is mainly found on the high central plateau, extending into inland KwaZulu-Natal and the Eastern Cape, and dominated by a single grass layer. Trees are largely absent except in localised habitats, geophytes are often abundant, and fire, frost and grazing maintain grass dominance while suppressing tree establishment. A sweetveld–sourveld gradient tracks rainfall and soil, with approximately 625 mm/yr taken as the threshold above which unpalatable (sour) grasses predominate on more acidic soils; C4 grasses dominate throughout, except at the highest altitudes where C3 grasses become prominent. The biome has been extensively transformed for maize and by urbanization. Its biodiversity is very high, with many endemic and often threatened geophytes and forbs, though very few grasses are threatened.

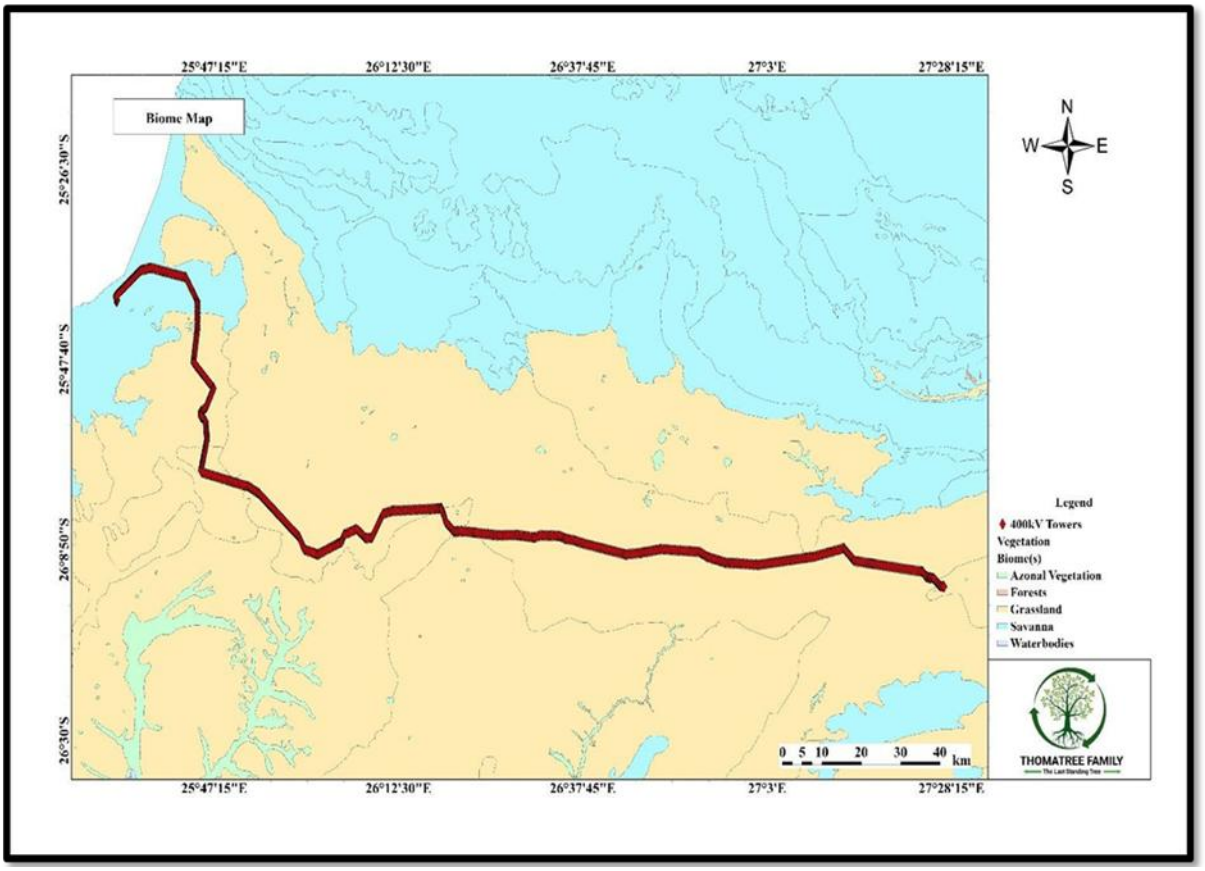


Figure 2: Map showing biomes in relation to the proposed powerline

4.3.3 Broad Vegetation Classification

The proposed powerline transmission runs through the following six vegetation unit types: Soweto Highveld Grassland, Carletonville Dolomite Grassland, Vaal-Vet Sandy Grassland (Dominating), Western Highveld Sandy Grassland and Klerksdorp Thornveld which are part of the Grassland Biome and the Mafikeng Bushveld which is part of the Savanna Biome. The vegetation types are shown in the map below (Figure 3).

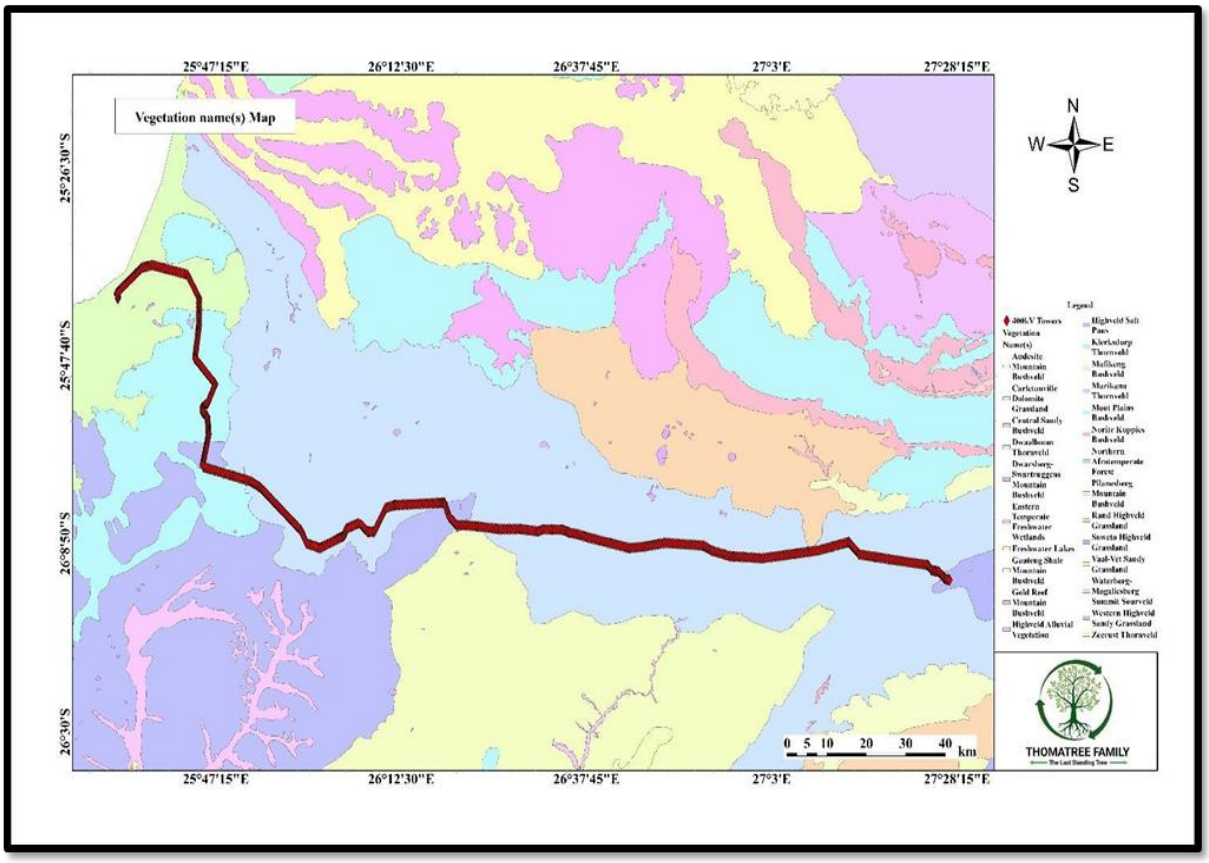


Figure 3: Affected vegetation types

The table below summarises the key characteristics of the affected vegetation types,

Table 2: Affected vegetation types and sensitivity

Vegetation type	Code	Biome	Brief description	Mucina	RLE (2021)
Soweto Highveld Grassland	Gm 8	Grassland	Short, dense *Themeda triandra* grassland of the Mpumalanga–Gauteng highveld.	Vulnerable	Vulnerable
Vaal-Vet Sandy Grassland	Gh 10	Grassland	Species rich sandy grassland; extensively cultivated (NW / Free State).	Endangered	Endangered
Klerksdorp Thornveld	Gh 13	Grassland	*Vachellia* / *Senegalia* thornveld in two patches; ~2.5% conserved.	Vulnerable	Least Concern
Western Highveld Sandy Grassland	Gh 14	Grassland	Sandy grassland from Mahikeng to Schweizer-Reneke.	Endangered	Endangered
Carletonville Dolomite Grassland	Gh 15	Grassland	Dolomitic grassland with chert ridges; ~24% transformed.	Vulnerable	Least Concern
Mafikeng Bushveld	SVk 1	Savanna	Tall open woodland on deep red Kalahari sand; at the western end / proposed substation footprint.	Vulnerable	Least Concern

4.4 Terrestrial biodiversity context of the surveyed positions

The surveyed positions were intersected with the North West Biodiversity Sector Plan (NWBSP 2015) terrestrial biodiversity dataset. The servitude traverses Critical Biodiversity Areas 1 and 2 and Ecological Support Areas 1 and 2, with the more extensive CBA1 associations occurring along the southern and central portions of the route

and generally linked to drainage features.

5 FINDINGS

5.1 Habitats within the Servitude

The following five habitats were confirmed along the walked servitude:

5.1.1 Open grassland

This unit (Figure 5) occupies areas of natural, largely undisturbed grassland and accounts for a substantial proportion of the walked servitude. The grass layer is dominated by *Eragrostis lehmanniana*, *Aristida congesta*, *Aristida canescens*, *Digitaria eriantha*, *Urochloa mosambicensis*, *Setaria sphacelata*, *Themeda triandra*, *Melinis repens*, *Cynodon dactylon* and *Heteropogon contortus*. Scattered woody and geophytic elements include *Ziziphus zeyheri*, *Diospyros lycioides* and *Hypoxis hemerocallidea*.

Walkdown finding: this unit carries the highest residual conservation value of the herbaceous communities along the servitude. Ecological functioning is assessed as low to medium, but the likelihood of encountering additional protected geophytes is medium to high owing to the low level of past disturbance. All geophyte records reported in Section 5.5 fall within this unit or its ecotone with mixed bushveld.

The open grassland has an ecological functioning of low-medium;

- The suitability of this community for SCCs/protected species is considered medium to high due to low disturbance that has occurred
- Two listed species (regarded as *Declining*) have been recorded, *i.e. Hypoxis hemerocallidea* and *Boophane disticha.*



Figure 4: Open grassland vegetation unit

5.1.2 Cultivated land

Active cultivation along the servitude comprises *Zea mays*, *Helianthus annuus*, *Glycine max* and *Medicago sativa*.

Field margins and fallow land are heavily disturbed and colonised by a mixture of alien and pioneer indigenous species, including *Eragrostis curvula*, *Hyparrhenia hirta*, *Melinis repens*, *Panicum repens*, *Bidens pilosa*, *Datura stramonium*, *Tagetes minuta*, *Argemone mexicana*, *Conyza bonariensis*, *Conyza canadensis* and *Cosmos bipinnatus*.

Walkdown finding: ecological functioning is negligible to low and conservation importance is low. No protected trees, geophytes or SCC were recorded at any tower position falling within actively cultivated land. Tower positions in this unit are therefore the least constrained on the servitude from a botanical perspective.

Sensitivity aspects

- Due to the complete transformation of currently cultivated fields these areas have negligible or low ecological functioning.
- No endemic, SCCs or protected species were recorded in the cultivated lands and the probability of such species occurring in this vegetation community is considered low.
- Accordingly, the conservation importance of cultivated land is considered low.



Figure 5: Cultivated area

5.1.3 Vegetation associated with watercourses

The unit (Figure 6) is characterised by taller woody species including *Eucalyptus* spp., *Salix mucronata*, *Searsia lancea* and *Melia azedarach*, with *Ziziphus mucronata*, *Gymnosporia buxifolia*, *Asparagus laricinus*, *Phragmites australis* and *Senecio inornatus*. Seasonal and temporary saturation zones support *Andropogon eucomus*, *Eragrostis plana*, *Typha capensis*, *Panicum coloratum*, *Sporobolus africanus*, *Cyperus rupestris*, *Andropogon appendiculatus* and *Setaria incrassata*.

Walkdown finding: ecological functioning is medium and conservation importance medium to medium-high, principally on account of avifaunal habitat and hydrological connectivity. Note that two of the species structuring

this unit *Melia azedarach* and *Eucalyptus* spp. are alien, and *Melia azedarach* is a NEMBA Category 1b listed invasive. The conservation value of this unit therefore attaches to its hydrological and habitat function rather than to its woody composition, and the invasive component must be addressed under the alien species management programme referred to in Section 5.5.

Sensitivity aspects

- The wetland vegetation unit in the study area has an ecological functioning of medium;
- The suitability of this community for Red Data/protected species is considered medium although;
- The conservation importance of this community is considered medium to medium-high as they provide habitat for avifauna.



Figure 6: A wetland Pan within the Cultivated land

5.1.4 Mixed bushveld

This unit was confirmed at some towers and across the entire footprint of the proposed MTS. The unit corresponds to the Klerksdorp Thornveld and Mafikeng Bushveld vegetation types and is characterised by a shrub dominated woody layer over a well-developed grass layer. Dominant woody species are *Vachellia erioloba*, *Diospyros lycioides*, *Grewia occidentalis*, *Ziziphus mucronata*, *Searsia lancea*, *Vachellia tortilis* and *Vachellia hebeclada*, with *Aloe zebrina*, *Prosopis glandulosa*, *Asparagus densiflorus* and *Asparagus laricinus*. The grass layer includes *Melinis repens*, *Themeda triandra*, *Panicum coloratum*, *Sporobolus africanus*, *Andropogon eucomus* and *Urochloa panicoides*.

Walkdown finding: Ecological functioning is medium to high and all protected tree records reported in Section 5.4 fall within it. *Vachellia erioloba* is the dominant woody species across the substation platform and is regenerating actively on site. The substation footprint cannot be accommodated within this unit without the removal of a substantial number of protected individuals, and this is addressed in Section 5.4.

Sensitivity aspects

- The overall ecological functioning of this community is considered medium to high.
- Only one dominating protected species was recorded in the area.
- Accordingly, the conservation importance this vegetation unit is considered medium to high due to the dominating nature of the Vachellia erioloba (listed as Declining).



Figure 7: The mixed bushveld dominated by Vachellia erioloba and Ziziphus mucronate

5.1.5 Secondary grassland

Secondary grassland occupies historically cultivated land which has been abandoned. Some areas were established to pasture grasses such as *Digitaria eriantha*; others are dominated by pioneers including *Eragrostis plana*, *Hyparrhenia hirta*, *Eragrostis lehmanniana* and *Cynodon dactylon*. Herbaceous diversity is low and comprises *Cleome maculata*, *Commelina africana* var. *krebsiana*, *Felicia muricata*, *Indigofera zeyheri* and *Hermannia depressa*.

Walkdown finding: ecological functioning is medium. Given the severity and duration of past soil disturbance, returning to primary grassland is not expected. No protected species or SCC were recorded at any tower position within this unit, except in the immediate vicinity of wetland margins where the soil was historically too wet to plough and where remnant geophyte persists.

Sensitivity

- The diversity was observed to be low.
- No plants of conservation concern were observed in the secondary grasslands.
- The overall ecological functioning of this community is considered medium.



Figure 8: Secondary grassland along the proposed route

5.2 Proposed Mahikeng Substation

Proposed Mahikeng MTS footprint is dominated by *Vachellia erioloba* scattered all over the area. Other tree species include *Ziziphus mucronata, Peltophorum africanum* and *Searsia tenuinervis.* The grass layer is well developed with grass species. The grass layer has species such as *Anthephora pubescens, Eragrostis lehmanniana, E superba, Aristida congesta, Cymbopogon pospischilii, Schmiditia pappophoroides* and *Cynodon dactylon.*



Figure 9: Overview of Proposed Mahikeng substation area with well-developed grasses and growing

The table below summarises servitude habitats and their implications.

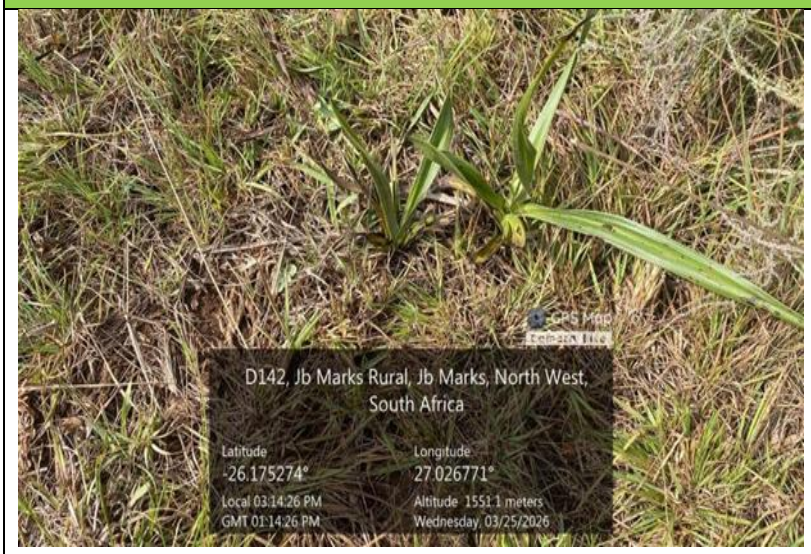
Table 3: Vegetation communities confirmed at surveyed positions

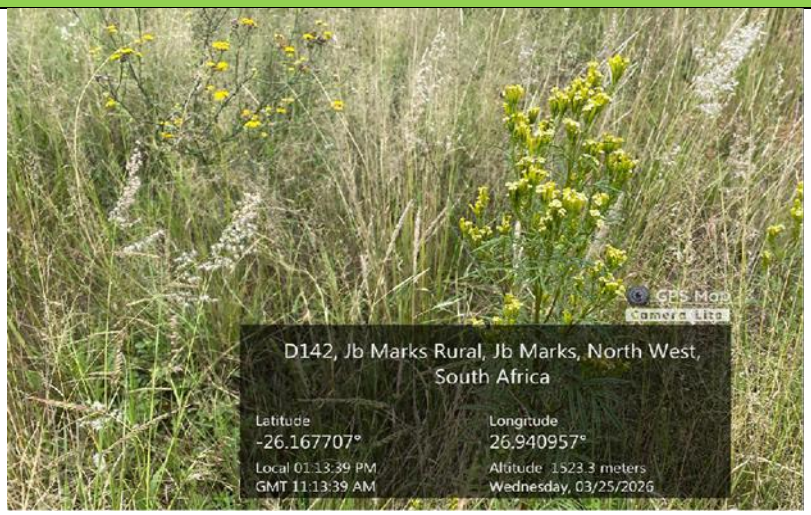
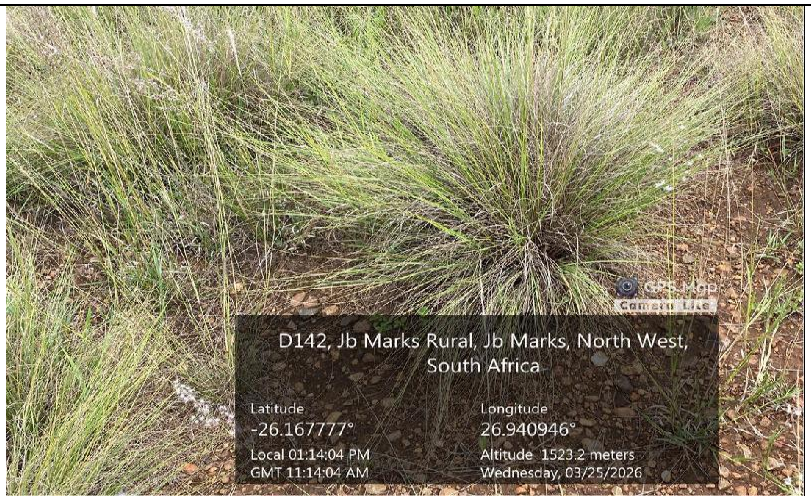
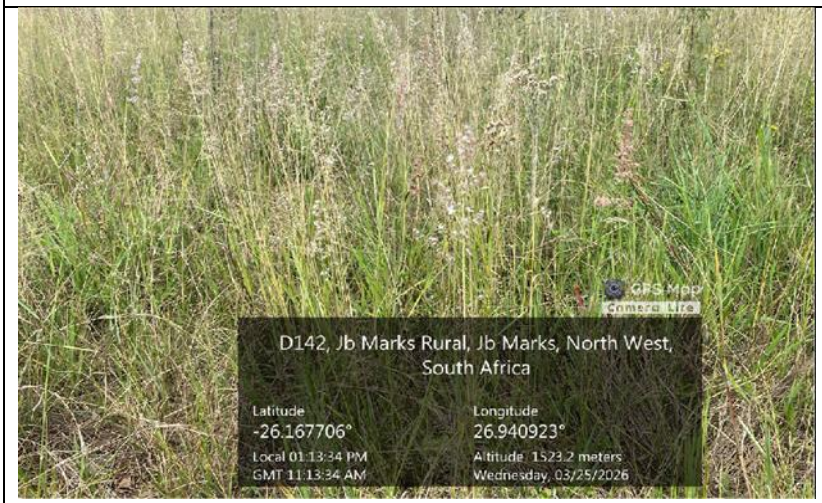
Habitat	Ecological functioning	Conservation importance	Protected species recorded at surveyed positions	Implication for the walkdown
Open grassland	Low–medium	Medium–high	Geophytes (4 species)	Pre-clearing geophyte sweep required; search and rescue applies.
Cultivated land	Negligible–low	Low	None	Least constrained
Watercourse vegetation	Medium	Medium–medium-high	None	Avoid and buffer; invasive species to be managed
Mixed bushveld	Medium–high	Medium–high	Protected trees (2 species)	National Forests Act licence required
Secondary grassland	Medium	Low–medium	None	Low constraint; suitable for laydown and temporary works

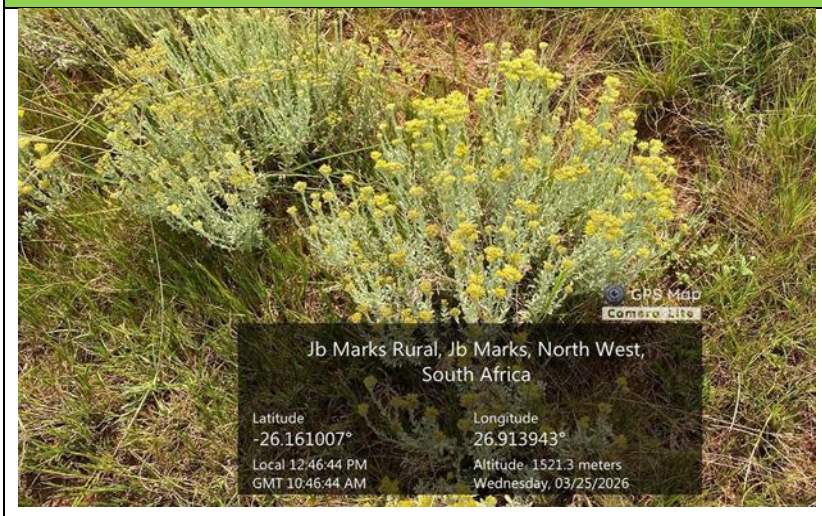
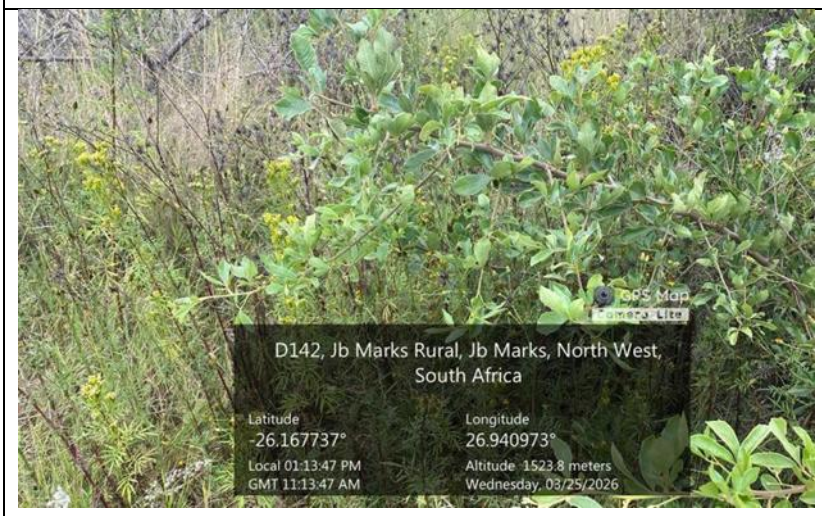
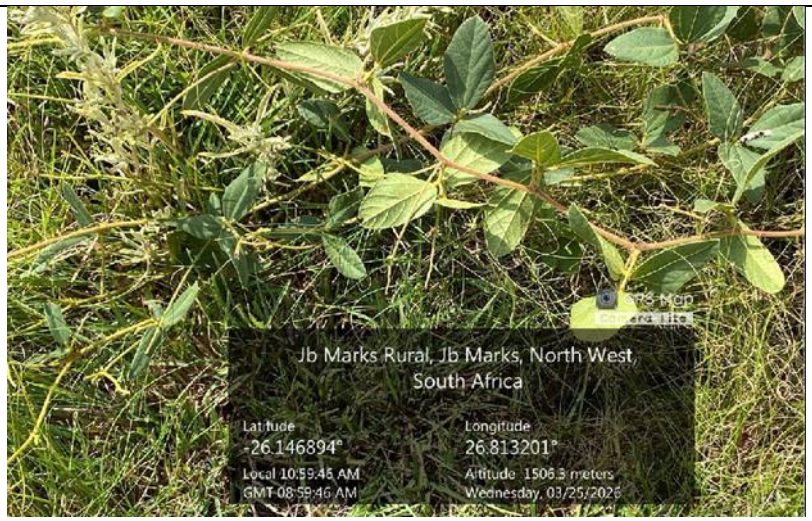
5.3 Recorded Flora

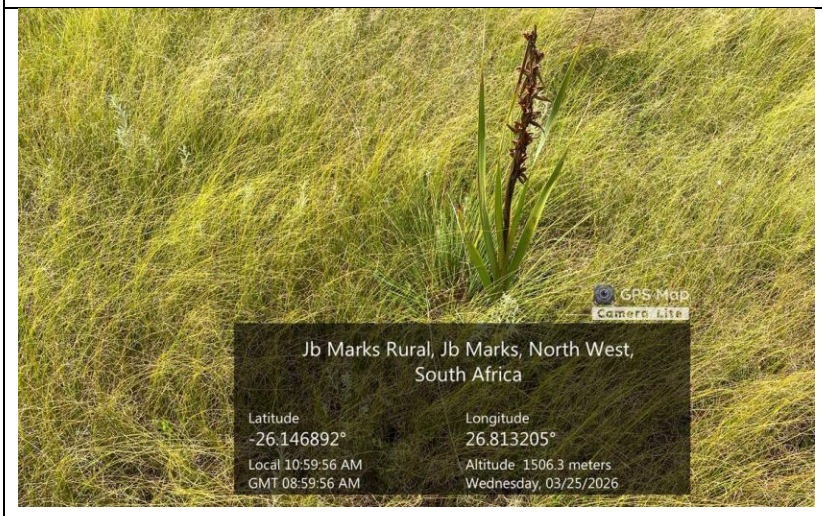
The table below details the flora observed during the walkdown

Table 4: Flora recorded within the servitude

Photographic Record	Description
	**Common name:** Stargrasses / African potato **Scientific name:** Hypoxis spp. **SANBI Status:** Varies by species; many species are listed as Least Concern (LC) **NEMBA Category:** Not listed as an invasive species under NEMBA. **Additional Note:** Some species within the genus Hypoxis, particularly African Potato, are considered medicinally important and may be sensitive to overharvesting in certain areas.
	**Common name:** Bushman's tea / Stoebe **Scientific name:** *Stoebe* spp. **SANBI Status:** Varies by species; many species are listed as Least Concern (LC) **NEMBA Category:** Not listed as an invasive species under NEMBA.
	**Common name:** Silver lasiosiphon **Scientific name:** *Lasiosiphon cuneifolius* subsp. *canaargenteus* (commonly referenced as *Lasiosiphon canoargenteus*) **SANBI Status:** Least Concern (LC) **NEMBA Category:** Not listed as an invasive species under NEMBA.

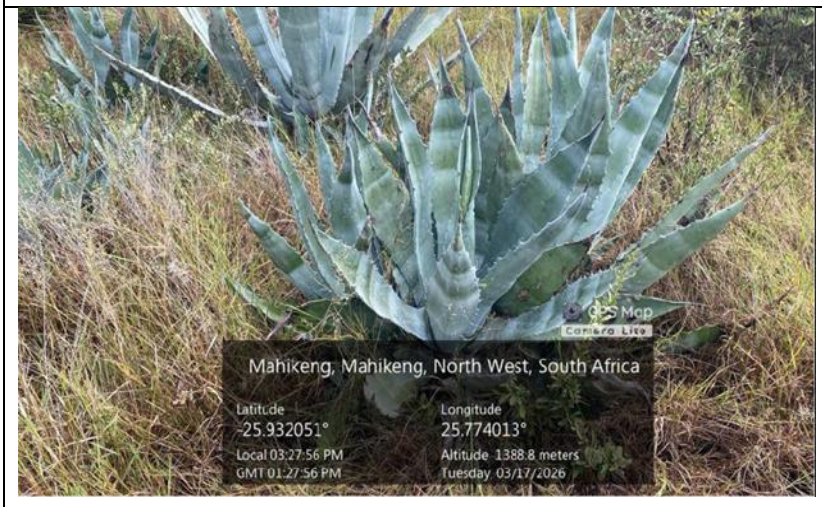
Photographic Record	Description
	**Common name:** Western goldentop **Scientific name:** *Euthamia occidentalis* **SANBI Status:** Not Evaluated (NE) **NEMBA Category:** Not listed as an invasive species under NEMBA.
	**Common name:** Natal panic grass **Scientific name:** Trichanthecium natalense **SANBI Status:** Least Concern (LC) **NEMBA Category**: Not listed as an invasive species under NEMBA.
	**Common name:** Wood small-reed / Bushgrass **Scientific name:** Calamagrostis epigejos **SANBI Status:** Not Evaluated (NE) **NEMBA Category:** Not listed as an invasive species under NEMBA.

Photographic Record	Description
	**Common name:** Toothed pentzia **Scientific name:** Pentzia dentata **SANBI Status:** Least Concern (LC) **NEMBA Category:** Not listed as an invasive species under NEMBA.
	**Common name:** Common currant-rhus **Scientific name:** Searsia pyroides **SANBI Status:** Least Concern (LC) **NEMBA Category:** Not listed as an invasive species under NEMBA
	**Common name**: Wild cowpea **Scientific name:** Vigna vexillata **SANBI Status:** Least Concern (LC) **NEMBA Category:** Not listed as an invasive species under NEMBA.

Photographic Record	Description
	**Common name:** Pineapple flower **Scientific name:** *Eucomis autumnalis* **SANBI Status:** Declining (D) **NEMBA Category:** Not listed as an invasive species under NEMBA. Additional Note: Pineapple flower is a medicinally important species and is under pressure from overharvesting in parts of its natural range.
	**Common name:** Hairy gladiolus **Scientific name:** *Gladiolus sericeovillosus* **SANBI Status:** Least Concern (LC) **NEMBA Category:** Not listed as an invasive species under NEMBA.
	Common name: Red grass **Scientific name:** *Themeda triandra* **SANBI Status:** Least Concern (LC) **NEMBA Category:** Not listed as an invasive species under NEMBA.

Photographic Record	Description
	**Common name:** Grassveld bitterbush **Scientific name:** *Chrysocoma ciliata* **SANBI Status:** Least Concern (LC) **NEMBA Category:** Not listed as an invasive species under NEMBA.
	**Common name:** Eriosema **Scientific name:** Eriosema distinctum **SANBI Status:** Least Concern (LC) **NEMBA Category:** Not listed as an invasive species under NEMBA.
	**Common name:** Eriosema **Scientific name**: *Eriosema distinctum* **SANBI Status:** Least Concern (LC) **NEMBA Category:** Not listed as an invasive species under NEMBA.

Photographic Record	Description
	**Common name:** Southwestern cosmos **Scientific name:** Cosmos parviflorus **SANBI Status:** Not Evaluated (NE) **NEMBA Category:** Not listed as an invasive species under NEMBA.
	**Common name:** Poison bulb **Scientific name:** Boophone disticha **SANBI Status:** Least Concern (LC) **NEMBA Category:** Not listed as an invasive species under NEMBA. Additional Note: Poison bulb is a culturally and medicinally important species commonly occurring in grassland and savanna ecosystems. It is a protected geophyte.
	**Common name:** Daggerpod **Scientific name:** *Phoenicaulis cheiranthoides* **SANBI Status**: Not Evaluated (NE) **NEMBA Category:** Not listed as an invasive species under NEMBA.

Photographic Record	Description
	**Common name:** Vomitdaisies **Scientific name:** Geigeria spp. **SANBI Status:** Varies by species; many species are listed as Least Concern (LC) **NEMBA Category:** Not listed as an invasive species under NEMBA.
	**Common name:** Dwarf elephant-root **Scientific name:** Entada elephantina **SANBI Status:** Least Concern (LC) **NEMBA Category:** Not listed as an invasive species under NEMBA.
	**Common name:** Mescal Ceniza **Scientific name:** Agave colorata **SANBI Status:** Not Evaluated (NE) **NEMBA Category**: Not listed as an invasive species under NEMBA.

Photographic Record	Description
	**Common name:** Buffalo-thorn **Scientific name:** Ziziphus mucronata **SANBI Status**: Least Concern (LC) **NEMBA Category:** Not listed as an invasive species under NEMBA.
	**Common name:** Tanglehead **Scientific name:** Heteropogon contortus **SANBI Status:** Least Concern (LC) **NEMBA Category:** Not listed as an invasive species under NEMBA.
	**Common name:** Rooikrans wattle Scientific name: Acacia cyclops A.Cunn. ex G.Don **SANBI Status:** Not Evaluated (NE) **NEMBA Category:** Category 1b – Invasive species.

5.4 Protected trees and geophytes

The Table below presents all protected tree and geophyte species recorded within the proposed servitude, together with their authorisation requirements. Location of protected species is shown in the maps attached in Appendix III.

Table 5: Recorded protected trees and geophytes

Scientific Name	Common Name	No. of Recorded Individuals	Protective Legislation	Authorisation Requirement
Boscia albitrunca	Shepherd's Tree	1	National Forests Act, 1998 (Act No. 84 of 1998)	DFFE (Forestry Branch) licence required before any protected tree is cut, disturbed, damaged, destroyed, removed or transported
Vachellia erioloba	Camel Thorn	41		
Eucomis autumnalis	Pineapple Flower	7	North West Biodiversity Management Act, 2016 (Act No. 4 of 2016)	Provincial flora permit required prior to picking, removal, relocation, destruction, possession or transport
Gladiolus sericeovillosus	Hairy Gladiolus	3	Gauteng Nature Conservation Ordinance, 1983 (Ordinance No. 12 of 1983)	Provincial flora permit required prior to picking, removal, relocation, destruction, possession or transport
Boophone disticha	Poison Bulb	6		
Hypoxis hemerocallidea	African Potato	7		

5.4.1 Protected trees confirmed during the walkdown

Forty-two protected tree individuals were located and recorded at or immediately adjacent to surveyed positions. All fall within the mixed bushveld unit, and all lie within the western portion of the servitude between the proposed Mahikeng MTS and approximately 13 km eastwards of it.

Two species are represented, both of which are listed on the national List of Protected Tree Species published under the National Forests Act, 1998 (Act No. 84 of 1998):

- *Vachellia erioloba* (Camel Thorn): 41individuals, of which 29 are large (>6 m) and 12 medium (3–6 m), with recorded stem diameters in the 45–80 cm range; and
- *Boscia albitrunca* (Shepherd's Tree): one medium individual (3–6 m), stem diameter in the 45–80 cm range, at 25.681975°S 25.563806°E.

Individual coordinates, size classes and stem dimensions for all records are given Annexure II.

Table 6: Protected tree records grouped by locality

Group	Individuals	Species composition	Size classes	Position on the servitude
PT-1	22	*Vachellia erioloba*	21 large, 1 medium	Densest concentration on the servitude; multiple towers affected
PT-2	12	11 *Vachellia erioloba*, 1 *Boscia*	6 large, 6 medium	Substation approach; includes the sole *Boscia* ***albitrunca*** record

Group	Individuals	Species composition	Size classes	Position on the servitude
		albitrunca		
PT-3	5	*Vachellia erioloba*	3 large, 2 medium	Eastern extent of the protected tree occurrence
PT-4	2	*Vachellia erioloba*	2 large	Isolated pair adjacent to the access track
PT-5	1	*Vachellia erioloba*	1 medium	Single isolated individual

5.4.2 Protected geophytes and Species of Conservation Concern

Twenty-three geophyte individuals across four species were recorded at or adjacent to surveyed positions. Unlike the protected trees, these records are distributed along the central and eastern sections of the servitude and occupy discrete, non-overlapping sections of it, each species occurring in a distinct segment.

Table 7: Geophytes and Species of Conservation Concern confirmed during the walkdown

Species	Common name	Records	Section of servitude occupied	Conservation and statutory status
Eucomis autumnalis	Pineapple Flower	7	26.115–26.149°S; 26.374–26.813°E (western–central)	SANBI Red List: Declining. Provincially protected. Medicinally harvested.
Boophone disticha	Poison Bulb	6	26.160–26.174°S; 27.116–27.297°E (central)	SANBI Red List: Least Concern. Provincially protected. Culturally and medicinally harvested.
Gladiolus sericeovillosus	Hairy Gladiolus	3	26.183–26.185°S; 27.371–27.382°E (eastern)	SANBI Red List: Least Concern. Provincially protected.
Hypoxis hemerocallidea	African Potato	7	26.201–26.215°S; 27.429–27.449°E (eastern terminus)	SANBI Red List: Least Concern. Provincially protected. Heavily harvested medicinally.

None of these four species is listed under the National Forests Act, and none is listed as a Threatened or Protected Species under the NEMBA Threatened or Protected Species Regulations. Their protection is provincial, and the removal, relocation, destruction or possession of any individual therefore requires a provincial flora permit rather than a national licence. This distinction is material: the two permits are issued by different authorities, on different timeframes, and the tree removal licence does not authorise geophyte removal.

5.5 Alien invasive plants

Fifteen listed alien invasive species were confirmed during the walkdown, categorised in terms of the Alien and Invasive Species Regulations promulgated under section 97(1) of the National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004). Thirteen are Category 1b and two are Category 2.

Table 8: Alien species recorded in the study area

Scientific name	Common name	NEMBA Category
Acacia mearnsii	Black wattle	2
Argemone Mexicana	Mexican prickly poppy	1b
Arundo donax	Giant reed	1b
Campuloclinium macrocephalum	Pom-pom weed	1b
Cereus jamacaru	Queen of the night	1b
Cortaderia selloana	Pampas grass	1b
Datura ferox	Large apple thorn	1b
Datura Stramonium	Downy thorn apple	1b
Lantana camara	Bird's brandy; cherry pie; tick-berry	1b
Melia azedarach	Syringa	1b
Opuntia ficus-indica	Prickly pear	1b
Prosopis glandulosa	Honey mesquite	1b in NW and not listed in Gauteng
Ricinus communis	Castor oil plant	2
Solanum mariantanum	Bug weed	1b
Verbena bonariensis	Wild Verbena	1b

5.6 Fauna Species

Apart from the domestic animals noted in various sections of the servitude, the following mammals were recorded in the Mafikeng Game Reserve; *Phacohoerus aethiopicus* (warthog), *Aepyceros melampus* (impala) and *Tragelaphus strepsiceros* (kudu). However, Morris J.W. (2022) indicates that the Reserve supports a representative assemblage of large and medium-sized savanna mammals characteristic of the western Bushveld and Kalahari transition zone. Species recorded within the reserve that may be encountered during construction are indicated in the Table below. Conditions as stated by Mafikeng Game Reserve must therefore be effectively implemented during construction in this area; i.e., Towers 100-105 and 118-121.

English Common Name	Scientific Name
African buffalo	*Syncerus caffer*
Black wildebeest	*Connochaetes gnou*
Common warthog	*Phacohoerus aethiopicus*
Eland	*Taurotragus oryx*
Giraffe	*Giraffa camelopardalis*
Grey duiker	*Sylvicapra grimmia*
Impala	*Aepyceros melampus*
Kudu	*Tragelaphus strepsiceros*

English Common Name	Scientific Name
Oryx(Gemsbok)	*Oryx gazella*
Plains/Burchell`s zebra	*Equus burchelli*
Red hartebeest	*Alcelaphus buselaphus*
Springbok	*Antidorcas marsupialis*
Steenbok	*Raphicerus campestris*
White rhinoceros	*Ceratotherium simum*
Black-backed jackal	*Canis mesomelas*

6 CONCLUSION AND RECOMMENDATIONS

6.1 Conclusion

The walkdown confirms the vegetation communities, fauna and the broad sensitivity pattern on which the Environmental Authorisation was granted. All the protected trees fall within a single vegetation unit at the western end of the servitude, in five identifiable groups. Additionally, the proposed Mahikeng MTS platform falls entirely within mixed bushveld dominated by regenerating Vachellia erioloba. The protected tree species are concentrated in the two groups (PT-1 and PT-2). Four geophyte species were also noted in discrete sections of the servitude. As it is a single season survey, a pre-clearing sweep remains necessary at every position in open grassland, including those where no geophyte was recorded during this walkdown.

During the walkdown survey, Common Warthog (Phacochoerus africanus), Impala (Aepyceros melampus) and Greater Kudu (Tragelaphus strepsiceros) were observed within the Mafikeng Game Reserve. Although no small mammal species were recorded during the walkdown, this is not considered indicative of their absence, as many species are nocturnal and are therefore unlikely to be detected during a daytime survey. A precautionary approach should therefore be adopted during construction, with unnecessary vegetation clearance minimised and all excavation works inspected for trapped or sheltering fauna prior to commencement of activities. The following recommendations must be implemented during the construction and rehabilitation of the proposed development:

- Use existing access tracks in preference to new ones over the full length of the servitude. Where widening is unavoidable, widen on the side away from the recorded protected individuals.
- Apply to the DFFE for a licence under section 15(1) of the National Forests Act for every *Vachellia erioloba* and *Boscia albitrunca* species that cannot be avoided, including all individuals within the substation platform. No cutting, disturbance, damage, destruction, removal or transport may occur before the licence is issued.
- Apply to the relevant provincial conservation authority for a flora permit covering the removal or relocation of *Eucomis autumnalis*, *Boophone disticha*, *Hypoxis hemerocallidea* and *Gladiolus sericeovillosus*.
- Demarcate every retained protected individual within 20 m of the working area before clearing begins, using a visible barrier maintained for the duration of construction.
- Undertake a pre-clearing geophyte sweep at every position within open grassland during the growing season, and implement search and rescue and relocation for individuals recovered. Relocation must be to a pre-identified receptor site of equivalent habitat, secured for the life of the project.

- Restrict clearing to the minimum footprint required for the tower base and working area, and apply selective rather than blanket clearing so that woody species not requiring removal are retained.
- Implement erosion control and rehabilitation at all disturbed positions, with rehabilitation specifications differentiated by vegetation community.
- Implement the alien invasive species management programme over the servitude for the duration of construction and the agreed aftercare period, addressing the mandatory Category 1b control duty.
- Report protected species compliance in the monthly ECO report, including any individual damaged or removed without authorisation and the corrective action taken.

7 REFERENCES

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APPENDIX I CVS

CURRICULUM VITAE

PERSONAL DETAILS:

Name and Surname : Mpho Ramalivhana

Date of Birth : 07 February 1987

Nationality : South African

ID number : 8702075633084

Driver's License : Code C1 (10)

Residential Address : 09 Krinkhout Avenue, Glen Marais, 1619

Cell No : 078 901 4833

Fax-mail No : 086 606 4760

Email : ramalivhanam@naledznaies.co.za or ramalivhanam@gmail.com

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EDUCATION:

Tertiary Qualification:

Institution : University of Limpopo

Degree : Honours in Botany (Plant Ecology)

Year Obtained : 2008

Institution : University of Limpopo

Degree : Bachelor of Science (Botany and Microbiology)

Year Obtained : 2007

High School Qualification:

School : Mudinane Secondary School

Qualification : Matriculation (Grade 12)

Year Obtained : 2004

ACCREDITATIONS:

- South African Council of Natural Scientific Professions (400395/14)
- South African Association of Botanists
- International Association of Impact Assessment South Africa

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LANGUAGE PROFICIENCY:

Language	Speaking	Reading	Writing
English	Excellent	Excellent	Excellent
Tshivenda	Excellent	Excellent	Excellent
Xitsonga	Good	Basic	Basic
Sepedi	Good	Basic	Basic

AREAS OF SPECIALISATION:

- Environmental Impact Assessment (EIA);
- Environmental Management Plan (EMP);
- Environmental Management System (EMS);
- Ecological and Wetland Assessment;
- Stakeholder engagement;
- Environmental Monitoring;
- Environmental Due Diligence;
- Ecological Assessment.

EXPERTISE:

- Environmental monitoring and auditing in construction, industrial and mining areas.
- Environmental consulting experience covering a broad range of projects (mining, energy, infrastructure, water, etc) including EIA, EMP, SIA, and PPP.
- Experience in conducting ecological and wetland assessment
- Experience in undertaking projects to best International management standards such:
  - Equator Principles (EP III);
  - IFC Performance Standards (PS1 – PS 8)

COMPETENCIES:

- Analytical ability;
- Quality oriented;
- Learning oriented;
- Time management;
- Project management; and
- Proactive.

SUMMARY OF KEY QUALIFICATIONS AND KNOWLEDGE:

Mpho Ramalivhana is currently the Senior Environmental Consultant and Managing Director at Naledzani Environmental Services. He is also an associate Environmental Assessment Practitioner at Joan Construction and Projects. He matriculated at Mudinane Secondary School in 2004 with a merit. He then went to the University of Limpopo (Turfloop Campus) to further his career from 2005 to 2007. He obtained a BSc Degree majoring with Microbiology and Botany. Then in 2008 he graduated top of his Honours Botany Class in the field of plant ecology. His honours project involved "*the investigation of the floral composition of the granite hills within the campus of the University of Limpopo*".

He has extensive experience in conducting Environmental Impact Assessment, developing Environmental Management Plans and implementation of Environmental Monitoring Systems. He also has remarkable experience in conducting Environmental Audit, Environmental Due Diligence, Land Quality Assessment, Ecological Assessment and Environmental Site Assessment.

His recent experience has focused upon formal environmental authorisation processes, particularly the management of public participation processes, environmental screening process projects. He has experience in energy related projects, including alternative energy (solar and wind) and power transmission projects as well as projects for social infrastructure including *inter alia* road, housing and waste management. He is familiar in compiling the requisite documentation for Environmental Impact Assessments (EIA) and Environmental Management Plans (EMP). Furthermore, he has experience in undertaking environmental compliance monitoring and the bio-monitoring of water resources.

Prior joining ThomaTree Family, Mpho worked for companies such as Parsons Brinckerhoff Africa (Now WSP), Muondli Consulting, Tshikovha Environmental and Communication Consulting, South African National Biodiversity Institute and Limpopo Department of Economic, Environment and Tourism where his professional working career started.

Mpho is a member of the South African Council of Natural Scientific, Profession (**400395/14**), South African Association of Botanists (SAAB) as well as the International Association of Impact Assessment – South Africa (IAIAsa)

EMPLOYMENT RECORD:

Name of company: **ThomaTree Family**
Position: **Managing Director / Senior Environmental Consultant**
Year: **November 2023 – Current**

Principal duties:

- Undertake:
  - Site visit (baseline data collection)
  - Environmental monitoring
  - Environmental audit
- Peer review of reports, methodologies and proposals
- Project management
- Give environmental inputs into projects within other units
- Undertake business development.

Name of company: **Joan Construction and Projects (Pty) Ltd**
Position: **Associate Environmental Assessment Practitioner**

Principal duties:

- Conduct environmental impact assessment reports for mining and construction projects
- Peer-review for EIA reports conducted by junior employees
- Conduct Wetland and ecological assessments
- Project management

Name of Company: **Tshikovha Environmental and Communication Consulting**
Position: **Senior Environmental Consultant**
Year: **February 2011 to February 2013**

Principal duties:

- Project management and administration.
- Managing, co-ordinating and compiling Basic Assessment Reports, EIAs and EMPs for environmental authorisation as per EIA Regulations.
- Planning and execution of Public Participation Process for a proposed project.
- Technical reviews.
- Proposal (Technical and financial) preparation.
- Client and stakeholder management.
- Assisting with attracting talent and development and mentoring of junior staff.
- Assist in other company project such as SHERQ and Training.

Reasons for leaving:

- Career advancement and need to acquire international experience.

Name of Company: **South African National Biodiversity Institute**
Position: **Data Management Co-ordinator Trainee**
Year: **April 2010 to January 2011**

Principal duties:

- Identify and name plants with current scientific names.
- Collect plants to fill the gaps in distribution data of southern African plants.
- To update the aromatic plants database.
- Mapping the distribution of aromatic plants in Southern Africa using POAC GIS.

ECOLOGICAL ASSESSMENT PROJECTS:

- Terrestrial biodiversity assessment for the proposed mixed development on a portion of the remaining extent of the farm greater Giyani 891 LT within Greater Giyani Local Municipality of the Mopani District in Limpopo Province.
- Terrestrial biodiversity assessment for the demarcation of 500 sites on portion 60 and 61 of the farm Grootvalley 530 KR, Mookgophong Local Municipality, Limpopo Province.
- Terrestrial biodiversity report for the prospecting right application of Rrietput Delwery cc for the prospecting of alluvial diamonds near Windsorton on portion 16, portion 6 (Langverwacht) and portion 7 (Oskamp) of the farm Slyklip south estate 36, Kimberley in Northern Cape.
- Terrestrial ecological assessment (Biomonitoring) for Glencore Merafe Venture: Boshoek Smelter, North West Province.
- Biodiversity assessment for the proposed prospecting right on the farm Zwartrand no 145 IP in the magisterial district of Ventersdorp under North West Province.

- Biodiversity impact assessment for the proposed construction of the new Eskom132/11/6.6kv calcined products and associated 2x132kv loop in and out servitude Westonaria Local Municipality in the Gauteng Province.
- Terrestrial biodiversity report for the proposed deviation of the Westgate Randfontein 10km 132kv servitude within the Randfontein Local Municipality in the Gauteng Province.
- Terrestrial biodiversity report for the proposed township establishment on the remainder of farm Fouriestrust 2525 district Mangaung Metropolitan Municipality, Bloemfontein in the Free State Province
- Terrestrial ecological assessment for the proposed of a lodge on 17 hectares of land in extent on Kheto agricultural farm on the farm Greater Giyani 891 LT within Greater Giyani Local Municipality of the Mopani District, Limpopo Province.
- Terrestrial ecological assessment report for the proposed development of ±5km 88kv power line from Eskom Tweedracht substation to the existing SAR Kameel – SAR Kleinfontein power line within the jurisdiction of City of Tshwane Metropolitan Municipality, Gauteng Province

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REFERENCES:

Name : Ms. Nomasonto Mnisi
Institution : Parsons Brinckerhoff Africa (Pty) Ltd
Position : Senior Environmental Consultant
Relationship : Colleague / Mentor
Contact no. : 078 057 9497
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Name : Mr. Moudy Mudzielwana
Institution : Tshikovha Environmental and Communication Consulting
Position : Managing Director
Relationship : Supervisor
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Name : Mr. Errol Tukiso Moeng
Institution : Limpopo Economic Development, Environment and Tourism
Position : Director: Biodiversity Management Division
Relationship : Mentor
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Khantshi Ndivhuho
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Company	: ThomaTree Family
Name	: Khantshi Ndivhuho
Nationality	: South African
Date of birth	: 20-02-1994
Profession	: Environmentalist & Land Rehabilitation Specialist
Position	: Environmental Specialist
Specialisation	: Project management, integrated Environmental management including Environmental impact assessments, Environmental management Programmes, Botanical investigations, Revegetation and Rehabilitation Programmes, integrated Development planning; public facilitation, Environmental auditing; and public private Partnership advisory services

Start date with ThomaTree Family : 2023 – Permanent full-time staff member

Key experience

Khantshi Ndivhuho of ThomaTree Family (Pty) Ltd Experienced Ecologist with a demonstrated history of working in the environmental services industry. Skilled in Environmental Compliance, Sustainability, Wildlife, Biodiversity and basic GIS. Strong research professional with a Bachelor of Science Hons (BSc) focused in Ecology and Resource Management from University of Venda.
Khantshi Ndivhuho specialises in various environmental disciplines:

His key experience includes:

Project management of various medium and large-scale infrastructural and environmental projects
Environmental advisory services and strategic environmental management including Strategic Environmental Assessments and environmental scans
Environmental impact assessment (EIA) of small, medium and large-scale infrastructure projects, including public participation processes
Environmental management programmes (EMP) for the construction and operational phases of infrastructure developments

Environmental sensitivity and land-use suitability analyses for various projects and biomes
Environmental management programme reports (EMPR) and mining permit applications for borrow areas and mines in terms of the Mineral and Petroleum Resources Development Act of 2002
Vegetation studies for ecologically sensitive areas within the Savannah Biome.
Rehabilitation and landscape plans for various developments, particularly mining operations
Environmental auditing including due-diligence, ISO 14001, legal compliance and waste audits.

Qualifications and Registrations/Certifications

Bachelor of Environmental Science : University of Venda, 2016 Bachelor of Science (Honours) in Environmental: University of Venda, 2018
GIS Certificate : University of Venda, 2016
Member of the South African Council for Natural Scientists, 2019 to date
Registration No : 122250
Professional Member of Land Rehabilitation Society of South Africa 2019 to date
Membership ID : 38540

Career summary

FEB 2017	**UNIVERSAL GREENING ORGANISATION –**	TRAINEE **PROJECT OFFICER**
FEB 2018	**Department of Environmental Affairs**	Intern
JAN 2019 TO	**Neda Resources**	Associate Manager Environmental Services
FEB 2019 TO MAY 2019	**Manganese Metal Company** Kingston Vale	Landfill Environmental Monitoring Committee-Committee Member
MAR 2020 JUNE2020	**Makhado Local Municipality-**	EPWP Coordinator Ap
NOV 2021 MARC 2023	**Green Development Foundation**	Project Manger
APRIL 2023 – NOV 2024	**ThomaTree Family (Pty)Ltd** –	Environmental Specialist
NOV 2024 – TO DATE	Magaki Civils	Environmental Specialist
SEPT 2023 – TO DATE	KIMOPAX	Environmental Specialist

Key projects include:

Ecological Studies/Rehabilitation Programmes

Assistant Project Manager for the proposed Land/Environmental rehabilitation which include Erosion control and clearing of alien species subcontracted by Department of Environmental Affairs, within the Soutpensberg Region, under Makhado Local Municipality of Vhembe District, Limpopo Province.

Ecological Specialist for the Ecological Studies of the proposed development of a resort and associated land uses on the remaining extent of portion 0 of farm Thorndale 73 LT in Bungeni village, within Collins Chabane local municipality under Vhembe District Municipality in Limpopo Province.

Ecological Specialist for the Ecological Studies of the proposed demarcation of 1008 stands on approximately 114.45 HA of the farm Zonnebloem 105 LT 213 LT in Tiyani Magoro Village within Collins Chabane Local Municipality (LIM 345) of Vhembe District Municipality, Limpopo Province.

Ecological Specialist for the Ecological Studies of the proposed demarcation of 100 sites on portion 0 of the farm Ramputa's Location 196 MT (Mabulo village) within Thulamela local Municipality of Vhembe District in Limpopo Province.

Land Rehabilitation Specialist for the Invasive vegetation eradication at EXXARO Tshikondeni as part of Mine hehabilitation within Musina local municipality under Vhembe District municipality in Limpopo province.

Terrestrial ecological assessment report for the proposed refurbishment of the Eskom 132KV of ±120km 400kv power line from Eskom Hydra substation to the Roodekuil substation De-Aar in Northen Cape

Terrestrial ecological assessment report for the proposed construction of the new Eskom400kv of ±37km 400kv power line from Eskom Westgate substation to the Hera Benina substation Westonaria local Municipality, Gauteng Province.

Botanical assessment report for the proposed vegetation management at Droeriver-Proteus 1 400kv , where the powerline traverses the Swartberg world heritage site in the Western Cape Province

Botanical assessment report for the proposed vegetation management at Cappa – Muldersvlei 1 400kv line from tower 316 to tower 330, 278 to tower 270, 316 to tower 330, 250 to tower 257. within the jurisdiction of city of Cape Town municipality, of the Western Cape Province

Botanical assessment report for the proposed vegetation management at all transmission western grid servitudes in the Koeberg Nature reserve properties within the jurisdiction of city of Cape Town municipality, of the Western Cape Province.

Botanical assessment report for the proposed vegetation management at acacia Koeberg 1 400kv line and Acacia Koeberg 2 132kv lines (where the line crosses the PNHS), within the jurisdiction of city of Cape Town municipality, of the Western Cape Province.

Botanical assessment report for the proposed vegetation management at Bacchus-Proteus 1 400kv line from tower 282 to tower 290, tower 308 to tower 311, and tower 311-tower 477 in the Western Cape Province

Botanical assessment report for the proposed vegetation management at Bachuss - Bachuss- Palmiet in the Western Cape Province.

Botanical assessment report for the proposed vegetation management at Droeriver-Proteus 1 400kv , where the powerline traverses the Swartberg world heritage site in the Western Cape Province.

Environmental Impact Assessments (EIA) and S24 G.

Project Manager for the rectification in terms of section 24g of the national environmental management act (act 107 of 1998) (NEMA) for the unlawful commencement of listed activities at **@The Village Lodge** located adjacent to the new traffic college, R536 Paul Kruger road on the portion of farm cork 295, KU Mkhuhlu, Bushbuckridge Local Municipality, Mpumalanga Province.

Project Manager for the conducting Environmental Impact assessment for the proposed Diesel Depot in Nzhelele, Luvhalani Village stand NO. 62C R523, within Makhado local municipality of Vhembe District, Limpopo Province

Project Manager for the scoping and EIA of the proposed Diesel and Petrol Depot in Agricultural Holding 190 Modder East Orchards under Victor Kanyi Municipality of Ehlanzeni District, Limpopo Province.

Project Manager for the Proposed Construction of Shopping Complex, Filling Station and Hardware at Nzhelele Portion 0, Stand NO D210 Musekwa Road Situated at Musekwa Village under Makhado Local Municipality, Vhembe District, Limpopo Province.

Project Manager for the Proposed Construction of a Shopping complex on Stand No. H01 at Musekwa Village on the remainder of the farm Musekwa No.194-MT, Makhado Local Municipality of Vhembe District, Limpopo Province.

Project Manager for the rectification in terms of section 24G of the national environmental management act (act 107 of 1998) (NEMA) for the unlawful commencement of listed activities on portion 0 of the remaining extent of the farm de Gladde Klipkop 763- JU Matoks Limpopo Province

Language capability

	Speaking	**Reading**	**Writing**
Tshivenda	Good	Good	Good
English	Good	Good	Good
Sepedi	Good	Fair	Fair
Swati	Good	Fair	Poor

Reference

NAME	**INSTITUTION**	**RELATIONSHIP**	**CONTACTS**
1.PROF GITARI W. M	UNIVEN	Research Supervisor	076 595 6869
2.MRS MUSHAPHI A	Department of Environmental Affairs	Senior Project manager	082 825 6279
3.RAMALIVHANA M	Naledzani Env	Peer reviewer	078 901 4833
4. Maraganedzha L	ThomaTree Family	Executive Director of Communication	061 426 1440

APPENDIX II WALKDOWN MATRIX

PROJECT NAME:	PLUTO-MAHIKENG 400KV POWERLINE	**DATE:**	24-Apr-26
SPECIALIST	ARCHAEOLOGY	**CONSULTANT**	THOMATREE

TOWER POSITION	DESCRIPTION	RANKING	MITIGATION
Mahikeng Substation 400kV	The presence of Camel Thorn within the proposed substation; Elevated the ecological sensitivity due to the high density and wide distribution of the species.	High Sensitivity	Avoid the Camel Thorn where possible; Apply for the tree permit. Protect remaining trees and promote natural regeneration
Tower 01 to 8, 11-13	High density and wide distribution of Camel Thorn.	High Sensitivity	Avoid the Camel Thorn where possible. If the tree cannot be avoided, a permit must be obtained from the relevant authority in terms of the National Forests Act prior to any disturbance or removal. Protect remaining trees and promote natural regeneration
Tower 9 - 10	Few Camel Thorn.	Medium Sensitivity	
Tower 15 - 37	Transformed due to active cultivated areas.	Low Sensitivity	See Agricultural measures. Carmel thorn recorded near towers 26, 33 and 40. Avoid the Camel Thorn where possible. If the tree cannot be avoided, a permit must be obtained from the relevant authority in terms of the National Forests Act prior to any disturbance or removal.
Tower 38 - 72	Transformed due to active cultivated areas.	Low Sensitivity	See Agricultural measures.
Tower 73 - 121	Secondary grass occurring within previously cultivated areas. Characterised by regenerating vegetation.	Low Sensitivity	**Mitigate.** Demarcate construction boundaries clearly to avoid unnecessary disturbance beyond the approved footprint.
Tower 121 - 122	Highly transformed and disturbed environment: human settlements and road crossings.	Low Sensitivity	
Tower 123 - 174	Secondary grass occurring within previously cultivated areas. Characterised by regenerating vegetation.	Low Sensitivity	**Mitigate.** Demarcate construction boundaries clearly to avoid unnecessary disturbance beyond the approved footprint.
Tower 175 - 189	Transformed due to active cultivated areas.	Low Sensitivity	
Tower 189 - 193	Previously cultivated land which is no longer active and is undergoing natural regeneration	Low Sensitivity	**Mitigate.** Avoid unnecessary disturbance to regenerating vegetation. Prevent further soil degradation and Support rehabilitation and natural succession post-construction.
Tower 193 - 215	Transformed due to active cultivated areas.	Low Sensitivity	See Agricultural measures.
Tower 216 - 222	Secondary succession. Regenerating vegetation that has re-established.	Low Sensitivity	**Mitigate.** Demarcate construction boundaries clearly to avoid unnecessary disturbance beyond the approved footprint.
Tower 222 - 235	Transformed due to active cultivated areas.	Low Sensitivity	See Agricultural measures.

TOWER POSITION	DESCRIPTION	RANKING	MITIGATION
Tower 236 - 237	Previously cultivated land which is no longer active and is undergoing natural regeneration	Low Sensitivity	**Mitigate.** Avoid unnecessary disturbance to regenerating vegetation. Prevent further soil degradation and Support rehabilitation and natural succession post-construction.
Tower 237- 238	Grass and scattered woody species	Low Sensitivity	**Mitigate.** Restrict vegetation clearing to the minimum required footprint for tower bases. Implement a selective clearing approach, avoiding unnecessary removal of woody species.
Tower 238 - 257	Semi-natural savanna system characterised by grass and scattered woody species.	Medium Sensitivity	**Mitigate.** Restrict vegetation clearing to the minimum required footprint for tower bases. Implement a selective clearing approach, avoiding unnecessary removal of woody species.
Tower 258 - 260	Highly transformed-near industrial area.	Low Sensitivity	
Tower 261- 280	Semi-natural savanna system characterised by grass and scattered woody species.	Medium Sensitivity	**Mitigate.** Restrict vegetation clearing to the minimum required footprint for tower bases. Implement a selective clearing approach, avoiding unnecessary removal of woody species.
Tower 280 - 281	Highly disturbed-small-scale mining area.	Low Sensitivity	
Tower 281 - 304	Semi-natural savanna system characterised by grass and scattered woody species.	Medium Sensitivity	**Mitigate.** Restrict vegetation clearing to the minimum required footprint for tower bases. Implement a selective clearing approach, avoiding unnecessary removal of woody species.
Tower 305 - 319	Semi-natural savanna system characterised by grass and scattered woody species.	Medium Sensitivity	**Mitigate.** Restrict vegetation clearing to the minimum required footprint for tower bases. Implement a selective clearing approach, avoiding unnecessary removal of woody species.
Tower 320 - 321	Crosses Wetland	Very High Sensitivity	See Wetland measures
Tower 321 - 339	Transformed due to active cultivated areas.	Low Sensitivity	See Agricultural measures. Pineapple Flower recorded at Tower 326. Provincial flora permit required prior to picking, removal, relocation, destruction, possession or transport.
Tower 340 - 374	Previously cultivated areas-secondary grass and regenerating vegetation.	Low Sensitivity	**Mitigate.** Demarcate construction boundaries clearly to avoid unnecessary disturbance beyond the approved footprint. Pineapple Flower recorded at Towers 354 and 370. Provincial flora permit required prior to picking, removal, relocation, destruction, possession or transport.
Tower 375 - 446	Previously cultivated areas-secondary grass, scattered savanna vegetation and regenerating vegetation.	Medium Sensitivity	**Mitigate.** Limit vegetation clearing to the minimum required footprint (tower bases and conductor clearance only). Apply selective clearing, retaining smaller shrubs and grasses wherever safe. Pineapple Flower recorded at Towers 395, 407, 416 and 428. Provincial flora permit required prior to picking, removal, relocation, destruction, possession or transport.

TOWER POSITION	DESCRIPTION	RANKING	MITIGATION
Tower 445 - 455	Previously cultivated land which is no longer active and is undergoing natural regeneration	Low Sensitivity	**Mitigate.** Avoid unnecessary disturbance to regenerating vegetation. Prevent further soil degradation and support rehabilitation and natural succession post-construction.
Tower 456 - 457	Grass and scattered woody species	Low Sensitivity	**Mitigate.** Align the servitude along existing disturbed areas or access tracks where possible.
Tower 458 - 464	Previously cultivated land which is no longer active and is undergoing natural regeneration	Low Sensitivity	**Mitigate.** Avoid unnecessary disturbance to regenerating vegetation. Prevent further soil degradation and Support rehabilitation and natural succession post-construction
Tower 465 - 499	Grass and scattered woody species	Low Sensitivity	**Mitigate.** Align the servitude along existing disturbed areas or access tracks where possible. Poison Bulb recorded at Tower 496. Provincial flora permit required prior to picking, removal, relocation, destruction, possession or transport.
Tower 500 - 502	Previously cultivated land which is no longer active and is undergoing natural regeneration	Low Sensitivity	**Mitigate.** Avoid unnecessary disturbance to regenerating vegetation. Prevent further soil degradation and Support rehabilitation and natural succession post-construction. Poison Bulb recorded at Tower 502. Provincial flora permit required prior to picking, removal, relocation, destruction, possession or transport.
Tower 503 - 552	Semi-natural savanna system characterised by grass and scattered woody species.	Medium Sensitivity	**Mitigate.** Restrict vegetation clearing to the minimum required footprint for tower bases. Implement a selective clearing approach, avoiding unnecessary removal of woody species. Poison Bulb recorded at Towers 504-505, 529, 532 and 540. Provincial flora permit required prior to picking, removal, relocation, destruction, possession or transport.
Tower 553 - 558	Transformed due to active cultivated areas.	Low Sensitivity	See Agricultural measures. Hairy Gladiolus recorded at Towers 555-558. Provincial flora permit required prior to picking, removal, relocation, destruction, possession or transport.
Tower 559 - 582	Previously cultivated areas-secondary grass, scattered savanna vegetation and regenerating vegetation.	Medium Sensitivity	**Mitigate.** Limit vegetation clearing to the minimum required footprint (tower bases and conductor clearance only). Apply selective clearing, retaining smaller shrubs and grasses wherever safe.
Tower 583	Transformed-within Pluto substation.	Low Sensitivity	
Pluto Substation	Connection of a new powerline into an existing substation	Low Sensitivity	

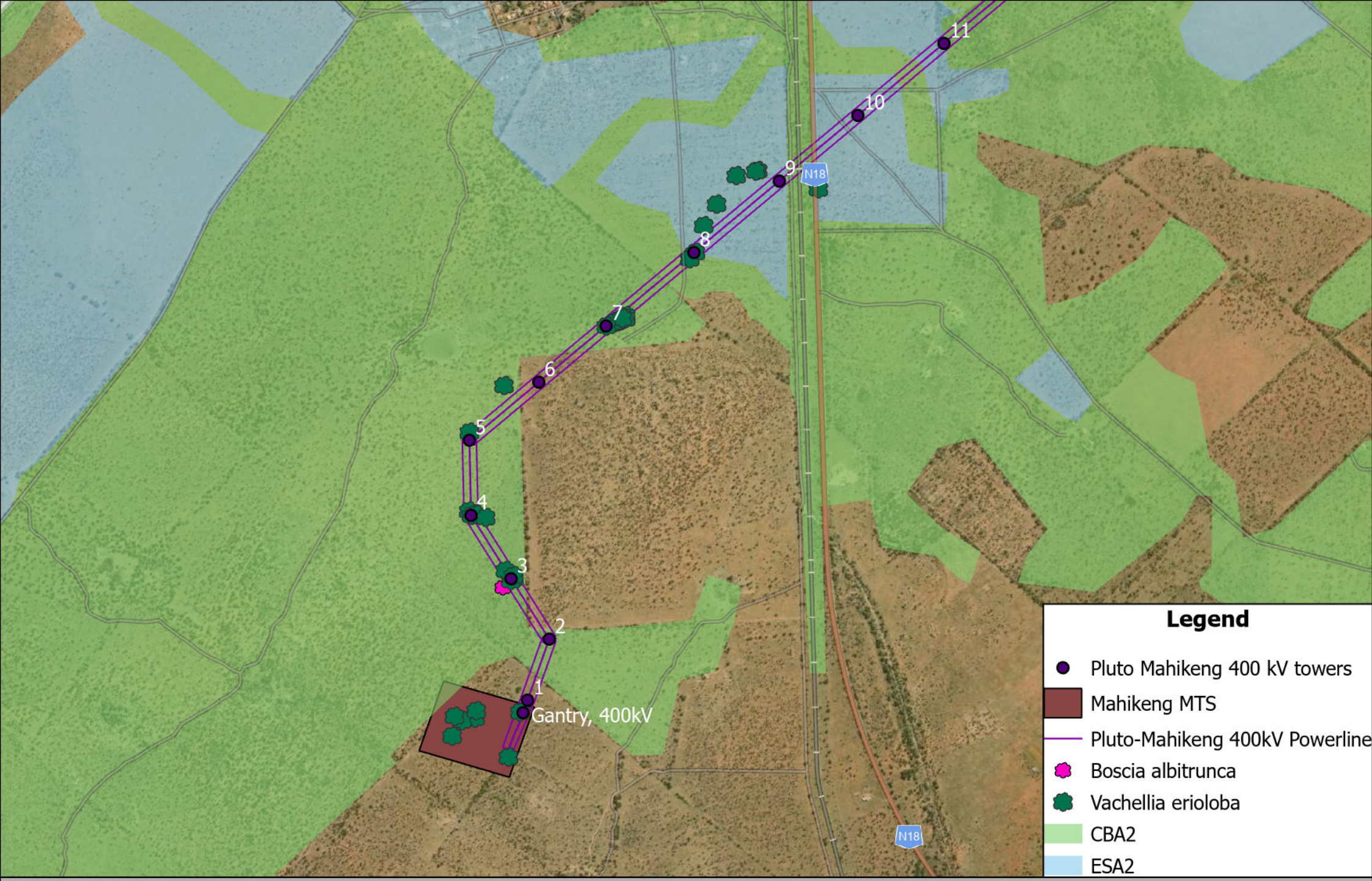
APPENDIX III PROTECTED TREES

No.	Common Name	Scientific Name	Size / Plant Height	Diameter / Circumference	GPS Coordinate (DMS)	Province	Protective Legislation	Authorisation Requirement
1	Shepherd's Tree	Boscia albitrunca	Medium (3-6 m tall)	45-80 cm	25°40'55.11"S 25°33'49.70"E	North West	National Forests Act, 1998 (Act No. 84 of 1998)	DFFE (Forestry Branch) licence required before any protected tree is cut, disturbed, damaged, destroyed, removed or transported
2	Camel Thorn	Vachellia erioloba	Large (>6 m tall)	45-80 cm	25°39'56.70"S 25°34'25.38"E	North West	National Forests Act, 1998 (Act No. 84 of 1998)	DFFE (Forestry Branch) licence required before any protected tree is cut, disturbed, damaged, destroyed, removed or transported
3	Camel Thorn	Vachellia erioloba	Large (>6 m tall)	45-80 cm	25°39'56.80"S 25°34'25.11"E	North West	National Forests Act, 1998 (Act No. 84 of 1998)	DFFE (Forestry Branch) licence required before any protected tree is cut, disturbed, damaged, destroyed, removed or transported
4	Camel Thorn	Vachellia erioloba	Large (>6 m tall)	45-80 cm	25°39'57.42"S 25°34'22.37"E	North West	National Forests Act, 1998 (Act No. 84 of 1998)	DFFE (Forestry Branch) licence required before any protected tree is cut, disturbed, damaged, destroyed, removed or transported
5	Camel Thorn	Vachellia erioloba	Large (>6 m tall)	45-80 cm	25°40'01.43"S 25°34'19.62"E	North West	National Forests Act, 1998 (Act No. 84 of 1998)	DFFE (Forestry Branch) licence required before any protected tree is cut, disturbed, damaged, destroyed, removed or transported
6	Camel Thorn	Vachellia erioloba	Large (>6 m tall)	45-80 cm	25°40'04.43"S 25°34'17.81"E	North West	National Forests Act, 1998 (Act No. 84 of 1998)	DFFE (Forestry Branch) licence required before any protected tree is cut, disturbed, damaged, destroyed, removed or transported
7	Camel Thorn	Vachellia erioloba	Large (>6 m tall)	45-80 cm	25°40'08.19"S 25°34'16.64"E	North West	National Forests Act, 1998 (Act No. 84 of 1998)	DFFE (Forestry Branch) licence required before any protected tree is cut, disturbed, damaged, destroyed, removed or transported
8	Camel Thorn	Vachellia erioloba	Large (>6 m tall)	45-80 cm	25°40'09.07"S 25°34'15.86"E	North West	National Forests Act, 1998 (Act No. 84 of 1998)	DFFE (Forestry Branch) licence required before any protected tree is cut, disturbed, damaged, destroyed, removed or transported
9	Camel Thorn	Vachellia erioloba	Large (>6 m tall)	45-80 cm	25°40'17.01"S 25°34'06.90"E	North West	National Forests Act, 1998 (Act No. 84 of 1998)	DFFE (Forestry Branch) licence required before any protected tree is cut, disturbed, damaged, destroyed, removed or transported
10	Camel Thorn	Vachellia erioloba	Large (>6 m tall)	45-80 cm	25°40'17.62"S 25°34'06.01"E	North West	National Forests Act, 1998 (Act No. 84 of 1998)	DFFE (Forestry Branch) licence required before any protected tree is cut, disturbed, damaged, destroyed, removed or transported
11	Camel Thorn	Vachellia erioloba	Large (>6 m tall)	45-80 cm	25°40'17.46"S 25°34'06.89"E	North West	National Forests Act, 1998 (Act No. 84 of 1998)	DFFE (Forestry Branch) licence required before any protected tree is cut, disturbed, damaged, destroyed, removed or transported
12	Camel Thorn	Vachellia erioloba	Large (>6 m tall)	45-80 cm	25°40'17.96"S 25°34'05.58"E	North West	National Forests Act, 1998 (Act No. 84 of 1998)	DFFE (Forestry Branch) licence required before any protected tree is cut, disturbed, damaged, destroyed, removed or transported
13	Camel Thorn	Vachellia erioloba	Large (>6 m tall)	45-80 cm	25°40'18.08"S 25°34'05.21"E	North West	National Forests Act, 1998 (Act No. 84 of 1998)	DFFE (Forestry Branch) licence required before any protected tree is cut, disturbed, damaged, destroyed, removed or transported
14	Camel Thorn	Vachellia erioloba	Large (>6 m tall)	45-80 cm	25°40'17.95"S 25°34'05.34"E	North West	National Forests Act, 1998 (Act No. 84 of 1998)	DFFE (Forestry Branch) licence required before any protected tree is cut, disturbed, damaged, destroyed, removed or transported
15	Camel Thorn	Vachellia erioloba	Medium (3-6 m tall)	45-80 cm	25°40'17.41"S 25°34'06.40"E	North West	National Forests Act, 1998 (Act No. 84 of 1998)	DFFE (Forestry Branch) licence required before any protected tree is cut, disturbed, damaged, destroyed, removed or transported
16	Camel Thorn	Vachellia erioloba	Medium (3-6 m tall)	45-80 cm	25°40'53.85"S 25°33'51.24"E	North West	National Forests Act, 1998 (Act No. 84 of 1998)	DFFE (Forestry Branch) licence required before any protected tree is cut, disturbed, damaged, destroyed, removed or transported
17	Camel Thorn	Vachellia erioloba	Large (>6 m tall)	45-80 cm	25°40'54.15"S 25°33'50.83"E	North West	National Forests Act, 1998 (Act No. 84 of 1998)	DFFE (Forestry Branch) licence required before any protected tree is cut, disturbed, damaged, destroyed, removed or transported
18	Camel Thorn	Vachellia erioloba	Large (>6 m tall)	45-80 cm	25°38'04.80"S 25°41'19.29"E	North West	National Forests Act, 1998 (Act No. 84 of 1998)	DFFE (Forestry Branch) licence required before any protected tree is cut, disturbed, damaged, destroyed, removed or transported
19	Camel Thorn	Vachellia erioloba	Large (>6 m tall)	45-80 cm	25°38'04.70"S 25°41'18.34"E	North West	National Forests Act, 1998 (Act No. 84 of 1998)	DFFE (Forestry Branch) licence required before any protected tree is cut, disturbed, damaged, destroyed, removed or transported
20	Camel Thorn	Vachellia erioloba	Large (>6 m tall)	45-80 cm	25°39'59.29"S 25°34'33.86"E	North West	National Forests Act, 1998 (Act No. 84 of 1998)	DFFE (Forestry Branch) licence required before any protected tree is cut, disturbed, damaged, destroyed, removed or transported
21	Camel Thorn	Vachellia erioloba	Large (>6 m tall)	45-80 cm	25°40'26.83"S 25°33'49.86"E	North West	National Forests Act, 1998 (Act No. 84 of 1998)	DFFE (Forestry Branch) licence required before any protected tree is cut, disturbed, damaged, destroyed, removed or transported
22	Camel Thorn	Vachellia erioloba	Large (>6 m tall)	45-80 cm	25°40'33.36"S 25°33'45.01"E	North West	National Forests Act, 1998 (Act No. 84 of 1998)	DFFE (Forestry Branch) licence required before any protected tree is cut, disturbed, damaged, destroyed, removed or transported
23	Camel Thorn	Vachellia erioloba	Medium (3-6 m tall)	45-80 cm	25°40'44.37"S 25°33'44.93"E	North West	National Forests Act, 1998 (Act No. 84 of 1998)	DFFE (Forestry Branch) licence required before any protected tree is cut, disturbed, damaged, destroyed, removed or transported

24	Camel Thorn	Vachellia erioloba	Medium (3-6 m tall)	45-80 cm	25°40'45.02"S 25°33'45.33"E	North West	National Forests Act, 1998 (Act No. 84 of 1998)	DFFE (Forestry Branch) licence required before any protected tree is cut, disturbed, damaged, destroyed, removed or transported
25	Camel Thorn	Vachellia erioloba	Medium (3-6 m tall)	45-80 cm	25°40'44.87"S 25°33'45.97"E	North West	National Forests Act, 1998 (Act No. 84 of 1998)	DFFE (Forestry Branch) licence required before any protected tree is cut, disturbed, damaged, destroyed, removed or transported
26	Camel Thorn	Vachellia erioloba	Large (>6 m tall)	45-80 cm	25°40'45.32"S 25°33'47.30"E	North West	National Forests Act, 1998 (Act No. 84 of 1998)	DFFE (Forestry Branch) licence required before any protected tree is cut, disturbed, damaged, destroyed, removed or transported
27	Camel Thorn	Vachellia erioloba	Large (>6 m tall)	45-80 cm	25°40'52.72"S 25°33'50.05"E	North West	National Forests Act, 1998 (Act No. 84 of 1998)	DFFE (Forestry Branch) licence required before any protected tree is cut, disturbed, damaged, destroyed, removed or transported
28	Camel Thorn	Vachellia erioloba	Large (>6 m tall)	45-80 cm	25°40'53.46"S 25°33'51.20"E	North West	National Forests Act, 1998 (Act No. 84 of 1998)	DFFE (Forestry Branch) licence required before any protected tree is cut, disturbed, damaged, destroyed, removed or transported
29	Camel Thorn	Vachellia erioloba	Large (>6 m tall)	45-80 cm	25°37'41.29"S 25°39'40.98"E	North West	National Forests Act, 1998 (Act No. 84 of 1998)	DFFE (Forestry Branch) licence required before any protected tree is cut, disturbed, damaged, destroyed, removed or transported
30	Camel Thorn	Vachellia erioloba	Large (>6 m tall)	45-80 cm	25°37'42.06"S 25°39'41.58"E	North West	National Forests Act, 1998 (Act No. 84 of 1998)	DFFE (Forestry Branch) licence required before any protected tree is cut, disturbed, damaged, destroyed, removed or transported
31	Camel Thorn	Vachellia erioloba	Large (>6 m tall)	45-80 cm	25°38'04.98"S 25°41'21.38"E	North West	National Forests Act, 1998 (Act No. 84 of 1998)	DFFE (Forestry Branch) licence required before any protected tree is cut, disturbed, damaged, destroyed, removed or transported
32	Camel Thorn	Vachellia erioloba	Large (>6 m tall)	45-80 cm	25° 41' 15.93" S, 25° 33' 42.6" E	North West	National Forests Act, 1998 (Act No. 84 of 1998)	DFFE (Forestry Branch) licence required before any protected tree is cut, disturbed, damaged, destroyed, removed or transported
33	Camel Thorn	Vachellia erioloba	Large (>6 m tall)	45-80 cm	25° 41' 13.16" S, 25° 33' 42.95" E	North West	National Forests Act, 1998 (Act No. 84 of 1998)	DFFE (Forestry Branch) licence required before any protected tree is cut, disturbed, damaged, destroyed, removed or transported
34	Camel Thorn	Vachellia erioloba	Large (>6 m tall)	45-80 cm	25° 41' 12.39" S, 25° 33' 45.98" E	North West	National Forests Act, 1998 (Act No. 84 of 1998)	DFFE (Forestry Branch) licence required before any protected tree is cut, disturbed, damaged, destroyed, removed or transported
35	Camel Thorn	Vachellia erioloba	Large (>6 m tall)	45-80 cm	25° 41' 12.56" S, 25° 33' 52.12" E	North West	National Forests Act, 1998 (Act No. 84 of 1998)	DFFE (Forestry Branch) licence required before any protected tree is cut, disturbed, damaged, destroyed, removed or transported
36	Camel Thorn	Vachellia erioloba	Large (>6 m tall)	45-80 cm	25° 41' 18.88" S, 25° 33' 50.48" E	North West	National Forests Act, 1998 (Act No. 84 of 1998)	DFFE (Forestry Branch) licence required before any protected tree is cut, disturbed, damaged, destroyed, removed or transported
37	Camel Thorn	Vachellia erioloba	Large (>6 m tall)	45-80 cm	25° 41' 13.42" S, 25° 33' 45.81" E	North West	National Forests Act, 1998 (Act No. 84 of 1998)	DFFE (Forestry Branch) licence required before any protected tree is cut, disturbed, damaged, destroyed, removed or transported
38	Camel Thorn	Vachellia erioloba	Large (>6 m tall)	45-80 cm	25° 41' 13.77" S, 25° 33' 43.99" E	North West	National Forests Act, 1998 (Act No. 84 of 1998)	DFFE (Forestry Branch) licence required before any protected tree is cut, disturbed, damaged, destroyed, removed or transported
39	Camel Thorn	Vachellia erioloba	Medium (3-6 m tall)	45-80 cm	25°38'05.39"S 25°41'19.75"E	North West	National Forests Act, 1998 (Act No. 84 of 1998)	DFFE (Forestry Branch) licence required before any protected tree is cut, disturbed, damaged, destroyed, removed or transported
40	Camel Thorn	Vachellia erioloba	Medium (3-6 m tall)	45-80 cm	25°38'05.29"S 25°41'18.89"E	North West	National Forests Act, 1998 (Act No. 84 of 1998)	DFFE (Forestry Branch) licence required before any protected tree is cut, disturbed, damaged, destroyed, removed or transported
41	Camel Thorn	Vachellia erioloba	Medium (3-6 m tall)	45-80 cm	25°37'37.37"S 25°37'48.08"E	North West	National Forests Act, 1998 (Act No. 84 of 1998)	DFFE (Forestry Branch) licence required before any protected tree is cut, disturbed, damaged, destroyed, removed or transported
42	Camel Thorn	Vachellia erioloba	Medium (3-6 m tall)	45-80 cm	25°40'18.52"S 25°34'04.18"E	North West	National Forests Act, 1998 (Act No. 84 of 1998)	DFFE (Forestry Branch) licence required before any protected tree is cut, disturbed, damaged, destroyed, removed or transported
43	Pineapple Flower	Eucomis autumnalis	20-60 cm	20-50 cm	26° 8'48.82"S 26°48'47.52"E	North West	North West Biodiversity Management Act, 2016 (Act No. 4 of 2016)	Provincial flora permit required prior to picking, removal, relocation, destruction, possession or transport
44	Pineapple Flower	Eucomis autumnalis	20-60 cm	20-50 cm	26° 8'57.91"S 26°45'36.03"E	North West	North West Biodiversity Management Act, 2016 (Act No. 4 of 2016)	Provincial flora permit required prior to picking, removal, relocation, destruction, possession or transport
45	Pineapple Flower	Eucomis autumnalis	20-60 cm	20-50 cm	26° 8'56.49"S 26°43'21.96"E	North West	North West Biodiversity Management Act, 2016 (Act No. 4 of 2016)	Provincial flora permit required prior to picking, removal, relocation, destruction, possession or transport
46	Pineapple Flower	Eucomis autumnalis	20-60 cm	20-50 cm	26° 8'27.66"S 26°39'58.14"E	North West	North West Biodiversity Management Act, 2016 (Act No. 4 of 2016)	Provincial flora permit required prior to picking, removal, relocation, destruction, possession or transport

47	Pineapple Flower	Eucomis autumnalis	20-60 cm	20-50 cm	26° 6'55.12"S 26°33'46.09"E	North West	North West Biodiversity Management Act, 2016 (Act No. 4 of 2016)	Provincial flora permit required prior to picking, removal, relocation, destruction, possession or transport
48	Pineapple Flower	Eucomis autumnalis	20-60 cm	20-50 cm	26° 7'12.64"S 26°29'40.75"E	North West	North West Biodiversity Management Act, 2016 (Act No. 4 of 2016)	Provincial flora permit required prior to picking, removal, relocation, destruction, possession or transport
49	Pineapple Flower	Eucomis autumnalis	20-60 cm	20-50 cm	26° 6'53.73"S 26°22'26.68"E	North West	North West Biodiversity Management Act, 2016 (Act No. 4 of 2016)	Provincial flora permit required prior to picking, removal, relocation, destruction, possession or transport
50	Hairy Gladiolus	Gladiolus sericeovillosus	20-60 cm	20-50 cm	26°11'4.81"S 27°22'56.71"E	Gauteng	Gauteng Nature Conservation Ordinance, 1983 (Ordinance No. 12 of 1983)	Provincial flora permit required prior to picking, removal, relocation, destruction, possession or transport
51	Hairy Gladiolus	Gladiolus sericeovillosus	20-60 cm	20-50 cm	26°11'2.28"S 27°22'38.68"E	Gauteng	Gauteng Nature Conservation Ordinance, 1983 (Ordinance No. 12 of 1983)	Provincial flora permit required prior to picking, removal, relocation, destruction, possession or transport
52	Hairy Gladiolus	Gladiolus sericeovillosus	20-60 cm	20-50 cm	26°10'58.67"S 27°22'15.12"E	Gauteng	Gauteng Nature Conservation Ordinance, 1983 (Ordinance No. 12 of 1983)	Provincial flora permit required prior to picking, removal, relocation, destruction, possession or transport
53	Poison Bulb	Boophone disticha	15-40 cm	10-30 cm	26°10'25.29"S 27°17'47.57"E	Gauteng	Gauteng Nature Conservation Ordinance, 1983 (Ordinance No. 12 of 1983)	Provincial flora permit required prior to picking, removal, relocation, destruction, possession or transport
54	Poison Bulb	Boophone disticha	15-40 cm	10-30 cm	26°10'11.91"S 27°15'42.37"E	Gauteng	Gauteng Nature Conservation Ordinance, 1983 (Ordinance No. 12 of 1983)	Provincial flora permit required prior to picking, removal, relocation, destruction, possession or transport
55	Poison Bulb	Boophone disticha	15-40 cm	10-30 cm	26°10'6.50"S 27°15'3.05"E	Gauteng	Gauteng Nature Conservation Ordinance, 1983 (Ordinance No. 12 of 1983)	Provincial flora permit required prior to picking, removal, relocation, destruction, possession or transport
56	Poison Bulb	Boophone disticha	15-40 cm	10-30 cm	26° 9'35.10"S 27° 9'16.22"E	Gauteng	Gauteng Nature Conservation Ordinance, 1983 (Ordinance No. 12 of 1983)	Provincial flora permit required prior to picking, removal, relocation, destruction, possession or transport
57	Poison Bulb	Boophone disticha	15-40 cm	10-30 cm	26° 9'42.51"S 27° 8'34.37"E	Gauteng	Gauteng Nature Conservation Ordinance, 1983 (Ordinance No. 12 of 1983)	Provincial flora permit required prior to picking, removal, relocation, destruction, possession or transport
58	Poison Bulb	Boophone disticha	15-40 cm	10-30 cm	26° 9'54.98"S 27° 6'57.41"E	Gauteng	Gauteng Nature Conservation Ordinance, 1983 (Ordinance No. 12 of 1983)	Provincial flora permit required prior to picking, removal, relocation, destruction, possession or transport
59	African Potato	Hypoxis hemerocallidea	15-40 cm	10-30 cm	26°12'52.94"S 27°26'55.71"E	Gauteng	Gauteng Nature Conservation Ordinance, 1983 (Ordinance No. 12 of 1983)	Provincial flora permit required prior to picking, removal, relocation, destruction, possession or transport
60	African Potato	Hypoxis hemerocallidea	15-40 cm	10-30 cm	26°12'49.12"S 27°26'47.91"E	Gauteng	Gauteng Nature Conservation Ordinance, 1983 (Ordinance No. 12 of 1983)	Provincial flora permit required prior to picking, removal, relocation, destruction, possession or transport
61	African Potato	Hypoxis hemerocallidea	15-40 cm	10-30 cm	26°12'45.17"S 27°26'38.30"E	Gauteng	Gauteng Nature Conservation Ordinance, 1983 (Ordinance No. 12 of 1983)	Provincial flora permit required prior to picking, removal, relocation, destruction, possession or transport
62	African Potato	Hypoxis hemerocallidea	15-40 cm	10-30 cm	26°12'39.09"S 27°26'30.07"E	Gauteng	Gauteng Nature Conservation Ordinance, 1983 (Ordinance No. 12 of 1983)	Provincial flora permit required prior to picking, removal, relocation, destruction, possession or transport
63	African Potato	Hypoxis hemerocallidea	15-40 cm	10-30 cm	26°12'29.36"S 27°26'16.34"E	Gauteng	Gauteng Nature Conservation Ordinance, 1983 (Ordinance No. 12 of 1983)	Provincial flora permit required prior to picking, removal, relocation, destruction, possession or transport
64	African Potato	Hypoxis hemerocallidea	15-40 cm	10-30 cm	26°12'17.02"S 27°26'5.52"E	Gauteng	Gauteng Nature Conservation Ordinance, 1983 (Ordinance No. 12 of 1983)	Provincial flora permit required prior to picking, removal, relocation, destruction, possession or transport
65	African Potato	Hypoxis hemerocallidea	15-40 cm	10-30 cm	26°12'3.73"S 27°25'43.23"E	Gauteng	Gauteng Nature Conservation Ordinance, 1983 (Ordinance No. 12 of 1983)	Provincial flora permit required prior to picking, removal, relocation, destruction, possession or transport

APPENDIX IV MAPS

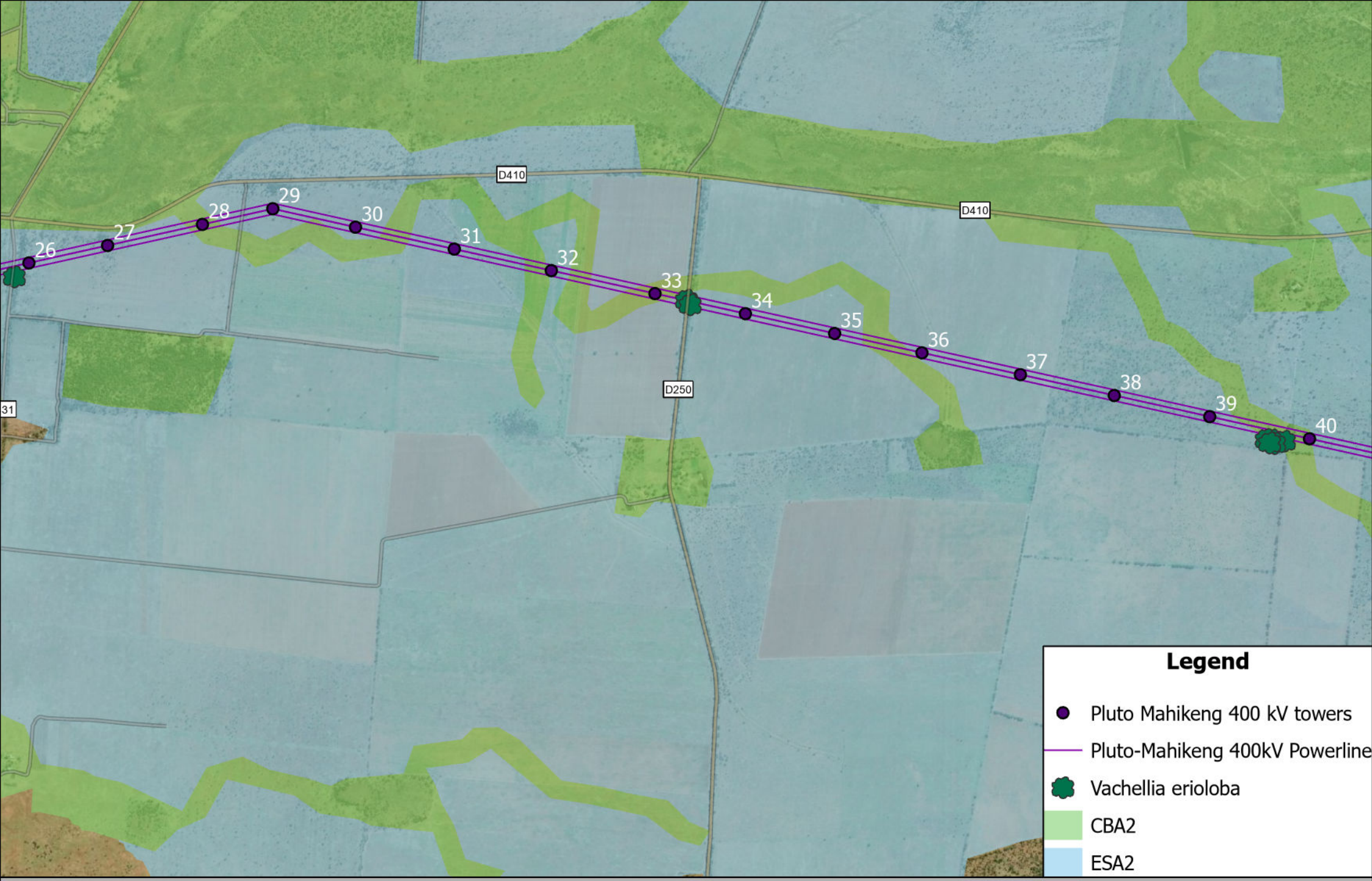


Pluto-Mahikeng 400 KV Powerline

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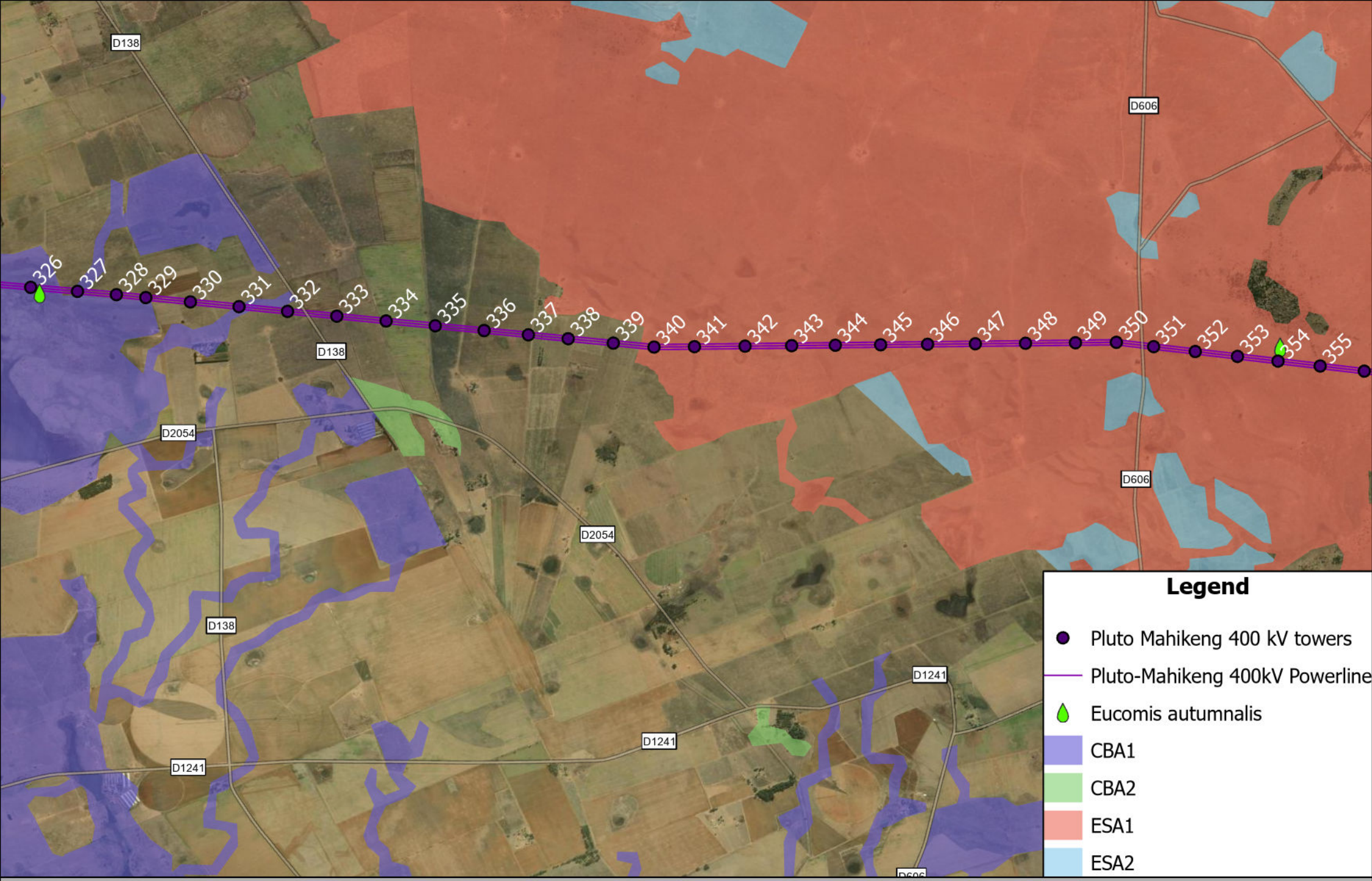
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Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, © OpenStreetMap contributors, and the GIS User Community, Source: Esri, Vantor, Earthstar Geographics, and the GIS User Community



Pluto-Mahikeng 400 KV Powerline

Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, © OpenStreetMap contributors, and the GIS User Community, Source: Esri, Vantor, Earthstar Geographics, and the GIS User Community

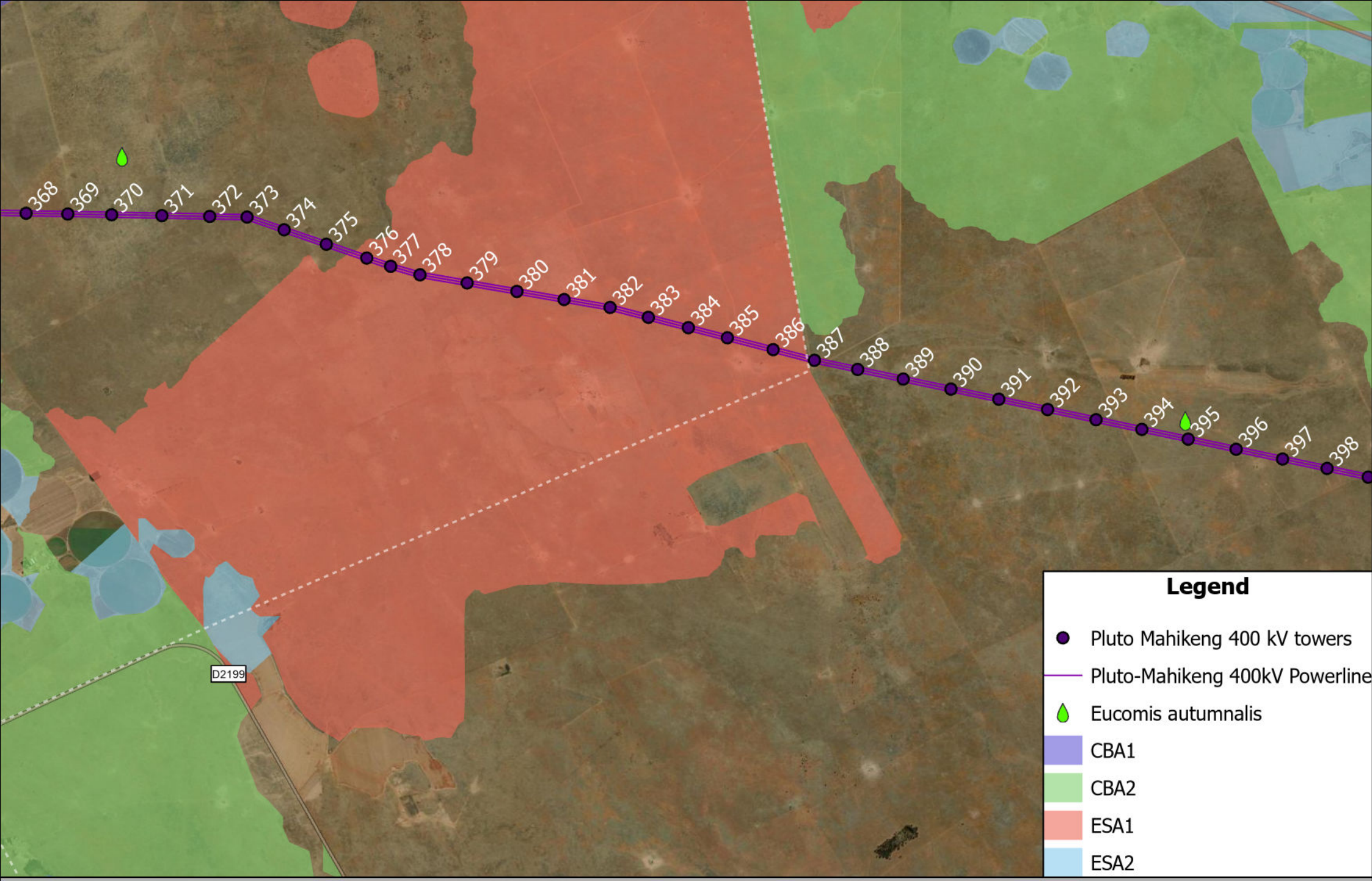


Pluto-Mahikeng 400 KV Powerline

N

0 500 1,000 2,000 m

Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, © OpenStreetMap contributors, and the GIS User Community, Source: Esri, Vantor, Earthstar Geographics, and the GIS User Community

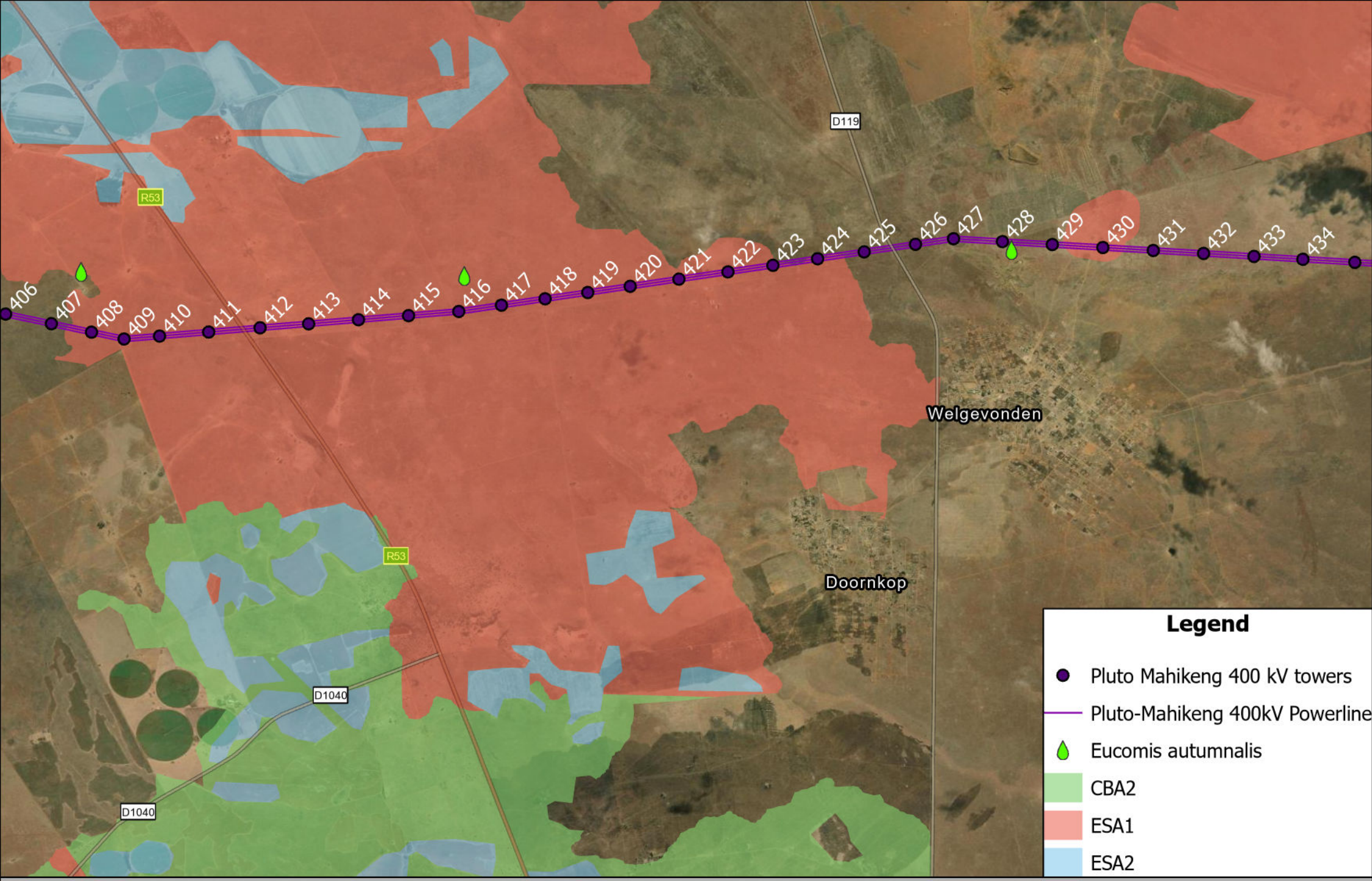


Pluto-Mahikeng 400 KV Powerline

N

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Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, © OpenStreetMap contributors, and the GIS User Community, Source: Esri, Vantor, Earthstar Geographics, and the GIS User Community

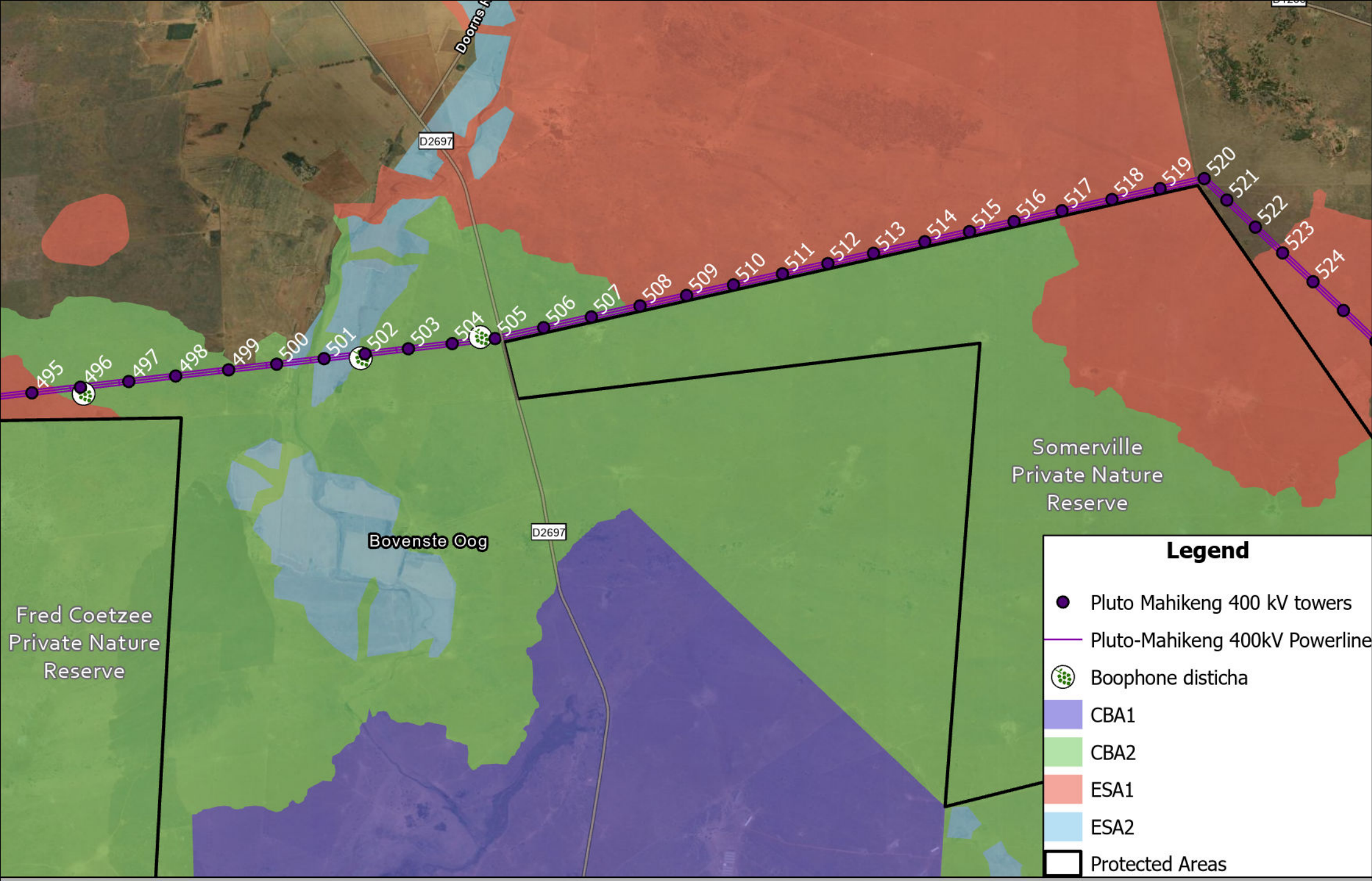


Pluto-Mahikeng 400 KV Powerline

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Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, © OpenStreetMap contributors, and the GIS User Community, Source: Esri, Vantor, Earthstar Geographics, and the GIS User Community



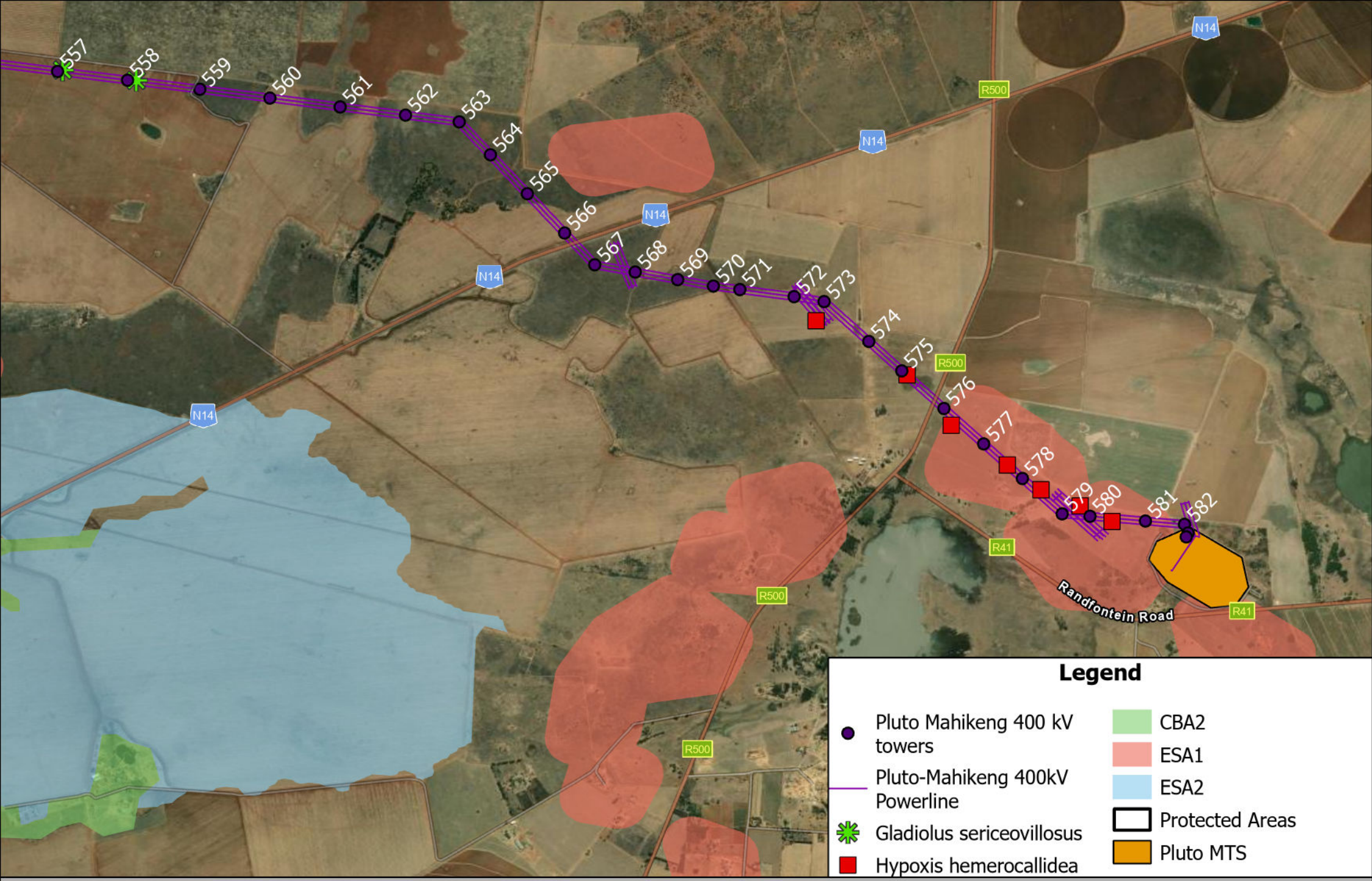
Pluto-Mahikeng 400 KV Powerline

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Pluto-Mahikeng 400 KV Powerline

N

0 370 740 1,480 m

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