DRAFT BASIC ASSESSMENT REPORT FOR THE PROPOSED ESKOM KEKANA SUBSTATION AND LOOP IN & OUT POWERLINE SERVITUDES, WITHIN THE JURISDICTION OF THE CITY OF TSHWANE MUNICIPALITY, GAUTENG PROVINCE

NSOVO REF: F005-24

DATE

JUNE 2024

PREPARED FOR

ESKOM HOLDINGS SOC LIMITED

PREPARED BY

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DOCUMENT CONTROL		
Draft Basic Assessment Report	June 2024	Version 000

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PROJECT TITLE:

DRAFT BASIC ASSESSMENT REPORT FOR THE PROPOSED ESKOM KEKANA SUBSTATION AND LOOP IN & OUT POWERLINE SERVITUDES, WITHIN THE JURISDICTION OF THE CITY OF TSHWANE MUNICIPALITY, GAUTENG PROVINCE.

QUALITY CONTROL:

Report:	Compiled By:	Peer Reviewed by:
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Document Approval and Quality Review

	Document Approval Munyadziwa Rikhotso  June 2024 Cert. Sci. Nat: 300076/15 (SACNASP) EAP (EAPASA): Registration No.: 2019/1156

EXECUTIVE SUMMARY

Eskom Holdings (SOC) Limited generates, transmits, and distributes electricity in South Africa. Currently, Eskom generates approximately 95% of the country's electricity through supply and demand requirements. However, due to challenges such as aging infrastructure and new developments, South Africa frequently experiences power outages. This challenge impacts South Africa on a national, provincial, and local scale.

Given the above, Eskom proposes servitude acquisition to establish a 100 m by 150 m 132/22kV Kekana Substation and a 132kV double circuit loop-in-loop-out (LILO) powerline.

In terms of the National Environmental Management Act, 1998 (Act 107 of 1998) (as amended) (NEMA) and the December 2014 EIA Regulations GN.983 and GN.985 as amended, the proposed project triggers activities that require Eskom to obtain an Environmental Authorisation (EA) through a Basic Assessment (BA) process from the National Department of Environment Forestry and Fisheries (DFFE).

- This is an application for Environmental Authorisation for listed activities as contained in Government Notice Regulations (GN R), GN 983, and GNR 985.

Eskom appointed Nsovo Environmental Consulting as an Independent Consultant following Regulation 13 of GN R982 of 04 December 2014, as amended, to undertake the Basic Assessment process to assess, identify, and mitigate impacts associated with the project.

The proposed substation will cover an extent of 1.5hectares (100 m by 150 m), and the associated 132kV powerline to the existing Pelly-Temba main 132kV line will be approximately 7 km long, connecting to the new Kekana Substation. Eskom has proposed three alternative servitude routes and substation areas for the assessment to select the most suitable servitude and site for the proposed land use. For Basic Assessment purposes, a 1km wide corridor has been proposed as a study area that includes the loop-in loop-out powerline. The proposed substation site and powerline servitudes are located within 1 km adjacent to each other and within the same vegetation type.

The project area is located approximately 50 km North of Pretoria. The residential area of Hammanskraal West and the existing Pelly-Temba Main 132kV line are located east of the proposed site. No Conservation Areas were identified within a 15km radius of the site; however, as per the South African Conservation Areas Database (SACAD,2023), the site is located approximately 30km north of Magalies Biosphere Reserve.

The proposed Kekana 132/22kV substation is designed to meet the region's growing electricity demands. It will play a critical role in enhancing the reliability and stability of the power supply network. The distribution line will ensure efficient power transfer to and from the substation, supporting the area's overall energy infrastructure.

Furthermore, the proposed project will trigger Section 21 water use activities; as such, Nsovo will lodge a Water Use Licence Application (WULA) on behalf of Eskom in terms of Section 40 of the National Water Act, 1998 (Act No. 36 of 1998) (NWA) to obtain a General Authorisation (GA) from the Department of Water and Sanitation (DWS) before the commencement of any listed Section 21 water use activity. The application will be lodged immediately after the Environmental Authorisation.

The Basic Assessment Report (BAR) has been compiled in line with the requirements of Appendix 1 of the EIA Regulations, and it contains the following information:

- The details and expertise of the Environmental Assessment Practitioner (EAP) who prepared the report.
- The location of the proposed activities.
- A plan which locates the proposed activities to be undertaken.
- Description of the scope of the proposed project, including the listed activities and the associated structures and infrastructures.
- Description of Policy and Legislative content within which the development is located and an explanation of how the development complies with and responds to the legislation and policy context.
- A motivation for the need and desirability of the proposed development.
- A full description of the process followed to reach the proposed preferred activities, site, and proposed location of the development footprint within the site.
- A plan of study for undertaking the environmental impact assessment process to be conducted; and
- An undertaking under oath or affirmation by the EAP.

The Basic Assessment has been undertaken in accordance with the provisions of the NEMA and the EIA Regulations of December 2014 as amended, as well as associated legislations. The alternatives have been proposed, and the primary objective was to assess their suitability and the impact of the proposed development. This report has comprehensively addressed the baseline environment, which forms the backdrop of the impact assessment. The information provided has been supported by specialist studies that were undertaken and attached hereto. No fatal flaws or highly significant impacts were identified that would necessitate substantial redesign or termination of the project. From the EAP's and the Specialists' point of view, there is no reason why the development should not proceed if the recommendations made in this report and the specialists' reports are adhered to.

Furthermore, the following is recommended by the EAP:

- That of the three substation sites and associated powerlines, Alternative 1, be authorized.

- That a final walk-down be undertaken to identify sensitivities. This should be conducted before the commencement of construction and form part of the conditions of the EA. The "walk down" of the final powerline servitude and all other activity areas, access roads, construction camps, etc, should document all sites, features, and objects to propose adjustments to the route and avoid as much impact on heritage as possible.
- All mitigation measures the specialist makes must be considered during the construction and operational phases.
- Eskom must ensure hydrocarbons and all biofuels during construction are stored at a designated area away from the project area to minimise the risk of contamination of the triggered water resources. The hydrocarbons/biofuels should also be handled properly in some concrete to cement lined with berm walls to avoid any seepage into the groundwater resources and to ensure that the design of the storage area is such that any leakages or spillages can be contained.
- The Generic Environmental Management Programme, attached hereto as Appendix D, is a living document that guides the proposed project's construction, operational, and decommissioning phases. This EMPr should always be complied with, and audits should be conducted during the construction of the proposed powerline.
- All permits, Licences, and other authorisations required by any Act, Policy, Law, or By-Law must be obtained before the construction of the powerline. A Water Use Licence Application must be lodged with the DWS, and construction of the proposed project should only commence once the Licence has been approved by the DWS. All recommendations made by the DWS must be adhered to.
- Upon approval, the layout plan must include the construction area.
- All authorities, such as the DFFE, DWS, and the City of Tshwane, should be notified prior to the commencement of construction activities.
- The Eskom Process for Securing Land and Rights by Eskom in Appendix I must be adhered to during negotiations of the servitude rights with the affected households and landowners.
- Implement an integrated waste management approach based on waste minimisation that incorporates reduction, reuse, and disposal where appropriate.
- Unnecessary clearance of vegetation must be avoided at all costs. Vegetation clearance should be limited to the approved footprint. Sensitive seepage zones and wetlands must be avoided for tower placement. This must be identified by an ecologist during the walk-down assessment. It is further recommended that no towers be placed within the 30m buffer of any wetland or river.
- As per Section 19(1) of the NWA, Eskom must ensure that any pollution incident(s) (of a water resource) originating from the proposed project shall be reported to the Regional Office of the DWS within 24 hours.

The undertaking of this Basic Assessment process has fully complied with the requirements of the NEMA and associated regulations. Therefore, the proposed project should be authorised so that it can proceed.

Comments received following this 30-day review period will be addressed, and the Report will be Finalised for submission to the DFFE.

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LIST OF ACRONYMS AND ABBREVIATIONS

BA	Basic Assessment
CBA	Critical Biodiversity Areas
DEA	Department of Environmental Affairs
DFFE	Department of Forestry Fisheries and the Environment
DWS	Department of Water and Sanitation
EA	Environmental Authorisation
NFEPA	National Freshwater Ecosystem Priority Areas
EIA	Environmental Impact Assessment
EMPr	Environmental Management Programme
I&APs	Interested and Affected Parties
km	Kilometers
kV	Kilovolts
NEMA	National Environmental Management Act
NEFPA	National Freshwater Ecosystem Priority Areas
PPP	Public Participation Process
SACAA	South African Civil Aviation Authority
CAA	Civil Aviation Authority
SANRAL	South African National Resource Agency
SAHRA	South African Heritage Resources Agency
SOC	State Owned Company
SSV	Site Sensitivity Verification
WULA	Water Use Licence Application

1 INTRODUCTION

Nsovo Environmental Consulting (hereafter referred to as Nsovo) has been appointed by Eskom Holdings SOC Limited (hereafter referred to as Eskom) to conduct the environmental authorisation process for the proposed servitude acquisition for the Eskom Kekana substation and double circuit loop-in loop-out powerline. The proposed project will be located outside an urban area, in Hammanskraal within the jurisdiction of the City of Tshwane Metropolitan (wards 49 & 95), Gauteng province.

The project aims to acquire servitude to establish essential electrical infrastructure, comprising a new Kekana substation and loop-in-loop-out line, to enhance power distribution and reliability in the designated area of Hammaskraal. The project objectives are as follows:

Servitude Acquisition

- Obtain necessary land servitudes for the proposed Kekana 132/22kV substation, occupying an area of 100x150 meters.
- Acquire a 31-meter-wide servitude for the approximate 7-kilometer 132kV double-circuit loop-in-loop-out line from the existing Pelly-Temba Main 132kV line to the Kekana substation.

Establishment of Substation:

- A new 132/22kV Kekana substation, equipped with 2 × 20MVA transformers to meet power demand requirements. This includes the installation of 4 × 22kV feeder bays to facilitate efficient power distribution.

Loop-in-loop-out Infrastructure:

- Establish connectivity between the new Kekana substation and the existing Pelly-Temba Main 132kV line through loop-in-loop-out lines. Utilize 2 × 7m 132kV TERN conductors on a double-circuit structure to connect the substations for seamless power transmission.

The proposed project will include the following infrastructures:

- 132kV line through double circuit loop-in-loop-out
- 132/22kV Substation with a footprint of 100x150m
- 4x22KV feeder bays for transformer connection
- 2 x 20MVA transformers to step up and down the voltage.
- Switch gear to control electrical equipment inside the substation.
- Fencing and Perimeter to secure the substation.
- A laydown area
- An Operation and Maintenance(O&M) Building
- Access road for construction and maintenance

Eskom supplies electricity to Hammanskraal area (via the Temba Main substation, Pelly substation, Dilopye Substation, Sterkwater Substation, Makapanstad Substation, Mathibestad, and Babelegi Substation). However, these substations

are not sufficient to electrify all the stands within the area. With this pressing challenge, Eskom is proposing to develop a new Kekana substation to increase the capacity. Additionally, the current electricity network in the Hammanskraal area does not have spare capacity to accommodate future developments and commercial industries. This project has been raised to acquire servitude for the new Kekana 132/22kV substation and 132kV loop-in loop-out powerline.

The proposed project will, directly and indirectly, improve the standard of living for Hammanskraal communities as it will create employment opportunities, generate income, and contribute to the local economy as well as the country.

The proposed project triggers the NEMA EIA listed activities as contained Government Notice Regulations (GN R) GN 983, and GNR 985. as such, Eskom is required to undertake a Basic Assessment (BA) process and obtain an Environmental Authorisation (EA) in line with the requirements of the EIA Regulations of 2014 as amended, promulgated in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA).

In terms of chapter 6 of EIA Regulations 2024 as amended the public participation will be undertaken to inform and consult all the Interested and Affected Parties (I&Aps) of the proposed project. The I&Aps database will be available to register all the stakeholders. A draft report will be available for comments and all the comments will be addressed.

Furthermore, the proposed project triggers Section 21 water use activities; as such, Water Use Licence Application (WULA) in terms of Section 40 of the National Water Act, 1998 (Act No. 36 of 1998) (NWA) will be undertaken to obtain a Water Use Licence (WUL) from the Department of Water and Sanitation (DWS).

Subsequently, Eskom appointed Nsovo Environmental Consulting (hereafter referred to as Nsovo) to undertake the necessary authorisation process to comply with the legislation requirement. The project proponent is Eskom Holdings SOC Limited; the Competent Authority (CA) is the National Department of Forestry, Fisheries, and the Environment (DFFE).

2 DETAILS OF THE ENVIRONMENTAL ASSESSMENT PRACTITIONER

Eskom has appointed Nsovo as the independent EAP for the proposed project and meets the general requirements stipulated in regulations 13(1) of the NEMA 2014 EIA Regulations, as amended. Nsovo is, therefore:

- Independent and objective.
- Has expertise in conducting EIAs.
- Ensures compliance with the EIA Regulations.
- Considers all relevant factors relating to the application; and
- Provides full disclosure to the applicant, relevant environmental authority, specialists, and Interested and Affected Parties (I&APs).

Table 1 below provides details of the EAP and relevant experience. Detailed Curriculum Vitae and Qualifications are attached as **Appendix B**.

Table 1: Details of the Environmental Assessment Practitioner (EAP)

Name of Company	Nsovo Environmental Consulting
Person Responsible	Rejoice Aphane
Professional Registration	EAP (EAPASA): Reg 2019/1277
Telephone Number	087 803 9294
Fax Number	086 602 8821
Email	rejoice@nsovo.co.za
Qualifications and Experience	BA Environmental Management **Eleven years of experience**
Project Related Expertise	In terms of project-related expertise, the Environmental Assessment Practitioner has undertaken projects of varying scale and complexity, including: • Integrated Environmental Impact Assessment and WULA for Exxaro discard dump expansion (2021). • Integrated Environmental Impact Assessment and WULA for Bushveld Vanchem Expansion project (2021). • Integrated Environmental Impact Assessment and WULA for Grammatikos Vogelfontein project (2021). • EIA for the proposed Tubatse Strengthening Phase 1 – Senakangwedi B integration within the jurisdiction of Greater Tubatse Local Municipality in Limpopo Province 2018). • EIA for the proposed Maphutha-Witkop powerline in Limpopo Province (2018).

2.1 Details Of The Applicant

The Applicant for the proposed powerline is Eskom Holdings SOC Limited. Their details are included in Table 2 below.

Table 2: Details of the Applicant

Name of Company	Eskom Holdings SOC Limited

Physical Address	Eskom Academy of Learning, Dale Road, Midrand, 1685
Postal Address	Private/Bag X13 Dale Road, Midrand
Contact Person and Project Manager	Yolisa Zokufa
Email address	ZokufaYO@eskom.co.za

2.2 DETAILS OF THE SPECIALIST

To adequately identify and assess potential environmental impacts associated with the proposed project, Nsovo has appointed specialist sub-consultants listed in Table 3 below to conduct various specialist impact assessments. The DFFE Screening tool, EAP site assessment, and judgment based on available information and experience informed the specialist requirement.

Table 3: List of specialist sub-consultants

Specialist Study	Company	Name of Specialist
Heritage Impact Assessment	(AHSA) Archaeological and Heritage Services Africa (Pty) Ltd	Edward J. Matenga
Agricultural Impact Assessment	Nsovo Environmental Consulting	Tshiamo Setsipane
Paleontology Assessment	Marion Bamford Consulting	Prof Marion Bamford
Aquatic & Wetlands Study	Watermakers	Willem Lubbe
Visual Impact Assessment	Outline Landscape Architects	Kathrin Hammel-Louw
Terrestrial Impact Assessment	Mboneni Ecological Services (Pty) Ltd	Avhafarei Phamphe
Defence	Nsovo Environmental Consulting	Munyadziwa Rikhotso
Civil	Nsovo Environmental Consulting	Munyadziwa Rikhotso

3 DESCRIPTION OF THE LOCALITY AND THE PROPERTY ON WHICH THE ACTIVITY IS TO BE UNDERTAKEN AND THE LOCATION OF THE ACTIVITY ON THE PROPERTY

This section describes the proposed location of the substation, powerline, and associated infrastructure. The main aim is to provide the environmental aspects of the proposed development's location and a description of the surroundings.

3.1 Locality Of The Proposed Project

3.2 Province

The proposed project will be undertaken within the Gauteng Province, in Hammaskraal. However, Hammaskraal is a Trans-Provincial Region that is functionally connected and spreads along 4 provinces. It sits close to the border between Gauteng, Northwest, Limpopo, and Mpumalanga.

3.3 Municipal Wards

The proposed substation and powerline fall within Wards 49 and 95 of the City of Tshwane Metropolitan Municipality.

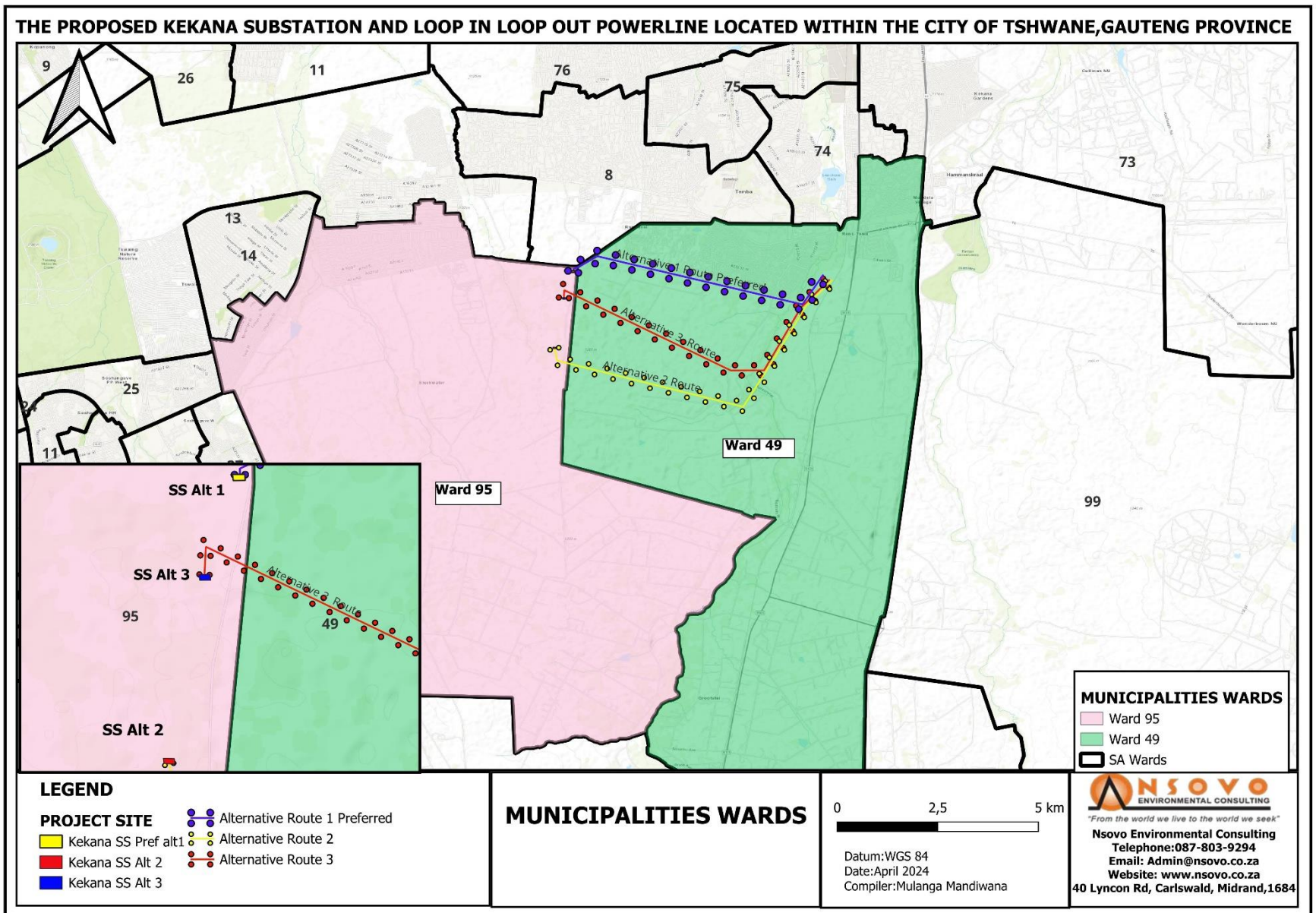


Figure 1: Municipal Wards within the proposed substation powerline route.

3.4 AFFECTED FARMS

The farms affected by the proposed development, as well as the 21-digit Surveyor General Code, are listed in **Appendix E.** The GPS location coordinates for the proposed substation and power line alternatives are shown in table below.

Table 4: Coordinates of the proposed Substation.

Kekana Substation Alternative 1(Preferred)

Location	Farm/Portions	Coordinates	Surveyor General Codes
Point A	ZANDKOP ZYN LAAGTE 108 JR	25°24'53.95"S 28°12'42.89"E	T0JR00000000010800000
Point B	ZANDKOP ZYN LAAGTE 108 JR	25°24'53.90"S 28°12'45.84"E	T0JR00000000010800000
Point C	ZANDKOP ZYN LAAGTE 108 JR	25°24'55.40"S 28°12'43.09"E	T0JR00000000010800000
Point D	ZANDKOP ZYN LAAGTE 108 JR	25°24'55.33"S 28°12'45.94"E	T0JR00000000010800000

Kekana Substation Alternative 2

Location	Farm/Portions	Coordinates	Surveyor General Codes
Point A	STERKWATER 106 JR	25°26'1.97"S 28°12'26.33"E	T0JR00000000010600000
Point B	STERKWATER 106 JR	25°26'2.04"S 28°12'28.94"E	T0JR00000000010600000
Point C	STERKWATER 106 JR	25°26'3.21"S 28°12'26.54"E	T0JR00000000010600000
Point D	STERKWATER 106 JR	25°26'3.28"S 28°12'29.06"E	T0JR00000000010600000

Kekana Substation Alternative 3

Location	Farm/Portions	Coordinates	Surveyor General Codes
Point A	ZANDKOP ZYN LAAGTE 108 JR	25°25'19.29"S 28°12'35.07"E	T0JR00000000010800000

Point B	ZANDKOP ZYN LAAGTE 108 JR	25°25'17.93"S 28°12'34.77"E	T0JR00000000010800000
Point C	ZANDKOP ZYN LAAGTE 108 JR	25°25'17.86"S 28°12'37.52"E	T0JR00000000010800000
Point D	ZANDKOP ZYN LAAGTE 108 JR	25°25'19.26"S 28°12'37.70"E	T0JR00000000010800000

Table 5: Coordinates of the proposed loop-in loop-out Alternatives.

Alternative Route 1(Preferred)

Location	Farm/Portions	Coordinates	Surveyor General Codes
Start	HAMMASKRAAL 112 JR	25°24'59.16"S 28°16'25.55"E	T0JR00000000011200000
Middle	HAMMASKRAAL 112 JR	25°25'4.86"S 28°14'42.61"E	T0JR00000000011200000
End	ZANDKOP ZYN LAAGTE 108 JR	25°24'54.08"S 28°12'44.51"E	T0JR00000000010800000

Alternative Route 2

Location	Farm/Portions	Coordinates	Surveyor General Codes
Start	HAMMASKRAAL 112 JR	25°25'4.12"S 28°16'35.74"E	T0JR00000000011200000
Middle	RONDAVEL ALIAS SCHOONGEZICHT	25°26'56.01"S 28°15'13.59"E	T0JR00000000011200000
End	STERKWATER 106 JR	25°26'4.80"S 28°12'28.21"E	T0JR00000000010600000

Alternative Route 3

Location	Farm/Portions	Coordinates	Surveyor General Codes
Start	HAMMASKRAAL 112 JR	25°25'2.80"S 28°16'32.57"E	C0870014000000 6200000
Middle	RONDAVEL ALIAS SCHOONGEZICHT	25°26'23.05"S 28°15'4.11"E	T0JR00000000010900000

Location	Farm/Portions	Coordinates	Surveyor General Codes
End	ZANDKOP ZYN LAAGTE 108 JR	25°25'19.06"S 28°12'35.54"E	T0JR00000000010800000

3.5 LOCALITY MAP

Figure below is a locality map representing the proposed study area at a scale of 1:50 000. The proposed study area is primarily residential.

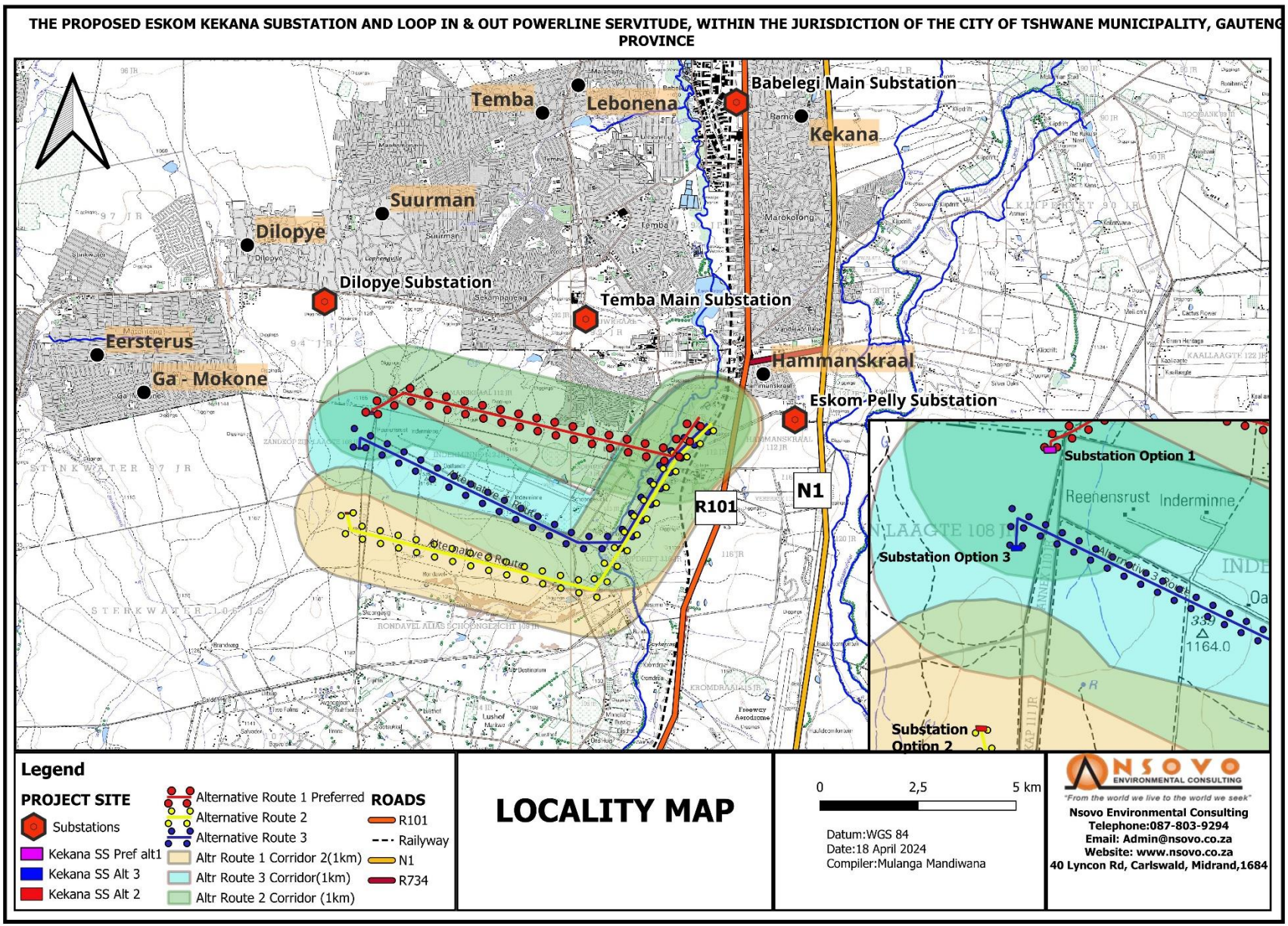


Figure 2: Project locality map

3.6 SURROUNDING LAND USES

This section describes the land uses within and around the proposed study area.

3.6.1 ECONOMIC ACTIVITIES

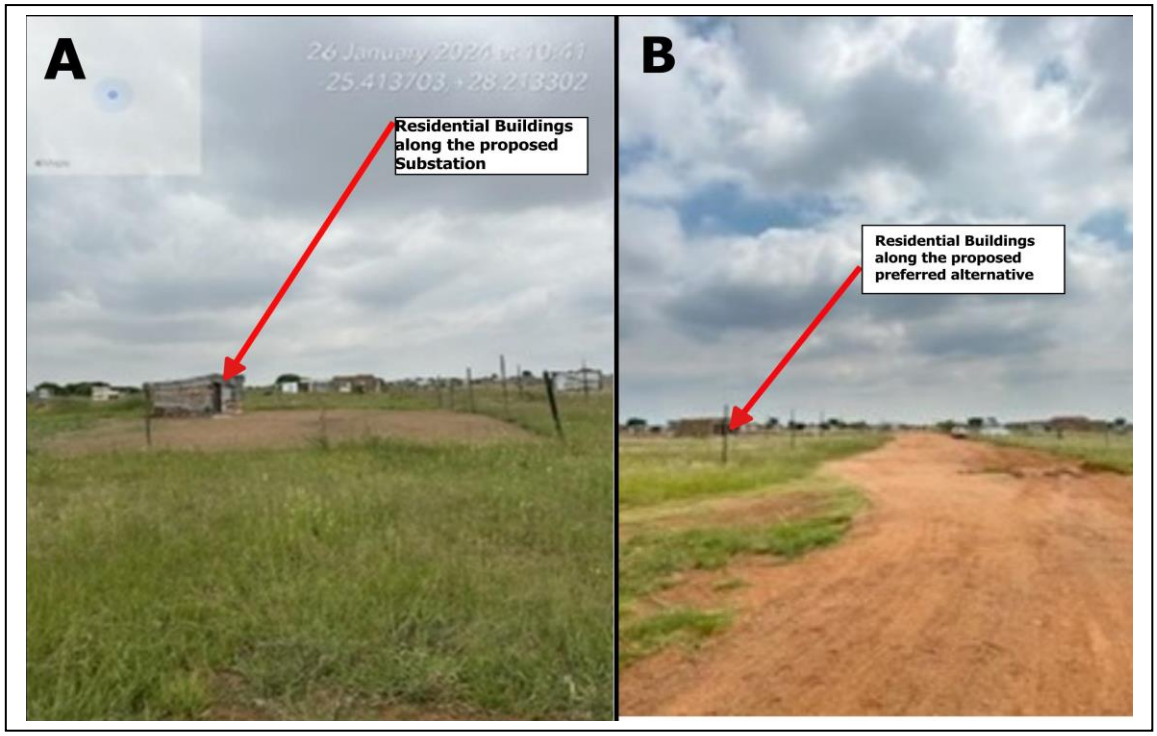
The primary economic sector in the City of Tshwane Metropolitan Municipality is agriculture. Other activities include community services, construction, mining, electricity, finance, manufacturing, transport, and trade.

The immediate north of the study area is characterised by subsistence farming practices within the yards. The subsistence farming practices include vegetable production and livestock farming. The mid and south sections of the study area are characterised by large-scale farming enterprises cultivating soybeans under irrigation.

Photograph 1: Agriculture Activities within the proposed

3.6.2 RESIDENTIAL

The properties within the study area are residential, as depicted in the photographs labelled A and B below. Residential areas/Villages affected by the proposed development include Hammaskraal West.



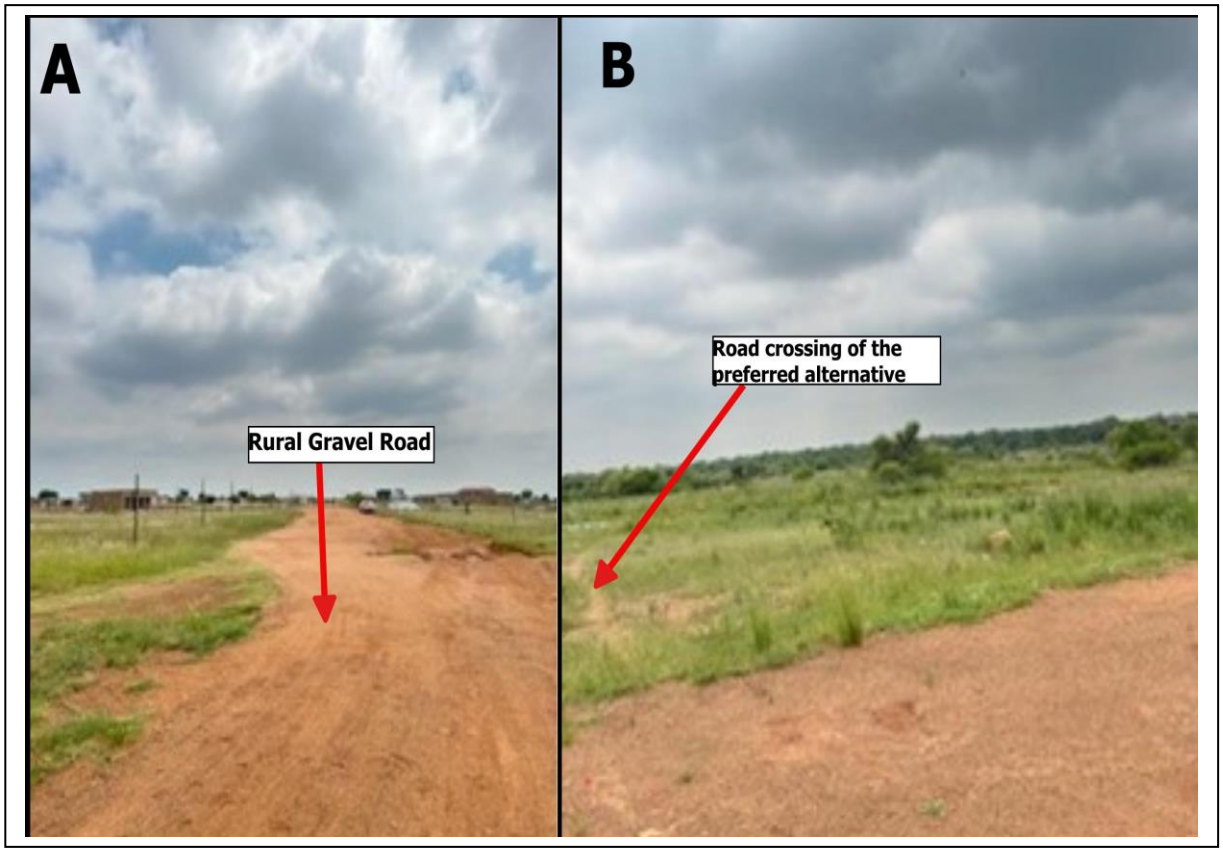
Photograph 2: Kekana Substation area (site visit 26 January 2024)

3.7 SURFACE INFRASTRUCTURE

This section describes the surface infrastructures within the study area, including the road network, existing substations, and powerlines.

3.7.1 ROAD NETWORK

The primary access road to the proposed study area is via the R101 (Old warmbath road) and R734 joining from the N1. These access roads are the direct access to the study areas. Other gravel roads within the residential areas will be used to access the powerline servitude. Figure 3 and photographs A and B present the road network.



Photograph 3: Rural gravel roads (Site visit 26 January 2024)

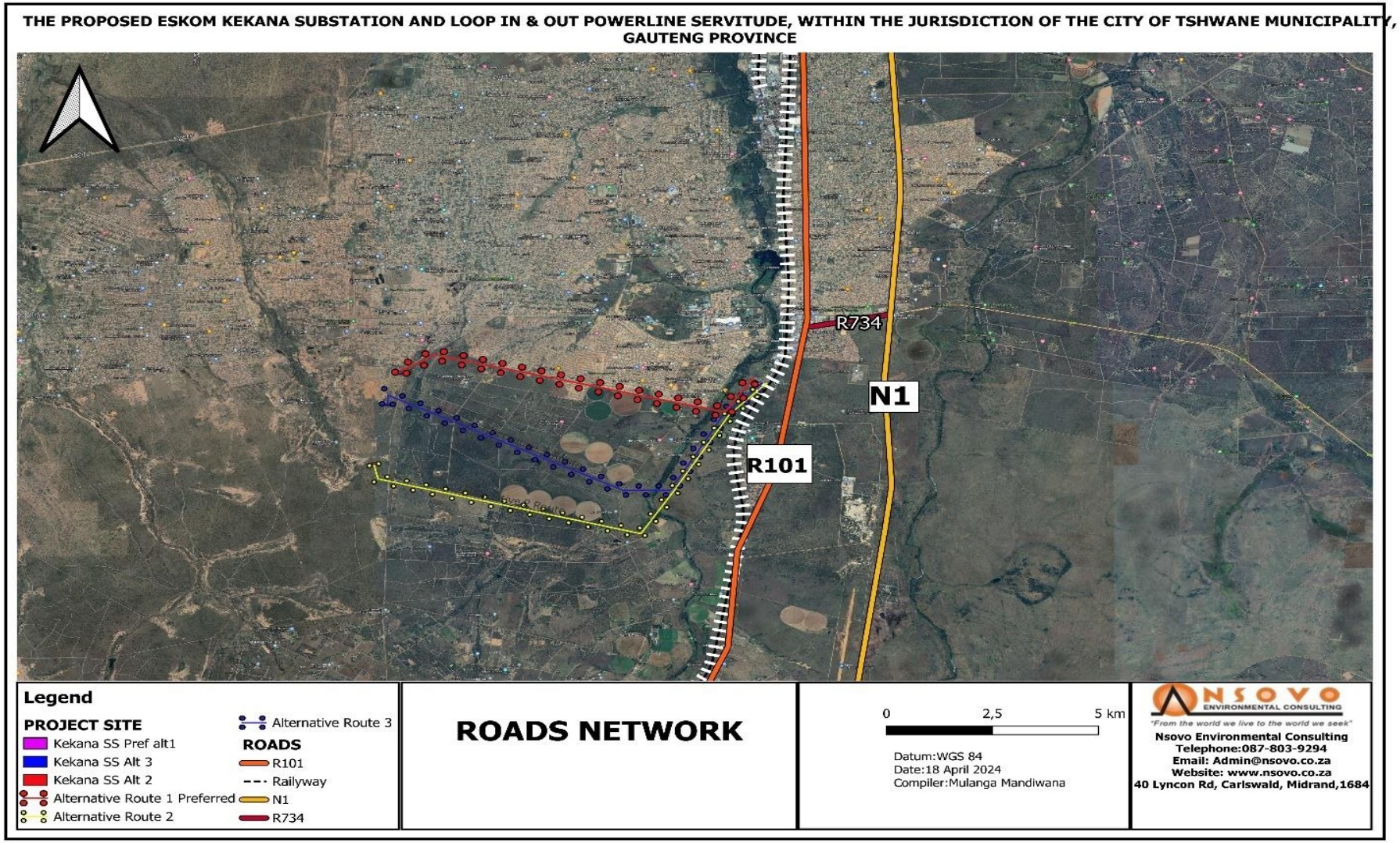


Figure 3: Road Network map

3.7.2 POWERLINES AND ASSOCIATED INFRASTRUCTURE

There are existing transmission and distribution powerlines close to the proposed site. The proposed powerline will connect the existing Pelly-Temba 132kV line to the proposed Kekana Substation.

4 A PLAN WHICH LOCATES THE PROPOSED ACTIVITY OR ACTIVITIES APPLIED FOR AS WELL AS ASSOCIATED STRUCTURES AND INFRASTRUCTURE AT AN APPROPRIATE SCALE

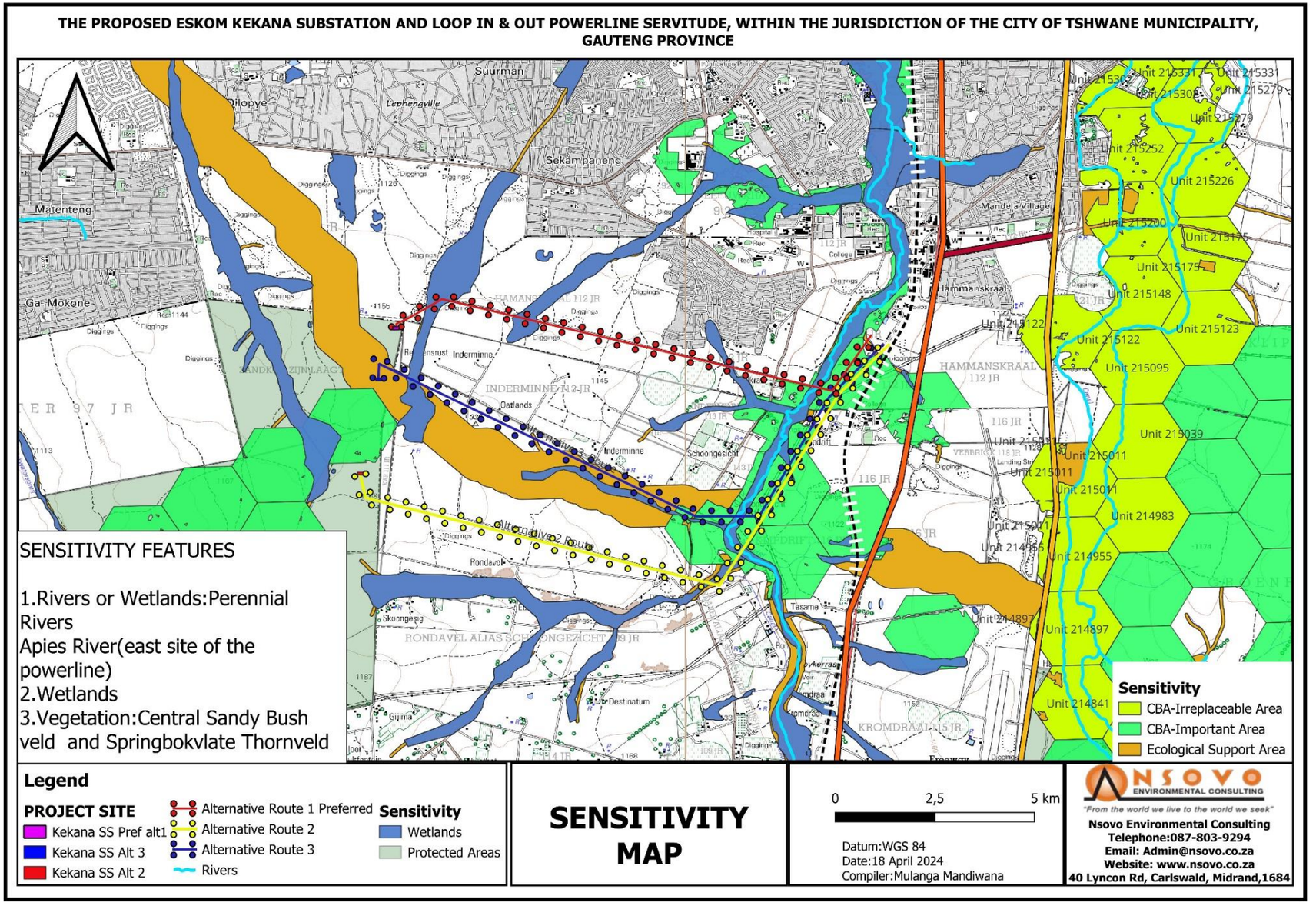


Figure 4: Sensitivity Map showing the site location.

5 DESCRIPTION OF THE PROPOSED ACTIVITY

This section describes the proposed activities, focusing on the listed activities that trigger the BA process.

5.1 BACKGROUND AND THE PROPOSED SCOPE OF WORK

Eskom has identified a pressing need to upgrade the power supply infrastructure serving the Hammanskraal area. The existing substation is inadequate to meet the power demands of the growing number of residential households. In response, Eskom proposes a comprehensive project aimed at enhancing power distribution and reliability in the designated area.

The project entails acquiring servitudes to establish crucial electrical infrastructure, including the establishment of a new Kekana substation and 132kV loop-in-loop-out lines. The primary objective is to strengthen power distribution capabilities and ensure uninterrupted supply to the community.

Additionally, the proposed substation and powerline configuration is designed to minimize maintenance downtime for existing substations and powerlines, thereby enhancing overall system reliability. Specifically, Eskom plans to develop a double circuit loop-in-loop-out 132kV/22kV powerline from the existing Pelly-Temba 132kV line to the proposed Kekana Substation.

5.1.1 SERVITUDE REQUIREMENTS

A 100 X 150m servitude width is required for the proposed 132kV/22kV substation, and a 31m wide servitude for the approximate 7 km 132kV double circuit loop-in loop-out; only the immediate footprint within the servitude will be cleared for construction.

5.1.2 CORRIDORS WALK-DOWN

The main aim of conducting the corridor walk-down is to ensure that sensitive areas are identified and avoided where needed and buffers are created for conservation purposes. A 1km wide corridor was created for assessment.

5.1.3 ACCESS ROADS

As indicated above, primary access to the proposed sites will be via the R101 and R734, while secondary access will be via public roads. Eskom will need to create access roads to allow access along the entire length of the servitude. The areas without access points and roads will be negotiated with landowners for vegetation clearance.

5.1.4 SUBSTATION AND POWERLINE DESCRIPTION

The proposed development consists of a 100 x 150m 132/22kV Substation, which will cover a footprint of 1.2 hectares. Specific details regarding the number and type of towers and other support infrastructure associated with the power

line will be confirmed during the detailed design phase and following the environmental authorisation. Various materials will be used during the construction of the substation, and some of these will be transported in segments and assembled on-site.

5.1.5 LINE CLEARANCES

Vegetation clearance will be conducted according to the recommendations of the Environmental Management Programme (EMPr) and Eskom's policies and guidelines. Moreover, the clearing will take place with the aid of a surveyor.

5.1.6 COMPLETION OF CONSTRUCTION WORK

Once construction work is complete, the affected site areas will be rehabilitated as per the specifications of the EMPr and the approved Method Statements, among other activities. The rehabilitation activities will include:

- Removal of excess building material and waste.
- Repairing any damage caused by construction activities.
- Rehabilitating the area affected by temporary access roads.
- Repairing existing roads; and
- Replacing topsoil and planting indigenous vegetation where necessary.

5.2 LISTED ACTIVITIES APPLICABLE TO THE PROJECT

The listed activities in the table below are triggered by the proposed development in terms of EIA Regulations as amended:

Table 6: Listed Activities triggering EIA Regulations applicable to the proposed project.

Regulation	Listed activities	Activity/Project Description
GN R. 983 Activity 11	The development of facilities or infrastructure for the transmission and distribution of electricity- (i) Outside urban areas or industrial complexes with a capacity of more than 33 but less than 275 kilovolts.	The proposed project involves developing a 132/22kV substation and a loop-in loop-out 132kV powerline outside urban areas.
GNR.983 Activity 19	The infilling or depositing of any material of more than 10 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles, or rock	The proposed development entails the installation of a 132KV loop-in loop-out powerline which will require the infilling/depositing material of more

Regulation	Listed activities	Activity/Project Description
	of more than 10 cubic metres from (i) a watercourse	than 10 cubic meters into a watercourse.
GNR.983 Activity 27	The clearance of an area of 1 hectare or more, but less than 20 hectares of indigenous vegetation, except where such clearance vegetation is required for. (i)the undertaking of a linear activity; or (ii) maintenance purposes undertaken in accordance with maintenance management plan	Indigenous vegetation will need to be cleared to accommodate the construction of a 1.5-hectare substation.
GN R. 985 Item 12	The clearance of an area of 300 square meters or more of indigenous vegetation except where such clearance of indigenous vegetation is required for maintenance purposes undertaken in accordance with a maintenance management plan. (a) In Gauteng (ii) Within critical biodiversity areas identified in bioregional plans.	The proposed substation and powerline will traverse the Critical Biodiversity Area. As such, it is expected that an area of more than 300 square metres will be cleared during construction.
GN R. 985 Activity 14	The development of- (ii) infrastructure or structures with a physical footprint of 10 square meters or more. where such development occurs- (a) Within a watercourse (b) In Gauteng (dd) Sensitive areas are identified in an environmental management framework as contemplated in Chapter 5 of the Act and as adopted by the competent authority. (ff) Critical biodiversity areas or ecosystem service areas as identified in systematic	The proposed development entails the establishment of 132 kV overhead powerlines of approximately 7km with a physical footprint of more than 10 square meters. The powerline will in some instances encroach on the watercourse and in some, it will cross the watercourse.

Regulation	Listed activities	Activity/Project Description
	biodiversity plans adopted by the competent authority or in bioregional plans.	

5.3 TRIGGERED WATER USES

The loop-in-loop-out powerlines traverse the wetland area. Refer to the below for the triggered water use activities.

Water uses	Purpose/Description
Section 21: I. (c) - impeding or diverting the flow of water in a watercourse.	• Developing a double circuit loop-in-loop-out 132kV/22kV powerline from the existing Pelly-Temba 132kV line to the proposed Kekana Substation.
II. (i) - is altering the bed, banks, course, or characteristics of a watercourse.	• Proposed 132kV/22kV Kekana substation.

6 A DESCRIPTION OF THE POLICY AND LEGISLATIVE CONTEXT WITHIN WHICH THE DEVELOPMENT IS PROPOSED

The EIA Regulations of December 2014, as amended, require a description of applicable legislation in the Basic Assessment report. Therefore, this section lists and describes the acts and legislation relevant to the proposed development. Table 7 below describes the current South African environmental legislation pertinent to the proposed development.

Municipal policies, plans, and by-laws, as well as Eskom policies and world best practices, were considered during the undertaking of the Basic Assessment process. The list of legislations that apply to the project is not an exhaustive analysis; however, it provides a guideline to the relevant aspects of each Act.

6.1 NATIONAL LEGISLATION

Table 7: Legislation pertaining to the proposed project.

Aspect	Relevant Legislation	Brief Description
Environment	National Environmental Management: Act 1998	The overarching principles of sound environmental responsibility reflected in the National Environmental

Aspect	Relevant Legislation	Brief Description
	(Act No. 107 of 1998) as amended.	Management Act, 1998 (Act No. 107 of 1998) (NEMA) apply to all listed projects. Construction and operation of activities shall be conducted per the generally accepted principles of sustainable development, integrating social, economic, and environmental factors. This application for Environmental Authorisation complies with the requirements of the NEMA and EIA Regulations, as amended.
Biodiversity	National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004)	The National Environmental Management Biodiversity Act, 2004 (Act No. 10 of 2004) (NEMBA) aims to manage and conserve South Africa's biodiversity within the framework of the NEMA and protect species and ecosystems that warrant national protection. The National Spatial Biodiversity Assessment was developed as part of its implementation strategy. There are several sensitive areas within the substation development footprint and the entire powerline route, including CBA. Furthermore, the 132kV powerline route will cross the Apies River.
Forests	National Forests Act 84 of 1998 ("NFA")	The National Forests Act 84 of 1998 ("NFA") regulates the protection of certain forests and trees. The NFA provides that a licence or exemption must be obtained in order to: • cut, disturb, damage or destroy (i) any indigenous tree in a natural forest; or (ii) any protected tree; or • possess, collect, remove, transport, export, purchase, sell, donate or in any other manner acquire or dispose of any tree, or any forest product derived from (i) an indigenous tree in a natural forest; or (ii) a protected tree. According to the DFFE Screening Tool, the site comprises high terrestrial biodiversity; however, a Terrestrial Biodiversity specialist confirmed that there are no

Aspect	Relevant Legislation	Brief Description
		protected trees but a nature reserve that is not a formal Protected Area and there is no fence to demarcate this Reserve and has been de-proclaimed.
Protected Areas	National Environmental Management: Protected Areas Act, 2003 (Act No.57 of 2003)	National Environmental Management: Protected Areas Act, 2003 (Act No.57 of 2003) aims to provide conservation and management to South African Protected areas such as Nature reserves and National parks. The proposed powerlines and substation site are located within the Sterkwater Private Nature Reserve, however, the Nature Reserve is not a formal Protected Area and there is no fence to demarcate this Reserve, and has been de-proclaimed.
Heritage Resources	National Heritage Resources Act, 1999 (Act No. 25 of 1999)	The National Heritage Resources Act, 1999 (Act No. 25 of 1999) legislates the necessity for cultural and heritage impact assessment in areas earmarked for development that exceed 0.5ha. The Act makes provision for the potential destruction of existing sites, pending the archaeologist's recommendations through permitting procedures. Permits are administered by the South African Heritage Resources Agency (SAHRA). The screening tool rated heritage resources as low and the heritage specialist findings show that no Stone Age, Iron Age, or burial grounds were found during the survey. However, Old buildings with ruined bricks close to the Alternative 3 route were identified as sites of heritage potential identified
Conservation of Agricultural Resources Act	Conservation of Agricultural Resources Act, 1983 (Act 43 of 1983)	The objective is to provide for control over the utilisation of the natural agricultural resources of the Republic to promote the conservation of soil, water sources, vegetation, combating weeds and invader plants, and for matters connected in addition to that.

Aspect	Relevant Legislation	Brief Description
		The Screening Tool rated Agricultural Resources Sensitivity as Medium for the proposed substation alternative site and high sensitivity for the proposed powerline route. However, GIS Mapping and site assessment confirmed that most of the soils identified within the study area are largely unsuitable for agricultural cultivation due to their inherent soil properties
Air quality management and control	National Environmental Management: Air Quality Act, 2004 (Act 39 of 2004)	The objective of the Act is to protect the environment by providing reasonable measures for the protection and enhancement of air quality and to prevent air pollution. The Act provides measures to control dust, noise, and offensive odours. Section 32 of The National Environmental Management: Air Quality Act, 2004 (Act 39 of 2004) deals with dust control measures. None are promulgated, thus allowing the Minister or MEC to prescribe measures aimed at dust control in specified places or areas, either generally or by specific machinery. The proposed project is likely to generate minimal dust during vegetation clearance and excavations for the placement of towers, which is expected to be short-term and site-specific.
Noise Management and Control	Noise Control Regulations in terms of the Environmental Conservation, 1989 (Act 73 of 1989)	The assessment of impacts relating to noise pollution management and control, where appropriate, must form part of the EMPr. Applicable noise management and control laws refer to the National Noise Control Regulations issued in terms of the Environmental Conservation Act, 1989 (Act 73 of 1989). The occupation of the site by Contractors may generally increase the ambient noise levels in the area. Additional

Aspect	Relevant Legislation	Brief Description
		noise may be expected from the increased heavy-duty traffic and construction equipment.
Water	National Water Act, 1998 (Act 36 of 1998)	This Act provides fundamental reform of laws relating to water resources and use. The preamble recognises that water resource management aims to achieve sustainable water use for the benefit of all users. Protecting the quality of water resources is necessary to ensure the sustainability of the nation's water resources in the interests of all water users. The proposed powerline will require a Water Use Licence from the Department of Water and Sanitation to cross the identified river. The application will be lodged after Environmental Authorisation
Waste	National Environmental Management: Waste Act 59 of 2008	This Act provides fundamental reform of the law regulating waste management to protect health and the environment by providing reasonable measures for preventing pollution and ecological degradation and securing ecologically sustainable development. This act also ensures the provision of national norms and standards for regulating waste management by all spheres of government. The National Environmental Management: Waste Act provides for specific waste management measures, licensing and control of waste management activities, remediation of contaminated land, compliance and enforcement, and for matters connected. The proposed project will produce general waste, which will be discarded at a licensed facility and does not trigger a waste license.
Civil Aviation	Civil Aviation Act 13 of 2009	As outlined in Part 139.01.30 of the Civil Aviation Regulations (GN R425, GG 35398 of 1 June 2012), Buildings or other objects which will constitute an obstruction or potential hazard to aircraft moving in the

Aspect	Relevant Legislation	Brief Description
		navigable air space in the vicinity of an aerodrome, or navigation aid, or which will adversely affect the performance of the radio navigation or instrument landing systems, must not be erected or allowed to come into existence without the prior approval of the Director Civil aviation was rated high on the screening report. However, a detailed assessment of mapping confirmed that the proposed servitude is within the low sensitivity of the other civil aviation aerodromes. The site is located about 50km away from the Waterkloof Airforce Base.
Defence	Defence act 42 of 2002	The Defence Act 42 of 2002 is a comprehensive piece of legislation in South Africa that governs various aspects related to national defence, military organization, and security matters. The screening tool assessed the proposed site as having low sensitivity to Defence concerns. Therefore, according to protocols for Specialist (GN.320) of March 2020, there are no anticipated negative impacts on the defence. Moreover, GIS mapping confirmed that the proposed Kekana Substation and LILO powerline are located within a low sensitivity area.
Human	The Constitution of South Africa, 1996 (Act No. 108 of 1996)	The Constitution of South Africa, 1996 (Act No. 108 of 1996) provides for an environmental right (contained in the Bill of Rights, Chapter 2). The state is obliged "to respect, protect, promote and fulfill the social, economic and environmental rights of everyone." The environmental right states that: "Everyone has the right – a) To an environment that is not harmful to their health or well-being; and

Aspect	Relevant Legislation	Brief Description
		b) To have the environment protected for the benefit of present and future generations through reasonable legislative and other measures that – • Prevent pollution and ecological degradation. • Promote conservation; and • Secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development."
Protection of Information	The Protection of Personal Information Act, 2013 (Act No. 4 of 2013)	Part of this responsibility is to protect the information inside the organisation and be responsible when it comes to storing and sharing personal information. Therefore, information such as email addresses and contact numbers will not be distributed during the Public Participation Process.

6.2 PROVINCIAL LEGISLATION

6.2.1 GAUTENG PROVINCIAL ENVIRONMENTAL MANAGEMENT FRAMEWORK 2021

The Gauteng Environmental Management Framework (GEMF) divides the province into different zones to manage and regulate environmental issues effectively. The proposed site alternative route 1 is located within Zone 1 which is categorized under the Urban development area. Zone 1 aims to make urban development in a particular area more organized and efficient. It focuses on encouraging activities like filling in empty spaces, increasing the number of buildings, and concentrating development within designated urban zones. This plan is in line with the Gauteng Spatial Development Framework (GSDF), which sets guidelines for managing development in Gauteng, a province in South Africa.

By providing reliable electricity infrastructure, the project facilitates the growth of urban areas within Zone 1 without the need to expand into rural regions. It enables new buildings and developments to be powered efficiently, contributing to the overall aim of creating a more organized and sustainable urban environment.

The preferred energy sources for new and existing development in this zone include Electricity from the national grid. Figure 6 presents the Gauteng EMF map.

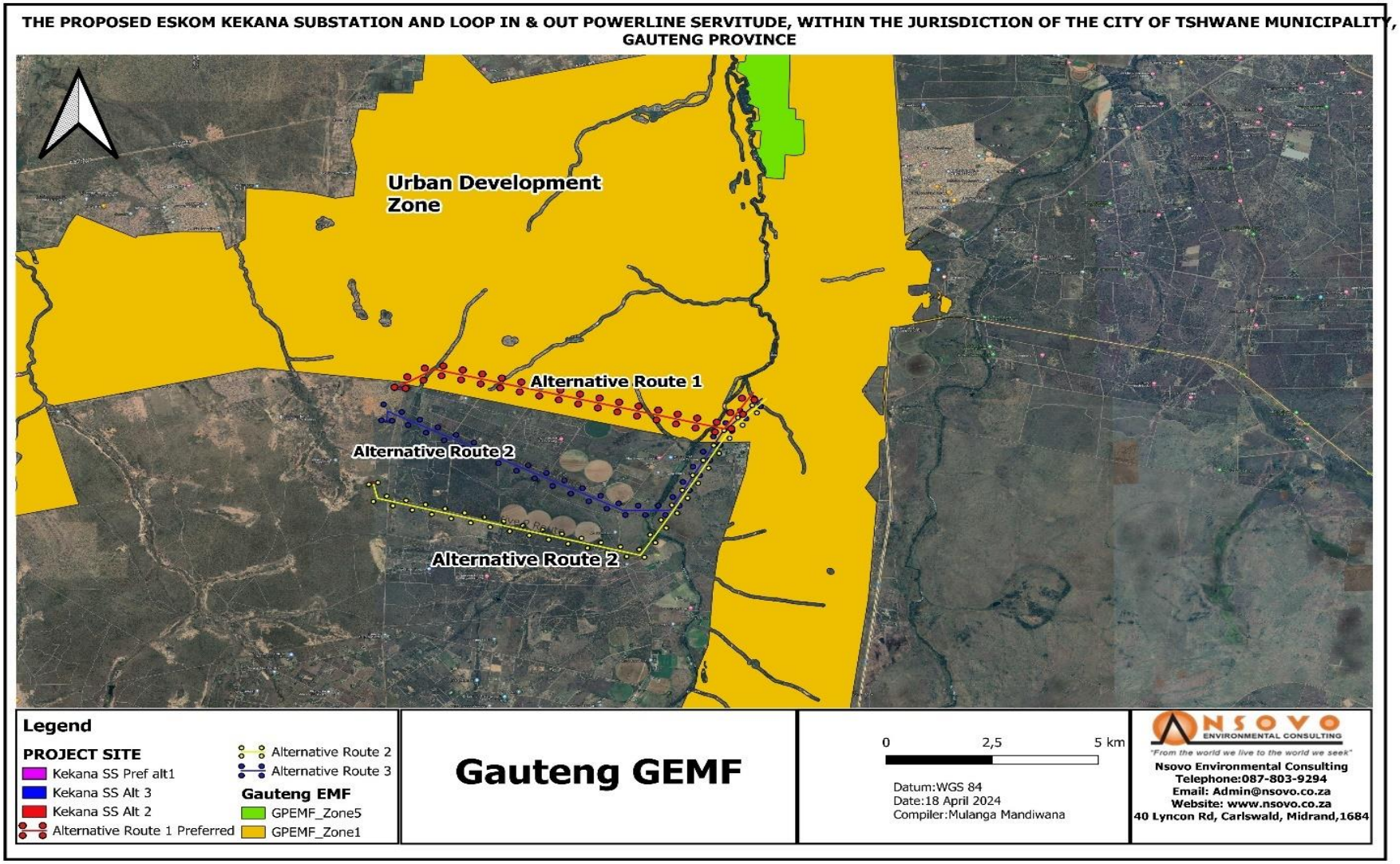


Figure 5:Gauteng EMF

6.2.2 GAUTENG SPATIAL DEVELOPMENT FRAMEWORK 2030

The GSDF emphasizes the need for strategic infrastructure development to support sustainable urbanization and access to reliable electricity is crucial for economic development and investment attraction.

The proposed project of establishment of a substation and powerline project contributes to creating an enabling environment for businesses and industries to thrive, in line with the economic development goals of the GSDF. By powering commercial and industrial areas within Gauteng, the project supports job creation and economic growth in accordance with the framework's objectives.

6.2.3 GAUTENG CONSERVATION PLAN 3.3

Bioregional plans are one of a range of decision support tools provided for in the Biodiversity Act 1 that can.
be used to enable biodiversity conservation in priority areas. The main purposes of C-Plan 3.3 are:

- to serve as the primary decision support tool for the biodiversity component of the Environmental Impact Assessment (EIA) process.
- to inform protected area expansion and biodiversity stewardship programmes in the province.
- to serve as a basis for the development of Bioregional Plans in municipalities within the province.

The proposed powerlines and substation alternatives are within a Sterkwater Private Nature Reserve which is is not a formal Protected Area and there is no fence to demarcate this Reserve and has been de-proclaimed. The project transverse within the Critical Biodiversity Area (Irreplaceable Area) and Ecological Support Area (ESA). (2011 Gauteng C-Plan 3.3). Figure 7 present Gauteng C-plan.

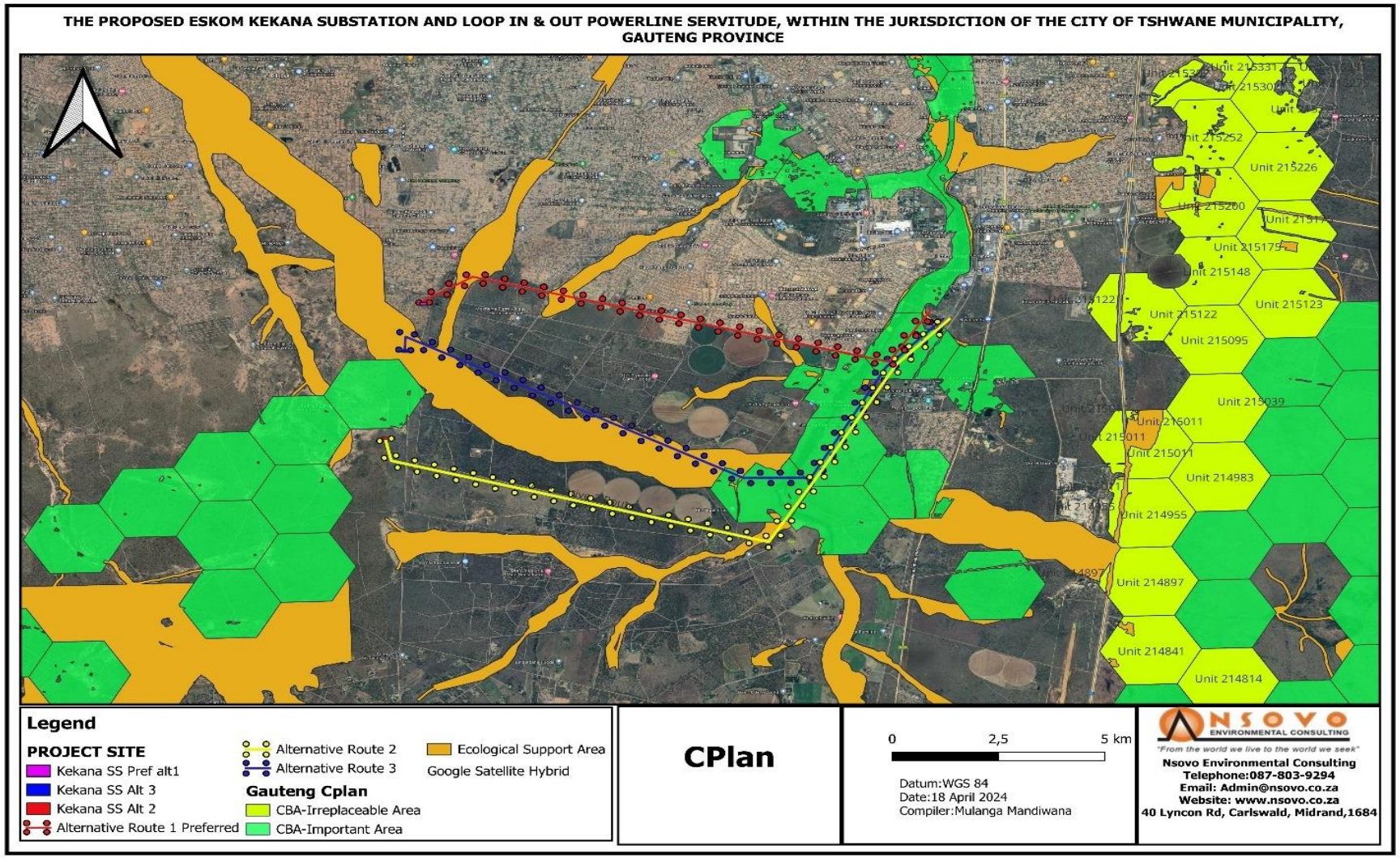


Figure 6: Gauteng Cplan

7 MOTIVATION FOR THE NEED AND DESIRABILITY FOR THE PROPOSED DEVELOPMENT, INCLUDING THE NEED AND DESIRABILITY OF THE ACTIVITY IN THE CONTEXT OF THE PREFERRED LOCATION

In terms of section 3(1)(f) of Appendix 1 of NEMA 2014 EIA Regulations, as amended, a Basic assessment must include a discussion of the need and desirability of a proposed project. This section justifies the need for the proposed project with a focus on the benefits and its importance to the people within the Hammaskraal communities.

7.1 Motivation For The Development

Eskom distribution plays a significant role in distributing electricity to the country, ensuring that a reliable electricity supply of acceptable quality is essential for the economic development of South Africa. It is also a prerequisite for socio-economic development, as it paves the way to access education, improved nutrition and health care, and jobs. The distribution system is vital in delivering a reliable, high-quality electricity supply throughout the region and the country. It delivers electricity in bulk to load centers, wherein the distribution networks owned by Eskom and municipalities provide electricity to end-users. The distribution system needs to be well-maintained to deliver a reliable supply of electricity, and it also needs to be strengthened to meet changing customer needs.

In this way, the proposed servitude acquisition for the establishment of a 132/22kV Kekana Substation and a 132kV powerline is aligned with Eskom's objectives and priorities for service delivery and infrastructural development in the area. The project is for electrifying the residential stands in the Hammaskraal area. Below are the stands that need to be electrified:

- 2764 stands at Hammaskraal West Ext 10 – 6633.6kVA.
- 3199 stands at Hammaskraal West Ext 4 - 7678kVA.
- 2020 stands at Hammaskraal West Portion 9 & 10 - 4848kVA.

The adjacent substations and feeders do not have sufficient capacity to supply the above-mentioned electrifications; therefore, a New Kekana substation is required to create capacity to electrify the Hammanskraal area. This project has been raised to acquire servitude for the new Kekana substation.

7.2 Benefits of the Project

Electrification has significant positive benefits from a socio-economic and ecological perspective. The provision of electricity leads to several social benefits for organs of state, individuals, industries, and communities since it enables development and encourages small and medium enterprise development, and as a result, contributes to a possible increase in disposable income. A new reliable substation and powerline must be built to encourage and facilitate all the identified benefits.

Advantages of the proposed project include:

- On project completion, the asset is estimated to have a plus 30-year or more life expectancy.
- Build a rigid and robust network that is reliable to the clusters within the Hammanskraal area.
- Minimises operating time for the Pelly-Temba Main 132kV line when attending to network faults.
- Minimise the high maintenance costs due to breakdown maintenance (faults) and routine maintenance of the old substation and powerline.

The objective of this project is to strengthen the electricity arm within the Municipality. It will also allow for load growth and improve supply reliability.

8 A MOTIVATION FOR THE PREFERRED SITE, ACTIVITY, AND TECHNOLOGY ALTERNATIVE

The identification of alternatives is a critical component of the BA process. The identified alternatives are assessed in terms of environmental acceptability technical, and economic feasibility wherein the preferred alternative is highlighted and presented to the Authorities.

Eskom has proposed three alternative options for both a substation and powerline, with a preferred option named Substation Alternative 1 (preferred) and Alternative Route 1 (preferred). Initially, the preferred route was going through an area with many houses along the servitude, which required a relocation of residents. Therefore, it was decided to divert the line to an area with fewer houses underneath it. The project has considered technical options that are economically and environmentally viable compared to other options. Additionally, the no-go alternative has also been considered as part of the environmental assessment process.

The selection of project alternatives was primarily based on Eskom's pre-feasibility study that technically determined the broad location based on the need of the project. Subsequent site visits were undertaken by the environmental and specialist teams. Furthermore, a detailed Public Participation will be undertaken to assess the viability of the proposed route alternatives, which may result in the identification of suitable route for consideration to assess the economic need and desirability of the project. The route selection process also focused on reviewing the Municipality's Integrated Development Plan, Eskom's 10-Year Development Plan, and associated documents that address current and future development in and around the area.

Consideration of specialist and technical input culminated in selecting the preferred substation and powerline servitude, not necessarily the exact footprint. After approval by the Competent Authority (DFFE), the EAP recommends that the exact footprint within the approved route site be determined. Such will be achieved by undertaking a walk down, with the specialist team, particularly the ecology and heritage. The profiling of the substation and powerline will seek to avoid sensitive environments as far as practically possible. A comparative analysis of alternatives has been included in Section 9 below

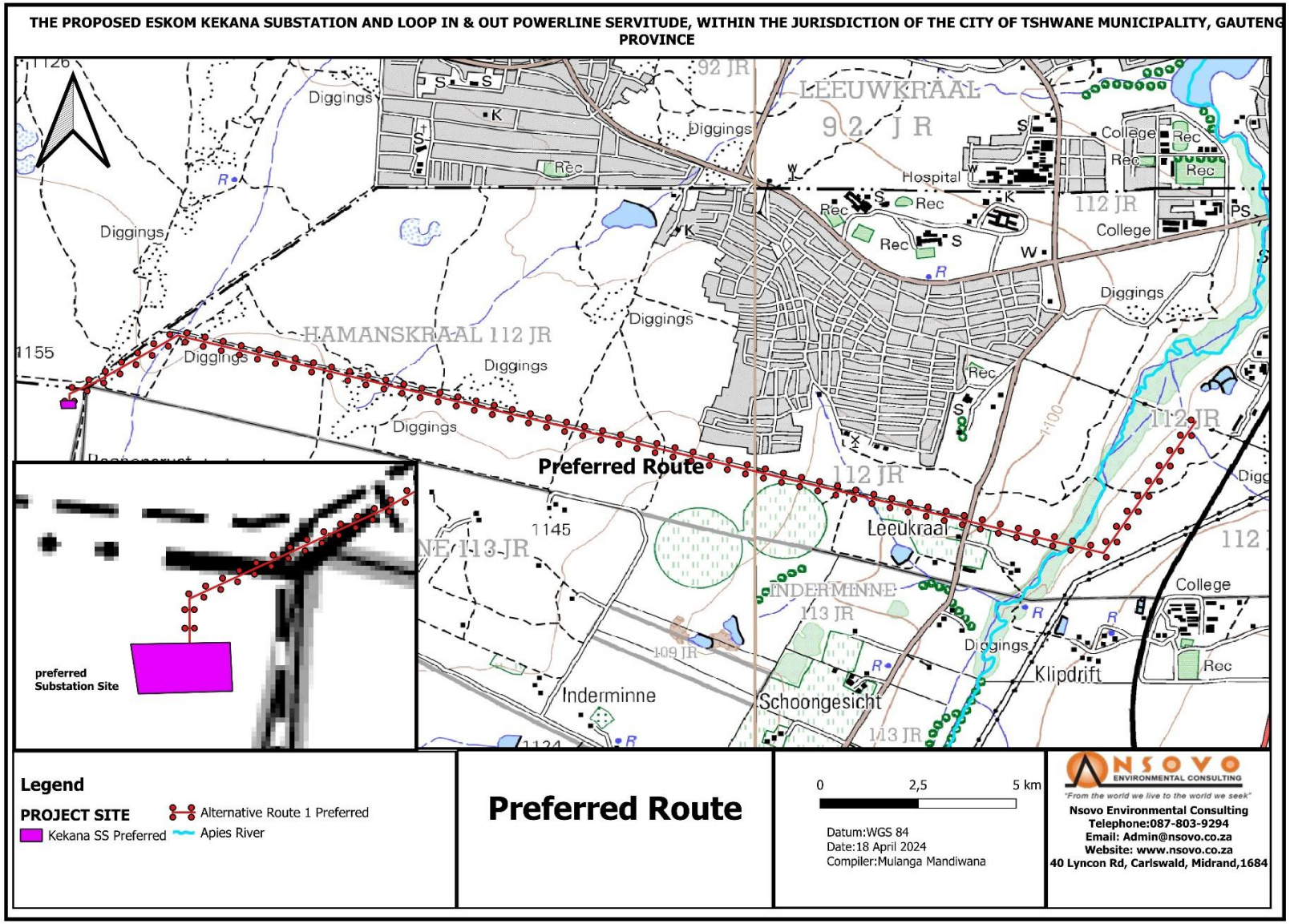


Figure 7: Preferred route.

9 DESCRIPTION OF THE PROCESS FOLLOWED TO REACH THE PROPOSED PREFERRED ACTIVITY, SITE, AND LOCATION WITHIN THE SITE

The identification of alternatives is a vital component of the BA process. The identified alternatives are assessed in terms of environmental acceptability, technical, and economic feasibility during the BA process, wherein the preferred alternative is highlighted and presented to the Authorities.

Eskom proposed three alternatives for the proposed substation and powerline, however, one alternative was considered preferred for both the substation and a powerline servitude. The powerline will be installed starting from the existing Pelly-Temba substation 132kV to the new proposed 132/22kV Kekana substation. The project has considered powerline technical alternatives (Section 9.1) that are considered economically and environmentally viable compared to the other options. The alternatives are presented as part of this BAR.

No major impacts that could be posed by the proposed development were identified by the various specialists conducted. Where impacts are anticipated to occur, mitigation measures have been included and should they be applied, the proposed powerline will have a low impact on the environment.

9.1 DETAILS OF ALTERNATIVES CONSIDERED

This section describes the alternatives considered and includes the technical, structural, route, and no-go alternatives which are discussed as follows:

9.1.1 PREFERRED SITE

Based on the outcomes of the specialist studies summarized in the table below, the proposed site is deemed preferable and most suitable for the project. During the construction phase, certain aspects of the project may require modifications to the existing infrastructure. This could render an alternative site unfeasible or impractical. Mitigation measures recommended by the specialist will be implemented to mitigate identified negative impacts. However, it's worth noting that all three alternatives were assessed for wetlands study and have similar potential impacts, with no clear preference from a wetland perspective. Therefore, emphasis will be placed on site-specific mitigation for each scenario or route, as suggested by one specialist.

Table 8: Summary of Specialist alternatives route

Specialist	Description of the route alternatives
Agricultural Assessment	Most of the soils identified within the study area are largely unsuitable for agricultural cultivation due to their inherent soil properties unless intense

Specialist	Description of the route alternatives
	management strategies are utilised (such as deep in-situ ripping of the lithic layer below the topsoil.
Heritage Assessment	Old buildings with ruined bricks close to the Alternative 3 route were identified as sites of heritage potential, but these are far from the preferred alternative route. No Stone Age, Iron Age, or burial grounds were found during the survey.
Paleontological desktop assessment.	There is a very small chance that fossils may occur below the ground surface in the shales of the Ecca Group, so a Fossil Chance Find Protocol should be added to the EMPr. If fossils are found by the environmental officer or other responsible person once excavations for pole foundations and infrastructure have commenced, they should be rescued, and a paleontologist should be called to assess and collect a representative sample. The impact on the paleontological heritage would be low, so as far as paleontology is concerned, the project should be authorised.
Wetland Baseline Assessment	Thirty-one hydro-geomorphic units (HGM) were identified, including valley bottom wetlands with or without channels and hillslope seepage wetlands connected to watercourses, both within and around the study area. The Ecological Importance and Sensitivity assessment revealed that most HGM units scored low due to their temporary nature and anthropogenic impacts, notably sand mining. However, two seepage wetlands and the Apies River scored high due to their uniqueness and functional value.
Terrestrial Biodiversity	The Screening report for an Environmental Authorization evaluates the proposed site's environmental sensitivity. It rates animal species as highly sensitive, plant species as medium, and terrestrial biodiversity as very high due to the presence of several protected areas. A site verification and impact assessment found the overall ecological sensitivity to be medium. The Apies River is highly sensitive, proposed routes 2 and 3 are medium, and alternative route 1 is low in sensitivity. No towers should be placed within 30-50 meters of the Apies River
Visual Impact Assessment	All three proposed alternatives have similar visibility impacts. Alternative 1, which is closer to high-density residential areas, may have a slightly higher impact on residents. However, existing powerlines in the area lessen this impact, and the substation for Alternative 1 is proposed on degraded land, further reducing visual disruption.

Specialist	Description of the route alternatives
	Alternatives 2 and 3 would impact the more natural southern area, requiring removal of natural landscapes and affecting tourist activities in private game reserves and resorts. Therefore, Alternative 1 is preferred. With mitigation measures and adherence to recommendations, the project can proceed with very low visual impact.

9.1.2 SUBSTATION AND ALTERNATIVES

This section offers a comprehensive overview of the various substation alternatives evaluated for the proposed development. Three substation alternatives were identified and rigorously assessed, namely Substation Alternatives 1, 2, and 3. It is noteworthy that minimal distinctions exist among these alternatives, given their proximity to the same type of vegetation, soil composition, and other environmental factors. The table provided below presents the precise coordinates and dimensions of each proposed substation, facilitating a clear comparison between the options.

1. Kekana Substation Pref Alt 1

Location	Latitude	Longitude	Size
Point A	25°24'53.95"S	28°12'42.89"E	1.5 ha (100m X150m)
Point B	25°24'53.90"S	28°12'45.84"E	
Point C	25°24'55.40"S	28°12'43.09"E	
Point D	25°24'55.33"S	28°12'45.94"E	

2.Kekana Substation Alt 2

Location	Latitude	Longitude	Size
Point A	25°26'1.97"S	28°12'26.33"E	1.5 ha (100m x150m)
Point B	25°26'2.04"S	28°12'28.94"E	
Point C	25°26'3.21"S	28°12'26.54"E	
Point D	25°26'3.28"S	28°12'29.06"E	

3.Kekana Substation Alt 3

Location	Latitude	Longitude	Size
Point A	25°25'19.29"S	28°12'35.07"E	1.5 ha (100m X150m)
Point B	25°25'17.93"S	28°12'34.77"E	
Point C	25°25'17.86"S	28°12'37.52"E	
Point D	25°25'19.26"S	28°12'37.70"E	

Substation option 1 (Preferred Alternative)

Substation option 1 requires a 100m x 150 m footprint and will be situated in the protected area (Sterkwater Private Nature Reserve). This option is situated close to the disturbed area as several existing Eskom powerlines are nearby. This proposed Kekana substation will be connected to the existing Pelly-Temba main 132kV.

Substation option 2

Like substation option 1, this substation requires a 100 m x 150 m footprint for construction purposes and is located within the protected area (Sterkwater Private Nature Reserve). This proposed Kekana substation will be connected to the existing Pelly-Temba main 132kV line.

Substation option 3

Substation option 2 requires a 100-square-meter footprint and will be situated in a protected area (Sterkwater Private Nature Reserve) within a CBA. This proposed Kekana substation will be connected to the existing Pelly-Temba Main 132kV Line. The table below compares the three substation alternatives.

Table 9: Comparison of the proposed substation

Substation option 1 (Preferred)	Substation option 2	Substation option 3
Substation option 1 is located 6km to the existing Eskom powerline and the 132kV Pelly-Temba Main Substation.	Substation 2 is located 7km from the existing Eskom lines.	Substation 3 is located 8km from the existing Eskom lines.
Located approximately 900m from the Critical Biodiversity Area (Important Area). Located with the Sterkwater Private Nature Reserve.	Situated approximately 200m from the Critical Biodiversity Area. Located with the Sterkwater Private Nature Reserve.	Situated approximately 200m from the Critical Biodiversity Area. Located with the Sterkwater Private Nature Reserve.

Situated approximately 1km from the NFEPA seep wetlands type	Situated approximately 400m from the seep wetland type	Situated approximately 1km from the NFEPA seep wetlands type

9.1.3 POWERLINE ALTERNATIVES

Three powerline alternatives, namely Alternatives Route 1 (preferred), 2, and 3, were identified and evaluated for their feasibility. These proposed alternatives are intended to be seamlessly integrated into the existing Pelly-Temba Main 132kV powerline infrastructure. To facilitate a thorough assessment, a one-kilometer corridor was strategically delineated for each alternative. The table provided below furnishes precise details regarding the coordinates of the proposed powerline, offering valuable insights for decision-making and comparative analysis.

1. Alternative 1 Route Preferred

Location	Latitude	Longitude
Start	25°24'59.16"S	28°16'25.55"E
Middle	25°25'4.86"S	28°14'42.61"E
End	25°24'54.08"S	28°12'44.51"E

2. Alternative 2 Route

Location	Latitude	Longitude
Start	25°25'4.12"S	28°16'35.74"E
Middle	25°26'56.01"S	28°15'13.59"E
End	25°26'4.80"S	28°12'28.21"E

3. Alternative 3 Route

Location	Latitude	Longitude
Start	25°25'2.80"S	28°16'32.57"E
Middle	25°26'23.05"S	28°15'4.11"E
End	25°25'19.06"S	28°12'35.54"E

Table 10: Comparative Analysis of the Route alternatives

Aspect	Alternative Route 1 (Preferred)	Alternative Route 2	Alternative Route 3
Ecological	• About 30% of the powerline is within the Critical Biodiversity Area (Important Area). • The site is partially within the Ecological support area (ESA). • 3% of route 1 site is within the Sterkwater Private Nature Reserve.	• About 40% of the powerline is within the Critical Biodiversity Area (Important Area). • The site is partially within the ESA. • About 5% of the powerline is within the Nature Reserve.	• About 30% of the powerline is located within the Critical Biodiversity Area (Important Area). • About 50% of route 3 is located within the ESA. • 5% of the powerline route 3 is within the Nature Reserve.
Wetlands	• Transverse Apies River • Within a valley-bottom wetland.	• Transverse Apies River • Depression FEPA wetland was identified.	• Transverse Apies River. • Within the hill slope wetland.
Terrestrial Biodiversity	Anthropogenic Activities: • High, with prevalent illegal dumping of materials. • Dominated by alien invasive plant species. • The route traverses the river	Anthropogenic Activities: • Lower, situated in bushveld areas. • Dominated by native plant species such as Terminalia sericea, Dichrostachys cinerea, Combretum hereroense, Combretum molle • The route traverses the river	Anthropogenic Activities: • Lower, situated in bushveld areas. • Dominated by native plant species such as Terminalia sericea, Dichrostachys cinerea, Combretum hereroense, Combretum molle • The route traverses the river Wildlife Impact:

Aspect	Alternative Route 1 (Preferred)	Alternative Route 2	Alternative Route 3
	Wildlife Impact: • Domestic dogs hunting small wild mammal species **Mammal Species of Conservation Concern**: • None recorded. **Bird Micro-Habitats**: • Includes open grassland, exotic trees, bushveld, pans, and perennial river.	**Wildlife Impact**: Domestic dogs hunting small wild mammal species **Mammal Species of Conservation Concern**: • None recorded. **Bird Micro-Habitats**: • Includes open grassland, exotic trees, bushveld, pans, and perennial river.	• Domestic dogs hunting small wild mammal species **Mammal Species of Conservation Concern**: • None recorded. **Bird Micro-Habitats**: • Includes open grassland, exotic trees, bushveld, pans, and perennial river.
Heritage	• No Burial grounds were identified. • No material dating to the Iron Age and stone age were identified.	• There are two old buildings close to option 3. • No Burial grounds were identified. • No material dating to the Iron Age and stone age were found.	
Agriculture	The route is characterised by residential areas with subsistence farming practices within the yards.	These routes are characterised by large-scale farming enterprises cultivating soybeans under irrigation.	
Paleontology	The three powerline routes are on the Nebo Granite, which is non-fossiliferous, therefore no impact is expected.		

9.1.4 TECHNICAL ALTERNATIVES

Technical alternatives have been identified for the proposed project, i.e., the overhead powerline and underground cabling.

- OVERHEAD POWERLINES OR UNDERGROUND CABLES

The overhead powerline and underground cabling were also considered for the construction method, with the construction of the proposed powerline overhead being the preferred. Technically, underground cables need to be insulated against the surrounding soil. On low-voltage reticulation networks (11kV and 22kV), the heat generated by the cable is low enough for standard insulation to be used. However, for the 132kV power lines, the proposed electrical and heat insulation method becomes more burdensome. The table below depicts the comparison between the overhead and underground cabling.

Table 11: Comparison of the proposed technical alternatives

Technical alternatives	
Overhead powerline	**Underground cabling**
Faults such as a damaged line may be easily found and repaired within a few days without excavating the area.	Underground cables have almost exclusively permanent faults, usually requiring powerlines requiring excavating a powerline section.
The clearance of vegetation will only be done within 31m servitude.	The clearance of vegetation will be done for approximately 1km.
Easy control of electrical losses and heat control on the overhead powerline.	Control of electrical losses and heat control are critical for underground cables.
Removing avifaunal habitat will reduce the impact, as the clearance will be done within servitude for the stringing of the conductors.	The underground cable requires excavating the area, reducing the habitat available to birds for foraging, roosting, and breeding.
Towers will be placed more than 50m from the identified watercourses or wetlands.	The watercourse will be diverted.

Economically, costs vary and depend on terrain, land use, and line size. However, underground cabling is lines not preferred for the proposed development. The overhead powerline is, therefore, preferred for the proposed development. This is because it would not be ideal to build underground cables in these areas due to the farming activities, and for such long lines underground would not be feasible due to the costs, cable theft, and terrain.

9.1.5 NO-GO ALTERNATIVE

In accordance with GN R982, consideration must be given to the option not to act. This option is usually considered when the proposed development is envisaged to have significant adverse environmental impacts, and mitigation measures cannot ameliorate the identified impacts effectively. The no-go alternative would be the option of not undertaking the proposed development. Additionally, should the project not be authorised, Eskom distribution may end with a situation of not being able to ensure firm supply into some parts of Hammanskraal area.

10 DETAILS OF THE PUBLIC PARTICIPATION PROCESS UNDERTAKEN IN TERMS OF REGULATION 41 OF THE REGULATIONS.

The NEMA EIA Regulations require that during the EIA process, the Organs of State, together with Interested and Affected Parties (I&APs), be informed of the application and allowed to comment on the application.

Public Participation Process (PPP) is any process that involves the public in problem-solving and decision-making; it forms an integral part of the BAR and EIA process. The PPP provides I&APs with an opportunity to provide comments and raise issues of concern or to make suggestions that may result in enhanced benefits for the project.

The primary purpose of the PPP report is as follows:

- To outline the PPP that was undertaken.
- To synthesise the comments and issues raised by the key stakeholders, I&APs; and
- To ensure that the EIA process fully addresses the issues and concerns raised.

Chapter 6, Regulation 39 through 44 of the 2014 EIA Regulations stipulates how the PPP should be conducted and the minimum requirements for a compliant process. These requirements include but not limited to:
Fixing a notice board at or on the fence of-

(i) The proposed site where the activity is to be undertaken (the application relates to); and
(ii) A place conspicuous to the public at the site's boundary.

Giving written notice to:

- The occupiers of the site where the activity is or is to be undertaken or to any alternative site where the activity is to be conducted;
- The owners or persons in control of the occupied land and the adjacent land to the site where the activity is or is to be undertaken and to any alternative site where the activity is to be conducted;

- The municipal councillor of the ward where the site and alternative site is situated and any organisation of ratepayers that represent the community in the area;
- The municipality which has jurisdiction in the area;
- Any organ of the state having jurisdiction in respect of any aspect of the activity; and
- Any other party as required by the competent authority.

Placing an advertisement in

(i) One of the local newspapers within or around the proposed site

In line with the above, the principle of Public Participation holds that those affected by a decision have the right to be involved in the decision-making process (i.e., the public's contribution will influence the decision). One of the primary objectives of conducting the PPP is to provide Interested and Affected Parties with an opportunity to express their concerns and views on issues relating to the proposed project. The principles of public participation are to ensure that the PPP:

- Communicates the interests of and meets the process needs of all participants.
- Seek to facilitate the involvement of those potentially affected.
- Involves participants in defining how they participate.
- Is as inclusive and transparent as possible; it must be conducted in line with the requirements of Regulations 39 through 44 of the EIA Regulations as amended.

10.1 APPROACH AND METHODOLOGY

The Public Participation approach to be adopted in this process will align with the process contemplated in Regulations 39 through 44 of the EIA Regulations as amended, in terms of NEMA, which provides that I&APs must be notified about the proposed project.

10.1.1 IDENTIFICATION OF INTERESTED AND AFFECTED PARTIES

Interested and Affected Parties (I&APs) will be identified, and the draft Basic Assessment Report will be submitted to the identified stakeholders for review and comment.

10.1.2 PUBLIC PARTICIPATION DATABASE

In accordance with the requirements of the EIA Regulations under Section 24 (5) of NEMA, Regulation 42 of GN R. 326, the public participation practitioner must keep a register of I&APs. To fulfill this requirement, a stakeholder

register will be compiled, and details of I&APs, including their comments, will be updated throughout the project cycle.

10.1.3 SITE NOTICES

The A2 size notices will be fixed at conspicuous locations within and around the proposed development area. The identified locations include, but are not limited to, the community halls within the area, local clinics, Hammanskraal Public Libraries, Towns, and Municipalities, as well as different townships along the route.

10.1.4 PLACEMENT OF ADVERTISEMENT IN THE LOCAL NEWSPAPER

A newspaper advertisement will be placed in the local newspaper, and the advert will be in Setswana and English. The advertisement aimed to inform further the I&APs of the proposed activities and the availability of draft reports for review and comment. Thirty (30) days will be allowed for the public to submit their comments, issues, and concerns.

10.1.5 PLACEMENT OF DRAFT BASIC ASSESSMENT REPORT FOR REVIEW AND COMMENTS

The Draft BA Report will be made available for review and comment to I&AP, Stakeholders and on the Nsovo website at www.nsovo.co.za.

10.1.6 PUBLIC MEETINGS

The public meeting is scheduled for July 3, 2024, at Lefika Campsite in Hammarskraal, starting at 10:00 AM. The details of the meeting were also advertised in the Hamilton Journal Newspaper, published on June 14, 2024.

11 DESCRIPTION OF THE ENVIRONMENTAL ATTRIBUTES ASSOCIATED WITH THE ALTERNATIVES FOCUSING ON THE GEOGRAPHICAL, PHYSICAL, BIOLOGICAL, SOCIAL, HERITAGE, AND CULTURAL ASPECTS

This section outlines parts of the socio-economic and biophysical environment that could be affected by the proposed development. Using the project description and knowledge of the existing environment, potential interactions between the project and the environment are identified below. The possible effects of the project on the human environment, socio-economic conditions, and physical and cultural resources are included.

11.1 SOCIO-ECONOMIC DESCRIPTION

This section presents the socio-economic aspects focusing on the Province and Municipalities within the proposed study area.

11.1.1 PROVINCIAL DESCRIPTION OF THE PROPOSED PROJECT

Gauteng province is situated in the northeastern part of South Africa, covering an area of approximately 18,178 square kilometers. It is the smallest province in terms of land area but holds immense significance as the economic powerhouse of the country. Gauteng's landscape is characterised by undulating hills, plains, and valleys, with the northern parts featuring rocky ridges and outcrops. The province lies in the Highveld region of South Africa, which is characterized by its moderate climate and high elevation.

The province is divided into three metropolitan municipalities: the City of Johannesburg Metropolitan Municipality, the City of Tshwane Metropolitan Municipality (which encompasses Pretoria & Hammaskraal), and the Ekurhuleni Metropolitan Municipality. Additionally, Gauteng is further subdivided into several district municipalities and local municipalities, each with its unique character and community.

11.1.2 DISTRICT MUNICIPALITY WITHIN WHICH THE STUDY AREA IS LOCATED

The City of Tshwane encompasses a diverse range of landscapes, from urban cityscapes to more rural areas and natural reserves. The city is known for its rich history, vibrant culture, and significant contributions to South Africa's political and economic landscape. Within the City of Tshwane, there are several regions, including Pretoria, Centurion, Mamelodi, Soshanguve, and Hammanskraal, each with its own distinct character and community. Pretoria, the administrative capital of South Africa, is the largest and most prominent city within Tshwane, known for its historic buildings, academic institutions, and government offices.

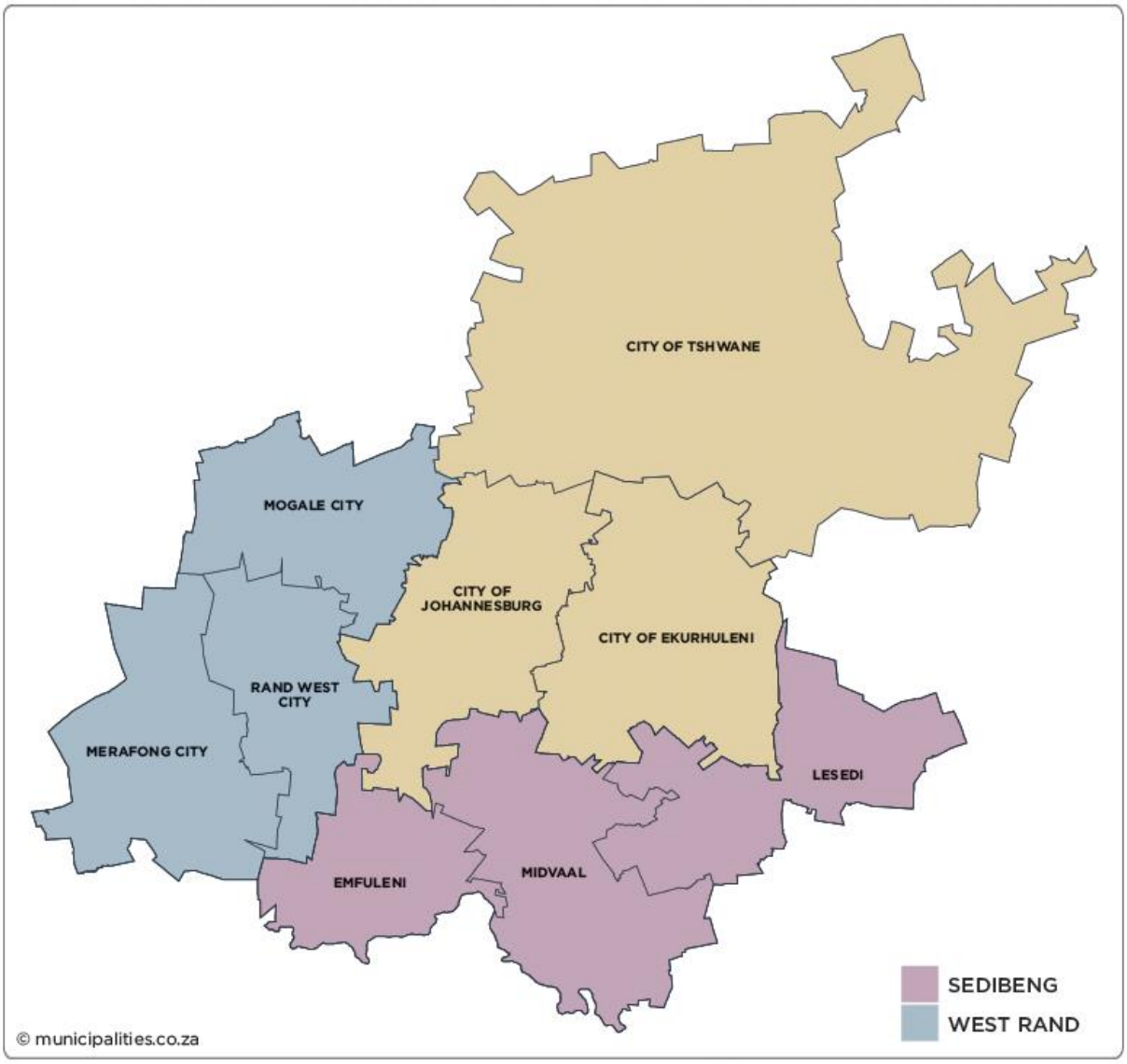


Figure 8: District Municipalities (Municipalities.co.za)

11.1.3 CLIMATIC CONDITIONS OF THE PROPOSED AREA

Hammanskraal, located in the Gauteng province of South Africa, has a typical subtropical highland climate, influenced by its inland location and high altitude. The region experiences hot summers and mild winters.

The average annual highest temperature in Hammanskraal typically ranges from around 25 to 30 degrees Celsius. During the peak of summer, which is usually from December to February, temperatures can often soar above 30 degrees Celsius, with occasional heatwaves pushing temperatures even higher.

Winters, on the other hand, are generally mild, with average daytime temperatures ranging from 15 to 20 degrees Celsius. Frost is rare, but temperatures occasionally drop below freezing during the coldest months of June and July, particularly during clear nights.

Regarding precipitation, Hammanskraal typically receives its rainfall during the summer months, which span from November to March. The mean annual precipitation in the area ranges from approximately 400 to 600 millimeters. However, rainfall patterns can vary, and the region may experience occasional heavy downpours or prolonged dry spells.

11.1.4 GEOLOGY WITHIN THE STUDY AREA

The project lies on the eastern margin of the Transvaal Basin. Volcanic intrusive rocks associated with the final stages of the Bushveld Igneous complex are also present, as are much younger sediments from the Karoo Basin, the Ecca Group's shales and sandstones.

In a much younger foreland basin that partially overlies the Transvaal Basin, namely the Karoo Basin filled with meltwaters and then waters from the northern and southern highlands, the sediments of the Karoo Supergroup accumulated from the Late Carboniferous to the Jurassic. The basal-most sediments are known as the Dwyka Group diamictites and tillites and were from the glacial meltwaters. As the supercontinent moved northwards and the climate warmed, the sediments filling the basin became known as the Ecca Group. In the northwestern part of the basin, the Ecca sediments are divided into the basal Pietermaritzburg Group, the Vryheid Formation, and the Volksrust Formation based on the lithofacies, ranging from mudstones to siltstones, shales, and sandstones. In some parts, the lithofacies are not distinct, and there are no fossils to assist in distinguishing the Formations. This is the case in this region (Johnson et al., 2006)—figure 14 presents geology within the area.

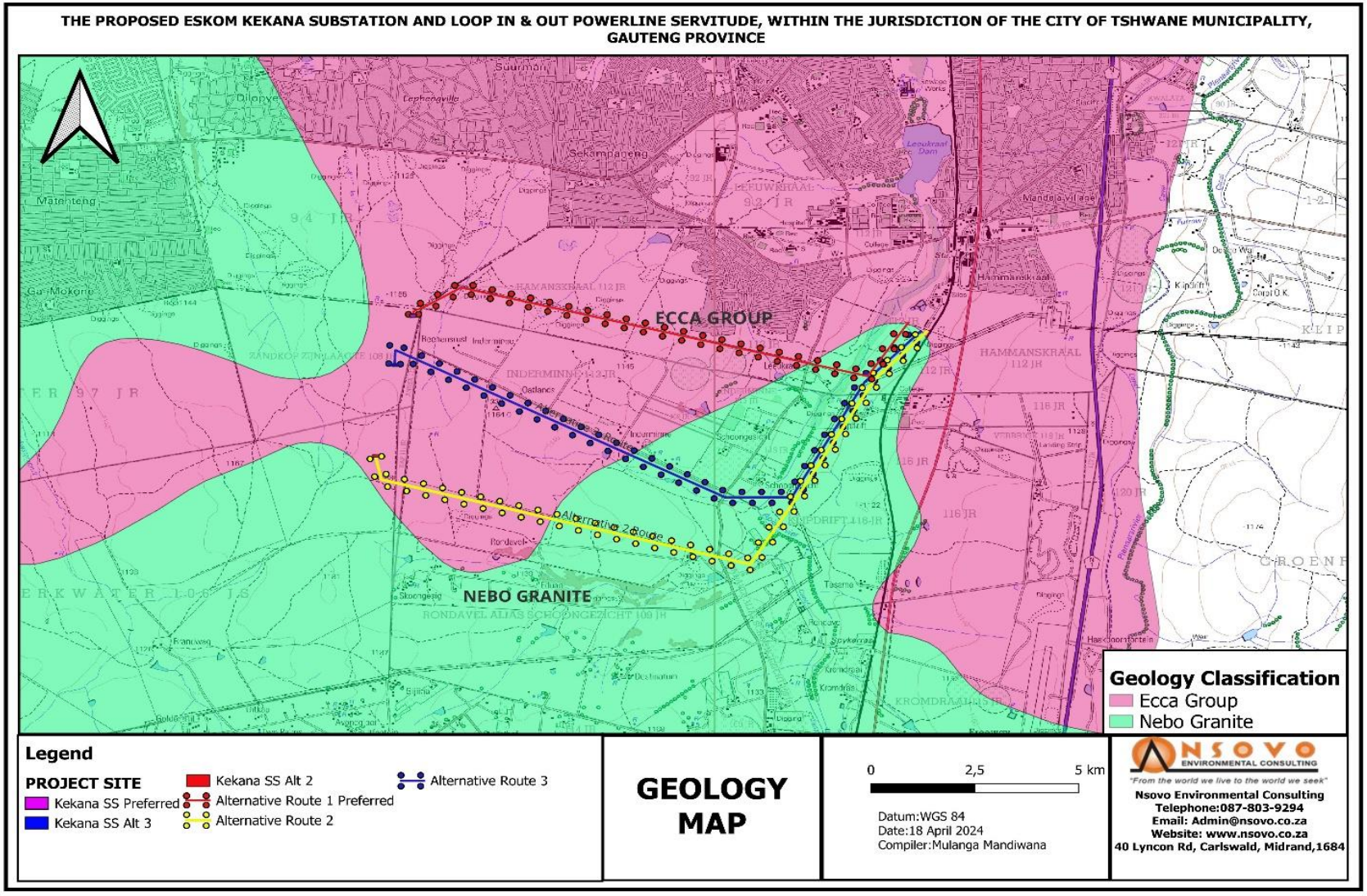


Figure 9: Geology map.

11.1.5 LAND USE AND LAND COVER

The study area includes various subsistence cultivated land, vacant land, river crossings, and settlements. Much of the vacant land is used for grazing. (Refer to the figure below)

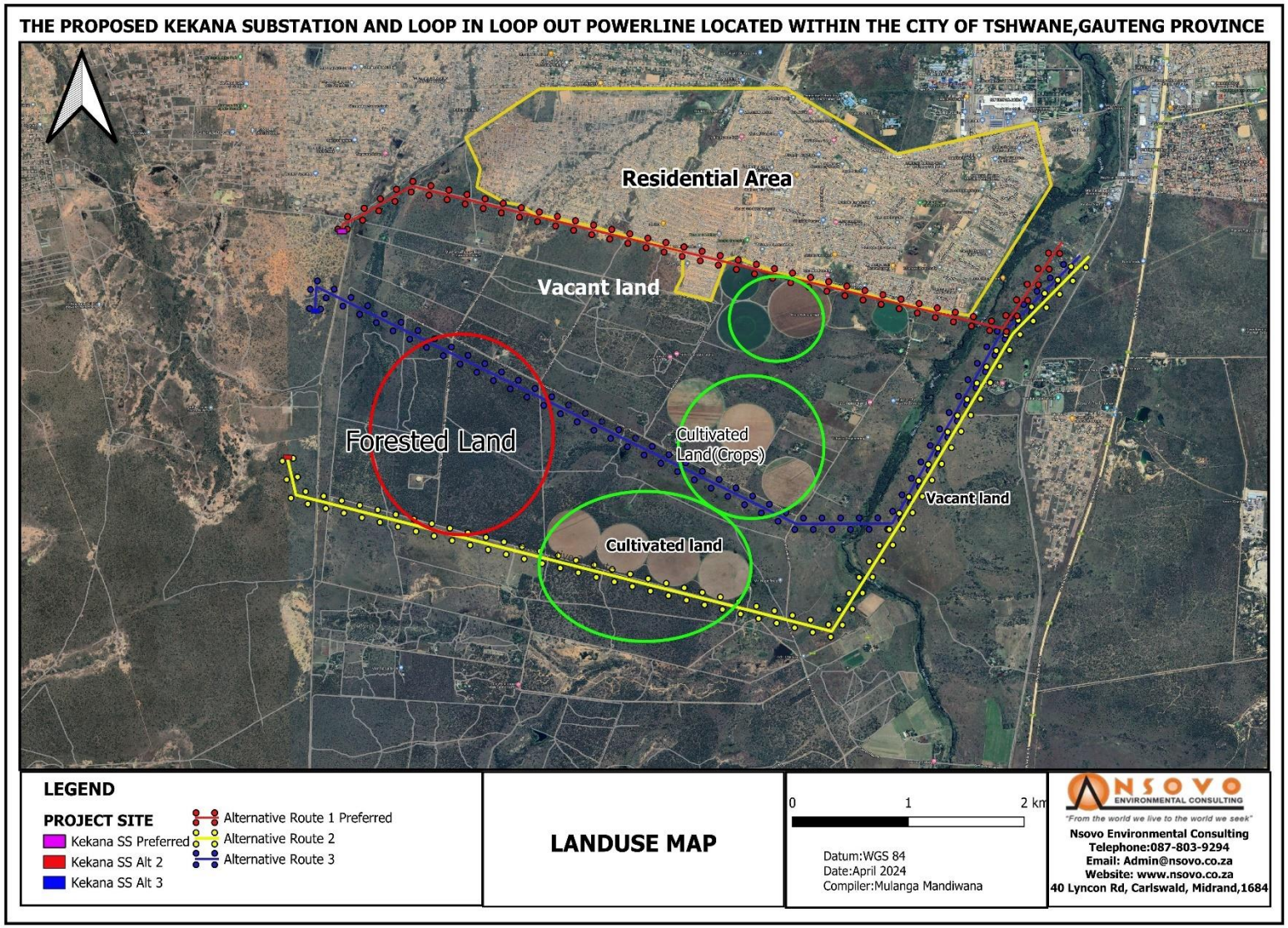


Figure 10: Land Use and Land Cover within the proposed substation and powerline

11.1.6 Topography Of The Study Area

The topography of Hammanskraal is characterized by undulating terrain with scattered hills and valleys. The region is primarily flat to gently sloping, with elevations ranging from approximately 1,200 meters above sea level in the hills to around 1,000 meters in the valleys.

The area is traversed by several seasonal rivers, including the Elands River and the Pienaars River, which contribute to the formation of small gorges and ravines. These watercourses are typically dry outside of the rainy season but can experience flash floods during periods of heavy rainfall.

11.1.7 Surface Water within the area

The study area is located within the catchments of the Crocodile (West) and Marico Water Management Areas in Gauteng Province, South Africa. Within these catchments, the major rivers include the Apies River and its tributaries.

The surface water features consist primarily of the Apies River and its associated tributaries, which play a vital role in providing water resources for the local community. The Apies River serves as a key water source for agricultural, industrial, and domestic purposes in the region. Additionally, smaller streams and drainage channels are scattered throughout Hammanskraal, contributing to the local hydrology and supporting biodiversity. These surface water features are crucial for sustaining ecosystems and providing recreational opportunities for residents. Figure 16 below presents a hydrology map of the site.

11.1.7.1 Wetlands

According to the wetland specialist (Appendix B6), thirty-one hydro-geomorphic units (HGM) comprising three HGM types, namely a valley bottom wetland with a channel, valley bottom wetland without a channel as well as a hillslope seepage wetland connected to a watercourse, were delineated and classified within the study area and within two kilometre surrounding the study area.

Wetlands within the study area improve habitat within and potentially downstream of the study area by providing various ecosystem services, including sediment trapping, nitrate removal, toxicant removal, erosion control, carbon storage, maintenance of biodiversity, and water supply for human use. Each wetland's ability to contribute to ecosystem services within the study area was also dependent on the particular wetland's Present Ecological State in relation to a benchmark or reference condition. Present Ecological State scores were determined for wetlands within the study area using Wet-Health Level 2 assessment, which indicated that, in general, wetlands have been seriously modified as a result of extensive sand mining operations that have taken place on various scales and over several

decades, still continuing at present. Sand mining operations have been impacted more severely towards the north of the study area, where population densities and associated anthropogenic pressures and impacts escalate.

The Ecological Importance and Sensitivity assessment was undertaken to rank water resources in terms of providing goods and services or valuable ecosystem functions that benefit people, biodiversity support, and ecological value and reliance of subsistence users. In general, most of the identified HGM units attained low to very low scores for their respective Ecological Importance and Sensitivity analysis as a result of the temporary nature of the majority of wetlands as well as due to anthropogenic impacts, especially extensive sand mining within the study area's wetlands and their respective catchments. However, two seepage wetlands scored high as a result of their uniqueness and intact nature. The Apies River also received high scores as a result of the regional hydrological and functional, as well as the high ratio of permanent zonation associated with this valley bottom wetland. The direct human benefits associated with the wetlands within the study area included water supply, cultivation of agricultural plots and food gardens, water supply to commercial pivots, subsistence and recreational hunting, collection of building materials and firewood, as well as grazing of livestock.

11.1.7.2 Wetland Vegetation Group

According to Nel et al. (2011), the study areas fall mostly within the Central Bushveld Group 3 wetland vegetation group and a small section Central Bushveld Group 2 vegetation group towards the east of the study area. According to Macfarlane et al. (2014), the Central Bushveld Group 2 is regarded as being vulnerable and the Central Bushveld Group 3 wetland vegetation group is regarded as being Endangered (Macfarlane et al., 2014). All of the desktop-identified FEPA wetlands form part of the Central Bushveld Group 3 wetland vegetation group and were identified by experts at regional review workshops as containing wetlands with biodiversity features but with no valid reasons documented.

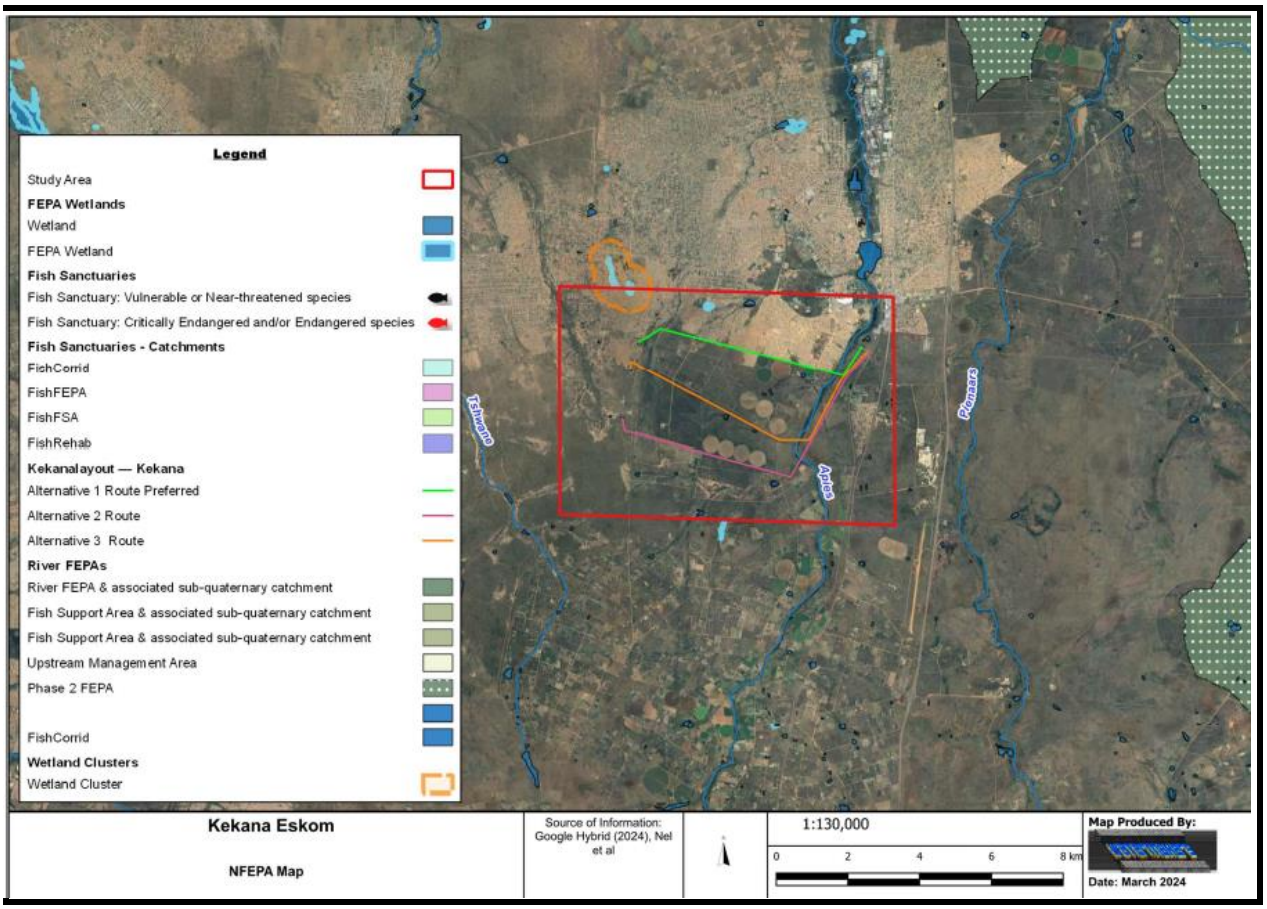


Figure 11: NFEPA map indicating closest FEPA features in relation to the study area

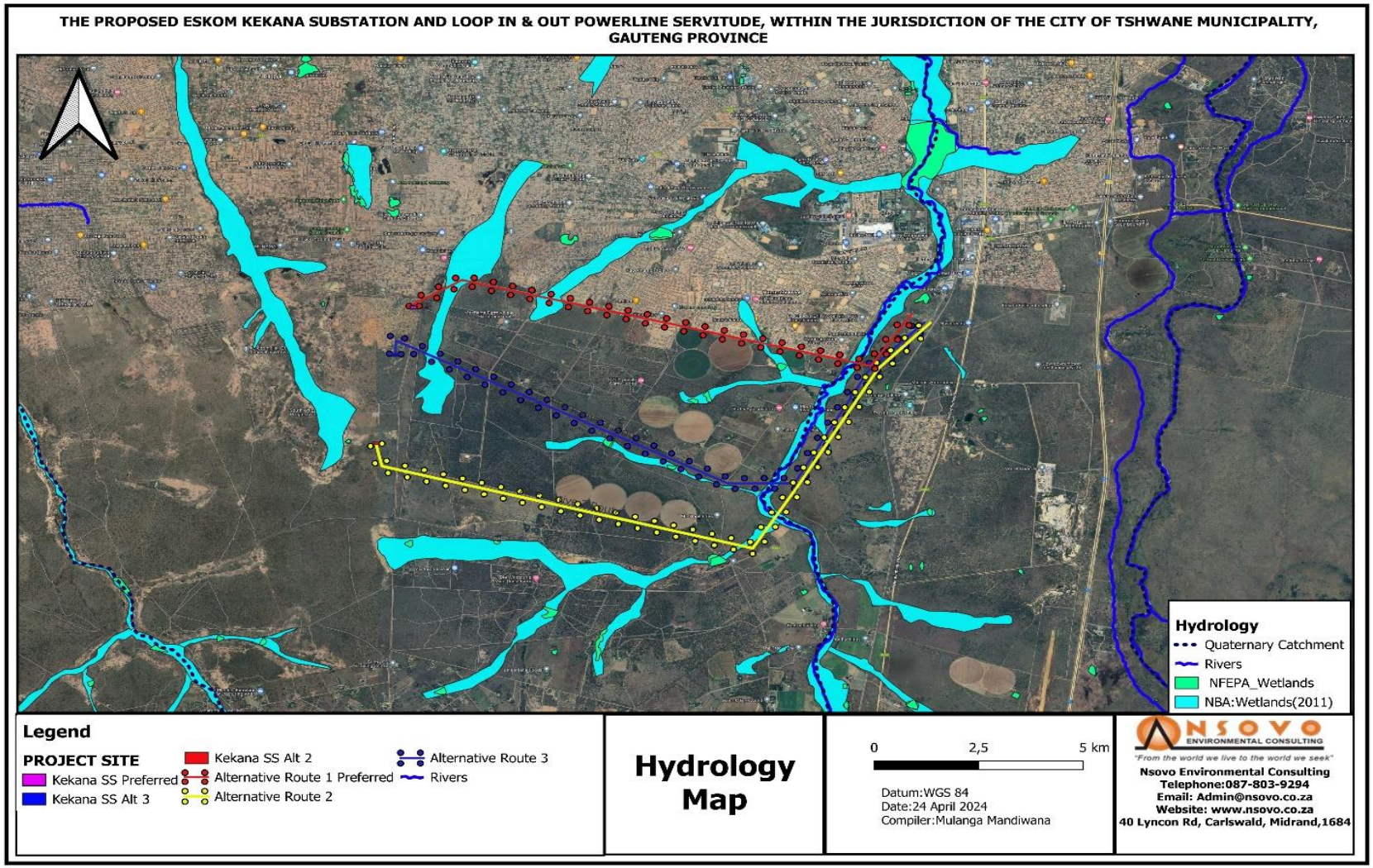


Figure 12: Hydrological map of the proposed location (Nsovo Environmental Consulting).

As indicated above, the Ecological Importance and Sensitivity assessment revealed that most HGM units scored low due to their temporary nature and anthropogenic impacts, notably sand mining. However, two seepage wetlands and the Apies River scored high due to their uniqueness and functional value. The DWS Risk Assessment Matrix (GA 509) evaluated the impact of the proposed development on key freshwater resources, including hydrology, water quality, geomorphology, habitat, and biota, located within 500 meters of the site. The assessment, which considered the severity, spatial scale, duration, and frequency of the proposed Eskom infrastructure relocation, determined that the risk to resource quality is low during both the construction and operational phases. This low impact sensitivity is contingent on the implementation of all recommended mitigation measures outlined in the report. Refer to table 12 below.

Table 12: Wetland Sensitivity Screening Tool Vs Specialist Site Sensitivity Verification Outcomes

Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
	Screening Tool		SSV

11.1.8 AGRICULTURE

Landuses

The Agricultural Impact Report confirmed that the primary economic sector in the City of Tshwane Metropolitan Municipality is agriculture. The immediate north of the study area is characterised by residential areas with mainly subsistence farming practices within the yards. The subsistence farming practices include vegetable production and livestock farming. The mid and south sections of the study area are characterised by large-scale farming enterprises cultivating soybeans under irrigation. Residential areas of commercial accommodation establishments (i.e., guest houses) were also observed. Minimal signs of soil degradation and erosion were observed, which can be attributed to previous excavations and the removal of trees to establish the informal settlements.

Photograph 3: Agriculture Activities within the proposed

Soil Form

a) Mispah/Glenrosa

The Glenrosa soil in the study area is saprolithic (Gs2110), characterized by highly weathered, friable to hard parent rock, particularly resistant quartz. These shallow soils result from limited weathering and convex topography, often leaving rocky outcrops. Classified under Grazing (Class VI) land capability, they are suitable for perennial vegetation and unsuitable for cultivation.

Photograph 4: Mispah/Glenrosa

b) The Grabouw

The Grabouw soil formation can be characterized as soils that have been altered to improve agricultural production through land preparation and the breaking of the plough layer (deep in-situ ripping) to increase the infiltration capacity and root penetration. This has resulted in the original horizon sequence no longer being recognizable and present in disjointed order while remaining within its essential original location. The Grabouw are characterized by stoniness and a shallower depth. However, tillage practices were used to improve the soils for cultivation, and thus, these soils are classified under the Arable

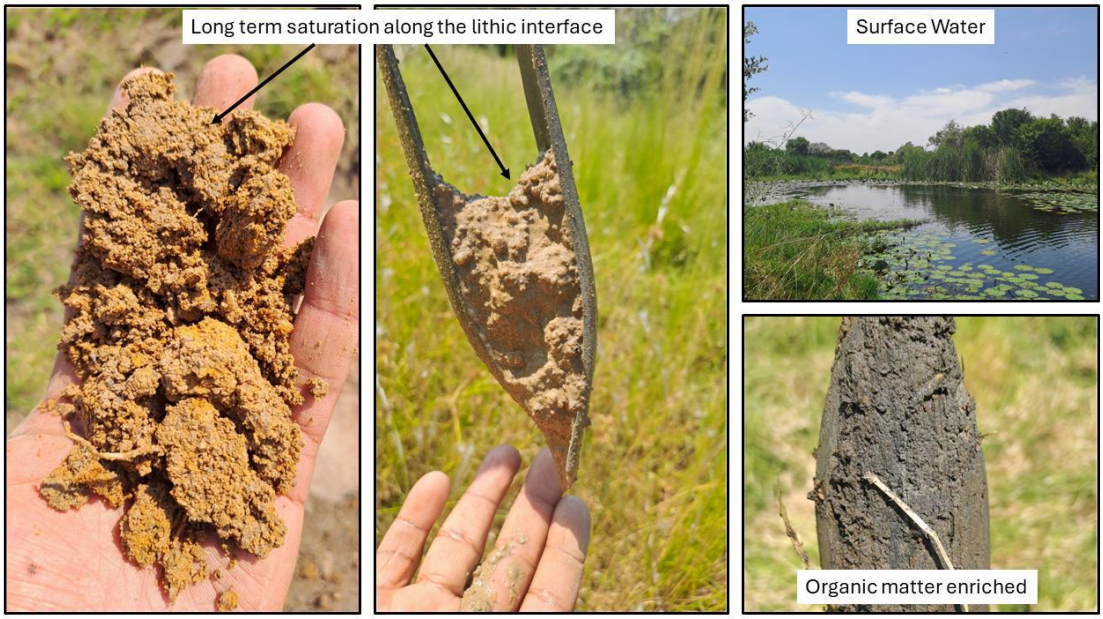
Soyabean cultivation on shallow soils

Photograph 5: Grabouw

c) Dundee and Gleylithic (Glenrosa)

The Dundee soil form, found near watercourses, lacks gleying and consists of fluvial, lacustrine, or aeolian deposits. These sandy soils are low in nutrients and prone to waterlogging during rainy seasons. The Glenrosa soil form (Gs3130) has a gleylithic layer, indicating prolonged water saturation, with a stone line below the orthic horizon. These shallow

soils are prone to waterlogging, making cultivation difficult due to poor aeration. Classified under Wet-based soils (Class V), their main limitation is frequent waterlogging.



Photograph 6: Dundee and Gleylithic (Glenrosa)

d) Witbank

These soils are usually disturbed by anthropogenic influences such as intentional transportation and severe physical disturbance. The diagnostic horizons are no longer arranged in any discernible order or recognizable horizonation as expected in natural soil, sometimes rendering them unsuitable for any cultivation.

Photograph 7: Witbank

The DFFE Screening Tool indicated high agricultural sensitivity within the study area. The site is underlain by grazing farming and arable land. In addition, this is an overhead powerline that has minimal impact on crops/produce. The areas to be affected are small-scale agrarian areas. Therefore, if agricultural/household farms are affected, negotiations will be undertaken to determine compensation. However, GIS Mapping and site assessment confirmed that most of the soils identified within the study area are largely unsuitable for agricultural cultivation due to their inherent soil properties.

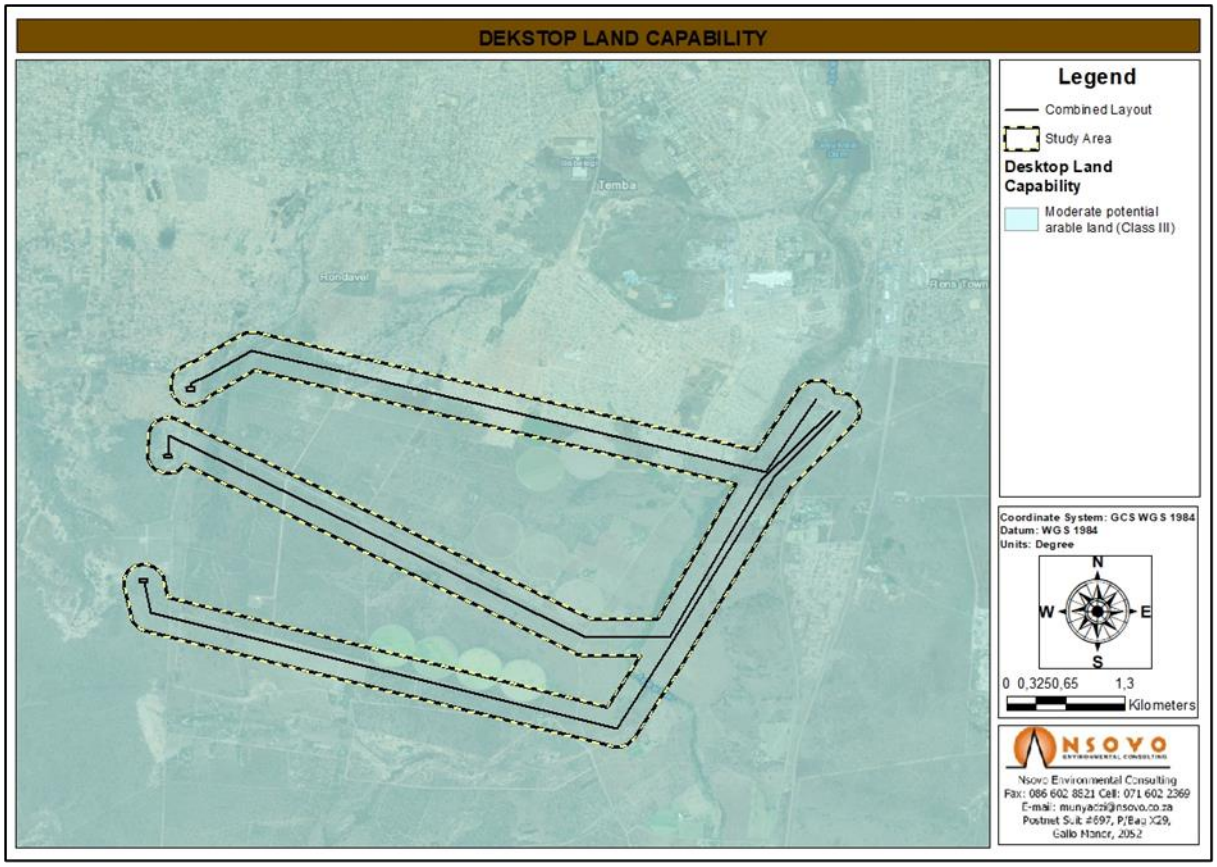


Figure 13: Land capability map.

Table 13: Agricultural Sensitivity Screening Tool Vs Specialist Site Sensitivity Verification Outcomes

Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
	Screening Tool		SSV

11.1.10 PALAEONTOLOGY

The project lies on the eastern margin of the Transvaal Basin. Volcanic intrusive rocks associated with the final stages of the Bushveld Igneous complex are also present, as are much younger sediments from the Karoo Basin, the Ecca Group's shales, and sandstones.

Based on experience and the lack of any previously recorded fossils from the area, it is extremely unlikely that any fossils would be preserved in the overlying soils of the Quaternary. There is a very small chance that fossils may occur below the ground surface in the shales of the Ecca Group, so a Fossil Chance Find Protocol should be added to the EMPr. If fossils are found by the environmental officer or another responsible person once excavations for pole foundations and infrastructure have commenced, they should be rescued, and a paleontologist should be called to assess and collect a representative sample. The impact on the palaeontological heritage would be low, so as far as paleontology is concerned, the project should be authorised. Both alternative sites for the substations are in the Ecca Group but covered with soils and vegetation. Both have low sensitivity, so there is no preferred site for the substations.

The three powerline route alternatives are predominantly on the Nebo Granite, which is non-fossiliferous, so there will be no impact. As far as paleontology is concerned, there is no preferred route.

Table 14: Palaeontology Sensitivity Screening Tool Vs Specialist Site Sensitivity Verification Outcomes

Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
	Screening Tool		SSV

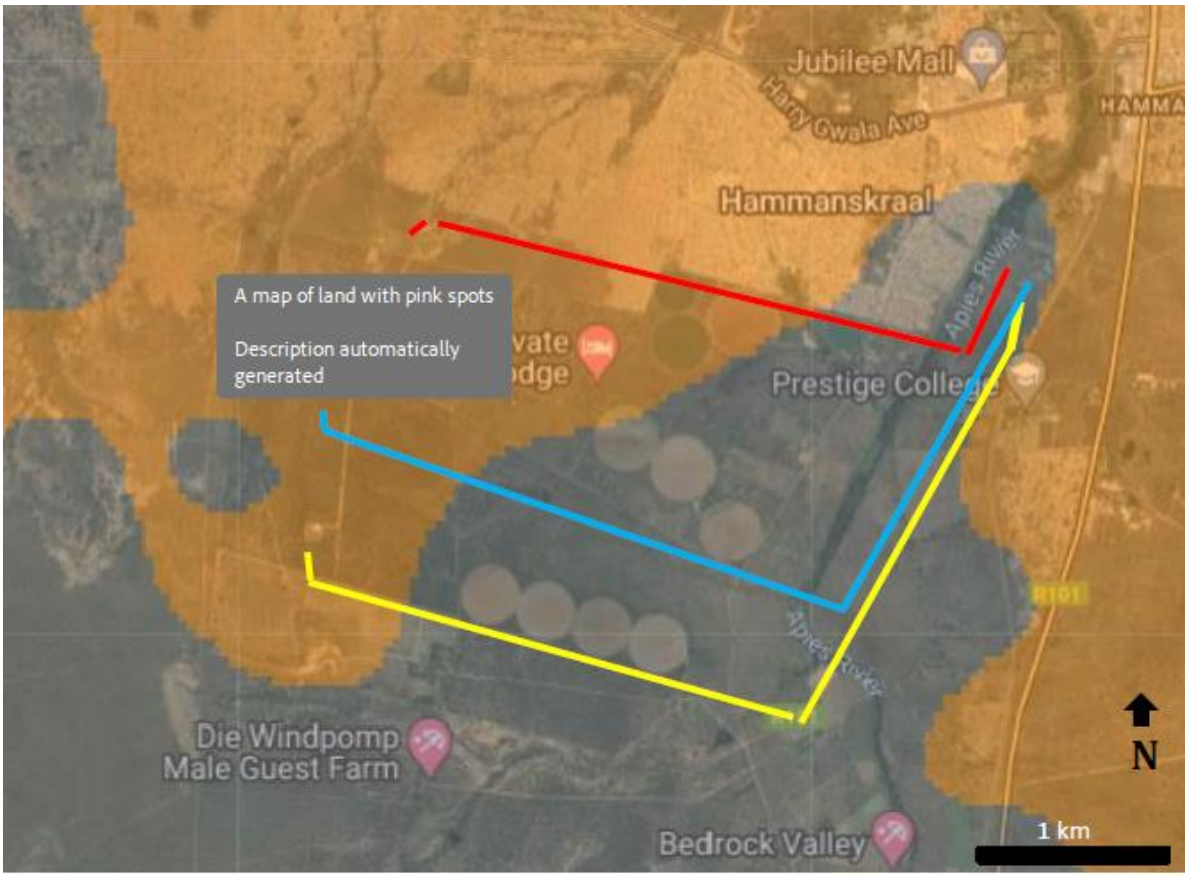


Figure 14: SAHRIS palaeosensitivity map for the site for the proposed Kekana Substation and power lines. Red – Alternative 1 line; blue – alternative 2; yellow alternative 3. White blocks – substations alternatives 2 and 3. Background colours indicate the following degrees of sensitivity: red = very highly sensitive; orange/yellow = high; green = moderate; blue = low; grey = insignificant/zero (Bamford, 2024)

11.1.11 Civil Aviation

Civil aviation was rated high on the screening report. However, a detailed assessment of mapping confirmed that the proposed servitude is within the low sensitivity of the other civil aviation aerodromes. The site is located about 50km away from the Waterkloof Airforce Base (Refer to the figure and table below).

Table 15: Civil Aviation Sensitivity Screening Tool Vs Specialist Site Sensitivity Verification Outcomes

Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
	Screening Tool		SSV

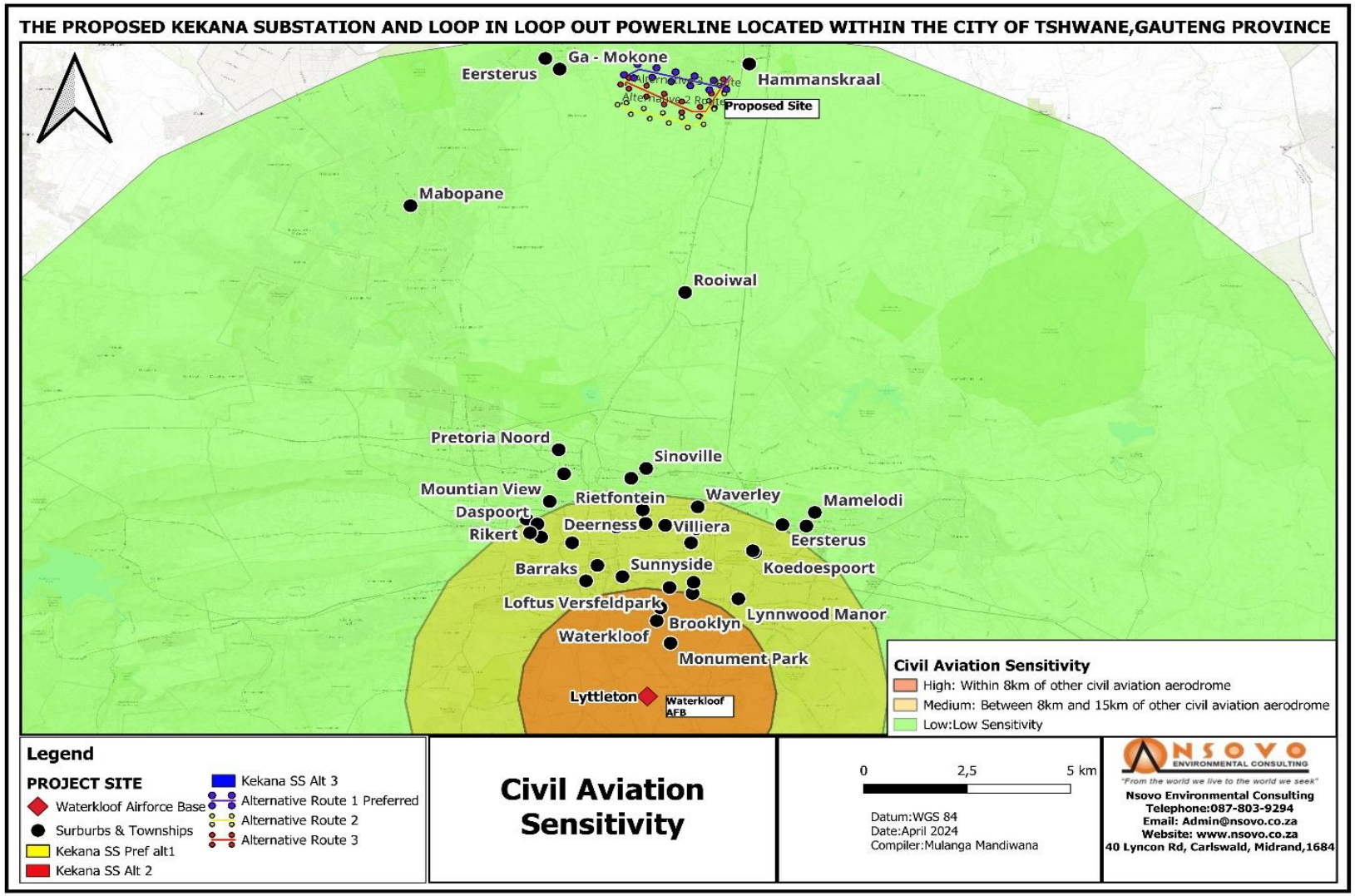


Figure 15:Civil Aviation Map (Nsovo Environmental Consulting).

11.1.9 DEFENCE

The screening tool assessed the proposed site as having low sensitivity to Defence concerns. Therefore, according to protocols for Specialist (GN.320) of March 2020, there are no anticipated negative impacts on defence. Moreover, GIS mapping confirmed that the proposed Kekana Substation and LILO powerline are located within a low-sensitivity area.

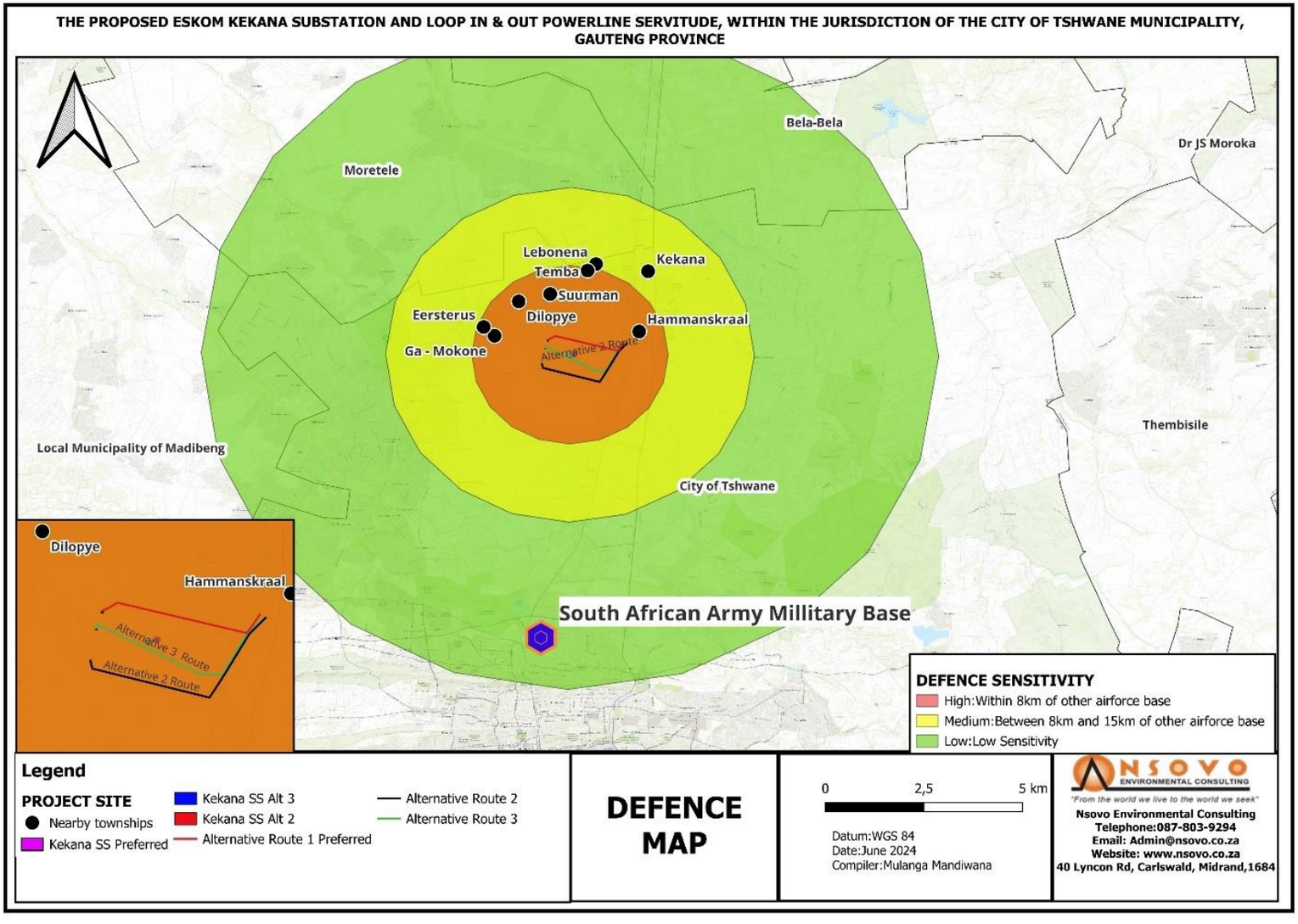


Figure 16: Defence Map (Nsovo Environmental Consulting).

Table 16: Defence Sensitivity Screening Tool Vs Specialist Site Sensitivity Verification Outcomes

Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
			Screening Tool/SSV

11.1.10 AIR QUALITY AND POLLUTION

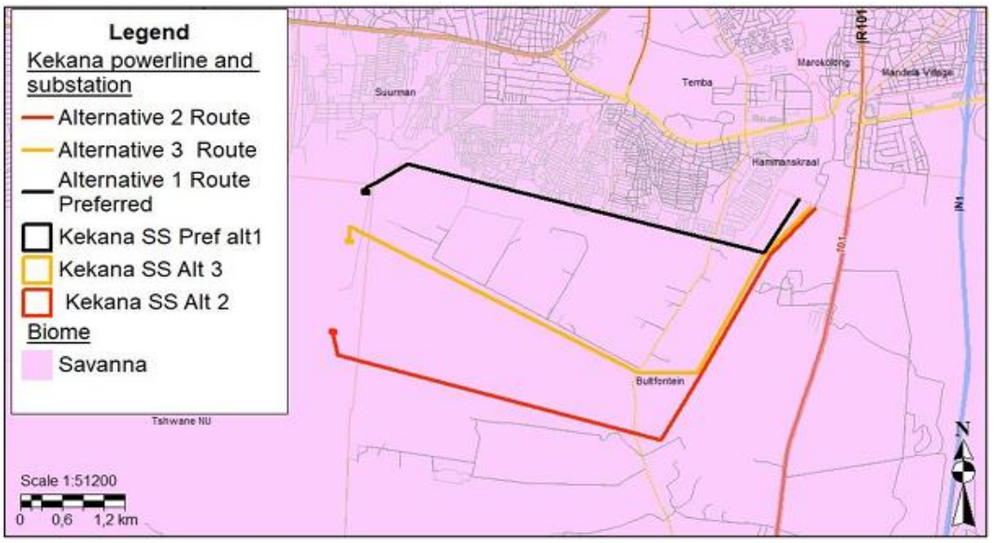
Air quality is defined to include noise and odour and addressing all sources of air pollution (i.e., point, area, and mobile sources). The Gauteng Air Quality Management Plan has been developed to comply with the National Environmental Management: Air Quality Act, 39 of 2004, and more specifically, to guide Air Quality Management. The Plan identifies air pollution sources in the proposed locations as follows:

- Brick making;
- Fuel depots;
- Biomass burning;
- Waste burning; and
- Motor vehicles.

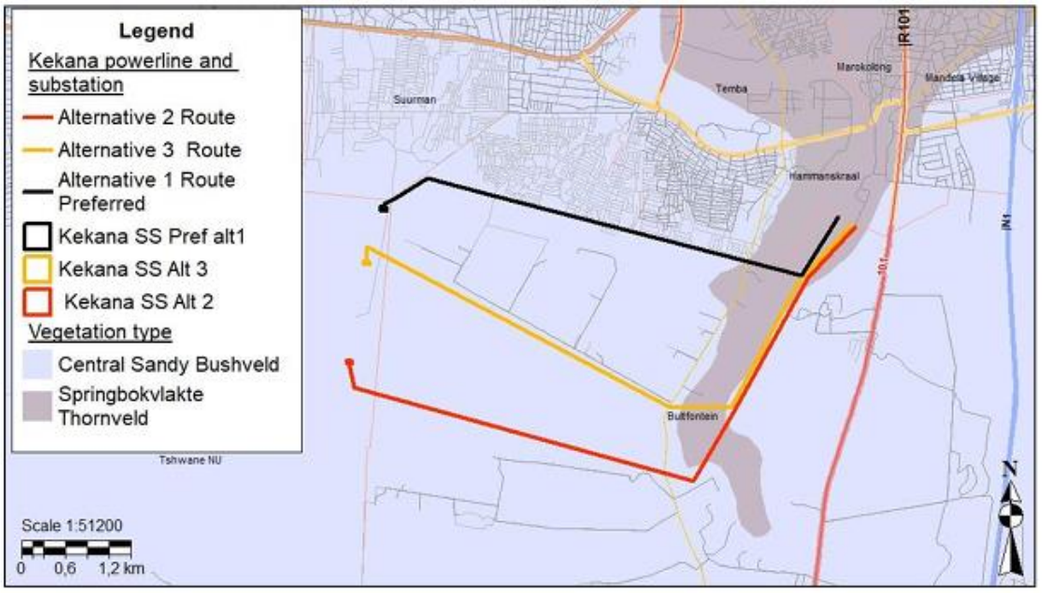
11.1 11 TERRESTRIAL BIODIVERSITY (VEGETATION STRUCTURE AND COMPOSITION)

Regional Vegetation

According to the terrestrial biodiversity the entire project site falls within the Savanna Biome (Figure below) and this Biome is the largest Biome in South Africa and occupies over one third of the country. It is characterized by a grassy ground layer and distinct upper layer of woody plants. This biome is defined by a herbaceous layer dominated by grass species and a discontinuous to sometimes very open tree layer classified the project site as falling within the Central Sandy Bushveld and Springbokvlakte Thornveld vegetation types, as indicated in Figure below.



Biome on the project site



Central Sandy Bushveld vegetation

Central Sandy Bushveld vegetation type is found in Limpopo, Mpumalanga, Gauteng and North-West Provinces. The undulating terrain occurs mainly in a broad arc south of the Springbokvlakte from the Pilanesberg in the west through Hammanskraal and Groblersdal to GaMasemola in the east. A generally narrow irregular band occurs along the north western edge of the Springbokvlakte (including Modimolle) extending into a series of valleys and lower altitude areas within the Waterberg including the upper Mokolo River Valley near Vaalwater, the corridor between Rankins Pass and the Doorndraai Dam, and the lowlands from the Mabula area to south of the Hoekberge. Some isolated sandy rises are found on the Springbokvlakte (Mphamphe, 2024).

The conservation status of this vegetation type is classified as Vulnerable, with a national conservation target of 19%. Less than 3% is statutorily conserved spread thinly across many nature reserves including the Doorndraai Dam and Skuinsdraai Nature Reserves. An additional 2% is conserved in other reserves including the Wallmansthal SANDF Property and a grouping of private reserves, which include most of the Nylsvlei freshwater wetlands. About 24% is transformed, including about 19% is cultivated and 4% is urban and built-up areas. Much of the unit in the broad arc south of the Springbokvlakte is heavily populated by rural communities. Several alien plants are widely scattered but often at low densities; these include Cereus jamacaru, Eucalyptus species, Lantana camara, Melia azedarach, Opuntia ficus indica and Sesbania punicea (Mphamphe, 2024).

Springbokvlakte Thornveld

Springbokvlakte Thornveld is found in Limpopo, Mpumalanga, North-West and Gauteng Provinces: Flats from Zebediela in the northeast to Hammanskraal and Assen in the southwest as well as from Bela-Bela and Mookgophong in the northwest to Marble Hall and Rust de Winter in the southeast (Mucina and Rutherford, 2006). According to Mucina and Rutherford (2006), the Important taxa include:

- Small trees: Acacia karoo (d), A. luederitzii var. retinens (d), A. mellifera subsp. detinens (d), A nilotica (d), Ziziphus mucronata (d), Acacia tortilis subsp. heteracantha, Boscia foetida subsp. rehmanniana.

- Tall shrubs: Euclea undulata (d), Rhus engleri (d), Dichrostachys cinerea, Diospytos lycioides subsp. lycioides, Grewia flava, Tarchonanthus camphortus;
- Low shrubs: Acacia tenuispina (d), Ptycholobium plicantum;
- Succulent shrub: Kleinia longiflora;
- Herbaceous climbers: Momordica balsamina, Rhynchosia minima;

The conservation status of this vegetation type is classified as Endangered, with a national conservation target of 19%. Only 1% statutorily conserved, mainly in the Mkombo Nature Reserve. Roughly three times this area is conserved in a number of other reserves. At least 49% transformed, including about 45% cultivated and 3% urban and built-up. Dense rural populations in parts of the southern and eastern side of the unit. Very scattered alien plants over wide areas include Cereus jamacaru, Eucalyptus species, Lantana camara, Melia azedarach, Opuntia ficus-indica and Sesbania punicea (Mphamphe, 2024).

The Screening report for an Environmental Authorization evaluates the proposed site's environmental sensitivity. It rates animal species as highly sensitive, plant species as medium, and terrestrial biodiversity as very high due to the presence of several protected areas.

A site verification and impact assessment found the overall ecological sensitivity to be medium. The Apies River is highly sensitive, proposed routes 2 and 3 are medium, and alternative route 1 is low in sensitivity. See table below.

Table 17: Terrestrial Sensitivity Screening Tool Vs Specialist Site Sensitivity Verification Outcomes

Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
	Screening Tool		SSV

11.1.11 HERITAGE

According to the Heritage Specialist Report (Appendix B2), in the 1800s, the area where Hammanskraal was later established was occupied by the Ba-Kgatla and a major segment of the Tswana. Subsequently, the Ndebele of Lebello settled the area. In 1940, many people settled in Hammanskraal as a result of forced removals. Hammanskraal was developed as an unplanned settlement, with the residents supplying labour to industries in Pretoria. In 1972 the Homeland of Bophuthatswana was formed into which Hammanskraal was incorporated. Charles Mangope, the President of the Homeland is said to have been a visionary who established an industrial park in Hammanskraal in the 1970s and the Carousel Casino in 1992. Both projects were praised for bringing much-needed employment relief (Godsell, 2015).

The heritage survey highlighted that no Ston Age, Iron Age, or burial grounds were found within the study area. However, two old buildings recorded were considered of low significance: one ruined brick building close to the Option 3 route (Lat: 25°25'53.7"S, Long: 28°14'19.1"E) and another ruined brick building close to the Option 2 route (Lat: Long: 25°25'42.25"S, 28°14'44.72"E). The Screening report identified Heritage as Low, and this was confirmed by the site verification

Table 18: Heritage Sensitivity Screening Tool Vs Specialist Site Sensitivity Verification Outcomes

Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
			Screening Tool/SSV

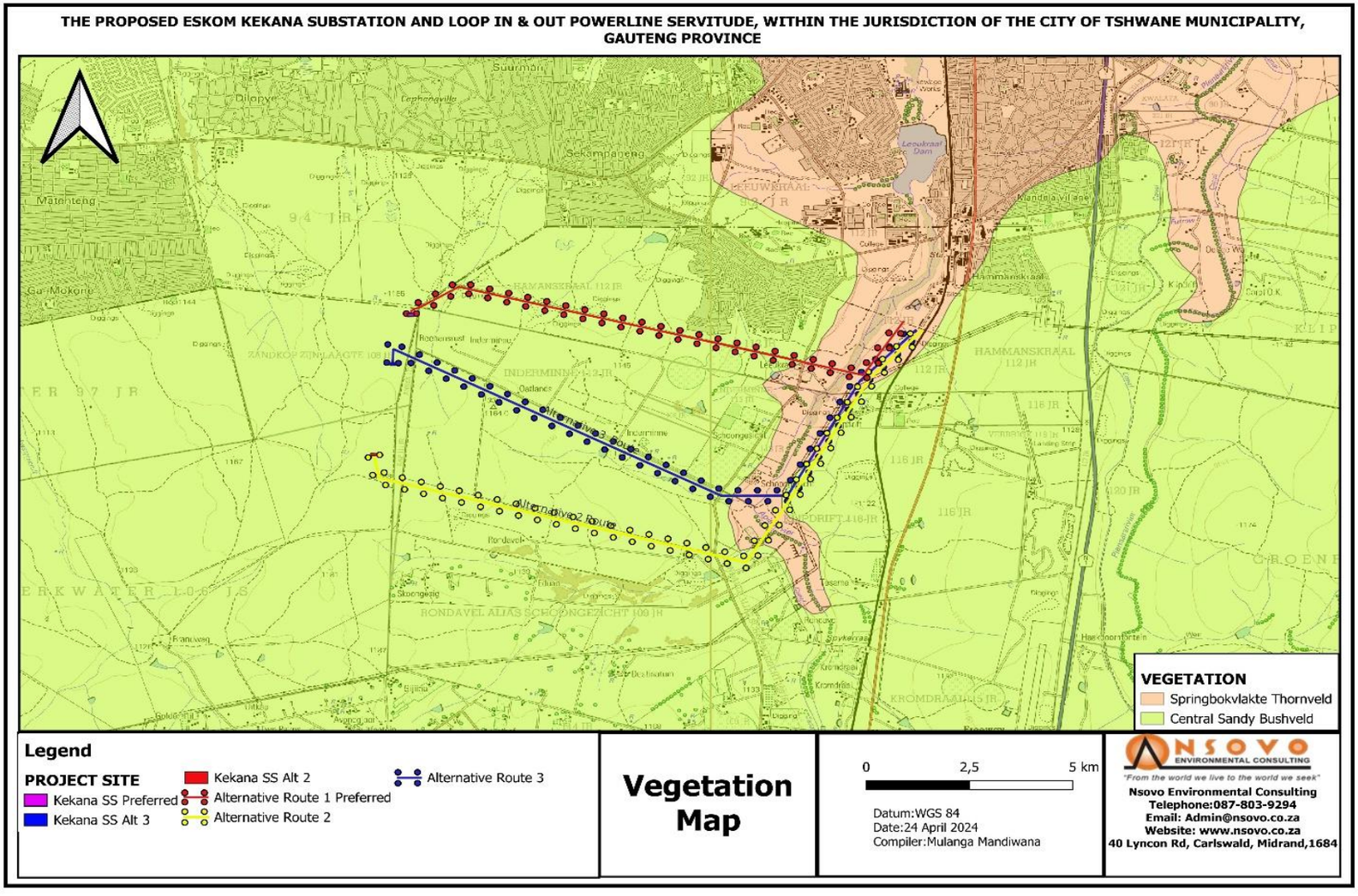


Figure 17:Vegetation Map

12 DESCRIPTION OF THE ENVIRONMENTAL ISSUES AND POTENTIAL IMPACTS, INCLUDING CUMULATIVE IMPACTS IDENTIFIED

This section describes the potential impacts of the proposed development on the receiving environment. Impacts associated with the relevant environmental components within the study area, as identified, have been assessed based on the EAP's opinion in consideration of the site and previous experience on similar undertakings, as well as consideration of specialist studies undertaken.

12.1 POTENTIAL ENVIRONMENTAL IMPACTS IDENTIFIED

Potential environmental impacts are described in the table below. This is not an exhaustive list but an insight into the potential impacts of the proposed development. It must be noted that more potential impacts may be identified during the conclusion of public participation, and any such impacts will be assessed in more detail.

Table 18: Potential Environmental Impact Identified

Issue	Nature	Description
Employment	Positive-No mitigation required	This impact will typically be limited to skilled engineers and planning professionals. The proposed powerline project will result in minimal opportunities for the skilled local community during the construction phase. This impact will be positive.
Air Pollution	Neutral	The potential air pollutants will be generated during construction. This may be from the following: • Dust emanating from site preparation, • Excavations for placing towers and • Exhaust fumes from construction vehicles. The impact is anticipated to be site specific in extent, short term, and of low significance.
Terrestrial Biodiversity	Negative	Potential negative impacts on terrestrial biodiversity that may be expected during the construction phase include: • Irreversible loss of natural habitat; and • Ecosystem degradation and loss of integrity.
Visual	Negative	The negative impacts associated with the proposed development include: • Negative impact on the visual quality of the landscape due to the presence of foreign elements; • Loss of vegetation cover; • Construction camp and lay-down yard may cause unsightly views. All these will result from the establishment of construction camps, construction of access roads, and the clearance of the servitude. The impact can be considered definite, short-term, local in extent, and low to insignificant as there is already an existing powerline and associated linear infrastructure.

Issue	Nature	Description
Avifauna	Negative	The construction phase will result in habitat destruction, impacting the faunal communities, including avifauna. The impacts identified include the following: • Loss of priority avian species from important habitats. • Loss of resident avifauna through increased disturbance. • Long-term or permanent degradation and modification of the receiving environment resulting to the loss of critical avian habitats. • Collisions with powerline infrastructure. • Electrocution risks leading to injury or loss of avian life, which decreases avifauna species diversity. This impact is of medium significance, considering the sensitive area that the line will traverse (e.g., wetland, woodland vegetation).
Noise	Negative	An increase in noise is expected to emanate from construction activities, which might have an impact, especially on the surrounding communities. Noise associated with the construction activities can be mitigated by limiting the construction operation to business hours, during which noise will not be a big concern to surrounding residents. According to the SABS 0103, the acceptable noise level during the daytime is 45 dB. A noise intrusion is disturbing if it exceeds 7dBA or more. Given the nature of the project, it is highly unlikely that the stipulated noise levels will be exceeded at any given time. During the operational phase, the impact of noise will also be reduced to almost insignificant levels, given the nature of the proposed project.
Waste	Negative	Naturally, the land's occupancy will result in the accumulation of various forms of waste in the area. The area's aesthetic value would decrease if waste were not collected and disposed of appropriately. Waste material will be generated during the construction phase. Such waste may accumulate from site personnel's campsite or litter left

Issue	Nature	Description
		around the work area by the construction staff. Other waste substances may come from cement bags, amongst other construction materials. Although reduced, waste has a definite impact and will last for the duration of the construction and operational phases.
Soil	Negative	The movement of heavy machinery and vegetation clearance may destabilise soils, which then become susceptible to erosion. The continuous movement of vehicles over the land during the construction phase may leave it exposed to erosion.
Heritage	Neutral	Signs of sites of heritage potential were old buildings with ruined bricks close to the Alternative 3 route, but these are far from the preferred alternative route and are located much closer to routes 2 and 3. No Stone Age, Iron Age, and Burial grounds were found during the survey.
Hazardous substances	Negative	Hazardous substances will be in the form of spillages of hydrocarbons from vehicles during construction. The risk of spillage of a variety of hazardous substances may occur during the use of heavy machinery, construction vehicles, and construction vessels for instance, spillage results from fuel leaks, refueling, or collision. Hydrocarbons are toxic to aquatic organisms, and precautions must be taken to prevent them from contaminating the surrounding rivers and tributaries. All fuel and oil must be stored with adequate spill protection, and no leaking vehicles should be permitted on site. Intentional disposal of any substance into the river system is prohibited. Any accidental spillage must be prevented, contained, and reported immediately.

Issue	Nature	Description
Social Impact Assessment	Neutral	The following impacts can be expected during construction: • Access across the site • Crime and security • Health issues • Economic issues • Job creation • SME opportunities • Traffic disruption • Resettlement • Land claim. During construction, in areas with a higher population, such as in the residential and commercial areas, access across the site is likely to be more disruptive to a higher number of people engaging in their daily activities than in less populated rural areas. Therefore, the Contractor must consult with property owners, local authorities, and communities to ensure that all affected parties are informed of the timing and extent of any disruption.
Surface and Groundwater Pollution	Negative	The proposed powerline traverses the Apies River and wetlands. The impact assessment identified the destruction of wetland and riparian habitat, changes to the surface and sub-surface flows as well as sedimentation as the major potential impacts during the construction and operational phases. Several general and specific mitigation measures are proposed. All three alternatives are considered to have the same potential impacts when compared, with no preferential route from a wetland perspective; the emphasis must fall on site-specific mitigation for each scenario /route. Further, illegal sand mining is so rife in and surrounding the study area that all three substation sites could potentially be affected by erosion processes associated with sand mining activities.

Issue	Nature	Description
		An increased volume of stormwater runoff, peak discharges, and frequency and the severity of flooding are therefore often characteristic of the transformed catchment. The impact on water is site-specific but can be local or regional if proper measures are not implemented.
Traffic	Negative	Given the magnitude of the project, the amount of material and equipment will be delivered to the site during the construction phase of the development. Therefore, there is expected to be a significant impact considering that the R101 and other access roads form part of the primary access to the study area. Unmanaged construction vehicles may decrease road safety for other road users.

13 METHODOLOGY FOR ASSESSING THE SIGNIFICANCE OF POTENTIAL IMPACTS

The assessment of impacts is primarily based on the Department of Environmental Affairs and Tourism's (1998) Guideline Document: Environmental Impact Assessment Regulations. The assessment considers impacts arising from the project's proposed activities both before and after the implementation of appropriate mitigation measures.

The impacts are assessed according to the criteria outlined in this section. Each issue is ranked according to extent, duration, magnitude (intensity), and probability. From these criteria, a significance rating is obtained, and the method and formula are described below. Where possible, mitigation recommendations have been made and are presented in tabular form.

The criteria in the tables below will be used for the evaluation. The nature of each impact will be assessed and described in relation to the extent, duration, intensity, significance, and probability of occurrence attached to it.

Table 19: Methodology used in determining the significance of potential environmental impacts.

Status of Impact The impacts are assessed as either having a: The negative effect (i.e., at a `cost' to the environment), positive effect (i.e., a `benefit' to the environment) or Neutral effect on the environment. **Extent of the Impact** (**1**) Site (site only), (**2**) Local (site boundary and immediate surrounds), (**3**) Regional (within the project area), (**4**) National, or (**5**) International. **Duration of the Impact** The length that the impact will last is described as either: (**1**) immediate (<1 year) (**2**) short term (1-5 years), (**3**) medium term (5-15 years), (**4**) long-term (ceases after the operational life span of the project), (**5**) Permanent. **Magnitude of the Impact**

The intensity or severity of the impacts is indicated as either:

(**0**) none,

(**2**) Minor,

(**4**) Low,

(**6**) Moderate (environmental functions altered but continue),

(**8**) High (environmental functions temporarily cease), or

(**10**) Very high / Unsure (environmental functions permanently cease).

Probability of Occurrence

The likelihood of the impact actually occurring is indicated as either:

(**0**) None (the impact will not occur),

(**1**) improbable (probability very low due to design or experience)

(**2**) low probability (unlikely to occur),

(**3**) medium probability (distinct probability that the impact will occur),

(**4**) high probability (most likely to occur), or

(5) Definite.

Significance of the Impact

Based on the information contained in the points above, the potential impacts are assigned a significance rating (**S**). This rating is formulated by adding the sum of the numbers assigned to extent (**E**), duration (**D**) and magnitude (**M**) and multiplying this sum by the probability (**P**) of the impact.

S=(E+D+M) P

The significance ratings are given below.

(**<30**) low (i.e., where this impact would not have a direct influence on the decision to develop in the area),

(**30-60**) medium (i.e., where the impact could influence the decision to develop in the area unless it is effectively mitigated),

(**>60**) high (i.e., where the impact must influence the decision process to develop in the area).

13.1 ASSESSMENT OF IMPACTS

The following section presents the impacts and their significance as rated by the specialists and the EAP. The Tables below highlight the significance of the identified impacts during the construction and operational phases of the proposed development.

The impacts are assessed according to the criteria outlined below. Each issue is ranked according to extent, duration, magnitude (intensity), and probability. From these criteria, a significance rating is obtained; the method and formula is also described below. Mitigation measures and recommendations have been made and are presented in tabular form below.

The ratings are assessed with and without mitigation and color-coded as follows to indicate the significance:

High	>60
Medium	>30 - 60
Low	<30

13.1.1 Impacts Relating to Construction Phase

13.1.2 Soils and Erosion

The loss of topsoil in South Africa is a national concern; thus, erosion control measures should be taken seriously. Ineffective stormwater management systems and the unnecessary clearance of vegetation can result in soil erosion. Where soils are highly erodible, adequate measures must be implemented to prevent undue soil erosion. Extensive soil erosion is not expected during the construction of the proposed powerline due to minimal vegetation that will be cleared.

Impact	Corrective measures	Impact rating criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
Construction Phase:							
• Unnecessary clearance of vegetation. • Ineffective stormwater management systems.							
Soils and Erosion	No	Negative	2	2	4	4	32 = Medium
	Yes	Negative	1	2	2	3	15 = Low
Mitigation Measures							

Impact	Corrective measures	Impact rating criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
• Implementation of anti-erosion measures, such as the construction of berms to reduce the water velocity, is essential. • Soil must be stabilized to prevent the resulting washdowns into any water resource, and where possible, rehabilitation of the disturbed area must be done concurrently with the construction activity. • A stormwater management plan and proper stormwater management measures must be developed and implemented to prevent pollution runoff. • Soil stockpiles must be kept at a minimum of 2m. • Foundation excavations for each tower must be inspected by a competent Engineer and Geotech during construction. • Construction should be done, preferably during the dry season. • Excavation must not be left open for longer than necessary. • Existing roads must be used during construction.							
Operational Phase							
• Use of the wrong roads during maintenance							
Soils and Erosions	Yes	Negative	1	1	2	3	12 Low
Mitigation Measures							
• If significant erosion occurs, adequate corrective measures must be implemented to prevent further soil loss. • Existing roads must be used during construction. • The soil must be stabilised to prevent the resulting washdowns into any water resource, and where possible, rehabilitation of the disturbed area must be done concurrently with the construction activity.							

13.1.3 IMPACT ON TRAFFIC

Impact	Corrective measures	Impact rating criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
Construction Phase:							

Impact	Corrective measures	Impact rating criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
• Increased traffic loads may negatively impact existing traffic flow. • Construction vehicles may decrease road safety for other road users. • Uncontrolled movement of construction vehicles may result in unnecessary impacts to the environment through vegetation and habitat destruction.							
Traffic	No	Negative	2	2	6	4	40 = Medium
	Yes	Negative	2	2	4	3	24 = Low
Mitigation Measures							
• The delivery of construction material and equipment should be limited to hours outside peak traffic times (including weekends) prevailing on the surrounding roads. • Access roads must be clearly marked. • Delivery vehicles must comply with all traffic laws and bylaws. • A speed limit of 30 km per hour must be maintained.							
Operational Phase							
None.							
Traffic	Yes	Negative	1	1	2	3	12 Low
Mitigation Measures							
• Existing roads used during construction must be used during operation when maintenance is conducted.							

13.1.4 VISUAL IMPACT

Impact	Corrective measures	Impact rating criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
Construction Phase:							
• Negative impact on the visual quality of the landscape due to the presence of foreign elements and a loss of vegetation cover. • The initial presence of a construction camp in an undeveloped landscape will cause a temporary and localised alteration to the landscape character. • Construction camps and lay-down yards may cause unsightly views to residents, tourists, and motorists.							

Impact	Corrective measures	Impact rating criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
• The cleared site, construction camp and material lay-down yards will appear unsightly and out of character.							
Visual Impact	No	Negative	3	5	6	4	56 = Medium
	Yes	Negative	3	5	6	3	42 = Medium
Mitigation Measures							
• Minimize changes in alignment direction to reduce the use of visually intrusive self-supporting strain towers. • Rehabilitate areas around pylons promptly after construction to avoid prolonged exposure of soil. • Use existing access roads where possible. • Keep disturbance from new access roads minimal, preferring two-track dirt roads. • Locate access routes to limit topography modification and avoid removal of established vegetation. • Avoid crossing ridges, rivers, pans, or visually valuable natural features, as well as areas of floral endemism and vegetation that is slow to recover. • Maintain minimal or no cleared road verges. • Position access routes on the perimeter of disturbed areas to prevent fragmentation of intact vegetated areas. • If vegetation clearance for roads is necessary, avoid creating continuous straight lines; instead, curve roads to reduce the visible extent of cleared corridors. • Position the alignment and cleared servitude to avoid removing established vegetation. • Avoid creating a continuous linear path of cleared vegetation that contrasts strongly with the surrounding landscape. • Feather the edges of the cleared corridor to prevent a clearly defined line through the landscape. Locate construction camps in already disturbed areas or naturally bare areas to avoid removing established vegetation. • Use existing screening features like dense vegetation or topographical features to hide construction camps and lay-down yards from sensitive visual receptors. • Maintain neat, clean, and organized construction sites and camps to ensure a tidy appearance. Situate construction camps away from existing residents, lodges, and tourist venues.							
Operational Phase							

Impact	Corrective measures	Impact rating criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
• Negative impact on the visual quality of the landscape due to the presence of a transmission line and associated structures such as towers. • The presence of a power line intrudes on existing views and spoils the open panoramic views of the landscape.							
Visual Impact	Yes	Negative	3	5	6	3	42 = Low
Mitigation Measures							
• A 200 m buffer zone around alignments should be applied within towers, and this allows for placement of the power lines in an area that will cause the least impact. • Locate access routes to limit modification to the topography and to avoid the removal of established vegetation. • Avoid crossing over or through ridges, rivers, pans, or any natural features that have visual value. This also includes centres of floral endemism and areas where vegetation is not resilient and takes extended periods to recover.							

13.1.5 CHANGES IN SEDIMENT ENTERING AND EXITING THE WATER RESOURCE

Impact	Corrective measures	Impact rating criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
Construction Phase:							
• Earthwork activities during powerline construction. • Clearing of surface vegetation will expose the soil, which will result in sedimentation. In addition, indigenous vegetation communities are unlikely to colonise eroded soils successfully and seeds from proximate alien invasive trees can spread easily into these eroded soils. • Disturbance of slopes through creation of roads and tracks adjacent to the watercourse. • Erosion (e.g., gully formation, bank collapse).							
Water Resource	No	Negative	3	3	6	4	48 = Medium
	Yes	Negative	2	3	4	3	27 = Low
Mitigation Measures							

Impact	Corrective measures	Impact rating criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
• It is likely that water will be contaminated within earthworks and should thus be cleaned or dissipated into a structure that allows for additional sediment input and slows down the velocity of the water thus reducing the risk of erosion. Effective sediment traps should be installed. • Construction in and around watercourses must be restricted to the dryer winter months where possible. • Retain vegetation and soil in position for as long as possible, removing it immediately ahead of construction / earthworks in that area. • Only remove vegetation in areas essential for construction and do not allow any disturbance to the adjoining natural vegetation cover. • Rehabilitation plans must be submitted and approved for rehabilitation of damage during construction and that plan must be implemented immediately upon completion of construction. • Cordon off areas that are under rehabilitation as no-go areas using danger tape and steel droppers. If necessary, these areas should be fenced off to prevent vehicular, pedestrian and livestock access. • Measures must be put in place to control the flow of excess water so that it does not impact on the surface vegetation. • Protect all areas susceptible to erosion and ensure that there is no undue soil erosion resultant from activities within and adjacent to the construction camp and work areas. • Runoff from the construction area must be managed to avoid erosion and pollution problems. • Buffer zones to trap sediments. • Monitoring should be done to ensure that sediment pollution is timeously addressed.							
Operational Phase							
• Disturbance of soil surface during maintenance of towers. • Implementation of best management practices. • Contamination of water resources.							
Water Resource	Yes	Negative	2	3	4	3	27 = Low
Mitigation Measures							
• Monitoring should be done to ensure that sediment pollution is timeously dressed.							

13.1.6 INTRODUCTION AND SPREAD OF ALIEN VEGETATION

Impact	Corrective measures	Impact rating criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
Construction Phase:							
• Introduction and spread of alien vegetation.							
Alien Vegetation	No	Negative	3	3	6	4	48 = Medium
	Yes	Negative	2	3	4	3	27 = Low
Mitigation Measures							
• Retain vegetation and soil in position for as long as possible, removing it immediately ahead of construction / earthworks in that area and returning it where possible afterwards. • Monitor the establishment of alien invasive species within the areas affected by the construction and maintenance and take immediate corrective action where invasive species are observed to establish. • Rehabilitation and/ or revegetation of disturbed areas.							

13.1.7 LOSS AND DISTURBANCE OF WETLAND/RIPARIAN HABITAT

Impact	Corrective measures	Impact rating criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
Construction Phase:							
• Displacement of species of conservation importance from aquatic habitats. • Pollution of the wetland ecosystem and impacting on the water quality. • Alteration of subsurface hydrology							
Wetland/Riparian Habitat	No	Negative	1	2	6	3	27 = Low
	Yes	Negative	1	1	4	2	12 = Low
Mitigation Measures							
• Construct development in shortest timeframe and minimise development footprint. • A biodiversity management plan for the existing priority species must be developed. • Delineate 30-50m buffers from aquatic habitats.							

Impact	Corrective measures	Impact rating criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
• Prohibit clearing of vegetation within the buffer area. • Use designated roads to access the construction site. • Monitoring of implementation of mitigation controls, along with reporting, should be undertaken at least quarterly throughout the construction phase.							
Operational Phase							
• Adverse effects on the wetland soil and vegetation due to movement of heavy machinery during operation and maintenance of the powerline. • Continuous deterioration of aquatic ecosystem.							
Wetland/Riparian Habitat	Yes	Negative	1	3	2	3	18 = Low
Mitigation Measures							
• Use designated roads to access the site. • Minimise development footprint. • Delineate 30-50m buffers from aquatic habitats. • Monitor and report on their effectiveness. • Monitoring of implementation of mitigation controls, along with reporting, should be undertaken at least bi-annually during the operational phase. • Preserve as much of the natural habitat as possible during the operation of the powerline to lessen the operational impacts and to reduce the irreversibility of impacts. • Effective restoration of the natural habitats that were intact before the development should be implemented and reported. • Maintenance activities should not take place within watercourses or buffer zones, nor should edge effects impact on these areas.							

13.1.8 SURFACE AND GROUNDWATER POLLUTION

Impact	Corrective measures	Impact rating criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
Construction Phase:							
• Exposed surfaces during construction would provide a source of sediments to be taken up by storm water and resulting in down-stream sedimentation of water resources.							

Impact	Corrective measures	Impact rating criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
• construction material may pollute the surface and/or ground water on site resulting from spillage of hydrocarbons. • Pollution of the wetland ecosystem and impacting on the water quality.							
Surface and Groundwater Pollution	No	Negative	1	2	6	3	27 = Low
	Yes	Negative	1	3	2	3	18 = Low
Mitigation Measures							
• No activities should occur within a 100m or within a 1:100-year flood line, whichever is greatest without approval from DWS. • Care must be taken during construction to prevent leaks and spillage of materials that may detrimentally affect water quality (especially fuels and chemicals). • Care must be taken to avoid destruction of water courses. • Adequate measures must be put in place to prevent runoff of construction debris to nearby water bodies. • The use of any temporary, chemical toilet facilities must not cause any pollution to a water resource or pose a health hazard. In addition, these toilets must not be situated within 100m from a watercourse or within the 1:100-year floodline (whichever is the greatest). Furthermore, no form of secondary pollution should arise from the disposal of refuse or sewage from the temporary, chemical toilets. Any pollution problems arising from the above are to be addressed immediately by Eskom. • It is important that any significant spillage of chemicals, fuels, etc. during the construction phase and/or operational phase is reported to this Office and other relevant authorities. • Stockpiling of soil or any other materials used during the construction phase must not be allowed on or near steep slopes, near a watercourse or water body.							
Operational Phase							
• Pollution of the wetland and river ecosystem which leads to impacts in the water quality.							
Surface and Groundwater Pollution	Yes	Negative	1	1	4	2	12 = Low
Mitigation Measures							
• Care must be taken during construction to prevent leaks and spillage of materials that may detrimentally affect water quality (especially fuels and chemicals). • Care must be taken to avoid destruction of water courses.							

13.1.9 WASTE GENERATION

Impact	Corrective measures	Impact rating criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
Construction Phase:							
• The aesthetic value of the area would decrease if waste were not collected and disposed of appropriately. • Litter left around the work area by the construction staff.							
Waste Generation	No	Negative	2	2	4	4	32 = Medium
	Yes	Negative	1	2	4	2	8 = Low
Mitigation Measures							
• No waste will be buried on site or incorporated into the foundation trenches. • The work force must be encouraged to sort waste into recyclable and non-recyclable waste. • No burning of waste will be allowed; and • Waste must be regularly removed from site and disposed of at a registered waste disposal facility and proof of disposal must be kept on site.							
Operational Phase							
• Litter left around the work area by the maintenance staff. • Should private contractors be used, all solid waste must be disposed of at a permitted landfill site and proof of this must be made available to the Department when required. • Washing, refueling, maintaining of vehicles or the transfer of hazardous substances must be conducted within a bunded area. All drainage arising from the bunded area must be treated as a water containing waste and disposed of safely.							
Waste Generation	Yes	Negative	1	1	2	1	4 = Low
Mitigation Measures							
• Waste must be regularly removed from site and disposed of at a registered waste disposal facility.							

13.1.10 IMPACT ON AVIFAUNA

Impact	Corrective measures	Impact rating criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
Construction Phase:							

Impact	Corrective measures	Impact rating criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
• Loss of priority avian species from important habitats. • Loss of resident avifauna through increased disturbance. • Long-term or permanent degradation and modification of the receiving environment resulting to the loss of important avian habitats.							
Avifauna	No	Negative	2	2	6	4	40 = Medium
	Yes	Negative	2	2	6	2	20 = Low
Mitigation Measures							
• An ecologist must conduct a survey to determine the exact tower locations, considering sensitive environmental features and technical criteria • Implement Eskom's Transmission Vegetation Management Guideline. • Address identified floral species of conservation concern (SCC) and obtain relevant permits if required. • Ensure vegetation loss and disturbance are restricted to the recommended site layout footprint. • Clearly demarcate the construction footprint before clearing vegetation. • Re-vegetate or landscape areas cleared of vegetation before the contractor leaves the site. The Environment Control Officer (ECO) should supervise and oversee vegetation-clearing activities. • Prohibit the collection of plant material for medicinal purposes and fire wood. • Ensure awareness of basic environmental principles. • Emphasize the conservation and importance of provincially protected plants, Orange-listed plants, medicinal plants, and plant species of conservation concern (SCC) that are highly likely to occur on site. • Conduct an environmental induction for all construction staff on site.							
Operational Phase							
• Loss of resident avifauna through increased disturbance. • Collisions with powerline infrastructure. • Electrocution risks leading to injury or loss of avian life which decreases avifauna species diversity.							
Avifauna	Yes	Negative	2	4	4	6	60 = High
Mitigation Measures							
• Demarcate sections requiring the installation of deterrents/flappers on all required sections of power line or directly adjacent to site.							

13.1.11 IMPACTS ON ECOLOGY

Impact	Corrective measures	Impact rating criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
Construction Phase:							
• Natural vegetation could be destroyed by vegetation clearance or the illegal disposal of construction materials such as oil, cement, etc. • Increased soil erosion, increase in silt loads and sedimentation. • Establishment and spread of declared weeds. • The removal of surface vegetation will expose the soils, which in rainy events would wash down into moist grasslands that are situated along most of the route alignments, causing sedimentation and erosion.							
Ecology	No	Negative	3	5	8	4	64 = High
	Yes	Negative	1	3	6	4	40 = Medium
Mitigation Measures							
• An Independent Ecological Control Officer (ECO) should be appointed to oversee construction. • Preserve the Orange listed plant (*Hypoxis hemerocallidea*) and several medicinal plants (*Aloe davyana*) found on the site. • Incorporate these plants into the landscaping/rehabilitated areas around the development site or move them outside the construction servitudes. • Conduct a search and rescue operation for *Hypoxis hemerocallidea* and *Aloe davyana*. • Translocate these plants to a suitable nearby area or within the site by a qualified specialist. • If translocation is not possible, obtain a permit from GDARDE to transplant these species outside the proposed development region. • Preserve protected trees on or adjacent to the project site, including Marula (*Sclerocarya birrea subsp. caffra*), Leadwood (*Combretum imberbe*), and Shepherd's tree (*Boscia albitrunca*). • Alternatively, plant an equivalent or greater number of new individuals elsewhere in the landscaped/rehabilitated area. • Areas designated for vegetation clearing should be identified and visibly marked off. • Vegetation clearing in natural areas should be kept to a minimum and restricted to the proposed development footprint, i.e., the confirmed servitude and access roads. • A temporary fence or demarcation must be erected around the construction area (including the servitude, construction camps, areas where material is stored and the actual footprint of the development) to prevent access to sensitive environs.							

Impact	Corrective measures	Impact rating criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
• Prohibit vehicular or pedestrian access into natural areas beyond the demarcated boundary of the construction area. • No open fires are permitted within naturally vegetated areas. • Formalise access roads and use existing roads, including farm roads and tracks, where feasible rather than creating new routes through naturally vegetated areas. • Construction workers may not remove flora, and neither may anyone collect seeds from the plants without permission from the local authority. • Re-alignment of some routes should be considered – especially where routes traverse riverine/wetland vegetation. • Do not allow erosion to develop on a large scale before acting. • Retain vegetation and soil in position for as long as possible, removing it immediately ahead of construction / earthworks in that area. • Runoff from roads must be managed to avoid erosion and pollution problems. • Remove only the vegetation that is essential for construction, and do not allow any disturbance to the adjoining natural vegetation cover. The grassland can be removed as sods and re-established after construction is completed. • After construction, the land must be cleared of rubbish, surplus materials, and equipment, and all parts of the land must be left in a condition as close as possible to that prior to construction.							
Operational Phase							
• Positive impact by removing alien invasive plants, although care must be taken not to remove all vegetation at once, especially during the rainy season (could result in soil erosion and loss). • Bush encroachment.							
Ecology	Yes	Negative	2	3	8	4	52 = Medium
Mitigation Measures							
• Monitor all sites disturbed by construction activities for colonisation by exotic or invasive plants and control these as they emerge. Monitoring should continue for at least two years after construction is complete. • Ensure that maintenance work does not take place haphazardly but according to a fixed plan. • Delay the re-introduction of livestock (where applicable) to all rehabilitation areas until an acceptable level of re-vegetation has been reached. • Maintenance workers may not trample natural vegetation, and work should be restricted to previously disturbed footprints. In addition, mitigation measures as set out for the construction phase should be adhered to.							

13.1.12 Noise Pollution

Impact	Corrective measures	Impact rating criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
Construction Phase:							
• An increase in noise is expected due to construction activities, which might have a minor impact.							
Noise Pollution	No	Negative	2	2	2	4	24 = Low
Yes		Negative	1	2	2	3	15 = Low
Mitigation Measures							
• Mobile equipment, vehicles, and power generation equipment should be subject to noise tests, which are measured against manufacturer specifications to confirm compliance before deployment on-site. • It must be ensured that all vehicles used during construction are properly maintained. • Surrounding residents should be notified in advance of construction schedules. • Working hours must be restricted to daytime only (7 am – 5pm). • Selecting equipment with lower sound power levels which is in accordance with the Health and Safety Regulations.							
Operational Phase							
• No noise impacts are anticipated.							
Yes		Negative	1	4	0	1	5 = Low
Mitigation Measures							
• Maintenance vehicles and equipment and power generation equipment should be subject to noise tests measured against manufacturer specifications to confirm compliance before deployment on-site.							

13.1.13 Impact on Heritage Resources

Impact	Corrective measures	Impact rating criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
Construction Phase:							
• The only signs of sites of heritage potential were mostly graves, but these are a distance from the preferred alternative route. Archaeological sites dating to the Stone, Iron, and Historical Age are known							

Impact	Corrective measures	Impact rating criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
to occur in the wider region of study area. However, most of the known sites would only have an indirect impact. • There is also a high chance of finding archaeological sites and this will be difficult to avoid since most of these are trifling, and often hidden underground, only exposed once construction begins. Although no remains of Stone/ Iron Age sites were noted during site visit, the area could still contain sites. • There are no major heritage flaws which can hamper the accomplishment of this project							
Heritage Resources	No	Negative	1	2	4	2	14= Low
Yes		Negative	1	2	2	1	5 = Low
Mitigation Measures							
• Should some important discoveries be made during construction, operations should be halted and SAHRA notified for an investigation and evaluation of the findings to take place • A professional archaeologist or SAHRA officer should be contacted immediately. In the meantime, it must be the responsibility of the Contractor to protect the site from publicity (i.e., media) until a mutual agreement is reached. • It must be noted that any measures to cover up the suspected archaeological material or to collect any resources are illegal and punishable by law. In the same manner, no person may exhume or collect such remains, whether of recent origin or not, without the endorsement by SAHRA.							

13.1.14 Socio-economic

Impact	Corrective measures	Impact rating criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
Construction Phase:							
• The demand for equipment, building materials, and labor will increase. • Employment opportunities for construction activities. • Secondary service provision, such as food supply, toilet hire, equipment maintenance, and many more, would also stimulate the local economy. • Exposed to excessive and continuous levels of construction-related dust and noise. • Resettlement of the affected landowners or houses. • Land Claims. • Farming operation.							

Impact	Corrective measures	Impact rating criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
No		Negative	3	3	6	4	48 = Medium
Yes		Positive	4	5	8	5	85= High

Mitigation Measures:

- Negotiations with landowners and/or traditional authorities will need to acquire land for site establishment.
- Provide strategically distributed crossing points to secure existing routes currently used by local communities and others for access.
- Consult with property owners before any access to ensure they are timeously informed of the duration and nature of the required access.
- Consult with property owners, local authorities, and communities to ensure that all affected parties are informed of the timing and extent of any disruptions.
- Where excavation happened, Contractors need to ensure that those sites are fenced off to prevent people and animals from falling into the pit.
- Adequately and promptly repair damage caused to any infrastructure by contractors to an acceptable standard.
- For minimal jobs, the appointed Contractor should consider the residents for jobs without skill transfer.
- Property owners or occupiers must always be treated with respect and courtesy.
- The culture and lifestyles of the communities near the proposed development must be respected.
- No firewood is to be collected except with the landowner's written consent.
- A register must be maintained of all complaints or queries received as well as action taken.
- To reduce the criminal activity associated with the project, the following measure needs to be in place:
- Ensure that all staff, including contractors' staff, can always be identified with identity cards and wear identifiable clothing.
- Ensure that communication with landowners and authorities is assigned to an appointed Social Facilitator by Eskom and those people will be introduced in writing to landowners and authorities.
- Liaise with landowners before entering their property and where possible, share a list of senior supervisors who will be working on the site for easy identity.
- The perimeter of the construction site should be appropriately secured to prevent unauthorised access to the site.
- The provision of Personnel Protective Equipment (PPE) will assist in reducing health impacts.
- HIV awareness should be provided to contractors and ensure that they have access to free condoms and health services.

Impact	Corrective measures	Impact rating criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
• A complete list of areas under land claim should be requested before a final decision on the preferred route. • The construction company should follow government protocol if they have any Covid-19 cases. • Contractors are to appoint a community facilitator to address all related social aspects experienced along the transmission route. • Where possible, for all unskilled jobs, use local labour as far as possible. • Work with the local municipality and social facilitator to establish an SME database.							
Operational Phase:							
• Increase electricity demand for more economic activities in the area. • Help strengthen the supply network in an area experiencing low voltage. • Improve the security of electricity supply, thus benefiting users in the region and country. • Address municipality backlog for electricity supply; and • Improve the economic status of the country							
Yes	Positive	4	5	10	5		95 = High

13.2 GENERAL CUMULATIVE IMPACTS

Cumulative impacts in relation to an activity means the past, present, and reasonably near future impacts of an activity, considered together with the impacts of activities associated with that activity, which may not be significant but may become significant when added to the existing and reasonably foreseeable impacts eventuating from similar or diverse activities (DEA, 2014 EIA Regulations). The most important concept related to cumulative impact is an acceptable level of environmental change. A cumulative impact only becomes relevant when the impact of the proposed development will lead directly to the sum of impacts of all developments, causing an acceptable level of change to be exceeded in the surrounding area. If the impact of the development being assessed does not cause that level to be exceeded, then the cumulative impact associated with that development is not significant. The cumulative impact significance rating was defined according to the predicted impacts before and after mitigation measures recommended by the specialists. The cumulative impact significance rating was taken into consideration when preparing the motivation for the need and desirability of the proposed development.

This section provides cumulative impact ratings associated with the proposed project, which include waste generation, socio-economic, traffic, and noise. It also outlines the mitigation measures of each rated cumulative impact as follows:

13.2.1 POWERLINES

There are existing Eskom powerlines within the site which the proposed powerline will add to the visual impact. Furthermore, the powerlines will add to the impact on avifauna, as powerlines impact avifauna negatively through electrocution, habitat destruction, and collision. According to the avifauna specialist, the cumulative impact is expected to be negatively low.

Impact	Corrective measures	Impact rating criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
Impact on avifauna	No	Negative	3	4	3	4	40 (Medium)
	Yes	Negative	3	4	2	3	27 (Low)

Mitigation Measures:

- Vehicles must be restricted to traveling on designated roadways to limit the ecological footprint of the proposed activity.
- Watercourses, drainage lines, streams, and wetlands must be avoided, and a no-go buffer of m must be applied around them.
- Signage must be placed all around the project site to raise awareness amongst the staff and laborers about the birds and wildlife that reside in the project area.
- All project activities must be undertaken with appropriate noise mitigation measures to avoid disturbance to humans and the region's avifauna population.
- Activities generating high noise shall be restricted to daytime and must be mitigated to minimise the noise level outside the site boundary.
- Facility lighting during construction and operation should be kept to a minimum and should make use of the latest technology to ensure that light disturbance is minimised. This will also reduce the attraction of insects (and, in turn, insectivorous birds) to the facility.

13.2.2 TRAFFIC IMPACT

Impact	Corrective measures	Impact rating criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	

Construction Phase:

- Increased traffic loads may negatively impact existing traffic flow.
- Construction vehicles may decrease road safety for other road users.
- Uncontrolled movement of construction vehicles may result in unnecessary impacts on the environment through vegetation and habitat destruction.

Impact		Corrective measures	Impact rating criteria					Significance
			Nature	Extent	Duration	Magnitude	Probability	
Traffic		No	Negative	1	2	4	2	14= Low
		Yes	Negative	1	2	2	1	5 = Low
Mitigation Measures								
• The delivery of construction materials and equipment should be limited to hours outside peak traffic times (including weekends) prevailing on the surrounding roads where possible. • Existing access roads must be used, and • Delivery vehicles must comply with all traffic laws and bylaws.								

14 UNDERTAKING UNDER OATH OR AFFIRMATION BY THE EAP

During the draft phase of the BAR for the proposed development, the EAP took into consideration the requirements stipulated in the EIA Regulation of December 2014 as amended, as well as other relevant Acts and Regulations. The EAP hereby confirms that with the information available at the time of preparing this report, the following has been considered:

- The correctness of the information provided in the report.

Refer to **Appendix B** for the Declaration of the EAP.

15 ENVIRONMENTAL IMPACT STATEMENT

This draft BAR assesses the likely impact the development may have on the surrounding environment and provides recommendations regarding available alternatives, mitigation, and management measures. The process aims to ensure that impacts are identified and that, where negative impacts are anticipated, they are prevented, minimized, and remedied (should these be unavoidable), and where positive impacts are identified, they are enhanced as far as possible.

The BAR presents the relevant information to the Competent Authority for the purposes of decision making. Key findings and the other information in this report must be considered in deciding regarding this application. The suggested mitigation measures must also be considered, and compliance should form a condition for any decision to proceed with the development. In addition, these conditions should be incorporated into a Construction Phase EMPr, which guides and informs sustainable environmental practices during the construction process. The complete identified management and mitigation measures are listed in the EMPr. These measures include those listed in this report.

15.1 PLANNING AND DEVELOPMENT PHASE

Impacts associated with the planning and development phase of the proposed activity include the creation of job opportunities for skilled engineers and planning professionals. This positive impact will be definite and short term in duration. No significant negative impact has been associated with this phase, and the proposed activity 15.2

15.2 IMPACTS ASSOCIATED WITH THE CONSTRUCTION AND OPERATIONAL

With corrective measures in place and implementing the specialist's recommendations, none of the identified negative impacts are considered a fatal flaw.

Heritage Resources Impact

The proposed powerline and substation development can be approved based on the above findings. Should some important discoveries be made during construction, operations should be halted, and SAHRA should be notified so that an investigation and evaluation of the findings can take place.

Visual Impact

All three proposed alternatives have similar visibility impacts. Alternative 1, closer to high-density residential areas, may have a slightly higher impact on residents. However, existing powerlines in the area lessen this impact, and the substation for Alternative 1 is proposed on degraded land, further reducing visual disruption.
Alternatives 2 and 3 would impact the more natural southern area, requiring the removal of natural landscapes and affecting tourist activities in private game reserves and resorts. Therefore, Alternative 1 is preferred. The project can proceed with very low visual impact with mitigation measures and adherence to recommendations.

Palaeontology

There is a very small chance that fossils may occur below the ground surface in the shales of the Ecca Group, so a Fossil Chance Find Protocol should be added to the EMPr. If fossils are found by the environmental officer or other responsible person once excavations for pole foundations and infrastructure have commenced, they should be rescued, and a paleontologist should be called to assess and collect a representative sample.

The impact on the paleontological heritage would be low, so as far as paleontology is concerned, the project should be authorised.

Terrestrial Biodiversity

The Screening report for an Environmental Authorization evaluates the proposed site's environmental sensitivity. It rates animal species as highly sensitive, plant species as medium, and terrestrial biodiversity as very high due to the presence of several protected areas.

A site verification and impact assessment found the overall ecological sensitivity medium. The Apies River is highly sensitive, proposed routes 2 and 3 are medium, and alternative route 1 is low in sensitivity. No towers should be placed within 30-50 meters of the Apies River

Agricultural Impacts

The screening tool analysis was conducted, which presented the findings as the impact on agricultural resources being of a very high sensitivity in terms of agricultural potential. Based on the outcomes of the field assessment, this was found to have a less significant impact as presented on the screening tool due to the dominant soil forms that are not high potential agricultural soils due to various limitations, including shallower depth and requiring iv Draft Agricultural Impact Assessment: Eskom Kekana Servitude intensive management strategies to cultivate. The land capability of the surrounding soils and the agricultural potential are very low to moderate due to adequate climatic conditions (i.e., rainfall, temperature) and appropriate slopes, which allow for intensive commercial agricultural practices.

The specialist believes that this study provides the relevant information required for the Environmental Impact Assessment phase of the project to ensure that appropriate consideration of the agricultural resources in the study area are made in support of the principles of Integrated Environmental Management (IEM) and sustainable development.

Wetland Baseline and Impact Assessment

Thirty-one hydro-geomorphic units (HGM) were identified, including valley bottom wetlands with or without channels and hillslope seepage wetlands connected to watercourses within and around the study area.

The Ecological Importance and Sensitivity assessment revealed that most HGM units scored low due to their temporary nature and anthropogenic impacts, notably sand mining. However, two seepage wetlands and the Apies River scored high due to their uniqueness and functional value.

Additionally, the overall impact of the proposed development on water resources was scored a “Negative low impact” before and after mitigation. Powerlines in South Africa have been noted to have low maintenance during the operational phase, making them less impactful on the receiving environment.

16 IMPACT MANAGEMENT MEASURES IDENTIFIED FROM SPECIALIST REPORTS

The mitigation measures identified by the various specialists have been included in the tables above in Section 13.

17 ASSUMPTIONS AND LIMITATIONS

It is assumed that the technical data supplied by Eskom was correct and valid at the time of the compilation of specialist studies and the Draft Basic Assessment Report. Furthermore, it is assumed that the alternatives presented by Eskom are feasible.

17.1 AGRICULTURAL

- It is assumed that the infrastructure components will remain as indicated on the layout and that the activities for the construction and operation of the infrastructure are limited to that typical for a project of this nature.
- The soil survey was confined to the study area outline with consideration of various land uses outside the study area.
- Certain farm portions could not be accessed due to owners' decline to grant access and locked gates fear of trespassing, and
- Soil profiles were observed using a 1.5m hand-held soil auger; thus, a description of the soil characteristics deeper than 1.5m cannot be given.

17.2 PALAEONTOLOGY

- Based on the geology of the area and the paleontological record as we know it, it can be assumed that the formation and layout of the granites, sandstones, shales, and sands are typical for the country, and only some might contain fossil plant, insect, invertebrate and vertebrate material. The Paleoproterozoic granites and the sands of the Quaternary period would not preserve fossils.

17.1 WETLAND BASELINE IMPACT

- Studies should ideally be conducted over several seasons and over several years to obtain definitive data regarding the biodiversity, hydrology, and functioning of particular wetlands.
- The study relied on a single field survey, desktop data, and expert judgment.
- Wetland and riparian areas in transformed landscapes often lack clear indicators due to disturbances.
- Precision agricultural techniques like soil manipulation may obscure signs of wetness.
- Assessments use Department of Water and Sanitation techniques, which are qualitative and limited.
- Anthropogenic activity has altered soil profiles and species composition.
- Wetland delineations rely on field data, contour maps, and aerial imagery, but errors may affect accuracy.
- Extrapolation and sampling outside the study area boundary were done for wetland assessment.

17.2 TERRESTRIAL BIODIVERSITY

- The field survey was conducted in early April 2024, which covers an optimal time of the year to find animals and plant species of high conservation priority. It is unlikely that any more visits would reveal information that would change the outcome of this assessment both in terms of ecosystems of special conservation concern and suitable habitats of species of particular conservation concern. Therefore, a site visit that was conducted appears to be sufficient to address the objectives of this study.
- The survey areas were concentrated along the proposed development routes.
- Weather conditions during the survey were favorable for recording both fauna and flora.
- The focus of the survey remains a habitat survey that concentrates on the possibility that species of conservation priority occur on the site or not.
- While assessment of the potential occurrence of SCC has been undertaken and is informed by readily available information, this provides only a surrogate indicator of the likelihood of such species occurring. However, this is regarded as appropriate given the habitat degradation/transformation level across much of the project area.
- This study's data collection relied heavily on data from representative, homogenous sections of vegetation units, general observations, analysis of satellite imagery from the past until the present, generic data, and a desktop analysis.
- The potential of future similar developments in the same geographical area, which could lead to cumulative impacts cannot be meaningfully anticipated.
- The impact descriptions and assessment are based on the author’s understanding of the proposed development based on the site visit and information provided. Since ecological impact studies deal with dynamic natural systems, additional information may come to light at a later stage, and this Specialist can thus not accept responsibility for conclusions and mitigation measures made in good faith-based information gathered or databases consulted at the time of the investigation

18 PERIOD TO WHICH THE ENVIRONMENTAL AUTHORISATION IS REQUIRED

The Environmental Authorisation (EA) should be valid for 10 years prior to construction and thereafter for the life of the power line.

19 CONCLUSION

The Basic Assessment has been undertaken in accordance with the provisions of the NEMA and the EIA Regulations of December 2014 as amended, as well as associated legislations. The alternatives have been proposed, and the primary objective was to assess their suitability and the impact of the proposed development. This report has comprehensively addressed the baseline environment, which forms the backdrop of the impact assessment. The information provided has been supported by specialist studies that were undertaken and attached hereto. No fatal flaws or highly significant impacts were identified that would necessitate substantial

redesign or termination of the project. From the EAP's and the Specialists' point of view, there is no reason why the development should not proceed if the recommendations made in this report and the specialists' reports are adhered to.

Furthermore, the following is recommended by the EAP:

- That of the three substation sites and associated powerlines, Alternative 1, be authorized.
- That a final walk-down be undertaken to identify sensitivities. This should be conducted before the commencement of construction and form part of the conditions of the EA. The "walk down" of the final powerline servitude and all other activity areas, access roads, construction camps, etc, should document all sites, features, and objects to propose adjustments to the route and avoid as much impact on heritage as possible.
- All mitigation measures the specialist makes must be considered during the construction and operational phases.
- Eskom must ensure hydrocarbons and all biofuels during construction are stored at a designated area away from the project area to minimise the risk of contamination of the triggered water resources. The hydrocarbons/biofuels should also be handled properly in some concrete to cement lined with berm walls to avoid any seepage into the groundwater resources and to ensure that the design of the storage area is such that any leakages or spillages can be contained.
- The Generic Environmental Management Programme, attached hereto as Appendix D, is a living document that guides the proposed project's construction, operational, and decommissioning phases. This EMPr should always be complied with, and audits should be conducted during the construction of the proposed powerline.
- All permits, Licences, and other authorisations required by any Act, Policy, Law, or By-Law must be obtained before the construction of the powerline. A Water Use Licence Application must be lodged with the DWS, and construction of the proposed project should only commence once the Licence has been approved by the DWS. All recommendations made by the DWS must be adhered to.
- Upon approval, the layout plan must include the construction area.
- All authorities, such as the DFFE, DWS, and the City of Tshwane, should be notified prior to the commencement of construction activities.
- The Eskom Process for Securing Land and Rights by Eskom in Appendix I must be adhered to during negotiations of the servitude rights with the affected households and landowners.
- Implement an integrated waste management approach based on waste minimisation that incorporates reduction, reuse, and disposal where appropriate.
- Unnecessary clearance of vegetation must be avoided at all costs. Vegetation clearance should be limited to the approved footprint. Sensitive seepage zones and wetlands must be avoided for tower placement. This must be identified by an ecologist during the walk-down assessment. It is further recommended that no towers be placed within the 30m buffer of any wetland or river.
- As per Section 19(1) of the NWA, Eskom must ensure that any pollution incident(s) (of a water resource) originating from the proposed project shall be reported to the Regional Office of the DWS within 24 hours.

The undertaking of this Basic Assessment process has fully complied with the requirements of the NEMA and associated regulations. Therefore, the proposed project should be authorised so that it can proceed.

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- Tshiamo Setsipane, Soil, Land Use, and Land Capability (Agriculture Impact) Assessment: For the proposed Eskom Kekana Substation and Loop In & Loop Out Powerline Servitudes in Hammanskraal Within the City of Tshwane Metropolitan Municipality in Gauteng Province. (2024)
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