JANUARY 2024

DRAFT BASIC ASSESSMENT REPORT FOR THE KIMBERLEY STRENGTHENING PHASE 3:

PROPOSED CONSTRUCTION OF THE FERRUM – MOOKODI 400KV POWERLINE AND ASSOCIATED SUBSTATION UPGRADES WITHIN JOE MOROLONG, GAMAGARA, GA-SEGONYANA LOCAL MUNICIPALITIES UNDER JOHN TAOLO GAETSEWE DISTRICT MUNICIPALITY, NORTHERN CAPE PROVINCE AND NALEDI, GREATER TAUNG LOCAL MUNICIPALITIES UNDER DR RUTH SEGOMOTSI MOMPATSI DISTRICT MUNICIPALITY, NORTH WEST PROVINCE

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DOCUMENT CONTROL

Report Name:	**Draft Basic Assessment Report for the Kimberley Strengthening Phase 3: Proposed construction of the Ferrum – Mookodi 400kV powerline and associated substation upgrades within Joe Morolong, Gamagara, Ga-Segonyana Local Municipalities under John Taolo Gaetsewe District Municipality, Northern Cape Province and Naledi, Greater Taung Local Municipalities under Dr Ruth Segomotsi Mompatsi District Municipality, North West Province**
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Report compiled by:	Brenda Makanza
Report Date:	3 January 2025
Status:	**Draft Report**

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APPROVAL SCHEDULE		
REV	DIGES GROUP	
	Compiler	Reviewer
00	Brenda Makanza 03.01.2025 Date	Frank Mhandu 06.01.2025 Date

EXECUTIVE SUMMARY

A. BACKGROUND

A study done for the Northern Cape and North West grid indicated that based on the anticipated growing electricity demand, there may be a risk that demand will exceed the supply. As a result, they have identified the need to strengthen the transmission system between the Ferrum, Hotazel Transmission and Mookodi Substations by constructing two 400kV transmission powerlines and upgrade substations. The first Ferrum-Mookodi 400kV powerline has been constructed and the scope of work for the second entails the following:

(i) Construction of a 400kV transmission powerline of ±260km from Ferrum Substation to Mookodi Substation.

(ii) Upgrade the Mookodi Substation by installing:
- 1 x 100MVAr busbar reactor at Mookodi 400kV busbar.
- 1x 400kV Mookodi feeder bay.
- 1x 400kV Line reactor at Mookodi 400kV.

(iii) Upgrade the Ferrum Substation by installing
- 1 x 100MVAr busbar reactor at Ferrum 400kV busbar.
- 1x 400kV Ferrum feeder bay.
- 1x 400kV Line reactor at Ferrum 400kV.

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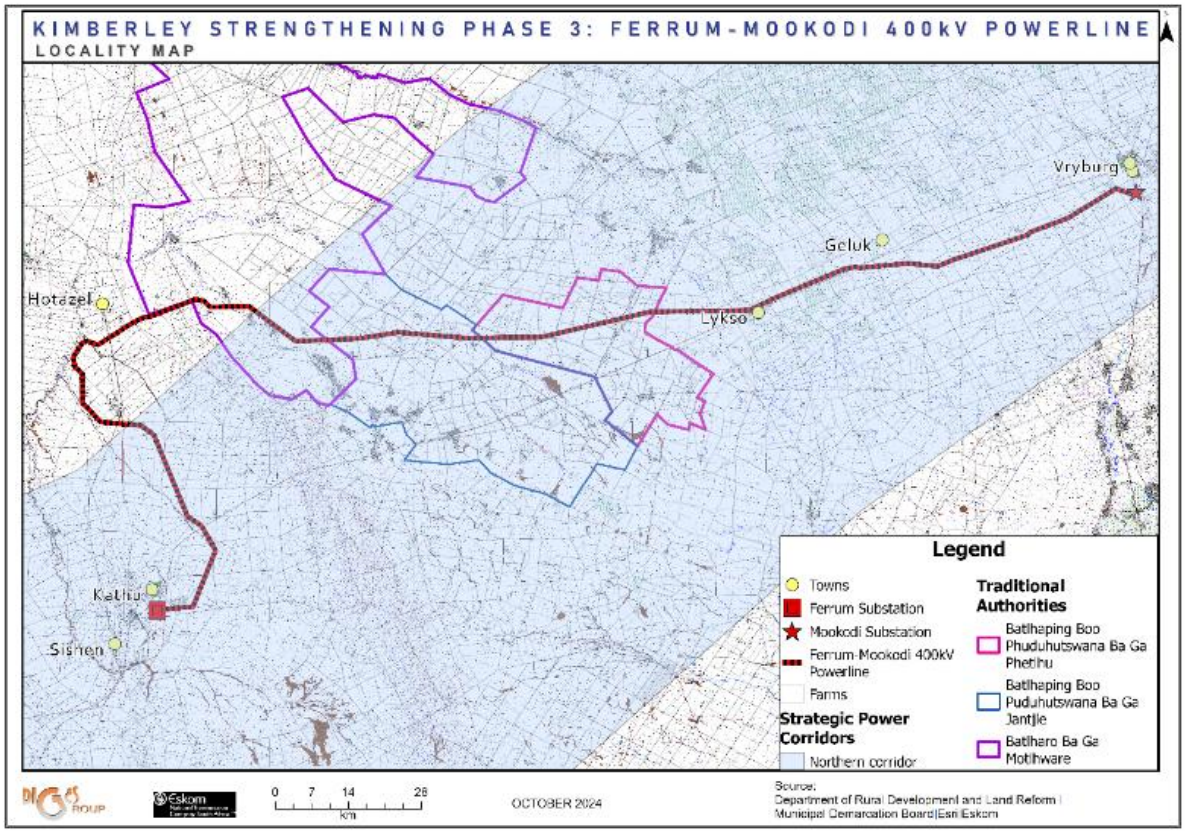
The proposed project has been previously authorised by the Department of Environmental Affairs (DEA) in 2013 with DEA Reference No.: DEA Ref: 12/12/20/2485. Since the aforementioned activities did not commence in the allotted time, a new EA application is required.

LOCATION

The proposed route is approximately 60km between Ferrum Substation and Hotazel and 200km between Hotazel and Mookodi substation. Ferrum Substation is approximately 3.4km southeast of Kathu, and the Mookodi Substation is 6.5km south of Vryburg town. The proposed route crosses the national road (N14), regional road R31, a few district roads between N14 and R31, and a railway line. Mine areas exist close to Hotazel town, and several settlements are near the proposed corridor. Approximately 80% of the area affected by this proposed route is rural land, while 79% of the proposed powerline route is within the Northern Strategic Transmission Corridor and 18% within the Vryburg Renewable Energy Development Zone. See map



Project Location

B. THE PROCESS

The proposed activities to be undertaken together with the infrastructure to be provided are listed as having negative impacts on the environment and as such requires that a Scoping and Environmental Impact Assessment be undertaken. However, NEMA Government Notice 113 of 16 February 2018, as amended, indicates that where the greater part of the proposed powerline is to occur in one or more Strategic Transmission Corridors, a Basic Assessment (BA) procedure contemplated in Regulation 19 and 20 of the Environmental Impact Assessment Regulations, Government Notice R982 of 2014, as amended (hereinafter EIA Regulations, 2014 (as amended)) must be followed in order to obtain EA, as required in terms of the Act. Approximately 79% of the Ferrum-Mookodi 400 kV powerline falls within the Northern Strategic Transmission Infrastructure Zone hence a Basic Assessment (BA) is being undertaken for this project. In addition, the proposed powerline falls with the National Water Act, Act 36 of 1998 (NWA), 500m regulated area hence a General Authorization is also required in terms of Government Notice 4167 of 2023: Revised General Authorization in terms of section 39 of the Act for water uses as defined in section 21 (c) or section 21 (i) of the Act.

C. ASSUMPTIONS AND LIMITATIONS

In undertaking this Basic Assessment (BA), the Environmental Assessment Practitioner (EAP) has considered the following assumptions:

i. The EAP compiled the BAR using many sources including specialist reports. The EAP assumes that the information from the specialist reports is correct.
ii. The EAP assumes that the information provided by Eskom is correct.

D. SPECIALIST STUDIES

Considering the powerline corridor and the nature of the environment, potential environmental impacts were identified through an internal process based on similar developments, site visits and the Screening Report. Specialist studies were therefore commissioned to gain an in-depth understanding of the status quo of various aspects of the environment and how the development will have an impact on these environmental aspects. The results of these studies serve as a basis to identify the potentially significant impacts expected should the development be undertaken. This report includes the specialist impact assessment reports commissioned as part of the environmental process and summaries of the Avifauna, Archaeological, Palaeontology, Terrestrial Plant Species, Terrestrial Animal Species, Freshwater, Social, Civil Aviation and Visual Assessments are given below:

i. **Agriculture (Soil Potential and land capability):** It is not expected that the proposed overhead powerline project will negatively affect the agricultural activities taking place in the study area because it will not have an effect on the area's future agricultural production capacity. All currently operating agricultural operations, especially those centered on game and cattle farming, will be free to continue as usual below the powerline. The cumulative impacts are deemed low significance since agricultural activities can continue to operate effectively beneath the powerlines without significant disruption. There is no expected net loss in future agricultural production resulting from this proposed development and the currently operating developments of a similar nature.
ii. **Animal:** The larger part of the study area is modified by historic and current land use activities. The main impacts are over grazing, trampling, erosion, poor fire regimes and wood harvesting. The activity related to farming has impacted on the animal population is the area. Apart from avifauna, the screening tool has not indicated any Species of Conservation Concern, which was further validated during the field assessment. Most of the observations noted during the walkdown assessment were active dens and include the Hystrix africaeaustralis, Orycteropus afer and

Xerus inauris. Many of the active den sites are close to proposed tower positions and it is recommended that these dens must be marked prior to construction. Where possible, the dens must not be disturbed. It is probable that the animals will move from the dens once activity start.

iii. **Avifauna:** The screening tool report assigned an overall high sensitivity to the animal species due to species indicated as having a medium and high sensitivity. The high sensitivity was validated during Pre-feasibility and the walkdown assessment as there is a habitat for SCC and in some areas SCC such as Kori Bustard (Ardeotis kori), Lappet-faced Vulture (Torgos tracheliotos) and White-backed Vulture (Gyps africanus). The impact of the powerline on avifauna due to collisions, electrocutions and habitat destruction has been rated a moderate to low significance after the implementation of mitigation measures. Though, limited remnant habitat has been impacted in the 30 km area, there are existing powerlines within the 30km area, resulting in the cumulative impact being Negative Moderate.

iv. **Archaeology and Cultural Heritage:** The assessment did not reveal any heritage resources at the tower locations. However, note must be taken that isolated stone tools and graves were noted in the servitude of the proposed powerline, these will not be directly affected, though accidental disturbances remain a threat to these sites, especially graves. Nevertheless, although Stone tools are almost ubiquitous in the wider region of the proposed Phase 3 Project, their unavailability is, however, not unexpected. The impact of the development on graves and stone tools is deemed low post mitigations. Sites outside the surveyed area would suffer a major cumulative negative impact if the impact of the proposed powerline development were permitted to extend beyond the surveyed area.

v. **Civil Aviation:** There are no civilian radar facilities within 35km of the proposed prospecting site. The airspace around FASS, FAVB, FAKU and FABP is uncontrolled. The airspace classification of the environs around the affected aerodromes. There are no civilian radar facilities at any of the affected aerodromes. The closest ground-based navigational equipment is a VOR/DME array near Kathu Aerodrome, some 10 km N of the proposed Ferrum substation. The risk of any impact of the project on nearby civilian radar installations is thus low. The SACAA AIP information of the affected aerodromes was also assessed, and it was determined that there are no known ground-based navigational aids

located within 15km of the development, apart from the VOR/DME and precision approach path indicators at FASS, which provide visual guidance to pilots and are not subjected to potential interference.

vi. **Palaeontology:** The occurrence of stromatolite-bearing dolomite was confirmed during the field assessment and the classification of the study area as having a Very High Palaeontological Sensitivity is supported. Where possible intact, well-preserved stromatolites should be preserved. The impact on the palaeontology of the study site is considered to be MEDIUM which implies that, although the stromatolites in the study are scientifically very important, the effect of the impact could be mitigated as long as the Change Find Procedures are followed.

vii. **Plants:** Nearly all of the planned development is located in natural habitat areas with low to moderate biodiversity values and low sensitivity. Although the corridor passes through a few Ecological Support Areas with Very High sensitivity to the Terrestrial Biodiversity Theme, the powerline will not significantly impact these areas' ecological functioning. The powerline has little effect on ecological functioning at the landscape level, which is the only level of concern where local sensitivities have been identified.

viii. **Freshwater Assessment:** Perennial and non-perennial wetlands, drainage lines, and riverine systems with riparian zones were among the watercourse features found along the proposed powerline route. The proposed powerline did not affect the nearby watercourses for the most part, but it did intersect with a number of watercourse features. The majority of the expected impacts to the identified watercourses were rated as "Low" because of the reasonably low-impact nature of the proposed development. Some of these effects, however, were assessed as "Moderate" risks to the watercourses after mitigation.

ix. **Social Impact Assessment:** No fatal flaws have been identified, and the negative impacts noted can be mitigated apart from the powerline's intrusion on the landscape's panoramic views. In addition, the project will create jobs and uplift SMMEs' within the area.

E. PRE-CONSTRUCTION WALKDOWN

The pre-construction walkdown for avifauna, flora, fauna, and heritage has been undertaken and tower specific measures have been incorporated into this report and Environmental Management Programme.

F. PUBLIC PARTICIPATION PROCESS (PPP)

A reconnaissance site visit was undertaken to develop an understanding of the social context (representative structures; language; communication media, etc.). The outcome of this site visit was that information to the communities in the receiving environment would be first distributed via the municipal officials and in the farms, notifications were submitted to all the affected landowners. The community structure and farmers associations will also assist in setting up public meetings. Interested and Affected Parties (IAPs) were identified, and these are currently registered on the database. The database submitted with this report includes stakeholders from:

- National, Provincial and Local Government.
- Landowners.
- Non-Governmental Organizations.

The Background Information Document and notifications were sent to stakeholders via emails, and site notices were placed in conspicuous places within 10 km of the servitude. An advert was also placed in the Sowetan and Stellalander newspapers, notifying the public about the project Meetings will be scheduled with the affected communities in consultation with ward councilors and Traditional Councils. All comments received to date have been recorded in the Comments and Response Report (C&R Report) and have been responded to accordingly.

G. PROCEDURE FOR THE REMAINDER OF THE STUDY

The following activities will be carried out during the finalization of the application:

- Comments received during the 30-day review period will be addressed in the final report.
- The FBAR will be submitted to DFFE for review and decision-making.
- Stakeholders will get written notice of DFFE's decision and instructions on appealing it within the specified deadlines.

H. ENVIRONMENTAL IMPACT STATEMENT AND RECOMMENDATIONS

The proposed project will pose various positive and negative impacts to the environment. Specialists' studies have been undertaken, and based on their findings, the specialists have recommended that the project proceeds on the condition that all the mitigation measures are implemented. Notifications and Background Information Document (BID) has been submitted to the Interested and Affected Parties and landowners; to date, none has objected to the proposed project. There are no fatal flaws that have been identified in the proposed project. Therefore, the EAP is of the opinion that the proposed project should be approved. All the specialists' recommendations included in this report and the attached EMPr must be implemented accordingly

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UITVOERENDE OPSOMMING

A. AGTERGROND

'n Studie wat vir die Noord-Kaapse en Noordwes-netwerk gedoen is, het aangedui dat daar, op grond van die verwagte groeiende vraag na elektrisiteit, 'n risiko kan ontstaan dat die aanvraag die aanbod sal oorskry. Daarom is die behoefte geïdentifiseer dat die transmissiestelsel tussen die Ferrum- en Hotazel-transmissie- en Mookodi-substasies versterk moet word deur twee 400kV-transmissiekraglyne te bou en substasies op te gradeer. Die omvang van die werk behels die volgende:

(i) Die bou van 'n 400kV-transmissiekraglyn van ±260km vanaf die Ferrum-substasie na die Mookodi-substasie.

(ii) Opgradering van die Mookodi-substasie deur die installasie van:
- 1 x 100MVAr-busbalkreaktor by Mookodi se 400kV-busbalk.
- 1 x 400kV-Mookodi-voerderbaai.
- 1 x 400kV-lynreaktor by Mookodi se 400kV.

(iii) Opgradering van die Ferrum-substasie deur die installasie van:
- 1 x 100MVAr-busbalkreaktor by Ferrum se 400kV-busbalk.
- 1 x 400kV-Ferrum-voerderbaai.
- 1 x 400kV-lynreaktor by Ferrum se 400kV.

Die voorgestelde projek is voorheen, in 2013, goedgekeur deur die Departement van Omgewingsake (DEA) met DEA-verwysingnr.: 12/12/20/2485. Aangesien die bogenoemde aktiwiteite nie binne die toegelate tyd begin het nie, is 'n nuwe OM-aansoek nodig.

B. LIGGING

Die voorgestelde roete is ongeveer 60km tussen die Ferrum-substasie en Hotazel en 200km tussen die Hotazel- en Mookodi-substasie. Die Ferrum-substasie is ongeveer 3,4km suidoos van Kathu, en die Mookodi-substasie is 6,5km suid van die dorp Vryburg. Die voorgestelde roete kruis die nasionale pad (N14), streekspad R31, 'n paar distrikspaaie tussen die N14 en R31, en 'n spoorlyn. Myngebiede bestaan naby die dorp Hotazel, en daar is verskeie nedersettings naby die voorgestelde korridor. Ongeveer 80% van die gebied wat deur hierdie voorgestelde roete geraak word, is landelike grond, terwyl 79% van die voorgestelde kraglynroete binne die Noordelike Strategiese Transmissiekorridor is en 18% binne die Vryburgse Hernubare Energie-ontwikkelingsone val

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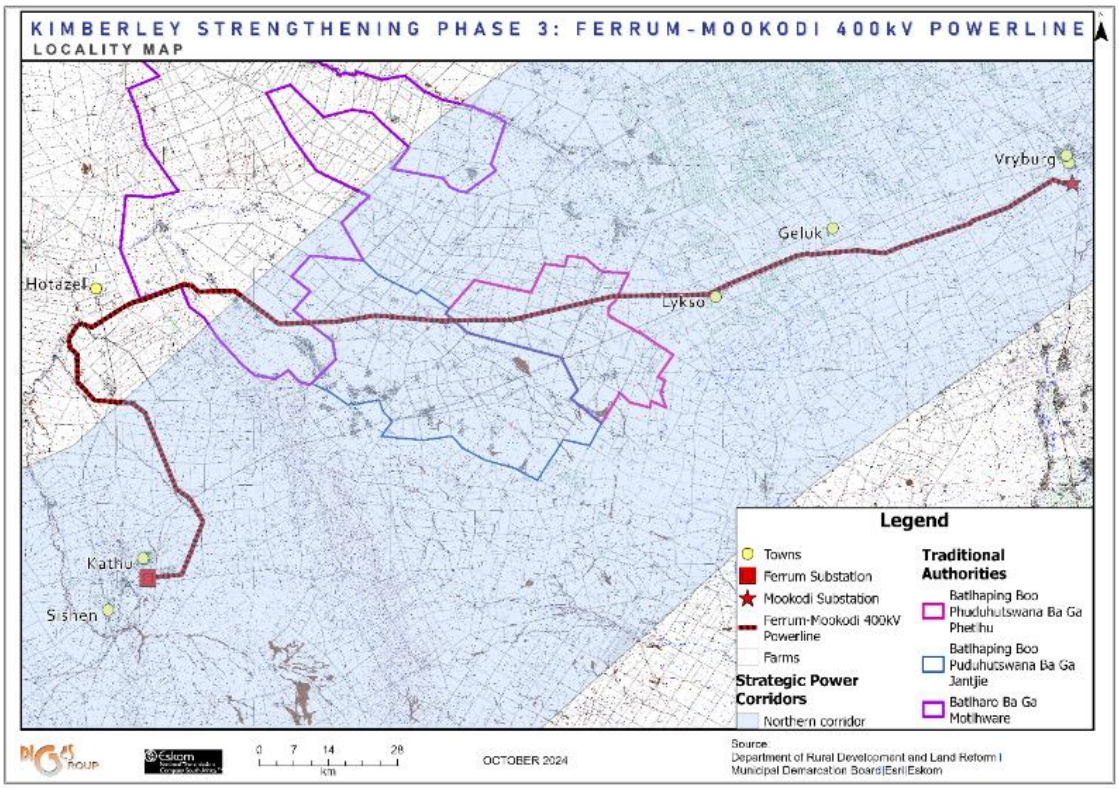


Projekligging

C. DIE PROSES

Die voorgestelde aktiwiteite wat onderneem gaan word tesame met die infrastruktuur wat verskaf moet word, word gelys as negatiewe impakte op die omgewing, en daarom is dit nodig dat ’n Omvangs- en Omgewingsimpakassessering onderneem word. Die Nema-regeringskennisgewing 113 van 16 Februarie 2018, soos gewysig, sê egter dat daar waar die grootste deel van die voorgestelde kraglyn in een of meer van die Strategiese Transmissiekorridors moet plaasvind, 'n Basiese Assesserings- (BA-) prosedure, soos beoog in Regulasie 19 en 20 van die Regulasies vir Omgewingsimpakassessering, Regeringskennisgewing R982 van 2014, soos gewysig, gevolg moet word om ’n OM te verkry, soos vereis ingevolge die Wet. Ongeveer 79% van die 400 kV-Ferrum-Mookodi-kraglyn val binne die Noordelike Strategiese Transmissie-infrastruktuursone, en daarom word 'n Basiese Assessering (BA) vir hierdie projek onderneem. Daarbenewens val die voorgestelde kraglyn binne die 500m-gereguleerde gebied van die Nasionale Waterwet, Wet 36 van 1998 (NWA), en daarom word ’n Algemene Magtiging ook ingevolge Regeringskennisgewing 4167 van 2023 vereis: Hersiene Algemene Magtiging ingevolge artikel 39 van die Wet vir watergebruik soos omskryf in artikel 21 (c) of artikel 21 (i) van die Wet.

D. AANNAMES EN BEPERKINGS

By die uitvoering van hierdie Basiese Assessering (BA) het die Omgewingsassesseringspraktisyn (OAP) die volgende aannames oorweeg:

i. Die OAP het die BAV saamgestel met behulp van baie bronne, insluitend spesialisverslae. Die OAP neem aan dat die inligting uit die spesialisverslae korrek is.

ii. Die OAP neem aan dat die inligting wat Eskom verskaf het, korrek is.

E. SPESIALISSTUDIES

Met inagneming van die kraglynkorridor en die aard van die omgewing, is potensiële omgewingsimpakte geïdentifiseer deur 'n interne proses wat gebaseer is op soortgelyke ontwikkelings, terreinbesoeke en die siftingsverslag. Opdrag is dus gegee vir spesialisstudies om ’n diepgaande begrip te verkry van die status quo van verskillende aspekte van die omgewing en hoe die ontwikkeling ’n impak op hierdie omgewingsaspekte sal hê. Die resultate van hierdie studies dien as basis om die potensiële beduidende impakte wat verwag word, te identifiseer indien die ontwikkeling onderneem sou word. Hierdie verslag sluit die spesialis-impakassesseringsverslae in waarvoor opdrag gee is as deel van die omgewingsproses, en opsommings van die volgende word hier onder aangedui - Avifauna, Argeologie, Paleontologie, Aardse plantspesies, Aardse dierspesies, Varswater, Maatskaplik, Burgerlugvaart, en Visuele Assessering:

i. **Landbou (grondpotensiaal en grondvermoë):** Daar word nie verwag dat die voorgestelde oorhoofse kraglynprojek die landboubedrywighede wat in die studiegebied plaasvind, negatief sal beïnvloed nie, omdat dit nie die gebied se toekomstige landbouproduksievermoë sal beïnvloed nie. Alle huidige landboubedrywighede, veral dié wat op wild- en beesboerdery fokus, sal vry wees om soos gewoonlik onder die kraglyn aan te gaan. Die kumulatiewe impak word as laag beskou, aangesien landboubedrywighede doeltreffend onder die kraglyne kan aangaan sonder beduidende ontwrigting. Daar is geen verwagte netto verlies in toekomstige landbouproduksie as gevolg van hierdie voorgestelde ontwikkeling en die huidige bedryfsontwikkelings van ’n soortgelyke aard nie.

ii. **Diere:** Die grootste deel van die studiegebied is veranderd as gevolg van historiese en huidige grondgebruikbedrywighede. Die belangrikste impak is oorbeweiding, vertrapping, erosie, swak brandstelsels en houtkappery. Die aktiwiteit wat met boerdery verband hou, het 'n impak op die dierebevolking in die gebied. Buiten die avifauna, het die

siftingsinstrument geen Spesie van Bewaringskommer (SBK) aangedui nie, wat verder tydens die veldassessering bevestig is. Die meeste van die waarnemings wat tydens die waarnemingsassesserings opgemerk is, was aktiewe woongate en sluit in die Hystrix africaeaustralis, Orycteropus afer en Xerus inauris. Baie van die aktiewe woongat-plekke is naby aan voorgestelde toringposisies en daar word aanbeveel dat hierdie woongate gemerk moet word voor konstruksie. Waar moontlik, moet die woongate nie versteur word nie. Dit is waarskynlik dat die diere uit die gate sal beweeg sodra die bedrywighede begin.

iii. **Avifauna:** Die siftingsinstrumentverslag het ’n algehele hoë sensitiwiteit vir die diersoorte toegeken aangesien daar aangedui is dat daar spesies van medium en hoë sensitiwiteit is. Toe die haalbaarheid getoets en die waarnemingsassessering gedoen is, is die hoë sensitiwiteit weer bevestig, aangesien daar ’n habitat vir SBK is, en in party plekke is dit SBK soos gompoue (Ardeotis kori), swartaasvoëls (Torgos tracheliotos) en witrugaasvoëls (Gyps africanus). Die impak van die kraglyn op avifauna as gevolg van botsings, elektrokusies en habitatvernietiging is as matig tot laag gegradeer ná die implementering van versagtingsmaatreëls. Hoewel ’n beperkte oorblywende habitat in die 30 km-gebied geraak word, is daar bestaande kraglyne binne die 30 km-gebied, wat die kumulatiewe impak negatief-matig maak.

iv. **Argeologie en kultuurerfenis:** Die assessering het geen erfenishulpbronne by die toringliggings aangedui nie. Let egter daarop dat geïsoleerde klipgereedskap en grafte in die serwituut van die voorgestelde kraglyn aangeteken is, maar dit sal nie direk beïnvloed word nie, hoewel toevallige versteurings ’n bedreiging vir hierdie terreine, veral vir grafte, bly. Hoewel klipgereedskap byna alomteenwoordig is in die breër streek van die voorgestelde fase 3-projek, is die onbeskikbaarheid daarvan egter nie onverwags nie. Die impak van die ontwikkeling op grafte en klipgereedskap word ná versagtings as laag beskou. Terreine buite die opgemete gebied sal ’n baie groot kumulatiewe negatiewe impak hê as die impak van die voorgestelde kraglynontwikkeling toegelaat sou word om verder as die opgemete gebied te strek.

v. **Burgerlugvaart:** Daar is geen burgerlike radarfasiliteite binne 35km van die voorgestelde prospekteerterrein nie. Die lugruim rondom FASS, FAVB, FAKU en FABP is onbeheerd. Die lugruim-klassifikasie van die omgewing rondom die vliegvelde wat

geraak word: Daar is geen burgerlike radarfasiliteite by enige van die vliegvelde wat geraak word nie. Die naaste grondgebaseerde navigasietoerusting is ’n VOR/DME-opstelling naby die Kathu-vliegveld, ongeveer 10km N van die voorgestelde Ferrum-substasie. Die risiko van enige impak van die projek op nabygeleë burgerlike radarinstallasies is dus laag. Die SACAA AIP-inligting van die geraakte vliegvelde is ook geassesseer, en daar is bepaal dat daar geen bekende grondgebaseerde navigasiehulpmiddele binne 15km van die ontwikkeling geleë is nie, buiten die VOR/DME en presisiebenadering-roeteaanwysers by FASS, wat visuele leiding aan vlieëniers verskaf, en dit is nie onderhewig aan potensiële inmenging nie.

vi. **Paleontologie:** Die voorkoms van stromatolietdraende dolomiet is bevestig tydens die veldassessering, en die klassifikasie van die studiegebied as ’n gebied van baie hoë paleontologiese sensitiwiteit word ondersteun. Waar moontlik, moet goed bewaarde stromatoliete bewaar word. Die impak op die paleontologie van die studieterrein word as MEDIUM beskou, wat impliseer dat, hoewel die stromatoliete in die studie wetenskaplik baie belangrik is, die uitwerking van die impak versag kan word solank die ‘toevallige vonds’-prosedures gevolg word.

vii. **Plante:** Byna al die beplande ontwikkeling is geleë in natuurlike habitatgebiede met lae tot matige biodiversiteitswaardes en lae sensitiwiteit. Hoewel die korridor deur ’n paar ekologiese ondersteuningsgebiede met ’n baie hoë sensitiwiteit ten opsigte van die aardse biodiversiteitstema loop, sal die kraglyn nie die ekologiese funksionering van hierdie gebiede noemenswaardig beïnvloed nie. Die kraglyn het min invloed op ekologiese funksionering op landskapvlak, wat die enigste vlak van kommer is waar plaaslike sensitiwiteite geïdentifiseer is.

viii. **Varswater-assessering:** Meerjarige en nie-meerjarige vleilande, dreineringslyne en rivierstelsels met oewersones is ’n paar van die waterloopkenmerke wat langs die voorgestelde kraglynroete gevind is. Die voorgestelde kraglyn het oor die algemeen nie die nabygeleë waterlope beïnvloed nie, maar dit het wel met ’n aantal waterloopfunksies gekruis. Die meeste van die verwagte impakte op die geïdentifiseerde waterlope is as “laag” beskou as gevolg van die redelik lae aard van die impak van die voorgestelde ontwikkeling. Sommige van hierdie uitwerkings is egter

geassesseer as “matige” risiko’s vir die waterlope ná versagting.

ix. **Sosiale impak-assessering:** Geen onherstelbare foute is geïdentifiseer nie, en die negatiewe impakte wat aangeteken is, kan versag word, afgesien van die kraglyn se inmenging met die landskap se panoramiese uitsig. Daarbenewens sal die projek werk skep en KMMO’s in die gebied ’n hupstoot gee.

F. VOORKONSTRUKSIE-DEURLOOP

Die voorkonstruksie-deurloop vir avifauna, flora, fauna en erfenis is onderneem en toringspesifieke maatreëls is in hierdie verslag en die Omgewingsbestuursprogram opgeneem.

G. OPENBARE DEELNAMEPROSES (ODP)

’n Verkenningsterreinbesoek is onderneem om ’n begrip te ontwikkel van die sosiale konteks (verteenwoordigende strukture; taal; kommunikasiemedia, ens.). Die resultaat van hierdie terreinbesoek was dat die inligting aan die gemeenskappe in die geraakte omgewing eers bekend gemaak sal word deur die munisipale beamptes, en op die plase is kennisgewings aan al die geraakte grondeienaars beskikbaar gemaak. Die gemeenskapstruktuur en boereverenigings sal ook help deur openbare vergaderinge op te stel. Belanghebbende en geraakte partye (BGP’s) is geïdentifiseer, en hulle is tans op die databasis geregistreer. Die databasis wat saam met hierdie verslag ingedien word, sluit belanghebbendes in van:

- Nasionale, Provinsiale en Plaaslike Regering.
- Grondeienaars.
- Nieregeringsorganisasies.

Die agtergrondinligtingsdokument en kennisgewings is per e-pos aan belanghebbendes gestuur, en terreinkennisgewings is op duidelik sigbare plekke binne 10 km van die serwituut aangebring. ’n Advertensie is ook in die Sowetan- en Stellalander-koerante geplaas, wat die publiek in kennis gestel het van die projekvergaderings wat met die geraakte gemeenskappe geskeduleer sal word, in oorleg met wykraadslede en tradisionele rade. Alle kommentaar wat tot dusver ontvang is, is in die kommentaar- en reaksieverslag (C&R-verslag) aangeteken, en daar is dienooreenkomstig daarop gereageer.

H. PROSEDURE VIR DIE RES VAN DIE STUDIE

Die volgende aktiwiteite sal gedurende die finalisering van die aansoek uitgevoer word:

- Alle kommentaar wat gedurende die hersieningstydperk van 30 dae ontvang word, sal in die finale verslag aangespreek word.
- Die FBAV sal aan die DFFE voorgelê word vir oorsig en besluitneming.
- Belanghebbendes sal skriftelik in kennis gestel word van die DFFE se besluit, asook oor instruksies oor hoe

om binne die gespesifiseerde sperdatums te appelleer.

I. OMGEWINGSIMPAKVERKLARING EN AANBEVELINGS

Die voorgestelde projek sal verskeie positiewe en negatiewe impakte vir die omgewing inhou. Spesialisstudies is onderneem, en gebaseer op die bevindings daarvan het die spesialiste aanbeveel dat die projek voortgaan op voorwaarde dat al die versagtingsmaatreëls geïmplementeer word. Kennisgewings en die Agtergrondinligtingsdokument (AID) is aan die belanghebbende en geraakte partye en grondeienaars voorgelê, en tot op hede het niemand beswaar gemaak teen die voorgestelde projek nie. Daar is geen onherstelbare foute met betrekking tot die voorgestelde projek geïdentifiseer nie. Daarom is die OAP van mening dat die voorgestelde projek goedgekeur moet word. Al die aanbevelings van die spesialiste wat by hierdie verslag ingesluit is en die aangehegte OBPv moet ooreenkomstig geïmplementeer word.

TSHOBOKANYO

A. LEMORAGO

Thutopatlisiso e e dirilweng ya seboloko sa Kapa Bokone le Bokone Bophirima e supilwe gore go ya ka topo e e lebeletsweng, e e golang ya motlakase, go ka nne ga nna le kotsi ya gore topo e ka feta tlamelo. Ka ntlha ya seno, ba tshwaile tlhokego ya go nonotsha tsamaiso ya phetiso magareng a Ferrum, Hotazel Transmission le Mookodi Substations ka go aga dithapo tsa motlakase di le pedi tsa 400kV le go ntšhafatsa diteišenepotlana. Bonamo jwa tiro bo akaretsa tse di latelang:

(i) Kago ya thapo ya motlakase ya 400kV ya dikhilometara di le ±260 go tswa kwa Ferrum Substation go ya kwa Mookodi Substation.

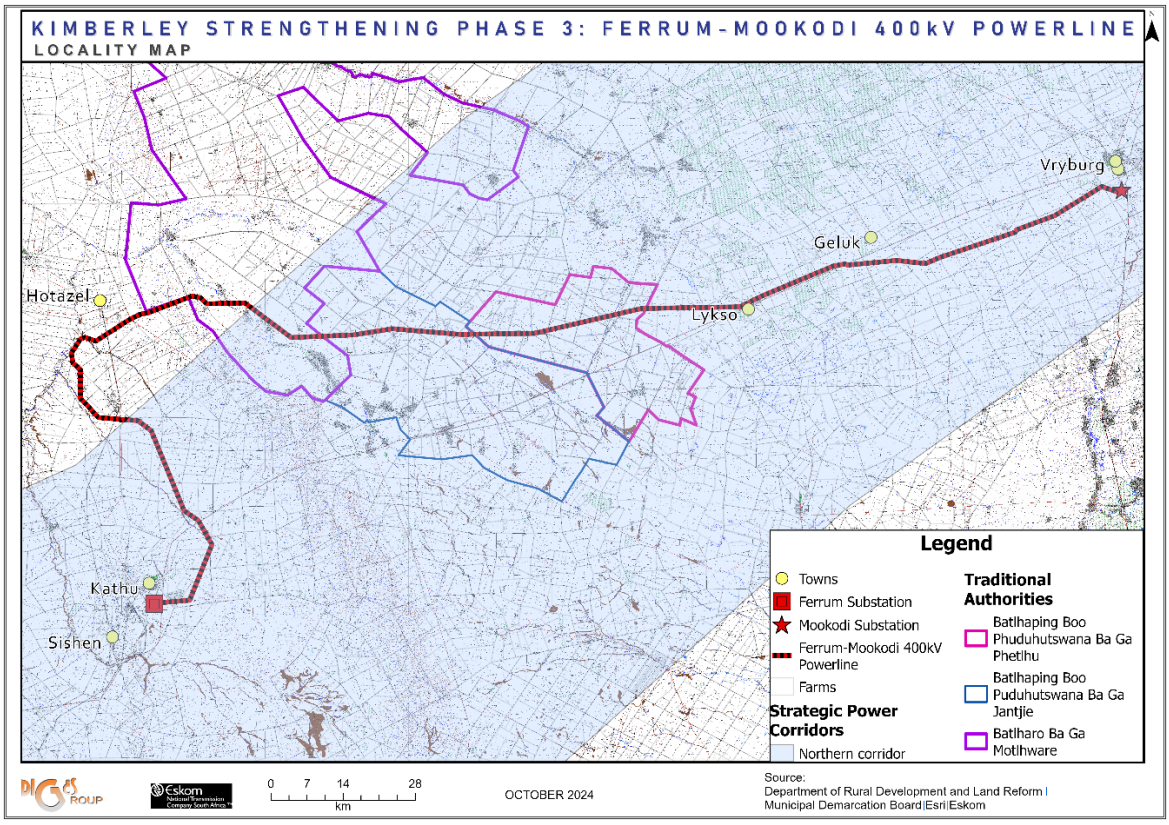
(ii) Ntšhafatsa Mookodi Substation ka go tsenya:
- Sefetlhamotlakase se le 1 x 100MVAr kwa Mookodi setsamaisamotlakase sa 400kV.
- Lefelo le le fepang a mangwe ka motlakase la Mookodi la 1x 400kV.
- Sediriswa se se thibelang kgaogo ya motlakase se le 1x 400kV kwa Mookodi 400kV.

(iii) Ntšhafatsa Ferrum Substation ka go tsenya
- Sefetlhamotlakase se le 1 x 100MVAr kwa Ferrum setsamaisamotlakase sa 400kV.
- Lefelo le le fepang a mangwe ka motlakase la Ferrum le le 1x 400kV.
- Sediriswa se se thibelang kgaogo ya motlakase se le 1x 400kV kwa Ferrum.

Porojeke e e sisintsweng e ne e kile ya dumelelwa ke Lefapha la Merero ya Tikologo (DEA) ka 2013 ka Nom ya Tshupetso ya DEA ya: DEA Ref: 12/12/20/2485. Ka fa ditiro tse di umakilweng kwa godimo di sa simolola mo nakong e e beilweng, kopo e ntša ya EA e a tlhokega.

B. LEFELO

Tsela e e sisintsweng e fopholediwa go dikhilometara di le 60 magareng a Ferrum Substation le Hotazel le dikhilometara di le 200 magareng a Hotazel le seteišenepotlana sa Mookodi. Ferrum Substation e fopholediwa go dikhilometara di le 3.4 borwa-botlhaba jwa Kathu, le Mookodi Substation e dikhilometara di le 6.5 borwa jwa toropo ya Vryburg. Tsela e e sisintsweng e kgabaganya tsela ya bosetšhaba (N14), tsela ya kgaolo R31, ditsela di le mmalwa tsa sedika magareng a N14 le R31, le seporo sa terena. Mafelo a meepo a teng gaufi le toropo ya Hotazel, le metse e e mmalwa e gaufi le mokgotha o o sisintsweng. Diperesente tse di fopholediwang go di le 80 tsa lefelo le le amilweng ke tsela eno e e sisintsweng ke lefatshe la magae, fa diperesente di le 79 tsa tsela ya thapo ya motlakase e e sisintsweng di le mo Northern Strategic Transmission Corridor le diperesente di le 18 mo Vryburg Renewable Energy Development Zone.



Lefelo la Porojeke

C. TIREGO

Ditiro tse di sisintsweng di tshwanetse go dirwa mmogo le mafaratlhatlha a a tshwanetseng go tlamelwa di kwadilwe jaaka tse di nang le dikhuetso tse di sa siamang mo tikologong mme ka jalo go tlhokega gore go dirwe Tekolo le Tshekatsheko ya Khuetso ya Tikologo. Le fa go le jalo, Kitsiso ya Puso ya NEMA 113 ya Tlhakole a le 16 2018, jaaka e baakantswe, e bontsha gore foo karolo e kgolwane ya thapo ya motlakase e e sisintsweng e tla diragalang go e le nngwe kgotsa go feta ya di Strategic Transmission Corridors, mokgwa wa Tshekatsheko ya Motheo (BA) o o akanyediwang mo Molawaneng wa bo 19 le 20 wa Environmental Impact Assessment Regulations, Kitsiso ya Puso R982 ya 2014, jaaka e baakantsweng (go tloga fano Melawana ya EIA, 2014 (jaaka e baakantswe)) e tshwanetse go latelwa gore go bonwe EA, jaaka e tlhokega go ya ka Molao. Diperesente tse di fopholediwang go di le 79 tsa thapo ya motlakase ya 400Kv ya Ferrum-Mookodi di wela mo teng ga Northern Strategic Transmission Infrastructure Zone, ka gone Tshekatsheko ya Motheo (BA) e direlwa porojeke eno. Mo godimo ga moo, thapo ya motlakase e e sisintsweng e wela go Molao wa Bosetšhaba wa Metsi, Molao 36 wa 1998 (NWA), karolo ya taolo ya dimetara di le 500, ka gone Tumelelo ya Tiriso ya Metsi le yone e a tlhokega go ya ka Kitsiso ya Puso 4167 ya

2023: Tumelelo ya Tiriso ya Metsi e e tlhabolotsweng go ya ka karolo 39 ya Molao wa tiriso ya metsi jaaka e tlhalositswe mo karolo 21 (c) kgotsa 21 (i) ya Molao.

D. DIKAKANYO LE DIKGORELETSI

Fa go dirwa Tshekatsheko eno ya Motheo (BA), Moitseanape wa Tshekatsheko ya Tikologo (EAP) o akanya dikakanyo tse di latelang:

i. EAP o rulagantse BAR a dirisa metswedi e le mentsi go akarediwa dipegelo tsa bomankge. EAP o akanya gore tshedimosetso go tswa dipegelong tsa bomankge e nepagetse.
ii. EAP o akanya gore tshedimosetso e e tlametsweng ke Eskom e nepagetse.

E. DITHUTOPATLISISO TSA BOMANKGE

Fa o leba mokgotha wa thapo ya motlakase le ka fa tikologo e leng ka gone, dikhuetso tse di ka nnang gone mo tikologong di ne tsa supiwa ka thulaganyo ya ka fa gare e e ikaegileng mo ditlhabololong tse di tshwanang le tseo, go etela lefelo le Pegelo ya Tlhatlhobo. Dithutopatlisiso tsa Bomankge ka jalo di ne di laelwe go bona go tlhaloganya go go boteng ga maemo a gajaana a dintlha tse di farologaneng tsa tikologo le ka fa tlhabololo e tla nnang le khuetso mo dintlheng tseno tsa tikologo. Dipholo tsa dithutopatlisiso tseno di dira jaaka motheo wa go tshwaya dikhuetso tse di ka nnang gone tsa botlhokwa tse di lebeletsweng fa tlhabololo e ka dirwa. Pegelo eno e akaretsa dipegelo tsa tshekatsheko ya khuetso ka bomankge e e laetsweng jaaka karolo ya thulaganyo ya tikologo mme ditshobokanyo tsa tshekatsheko ya Dinonyane tsa kgaolo e e rileng, Thutamarope, Bonetetshi jwa masaledi a diphologolo le dijalo, Mefuta ya Dimela tse di melang mo Lefatsheng, Metsi a a phepa, Tsa loago, Bothati jwa tsa Bofofane jwa Batho le Tse di bonwang di neetswe fa tlase:

i. **Temothuo (Kgonegoboleng ya mmu le Se lefatshe le kgonang go se tlhagisa):** Ga go a lebelelwa gore porojeke ya thapo ya motlakase e e tsamayang kwa godimo, e e sisintsweng e tla ama ditiro tsa temothuo tse di diragalang mo lefelong la dipatlisiso ka tsela e e sa siamang ka gonne e ka se nne le ditlamorago mo bokgoning jwa mo isagweng jwa ntshokuno ya temothuo mo lefelong. Ditiro tsotlhe tsa temothuo tse di diriwang gajaana, segolobogolo tse di ikgarileng ka temothuo ya diphologolo tse di tlhaga le dikgomo, di tla gololosega go tswelela jaaka gale ka fa tlase ga thapo ya motlakase. Dikhuetso tse di oketsegileng di tsewa di se botlhokwa thata ka fa ditiro tsa temothuo di kgona go tswelela go dirwa ka botlalo ka fa tlase ga dithapo tsa motlakase kwa ntle ga dikgoreletso tse di masisi. Ga go a lebelelwa ditshenyegelo tse di fetang lotseno mo ntshokunong ya temothuo mo isagweng ka ntlha ya tlhabololo eno e e sisintsweng le ditlhabololo tse di

dirwang gajaana tsa mofuta o o tshwanang.

ii. **Phologolo:** Karolo e kgolwane ya lefelo la thutopatlisiso e fetotswe ke ditiro tsa tiriso ya lefatshe e e fetileng le ya gajaana. Dikhuetso tse dikgolo ke go fula go feta selekanyo, go gataka, kgogolego, tsamaiso e e bokoa ya molelo le go rema dikgong. Tiro e e nyalanang le temothuo e na le kutlwalo mo palong ya diphologolo mo lefelong. Ntle le dinonyane tsa kgaolo, sediriswa sa go tlhatlhoba ga se ise se bontshe Mefuta epe ya Ditshedi tse di Tshwanetseng go Sirelediwa, eo e neng ya tlhomamisiwa go ya pele ka nako ya tshekatsheko ya setsha. Bontsi jwa tse di etsweng tlhoko ka nako ya fa go tsamaiwa go tlhatlhobiwa ke mengobo e e dirisiwang mme di akaretsa Noko, Thakadu le Bosamane. Bontsi jwa mengobo e e dirisiwang bo gaufi le maemo a ditora a a sisintsweng gape go akantshiwa gore mengobo eno e tshwaiwe pele go agiwa. Foo go kgonegang, mengobo ga e a tshwanela go kgorelediwa. Go ka direga gore diphologolo di fuduge mo mengobong fa tiro e simolola.

iii. **Dinonyana tsa kgaolo e e rileng:** Pegelo ya sediriswa sa tlhatlhobo e kaile gore bosisi jo bo kwa godimo ka kakaretso bo mo mefuteng ya diphologolo ka ntlha ya fa mofuta o, o supilwe e le o o nang le bosisi jo bo mo magareng go ya go jo bo kwa godimo. Bosisi jo bo kwa godimo bo netefaditswe ka nako ya tshekatsheko ya kgonagalo-pele le go tsamaya o tlhatlhoba ka fa go na le bonno jwa SCC mme mo mafelong a mangwe SCC jaaka Bokgori (Ardeotis kori), Lenong (Torgos tracheliotos) le Lenong la Mokwatla o Mosweu (Gyps africanus). Khuetso ya thapo ya motlakase mo dinonyaneng tsa kgaolo ka ntlha ya dithulano, go fisiwa ke motlakase le tshenyo ya lefelo la bonno e lekanyeditswe go nna botlhokwa mo go lekanetseng go ya kwa tlase morago ga go tsenngwa tirisong ga dikgato tsa go fokotsa. Le fa lefelo le le lekanyeditsweng la bonno le nnile le kutlwalo mo lefelong la dikhilometara di le 30, go na le dithapo tsa motlakase tse di leng gone mo lefelong la dikhilometara di le 30, go feleletsa mo khuetsong e e oketsegileng e le E e sa siamang E e mo magareng.

iv. **Thutamarope le Ngwao-Boswa:** Tshekatsheko ga e a senola metswedi epe ya boswa kwa mafelong a ditora. Le fa go le jalo, go tshwanetse go elwe tlhoko gore didiriswa tse di aroganeng tsa matlapa le mabitla di bonwe mo bonnong jwa thapo ya motlakase e e sisintsweng, tseno di ka se amege ka tlhamalalo, le fa dikgoreletso tse di sa rulaganngwang e tla nna e le matshosetsi mo mafelong , segolobogolo mabitla. Le fa go ntse jalo, le fa gone didiriswa tsa matlapa di

batlile di tlalatlala mo kgaolong e kgolwane ya Porojeke e e sisintsweng ya Kgato 3 , go sa nne teng ga tsone, le fa go le jalo, ga se ga tshoganyetso. Khuetso ya tlhabologo mo mabitleng le didiriswa tsa matlapa e tsewa e le kwa tlase morago ga go fokodiwa. Ditsha tse di leng kwa ntle ga lefelo le le batlisisitsweng di ka nna le kutlwalo e kgolo e e sa siamang fa kutlwalo ya tlhabololo ya thapo ya motlakase e e sisintsweng e ka letlelelwa go atologela ka kwa ga lefelo le le batlisisitsweng.

v. **Bothati jwa tsa Bofofane:** Ga go na madirelo a radara a baagi mo dikhilometsreng di le 35 tsa lefelo le le solofetsweng, le le sisintsweng. Karolo ya mo moweng gaufi le FASS, FAVB, FAKU le FABP ga e laolwe. Tlhaolo ya karolo eno ya mo mowing mo tikologong e e gaufi go dikologa boemelafofane jo bo amegang. Ga go na madirelo a radara a baagi mo boemelafofaneng bope jo bo amegang. Sediriswa sa masupatsela se se gaufi sa ba ba fa fatshe ke VOR/DME ka bontsi gaufi le Kathu Aerodrome, e ka nna dikhilometara di le 10 B jwa seteišenepotlana se se sisintsweng sa Ferrum. Kotsi ya khuetso nngwe le nngwe ya porojeke mo tse di fa gaufi tse di tsentsweng tsa radara ya baagi, ka jalo e kwa tlase. Tshedimosetso ya SACAA AIP ya boemafofane jo bo amegang le yone e ne ya sekasekiwa, Mme go ne ga lemogiwa gore ga gona dithuso tse di itsegeng tsa bosupatsela tse di beilweng mo dikhilometsreng di le 15 tsa tlhabololo, kwa ntle ga VOR/DME le mabone a a mo matlhakoreng a lebalakotamelo kwa FASS, tse di tlamelang kaelo ya pono mo bakgweetsing ba difofane mme ga di itemogele kgonagalo ya kgoreletso.

vi. **Bonetetshi jwa masalela a diphologolo le dimela:** Tiragalo ya dolomite e e nang le stromatolite e ne ya tlhomamisiwa ka nako ya tshekatsheko ya tshimo le tlhaolo ya thutopatlisiso jaaka e e nang le Go ka Amega thata ga Masalela a diphologolo le dimela e a tshegediwa. Foo go kgonegang, di-stromatolites tse di tiileng, di bolokesegile di tshwanetse go sirelediwa. Khuetso mo masaleleng a diphologolo le dimela tsa setsha sa thutopatlisiso e tsewa go nna MAGARENG, se se kayang gore, le fa di-stromatolites di le botlhokwa thata mo go tsa saense, diphelelo tsa khuetso di ka fokodiwa fa fela Dithulaganyo tsa Fetola Fitlhela di salwa morago.

vii. **Dijalo:** E e batlileng e nna tlhabologo yotlhe e e akantsweng e beilwe mo mafelong a bonno a tlholego a a nang le boleng jwa mefutafuta ya ditshedi jo bo kwa tlase go jo bo lekanetseng le go amega go go kwa tlase. Le fa mokgotha o kgabaganya mafelo a mmalwa a Tshegetso Ya Tikologo ya Ditshedi tse di Amegang Thata mo Thitokgannyeng ya Ditshedi tsa mefutafuta tsa mo

Lefatsheng, thapo ya motlakase e ka se nne le kutlwalo e kgolo mo tiragatsong ya mafelo ano ya tikologo. Thapo ya motlakase e na le ditlamorago tse dinnye mo tiragatsong ya tikologo mo seemong sa naga, se e leng seemo se le sosi se go tshwenyegwang ka sone foo go supilweng tse di ka amang tikologo mo lefelong.

viii. **Tshekatsheko ya Metsi a a Phepa:** Metsitlane e e sa kgaleng le e e sa nneng ngwaga otlhe, mela ya kgogolego, le tsamaiso ya dinoka ka mafelo a a fa dintshing tsa lewatle e ne e le gareng ga mesele ya metsi e e bonwang fa thoko ga tsela e e sisintsweng ya thapo ya motlakase. Thapo ya motlakase e e sisintsweng ga e a ama thatathata mesele ya metsi e e fa gaufi, fela e ne ya kopana le mesele e le mmalwa ya metsi. Bontsi jwa dikhuetso tse di lebeletsweng mo meseleng ya metsi e e supilweng e lekanyeditswe go nna “Kwa tlase" ka ntlha ya khuetso e e batlang e le kwa tlase ya tlhabololo e e sisintsweng. Tse dingwe tsa ditlamorago tseno, le fa go ntse jalo, di ne di tsewa jaaka dikotsi "Tse di lekaneng" mo meseleng ya metsi morago ga go fokodiwa.

ix. **Tshekatsheko ya Khuetso mo Loagong:** Ga go a supiwa makoa afe a a ka bakang tshenyo, le dikhuetso tse di sa siamang tse di lemogilweng di ka fokodiwa kwa ntle ga go tsenelela ga thapo ya motlakase mo ponalong e ntle ya lonaga. Mo godimo ga moo, porojeke e tla tlhola ditiro mme ya godisa diSMME’ kwa lefelong.

F. TLHATLHOBO YA PELE GA KAGO

Tlhatlhobo ya Pele GA Kago ya dinonyane tsa mo kgaolong, dijalo, diphologolo le boswa di dirilwe le dikgato tse di totobetseng tsa ditora di akareditswe mo pegelong eno le Lenaneo la Tsamaiso ya Tikologo.

G. THULAGANYO YA BOTSAYAKAROLO JWA SETŠHABA (PPP)

Ketelo ya lefelo ya go batlisisa e dirilwe go tlhola go tlhaloganya bokao jwa loago (ditheo tsa kemedi; Puo; metswedi ya tlhaeletsano, jj.). Phelelo ya ketelo ya setsha e ne e le gore tshedimosetso go ya baaging ba ba mo memong a go amogela e tla abiwa pele ka batlhankedi ba mmasepala le kwa dipolaseng, dikitsiso di rometswe kwa beng ba lefatshe botlhe ba ba amegang. Ditheo tsa setšhaba le mekgatlho ya balemirui gape e tla thusa go rulaganya dikopano tsa batho botlhe. Makoko a a Nang le Kgatlhego le a a Amegang (IAPs) a supilwe, mme ano a kwadisitswe mo polokelotshedimosetsong gajaana. Polokelotshedimosetso e e rometsweng le pegelo eno e akaretsa bannaleseabe go tswa:

- Pusong ya Bosetšhaba, ya Porofense le ya Selegae.
- Beng ba Lefatshe.
- Mekgatlhong e e seng ya Puso.

Tokomane ya Tshedimosetso ya Lemorago le dikitsiso di rometswe kwa bannaleseabeng ka

diimeili le dikitsiso tsa lefelo di ne di beilwe mo mafelong a a bonalang sentle mo sekgaleng sa dikhilometara di le 10 km tsa lefelo la bonno. Papatso e ne ya bewa mo makwalodikgannye a Sowetan le Stellalander, e itsise setšhaba ka porojeke. Dikopano di tla rulaganngwa le baagi ba ba amegang ka ditherisano le bakhanselara ba woto le Kgotla ya Setso.

Ditshwaelo tsotlhe tse di amogetsweng go fitlha jaanong di rekotilwe mo Pegelong ya Ditshwaelo le Dikarabo (C&R Report) mme e arabilwe ka tsela e e maleba.

H. THULAGANYO YA KAROLO E E SETSENG YA THUTOPATLISISO

Ditiro tse di latelang di tla diriwa ka nako ya konosetso ya go dira dikopo.

- Ditshwaelo tse di amogetsweng ka nako ya teboseša ya paka ya malatsi a le the 30 e tla lejwa mo pegelong ya bofelo.
- FBAR e tla romelwa kwa DFFE gore e lejwe seša le ditshwetso di tsewe.
- Bannaleseabe ba tla bona kitsiso ka lekwalo ya tshwetso ya DFFE le ditaelo fa ba ikuela mo nakong e e tlhomilweng.

(iv) TLHALOSO YA KHUETSO MO TIKOLOGONG LE DIKAKANTSHO

Porojeke e e sisintsweng e tla tlisa dikhuetso tse di farologaneng tse di siameng le tse di sa siamang mo tikologong. Dithutopatlisiso tsa bomankge di dirilwe, mme go ya ka diphitlhelelo tsa bone, bomankge ba akantshitse gore porojeke e tswele pele fela fa dikgato tse di fokotsang di tsenngwa tirisong. Tokomane ya Dikitsiso le Tshedimosetso ya Lemorago (BID) e rometswe go Makoko a a Nang le Kgatlhego le a a Amegang le beng ba lefatshe; go fitlha jaanong, ga go yo o ganeditseng porojeke e e sisintsweng. Ga go na makoa a a ka tlholang tshenyo a a supilweng mo porojekeng e e sisintsweng. Ka jalo, EAP e akanya gore porojeke e e sisintsweng e amogelwe. Dikakantsho tsotlhe tsa bomankge tse di akareditsweng mo pegelong eno le EMPr e e mametleletsweng di tshwanetse go tsenngwa tirisong ka tsela e e maleba.

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ABBREVIATIONS

BA	Basic Assessment
BAR	Basic Assessment Report
BC	Biodiversity Conservation Directorate (DFFE)
CAR	Coordinated Avifaunal Roadcount
CBA	Critical Biodiversity Area
CIA	Cumulative Impact Assessment
DAEARDLR	Department of Agriculture, Environmental Affairs, Rural Development and Land Reform
DEA	Department of Environmental Affairs
DEAT	Department of Environmental Affairs and Tourism
DFFE	Department of Forestry, Fisheries, and the Environment
DMRE	Department of Mineral Resources
DWS	Department of Water and Sanitation
EA	Environmental Authorisation
EIA	Environmental Impact Assessment
EIS	Environmental Importance and Sensitivity
EMI	Electromagnetic Interference
EMPR	Environmental Management Programme
ESA	Ecological Support Area
EWT	Endangered Wildlife Trust
GA	General Authorisation
GW	Giga watts
I&APs	Interested and Affected Parties
IEA	Integrated Environmental Authorisations
IRP 2019	Integrated Resource Plan
KBA	Key Biodiversity Area
NFEPA	National Freshwater Ecosystem Priority Area
MTS	Main Transmission Substation
NEMA	National Environmental Management Act, 107 of 1998 (as amended)
NEMBA	National Environmental Management: Biodiversity Act 10 of 2004
NWA	National Water Act No. 36 of 1998
PAOI	Project Area of Influence
PES	Present Ecological Status
POPIA	Protection of Personal Information Act (No. 4 of 2013),
PPP	Public Participation Process

PV	Photovoltaic
RCIA	Rapid Cumulative Impact Assessment
RI	Radio Interference
SABAP 2	South African Bird Atlas 2 (SABAP 2)
SACAA	South African Civil Aviation Authority
SAHRA	South African Heritage Resources Agency
SANDF	South Africa National Defence Forces
SARAO	South African Radio Astronomy Observatory
SCC	Species of Conservation Concern
SKA	Square Kilometer Array
SIA	Social Impact Assessment
SOC	State Owned Company
SQR	Sub-Quaternary Reaches
STR	Screening Tool Report
TDP	Transmission Development Plan
TOPS	Threatened and Protected Species
WUL	Water Use Licence Application
WULA	Water Use Licence Application

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Appendix E-1:	Proof of placement of site notices
Appendix E-2:	Newspaper adverts (Inception and DBAR)
Appendix E-3:	Proof of distribution of the BID
Appendix E-4:	Stakeholder Database
Appendix E-5:	Comments and Responses Report
Appendix E-6:	Stakeholder Comments
Appendix F:	DFFE Response to Pre-Application Meeting
Appendix G:	Screening Report
Appendix H:	Draft Generic Environmental Management Programme for Powerline

1 INTRODUCTION

This section of the report details the information required as per Section 3(1)(a) to (c) of Appendix 1 of Environmental Impact Assessment (EIA) Regulations, Government Notice R982 of 2014 (as amended)

(a) details of—
(i) the EAP who prepared the report; and
(ii) the expertise of the EAP, including a curriculum vitae.
(b) the location of the activity, including:
(i) the 21-digit Surveyor General code of each cadastral land parcel.
(ii) where available, the physical address and farm name.
(iii) where the required information in items (i) and (ii) is not available, the coordinates of the boundary of the property or properties.
(c) a plan which locates the proposed activity or activities applied for as well as associated structures and infrastructure at an appropriate scale; or, if it is—
(i) a linear activity, a description, and coordinates of the corridor in which the proposed activity or activities is to be undertaken; or
(ii) on land where the property has not been defined, the coordinates within which the activity is to be undertaken;

The National Transmission Company South Africa SOC Ltd (NTCSA) a subsidiary of Eskom Holdings SOC Ltd, has to supply reliable power to meet the increasing needs of electricity users. Therefore, NTCSA must continuously maintain, construct, and upgrade its transmission powerlines and substation infrastructure. According to Eskom TDP 2010–2019, some objectives involve transmission network strengthening plans and reliability projects, ensuring the transmission system's reliability and adequacy are sustained as load demand increases. A study done for the Northern Cape and North West grid indicated that based on the anticipated growing electricity demand, there may be a risk that demand will exceed the supply. As a result, they have identified the need to strengthen the transmission system between the Ferrum, Hotazel and Mookodi Substations by constructing two 400kV transmission powerlines and upgrading the substations. The first Ferrum-Mookodi 400kV powerline has been constructed and commissioned. NTCSA intends to develop the second Ferrum-Mookodi 400kV powerline.

The proposed construction of the Ferrum-Mookodi 400 kV line triggers activities listed in the Environmental Impact Assessment (EIA) Regulations, Government Notice (GN) R982 of 2014 as amended, promulgated under that National Environmental Management Act No. 107 of 1998, as amended (NEMA). Section 24 F (1) (a) of NEMA indicates that no person may commence an activity listed or specified in terms of Section 24(2)(a) or (b), except per the Environmental Authorisation (EA)

issued for that activity. NTCSA has therefore appointed DIGES Group (hereinafter DIGES) to apply with the Department of Forestry, Fisheries, and the Environment (DFFE) for an Environmental Authorisation for the ± 260km Ferrum-Mookodi 400 kV power line within Joe Morolong, Gamagara and Ga-Segonyana Local Municipalities, under the John Taolo Gaetsewe District Municipality, Northern Cape Province and Greater Taung and Naledi Local Municipalities under the Dr Ruth Segomotsi Mompatsi District Municipality, North West Province. The proposed activities to be undertaken together with the infrastructure to be provided are listed as negatively impacting the environment. As such, a Scoping and Environmental Impact Assessment is required. However, NEMA Government Notice 113 of 16 February 2018, as amended, indicates that where the greater part of the proposed powerline is to occur in one or more Strategic Transmission Corridors, a Basic Assessment (BA) procedure contemplated in Regulation 19 and 20 of the Environmental Impact Assessment Regulations, Government Notice R982 of 2014, as amended (hereinafter EIA Regulations, 2014 (as amended)) must be followed to obtain EA, as required in terms of the Act. Approximately 79% of the Ferrum-Mookodi 400 kV powerline falls within the Northern Strategic Transmission Infrastructure Corridor; hence, a Basic Assessment (BA) is being undertaken for this project. The location of the powerline in relation to the Strategic Transmission Corridors (STC) is shown in Figure 1-1. In addition, the proposed powerline falls with the National Water Act, Act 36 of 1998 (NWA), 500m regulated area; hence, a General Authorisation is also required in terms of Government Notice 4167 of 2023: Revised General Authorisation in terms of section 39 of the Act for water uses as defined in section 21 (c) or section 21 (i) of the Act.

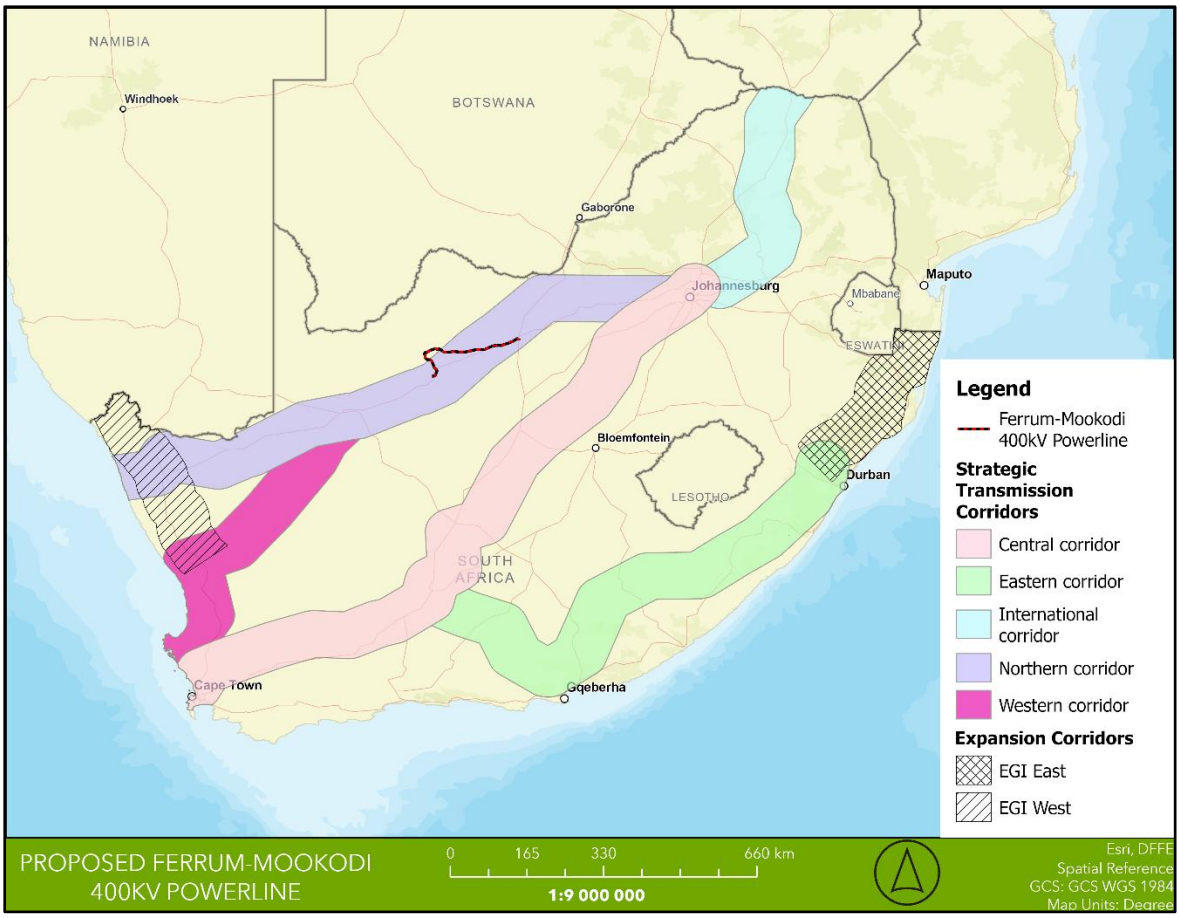


Figure 1-1: Location of the powerline in relation to Strategic Transmission Corridors

The following activities will be undertaken as part of the BA process:

i. Compilation of a screening report as per the DFFE Screening Tool.
ii. Site Sensitivity Verification.
iii. Specialists Assessment.
iv. Public Participation Process.
v. Compilation of the Draft and Final Basic Assessment Report and Environmental Management Programme.

1.1 Details of the Applicant

The details of the applicant are given in the Table below.

Table 1-1: Applicant's Details

Name of Company	National Transmission Company South Africa (NTCSA)
Physical Address	Megawatt Park, Maxwell Drive, Sunninghill, Sandton
Postal Address	P.O. Box 1091, Johannesburg, 2001
Contact Person	Itumeleng Moeng

Email Address	MoengI@ntcsa.co.za

1.2 Details of Environmental Impact Assessment Practitioner (EAP)

Section 13 of EIA Regulations, 2014, as amended, indicates that an Environment Assessment Practitioner (EAP) should be independent and have expertise in conducting Environmental Impact Assessments, including knowledge of the Act and any guidelines relevant to the proposed activity.

DIGES Group is a black-owned BBB-EE consultancy company established in 2004 that offers services in the geo-environmental sector. The company has completed many Environmental Impact Assessments for various developments. The details for the project EAPs are given below as per Section 3(1)(a)(i) of Appendix 1 of the EIA Regulations, 2014, as amended. Reference is also made to the CVs attached in Appendix A.

Table 1-2: EAP Details

Aspect	Details
Principal EAP	
Company name of EAP:	DIGES Group
EAP's name and surname:	Brenda Makanza
Postal address:	P.O. Box 7068, Midrand, 1685
Tel:	011 312 2878
Fax:	011 312 7824
E-mail:	brendam@diges.co.za
Qualifications and relevant experience	• B.Sc. Honours Environmental Science. • Professional Diploma Geographic Information Systems • Twenty-one (21) in the environmental consulting field. Refer to Appendix A for CV and Qualifications
Professional affiliations	• South African Council for Natural Scientific Professions (SACNASP). Registration Number 400016/17. • Environmental Assessment Practitioners of South Africa (EAPASA). Registration Number 2019/1542.
EAP	
Company name of EAP:	DIGES Group
EAP's name and surname:	Frank Mhandu
Postal address:	P.O. BOX 7068, Midrand, 1685
Tel:	011 312 2878

Aspect	Details
Fax:	011 312 7824
E-mail:	info@diges.co.za
Qualifications and relevant experience	• MSc Conservation Biology • Eight years (8) in the environmental consulting field. Refer to Appendix A for CV and Qualifications
Professional affiliations	• South African Council for Natural Scientific Professions (SACNASP). Registration Number 120638. • Environmental Assessment Practitioners of South Africa (EAPASA). Registration Number 2020/268.

1.3 Project Background

In 2012, Eskom Holdings Ltd commissioned Mokgope Consulting, to undertake a Scoping and EIA for the Ferrum-Hotazel-Mookodi 400kV powerline and substation upgrade in the Northern Cape and North West Provinces. The Competent Authority, Department of Environmental Affairs (DEA) accepted and approved the submitted Scoping and Environmental Impact Assessment Report (EIAR), NEAS Ref: DEA/EIA/0000618/2011; DEA Ref: 12/12/20/2485, and on June 10, 2013, the EA was issued with a requirement that project activities start within three years. The activities authorised under the EIA Regulations of 2010 entailed the following:

I. Construction of a 400kV transmission powerline of approximately 200km from Hotazel transmission Substation to Mookodi Substation plus associated work at Mookodi Substation; and construction of a 400kV transmission powerline of approximately 60km from Ferrum Substation to Hota2el transmission Substation plus associated work at the Ferrum Substation.

II. Substation Upgrades

Mookodi Substation

- 1 x 100MVAr busbar reactor at Mookodi 400kV busbar;
- 1 x 400kV Mookodi feeder bay; and
- 1 x 400kV Line reactor at Mookodi 400kV.

Ferrum Substation

- 1 x 100MVAr busbar reactor at Ferrum 400kV busbar;
- 1 x 400kV Ferrum feeder bay; and
- 1 x 400kV Line reactor at Ferrum 400kV.

Since the aforementioned activities did not commence in the allotted time, a new EA application is required. Prior to the application for the EA, NTCSA then Eskom appointed Margen Industrial Services in 2020 to undertake a Pre-Feasibility Study for the Ferrum-Selemo 400kV powerline to ascertain the environmental sensitivities. The powerline and upgrades were sub-divided as follows:

(i) Construction of a 400kV transmission powerline of approximately 60km from Ferrum Substation to Hotazel Transmission Substation plus associated work at the Ferrum substation. Substation upgrades: Mookodi Substation;

(ii) Construction of a 400kV transmission powerline of approximately 200km from Hotazel Transmission Substation to Mookodi Substation plus associated work at Mookodi substation;

(iii) Construction of a 400kV transmission powerline of approximately 200km from Mookodi Transmission Substation to Selemo Substation via Hermes Substation and Substation Upgrade;

- 1 x 100MVAr busbar reactor at Mookodi 400kV busbar;
- 1 x 400kV Mookodi feeder bay;
- 1 x 400kV Line reactor at Mookodi 400kV. Ferrum Substation
- 1 x 100MVAr busbar reactor at Ferrum 400kV busbar;
- 1 x 400kV Ferrum feeder bay;
- 1 x 400kV Line reactor at Ferrum 400kV.
- Establish the control building, telecommunication infrastructure, and oil dam.

The activities indicated above extended to areas falling under North-West Province, including Dr Kenneth Kaunda and Ngaka Modiri Molema District Municipalities. In addition, the scope for the Ferrum-Mookodi powerline also included the line going via the Umntu (Hotazel substation). As such, the Pre-Feasibility Report and associated specialist reports refer to the Ferrum-Mookodi powerline as the Ferrum-Umntu and Umntu-Mookodi 400kV powerlines. Notably, no alternate routes were evaluated for the 400kV Ferrum-Mookodi powerline because the impacted landowners had already agreed to the previously approved route and signed the servitude agreements. This report is therefore for the Ferrum-Mookodi 400kV powerline and is based on the walkdown assessment conducted by various specialists in September 2024 as well as the specialist studies conducted in 2020 during the Pre-Feasibility Assessment.

1.4 Location

1.4.1 Regional Context of the Project

The proposed powerline traverses two adjacent provinces, i.e., the Northern Cape and North West Provinces. The general profile of the provinces including the district and local municipalities affected is indicated below.

I. Northern Cape

The Northern Cape is the largest province in South Africa and covers an area of 361 830 km^2, constituting approximately 30% of South Africa. The province is divided into five district municipalities (DM): Frances Baard, John Taolo Gaetsewe, Namakwa, ZF Mgcawu and Pixley Ka Seme. The project area falls within the John Taolo Gaetsewe District Municipality (DC45), a Category C Municipality which is the third largest district in the province in terms of population size. The district is bordered by the ZF Mgcawu and Frances Baard District Municipalities to the west and south; the North West

Province (Dr. Ruth Segomotsi Mompati District Municipality) to the east and northeast; and Botswana to the northwest. The District Municipality is comprised of three municipalities: Gamagara, Ga-Segonyana and Joe Morolong. The powerline traverses all the local municipalities within the District Municipality. Gamagara Local Municipality (NC453) covers an area of 2619 square kilometres, which is approximately 10% of the total District area. It is located in the north-eastern sector of the Northern Cape, on the N14 National Road between Upington and Vryburg. The municipal area of Gamagara consists of 4 towns, Kathu, Sesheng, Dibeng, and Olifantshoek; and the area is demarcated into 7 wards. Ga-Segonyana Local Municipality (NC452) is located in the north-eastern part of the Northern Cape Province and covers an area of 4 491km^2. The municipality consists of 34 residential areas of which 20% is constituted of urban and peri-urban areas and 80% is rural areas. The area is demarcated into fifteen wards. Joe Morolong Local Municipality (NC451) is the largest municipality of the three that make up the district, accounting for three quarters of its geographical area. The area is mostly rural, with about 60% of it comprising virgin land surface and it is demarcated into fifteen wards. (John Taolo Gaetsewe District Municipality, 2024)

II. North West

The North West province is South Africa's fourth-smallest province, covering about 106 000km^2, and is bordered by Botswana to the north, Northern Cape to the west, Gauteng to the east, Limpopo to the north-east, and Free State to the south. It is comprised of four district municipalities: Ngaka Modiri Molema, Dr. Kenneth Kaunda, Dr. Ruth Segomotsi Mompati and Bojanala Platinum. The proposed powerline traverses the Dr Ruth Segomotsi Mompati District Municipality (RSMDM), DC39, which is bordered by Ngaka Modiri Molema and Dr Kenneth Kaunda Local Municipalities in the north, John Taolo Gaetsewe Local Municipality (Northern Cape) in the south. RSMDM covers an area of approximately 43,700km^2 and is home to five local municipalities namely Naledi, Greater Taung, Kagisano-Molopo, Mamusa and Lekwa-Teemane. The powerline traverses Greater Taung (NW394) and Naledi (NW392). Greater Taung is predominantly rural and contains 106 widely scattered villages with Reivilo and Taung being the major towns or settlements. Naledi Local Municipality is bordered by the Ngaka Modiri Molema District in the north, Greater Taung in the south, Mamusa in the east, and Kagisano-Molopo in the west. It is the second-largest of the municipalities that make up the district, accounting for 16% of its geographical area. Naledi is divided into 9 wards and comprises of the following towns Vryburg and Stella towns.

Figure 1-2 shows the regional location of the project area.

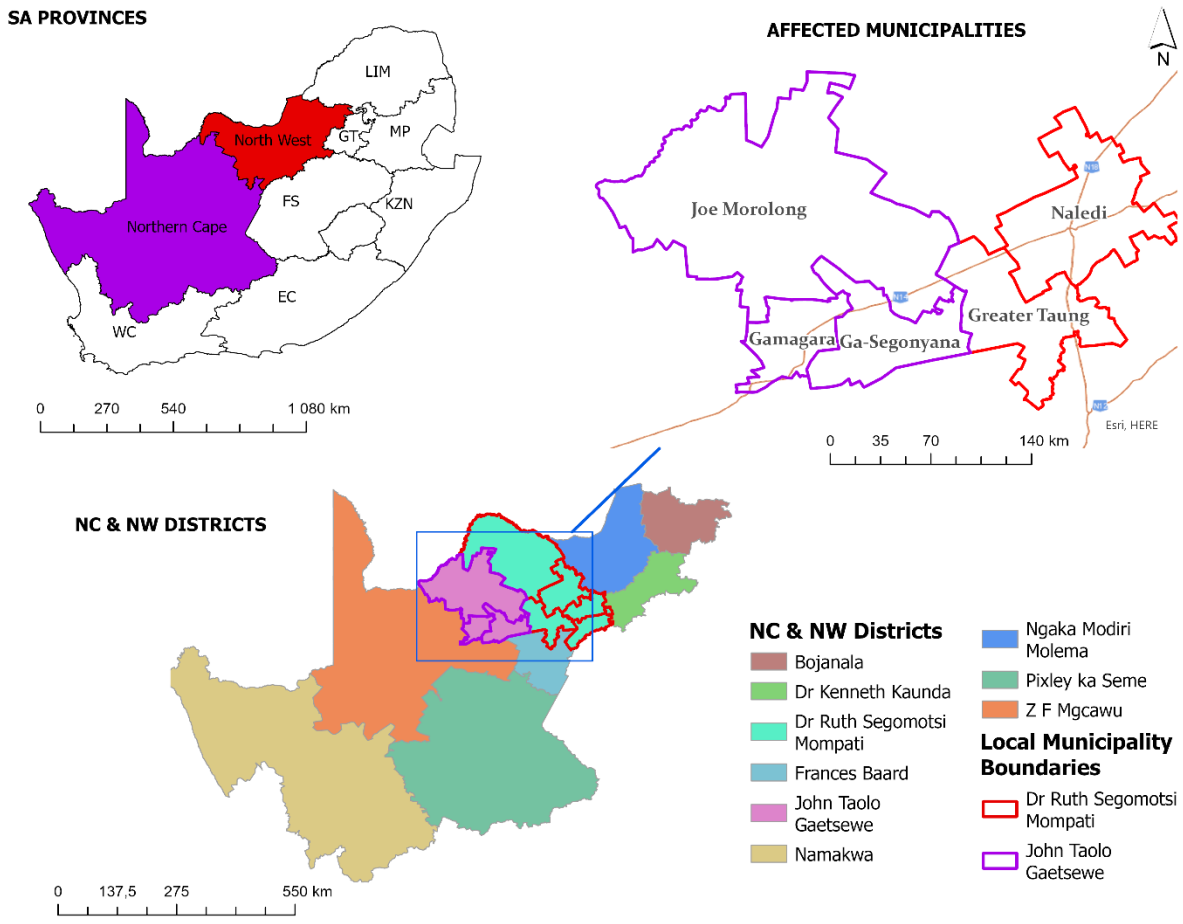


Figure 1-2: Regional location

1.4.2 Description of the Project Location

The proposed route is approximately 60km between Ferrum Substation and Hotazel and 200km between Hotazel and Mookodi substation. Ferrum Substation is approximately 3.4km southeast of Kathu, and the Mookodi Substation is 6.5km south of Vryburg town. The proposed route crosses the national road (N14), regional road R31, a few district roads between N14 and R31, and a railway line. Mine areas exist close to Hotazel town, and several settlements are near the proposed corridor. Approximately 80% of the area affected by this proposed route is rural land, while 79% of the proposed powerline route is within the Northern Strategic Transmission Corridor and 18% within the Vryburg Renewable Energy Development Zone. Reference is made to Table 1-3 and Figure 1-3 for the location information. The tower coordinates and the affected farms 21 Surveyor General Digits (SGD) are attached in Appendix C-1 and C-2 respectively.

Table 1-3: Project Location Information

Provinces	Northern Cape and North West
District Municipalities	John Taolo Gaetsewe (Northern Cape) Dr Ruth Segomotsi Mompatsi (North West)
Local Municipalities and Ward Nos.	Joe Morolong (4, 7, 13,14) Gamagara (2 and 8) Ga-Segonyana (7 and 8) Naledi (5) Greater Taung (1)
Towns and Settlements within 10km	Kuruman, Vryburg, Hotazel, Kathu, Sishen, Geluk, Lykso, Huhudi, Ga-Matsamai, Ga-Mopedi, Ncweng, Ga-Ruele.
Affected Farms	Remainder Portion Sekgame 461; Portions 1, 22, 16, 17, 36, 22 and Remainder of Bestwood 459; Portions 1 and 3 of Hartnolls 458; Remainder Portion of Westfield 455; Portions 1, 2 and Remainder of Cowley 457; Portion 1 and Remainder of Lyndoch 432; Portion 1 and Remainder of Dingwall 388, Portion 1 of Erith 389; Portion 1 and Remainder of Alton 368; Remainder of Moab 700; Portion 1 of Shirley 367; Remainder of Mamatwan 331; Portion 8 of Mahohomal 331; Remainder of Middelplaats 332; Remainder of Smartt 314; Remainder of Botha 313; Remainder of Devon 277; Remainder of Annex Langdon 278; Remainder of Langdon 273, Farm 220; Remainder of Lower Kuruman Native Reserve 219; Remainder of Minto 214; Portion 2 of Nyra 213; Portions 3, 4, 5, 7 and Remainder of Churchill 211; Cordington 210; Portions 2, 3 and Remainder of Kookfontein 208; Ellendale 207; Wilstead 99; Portion 1, 2 of Golington 101, Remainder of Warden 102; Portion 1 and Remainder of Kgatlagomo 106; Portion 1 of Colston 109; Portion 2 and Remainder of Depatholong 108; Portions 1, 2 and 3 of Witnesham 111; Portion 1, 2 and Remainder of Kormutsetla 639; Portions 1, 2, 3, 7 and Remainder of Kalahari 644; Portion 2 and Remainder of Holpan 645; Portions 1, 4, 7 and Remainder Hartebeest Bult 648; Portions 1, 6, 8 and Remainder of Beginsel Pan 649; Portion 9 and Remainder of Eersteling 652; Portion 1 and Remainder of Eengezind 651; Remainder of Rocklands 654; Portion 1 and Remainder of Kalk Plaats 655; Remainder of Langgewacht 656; Portion 2 of Knoppies Vlakte 657; Portions

	1, 2 and 4 of Takwanen Native Reserve 662; Portions 1 and 2 of Driepoort 664; Portion 4 and 5 Nazareth 665; Portion 1 of Retreat 671; Portion 1 of Frankfort 672; Farm 673
Traditional Authorities	Batlhoro Ba Ga Motlhware Batlhaping Boo Phuduhutswana Ba Ga Phetlhu Batlhaping Boo Phuduhutswana Ba Ga Jantjie
Surrounding land-uses	Mining. Settlements, Wilderness, Farming
Route Summary	**Start (Ferrum):** 27°43'48.35"S, 23° 3'35.41"E **Mid-point:** 27° 14' 28.58" S, 23° 47' 57.37" E **End (Mookodi):** 27° 0'40.18"S, 24°44'36.71"E **Length:** 262
Assessed Corridor	90m and at tower locations

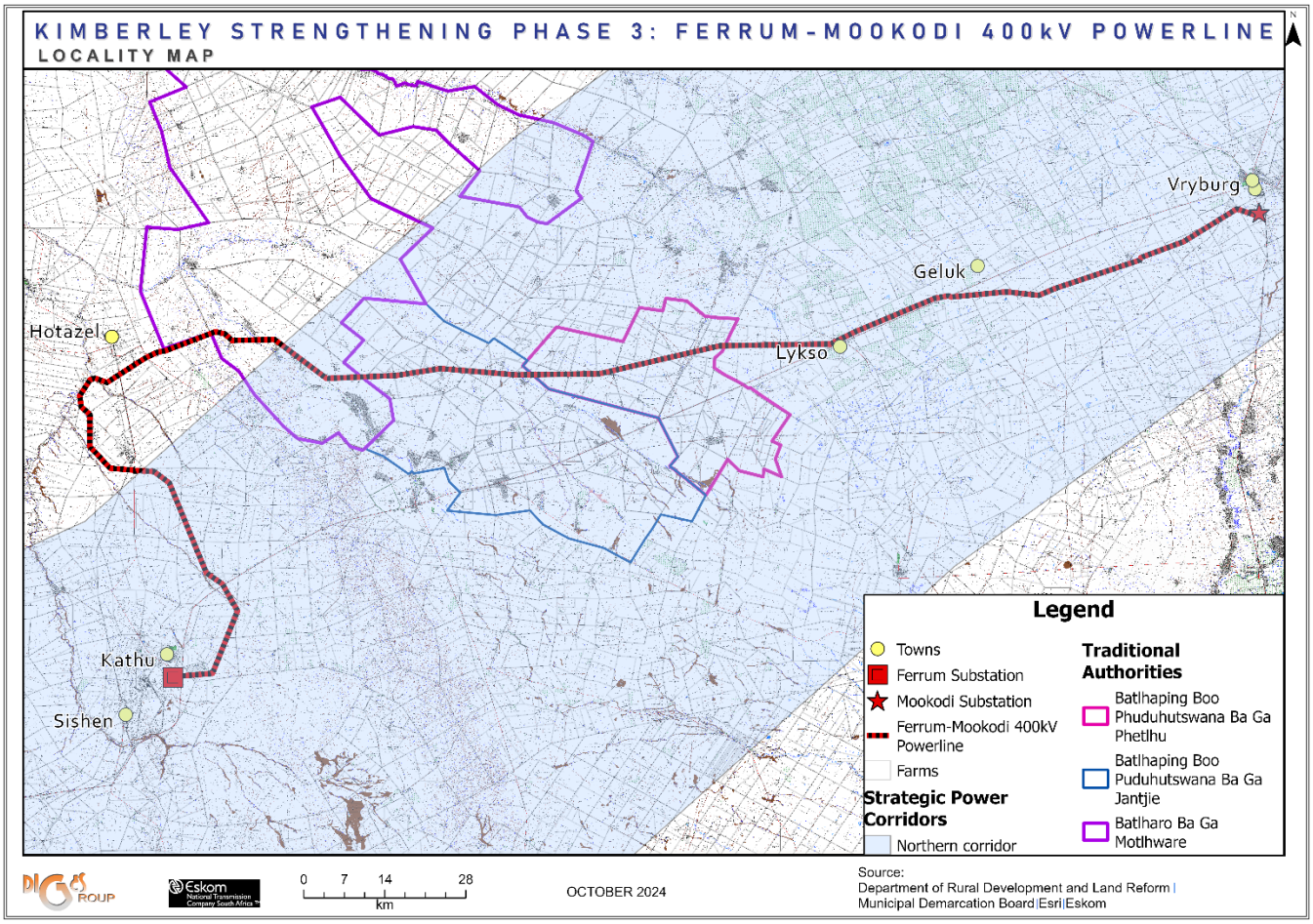


Figure 1-3: Locality map indicating the existing substations and the proposed power line corridor.

2 PROJECT DESCRIPTION

This section of the report details the information required as per Section 3(1)(d) of Appendix 1 of Environmental Impact Assessment (EIA) Regulations, Government Notice R982 of 2014 (as amended).

(d) a description of the scope of the proposed activity, including—
(i) all listed and specified activities triggered and being applied for; and
(ii) a description of the activities to be undertaken including associated structures and infrastructure

2.1 Description

A study done for the Northern Cape and North West grid indicated that based on the anticipated growing electricity demand, there may be a risk that demand will exceed the supply. As a result, they have identified the need to strengthen the transmission system between the Ferrum, Hotazel Transmission and Mookodi Substations by constructing two 400kV transmission powerline and upgrade substations. The first Ferrum-Mookodi 400kV powerline has been constructed and commissioned. The scope of work for the second powerline entails the following:

(i) Construction of a 400kV transmission powerline of ±260km from Ferrum Substation to Mookodi Substation.

(ii) Upgrade the Mookodi Substation by installing:
- 1 x 100MVAr busbar reactor at Mookodi 400kV busbar.
- 1 x 400kV Mookodi feeder bay.
- 1 x 400kV Line reactor at Mookodi 400kV.

(iii) Upgrade the Ferrum Substation by installing
- 1 x 100MVAr busbar reactor at Ferrum 400kV busbar.
- 1 x 400kV Ferrum feeder bay.
- 1 x 400kV Line reactor at Ferrum 400kV.

The proposal is to construct a powerline within the defined corridor area with most of the assessed alignment, being 55-90 m wide. The Project Area Of Influence (PAOI) is therefore treated as the corridor. The Ferrum and Mookodi substation upgrades will be done within the existing yards.

EIA Regulations, 2014 (as amended), published in terms of sections 24(5) and 44 of the National Environmental Management Act, 1998 (Act No. 107 of 1998), makes provision for two types or levels of assessment, namely Basic Assessment, and Scoping and EIA. The Regulations specify that all activities that appear in Listing Notice 1, GNR 983 of 2014 (as amended) and Listing Notice 3 GNR985, as amended require a Basic Assessment whilst activities indicated in Listing Notice 2 GNR. 984 of

2014 (as amended) require a Scoping and EIA to be done. The construction of a 400kV line is listed in Listing 2, however as a greater part of the proposed powerline is within the Northern Strategic Transmission Corridor, the application will be done per Government Notice No. 113 of 2018 (as amended) read with the EIA Regulations, 2014 (as amended). As a result, a Basic Assessment (BA) process is being undertaken, and an application will be lodged with the DFFE towards obtaining an Environmental Authorisation. Table 2-1 indicates the listed activities being applied for.

Table 2-1: Activities triggered under NEMA EIA Listing Notices

Activity Number	**Description of the relevant Basic Assessment Activity as per Listing Notice**	**Applicability of the Listed Activity to the proposed project**
Listing Notice 1 (GNR 983) under EIA Regulations of 2014 as amended		
12ii(a), (c)	*The development of* (ii) *infrastructure or structures with a physical footprint of 100 square metres or more where such development occurs:* *(a) within a watercourse* *(c) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse.*	The average footprint required for the specified towers ranges from 110.25m^2 to 1 200m^2. The powerline crosses multiple watercourses, and some towers will be placed within 32m of these watercourses.
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 of more than 10 cubic metres from a watercourse*	The construction of towers near watercourses and access to tower locations via watercourses will result in the excavation of more than 10 m^3 and infilling of the identified watercourses with more than 10 m^3 of material.
Listing Notice 2 (GNR984) under EIA Regulations of 2014 as amended		
9	*The development of facilities or infrastructure for the transmission and distribution of electricity with a capacity of 275 kilovolts or more, outside an urban area or industrial complex*	The construction of 262km of 400kV powerline from Ferrum substation located 3.4km southeast of Kathu, to the Mookodi Substation which is 6.5km south of Vryburg town. The area traversed is predominantly rural.
Listing Notice 3 (GNR985) under EIA Regulations of 2014 as amended		

Activity Number	Description of the relevant Basic Assessment Activity as per Listing Notice	Applicability of the Listed Activity to the proposed project
12 (h)(iv)	*The clearance of an area of 300 square metres or more of indigenous vegetation except where such clearance of indigenous vegetation is required for maintenance purposes undertaken in accordance with a maintenance management plan.* ***h. North west*** *vi. Areas within a watercourse or wetland, or within 100 metres from the edge of a watercourse or wetland.*	The clearance of more than 300 square metres of indigenous vegetation for constructing towers within 100m from the edge of watercourses and wetlands.
14(g)(ii)(ff)	*The development of* ii *infrastructure or structures* *with a physical footprint of 10 square metres or more, where such development occurs—* *(a) within a watercourse.* *(c) if no development setback has been adopted, within 32 metres of a watercourse, measured from the edge of a watercourse.* ***g. Northern Cape*** *ii. Outside urban areas:* *(ff) Critical biodiversity areas or ecosystem service areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans;*	The average footprint required for the specified towers ranges from 110.25 to 1 200m². Some of these towers are within 32m of watercourses in Ecological Support Areas per the Northern Cape CBA Map.

2.2 Technical Details of the Project

2.2.1 400kV Power line

According to Eskom, 2011, tree and building restriction distance and parallel line separation distance have to be obtained from the relevant Design Engineer for each individual project. However, the requirements based on theoretical and practical principles of a 400kV powerline are given in the table below and discussed in subsequent sections.

Table 2-2: Powerline Details

Component	Description/dimensions
Power line capacity	400 kV
Length	±260 km
Servitude	55m
Tower Structures	- Guyed "V" Suspension Tower (520B) - Self-Supporting 515C, D and E, 518C, D and H)
Number of Towers	562
Tower Height	21-51m
Tower clearance (Phase to Phase)	4m
Minimum ground clearance	8.1m

2.2.1.1 Towers

Different types of towers may be used on the proposed project depending on the terrain being crossed. The towers will consist of a lattice steel framework reaching a maximum height of 51m with electrical cables suspended between them. The average spacing between the towers will be approximately 450 m. The towers to be used for the 400kV powerline are indicated in Tables 2-4.

2.2.1.2 Minimum Clearance Distances

For safety reasons, the transmission line requires minimum clearance distances. These are summarized as follows:

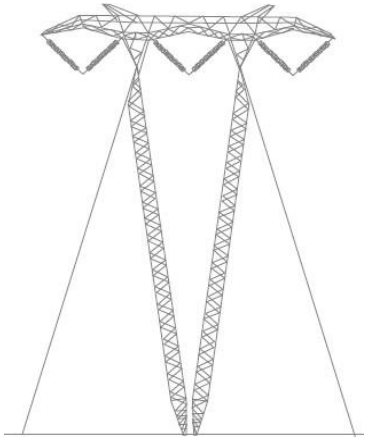
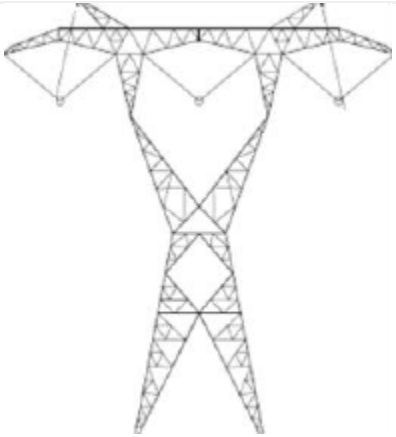
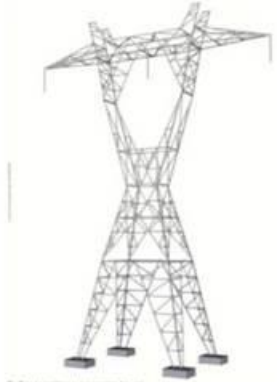
i. The minimum vertical clearance distance between the ground and power line conductors is 8.1 m; The maximum crop height permitted within the servitude is 4.3 m;
ii. The minimum vertical clearance to any fixed structure that does not form part of the power line is 5.6 m;
iii. Farming activity, except for sugarcane and commercial forestry, can be practiced under the conductors, provided that there is adherence to safe working clearances, crop height restrictions and building restrictions.

The standard for Vegetation Clearance for both new and existing powerlines for access, safety clearance, and prevention is indicated in the Table below:

Table 2-3: Standard for vegetation clearance per 240-52456757

Nominal voltage	**Servitude building restriction widths (measured from the centre line of the power line) ***	**Maximum Vegetation Clearance**
220 to 765 kV	22 m to 40 m	Clear from the centre of the power line up to the outer conductor, plus an additional 10 meters on either side. Grass and scrubs will be managed in accordance with Annex B (refer to 240-52456757) which is biome and land use dependant.

Table 2-4: Characteristics of the proposed towers

Type	Guyed "VEE" Suspension Tower (520B)	Self-Supporting Tower (515C, D, E)	Self-Supporting Suspension Tower (518 H)	Angle Strain and Closing Span Tower (518 C & D)
				
Maximum CAH	33m	21	45 m	51 m
Maximum Tower Height	40m	33	51.15m	C: 57m. D=58m
Footprint	30mx40m	10.5m x10.5m	21mx 21m	C=25mx25m; d= 26mx26m
Min Servitude Width	35 m	55m	35 m (55m sugar cane height)	35 m (55m sugar cane height)

2.2.2 Substation Upgrade

A substation is an important element of electricity generation, transmission, and distribution system. Its function is to transform voltages from high to low or the reverse, using transformers and other heavy-duty electric switchgear. To supply the full IPP interest of 250MW, the two substations will need to be upgraded. The proposed works at the substations will be within the substation yards. Table 2-5 indicates the proposed works at the substation. In addition, the drawings are attached in Appendix C-3 and C-4.

Table 2-5: Substations upgrade details

Ferrum Substation	– 1 X 100MVAr busbar reactor at Ferrum 400kV busbar. – 1x400kV Ferrum feeder bay. – 1X400kV Line reactor at Ferrum 400kV.
Mookodi Substation	– 1 X 100MVAr busbar reactor at Mookodi 400kV busbar; – 1x400kV Mookodi feeder bay; – 1X400kV Line reactor at Mookodi 400kV.
Proposed Infrastructure and their function	(i) **Feeder bay:** Steelwork housing for circuits ii) **Busbar:** Incoming and outgoing circuits of the same voltage tie into a common node called a busbar, which consists of a number of tubular conductors made of aluminium ii) **Line reactor** maintains a stable amperage to the user, and to help protect the system from voltage transients, power system surges, and fault currents.
Substation location	Ferrum: 27°43'48.35"S, 23° 3'35.41"E Mookodi: 27° 0'40.18"S, 24°44'36.71"E

2.3 Pre-construction and Construction Phase

The main works to be undertaken during the preconstruction and construction phases of the proposed project include the following:

2.3.1 Pre-Construction

2.3.1.1 Land Negotiation

The route being assessed has been pre-negotiated with the affected landowners. NTCSA therefore has certain rights and controls within the negotiated servitude that support the safe and effective operation of the line. These include:

(i) Access to erect a transmission line along a specific agreed route;

(ii) Reasonable access to operate and maintain the line inside the servitude area;

(iii) The removal of trees and vegetation that will interfere with the operation of the power line.

2.3.1.2 Right of Way Surveying

Before the overhead power line is constructed, a thorough ground survey is carried out to determine the ground profile along the centre of the power line route and where the ground profile slopes across the power line route. This is to ensure that the location selected for towers and stays and their relationship with each other comply with the technical limits. Further consideration is given to detailed environmental effects. Where the line route passes over or near trees that could infringe safe clearances to 'live' conductors, the trees must be felled or pruned before the line's construction.

2.3.1.3 Structure Stacking

A survey crew will peg the substation extension and the power line servitude.

2.3.2 Construction Phase

The construction of the line is expected to require 24 months to complete. The sequence of construction activities is listed below and briefly discussed in the following sections:

- Construction campsite and laydown area establishment.
- Vegetation clearing to facilitate access, construction, and the safe operation of the infrastructure.
- Establishing access roads on the servitude where required.
- Preparation for construction right-of-way and ground preparation.
- Pegging of tower positions for construction.
- Transportation of equipment, materials and personnel to sites and stores.
- Installation of foundations for the towers.
- Tower assembly and erection.
- Conductor stringing and regulation.

- Transfer of the line from the Contractor for commissioning.
- Final inspection of the line, commissioning and transfer to the Grid Line and Servitude Manager for operation.
- Rehabilitation of disturbed areas.
- Signing off Landowners on acceptability of the rehabilitation upon completion of the construction and rehabilitation.
- Transfer of the servitude by the Grid Environmental Manager; and
- Operation and maintenance of the infrastructure.

2.3.2.1 Construction Camp

The material lay-down yards are expected to be located adjacent to the construction camps and will serve as storage areas for the construction material and equipment. The location is selected by the contractor who will consider such aspects as access to the construction site, access to services, access to materials, etc. The contractor will enter into an agreement with a landowner for the establishment of the construction camp. The various teams will travel from the camp to the construction site each day. The site moves continuously with the progression of the line, so the teams will perhaps travel a different distance to the site each time. All materials are stored at the construction camp except for the steel towers and concrete, unless the site is very remote, when concrete may be mixed on site.

2.3.2.2 Clearing

The Right of Way (ROW) must be cleared to allow for construction and operation activities of the power line. An approximately 8m wide strip is generally required to be cleared of all trees and shrubs down the centre of a transmission powerline servitude for stringing purposes only. Any tree or shrub in other areas that will interfere with the operation and/or reliability of the transmission powerline must be trimmed or completely cleared (Eskom, 2003). The clearing of vegetation would be undertaken in accordance with the minimum standards to be used for vegetation clearing for the proposed new powerline construction (Eskom, 2003).

2.3.2.3 Access Road

A vehicle access road is usually required to be established to allow access along the entire length of the servitude. Access is required during both the construction and operation / maintenance phases of the transmission powerline life cycle. Any new access roads that are required would be established during the construction phase and are more established by vehicle passage than by grading or blading. In order to reduce potential impacts associated with the construction of new access roads, existing roads will be used as far as possible where available and new access roads will be constructed by means of driving over the vegetation where possible, to avoid permanent removal of the existing vegetation.

Establishment of new access routes during the construction phase would need to be negotiated with the relevant landowners concerned. Once the access has been negotiated, the contractor would need to signpost the access to the tower positions (Eskom Transmission, 2004).

2.3.2.4 Foundation Installation

A work crew will excavate the foundations for the tower structures and the foundation is influenced by the terrain encountered and the underlying geotechnical condition. The actual size and type of foundation to be installed will depend on the soil bearing capacity and can be excavated manually or by using machines. Strain structures require more extensive foundations for support than in-line suspension structures, which contribute to the cost of the construction of the powerline. Before erecting the towers and filling of the foundations, the excavated foundations are protected to safeguard unsuspecting animals and people from possible injury. The foundations will be backfilled, stabilized through compaction, and capped with concrete.

2.3.2.5 Insulators

Composite insulators are used to connect the conductors to the towers. Glass and porcelain have previously been used to connect the conductors for many years and are the most common. These products are, however, heavy, and susceptible to breakage by vandals and contamination by pollution. Composite insulators have a glass-fibre core with silicon sheds for insulation. Composite insulators are lightweight and resistant to both vandalism and pollution. Composite (Long rod type) insulators with silicone-based weather shed material will be used for strain assemblies. Composite horizontal line post insulators will be used for the intermediate structures and on the jumper supports.

2.3.2.6 Conductors

The conductors are made of aluminium with a steel core for strength. Power transfer is determined by the area of aluminium in the conductors. Conductors are used singularly, in pairs, or in bundles of three, four or six. The choice is determined by factors such as audible noise, corona, and electro-magnetic field (E-MF) mitigation. The size of conductor to be used is based on the initial and life-cycle costs of different combinations of size and bundles, as well as the required load to be transmitted.

2.3.2.7 Erecting structures and stringing Conductors

The Right of Way corridor may be used as an area for temporary storage and handling of equipment and materials related to construction with steel components of structures being delivered and placed on the ground near foundation sites. Once foundations are in place, the erection of the structures within the Right of Way will be done.

A guide wire is used to string the conductors between towers. This can be undertaken mechanically or by hand. The powerline is generally strung in sections (from bend to bend). Depending on the length of the conductor, cable drums are placed at 2km intervals during this stringing process.

2.4 Bulk Services and Infrastructure

The supply of the following basic services forms part of the contract between NTCSA and the contractor hence the agreements will be acquired by the contractor. The proposed services are indicated below:

i. **Water**: This report has not quantified the expected volume of water required for the construction phase of this project. A general authorization may be required if the water used for construction is sourced from surface water or a borehole where the abstracted quantities are more than what is permissible within the quaternary catchment.
ii. **Sewerage:** Sewerage generation is anticipated during the construction phase due to the presence of the workforce contracted for the project. Consequently, the use of portable chemical toilets is suggested, which will be serviced periodically.
iii. **Stormwater:** Storm-water measures will be implemented to suit the terrain. The measures to be implemented are detailed in the Environmental Management Programme attached in Appendix H.
iv. **Solid Waste:** It is anticipated that solid waste will be produced mostly in the construction phase such as litter, packaging materials such as plastics, carton boxes, paper, beverages, and stockpiles. This type of waste will not require a Waste Management License. The contractor will be required to compile a Waste Management Method Statement before the commencement of construction activities.

2.5 Operation and Maintenance of the Power line

The management of a transmission line servitude depends on the details and conditions of the agreement between the landowner and NTCSA and is, therefore site-specific. These may, therefore, vary from location to location. However, it is common that there is a dual responsibility for the maintenance of the servitude and NTCSA will be responsible for the tower structures, access roads, and roads relating to servitude access.

2.5.1 Land Use and Power Line Operation

Literature studies have shown that farming and associated infrastructure such as irrigation systems and support structures, can be practised under 400 kV power lines provided that all the safe working clearances, crop height restrictions and building restrictions are properly followed. However, there is also a need for the landowner to have an agreement with NTCSA concerning the activities that can be

carried out underneath the servitude. In terms of NTCSA's policies, the company has the right to impose some restrictions and/or allowances on certain activities within their servitudes. These for example include:

Restrictions:

- No building of houses, sheds or similar constructions that could affect or be affected by the power line and pylons.
- No blocking of access to the servitude area that would deny NTCSA maintenance operators access to and/or servicing the servitude area.
- The planting of trees and crops that could pose a threat to the functioning of the power lines (e.g., forestry plantations, sugar cane which could pose a fire risk).
- No blasting or excavating within the servitude area without prior approval from NTCSA.

Allowances:

- Grazing and dry land cultivation activities within the servitude area.
- Vegetation clearing and animal movement within the servitude area.
- Placing of topsoil berms not exceeding certain dimensions under the power lines or within the servitude area.

3 KEY LEGISLATIVE REQUIREMENTS

This section of the report details the information required as per Section 3(1)(e) of Appendix 1 of Environmental Impact Assessment (EIA) Regulations, Government Notice R982 of 2014 (as amended).

(e) a description of the policy and legislative context within which the development is proposed including— (i) an identification of all legislation, policies, plans, guidelines, spatial tools, municipal development planning frameworks, and instruments that are applicable to this activity and have been considered in the preparation of the report; and (ii) how the proposed activity complies with and responds to the legislation and policy context, plans, guidelines, tools frameworks, and instruments.

3.1 Key Legislation

Environmental laws are formulated to realize sustainable development strategies, preventing adverse impacts on the environment from implementing plans and construction projects and promoting coordinative development of the economy, society, and environment. Most developments are regulated by legislation, with the Constitution of the Republic of South Africa and NEMA being the cornerstone of environmental law. The aim of the legislation is to incorporate both human rights and sustainable development in terms of the environment. The following laws, principles and regulations have been formulated to promote environmental sustainability and that are relevant to this project are discussed below:

Table 3-1: Legislation, Policies and Guidelines applicable to the proposed project

Legislation/Policy/Guideline	Applicability
The Constitution of South Africa, 1996 (Act 108 of 1996)	Section 24 of the constitution states that: *Everyone has the right—* *a) to an environment that is not harmful to their health or wellbeing; and* *b) to have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that—* *(i) prevent pollution and ecological degradation.* *(ii) promote conservation; and*

Legislation/Policy/Guideline	Applicability
	(iii) secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development. The proposed project will have some negative impacts on the environment. These will need to be mitigated such that they do not compromise the rights of other human beings. The Bill of Rights in Chapter 2 of the Constitution entrenches the right to information, freedom of expression, participation in political activity, administrative justice and fundamental science, cultural, legal, economic, and environmental rights. In addition, the Constitution requires all legislature to facilitate public involvement in the legislative and other policy processes. Citizens have the right to engage in public initiatives and processes on an ongoing basis. Based on the Bill of Rights, the public will access all information developed and compiled during the Basic Assessment process.
National Environmental Management Act, 1998 (Act 107 of 1998) (NEMA), as amended	The National Environmental Management Act 107 of 1998 (NEMA) creates the legislative framework for environmental protection in South Africa and is aimed at giving effect to the environmental right in the Constitution. It sets out several guiding principles that apply to the actions of all organs of state that may significantly affect the environment. Sustainable development (socially, environmentally, and economically) is one of the key principles, and internationally accepted principles of environmental management, such as the precautionary principle and the polluter pays principle, are also incorporated. NEMA also provides that a wide variety of listed developmental activities, which may significantly affect the environment, may be performed only after an environmental impact assessment has been done and authorization has been obtained from the relevant authority.

Legislation/Policy/Guideline	Applicability
	The proposed project is within the Northern Strategic Corridor gazetted in Government Notice No. 113 published under Government Gazette No. 41445 of 16 February 2018. GN No. 113 of 2018 must be read with NEMA EIA Regulations (as amended) as the proposed development has activities that are listed in terms Listing Notices 1, 2 and 3 of 2014 as amended. An Environmental Authorisation must be obtained before commencement of the proposed project. In addition, Integrated Environmental Management (IEM) Guidelines were used during the entire EIA process: • Stakeholder Engagement, Integrated Environmental Management, Information Series 3. • Specialists Studies, Integrated Environmental Management, Information Series 4. • Impact Significance, Integrated Environmental Management, Information Series 5. • Ecological Risk Assessment, Integrated Environmental Management, Information Series 6. • Cumulative Effects Assessment, Integrated Environmental Management, Information Series 7. • Criteria for determining alternatives, Integrated Environmental Management, Information Series 11.
SPECIFIC ENVIORNMENTAL MANAGEMENT ACTS	
The National Environmental Management: Biodiversity Act 10 of 2004 (NEMBA)	The Act sets out the mechanisms for managing and conserving South Africa's biodiversity and its components; protecting species and ecosystems that warrant national protection; the sustainable use of indigenous biological resources; the fair and equitable sharing of benefits arising from bioprospecting, including indigenous biological resources. Some of the lists that have been promulgated in terms of various sections of the Act are: i. Threatened or Protected Species Regulations, ii. GN 1003 of 18 September 2020: Alien and Invasive Species Lists, 2020

Legislation/Policy/Guideline	Applicability
	iii. GN 2747 of 18 November 2022: The revised National list of ecosystems that are threatened and in need of protection. Categories are defined as Critically Endangered, Endangered, Vulnerable, and Protected, depending on their ecological structure, function, and composition. The primary implication of the Revised National List of Ecosystems that are Threatened or in need of Protection is that it is linked to Listing Notice 3 published under the National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA). The ecosystem within the project area is not classified as Critically Endangered or Endangered. Mitigation measures have been recommended for the conservation of biodiversity.
National Environmental Management: Waste Act, 2008 (Act 59 of 2008) (NEMWA).	NEMWA sets out to protect health and the environment in terms of the constitutional right to have an environment that is not harmful to health and well-being, and to protect the environment for the benefit of present and future generations while promoting justifiable economic development. This is to be achieved through measures including uniform application of strategies throughout the Republic as well as norms and standards which seek to ensure best waste practices within a system of co-operative governance to achieve: • prevention of pollution and ecological degradation through institutional arrangements, planning, and standards for regulating waste management by all spheres of government. • remediation of contaminated land • implementation of the national waste information system • compliance and enforcement. Sections 26 and 27 prohibits unauthorised disposal and littering. The Environmental Management Programme (Appendix H) outlines how the waste will be managed.

Legislation/Policy/Guideline	Applicability
National Environmental Management: Air Quality Act 2004 (Act 39 of 2004)	The Act has introduced prescribed standards to protect and enhance air quality and pollution prevention in South Africa. This includes the National Ambient Air Quality Standards (AAQ Standards), which set ambient air quality standards for sulphur dioxide (SO2), nitrogen dioxide (NO2) and particulate matter, amongst other priority pollutants. In addition, the Minister has published the National Dust Control Regulations in the gazette for controlling dust in all areas (Government Gazette No.36974, Notice No.827 of 01 November 2013), including the requirements for monitoring, dust management plan development and implementation and reporting. Mitigation measures have been recommended to ensure the minimisation of dust emissions during construction.
WATER	
National Water Act, 1998 (Act 36 of 1998) (NWA)	The Act seeks to ensure that the country's water resources are protected, used, developed, conserved, managed, and controlled in a manner that considers relevant factors such as meeting the basic human needs of present and future generations. In terms of Section 19(1) an owner of land or a person in control of land where any activity or process is or was performed or undertaken or where any situation exists must take all reasonable measures to ensure that which causes, has caused, or is likely to cause pollution of a water resource, must take all appropriate measures to prevent any such pollution from occurring, continuing, or recurring. Section 19(2) further indicates that measures must be undertaken to cease or modify the activity, comply with any waste standard or management practice, or eliminate the source of pollution. It further clarifies what is termed water use, and these 11 waters uses, as specified in Section 21, require a license/ General Authorization/ Water Use Licence.

Legislation/Policy/Guideline	Applicability
	A General Authorisation/ Water Use Licence is required per Section 21(c) and (i) of the Act since the route is within 500m of delineated wetlands.
FORESTRY	
National Forestry Act, Act No. 84 of 1998	This Act provides for the management, utilisation, and protection of forests through the enforcement of permitting requirements associated with the removal of protected tree species, as indicated in a list of protected trees. Protected and indigenous tree cutting permits in terms of the Section 15(1) of the Act. The protected trees that shall not be cut are indicated in the List of Protected Trees.
ENERGY	
National Energy Act, 2008 (Act 34 of 2008)	One of the objectives of the National Energy Act (2008) is to promote diversity of supply of energy and its sources. In this regard, the preamble makes direct reference to renewable resources, including wind "to ensure that diverse energy resources are available, in sustainable quantities, and at affordable prices, to the South African economy, in support of economic growth and poverty alleviation, taking into account environmental management requirements…; to provide for… increased generation and consumption of renewable energies". The proposed project will ensure that electricity generated from solar, and wind is evacuated from the province to other parts of the country.
White Paper on Renewable Energy (2003)	The White Paper on Renewable Energy (November 2003) (further referred to as the White Paper) supplements the White Paper on Energy Policy and recognises that the medium- and long-term potential of renewable energy is significant. This Paper sets out Government's vision, policy principles, strategic goals, and objectives for promoting and implementing renewable energy in South Africa. The White Paper notes that, while South Africa is well endowed with renewable energy resources that have the potential to become

Legislation/Policy/Guideline	Applicability
	sustainable alternatives to fossil fuels, these have thus far remained largely untapped. IRP 2010 aims to allocate 43% of new energy generation facilities in South Africa to renewables. Apart from the reduction of greenhouse gas emissions, the promotion of renewable energy sources is aimed at ensuring energy security through the diversification of supply (also refer to the objectives of the National Energy Act). Government's long-term goal is the establishment of a renewable energy industry producing modern energy carriers that will offer in future years a sustainable, fully non-subsidised alternative to fossil fuels,
HERITAGE	
National Heritage Resources Act, 1999 (Act 25 of 1999)	This legislation aims to promote good management of the national estate, and to enable and encourage communities to nurture and conserve their legacy so that it may be bequeathed to future generations. The National Heritage Resources Act (NHRA) has introduced an integrated system for the identification, assessment, and management of the heritage resources of South Africa. Section 3 of the Act lists a wide range of national resources protected under the act as they are deemed to be national estate. When conducting a Heritage Impact Assessment (HIA), heritage resources must be identified. In addition, the Act also makes provision for the general protection of heritage resources: ▪ Section 34 in respect of the built environment. ▪ Section 35 in respect of archaeology, palaeontology, and meteorites; and ▪ Section 36 in respect of graves and burial grounds.

Legislation/Policy/Guideline	Applicability
	Section 38 sets out guidelines for Heritage Resources Management and the conditions under which heritage impact assessments are required when developments impact upon heritage resources. If the appropriate authority permits the disturbance, the impacts on heritage resource/s affected must be mitigated to ensure the recovery and recording of information about that site. The screening tool has indicated the sensitivity of Palaeontology and Cultural Heritage to be very high. An archaeologist and palaeontologist have been commissioned to assess the significance of the project's impacts on archaeological and palaeontological resources.
AGRICULTURE	
Conservation of Agricultural Resources Act (Act No. 43 of 1983)	To provide for control over the utilization of the natural agricultural resources of the Republic in order 1 to promote the conservation of the soil, the water sources and the vegetation and the combating of weeds and invader plants; and for matters connected therewith. The proposed project will impact on agricultural land, soil, water resources and vegetation hence a soil potential and land capability assessment has been undertaken.
ASTRONOMY ADVANTAGE AREAS	
The Astronomy Geographic Advantage (AGA) Act 21 of 2007	The Act gives the Minister of Science and Technology the power to protect areas, through regulations, that are of strategic national importance for astronomy and related scientific endeavours. Regulations (R.465 of 22 June 2012) have been promulgated in terms of Sections 22 and 23 of the Act to prohibit or restrict certain activities in core Astronomy Advantage Areas in terms of the Astronomy Geographic Advantage Act, 2007. Regulation 2f indicates the restriction to the operation, construction, or expansion of facilities for generating, transmitting, or distributing electricity.

Legislation/Policy/Guideline	Applicability
	The proposed development area is not located within any Astronomy Advantage Area as it is approximately 206km from the Karoo Central Astronomy Advantage Areas, however there is an SKA receptor 30km north of the servitude.
HEALTH AND SAFETY	
Occupational Health and Safety Act (Act No. 85 of 1993)	The purpose of the act includes providing for the health and safety of persons at work and the health and safety of persons in connection with the use of plant and machinery; the protection of persons other than persons at work against hazards to health and safety arising out of or in connection with the activities of persons at work. Alongside the Act, a compensation scheme for victims of occupational accidents and diseases and their dependants is foreseen in the Compensation for Occupational Injuries and Diseases Act 130 of 1993. In addition, there are ancillary occupational safety and health regulations (e.g., Construction Regulations, 2014; Environmental Regulations for Workplaces, 1987; Facilities Regulations, 2004). The applicable Regulations should be implemented and adhered to during the project life cycle.
PROVINCIAL	
Northern Cape Nature Conservation Act No 9 of 2009	This act provides for the sustainable utilisation of wild animals, aquatic biota, and plants; the implementation of the Convention on International Trade in Endangered Species of Wild Fauna and Flora; describes offences and penalties for contravention of the Act; provides for the appointment of nature conservators to implement the provisions of the Act; provides for the issuing of permits and other authorisations; and provides for matters connected therewith. Sections 49 and 50 of the Act indicate restricted activities that require a permit when dealing with specially protected plants and protected plants while Section 51 deals with the picking,

Legislation/Policy/Guideline	Applicability
	receipt, possession, acquisition, or handling of indigenous vegetation. Schedules have been published for the species that require permits per the Sections indicated.
POLICIES, PLANS, GUIDELINES AND PROTOCOLS	
Energy Policy	The white paper gives an overview of the South African energy sector's contribution to Gross Domestic Product (GDP), employment, taxes, and the balance of payments. It concludes that the sector can greatly contribute to a successful and sustainable national growth and development strategy. The Energy Sector Policy objectives are as follows: • Increasing access to affordable energy services. • Improving energy governance. • Stimulating economic development. • Managing energy-related environmental and health impacts. • Securing supply through diversity
Integrated Resource Plan (IRP 2010 - 2023)	The promulgated IRP 2010–2030 identified the preferred generation technology required to meet expected demand growth up to 2030. It incorporated government objectives such as affordable electricity, reduced greenhouse gas (GHG) emissions, reduced water consumption, diversified electricity generation sources, localisation, and regional development.
The National Environmental Management Act 107 of 1998 (NEMA) Protocol for the Specialist Assessment and Minimum Report Content Requirements for Environmental Impacts on Terrestrial Animal and or Avifaunal Species	This protocol provides the criteria for the specialist assessment and minimum report content requirements for impacts on terrestrial animal and/or avifaunal species for activities requiring environmental authorisation. This protocol replaces the requirements of Appendix 6 of the Environmental Impact Assessment Regulations. The assessment and reporting requirements of this protocol are associated with a level of environmental sensitivity identified by the national web based environmental screening tool (screening tool) for terrestrial animal species. The relevant terrestrial animal species data in the screening tool has been provided by the South African National Biodiversity Institute (SANBI).

Legislation/Policy/Guideline	Applicability
Species Environmental Assessment Guideline: Guidelines for the implementation of the Terrestrial Flora (3c) & Terrestrial Fauna (3d) Species Protocols for environmental impact assessments in South Africa.	The Species Environmental Assessment Guideline provides background and context to the assessment and minimum reporting criteria contained within the Terrestrial Animal and Plant Species Protocols; as well as to provide guidance on sampling and data collection methodologies for the different taxonomic groups that are represented in the respective protocols. This guideline is intended for specialist studies undertaken for activities that have triggered a listed and specified activity in terms of the National Environmental Management Act, 1998 (No. 107 of 1998) (NEMA), as identified by the EIA Regulations, 2014 (as amended) and Listing Notices 1-3.
Strategic Infrastructure Projects	The South African Government adopted an Infrastructure Plan, and from the spatial analysis of the country's needs carried out, 17 Strategic Integrated Projects (SIP) have been identified that cover a wide range of economic and social infrastructure. The construction and operation of the powerline and associated infrastructure addresses the following SIP: **SIP 10:** Electricity transmission and distribution for all. Expand the transmission and distribution network to address historical imbalances, provide access to electricity for all and support economic development. Align the 10-year transmission plan, the services backlog, the national broadband roll-out and the freight rail line development to leverage off regulatory approvals, supply chain and project development capacity. The activities undertaken for the proposed project will contribute to SIP 10 is achieved. A SIP letter is attached to the application.

3.2 Other Relevant Legislation and Documents

The table below lists the other legislation and documents that have been considered for this project.

Table 3-2: Other Relevant Legislation and Documents

OTHER LEGISLATION	
✓ Civil Aviation Act (Act No. 13 of 2009) ✓ Infrastructure Development Act (Act No. 23 of 2014) ✓ Promotion of Access to Information Act (No. 2 of 2000) ✓ Promotion of Administrative Justice Act (No.3 of 2000) ✓ Protection of Personal Information Act (No. 4 of 2013), POPIA ✓ Spatial Planning and Land Use Management Act (Act No. 16 of 2013) ✓ Hazardous Substances Act (No. 15 of 1973) ✓ National Roads Act (Act No. 93 of 1996)	
PROVINCIAL, DISTRICT AND LOCAL MUNICIPALITIES	
✓ Gamagara IDP ✓ Ga-Segonyana, 2024-25 Integrated Development Plan ✓ Joe Morolong IDP, ✓ Greater Taung IDP, EMF ✓ Naledi Local Municipality IDP ✓ John Taolo Gaetsewe District Municipality IDP, SDF, Sector Plans ✓ Dr Ruth Segomotsi Mompati District Municipality SDF ✓ North-West Biodiversity Sector Plan of 2015 (READ, 2015).	
ESKOM STANDARDS AND GUIDELINES	
✓ Chemical Spillage Assessment and reporting. ✓ Waste Management. ✓ Water Strategy. ✓ Water Management Policy. ✓ Vegetation management and maintenance within Eskom land servitudes and Right of Way.	
Municipal Bylaws	The proposed project will have to comply with the bylaws of Gamagara, Ga-Segonyana, Joe Morolong, Greater Taung and Naledi Local Municipality including the John Taolo Gaetsewe District Municipality and Dr Ruth Segomotsi Mompati District Municipality District Municipalities.

3.3 Permits And Registrations

Table 3-3 indicates the permits that are required for the project.

Table 3-3: Required Permits

LEGISLATION	PERMIT	COMPETENT AUTHORITY	STATUS
NEMA: EIA Regulations GNR 982, 2014 (as amended) and its Listing Notices	Environmental Authorisation	DFFE	Ongoing
National Water Act: Government Notice (GN) 4167, published in December 2023 in Government Gazette (GG) no. 49833	Water Use Licence/ General Authorisation	Department of Water and Sanitation	Not yet started
The National Environmental Management: Biodiversity Act, Act No. 10 of 2004 (NEMBA)	TOPS Permit	DFFE	Not yet started
Northern Cape Nature Conservation Act, Act 9 of 2009 (NCNCA)- Schedules 1, 2 and 3	Specially Protected and protected species (animal and plant)	Department of Agriculture, Environmental Affairs, Rural Development and Land Reform	Not yet started
National Forest Act, Act No. 84 of 1998	Tree permit	DFFE	Not yet started

4 BASIC ASSESSMENT PROCESS

This Section gives a general overview of the BA process and the activities that have been taken to date.

A Basic Assessment (BA) is a proactive and systematic process where both positive and negative potential environmental impacts associated with certain activities are assessed. Every BA project has two objectives namely, process and content objectives. The process objectives are to ensure that the process is open, transparent, and inclusive, supply stakeholders with sufficient information afford them ample opportunity to contribute and make them feel that their contributions are valued. The content objectives of the project are in the form of "hard" information: facts based on the scientific and technical study, statistics, or technical data.

Section 24(4) of NEMA prescribes that the procedures for the investigation, assessment and communication of the potential consequences or impacts of activities on the environment must, inter alia, concerning every application for environmental authorization, ensure that the general objectives of Integrated Environmental Management (IEM) are considered. The BA should include an investigation of the potential consequences or impacts of the alternatives on the environment and an assessment of the significance of those potential consequences or impacts, including the option of not implementing the activity. Figure 4-1 overleaf presents the BA process to be followed for the proposed development.

4.1 Objectives of a Basic Assessment

The objectives of the BA process are:

(a) To determine the policy and legislative context within which the proposed activity is located and how the activity complies with and responds to the policy and legislative context.
(b) Identify the alternatives considered, including the activity, location, and technology alternatives.
(c) Describe the need and desirability of the proposed alternatives,
(d) Through the undertaking of an impact and risk assessment process inclusive of cumulative impacts which focused on determining the geographical, physical, biological, social, economic, heritage, and cultural sensitivity of the sites and locations within sites and the risk of the impact of the proposed activity and technology alternatives on these aspects to determine:
    i. the nature, significance, consequence, extent, duration, and probability of the impacts occurring to; and
    ii. the degree to which these impacts:

(aa) can be reversed.

(bb) may cause irreplaceable loss of resources; and

(cc) can be managed, avoided, or mitigated.

(e) through a ranking of the site sensitivities and possible impacts the activity and technology alternatives will impose on the sites and location identified through the life of the activity to—

i. identify and motivate a preferred site, activity, and technology alternative.

ii. identify suitable measures to manage, avoid or mitigate identified impacts; and

iii. identify residual risks that need to be managed and monitored.

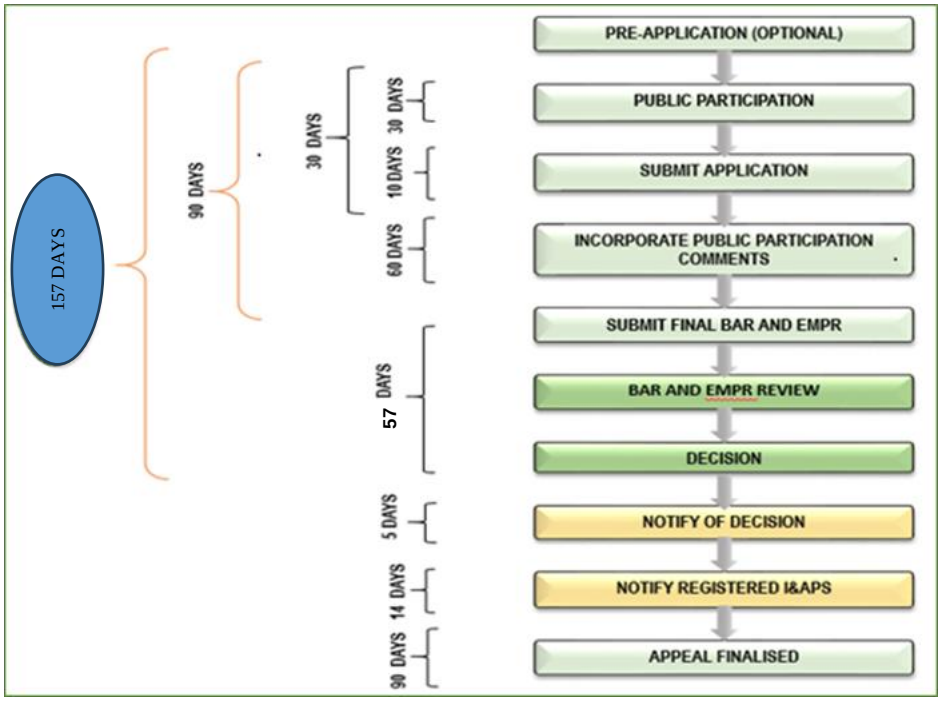


Figure 4-1: Basic Assessment Process

4.2 Methodology

The following phases have been undertaken for this assessment:

4.2.1 Screening Phase

Screening is the first stage in the EIA process whereby the EAP and the applicant determine if an EIA is required for the project in terms of the EIA Regulations, 2014 as amended, and its associated Listing Notices. The screening process was done by Margen Industrial Services from 2020-2021 to determine the feasibility of the route and identify any environmental constraints or sensitivities that would negatively impact the development. The Screening report indicates that there is no other alternative corridor. It was also noted that the majority of the line falls within the Northern Strategic Transmission

corridor as such, a Basic Assessment process was required as the construction of the 400kV power line. In addition, DIGES generated a Screening Report for the powerline corridor from the National Web-based Environmental Screening Tool. This report provides site-specific environmental information and sensitivities. The report is attached in Appendix G as per the requirement.

4.2.2 Pre-Application Meeting

For every new application where public participation is required, the Integrated Environmental Authorisations (IEA) of the DFFE has determined that a pre-application meeting request must be filed before the application is lodged. To comply with this criterion, a request for the meeting was made on May 8, 2024, and the assigned case officer responded that no meeting was necessary. Reference is made to Appendix F for the correspondence with DFFE.

4.2.3 Literature Review

A background study was undertaken to assess the environmental baseline conditions of the project area. Policy, legal and administrative framework, and requirements were identified through the review of relevant legal documents, guidelines, and planning procedures. This was done to ensure that necessary measures are included in the design and implementation of the project. Reference is made to Section 3 of this report for the key legislative framework. The following documents were also consulted:

i. Farm owner information from Windeed.
ii. Servitude Agreements.
iii. Northern Cape and North West Provinces, John Taolo Gaetsewe and Dr Ruth Segomotsi Mompati District Municipalities, Gamagara, Ga-Segonyana, Joe Morolong, Greater Taung and Naledi Local Municipalities Integrated Development Plans (IDP), Spatial Development Frameworks (SDF), Local Economic Development (LED)
iv. Northern Cape and North West CBA Maps.
v. Department of Water and Sanitation (DWS), then Department of Water Affairs (DWA) Integrated Environmental Management (IEM) series.
vi. Scoping and EIA Reports compiled by Mokgope in 2012.
vii. Pre-Feasibility (Screening) Report and associated attachments compiled by Margen Industrial Services.
viii. Other Provincial and local municipality environmental tools.
ix. Relevant documents on water published by the Department of Water and Sanitation.
x. NTCSA's project motivation.

In addition, spatial data was also used to identify the affected farms, different habitats, and sensitive areas within the area of study.

4.2.4 Site Assessment and Specialist Studies

A walk-down of the servitude and tower locations was undertaken by a DIGES, NTCSA, archaeologist, ecologist, surface water and avifauna specialists from 9 to 27 September 2024. The team used topographical maps, aerial photographs, and alignment profiles to identify specific areas at individual tower positions that will be negatively impacted during the construction process or pose a problem to the construction team. The team stopped at each tower location, and team members examined the proposed positions and other relevant locations. This allowed for the assessment of the various habitats and the listing of sensitive features and species. In addition, agricultural, social, visual and palaeontological specialists were commissioned to review and revise the respective specialist reports compiled during the Pre-Feasibility/ Screening Phase to ensure that they follow the respective specialist protocols and minimum requirements as specified by the South African Heritage Resources Agency (SAHRA). All specialist reports compiled are attached in Appendices D-2 to D-11.

The assessment methodologies applied by the specialists are based on guidance specific to each topic area, i.e., Protocols for the assessment and minimum report content requirements of environmental impacts for various environmental themes. Tower specific measures have been included in Section C of the Generic EMPr attached in Appendices H.

4.2.5 Public Participation

To find potentially interested and affected parties, a proactive strategy was employed. Preliminary information was gathered from landowners, municipal and government authorities, and community liaisons to identify the Interested Parties. The application was announced to stakeholders via emails and text messages from 16-19 September 2024. Along with the notifications, a Background Information Document (BID) was sent. In addition, site notices were posted at conspicuous locations and municipal places within 10 kilometres of the corridor and the substations, and an advertisement was also published in the Stellalander and Sowetan newspapers on 16 and 18 October 2024.

Comments received during the inception period have been recorded in the C&R Report and responded to accordingly. The report will be made available for public review and comments from 10 January 2025 to 10 February 2025. This has also been advertised in the Stellalander and Sowetan on 8 and 9 January 2025 respectively. Reference is also made to Section 7 of this report for the comprehensive details of the public participation process.

4.2.6 Impact Assessment

An impact assessment has been carried out and has been guided by the following criteria:

- **Assessment Criteria for Impacts**: As a means of determining the significance of the various impacts that can or may be associated with the project, a series of assessment criteria were used for each impact. These criteria included an examination of the nature, extent, duration, intensity, and probability of the impact occurring, and assessing whether the impact will be positive or negative for the biophysical and social environments at the site and surrounding areas.
- **Environmental Sensitivity Map:** An environmental sensitivity map was used to indicate environmentally sensitive features found on site that must be protected.
- **Maximization of Positive Impacts:** The philosophy followed focused on maximising the benefits to the local environment.
- **Specialists Integration**: A specialist integration workshop was held with NTCSA to discuss the tower recommendations. This was done to discuss the recommended tower movements.
- **Identification of Mitigation Measures and Environmental Management Programme:** The mitigatory measures recommended describe possible actions for the reduction of the significant negative environmental impacts identified in the assessment. As per Government Notice 435 of March 2019, a project that entails the construction of power lines and substations should submit a generic EMPr as developed by the Competent Authority. The plan provides guidelines for the planning, construction, operation, maintenance of the proposed power line, as well as a holistic management and monitoring plan for the entire project. The relevant Sections as determined have been completed and the EMPr is appended to this report.

5 THE NEED AND DESIRABILITY FOR THE PROPOSED DEVELOPMENT

This section of the report details the information required as per Section 3(1)(f) of Appendix 1 of Environmental Impact Assessment (EIA) Regulations, Government Notice R982 of 2014 (as amended).

(f) a motivation for the need and desirability for the proposed development, including the need and desirability of the activity in the context of the preferred location.

NTCSA has to supply reliable power to meet the increasing needs of electricity users. Therefore, on a continuous basis, NTCSA needs to maintain, construct and upgrade its infrastructure of transmission powerlines and substations. According to Eskom TDP 2010–2019, some of the objectives involve: transmission network strengthening plans and reliability projects, which would ensure that the transmission system reliability and adequacy are sustained as load demand increases on the network.

Based on the anticipated growing demand of electricity in the Northern Cape and North West Provinces, there may be a risk that the demand exceeds the supply. Consequently, the risk of load shedding would not be avoided. As a result, NTCSA identified the need to strengthen the transmission system between the Ferrum, Hotazel Transmission and Mookodi Substations by means of constructing two 400kV transmission powerline and substations upgrade. The Kimberley Phase 3 Strengthening was initially required to supply the growing demand around Ferrum Substation and the Hotazel area (Umtu Substation site). The anticipated demand did not materialise as expected, resulting in the project being deferred, however, the IRP 2019 has called for large scale renewable generation across South Africa, with approximately 10 GW expected to be installed in the Northern Cape by 2030. This will require extensive network reinforcement to enable the evacuation of excess generation from the province to major load centres in other parts of the country hence the urgent reprioritisation of the Ferrum – Mookodi – Hermes 400 kV line, which along with the proposed Aries – Upington – Ferrum 400 kV line also in development, forms a major evacuation corridor. The proposed powerline is within the areas that require future electricity supply, such as:

- Ferrum substation is within an area where there is an increase in Transnet Iron Ore line;
- Capacity;
- Hotazel area is experiencing an increase in electricity demand due to mining; and
- Mookodi substation is located within an area that is experiencing low voltages.

At the national, provincial, and local levels, there is a strong commitment to the growth of renewable energy sources and the energy infrastructure that goes along with it. The National Development Plan, New Growth Path Framework, and National Infrastructure Plan, all emphasize the significance of energy security and investment in energy infrastructure and support the development and investment in

renewable energy and related energy transmission infrastructure. Therefore, the development of the powerline is backed by important policy and planning documents and is consistent with the strategic energy planning environment of South Africa. The need for the project was initiated in terms of the national policy- the Integrated Resource Plan 2019 and Transmission Development Plan 2010-2019. At the local level, the District Municipality IDP document has indicated the need for infrastructure development to introduce renewable energy infrastructure as one of its priorities.

As South Africa has recently experienced electricity supply challenges, there is a justifiable need to introduce measures to improve supply but in a manner that aligns with the government's commitments to decarbonisation programs within the United Nations Framework Convention on Climate Change (UNFCCC). The South African government has also adopted the United Nations Sustainable Development Goals (SDGs), which require countries to adopt policies promoting sustainable service delivery. The Ferrum-Mookodi 400kV powerline, therefore, has been, in terms of policy evaluation, a justifiable proposal as far as enabling and overseeing policies and legislations are considered. The analysis established an element of safeguarding energy security in the local area and supply towards the national NTCSA grid.

6 ALTERNATIVES

This section of the report details the information required as per Section 3(1)(g) to (h) (i) of Appendix 1 of Environmental Impact Assessment (EIA) Regulations, Government Notice R982 of 2014 (as amended).

(g) a motivation for the preferred site, activity, and technology alternative.
(h) a full description of the process followed to reach the proposed preferred alternative within the site, including:
(i) details of all the alternatives considered.

6.1 A motivation for the Preferred site, Activity and Technology Alternative

In terms of the EIA Regulations, 2014 (as amended), alternatives in relation to a proposed activity, means different means of meeting the general purpose and requirements of the activity, which may include alternatives to the—

(a) property on which or location where the activity is proposed to be undertaken.

(b) type of activity to be undertaken.

(c) design or layout of the activity.

(d) technology to be used in the activity; or

(e) operational aspects of the activity.

and includes the option of not implementing the activity.

6.1.1 Route Alternative

To provide for future generation scenarios, five Strategic Transmission Corridors were assessed as part of the 2016 Electricity Grid Infrastructure (EGI) Strategic Environmental Assessment (SEA), (See Figure below):

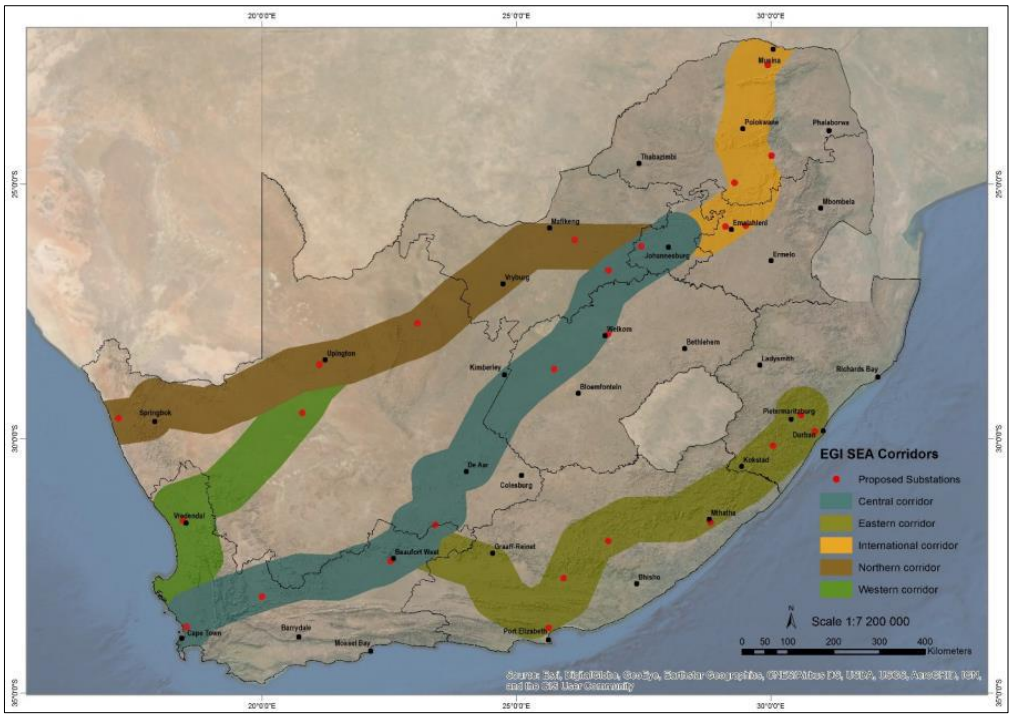


Figure 6-1: Five Strategic Transmission Corridor (Department of Environment, Forestry and Fisheries, 2019)

These corridors were gazetted for implementation on 16 February 2018 in Government Gazette 41445, Government Notice 113. The Gazette documented notice given by the Minister of Environmental Affairs of alternative procedures to be followed when applying for Environmental Authorisation for large scale electricity transmission and distribution development activities, identified in terms of section 24(2)(a) of the National Environmental Management Act (Act 107 of 1998, as amended) (NEMA) in the identified Strategic Transmission Corridors (i.e., areas declared as geographical areas of strategic importance), (Department of Environment, Forestry and Fisheries, 2019). The notice indicates that where a larger section of the route is within a gazetted corridor, then the conditions as indicated in the Government Notice apply. The Ferrum-Mookodi 400kV powerline is within the Northern Strategic Transmission corridor as such a pre-negotiated route is being assessed hence no other routes are being assessed. This will limit landowner issues that would otherwise be anticipated if there were many alternatives being dealt with in the project. The submission of a pre-negotiated route is beneficial for NTCSA as an upfront approval from landowners has been obtained prior to applying for an EA.

1.1.1 Design Alternatives

There are no design alternatives that are being considered for this project.

1.1.2 Electricity line system Alternatives

There are two electricity line transmission systems, i.e., overhead powerlines and underground cables. The overhead powerlines hang in the air and are supported by pylons, while underground cables are buried beneath the earth's surface.

1.1.2.1 Comparison of overhead transmission powerlines and underground cables

For this project, the option of installing the powerline cable underground has been considered and so is the option of installing the powerline aboveground. Both options have been compared and below is the outcome.

Voltage levels

The underground cables currently have a limited voltage capacity and cannot carry more than 66kV, whereas the overhead powerlines can handle more than 400kV, resulting in them being ideal for serving high-energy needs such as industrial applications.

Cost and Maintenance

Underground cables cost more to buy, install, and maintain compared to the overhead powerlines. Digging trenches and installing manholes and other special equipment or underground cables is more expensive than erecting pylons for overhead powerlines. In addition, underground cables must be coated by a thick coating because of the surrounding soil, which add to their manufacturing costs. Overhead powerlines use the surrounding air as insulation, reducing costs significantly.

Outage and Repairs

Underground cables are less susceptible to outages compared to overhead powerlines. The latter is secured underground, but overhead power lines are exposed to destructive elements such as extreme weather, birds, and critters. However, underground cables are difficult to repair because of their rigid structure. It may take hours or days to locate and fix the problem. Overhead powerlines are easier to assess and repair.

Application and Lifespan

Underground cable has approximately half the durability and lifespan of overhead power lines. They last for about 35 years, while overhead powerlines can last for up to 70 years. In addition, underground cables have a limited application scope because of their limited voltage capacity. They are recommended for crowed cities where pylons are difficult to set up.

Utilising Overhead Powerlines with protective Equipment

Overhead powerlines often offer more benefits than underground cables. However, they may be more susceptible to damages from critters, but this is a manageable problem using Critter Guards products.

After considering the above findings, it has been decided that the Alternative that will be most suitable for the proposed project is the construction of the overhead powerlines. As such, going forward, underground powerline cable will not be considered. Therefore, the proposed powerline will be overhead and within the 300m corridor which is located within the Strategic Transmission Corridor in the Northern Cape Province.

6.2 No-go Alternative

The No-go Alternative is the option of not constructing the powerline and associated infrastructure. The following will take place should there be no implementation of the project:

Positive

- There will be no environmental disturbance, including fauna, flora, soil, heritage, palaeontology, aquatic impacts.

Negative

Impact on the various Renewable Programmes.

- The area around Ferrum and Mookodi substation will not be suitable for developing renewable generation.
- IPP customers who invested in proposals for renewable generation will not get any return on it.
- The rollout of renewables in terms of the renewable energy drive will be negatively impacted.

Financial Impact

- The financial impact is mainly the loss of investment due to the cancellation of proposed renewable generation in the area.
- No jobs will be created.

Network and Operational Impact

- Obtaining a new line route would be difficult due to past and future mining activities making sites and routes unviable, existing infrastructures and developments, illegal encroachments, and difficulty obtaining land and servitudes.
- There may be possible voltage collapse.

- There will be no improvement in the overall reliability of the electrical systems, which would affect electricity users in the region.
- Inadequate electricity supply can result in low productivity which will lead to economic stagnation.

6.3 Public Participation Process Undertaken

Apart from the information provided above, PPP for this project is being undertaken in line with Chapter 6 of the EIA Regulations of 2014 as amended. Thus far in the project there have not been any objections on the project and as such, this is another motivation for preferring the proposed route. The full PPP undertaken to date is detailed in Section 7.

6.4 Outcome of the specialist studies undertaken

The powerline route runs through a semi-arid landscape that consists of extensive plains interspersed with intermittent hills, ridges, outcrops, and flattish uplands and crosses a plethora of rivers, tributaries, and drainage lines. The powerline will be placed along multiple single circuit angle steel towers which can be easily placed outside of the buffers of the riparian areas and therefore the potential risks to these watercourses are expected to be low. However, these structures are deemed to have a high visual impact on the residents and tourists. Based on the results of the impact assessment undertaken by the respective specialists, no fatal flaws were identified, and the impacts associated with the proposed project can be kept to acceptable levels after the implementation of the recommended mitigation measures.

Similarly cumulative impacts can also be kept to acceptable levels after the implementation of the recommended mitigation measures. Social cumulative impacts are expected to be positive on the local and national level as there will be revenue generation and employment opportunities for local communities, adequate capacity for renewable plants to feed into the Ferrum and Mookodi substations. However, the establishment of more lines will have a cumulatively high negative impact in terms of landscape aesthetics within the region. In terms of avifauna, the displacement due to disturbance and habitat transformation is cumulatively moderate. Cumulative impact on the animal species is low whilst the impact on aquatic resources is medium. Heritage and paleontological impacts are localised.

6.5 Conclusion

Government Notice 113 of 2018 indicates that where a larger section of the route is within a gazetted corridor, then the conditions as indicated in the Government Notice apply. The Ferrum-Mookodi 400kV powerline is within the Northern Strategic Transmission corridor as such a pre-negotiated route is being assessed with no alternatives being assessed. No design alternatives were considered however a comparison of overhead lines and underground cables was done and it was noted that overhead lines

are the most suitable option for the proposed project. As such the underground cables will not be further assessed. In addition, the No-go alternatives is also considered with the advantages and disadvantages being noted in Section 11.

7 PUBLIC PARTICIPATION PROCESS

This section of the report details the information required as per Section 3(1) (h) (i)and (ii) of Appendix 1 of Environmental Impact Assessment (EIA) Regulations, Government Notice R982 of 2014 (as amended)

h(ii) details of the public participation process undertaken in terms of regulation 41 of the Regulations, including copies of the supporting documents and inputs. (iii) a summary of the issues raised by interested and affected parties, and an indication of the manner in which the issues were incorporated, or the reasons for not including them

Public Participation Process (PPP) is viewed as a process of empowering communities and stakeholders in their efforts to safeguard the resource-base in more efficient ways and to use the resources sustainably. It also enables people to play lead roles in identifying, designing, directing, and implementing any development activity which has an impact on their immediate environment, and therefore on their way of life. When undertaking a Basic Assessment project, PPP is undertaken in terms of the Regulations set out in Chapter 6 of the EIA Regulations, 2014 as amended. The activities that will be carried out as part of the process are as follows:

- Section 40 –all registered Interested and Affected Parties (I&APs) are given 30 days to submit comments on generated reports.
- Section 41 – the person conducting a PPP must give notice to all I&APs by fixing notice boards, giving written notice, and placing advertisements in local newspapers and provincial/national newspapers.
- Section 42 – open and continuously maintain a register of Interested and Affected Parties (I&APs).
- Section 43 – all registered I&APs are entitled to comment on all reports and the person conducting the PPP must ensure that comments raised are brought to the attention of the proponent or applicant.
- Section 44 – the person conducting the PPP must ensure that comments of I&APs and records of meetings are recorded and responded to. The comments and responses report must be attached to the reports that are submitted to the competent authority.

7.1 Objectives and approach to the PPP

The objectives of the PPP are:

i. To gather input from Interested and Affected Parties (IAPs) regarding the level and nature of their interest to better plan public participation activities related to the Basic Assessment Process.

ii. To obtain local knowledge from the public to enhance our understanding of the environmental, cultural, and socio-economic setting of the proposed project for use in the Basic Assessment Process.
iii. To understand the reasons behind the views of the public regarding the potential environmental impacts.
iv. To solicit public input or views regarding potential alternatives and mitigation measures to reduce environmental impacts.
v. To work with the public to resolve a specific issue.
vi. To obtain public comments on all project documentation to verify whether information in the report is accurate, representative, and adequate.
vii. To provide feedback to Interested and Affected Parties about how their input, views, issues, and concerns have been considered in the process.
viii. To inform the public about the Competent Authority's (Department of Forestry, Fisheries, and the Environment) decision and the next steps to follow.

7.2 Methodology Adopted

Public Participation Process entails that all stakeholders that might be affected or have interest in the proposed project be afforded an opportunity to participate in the impact assessment of the project and they must each realize that they have responsibilities. The PPP will be undertaken in three (3) parts, where in Part 1 has already been undertaken as follows:

7.2.1 Part 1 of Public Participation Process

The following activities were undertaken during this phase.

7.2.1.1 Site Reconnaissance

A reconnaissance site visit was undertaken to develop an understanding of the social context (representative structures; language; communication media, etc.). The outcome of this site visit validated Margen's findings that the line traverses across land under the custodianship of Traditional Leader and privately owned where there are farmer's forums. In addition, information to the communities within 10-kilometre radii would be first distributed via Traditional and municipal leadership, e.g., tribal council, municipal manager's and ward councillor offices.

7.2.1.2 Stakeholder Database

With the help of landowners' database developed by NTCSA during the negotiation process, Margen during the Screening Phase, Windeed and through networking and advertising, I&APs were identified, and these I&APs are currently registered on the database. The database of registered stakeholders will be per POPIA and will include the following:

- All persons who, because of the PPP conducted have submitted written comments.
- All persons who have requested, in writing, for their names to be placed on the register; and
- All organs of state which have jurisdiction in the proposed project.

The register will continue to be updated as the project progresses. Refer to Appendix E-4 for a copy of the Database.

7.2.1.3 Notification

To create awareness, use was made of Background Information Document (BID), emails; telephone calls; newspaper advertisements and site notices. A BID was distributed to landowners, government departments, I&APs for review and comment.

The BID included the following information:

- The type of environmental assessment process (BA) being undertaken.
- Purpose of the BID.
- The description, nature, and location of the activity to which the application relates.
- Project legal requirement.
- Activities triggered by the proposed project.
- Other Permits required for the proposed project.
- Potential impacts.
- Where further information on the application or proposed application can be obtained;
- The manner in which and the person to whom representations/comments/objections in respect of the application or proposed application may be made.
- Name of consultant and contact details of the consultant.
- Invitation of the public members to register as I&APs.
- Public Participation Process to be followed and how the I&AP can get involved in the project.
- Registration and comments form.

Refer to appendix E-3 for the BID and proof of its distribution.

A2 size site notices were prepared in English, Afrikaans and Setswana and placed on various conspicuous areas around the project site from 9-27 September 2024. Refer to Appendix E-1 for the proof of placement of site notices. In addition, adverts were also published in the Stellalander and Sowetan on 16 and 18 October 2024 respectively. The site notices and newspaper adverts included the following information:

- The type of environmental assessment process (BA) being undertaken.
- The nature and location of the activity to which the application relates.
- Where further information on the application or proposed application can be obtained.
- The manner in which and the person to whom representations/comments/objections in respect of the application or proposed application may be made.
- Name of consultant and contact details of the consultant.
- Invitation of the public members to register as I&APs.

7.2.1.4 Comments and Responses Report

A full description of the comments and issues raised during the inception phases of the project are recorded in the Comment & Response Report attached in Appendix E-5. These have also been incorporated into this document. To date the comments have been received from the Tribal Authority, South African Civil Aviation Authority (SACAA), SAHRA and JTGDM. The comments received have been largely centred on requesting to be registered, submission of district and municipality spatial and development plans. The comments are attached in Appendix E-6.

7.2.2 Part 2 of Public Participation Process

Part 2 pertains to the Draft BAR being made available for a 30-day public review and comment period from 10 January 2025 to 10 February 2025. Copies of the Draft BAR will be sent to all registered I&APs by email, registered mail, and link on a text message. In addition, the report will be uploaded on DIGES website (www.diges.co.za). Hard copies of the Draft BAR will be placed at libraries in Khathu, Kuruman and Vryburg.

7.2.2.1 Newspaper Advert

Adverts have been published in the Sowetan and Stellalander newspaper to inform the public of the availability of the Draft BAR for review and comment; and where and how the Draft BAR can be accessed. Further, the adverts inform the public of the details regarding review and comment timelines and where the comments or queries can be submitted to.

7.2.2.2 Public Meetings

In consultation with the Tribal Authorities, ward councillors and Farmers Associations, meetings will be scheduled during the DBAR review period. Concerns and comments raised will also be addressed in the final report and the attendance registers and minutes will be attached.

7.2.2.3 Comments and Responses Report

The comments received during Part 2 of the PPP will be addressed and included in the Comments and Responses Report. These comments will also be addressed in the Final Basic Assessment Report.

7.2.3 Part 3 of Public Participation Process

Part 3 includes notifying the I&APs of DFFE's decision and appeal procedure in terms of Chapter 2 of the National Appeals Regulations of 2014 (as amended). This is the final part of PPP.

8 THE ENVIRONMENTAL ATTRIBUTES

This section of the report details the information required as per Section 3(1)(g)(iv) of Appendix 1 of Environmental Impact Assessment (EIA) Regulations, Government Notice R982 of 2014 (as amended).

(g) (iv) the environmental attributes associated with the alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects;

This information is provided as a baseline to ensure an understanding of the possible impacts of the proposed development on the environment. As such, aspects of the biophysical and socio-economic environment that the project could directly or indirectly impact have been discussed. This information has been sourced from existing documents such as the SDFs and IDPs for the Local Municipalities and District Municipalities, the site, and the specialists' assessments. A more detailed description of each aspect of the affected environment is included in the specialist reports. The specialists' studies commissioned are given in the table below. It must be noted that the information provided in the Pre-Feasibility Freshwater Assessment compiled by Limosella is relevant regarding the environmental attributes.

Table 8-1: Details of Specialists

THEME	ORGANISATION AND NAME OF SPECIALIST	QUALIFICATIONS AND PROFESSIONAL REGISTRATION
Animal	**Bioassets cc** Dr Wynand Vlok	PhD Zoology, Pr. Sci. Nat
Avifauna	**The Biodiversity Company** Martinus Erasmus	B-Tech in Nature Conservation (Pr.Sci. Nat)
Archaeology and Cultural Heritage	**Vhubvo Consultancy** Munyadziwa Magoma	Master of Arts (Archaeology) ASAPA
Civil Aviation	**GWI Aviation Advisory** Jon Heeger	BSc. Civil Engineering ECSA
Freshwater and Risk Assessment	**The Biodiversity Company** Andrew Husted	M.Sc Aquatic Health (Pr Sci Nat)
Palaeontology	Dr Francois Durand	PhD Palaeontology Pr. Sci. Nat
Soil and Land Capability	**Enviro-Solum (Pty) Ltd** Tshiamo Setsipane	M.Sc. (Agric): Soil Science Pr. Sci. Nat
Social	Barry Nkomo	Social Science (Honours)

THEME	ORGANISATION AND NAME OF SPECIALIST	QUALIFICATIONS AND PROFESSIONAL REGISTRATION
Terrestrial Plant Species	**David Hoare Consulting (Pty) Ltd** Dr David Hoare	PhD (Botany) Pr. Sci. Nat
Visual Impact Assessment	**Zara Capital** Leon Katsidzira	B Tech Architectural Technology SACAP

8.1 General Setting

The Ferrum substation lies at an elevation of 1221 amsl whilst Mookodi substation is at 1199 amsl. The powerline corridor runs through a semi-arid landscape that consists of extensive plains interspersed with intermittent hills, ridges, outcrops, and flattish uplands. There are also regular drainage valleys of various dimensions crossing the corridor.

8.2 Meteorological Setting

Meteorological information including primary precipitation, ambient temperature, as well as wind direction and speed, are essential data for adequately assessing the environmental impacts. Except for a few places where stations are in operation, meteorological records are rarely accessible. The study area is in the hot semi-arid climate zone, which is defined by hot, often extremely hot, summers and mild to cool winters with little to no precipitation. Hot semi-arid temperatures are most common along the edges of subtropical deserts. The western portion of the study region (mainly in the Northern Cape Province) experiences rainfall ranging from 201 to 400 mm. The eastern portion of the study region, primarily in the North West Province, experiences rainfall ranging from 401 to 600 mm. The study area can thus be defined as water-stressed. (Enviro-Solum Consulting, 2024)

8.3 Geology

The following information was sourced from the Palaeonntological Impact Assessment Report for the prepared by Durand JF in 2024.

Durand, 2024 indicates that the western part of the proposed Ferrum-Mookodi 400kV power line is mainly underlain by dune sand and aeolian sand. Surface limestone occur along the dry river bed south of Hotazel and the Ferrum Substation and a short section of the power line west of Kathu are underlain by surface limestone. The eastern part of the proposed Ferrum-Mookodi 400kV power line is mainly underlain by aeolian sand, surface limestone and Vaalian-aged dolomitic limestone, chert and limestone

of the Reivilo Formation of the Campbell Rand Subgroup (Erikkson et al., 2009). The easternmost end of the power line, west of Vryburg, is underlain by the Vaalian-aged oolitic and stromatolitic dolomite, shale and flagstone of the Boomplaas Formation of the Schmidtsdrift Subgroup of the Ghaap Group of the Griqualand West Supergroup. A short section of the line is underlain by the shale, conglomerate, chert and dolomite of the Clearwater Formation of the Schmidtsdrift Subgroup which overlies the rocks of the Boomplaas Formation. The line then crosses a section dominated by Tertiary-aged calcrete before it runs over a section that is underlain by the Carboniferous-aged tillite, mudstone, shale, boulder shale and sandstone of the Dwyka Group of the Karoo Supergroup. The easternmost end of the power line and the Mookodi Substation is underlain by the Vaalian-aged quartzite, flagstone, conglomerate, dolomite and shale, andesitic lava of the Vryburg Formation (see Figure 8-1).

The Quaternary-aged rubble, dune sand and aeolian sand and Tertiary-aged limestone cover parts of the dolomitic rocks along parts of the eastern part of the proposed Ferrum-Mookodi 400kV power line. The Kalahari sands which occur in large palaeo-valley systems that run in a north-south direction are part of the most extensive body of terrestrial sediments of Cenozoic age in southern Africa (Partridge et al., 2009). The geology of the area is shown in the map below.

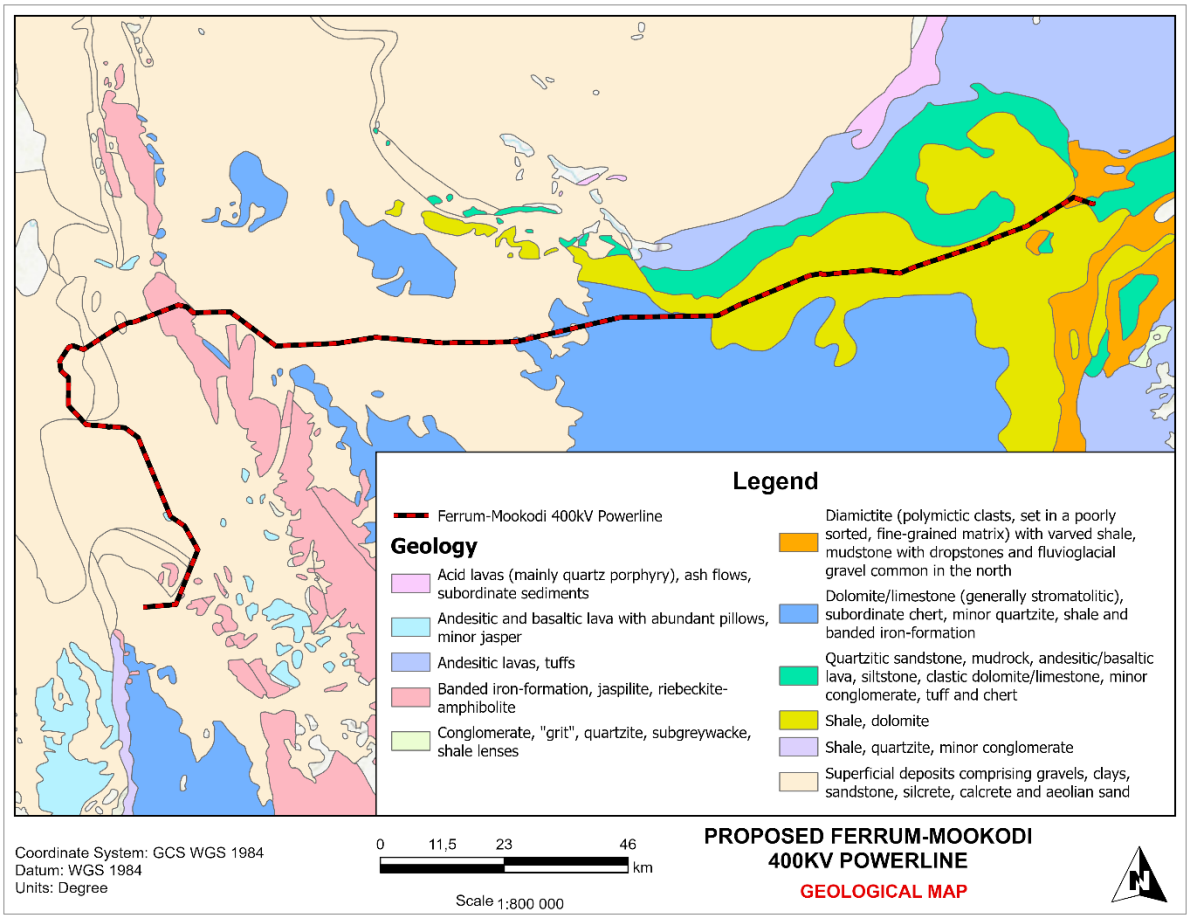


Figure 8-1: Geology of the area.

8.4 Soils and Land Capability

8.4.1 Soil pH

The soil pH associated with the soils within the study area is between 6.5 and 7.4, which is considered slightly acidic to neutral. This range is ideal because most plants thrive under it, and most nutrients are available for uptake (Enviro-Solum Consulting, 2024). Figure 8-2 depicts the soil pH associated with the soils within the study area.

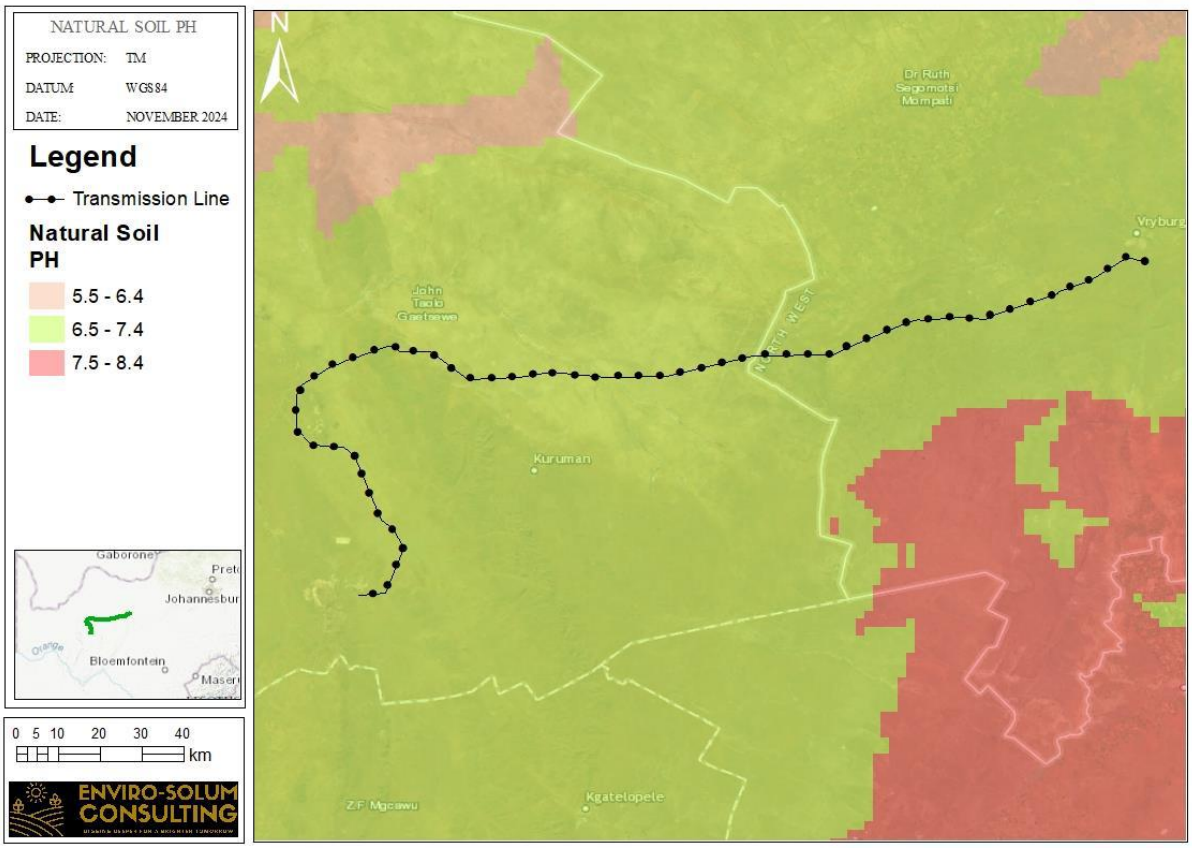


Figure 8-2: Soil pH associated with the project area (Enviro-Solum Consulting, 2024).

8.4.2 Soil And Terrain (SOTER) Dominant Soils

Enviro-Solum Consulting, 2024 indicates that the majority of the research region is dominated by ferralic arenosols, followed by chromic cambisols, calcic luvisols, and calcic solonchaks. Ferralic arenosols are primarily composed of sand, with minimal humus or clay, and may require additional inputs prior to cultivation. These soils can be two meters deep and contain greyish to brown sands. In arid regions, these soils are used for extensive grazing but can also be used for agriculture if irrigated. Chromic cambisols are characterised by the absence of a layer of accumulated clay, humus, soluble salts, or iron and aluminium oxides. Due to their favourable aggregate structure and high content of

weatherable minerals, they can usually be exploited for agriculture subject to the limitations of terrain and climate.

Luvisols show marked textural differences within the profile. The surface horizon is depleted in clay, while the subsurface horizon has accumulated clay. Most Luvisols have favourable physical properties: these are porous and well-aerated. Chemical properties and nutrient status vary with parent material and pedogenetic history, which also determine the options for land utilisation. Solonchaks are largely confined to the arid and semi-arid climatic zones and coastal regions in all climates. Common international names are 'saline soils' due to the high concentration of salts and the high evaporative demand of the areas where they occur. The Figure below illustrates the SOTER-dominant soils associated with the study area.

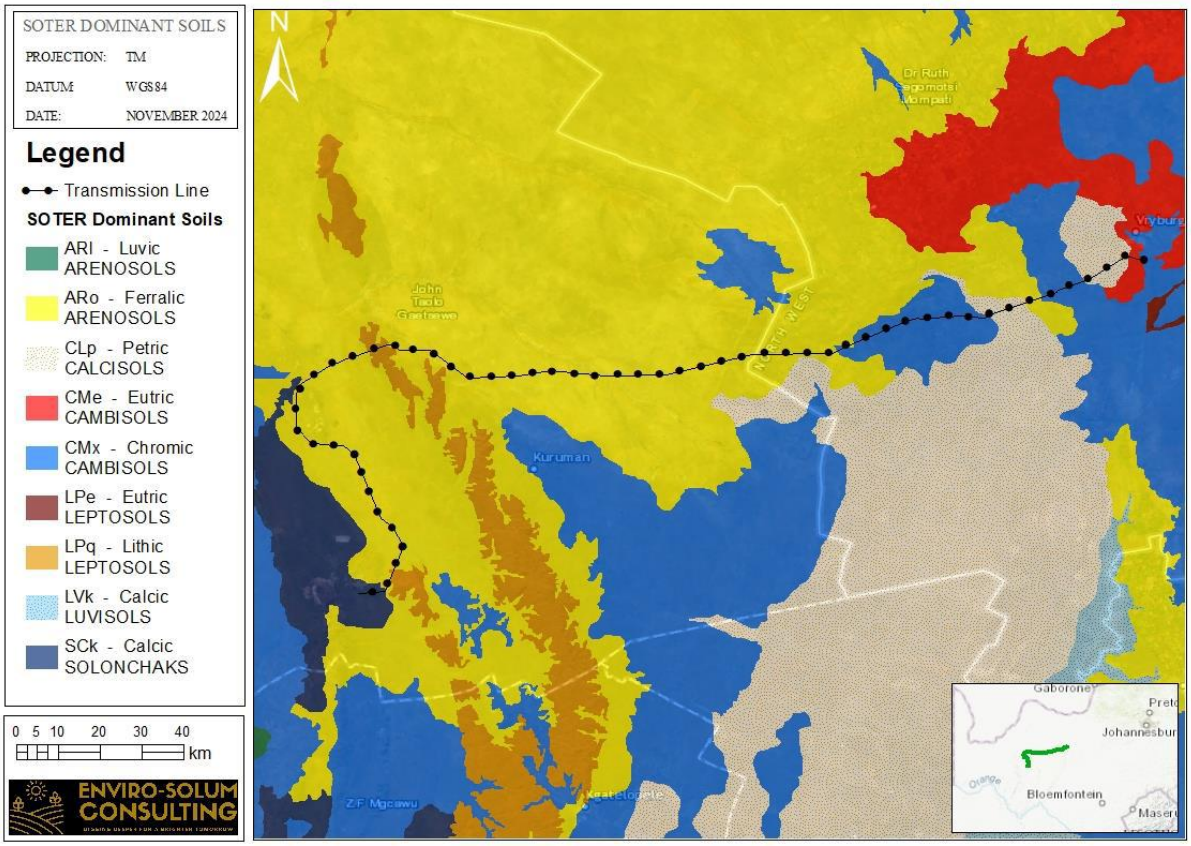


Figure 8-3: Soter Dominant soils associated with the study area (Enviro-Solum Consulting, 2024)

8.4.3 Land Capability

The desktop land capability associated with the soils within the study area is largely non-arable, and grazing, woodland, or wildlife is of Class V capability. See the Figure below.

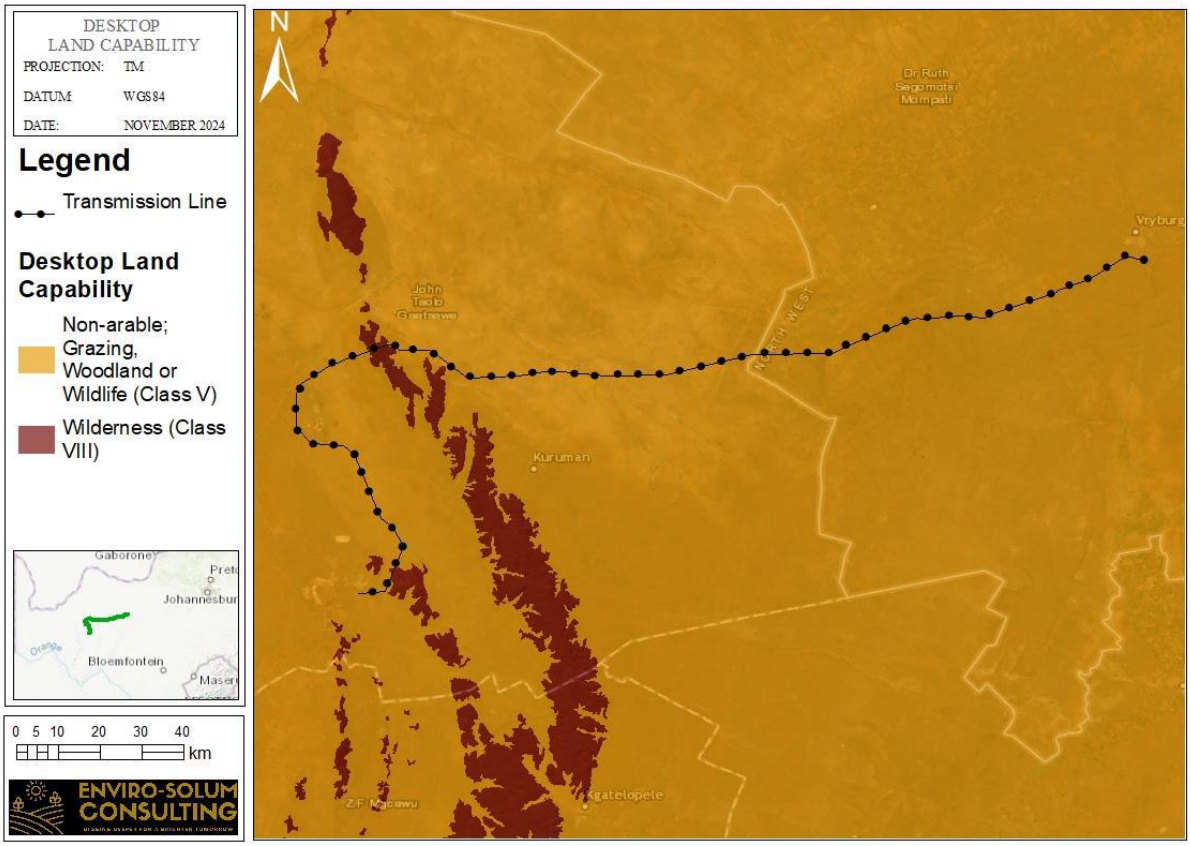


Figure 8-4: Land Capability (Enviro-Solum Consulting, 2024)

8.5 Water Resources

South Africa is divided into nine water management areas (WMA), managed by separate water boards. Each water management area (WMA) is made up of quaternary catchments which relate to the drainage regions of South Africa, ranging from A to X (excluding O). These drainage regions are subdivided into four known divisions based on size. For example, A denotes the primary drainage catchment, C8 represents the secondary catchment, C81 represents the tertiary catchment, and C81H represents the quaternary catchment, the lowest subdivision in the WR2005 manual. Each quaternary catchment has associated hydrological parameters, including area, mean annual precipitation (MAP), mean annual runoff (MAR), etc. The project is in the Vaal Water Management Area and falls within six (6) quaternary catchments, i.e., C32B, C32D, D41G, D41L, D41K and D41J. The major rivers found within these sub-catchments are Korobela, Droe Harts, Moshaweng, Mathwaring, Manyeding Kuruman, Witleegte, Ga-Mogara and Vlermuisleegte Rivers.

8.5.1 South African Inventory of Inland Aquatic Ecosystems

The South African Inventory of Inland Aquatic Ecosystems (SAIIAE) wetland dataset is a recent outcome of the National Biodiversity Assessment (NBA, 2018) and, was a collaborative project by the South African National Biodiversity Institute (SANBI) and the Council for Scientific and Industrial Research (CSIR). The SAIIAE dataset provides further insight into wetland occurrences and extents

building on the information from the National Freshwater Ecosystem Priority Areas (NFEPA), as well as other datasets. There are seeps, depression, valley bottom and river wetlands.

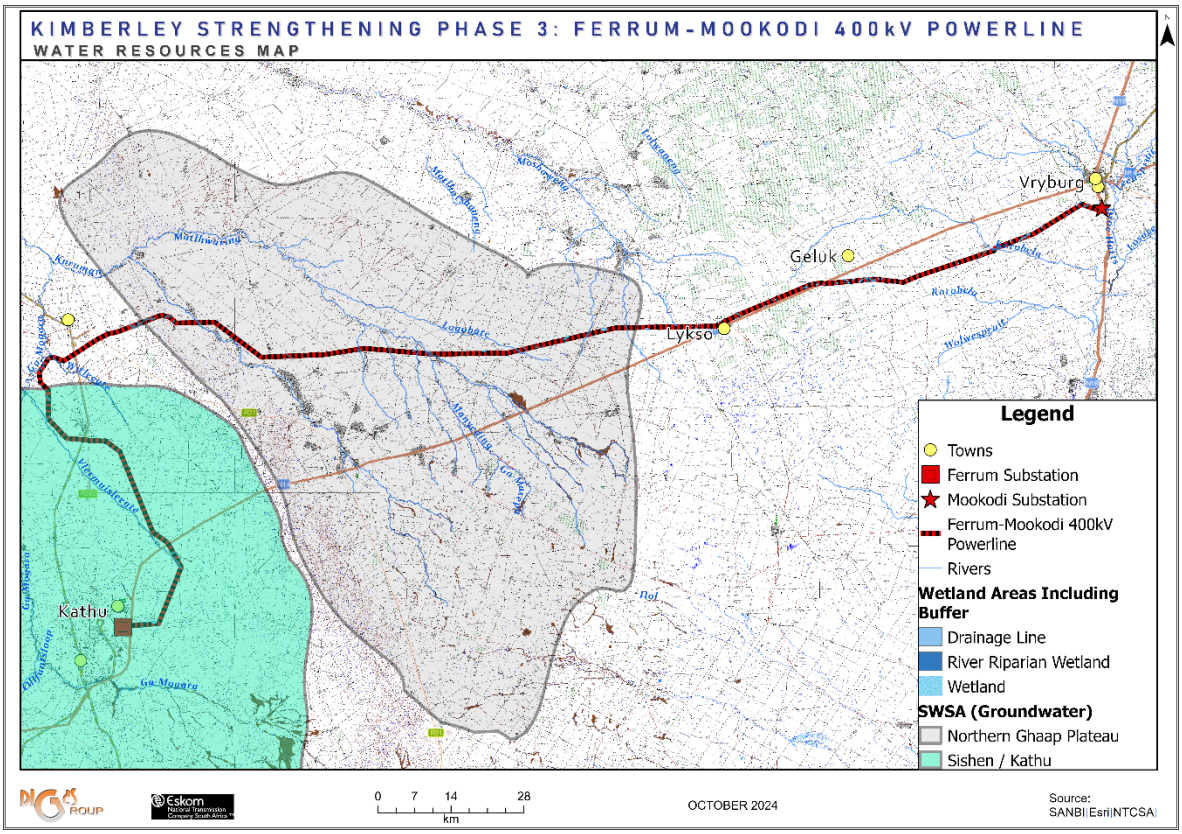


Figure 8-5: Water resources within the study area

8.5.2 Strategic Water Source Areas (SWSA)

Rainfall is unequal nationwide, and locations with significant rainfall and surface water production are crucial. Given the shortage of surface water, South Africa also relies on groundwater resources, making locations with substantial groundwater recharge strategically important. SWSAs are natural water source locations that provide disproportionately large amounts of water per unit area and are deemed crucial in terms of water security from a national planning viewpoint, whether for surface water, groundwater, or both. SWSAs may be described as "water factories" that support growth and development needs that are often a long distance away from the SWSAs. SWSAs are national ecological infrastructure assets essential for water security and underpin national development goals such as inclusive growth, employment creation, and reducing poverty. (StatsSA, 2023).Section of the powerline from Ferrum substation fall within two groundwater Strategic Water Source Areas namely: Northern Ghaap Plateau and Sishen/ Kathu.

8.5.3 National Freshwater Ecosystem Priority Areas

The National Freshwater Ecosystem Priority Areas (NFEPA) database forms part of a comprehensive approach to the sustainable and equitable development of South Africa's scarce water resources. This database provides guidance on how many rivers, wetlands and estuaries, and which ones, should remain in a natural or near-natural condition to support the water resource protection goals of the National Water Act (Act 36 of 1998) (NWA). This directly applies to the NWA, which feeds into Catchment Management Strategies, water resource classification, reserve determination, and the setting and monitoring of resource quality objectives (Nel et al., 2011). The NFEPAs are intended to be conservation support tools and envisioned to guide the effective implementation of measures to achieve the biodiversity goals of the National Environment Management Biodiversity Act (NEM:BA) (Act 10 of 2004), informing both the listing of threatened freshwater ecosystems and the process of bioregional planning provided for by this Act (Nel et al., 2011). Datasets downloaded from BGIS were overlaid on the project area and it was noted that there are wetlands and rivers within a 500m radius from the site. The PAOI overlaps with non-priority as well as priority wetlands and non-priority as well as Upstream management area rivers. Some of the water resources found on-site are shown below.

Figure 8-6 Examples of the different water resources found during the walk down. A & B) Riverine systems; C) Riverine system with riparian zone; and D) Riparian zone (The Biodiversity Company, 2024)

8.5.4 Threatened Ecosystems

Ecosystem threat status outlines the degree to which ecosystems are still intact or alternatively losing vital aspects of their structure, function, and composition, on which their ability to provide ecosystem services ultimately depends (Van Deventer, *et al*., 2019). Ecosystem types are categorised as Critically Endangered (CR), Endangered (EN), Vulnerable (VU) or Least Threatened (LT), based on the proportion of each ecosystem type that remains in good ecological condition (Van Deventer, *et al*., 2019). The Ecosystem Threat Status (ETS) of each river assessed was based on the extent to which the system had been modified from its natural condition (SANBI, 2018). According to the South African Inventory of Inland Aquatic Ecosystems (SAIIAE) released with the National Biodiversity Assessment (NBA) of rivers, the rivers which were superimposed on the aquatic ecosystem threat status (Figure 8-7) indicate that the proposed infrastructure crosses multiple watercourses which are considered Critically *Endangered and Least Threatened* ecosystems.

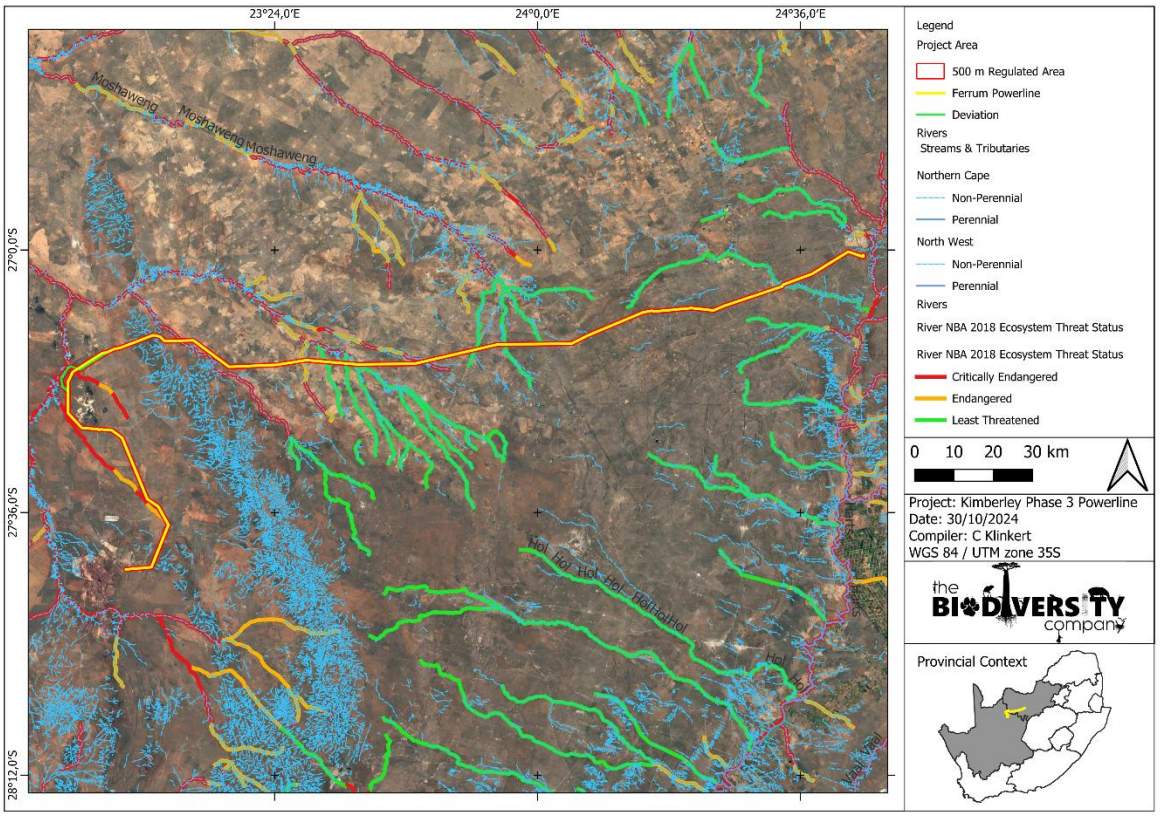


Figure 8-7: Desktop river and tributary delineations along the proposed Kimberley Phase 3 Ferrum Mookodi Powerline ((The Biodiversity Company, 2024)

The following information was sourced from the Terrestrial Plant Species Assessment Report for the prepared by David Hoare Consulting in 2024.

8.6 Terrestrial Plant Species

The corridor passes through several regional vegetation types which fall within the Eastern Kalahari Bushveld Bioregion. Two vegetation types, namely Ghaap Plateau Vaasbosveld and Mafikeng Bushveld are near Vryburg which then transitions to Kuruman Vaalbosveld further west. This then becomes Kuruman Thornveld before crossing the hills, which are covered by Kuruman Mountain Bushveld. On the Kathu side is a single vegetation type, Kathu Bushveld. See Figure 8-8 for the vegetation types. The three vegetation types on the Vryburg side (Ghaap Plateau Vaalbosveld, Kuruman Vaalbosveld, and Mafikeng Bushveld, are all open vegetation types with extensive grassy plains and scattered trees. Kathu Bushveld is similar in structure but has a higher density and diversity of trees. Kuruman Thornveld is densely thorny in the study area, possibly as a result of overgrazing leading to densification of blackthorn (Senegalia mellifera). The vegetation types are shown in the map below.

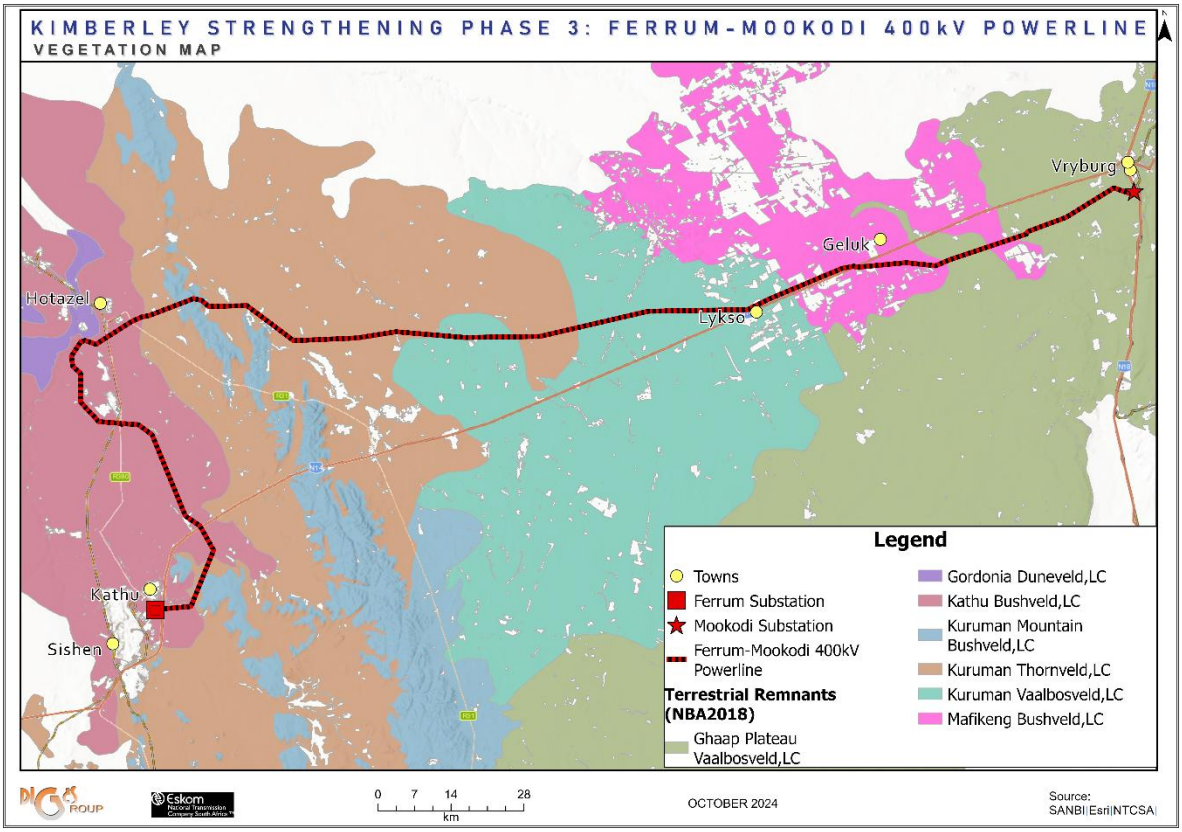


Figure 8-8: Vegetation type within the area

8.6.1 Plant Species

According to David Hoare Consulting (Pty) Ltd, 2024, on-site observations indicate that the patterns seen on site conform to the general published descriptions. Vegetation patterns and influenced by land-use. There are extensive communal settlements in the area north of Kuruman where the vegetation cover has been reduced through overgrazing. Table 8-2 shows some of the vegetation types noted on site. A total of 129 plant species were found within the corridor. None of these are Red List species. A

moderately high diversity of grasses and sedges, was observed on-site of which the following were common and widespread within terrestrial habitats: *Aristida congesta subsp congesta, Aristida meridionalis, Cenchrus ciliaris, Cymbopogon caesius, Cymbopogon pospischilii, Cynodon dactylon, Digitaria eriantha, Elionurus muticus, Enneapogon cenchroides, Eragrostis echinochloidea, Eragrostis gummiflua, Eragrostis lehmanniana, Eragrostis rigidior, Eragrostis superba, Fingerhuthia africana, Heteropogon contortus, Pogonarthria squarrosa, Schmidtia pappophoroides, Stipagrostis uniplumis, Themeda triandra* and *Tragus koelerioides*. A small number of grass and *sedge species only occur in wetland habitats (riparian areas and pans), namely Afroscirpoides* dioeca, *Andropogon sp., Cyperus marginatus, Hemarthria altissima, Imperata cylindrica, Juncus effusus, Schoenoplectus muricinux, Triraphis andropogonoides* and *Typha capensis*.

In bushveld vegetation, there was a high number of tree and shrub species, including *Asparagus laricinus, Asparagus suaveolens, Boscia albitrunca, Cadaba aphylla, Diospyros austro-africana, Euclea crispa, Euclea undulata, Grewia flava, Gymnosporia buxifolia, Hertia pallens, Lycium cinereum, Lycium pilifolium, Olea europaea subsp cuspidata, Rhigozum obovatum, Rhigozum trichotomum, Searsia ciliata, Searsia lancea, Searsia tridactyla, Senegalia mellifera, Tarchonanthus camphoratus, Terminalia sericea, Vachellia erioloba, Vachellia haematoxylon, Vachellia hebeclada, Vachellia karroo, Vachellia tortilis* and *Ziziphus mucronata*. (David Hoare Consulting (Pty) Ltd, 2024)

Table 8-2: Some of the vegetation types noted on-site (David Hoare Consulting (Pty) Ltd, 2024)

Grassland with low shrubs at Mookodi substation near Vryburg.

Mixed bushveld near Vryburg containing diverse grassland, shrubs and low trees. The grey shrub is *Tarchonanthus camphoratus* (vaalbos), after which the vegetation type is named (Ghaap Plateau Vaalbosveld). The low trees are mostly *Vachellia tortilis*.

Open grassland with scattered thorn trees, many of which are small camelthorn trees, *Vachellia erioloba*.

Riparian vegetation with flowing stream and grass-dominated banks.

Calcrete outcrop on slopes overlooking river valley. This habitat contained several species that do not occur elsewhere in the landscape, including the small succulent Prepodesma orpenii.

Vegetation on the ridge near Sedibeng, representing Kuruman Mountain Bushveld. The vegetation is dominated by blackthorn, Senegalia mellifera, on shallow stony soils. The vegetation has probably been heavily impacted by overgrazing – other locations further south have higher grass cover and more diverse woody species composition.

8.6.2 Protected Tree Species

According to (David Hoare Consulting (Pty) Ltd, 2024), the corridor is within geographic distribution of three protected tree species, i.e., Vachellia erioloba, Vachellia haematoxylon and Boscia albitrunca. All three species of protected tree were found on site in high numbers. The most commonly occurring species is camelthorn, *Vachellia erioloba*, which occurs along the entire corridor, sometimes as scattered trees, other times as dense groves, and elsewhere as high densities of juveniles. See Figure 8-9.

Figure 8-9: Camelthorn, *Vachellia erioloba*, seen within the corridor

8.6.3 Biodiversity Conservation Areas

Critical Biodiversity Areas are areas required to meet biodiversity targets for ecosystems, species, and ecological processes, as identified in a systematic biodiversity plan. Ecological Support Areas are not essential for meeting biodiversity targets but play an important role in supporting the ecological functioning of Critical Biodiversity Areas and protected areas and/or in delivering ecosystem services. (Skowno, et al 2019)

Critical Biodiversity Area Map is a spatial plan for ecological sustainability. It identifies a set of biodiversity priority areas, called Critical Biodiversity Areas (CBAs) and Ecological Support Areas (ESAs), which, together with Protected Areas, are important for the persistence of a viable representative sample of all ecosystem types and species as well as the long-term ecological functioning of the landscape (SANBI 2017b as cited in Skowno, et al 2019). These maps are a form of strategic planning for the natural environment, providing a coherent and systematically identified set of geographic priorities to inform planning, action and decision making in support of sustainable development. The powerline corridor was overlain on the Northern Cape CBA Map, 2016 and North West Terrestrial CBA Map, 2015 accessed from SANBI BGIS site, to verify if the project area was characterised by CBAs and ESAs. The North-West Province show Critical Biodiversity Areas (CBAs), Ecological Support Areas (ESAs), corridors and hills. Similarly, The Northern Cape Critical Biodiversity Area (CBA) map classifies the natural vegetation of the province according to conservation value. A combined map showing areas within the study area that fall within these classes is shown in Figure 8-10 and includes the following:

1. Critical Biodiversity Areas: The coverage for the CBAs is only confined in the Northern Cape Province covering less than 1 hectare near the rocky ridges in Ga-Motsamai.
2. Ecological Support Areas: Ecological Support Areas (ESAs) in the study area are corridors that have been aligned to coincide with major topographical features to provide connectivity between CBA1 and 2 areas. The ESA is therefore a drainage valley and an associated landscape corridor that links other areas with high biodiversity conservation value. There are three such corridors in the NW part of the project area. In the NC the ridge is also a corridor and, on the Kathu side, all drainage lines are ESAs. The presence of the ESAs indicate that the site has importance in a wider ecological context for supporting biodiversity patterns. The ESAs on site correspond to those parts of the site flagged in the Screening Tool report as being of Very High sensitivity and confirms this pattern. These parts of the landscape have Very High sensitivity with respect to the Terrestrial Biodiversity Theme (David Hoare Consulting, 2024)

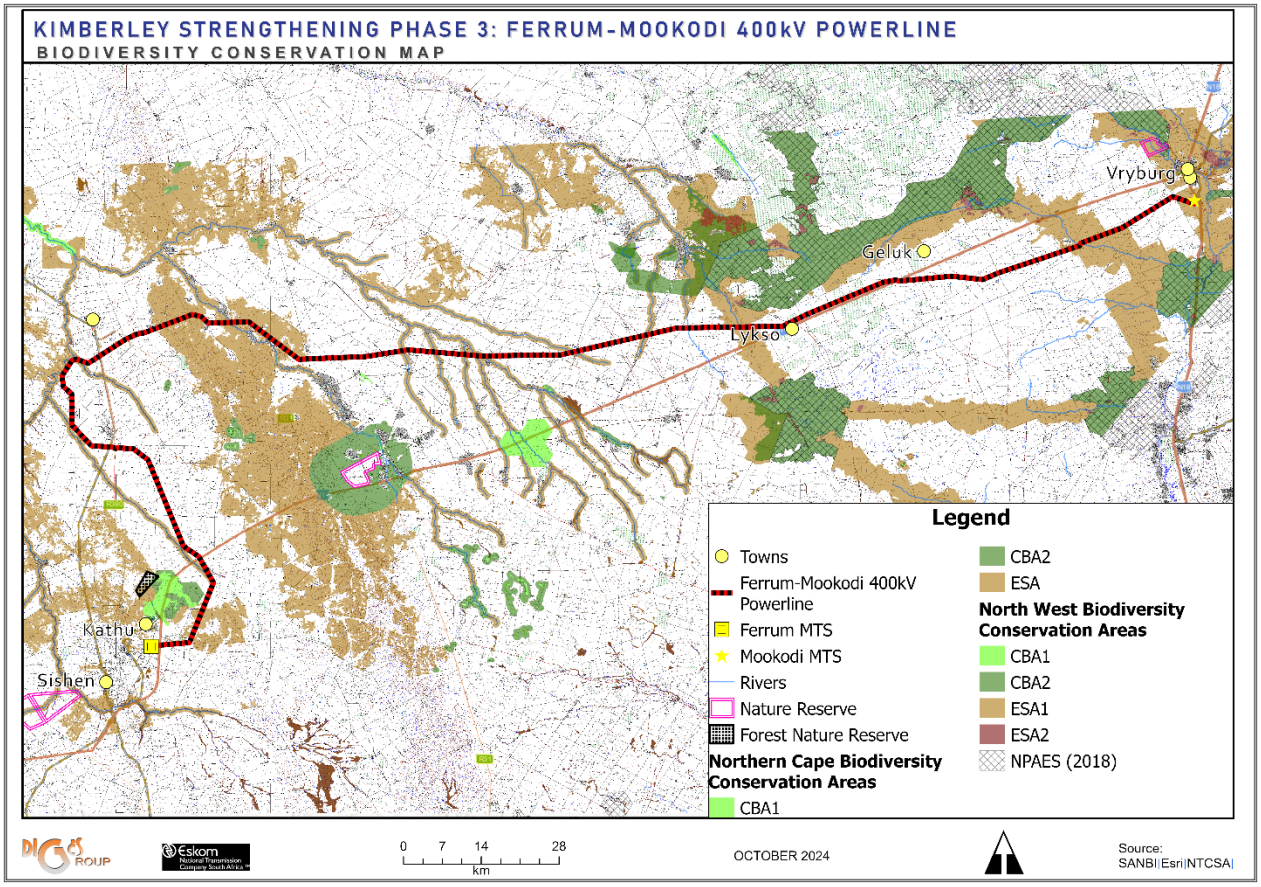


Figure 8-10: Critical Biodiversity Areas, Ecological Support Areas, and reserves

The table below indicates the CBA and ESA coverages within the 55m servitude.

Table 8-3: CBA and ESA Coverage

PROVINCE	CBA CATEGORY	AREA (HECTARES)
Northern Cape	Critical Biodiversity Area One	0,66
	Ecological Support Area	262,43
North West	Ecological Support Area 1	109.5

8.6.4 Threatened Ecosystems

Ecosystem threat status is an indicator of the degree to which ecosystems are still intact or alternatively losing vital aspects of their structure, function, or composition (Skowno & Monyeki, 2021; https://iucnrle.org/; NBA, 2018). These ecosystem types are categorised as Critically Endangered (CR), Endangered (EN), Vulnerable (VU) or Least Concern (LC), based on quantitative criteria and thresholds linked to ecosystem extent and condition (NBA 2018). The National Biodiversity Assessment (2018) published the threat status for all the realms in the country. The Red List of Threatened Ecosystems was firstly published and gazetted in 2011 following a series of assessment undertaken to evaluate the risks of the ecosystems. This was undertaken to understand whether ecosystems are still intact, or if they are losing vital aspects of their structure, function, or composition in relations to a series of thresholds set. In 2021, the Minister of Forestry, Fisheries, and the Environment, published the Revised National List of Threatened Terrestrial Ecosystems in Government Gazette 7526 (Notice No. 2747) in terms of the National Environmental Management: Biodiversity Act (NEMBA, Act No. 10 of 2004). The list was revised following the International Union for Conservation of Nature (IUCN) standard and 456 terrestrial ecosystem types described in South Africa (Mucina and Rutherford 2006; with updates described in Dayaram et al., 2019) were assessed. The revised list identified 120 threatened terrestrial ecosystem types (51 Critically Endangered, 55 Endangered and 14 Vulnerable types). This was for terrestrial ecosystems only however as stated earlier, the National Biodiversity Assessment (2018) assessed the threats status for all ecosystem realms (terrestrial, freshwater, coastal, and marine). The primary implication of the Revised National List of Ecosystem that are threatened or in need of protection is that it is linked to Listing Notice 3 published under the National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA). Some of the activities listed in Listing Notice 3 require environmental authorisation when they are carried out in a threatened ecosystem.

No listed ecosystems occur along the servitude.

8.6.5 Protected Areas and Protected Area Expansion Strategy

Protected Areas are defined geographical national assets (land and sea) that serve as nodes in South Africa's ecological infrastructure network. They are recognized by various legislature or other effective means to manage and conserve biodiversity. Protected areas maintain key habitats that ensures natural processes are maintained across the land or seascape and protect ecosystems that deliver important services to people, such as the production of clean water, flood moderation, prevention of erosion (NBA, 2018) The project area is not within a protected area or a Protected Area Expansion Strategy. The closest reserve is Khathu Forest Nature Reserve which is 7km west of the proposed 400kV power line. See Figure 8-10.

8.7 Fauna

BioAssets, 2024 indicates that the habitat for the three (3) red data species, Felis nigripes, Otomys auratus and Chersobius boulengeri are present. Most of the observations were active dens and include the Hystrix africaeaustralis, Orycteropus afer and Xerus inauris. Many of the active den sites are close to proposed tower positions and it is recommended that these dens must be marked prior to construction. Where possible, the dens must not be disturbed. It is probable that the animals will move from the dens once activity start.

8.8 Avifauna

The following information was sourced from the Avifauna Impact and Walkdown Assessment Report prepared by The Biodiversity Company. The report is attached in Appendix D-3a.

8.8.1 Important Bird Areas

Some sites are exceptionally important for maintaining the taxa dependent upon the habitats and ecosystems in which they occur. Vigorous protection of the most critical sites is one important approach to conservation. Many species may be effectively conserved by this means. Patterns of bird distribution are such that, in most cases, it is possible to select sites that support many species. These sites, carefully identified on the basis of the bird numbers and species complements they hold (i.e. globally threatened, range restricted and or migratory or congregatory species) are termed Important Bird Areas (IBAs). IBAs are selected such that, taken together, they form a network throughout the species' biogeographic distributions. IBAs are key sites for conservation – small enough to be conserved in their entirety and often already part of a protected-area network. Although there are several Important Bird Areas on both sides of the transmission powerline, they are at a significant distance away from proposed transmission powerline. With the nearest one being Barbespan & Leeupan, which is located north-west of Ottosdal (Mora Ecological Services Pty Ltd, 2021). The Biodiversity Company, 2024, however indicates that

BirdLife South Africa (BLSA), in consultation with the Key Biodiversity Area (KBA) National Coordination Group, has opted to retire IBAs and integrate KBAs into its conservation strategy. This strategic shift acknowledges the necessity of investing resources effectively to protect avian and other macroecological elements at the site level within a comprehensive framework of biodiversity conservation. Figure 8-11 shows that the PAOI is 26 km away from the Tswalu-Korannaberg KBA.

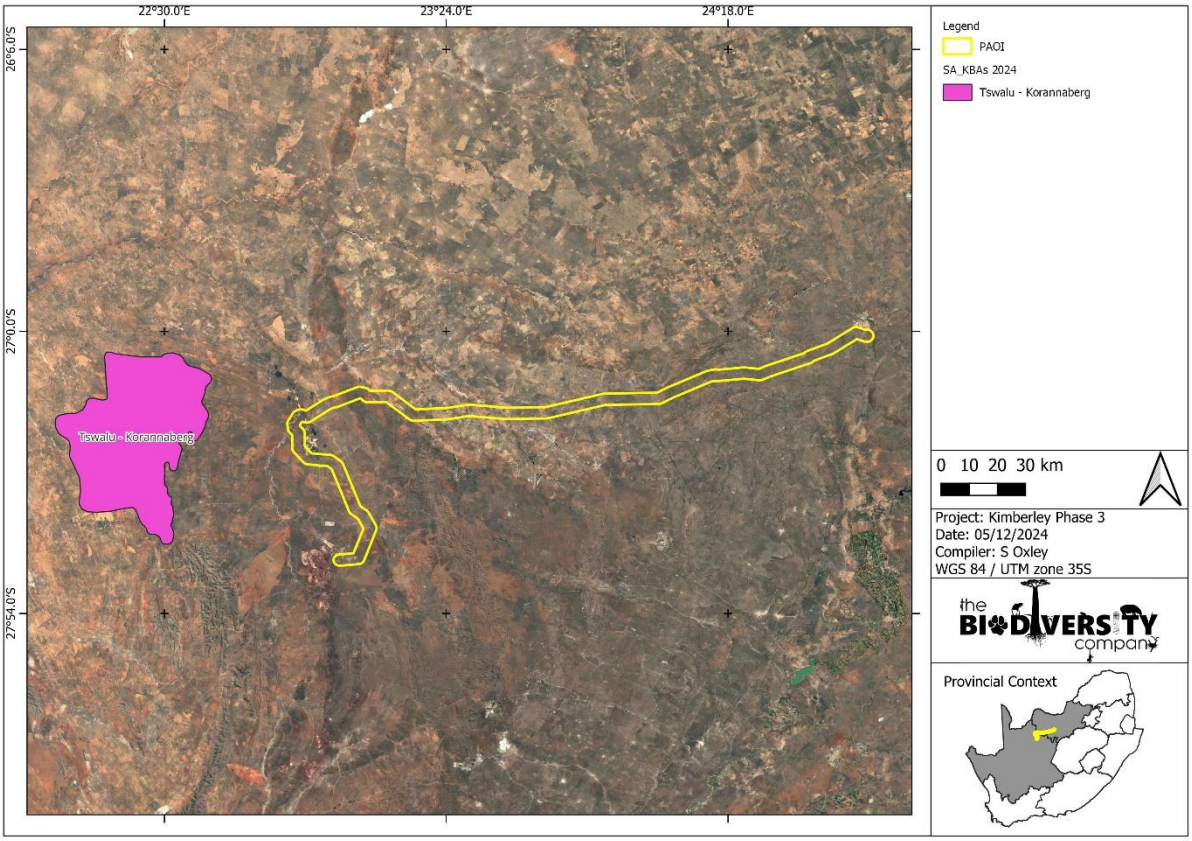


Figure 8-11: The PAOI in relation to the nearest IBAs (The Biodiversity Company, 2024)

8.8.2 Bird micro habitats

According to The Biodiversity Company, 2024, fine-scale habitats within the landscape are important in supporting a diverse avifauna community as they provide differing nesting, foraging and reproductive opportunities. Eight (8) habitats were delineated (Figure 8-12), a full description of the habitats is provided in Table 8-4.

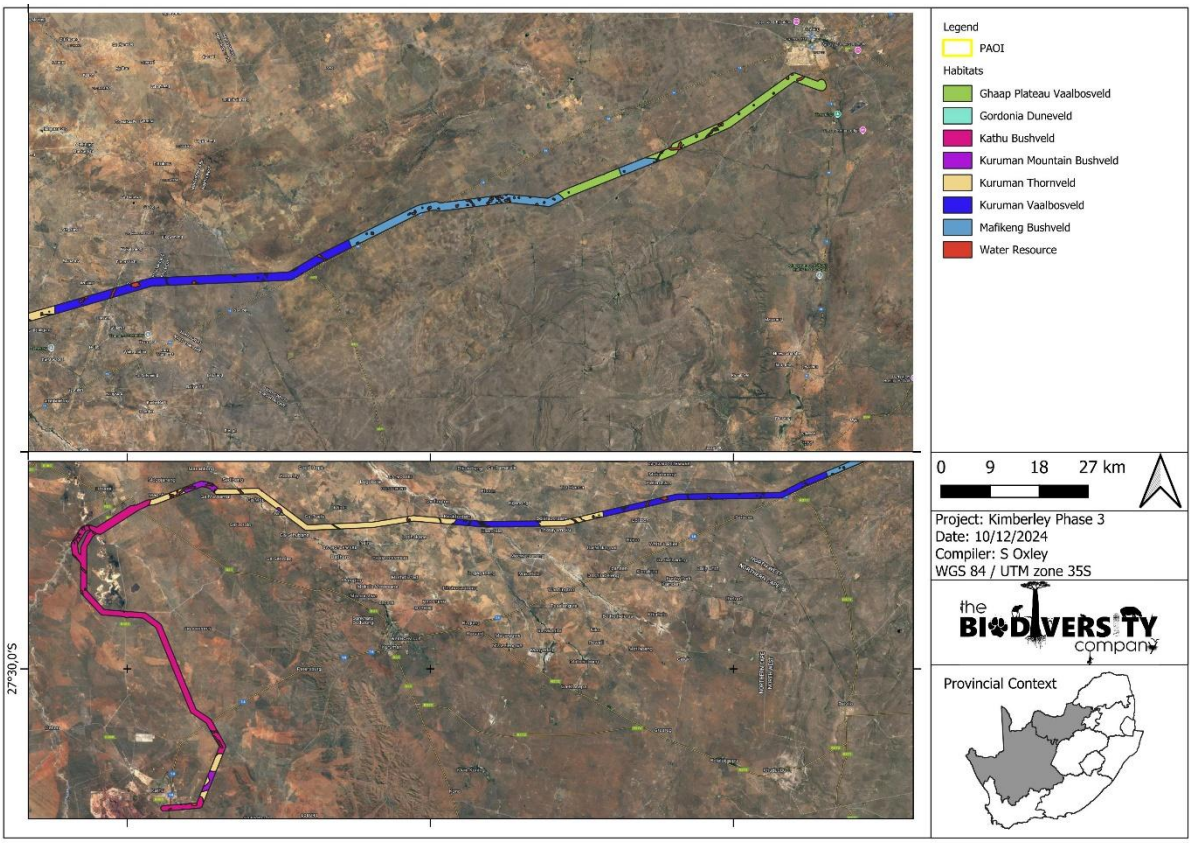


Figure 8-12 Habitats identified within the assessment areas (The Biodiversity Company, 2024)

Table 8-4 Habitats delineated in the project area (The Biodiversity Company, 2024)

Habitat	Description	Photo
Gordonia Duneveld	Areas with dunes comprising Karroid Shrubland plants. SCC expected to occur here: Secretarybird, Kori Bustard, Martial Eagle, Tawny Eagle, Lanner Falcon, European Roller, Abdim's Stork, Marabou Stork, Cape Vulture, Lappet-faced	 27°16'0.64"S and 22°56'14.67"E

Habitat	Description	Photo
	Vulture, White-backed Vulture	
Kathu Bushveld	This habitat consists of medium-tall thorny tree layer, with a variable grass layer cover. SCC likely to occur here: Secretarybird, Kori Bustard, Martial Eagle, Tawny Eagle, Lanner Falcon, European Roller, Abdim's Stork, Marabou Stork, Cape Vulture, Lappet-faced Vulture, White-backed Vulture	 27°43'33.23"S and 23° 6'21.53"E  27°21'59.86"S and 22°55'41.38"E
Kuruman Mountain Bushveld	This vegetation type is found on rolling hills, consisting of open shrubveld with a prominent grass layer. SCC likely to occur: Secretarybird, Kori Bustard, Ludwig's Bustard, Burchell's Courser, Martial	

Habitat	Description	Photo
	Eagle, Tawny Eagle, Verreaux's Eagle, Lanner Falcon, European Roller, Abdim's Stork, Black Stork, Marabou Stork, Cape Vulture, Lappet-faced Vulture, White-backed Vulture (recorded)	27°11'40.55"S and 23° 7'22.86"E
Kuruman Thornveld	This vegetation type consist of flat rocky plains and some sloping hills with a shrub layer and well-developed open tree stratum consisting of *Vachellia erioloba*.' SCC expected to occur here: Secretarybird, Kori Bustard, Martial Eagle, Tawny Eagle, Lanner Falcon, European Roller, Abdim's Stork, Marabou Stork, Cape Vulture, Lappet-faced Vulture, White-backed Vulture	 27°15'51.82"S and 23°17'31.62"E  27°15'22.10"S and 23°31'30.71"E

Habitat	Description	Photo
Kuruman Vaalbosveld	Open tree layer with a poorly developed shrub layer and grass layer open, with bare soil in places. SCC expected to occur here: Secretarybird, Kori Bustard, Martial Eagle, Tawny Eagle, Lanner Falcon, European Roller, Abdim's Stork, Marabou Stork, Cape Vulture, Lappet-faced Vulture, White-backed Vulture	 27°15'39.78"S and 23°37'42.55"E  27°12'57.82"S and 23°55'33.87"E
Mafikeng Bushveld	This habitat consist of a well-developed tree layer consisting of *Terminalia sericea*, *Vachellia luederitzii* and *V. erioloba* and a well-developed grass layer. SCC expected Secretarybird, Kori Bustard, Martial Eagle, Tawny Eagle, Lanner Falcon,	 27°10'28.98"S and 24° 9'49.05"E

Habitat	Description	Photo
	European Roller, Abdim's Stork, Marabou Stork, Cape Vulture, Lappet-faced Vulture (recorded), White-backed Vulture	 27° 5'50.44"S and 24°31'3.82"E
Water Resources	The water resources consist of wetlands, drainage features as well as rivers. As the avifauna community would utilise all of the habitats the various water resources were combined. For a full description of the water resources refer to the TBC Wetland (2024) report. SCC likely to occur: Abdim's Stork, Black Stork, Cape Vulture, Lappet-faced Vulture, White-backed Vulture	 27° 4'54.04"S and 24°33'33.61"E  27°12'26.60"S and 23°11'16.32"E

Habitat	Description	Photo
Ghaap Plateau Vaalbosveld	This vegetation type is found on flat plateaus, where it is characterised by open tree layer and smaller non thorny shrub species. SCC expected to occur: Secretarybird, Kori Bustard, Martial Eagle, Tawny Eagle, Lanner Falcon, European Roller, Abdim's Stork, Marabou Stork, Cape Vulture, Lappet-faced Vulture, White-backed Vulture	 27° 1'23.79"S and 24°40'40.15"E  27° 0'52.10"S and 24°44'39.39"E

8.8.3 Avifauna Expected Species

According to The Biodiversity Company, 2024, SABAP2 data indicates that 272 avifauna species are expected for the PAOI and surrounding areas. Of these, 17 are considered Species of Conservation Concern SCC. The likelihood of occurrence of the SCC within the POAI is indicated in Table 8-5. Three (3) SCC were recorded within the PAOI during the site visit, being the Kori Bustard (*Ardeotis kori*), Lappet-faced Vulture (*Torgos tracheliotos*), and the White-backed Vulture (*Gyps africanus*).

Table 8-5 Threatened avifauna species that are expected to occur within the PAOI. CR = Critically Endangered, EN = Endangered, LC = Least Concern, NT = Near Threatened and VU = Vulnerable (The Biodiversity Company, 2024)

Common Name	Scientific Name	Regional*	Global+	Likelihood of occurrence
Abdim's Stork	*Ciconia abdimii*	NT	LC	Moderate
Black Stork	*Ciconia nigra*	VU	LC	High
Blue Crane	*Anthropoides paradiseus*	NT	VU	Low
Burchell's Courser	*Cursorius rufus*	VU	LC	Moderate
Cape Vulture	*Gyps coprotheres*	EN	VU	High
European Roller	*Coracias garrulus*	NT	LC	Moderate
Kori Bustard	*Ardeotis kori*	NT	NT	Confirmed
Lanner Falcon	*Falco biarmicus*	VU	LC	High
Lappet-faced Vulture	*Torgos tracheliotos*	EN	EN	Confirmed
Ludwig's Bustard	*Neotis ludwigii*	EN	EN	Moderate
Maccoa Duck	*Oxyura maccoa*	NT	EN	Low
Marabou Stork	*Leptoptilos crumenifer*	NT	LC	Moderate
Martial Eagle	*Polemaetus bellicosus*	EN	EN	High
Secretarybird	*Sagittarius serpentarius*	VU	EN	High
Tawny Eagle	*Aquila rapax*	EN	VU	Moderate
Verreaux's Eagle	*Aquila verreauxii*	NA	LC	Moderate
White-backed Vulture	*Gyps africanus*	CR	CR	Confirmed

*(Taylor *et al.* 2015), + (IUCN 2021)

8.8.4 Coordinated Waterbird Counts (CWAC)

The Animal demographic unit launched the Coordinated Waterbird Counts (CWAC) project in 1992 as part of South Africa's commitment to International waterbird conservation. Regular mid-summer and mid-winter censuses are done to determine the various features of water birds including population size, how waterbirds utilise water sources and determining the health of wetlands. Figure 8-13 shows the PAOI is over 32.7 km from the nearest CWAC site, being the Pudu Farm Dam CWAC (The Biodiversity Company, 2024).

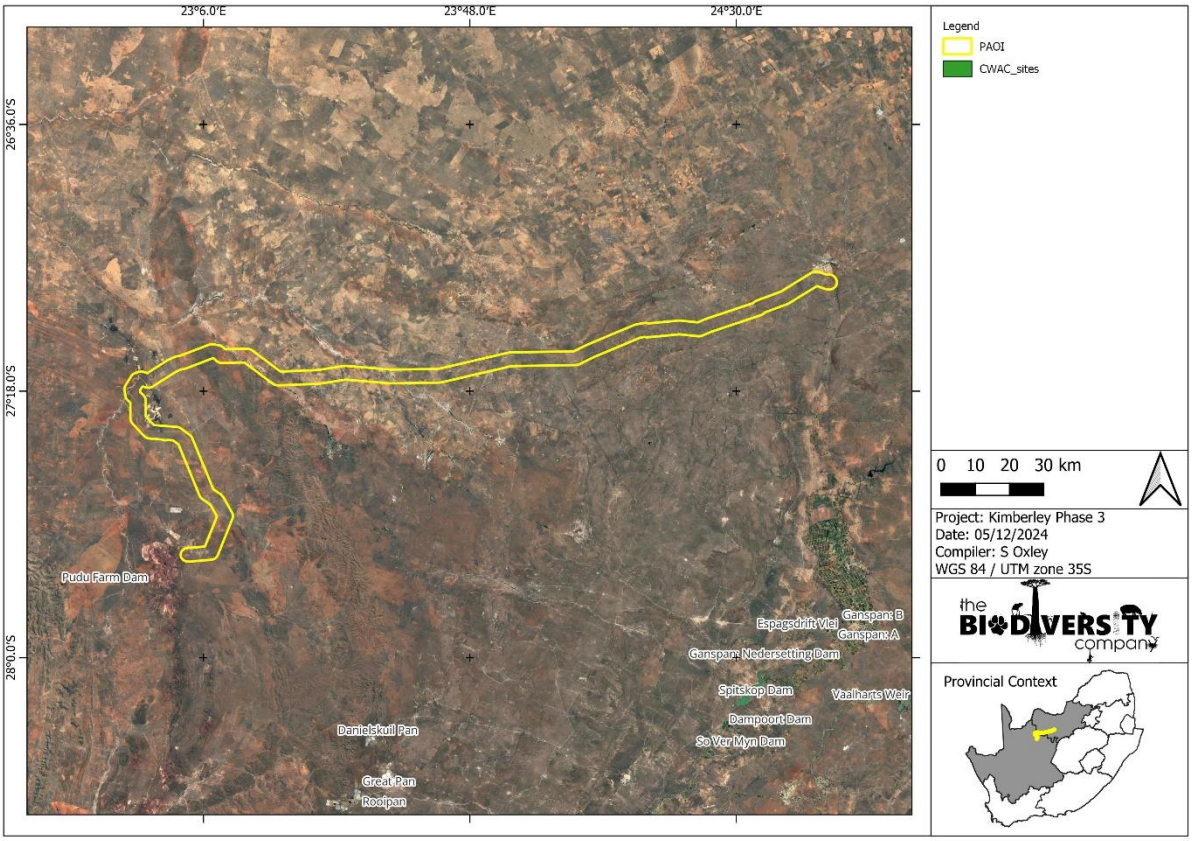


Figure 8-13 The PAOI in relation to nearby CWAC sites (The Biodiversity Company, 2024)

8.8.5 Vultures

According to The Biodiversity Company, 2024; two species of vulture were observed during the field survey. The maps below**Error! Reference source not found.** illustrate the Project Area of Influence (PAOI) in relation to recorded vulture electrocutions and collisions (Eskom/EWT Strategic Partnership database unpublished 2020). These maps indicate that there are fatalities recorded near the project area, both because of electrocution and collision. There are active vulture restaurants approximately 58 km east of the Mookodi substation and 61 km north of the line near Madibeng.

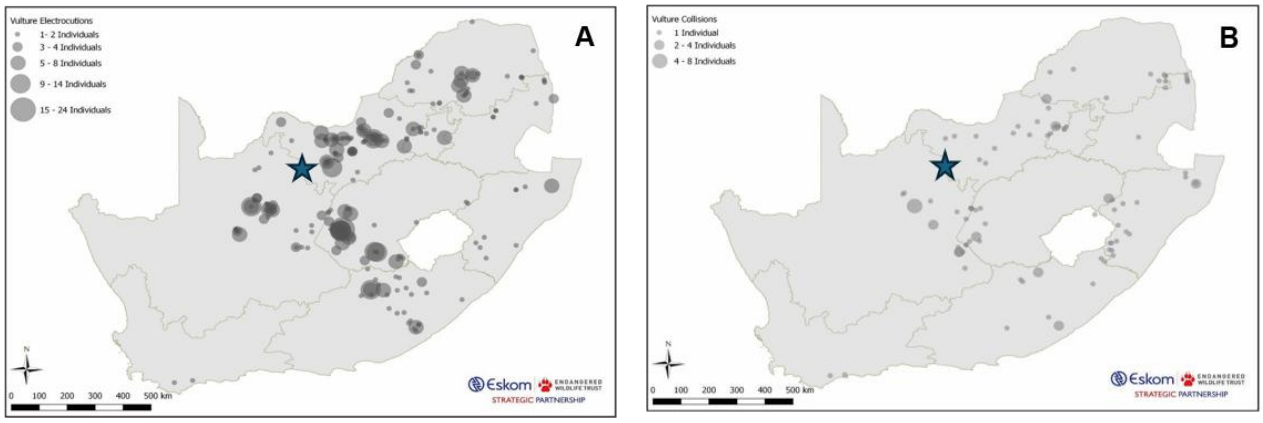


Figure 8-14:Maps indicating fatal vulture A) electrocutions and B) collisions on powerlines across South Africa reported to the EWT/Eskom Central Incident Register from 1996-2022 (Eskom/EWT Strategic Partnership database unpublished,2022). This map and information are as per Government Gazette No 47632. The star indicates the approximate location of the project area (The Biodiversity Company, 2024)

8.9 Archaeology and Cultural Heritage

The information below regarding the archaeology and cultural heritage of the site has been obtained from the (Vhubvo Consultancy cc, 2024).

8.9.1 Stone Age

The remnants of Stone Age hunter-gatherer's activities are customarily divided into the Early, Middle and Late Stone Age. MSA period is the representation of the Stone Age era in the regional North West province (Pistorius 2006, 2007a; Van Vollenhoven & Pelser 2008; Kruger 2012; Matenga 2017). Concisely, the MSA dates from approximately 300 000 years ago (kya) to 20 kya. The era is defined by the use of good quality raw material and bone tools; ochre, beads and pendants appear in the archaeological record at this time (Clark, 1982; Deacon & Deacon, 1999). Most archaeological material in the Northern Cape are found near water sources such as rivers, pans and springs, as well as on hills and in rock shelters. These sites usually comprise of open sites where the majority of evidence of human occupation is scatters of stone tools (Parsons 2003).

The most impressive archaeological sites in the Northern Cape Province is Wonderwerk Cave located approximately 100km away from the Eskom Ferrum. The cave is an enormous dolomitic cavity that has yielded archaeological deposits covering the Earlier, Middle, and Later Stone Age remains (ESA, MSA, LSA, respectively), spanning the past ca. 2.0 Ma years (Humphreys and Thackeray 1983; Beaumont and Vogel 2006; Matmon et al. 2012; Chazan and Horwitz 2015). The lengthy cultural sequence preserved at Wonderwerk has provided suitable contexts for dating, and the good preservation of faunal and botanical remains which offer excellent representations for paleo environmental studies,

making the site an archaeological and paleontological locality of global significance for studying human evolution.

The Fauresmith industry characterised by prepared cores, long, narrow flake blades, convergent points and small, broad hand axes (Mitchell 2002) belonging to the MSA era is also found on the broader region of Northern Cape. These artefacts dating to 276 00 –510 000 BP were also found at Wonderwerk. Associated with the MSA materials were several incised stone slabs, most with curved parallel lines. Pieces of haematite were also found. Due to significantly drier conditions, the cave was abandoned between 70 000 and 12 500 BP during which much of the region was abandoned and settlement only occurred at a few sites near permanent water sources (Beaumont & Vogel 2006).

The earlier LSA industry of the region forms part of the Oakhurst industry, characterised by rare, retouched artefacts, most of which are large scrapers that are oblong with retouch on the side. The predominant raw materials are banded ironstone and dolomite. Very few adzes and blades are found, while backed artefacts and bone tools are absent. Ostrich eggshell beads and fragments are also found (Humphreys & Thackeray 1983). At Wonderwerk, Oakhurst assemblages were dated to 8000 –10500 BP (Beaumont & Vogel 2006). Following after was the Wilton industry, distinguished by the use of various raw materials including banded iron stone, chert, chalcedony, jasper and quartz. The main retouched tools are elongated scrapers with repaired on the end and backed artefacts such as segments and blades. Other repaired or renovated tools include adzes, unifacial points, borers and notched artefacts. At other sites, bifacial points and bifacial tanged and barbed arrowheads are found.

At Wonderwerk, a few bone points have been found. Ostrich eggshell beads, pendants and decorated fragments, as well as stone rings were found (Humphreys & Thackeray 1983). Pottery made its appearance in the region by approximately 1400 BP and at Wonderwerk, Ceramic Later Stone Age layers have been dated to 900 –2000 BP (Humphreys & Thackeray 1983; Beaumont & Vogel 2006). Two discrete, contemporary stone tool industries are associated with pottery remains in the Northern Cape: Swartkop and Doornfontein (Beaumont et al.1995). Swartkop is a Wilton industry characterised by circular blades, a high proportion of backed blades, coarse undecorated pottery sherds that commonly contain grass temper, and a few iron items. It seems scrapers were favoured over blades on the Ghaap plateau (Humphreys & Thackeray 1983). These sites are usually found near water sources, such as pans and springs, or on the sides of low hills. Stone circles and ovals are sometimes also found and may represent the bases of dwellings. A late phase of this industry can be linked with the /XamSan who lived in the Karoo. Several Stone Age sites are known for the area surrounding Kuruman as well as along the Kuruman River (Humphreys & Thackeray, 1983; Beaumont & Morris, 1990; Parsons, 2003). Some of these sites contain rock engravings as well, such as Nchwaneng and Tsineng (Beaumont & Morris, 1990; Morris, 1988, 2002, 2003).

8.9.2 Iron Age

It is believed by Schapera (1962:6) that the Kgalagadi people, who are thought to have originated from Great-Lakes of East-Africa were the first group of the Tswana people to have encountered the San in the Northern Cape and North West provinces (Levitas 1983). However, Breutz (1989:1) argues that it was stated in oral tradition that they originated from the area were "the sun stood on the other side", it means they lived north of the equator, which would probably be southern Sudan, and not Great Lakes, which is on the Equator. Levitas (1983:168) argued that the name Kalahari was derived from the Kgalakgari people. The Rolong and Tlhaping group of the Tswana were the next to arrive; on arrival, they absorbed the Kgalagadi and San people who were found in the area (Schapera 1952). It was indicated by Breutz (1989) and Levitas (1983) that these groups arrived between 1200 and 1350.

Pilanesberg is a noticeable igneous massif in the North West Province. This mountainous area provided building stones, cultivatable soil, water and protection for Iron Age farmers in the past. Circular stone-walls marking Late Iron Age settlements found throughout the area belong mostly to the Group II (refer to Taylor 1979). The settlement belonging to this group is said to resemble a "sunflower" which is basically a representation of the Central Cattle Pattern (Huffman 1982). Group II settlement stretches across the hilly areas of Gauteng west towards Zeerust (Boeyens 1998, 2000; Huffman 1986; Mason 1986; Pistorius 1992; Taylor 1979,1984) and the Pilanesberg appears to form the northern limit. Some Group II settlements were vast aggregations housing thousands of people, such as Vlakfontein west of Sun City. These sites date back to the 18th century to the beginning of the Historic period and were inhabited by the Western Sotho-Tswana, such as the BaHurutshe and BaKwena.

8.9.3 Early History

Upon the arrival of the white settlers -c. AD 1650s-in this part of the country majority of things changed for the indigenous inhabitants of the land. The settlers were largely self-sufficient, relying on cattle/sheep farming and also hunting. Within few years of occupying the land, towns were established and farming remains the most dominant economy. From 1800 AD the archaeological record also reflects the development of a complex colonial frontier when precolonial social formations were considerably disrupted and there is an increasing 'fabric heavy' imprint of built structures, ash-heaps, and so on. The copper mines of Namaqualand and the diamond rush to the Kimberley area resulted in industrial archaeological landscapes in those areas which herald the modern era in South African history. All archaeological traces in the Northern Cape that are greater than 100 years old are automatically protected by the South African Heritage Resources Act, while some are formally protected by declaration as either Provincial Heritage Sites (e.g. Wildebeest Kuil and Nooitgedacht) or National Heritage Sites (e.g. Wonderwerk Cave).

8.10 Land use

The study area is primarily dominated by vast grasses, shrubs, and trees adapted to limited water and extreme temperatures. These areas are primarily used for cattle grazing, wilderness (game farming), and woodland land use with isolated farm properties outside the major towns. Mining areas (Sishen, Mamatwan, Middleplats, Tshipi and Kudumane mines) and supporting substations (Ferrum and Mookodi substations) in the vicinity of the powerline route were also observed. Signs of soil degradation in the form of soil erosion and compaction were observed within the study area.

John Taolo Gaetsewe Municipal Area is characterised by a mixture of land uses, of which agriculture and mining dominate. JTGDM was the richest mining region in the Northern Cape until a decline in mining employment and the near extinction of the asbestos mining industry in the 1980s. Today, minerals mined include manganese ore, iron ore and tiger's eye. The Sishen iron-ore mine is one of the largest open-cast mines in the world, and the iron-ore railway from Sishen to Saldanha is one of the longest iron-ore carriers in the world. The rural land in the district is used extensively for cattle, sheep, goat and game farming. The area is also well known for its good commercial hunting in the winter and holds potential as a tourism destination. The north-eastern region is comprised principally of high-density rural and peri-urban areas. In contrast, the western and southern areas are sparsely populated and consist mainly of commercial farms and mining activities. The main towns and villages within the district borders are Kuruman, Kathu, Deben, Dingleton, Olifantshoek, Vanzylsrus, Bothitong, Churchill, Manyeding, Laxey, Batlharos, Mothibistad, Hotazel and Heuningvlei *(JTG SDF Review, 2017)*. The different land-uses are shown in the Figure 8-15.

Figure 8-15: Land-uses within the project area

8.11 Socio-Economic Attributes

Socio-economic profile noted in this Section is as per the Social Impact Assessment Report compiled by Barry Nkomo.

8.11.1 Traditional Authorities

There are eight (8) Traditional Authorities in the JTGDM distributed as follows: two (2) are in Ga-Segonyana Local Municipality, and six (6) are in Joe Morolong. Local Municipality. The four (4) Traditional Authorities in RSMDM are distributed as follows: three (3) are in Greater Taung and one (1) is in the Kagisano –Molopo Local Municipality.

8.11.2 Demographics

The population of the John Taolo Gaetsewe District Municipality accounts for 20.1% of the total population in the Northern Cape Province. It is the third largest population after the Frances Baard and ZF Mgcawu Districts. This position has been consistent between 2011, 2016 and 2022.

Table 8-6: Comparison of total Population - Local Municipalities of JTG District Municipality: 2012, 2017 and 2022

Municipality	2012	2017	2022	Average Annual growth
Joe Morolong	80,400	80,200	82,800	***0.29***%
Ga-Segonyana	89,200	103,000	116,000	***2.65***%
Gamagara	42,900	52,100	58,500	***3.16***%
John Taolo Gaetsewe	212,512	235,587	257,121	***1.92***%

The Dr Ruth Segomotsi Mompati District Municipality had a population size of 464 832 people in 2016. The total population for the North West Province is estimated to increase to 4 467 702 by 2026, growing at an average annual rate of 0.13 %. The municipal area's growth rate is smaller than that of the province between 2016 and 2019 (0.68 %). (RSMDM IDP 2020-2023)

8.11.3 Education

The level of education has apparent implications for the employment potential and income of the people, and it has a direct influence on the local economy and the quality of life of local people; therefore, the establishment of institutions of higher learning such as Technical and Vocational Education Training (TVET) colleges and distance learning should be considered. Scholar transportation should be an interim arrangement with long-term goals of improving access.

A total of 143 000 individuals in JTGDM were considered functionally literate in 2022, while 26 800 people were considered illiterate. Expressed as a rate, this amounts to 84.18% of the population, an increase of 0.12 percentage points since 2012 (72.49%). The number of illiterate individuals decreased on average by -3.41% annually from 2012 to 2022, with the number of functionally literate people increasing by 3.62% annually (JTGDM IDP 2022-2033).

In 2019, the Dr. Ruth Segomotsi Mompati District Municipality had 22 119 low-skilled workers, 25 726 semi-skilled workers, and 12 236 skilled workers. Overall, between 2016 and 2019, the number of jobs in all categories increased. Mean years of schooling are increasing in the Dr. Ruth Segomotsi Mompati District Municipality. Overall, the adult literacy rate in the Dr. Ruth Segomotsi Mompati District Municipality increased from 2016 to 2019. The number of skilled workers within the area increased from 11 951 in 2016 to 12 236 in 2019. (RSMDM IDP 2020-2023) The table below indicates the differences within 4 years in skills categories.

Table 8-7: Number of workers by skill 2019

	Number of workers 2016	Number of workers 2019
Low-Skilled	21 888	22 119
Semi-Skilled	25 333	25726
Skilled	11 951	12 236
Total	**59 172**	**60 081**

(Source: RSMDM IDP 2020-2023)

8.11.4 Economic Sector and Employment

The key economic sectors in the district are mining, social services, agriculture, tourism, manufacturing, and construction. Mining is the largest employer, followed by the agricultural sector (StatsSA, 2022). Most of the District mines are concentrated around Hotazel (in Joe Morolong Local Municipality) and Sishen (in the Gamagara Local Municipal area). The companies that operate these mines are Kumba Resources, South32 and Assmang. The minerals being mined in the district are iron ore and manganese.

Table 8-8: Formal and Informal Employment by Broad Economic Sector - John Taolo Gaetsewe District Municipality, 2021

Sector	Formal Employment	Informal Employment
Agriculture	4,000	N/A
Mining	14,100	N/A
Manufacturing	1,080	238
Electricity	120	N/A

Sector	Formal Employment	Informal Employment
Construction	1,170	250
Trade	4,360	960
Transport	607	198
Finance	2,040	239
Community services	7,910	652
Households	3,360	N/A

The main economic activities for DRSDM are community services followed by agriculture and finance. The largest economic sectors in the district include general government, finance, insurance, real estate & business services and the Wholesale & retail trade, catering & accommodation sectors. The economy of the district performed better in 2019 compared to the preceding three years. The table below provides the sectoral GDPR for the District in 2019. Additionally, the table outlines each sector's percentage share and the average GDPR growth between 2016 and 2019. In 2019, those employed in the primary sector amounted to 22.49 % of the working population, 8.72 % in the secondary sector, and 68.79 % in the tertiary sector in the district. Dr. Ruth Segomotsi Mompati Municipal area employed 87 559 people, equating to 1 047 less than the previous year. However, the District shed - 667 jobs from 2016 to 2019. The sectors that contribute the most to employment in the district include the Wholesale & retail trade, catering & accommodation, Agriculture, forestry & fishing and Community, social & personal services. In 2019, it was estimated that the Dr. Ruth Segomotsi Mompati Municipal area lost 1 047 jobs. (RSMDM IDP 2020-2023)

Table 8-9: Number of workers by skill 2019

	Number of workers 2016	Number of workers 2019
Low-Skilled	21 888	22 119
Semi-Skilled	25 333	25726
Skilled	11 951	12 236
Total	**59 172**	**60 081**

(Source: RSMDM IDP 2020-2023)

8.11.5 Access to services

Access to electricity increased to 90% of the total population in 2016, as compared to 88% in 2011. With regards to the energy/fuel source for cooking, heating and lighting, (1) 76% of the population in the JTGDM use electricity for cooking; (2) 74% use electricity for heating; Electricity remains the primary source of energy in many households, and the demand is expected to increase with the increase in housing/ residential developments. Notably, a significant number of households still lack access to

electricity. The spatial development framework has indicated a propensity for electrification for future housing and residential development projects.

Table 8-10: Access to Electricity in JTGDM

Municipality	Electricity for lighting only	Electricity for lighting and other purposes	Not using electricity	Total
Joe Morolong	3,125	17,459	1,235	21,819
Ga-Segonyana	447	31,047	1,342	32,837
Gamagara	436	15,235	998	16,669
JTGDM Total:	**4,008**	**63,742**	**3,575**	**71,325**

The graphical figure below indicates access to electricity over 3 years within different local municipalities in RSMDM, and it is clear that the consumption increases over a period of time. This can be attributed to various factors such as an increase in population, developments and infrastructure, etc.

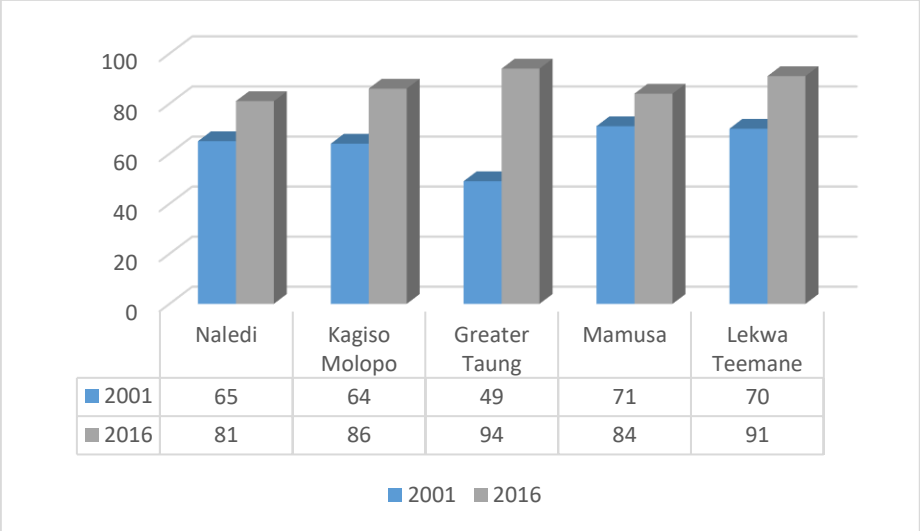
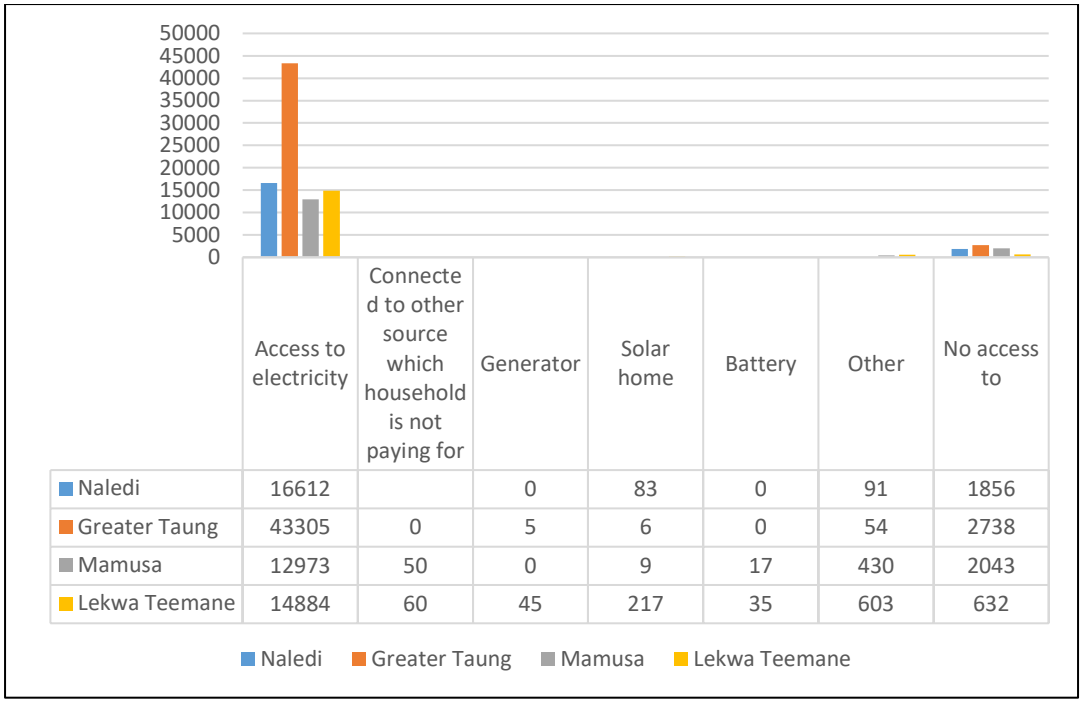


Figure 8-16: Access to Electricity over a Period of three Years

(**Source:** RSMDM IDP 2020-2023)

A detailed numerical representation is indicated in the figure below as to the number of access to different sources of energy, including those who do not have any source in all 5 local municipalities within RSMDM. It should also be noted that while the number is increasing from the graph above, the graph below shows a considerable lack of access in various local municipalities.



	Access to electricity	Connected to other source which household is not paying for	Generator	Solar home	Battery	Other	No access to
Naledi	16612		0	83	0	91	1856
Greater Taung	43305	0	5	6	0	54	2738
Mamusa	12973	50	0	9	17	430	2043
Lekwa Teemane	14884	60	45	217	35	603	632

Figure 8-17: Lack of Access to Electricity

(**Source**: RSMDM IDP 2020-2023)

8.11.6 Transport Network

Apart from the private farm roads, the proposed powerline crosses the following national and regional road and rail networks:

i. The N14, Vryburg-Upington road. This road is the key connector providing access to the rest of the Northern Cape and North West Provinces. This is also the main tourist route from Gauteng to Upington. The N14 passes through Kuruman and Sishen, the main economic centres within the district.

ii. The R31 (Kimberley-Kuruman-Hotazel) is the other important surfaced road linking Kuruman to Hotazel and the Mining activities at Blackrock as well as Kimberley. This route is also a tourist route - the Wonderwerk Caves and Eye of Kuruman are located along this route.

iii. Railway: Rail transport is mainly utilised in the agricultural and mining sectors. Ores are transported in this manner. A rail line extends from Black Rock southwards past Sishen to Kimberley where it connects with the main Cape Town – Johannesburg line. A second line, used to transport 34 | P a g e iron ore, extends from Sishen southwards to Saldanna Bay where it supplies the Saldanna steel plant. (John Taolo Gaetsewe District Municipality, 2024)

9 ENVIRONMENTAL IMPACT ASSESSMENT METHODOLOGY

This section of the report details the information required as per Section 3(1)**(h)(**v) -(xi), **(i)** and **(j)** of Appendix 1 of Environmental Impact Assessment (EIA) Regulations, Government Notice R982 of 2014 (as amended).

(h) (v) the impacts and risks identified for each alternative, including the nature, significance, consequence, extent, duration, and probability of the impacts, including the degree to which these impacts—

(aa) can be reversed.

(bb) may cause irreplaceable loss of resources; and

(cc) can be avoided, managed or mitigated.

(vi) the methodology used in determining and ranking the nature, significance, consequences, extent, duration and probability of potential environmental impacts and risks associated with the alternatives.

(vii) positive and negative impacts that the proposed activity and alternatives will have on the environment and on the community that may be affected focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects.

(viii) the possible mitigation measures that could be applied and level of residual risk.

(ix) the outcome of the site selection matrix.

(x) if no alternatives, including alternative locations for the activity were investigated, the motivation for not considering such.

(xi) a concluding statement indicating the preferred alternatives, including preferred location of the activity.

(i) a full description of the process undertaken to identify, assess and rank the impacts the activity will impose on the preferred location through the life of the activity, including—

(i) a description of all environmental issues and risks that were identified during the environmental impact assessment process.

(ii) an assessment of the significance of each issue and risk and an indication of the extent to which the issue and risk could be avoided or addressed by the adoption of mitigation measures.

(j) an assessment of each identified potentially significant impact and risk, including—

(i) cumulative impacts.

(ii) the nature, significance and consequences of the impact and risk.

(iii) the extent and duration of the impact and risk.

(iv) the probability of the impact and risk occurring.

(v) the degree to which the impact and risk can be reversed.

(vi) the degree to which the impact and risk may cause irreplaceable loss of resources.

(vii) the degree to which the impact and risk can be avoided, managed, or mitigated;

9.1 EIA Methodology

The identification and assessment of environmental impacts is a multi-faceted process, using a combination of quantitative and qualitative descriptions and evaluations. It involves applying scientific measurements and professional judgment to determine the significance of environmental impacts associated with the proposed project. The process involves consideration of, inter alia: the purpose and need for the project; views and concerns of interested and affected parties; social and political norms, and general public interest.

The methodology used for assessing impacts associated with the proposed project follows the philosophy of environmental impact assessments, as described in the booklet Impact Significance, Integrated Environmental Management Information Series 5 (DEAT, 2002b). The philosophy is summarised by the following extracts:

"The impact magnitude [or intensity] and significance should as far as possible be determined by reference to legal requirements, accepted scientific standards or social acceptability. If no legislation or scientific standards are available, the EIA practitioner can evaluate impact magnitude based on clearly described criteria. Except for the exceeding of standards set by law or scientific knowledge, the description of significance is largely judgemental, subjective, and variable. However, generic criteria can be used systematically to identify, predict, evaluate, and determine the significance of impacts." (DEAT, 2002b).

"Determining significance [of impacts] is ultimately a judgement call. Judgemental factors can be applied rigorously and consistently by displaying information related to an issue in a standard worksheet format." (Haug et al., 1984 taken from DEAT, 2002b).

The purpose of undertaking an impact assessment is to ensure that the project proactively considers environmental issues as part of the project planning and decision-making processes throughout the project life cycle.

9.1.1 The Impact Rating System:

Details of the impact assessment methodology used to determine the significance of physical, bio-physical and socio-economic impacts are provided below.

Table 9-1: Impact Assessment Methodology

The impacts are assessed as either having a: 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 three local municipalities), (4) National, or (5) International.
Duration of the Impact The length that the impact will last for 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.
Reversibility The degree to which an impact is reversible:

(1) Completely reversible
(2) Partly reversible
(3) Barely reversible
(4) Irreversible

9.1.2 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.

Table 9-2: Legend for Impact Significance

	Significance	Description of Significance
(<30)	Low	The activity will have a low impact in the environment. This impact would not have a direct influence on the decision to develop in the area.
(30-60)	Medium	Medium Impact – the activity will have a medium impact on the environment. The impact could influence the decision to develop in the area unless it is effectively mitigated.
(>60)	High	The activity will have a high impact on the environment. The impact must have an influence on the decision process to develop in the area.

9.2 The Assessment of Environmental Impacts and Risks

The proposed powerline will result in many positive and negative impacts. Mitigation measures have been provided for the negative impacts identified. The mitigation measures should be implemented in line with the Mitigation hierarchy as described by the DEA (2013). Refer to Figure 9-1 below for the Mitigation Hierarchy. This section is largely based on the recommendations by specialist and the EAP's experience on similar projects.

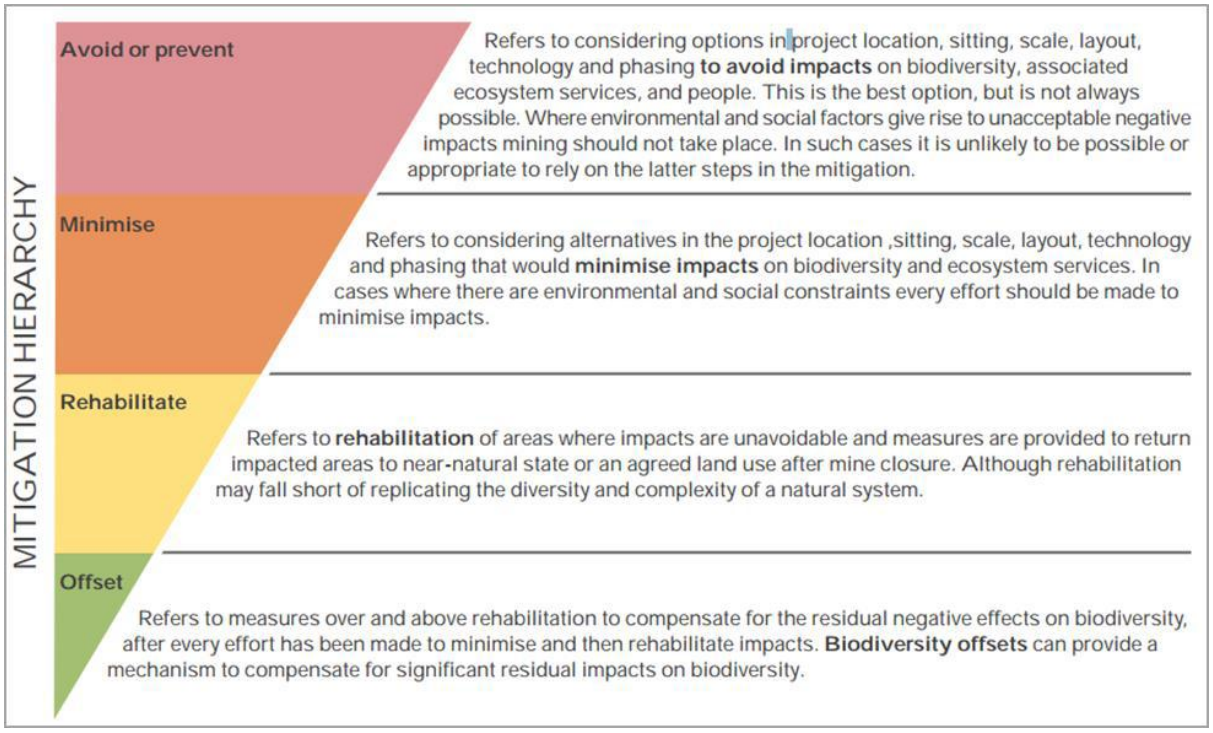


Figure 9-1: Mitigation Hierarchy as described by the DEA (2013)

The environmental impacts/risks have been grouped according to the phase of the project as follows:

- Pre-construction.
- Construction.
- Operational.
- Closure/decommissioning.

The table below links the anticipated impacts to the listed activities applied for. The detailed assessment of the impacts is given in the subsequent tables.

Table 9-3: Summary of anticipated impact significance and listed activities

LISTED ACTIVITIES	THEME	ACTIVITY	IMPACT DESCRIPTION	SIGNIFICANCE WITHOUT MITIGATION	SIGNIFICANCE WITH MITIGATION
– Listing Notice 1 (GNR 983): Activities 12, 19 – Listing Notice 2 (GNR984): Activity 9 – Listing Notice 3: Activities 12 and 19	Social	Movement of construction vehicles	Traffic congestion on public and private roads	Low (-)	Low (-)
		Hiring for construction	Waged Labor	Medium (+)	High (+)
		On the job training	Skills Development	Low (+)	Medium (+)
		Procurement of materials Housing for laborer's	Local Economic Development	Low (+)	Medium (+)
		Influx of job seekers	Increase in crime and diseases	Medium (-)	Low (-)
– Listing Notice 1 (GNR 983): Activities 12, 19 – Listing Notice 2 (GNR984): Activity 9 – Listing Notice 3 (GNR 985), 2014:	Avifauna	Vegetation clearance and construction activities	Habitat destruction within the project footprint	Medium (-)	Medium (-)
			Destruction, fragmentation and degradation of surrounding habitats	Medium (-)	Low (-)
		Construction activities	Displacement/emigration of avifauna community (including	Medium (-)	Low (-)

LISTED ACTIVITIES	THEME	ACTIVITY	IMPACT DESCRIPTION	SIGNIFICANCE WITHOUT MITIGATION	SIGNIFICANCE WITH MITIGATION
Activities 12 and 19			SCC) due to noise pollution		
		Illegal poaching	Direct mortality from persecution or poaching of avifauna species and collection of eggs	Medium (-)	Low (-)
		Movement of heavy machinery.	Direct mortality of avifauna species	Low (-)	Low (-)
	Animals	Construction activities (Potential poaching activities)	Illegal poaching of animals	Medium (-)	Low (-)
– Listing Notice 1 (GNR 983): Activities 12, 19 – Listing Notice 2 (GNR984): Activity 9 – Listing Notice 3 (GNR 985), 2014: Activities 12 and 19	Flora	Vegetation clearance	Destruction of habitats and loss of CBA, ESA and protected trees.	Medium (-)	Low (-)
	Water (Aquatic) Land capability	Excavations and road upgrades	Alteration of surface topography (excavations, reshaping and compacting)	Medium (-)	Low (-)
			Alteration of hydrodynamic patterns	Medium (-)	Low (-)

LISTED ACTIVITIES	THEME	ACTIVITY	IMPACT DESCRIPTION	SIGNIFICANCE WITHOUT MITIGATION	SIGNIFICANCE WITH MITIGATION
– Listing Notice 1 (GNR 983): Activities 12, 19 – Listing Notice 2 (GNR984): Activity 9 – Listing Notice 3 (GNR 985), 2014: Activities 12 and 19		Indiscriminate dumping of waste products or construction materials	Potential contamination of surface and groundwater.	Low (-)	Low (-)
		Soil stripping and construction of infrastructure.	Loss of wetlands.	Medium (-)	Low (-)
		Inadequate stormwater management	Soil erosion and sedimentation of water resources	Low (-)	Low (-)
		Clearing of vegetation for project infrastructure	Destruction of drainage areas and increase bare surface for surface run-off.	Medium (-)	Low (-)
		Storage of chemicals, mixes, and fuels with associated accident spills	Contamination of habitat as well as water resources.	Low (-)	Low (-)
		Final landscaping and reshaping	Potential contamination of soil, surface, and groundwater.	Low (-)	Low (-)
	Land capability	Soil stripping and construction of infrastructure.	Loss of grazing land	Medium (-)	Low (-)

LISTED ACTIVITIES	THEME	ACTIVITY	IMPACT DESCRIPTION	SIGNIFICANCE WITHOUT MITIGATION	SIGNIFICANCE WITH MITIGATION
	Visual	Construction of a powerline And substation upgrades	Altering the natural landscape's visual integrity	Medium (-)	Low (-)
	Cultural Environment	Excavation	Destruction of heritage graves	Medium (-)	Medium (-)
			Destruction of stone tools	Medium (-)	Low (-)
			Potential disturbance of paleontological resources	Medium (-)	Medium (-)
OPERATIONAL PHASE					
– Listing Notice 2 (GNR984), 2014 (as amended): Activity 9.	Avifauna	Operation of powerline	Collisions with infrastructure associated with the Powerline	High (-)	Medium (-)
			Electrocution due to powerlines	High (-)	Medium (-)
			Direct mortality from roadkills, persecution or poaching of avifauna species and collection of eggs	Medium (-)	Low (-)

LISTED ACTIVITIES	THEME	ACTIVITY	IMPACT DESCRIPTION	SIGNIFICANCE WITHOUT MITIGATION	SIGNIFICANCE WITH MITIGATION
			Displacement or death of SCCs	Medium (-)	Low (-)
	Land Water	Maintenance of infrastructure (powerlines and roads) and movement across wetlands	Soil erosion and sedimentation of water resources	Medium (-)	Low (-)
	Flora	Maintenance of powerline	Establishment of alien plants on disturbed areas.	Low (-)	Low (-)
	Infrastructure	Operation of powerline infrastructure.	Deterioration of infrastructure due to lack of maintenance.	Low (-)	Low (-)
	Visual	Operation of powerline and upgraded Mookodi substation	Erosion of the unique sense of place and altering the aesthetic character.	Medium (-)	Medium (-)
		Operation of the upgraded Ferrum substation		High (-)	Medium (-)

9.3 Impact Assessment During Pre-Construction Phase

9.3.1 Job Creation

Impact: Job creation

Corrective measures	Impact rating criteria						Significance
	Nature	Extent	Duration	Magnitude	Probability	Reversibility	
No	Positive	2	2	4	3	2	Low (24)
Yes	Positive	3	2	6	4	2	Medium (44)

Mitigation Measures:

- The Developer and Contractor should follow the applicable legislation when hiring staff.
- After completion of construction activities, some of the jobs will come to an end. However, there will be staff that will continue to work on the powerline during the operational phase, but it will be a smaller number. After decommissioning of the powerline there will be no more job opportunities on this project. There is no mitigation measure proposed for this impact.

9.3.2 Disturbance of the sub-surface environment

Impact: Disturbance of the sub-surface environment (Geotechnical)

Corrective measures	Impact rating criteria						Significance
	Nature	Extent	Duration	Magnitude	Probability	Reversibility	
No	Negative	3	5	8	3	3	Medium (48)
Yes	Negative	2	2	4	4	2	Low (24)

Mitigation Measures:

- Geotechnical Investigations should be done before commencement of construction activities.
- Towers and any other structures should be constructed on areas that are geotechnically stable.

9.3.3 Environmental Awareness

Impact: Non-compliance with authorisations, permits and licenses due to poor or no Environmental awareness training

Corrective measures	Impact rating criteria						Significance
	Nature	Extent	Duration	Magnitude	Probability	Reversibility	
No	Negative	3	3	8	4	2	Medium (56)

Yes	Negative	1	2	2	2	1	Low (10)

Mitigation Measures:

- All personnel and contractors should undergo Environmental Awareness Training.
- The induction is to include aspects such as the EMPr conditions, project permits conditions, need to avoid littering, the reporting and cleaning of spills and leaks and general good "housekeeping".
- The training should focus on the compliance of the conditions of the Environmental Authorisation (EA), Environmental Management Programme (EMPr), and any other relevant permits and licences.
- A signed register of attendance must be kept for proof.
- Awareness posters should be placed on the site notice board or any other placed allowed on site.
- Discussions are required on sensitive environmental receptors within the project area to inform contractors and site staff of the possible presence of SSC, their identification, conservation status and importance, biology, habitat requirements and management requirements the Environmental Authorisation and within the EMPr.
- The avoidance and protection of the surrounding watercourses and riparian areas must be included into a site induction.
- Contractors and employees must all undergo the induction and be made aware of the areas to be avoided.
- The Contractor must provide method statements on the protocols to be followed and contingencies to be implemented.
- Training on Cultural and Heritage Aspect
- Prior to construction, contractors should be given training on how to identify and protect archaeological remains that may be discovered during the construction phase. The pre-construction training should include some site recognition training for the types of archaeological sites that may occur in the construction areas. Below are some indicators of an archaeological site that may be found during construction:
- Flaked stone tools, bone tools and loose pieces of flaked stone.

9.4 Impact Assessment During Construction Phase

9.4.1 Impacts on Avifauna

Impact: Habitat destruction within the project footprint							
Corrective measures	**Impact rating criteria**						**Significance**
	Nature	**Extent**	**Duration**	**Magnitude**	**Probability**	**Reversibility**	
No	Negative	2	2	8	4	3	Medium (48)
Yes	Negative	2	2	6	3	2	Medium (30)
Impact: Destruction, fragmentation and degradation of surrounding habitats							
No	Negative	3	4	6	4	3	Medium (52)
Yes	Negative	2	3	2	3	3	Low (21)
Impact: Displacement/emigration of avifauna community (including SCC) due to noise pollution							
No	Negative	2	2	8	4	3	Medium (48)
Yes	Negative	2	2	4	2	2	Low (16)
Impact: Direct mortality from persecution or poaching of avifauna species and collection of eggs							
No	Negative	2	2	6	3	3	Medium (30)
Yes	Negative	2	2	2	2	2	Low (12)
Impact: Direct mortality from increased vehicle and heavy machinery traffic							
No	Negative	2	2	6	2	4	Low (20)
Yes	Negative	1	2	2	2	2	Low (10)

Mitigation Measures:

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

- A site-specific Construction EMPr (EMPr) must be implemented, which gives appropriate and detailed description of how construction activities must be conducted. All contractors are to adhere to the CEMPr and should apply good environmental practice during construction. The CEMPr must specifically include the following:
  - No off-road driving.
  - Maximum use of existing roads, where possible.
  - Measures to control noise and dust according to latest best practice.
  - Restricted access to the rest of the property.
  - Strict application of all recommendations in the biodiversity specialist report pertaining to the limitation of the footprint.
- Inclusion of operational measures to be followed with Environmental Awareness Training.

9.4.2 Impacts on animals

Impact: Potential poaching activities where people can actively hunt or collect slower moving animals (e.g., the tortoises) or by snaring (small mammals and birds).

Corrective measures	**Impact rating criteria**						**Significance**
	Nature	**Extent**	**Duration**	**Magnitude**	**Probability**	**Reversibility**	
No	Negative	3	4	8	4	3	Medium (60)
Yes	Negative	2	2	4	2	2	Low (16)

Mitigation Measures:

- No poaching will be allowed on site.
- Animals caught within the working areas should be rescued to safer sites within the area.
- Traffic control signs should be installed on site and all drivers should be urged to comply with them.
- To limit impacts on the larger ecosystem, it is recommended that the existing corridor (1st power line) is used as access during construction and maintenance for the 2nd 400 kV power line.
- Placement of pylons must as far as possibly avoid rocky outcrops, low hills, and drainage lines. It will not be possible to avoid all areas, but with planning, the impacts can be limited.
- No travelling should be done under the new power line – access to construction sites must be from the existing corridor and road.
- Where possible, limit travel over outcrops, hills, and low mountains – access from either side during construction to limit negative impact on the sloped areas. This will lower damage to the sensitive areas and lower the risk of erosion on the slopes.

9.4.3 Impacts on habitats and flora

Impact: Destruction of habitats and loss of protected trees							
Corrective measures	**Impact rating criteria**						**Significance**
	Nature	**Extent**	**Duration**	**Magnitude**	**Probability**	**Reversibility**	
No	Negative	3	4	8	4	4	Medium (60)
Yes	Negative	2	3	4	2	2	Low (18)
Impact: Destruction of habitats found on site due to development of roads							
No	Negative	3	2	4	2	2	Low (18)
Yes	Negative	2	2	2	2	2	Low (12)

Mitigation Measures:

- Areas of high ecological sensitivity should be demarcated as 'no-go' areas.
- Existing roads should be used where possible.
- A permit must be obtained for any plant species that are protected under the Northern Cape Nature Conservation Act, 2009 (Act 9 of 2009), the National Environmental Management: Biodiversity Act, 2004 (Act 10 of 2004).
- If any individuals of the protected tree, *Boscia albitrunca*, are likely to be affected, a permit is required according to the requirements of the National Forests Act., Act 84 of 1998.
- Existing roads must be used.

9.4.4 Impacts on agricultural resources

Impact: Soil stripping and construction of infrastructure can result in loss of grazing land capability.							
Corrective measures	**Impact rating criteria**						**Significance**
	Nature	**Extent**	**Duration**	**Magnitude**	**Probability**	**Reversibility**	
No	Negative	3	3	6	4	3	Medium (48)
Yes	Negative	2	2	4	3	2	Low (24)

Mitigation Measures:

- Rehabilitation of land can restore the grazing capacity to a large extent.
- Rehabilitation of soil needs to be done concurrently with construction activities to avoid soil erosion and water damming for long periods during the rainy season.

9.4.5 Impact on archaeological resources

Impact: Destruction of graves							
Corrective measures	**Impact rating criteria**						**Significance**
	Nature	**Extent**	**Duration**	**Magnitude**	**Probability**	**Reversibility**	
No	Negative	1	5	10	4	3	Medium (48)
Yes	Negative	1	5	4	1	1	Medium (30)
Mitigation Measures • In line with the NHRA, a 30m buffer must be established at the graves and cemeteries noted near Towers 229 and 507. • Before construction, contractors should be trained to identify and protect archaeological remains that may be discovered during construction.							
Impact: Destruction of stone tools							
No	Negative	3	5	4	3	3	Medium (36)
Yes	Negative	2	5	2	2	1	Low (18)
Mitigation Measures • NTCSA must take note of the site and ensure that the area is demarcated on the day of construction. • Before construction, contractors should be trained to identify and protect archaeological remains that may be discovered during construction.							

9.4.6 Impact on Palaeontological Resources

Impact: Potential disturbance of paleontological resources							
Corrective measures	**Impact rating criteria**						**Significance**
	Nature	**Extent**	**Duration**	**Magnitude**	**Probability**	**Reversibility**	
No	Negative	1	5	8	3	3	Medium (42)
Yes	Negative	1	5	4	3	1	Medium (30)
Mitigation Measures • If fossils are found by the environmental officer, or other responsible person once excavations and drilling have commenced, then they should be rescued, and a palaeontologist called to assess and collect a representative sample. The following Fossil Chance Find Protocol should be implemented. It should be noted that the following procedure is only required If fossils are seen on the surface and when excavation commence: o When excavations begin the rocks and must be given a cursory inspection by the environmental officer or designated person. Any fossiliferous material (trace fossils, fossils of plants, insects,							

bone or coalified material) should be put aside in a suitably protected place. This way the project activities will not be interrupted.

- Photographs of similar fossils must be provided to the developer to assist in recognizing the fossil plants, vertebrates, invertebrates or trace fossils in the shales and mudstones (for example see Figures 10-18 and 10-19). This information will be built into the EMP's training and awareness plan and procedures.
- Photographs of the putative fossils can be sent to the palaeontologist for a preliminary assessment.
- If there is any possible fossil material found by the contractor/environmental officer then the qualified palaeontologist sub-contracted for this project, should visit the site to inspect the selected material and check the dumps where feasible.
- Fossil plants or vertebrates that are of good quality or scientific interest by the palaeontologist must be removed, catalogued, and housed in a suitable institution where they can be made available for further study. Before the fossils are removed from the site a SAHRA permit must be obtained. Annual reports must be submitted to SAHRA as required by the relevant permits.
- If no good fossil material is recovered, then no site inspections by the palaeontologist will be necessary. A final report by the palaeontologist must be sent to SAHRA once the project has been completed and only if there are fossils.
- If no fossils are found and the excavations have finished, then no further monitoring is required.

9.4.7 Impact on water resources

Impact: Alteration of surface topography (excavations, reshaping and compacting)

Corrective measures	**Impact rating criteria**						**Significance**
	Nature	**Extent**	**Duration**	**Magnitude**	**Probability**	**Reversibility**	
No	Negative	3	4	4	4	4	Medium (44)
Yes	Negative	2	3	2	3	3	Low (21)

Mitigation Measures

- Do not allow surface water or stormwater to be concentrated, or to flow down slopes without erosion protection measures being in place.
- The entire construction area must not be stripped of vegetation prior to commencing construction activities.
- All disturbed areas must be rehabilitated as soon as construction in an area is complete or near complete and not left until the end of the project to be rehabilitated.

Impact: Alteration of hydrodynamic patterns due to crossing construction

No	Negative	3	4	4	4	4	Medium (44)
Yes	Negative	2	2	2	2	2	Low (12)

Mitigation Measures

- Ensure that all activities impacting the wetland features are managed according to the relevant DWS Licensing regulations (where applicable); and
- As far as possible, all construction activities should occur in the low flow season, during the drier winter months.
- The construction footprint must be surveyed and demarcated before construction commences. The development footprint is to be limited to what is absolutely essential in order to minimise environmental damage along the powerline corridor.
- A site plan must be developed showing the location of the site camp lay-down area and the plan must be approved by the ECO before construction begins.
- Make use of existing access roads as much as possible and plan additional access routes to avoid vegetation communities.
- Ensure that vegetation clearing and indiscriminate vehicle driving do not occur outside of the demarcated areas.
- Minimize construction footprints before the commencement of the construction and control the edge effects from construction activities.

Impact: Soil and water contamination due to accidental spillage and inadequate storage of chemicals.

No	Negative	2	3	4	3	2	Low (27)
Yes	Negative	1	2	2	2	1	Low (10)

Mitigation Measures

- All chemicals and toxicants to be used for the construction must be stored outside any channel system and in a bunded area.
- Safety Data Sheets for all chemical used on site should be kept on site.
- Proper signage should be placed at the hazardous substance storage site.
- The contractors should have spill kits available to ensure that any fuel or oil spills are cleaned-up and discarded at registered waste disposal site.

Impact: Improper placement of soil stockpiles may be eroded and sediment water resources

Corrective measures	**Impact rating criteria**						**Significance**
	Nature	**Extent**	**Duration**	**Magnitude**	**Probability**	**Reversibility**	
No	Negative	2	2	4	3	3	Low (24)
Yes	Negative	2	2	2	2	2	Low (12)

Mitigation Measures

- Laydown yards, camps and storage areas must be beyond the aquatic areas delineated watercourse extend and associated buffer zones.
- Where possible, the construction of the transmission line must take place from the existing road servitudes and not from within the aquatic systems.
- All construction areas should be clearly demarcated.

Impact: Inadequate stormwater management resulting in erosion and sedimentation							
Corrective measures	**Impact rating criteria**						**Significance**
	Nature	**Extent**	**Duration**	**Magnitude**	**Probability**	**Reversibility**	
No	Negative	2	3	4	3	3	Low (27)
Yes	Negative	2	3	2	2	2	Low (14_

Mitigation Measures:

- A Stormwater Management Plan must be developed to control runoff and prevent erosion of the site and its surroundings.
- Appropriate stormwater structures alongside a Stormwater Management Plan must be designed to minimise erosion of the surrounding environment and sedimentation of surrounding watercourses.

9.4.8 Erosion

Impact: Clearance of vegetation resulting in the increase of bare areas thereby increasing runoff							
Corrective measures	**Impact rating criteria**						**Significance**
	Nature	**Extent**	**Duration**	**Magnitude**	**Probability**	**Reversibility**	
No	Negative	3	4	4	4	4	Medium (44)
Yes	Negative	2	3	4	3	3	Low (27)

Mitigation Measures

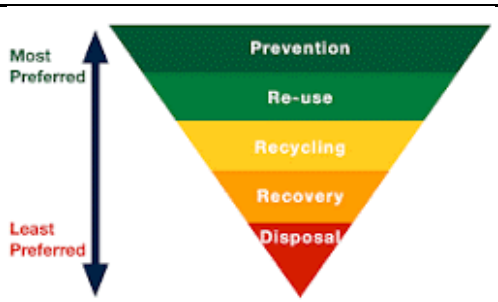
- Control soil erosion using geotextiles and re-vegetation of exposed soil surfaces where possible.

9.4.9 Inadequate waste management

Impact: Inadequate handling, storage and disposal of sewage, domestic and industrial waste resulting in odour, soil, surface, and ground water pollution.							
Corrective measures	**Impact rating criteria**						**Significance**
	Nature	**Extent**	**Duration**	**Magnitude**	**Probability**	**Reversibility**	
No	Negative	2	2	4	3	3	Low (24)
Yes	Negative	1	1	2	2	1	Low (8)

Mitigation Measures

- The management hierarchy should be implemented when managing waste generated. The waste management Hierarchy is indicated below.



Waste management Hierarchy

The Hierarchy indicates that:

- Avoidance and Reduction: Materials and products must be designed to reduce the natural materials used, their waste components and the waste generated during production and after the consumption of the material or product.
- Re-use: Materials can be used for different or similar purposes without changing their properties or shape. This approach seeks to re-use a product or material when it is no longer in use. In this way, it becomes an input for new materials and products.
- Recycling: This includes separating materials from the waste stream and processing as raw materials or products. The foundation of the 'cradle-to-cradle' waste management approach is the first element of the waste management hierarchy.
- Recovery: Recycle specific materials or components or use them as fuel.
- Treatment and disposal: This is a 'last resort' within the waste hierarchy. Treatment refers to the alteration of the physical properties of waste or destroying the toxic constituents of waste. Disposal refers specifically to the burial or disposal of waste in or on the land. For example, landfill disposal.
- Formal waste management and sewerage systems must be put in place for contractors.
- Contractors and construction crews conducting the works on site should be informed about approved waste disposal facilities.
- Waste management must be a priority, and all waste must be collected and stored effectively.
- All waste generated on-site during construction must be adequately managed. Separation and recycling of different waste materials should be supported.
- No dumping of litter, rubble or cleared vegetation on site should be allowed. Infrastructure and rubble removed because of the construction activities should be reduced, re-used, or recycled with disposal to landfill as a last resort.
- No temporary dump sites should be allowed in areas with natural vegetation. It is advised that waste disposal containers and bins be provided during the construction phase for all construction rubble and general waste.
- Vegetation cuttings must be carefully collected and disposed of at a separate waste facility.
- Burying of any waste, including rubble, domestic waste, and empty containers on the site, should be strictly prohibited.

- All construction rubble and other types of waste must be removed and disposed of at a suitable authorised disposal facility.
- The Contractor should supply sealable and properly marked domestic waste collection bins or skips and all solid waste collected shall be disposed of at a registered waste disposal site.
- Where a registered disposal facility is not available close to the project area, the Contractor shall provide a method statement regarding waste management.

9.4.10 Impact on the landscape visual integrity

Impact: The construction of the powerline directly alter the natural landscape's visual integrity. The powerline's prominence in the landscape, especially in areas of high scenic or cultural value, can erode the unique sense of place associated with the region.

Corrective measures	Impact rating criteria						Significance
	Nature	Extent	Duration	Magnitude	Probability	Reversibility	
No	Negative	3	2	6	4	4	Medium (44)
Yes	Negative	3	2	4	3	3	Low (27)

Mitigation Measures

- Restrict clearing to only essential areas.
- Rehabilitate disturbed areas post-construction with native vegetation.
- Consolidate storage areas and use natural topography to conceal machinery where feasible.
- Use colour-coordinated materials to blend temporary structures with the environment.
- Use directional or shielded lighting to minimize visual impact in dark-sky areas.
- Ensure all temporary structures, camps, and equipment are removed promptly post-construction.

Impact: The construction and upgrades of the Ferrum Substation and associated infrastructure directly affect the visual integrity of the surrounding landscape. The substation's expanded footprint, with additional high-voltage equipment and supporting structures, introduces prominent vertical and industrial elements. In areas with high scenic or cultural value, this infrastructure can diminish the unique sense of place and alter the natural aesthetic character of the region.

No	Negative	2	2	6	4	3	Medium (40)
Yes	Negative	2	2	4	3	3	Low (24)

Mitigation Measures

- Limit vegetation clearance to essential areas.
- Screen active construction sites using temporary barriers.
- Restore disturbed areas with indigenous vegetation post-construction.
- Design substation elements to blend with the surrounding landscape using neutral, non-reflective materials.

- Establish a buffer zone with indigenous vegetation to minimize visual intrusion.
- Implement lighting systems that minimize light pollution and glare.

Impact: The construction and upgrades of the Mookodi Substation and associated infrastructure directly affect the visual integrity of the surrounding landscape. The substation's expanded footprint, with additional high-voltage equipment and supporting structures, introduces prominent vertical and industrial elements. In areas with high scenic or cultural value, this infrastructure can diminish the unique sense of place and alter the natural aesthetic character of the region.

No	Negative	2	2	6	4	4	Medium (40)
Yes	Negative	2	2	4	3	3	Low (24)

Mitigation Measures

- Minimize vegetation clearing and rehabilitate disturbed areas.
- Implement dust suppression and noise control measures.
- Limit construction activities to working hours.
- Use natural colours and finishes to reduce visual intrusion.
- Screen the substation with indigenous vegetation.
- Monitor and maintain the surrounding environment to prevent degradation

9.4.11 Inadequate landscaping and reshaping

Impact: Inadequate final landscaping and reshaping may result in sedimentation of water resources

Corrective measures	**Impact rating criteria**						**Significance**
	Nature	**Extent**	**Duration**	**Magnitude**	**Probability**	**Reversibility**	
No	Negative	2	2	4	3	3	Low (24)
Yes	Negative	2	2	2	2	2	Low (12)

Mitigation Measures:

- Any exposed earth should be rehabilitated promptly by planting suitable vegetation (vigorous indigenous grasses) to protect the exposed soil.
- Compacted areas should be loosened and seeded as necessary.
- All waste material should be removed from site and disposed of at a registered waste disposal facility.
- Waste that can be reused should be removed and stored by the contractor off – site.
- All spillages should be cleaned up and waste disposed as hazardous waste.
- Temporary structures should be removed from site and stored off-site by the Contractor.
- No material which was brought by the Contractor will be left on site.

9.4.12 Socio-economic impacts

Impact: Traffic congestion on private and public roads							
Corrective measures	**Impact rating criteria**						**Significance**
	Nature	**Extent**	**Duration**	**Magnitude**	**Probability**	**Reversibility**	
No	Negative	3	2	4	3	3	Low (27)
Yes	Negative	2	2	2	2	2	Low (12)
Impact: Waged Labor/ Job creation							
No	Positive	2	2	6	5	2	Medium (50)
Yes	Positive	3	2	8	5	2	High (65)
Impact: Construction of the proposed project is expected to lead to community capacity building, as the project can create opportunities for residents through training, coaching and skill transfer							
No	Positive	1	1	4	4	2	Low (24)
Yes	Positive	2	2	8	5	2	Medium (60)
Impact: Local economy will benefit from the short-term socio-economic spin offs such as increased buying power around the construction sites. The presence of temporary workers may provide a small incentive to the local economy if housing for these workers can be found locally, thereby boosting the local economy through the rent paid.							
No	Positive	1	1	4	4	2	Low (24)
Yes	Positive	1	2	8	5	2	Medium (55)
Impact: The influx may also raise concerns, especially in towns, as the labourers from outside may be held accountable for criminal activity during construction**.**							
No	Negative	3	3	8	3	3	Medium (42)
Yes	Negative	2	2	4	2	1	Low (16)
Mitigation Measures: **Traffic** • The current existing roads should be used to access the powerline.							

- The necessary traffic control signage should be installed on site.
- Delivery of material must be outside of peak hours to prevent traffic congestion.
- Should temporary roads be required, these should agree with the landowners.
- Powerline servitude road should be developed and used as per the agreement with the landowners.
- Reduce speed to prevent animal road kills.

Waged Labor

- Hiring should prioritize the nearby communities. If not, enmity, contempt, or anger toward the endeavour may grow.
- The contractor(s) should be upfront about the few work opportunities that will be created and should not set unreasonable expectations for employment opportunities.

Local Economy

- Where possible, the contractor should consider buying material from local SMME's.

Influx of workers

- Maximising the use of local labour can make outsiders to realise that employment opportunities might not be readily available, and that recruitment is not taking place unsystematically. In addition, employment should be made through local community structures. No jobs will be created during the operational phase of the project and will thus be no influx of jobseekers.

9.5 Impact Assessment During Operation Phase

9.5.1 Avifauna

Impact: Collisions with powerlines							
Corrective measures	**Impact rating criteria**						**Significance**
	Nature	**Extent**	**Duration**	**Magnitude**	**Probability**	**Reversibility**	
No	Negative	3	5	8	4	4	High (64)
Yes	Negative	2	4	6	3	3	Medium (36)
Impact: Electrocution due to powerlines							
No	Negative	3	5	8	4	4	High (64)
Yes	Negative	2	4	6	2	3	Low (24)
Impact: Direct mortality from roadkills, persecution or poaching of avifauna species and collection of eggs							
No	Negative	3	4	6	3	2	Medium (39)
Yes	Negative	1	3	2	2	2	Low (12)
Impact: Displacement or death of SCCs							

No	Negative	3	5	8	3	3	Medium (48)
Yes	Negative	1	4	4	2	2	Low (18)

Mitigation Measures:

- NTCSA line and servitude managers are requested to report all bird collisions encountered during routine line patrols of the 400kV power line to the Eskom-Endangered Wildlife Trust Strategic Partnership.
- Bird flight diverters to be maintained on sections of power line during the operational life span of the 400kV power line.

9.5.2 Impact on soil

Impact: Maintenance of infrastructure (powerlines and roads) may result in soil erosion

Corrective measures	Impact rating criteria						Significance
	Nature	Extent	Duration	Magnitude	Probability	Reversibility	
No	Negative	2	3	4	3	2	Low (27)
Yes	Negative	2	2	2	2	2	Low (12

Mitigation Measures:

- As far as possible all access roads should use existing service road.

9.5.3 Impact on water resources

Impact: Movement of vehicles across wetland crossings (culverts) may result in sedimentation

Corrective measures	Impact rating criteria						Significance
	Nature	Extent	Duration	Magnitude	Probability	Reversibility	
No	Negative	3	3	6	3	3	Medium (36)
Yes	Negative	2	2	4	2	2	Low (16)

Mitigation Measures:

- As far as possible all access roads should use existing service road.

9.5.4 Establishment of Alien Species

Impact: Establishment of alien plants on disturbed areas

Corrective measures	Impact rating criteria						Significance
	Nature	Extent	Duration	Magnitude	Probability	Reversibility	
No	Negative	2	2	4	3	2	Low (24)
Yes	Negative	1	1	2	2	1	Low (8)

Mitigation Measures:

- An alien invasive Plant Management Plan needs to be implemented post construction to control current invaded areas and prevent the growth of invasives on cleared areas.

9.5.5 Impact on Visual Resources

Impact: : The presence of the powerline and associated infrastructure directly alter the natural landscape's visual integrity. The powerline's prominence in the landscape, especially in areas of high scenic or cultural value, can erode the unique sense of place associated with the region.

Corrective measures	Impact rating criteria						Significance
	Nature	Extent	Duration	Magnitude	Probability	Reversibility	
No	Negative	3	4	8	4	3	Medium (60)
Yes	Negative	2	4	6	3	3	Medium (36)

Mitigation Measures

- Use colour-coordinated materials to blend temporary structures with the environment.
- Use directional or shielded lighting to minimize visual impact in dark-sky areas.

Impact: The substation's expanded footprint (Ferrum), with additional high-voltage equipment and supporting structures, introduces prominent vertical and industrial elements. In areas with high scenic or cultural value, this infrastructure can diminish the unique sense of place and alter the natural aesthetic character of the region.

No	Negative	3	4	8	5	3	High (75)
Yes	Negative	3	4	6	3	3	Medium (39)

Mitigation Measures

- Establish a buffer zone with indigenous vegetation to minimize visual intrusion.
- Implement lighting systems that minimize light pollution and glare.

Impact: During operations, the infrastructure (Mookodi)will remain functional and visible, contributing to the region's energy stability.

No	Negative	2	4	6	5	3	Medium (30)
Yes	Negative	2	4	6	3	3	Medium (36)

Mitigation Measures

- Use natural colours and finishes to reduce visual intrusion.
- Screen the substation with indigenous vegetation.
- Monitor and maintain the surrounding environment to prevent degradation

9.6 Assessment of Cumulative Impacts

Cumulative impacts are assessed within the context of the extent of the proposed PAOI, other developments and activities in the area (existing and proposed) and general habitat loss and disturbance resulting from any other anthropogenic activities in the area. The impacts of projects are often assessed by comparing the post-project situation to a pre-existing baseline. Where projects can be considered in isolation this provides a good method of assessing a project's impact. However, in areas where baselines have already been affected, or where future development will continue to add to the impacts in an area or region, it is appropriate to consider the cumulative effects of development or disturbance activities. This is similar to the concept of shifting baselines, which describes how the environmental baseline at a specific point in time may actually represent a significant change from the original state of the system. (The Biodiversity Company, 2024)

The role of the cumulative assessment is to test if such impacts are relevant to the proposed project in the proposed location (i.e., whether the addition of the proposed project in the area will increase the impact). This section addresses whether the construction of the proposed development will result in:

- Unacceptable risk
- Unacceptable loss
- Complete or whole-scale changes to the environment
- Unacceptable increase in impact

The Cumulative Impact Assessment (CIA) study for proposed project has been conducted following the process specified by DEAT Cumulative Effects Assessment, Integrated Environmental Management, Information Series 7 and the IFC's Good Practice Handbook on the Cumulative Impact Assessment and Management: Guidance for the Private Sector in Emerging Markets. The figure below illustrates the CIA process that was adopted from IFC.

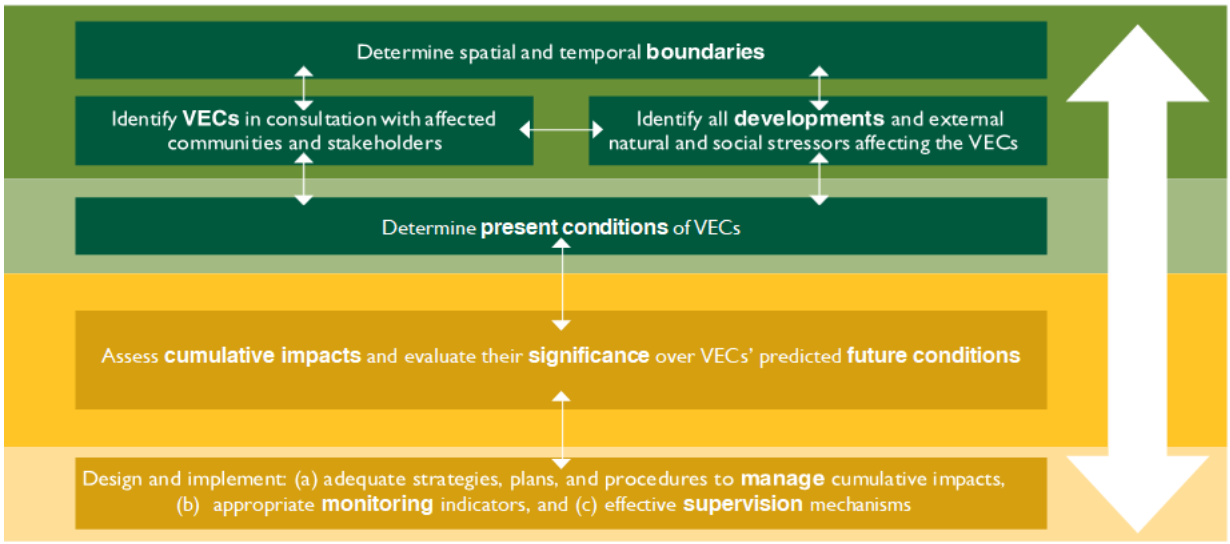


Figure 9-2: A rapid cumulative impact assessment (RCIA) followed (IFC World Bank Group, 2013)

9.6.1 Spatial Boundary

The influence area is the 30km radius of the proposed powerline and includes existing and planned powerlines and renewable energy plants. The area surrounding the Ferrum and Mookodi substations is characterised by existing operational powerlines. Further, there are also solar farms that exists and some that have been authorised. As a result, the impacts of the proposed project will add onto other existing impacts caused by the afore-mentioned facilities. Refer to Figure and Table 9-4 below for other existing and planned infrastructure near the proposed site.

Figure 9-3: Authorised Renewable Energy Plants and Existing Eskom Powerlines

9.6.2 Temporal Boundaries

Regarding the temporal boundary of the study, it was considered to be the entire period of different phases of planning, construction and operation. The timeframe of the construction phase is two years after which operation will commence. It is assumed that the powerlines operation will coincide with the construction of some of the authorised renewable plants and associated infrastructure.

9.6.3 Potential Environmental Resources to be considered in the Cumulative Impact Assessment

When determining the resources and impacts assessed, the feedback from the initial comments from stakeholders were considered. In addition, the Terms of reference for the specialist also specified the need to undertake a cumulative impact assessment for the respective environmental attributes. This will also be augmented by the issues that will be raised during the public meetings. Based on the comments and specialist assessments, the following aspects have been deemed to be significant:

i. Vegetation, CBAs and ESAs
ii. Avifauna
iii. Agriculture

iv. Freshwater
v. Socio-economic (Jobs)
vi. Visual Resources

9.6.4 Other Projects

The table below indicates the projects that have been identified and considered during the cumulative impact assessment. In addition, the significant impacts that have been typically identified for these projects are listed.

Table 9-4: Projects within the 30km radius

NO.	DEVELOPMENTS	STATUS	ANTICIPATED ENVIRONMENTAL ISSUES THAT COULD BE CUMULATIVE
	Renewable Energy Infrastructure		
1	Hyperion 1 & 2 solar PV energy facilities, near Kathu, Northern Cape Province (14/12/16/3/3/2/2019).	Proposed (Authorised)	1,2,5, 6, 9
2	Development of the supporting electrical infrastructure to the Kuruman wind energy facilities in the Northern Cape Province (14/12/16/3/3/1/1965)	Proposed (Authorised)	1,2,5, 6, 9
3	The proposed Gaetsewe solar within the Northern Cape Province (14/12/16/3/3/2/1083)	Proposed (Authorised)	1,2,5, 6, 9
4	Proposed electrical transmission lines associated with Hotazel Solar Park near Hotazel, Northern Cape (14/12/16/3/3/1/1756)	Proposed (Authorised)	1,2,5, 6, 9
5	Solar farm for Bestwood, Kgalagadi District Municipality, Northern Cape Province (12/12/20/1906)	Proposed (Authorised)	1,2,5, 6, 9
6	Proposed Development Of A 11.7MW Photovoltaic Solar Facility , Near Lykso In The North West Province (12/12/20/2660)	Proposed (Authorised)	1,2,5, 6, 9
7	The proposed development of a power line as part of the proposed Waterloo Solar Photovoltaic Energy Facility near Vryburg, North West Province (14/12/16/3/3/1/1552)	Proposed (Authorised)	1,2,5, 6, 9

NO.	DEVELOPMENTS	STATUS	ANTICIPATED ENVIRONMENTAL ISSUES THAT COULD BE CUMULATIVE
8	Development of the 115MW Vryburg Solar 1 PV facility and associated infrastructure in Vryburg (14/12/16/3/3/1/1939)	Proposed (Authorised)	1,2,5, 6, 9
9	Development of the 115MW Vryburg Solar 2 PV facility and associated infrastructure in Vryburg (14/12/16/3/3/1/1940)	Proposed (Authorised)	1,2,5, 6, 9
10	Development of the 115MW Vryburg Solar 3 PV facility and associated infrastructure in Vryburg (14/12/16/3/3/1/1941)	Proposed (Authorised)	1,2,5, 6, 9
11	Proposed construction of the Moeding solar PV facility in the North West Province (14/12/16/3/3/1/1987)	Proposed (Authorised)	1,2,5, 6, 9
12	Proposed Mogara Solar and associated infrastructure in the Northern Cape Province (14/12/16/3/3/2/1082)	Proposed (Authorised)	1,2,5, 6, 9
13	Proposed development of the PV Hyperion solar development 1 near Kathu, Northern Cape Province (14/12/16/3/3/2/1109)	Proposed (Authorised)	1,2,5, 6, 9
14	Proposed development of the PV Hyperion solar development 2 near Kathu, Northern Cape Province (14/12/16/3/3/2/1110)	Proposed (Authorised)	1,2,5, 6, 9
15	Proposed development of the PV Hyperion solar development 3 near Kathu, Northern Cape Province (14/12/16/3/3/2/1111)	Proposed (Authorised)	1,2,5, 6, 9
16	Proposed development of the PV Hyperion solar development 4 near Kathu, Northern Cape Province (14/12/16/3/3/2/1112)	Proposed (Authorised)	1,2,5, 6, 9
17	Construction of the 75MW Photovoltaic facility and associate infrastructure in Naledi (14/12/16/3/3/2/390)	Proposed (Authorised)	1,2,5, 6, 9
18	Proposed renewable energy generation project on Portion 1 of the Farm Shirley No. 367, Kuruman RD, Gamagara Local Municipality, Shirley Solar Park (14/12/16/3/3/2/616)	Proposed (Authorised)	1,2,5, 6, 9

NO.	DEVELOPMENTS	STATUS	ANTICIPATED ENVIRONMENTAL ISSUES THAT COULD BE CUMULATIVE
19	115 MW Sonbesie SEF and its associated infrastructure near Vryburg, Naledi LM, NW Province (14/12/16/3/3/2/915)	Proposed (Authorised)	1,2,5, 6, 9
20	The AMDA Delta solar PV energy facility Vryburg, North West Province (14/12/16/3/3/2/958)	Proposed (Authorised)	1,2,5, 6, 9
21	The proposed establishment of the AMDA foxtrot solar PV energy facility Vryburg, North West Province (14/12/16/3/3/2/959)	Proposed (Authorised)	1,2,5, 6, 9
22	Proposed establishment of the Amda Echo solar PV Energy facility Vryburg, North West Province (14/12/16/3/3/2/960)	Proposed (Authorised)	1,2,5, 6, 9
23	The proposed Hotazel solar park near Hotazel, Northern Cape Province (14/12/16/3/3/2/987)	Proposed (Authorised)	1,2,5, 6, 9
	Electrical Infrastructure		
24	Ferrum-Olien 1 275kV powerline	Existing	1, 2, 5
25	Ferrum-Olien 2 275kV powerline	Existing	1, 2, 5
26	Ferrum-Garona 1 400kV powerline	Existing	1, 2, 5
27	Ferrum-Mookodi 1 400kV powerline	Existing	1, 2, 5
28	Ferrum-Mookodi 2 400kV powerline	Proposed	1, 2, 5
	Source of Information DFFE NTCSA (Transmission Development Plan, 2022)	**Issues** 1. Vegetation 5. Visual Resources 9. Socio-economic 2. Animals 6. Surface Water 3. Air 7. Cultural Resources 4. Agriculture 8. Land use	

9.6.5 Present Conditions of Environmental Resources

The present state of the environmental resources being assessed has been discussed in Section 8.

9.6.6 Cumulative Impact Assessment

9.6.6.1 Biodiversity

The powerline corridor runs through a semi-arid landscape that consists of extensive plains interspersed with intermittent hills, ridges, outcrops, and flattish uplands. The corridor passes through several regional vegetation types of the Eastern Kalahari Bushveld Bioregion. These vegetation types are spread out over a vast area and are not thought to be particularly prone to powerline effects however the proposed and existing powerlines will contribute to the fragmentation of the ESA. Long-term threats to these habitats could, however, result from cumulative moderate effects like the proliferation of solar power facilities in the region.

9.6.6.2 Avifauna

Localised cumulative impacts include those from operations that are close enough to potentially cause additive effects on the local environment or any sensitive receivers (such as nearby large road networks, solar PV facilities, and power infrastructure). Relevant activities and impacts include dust deposition, noise and vibration, loss of corridors or habitat, disruption of waterways, groundwater drawdown, groundwater and surface water depletion, and transport activities. Long-term cumulative impacts associated with the site development activities can lead to the loss of endemic and threatened species, including natural habitat and vegetation types, and these impacts can even lead to the degradation of conserved areas such as the adjacent game parks.

A total area of 30 km surrounding the PAOI were used to assess the total habitat loss in the area and subsequently the cumulative impact. To determine the intact remnant habitat the NBA (2021) remnant spatial data was utilised. The total area within the 30 km buffer around the Project Area amounts to 1741579,9 ha, but when considering the transformation (131472,28 ha) that has taken place within this radius, 1610107,60 ha of intact habitat remains according to the 2021 National Biodiversity Assessment. Therefore, the area within 30 km of the project has experienced approximately 7,55% loss in natural habitat. (9-4). The proposed line in isolation has a Negative Moderate impact significance (Figure 2 5). Limited remnant habitat has been impacted in the 30 km area, however, there are existing powerlines within the 30km area, resulting in the cumulative impact being Negative Moderate.

Table 9-5 The cumulative impacts considered for avifauna

	Total Habitat (ha)	**Total Loss (ha)**	**Tot. Remaining Habitat (ha) (Remnants)**	**Total Historical Loss**
Approximate cumulative effects (Spatial)	1741579,88	131472,28	1610107,60	7,55

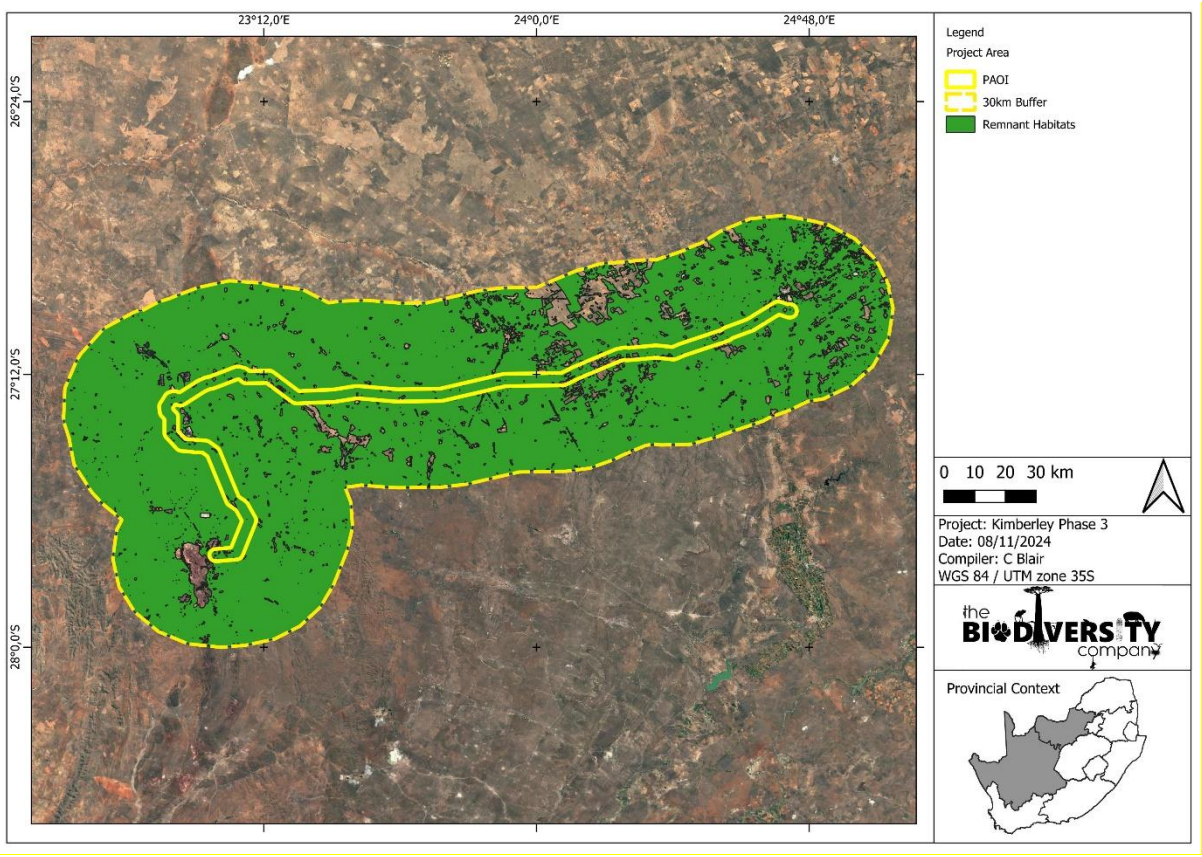


Figure 9-4 Cumulative habitat loss in 30 km surrounding the PAOI

9.6.6.3 Agriculture

In the context of the proposed powerline, the cumulative impacts have been analysed and are deemed to be of low impact significance. This is based on the fact that agricultural activities can continue to operate effectively beneath the powerlines without significant disruption. Consequently, there is no expected net loss in future agricultural production resulting from this proposed development and the currently operating developments of a similar nature. However, the proliferation of solar plants within the 30km radius will result in the loss of grazing land.

9.6.6.4 Freshwater Resources

Localised cumulative impacts include the cumulative effects from operations that are close enough to potentially cause additive effects on the environment or sensitive receivers. The impacts anticipated to contribute towards the degradation of the surrounding watercourses include impaired water quality, erosion and subsequent sedimentation, disturbed and reduced wetland vegetation cover, proliferation of alien and invasive vegetation, disruption of wildlife corridors or habitat and reduced or total loss of

watercourse functionality. While the proposed development is proposed to have a Low impact on the surrounding freshwater systems, provided that sensitive watercourse areas are avoided, the overall cumulative impact is expected to be **Moderate**

9.6.6.5 Socio-economic

Construction and operation of the proposed power line and the various Solar Plants that have been authorised would be a beneficial cumulative impact on surrounding areas, including the availability of electricity nationally and the revenue generated during the construction activities. The significance is expected to be medium to high with revenue being generated for a short timeframe whilst additional electricity will be added to the grid for a long time. Negative cumulative effects are possible when multiple projects occur simultaneously in sufficient proximity that transportation networks, become strained. In addition, regular protests may occur where the community feels they are not given first employment preference, or their concerns are not being addressed. Mitigations measures have been recommended based on community feedback received during consultations.

9.6.6.6 Visual Resources

The visual impacts of the proposed development have been evaluated based on its effect on the visual environment. Visual assessment, as a component of human aesthetics, is one of several social impacts—such as noise and sense of place—that collectively contribute to cumulative impacts. However, this study focuses solely on visual impacts. Since the proposed development is situated on rural agricultural land in a "greenfields" area, there are minimal cumulative impacts from adding to an existing development network within the site boundaries. On the other hand, one could argue for a 100% cumulative impact, as the project introduces an entirely new development in a previously undeveloped area.

Visually, the development connects to external elements such as NTCSA transmission lines, existing villages, roads, and agricultural lands surrounding and intersecting the site. While this connection increases the cumulative impact, it cannot be quantified empirically. Nonetheless, it is generally understood that visual impacts diminish exponentially with distance, whereas doubling the size or scale of a development may amplify its impact disproportionately. Despite this increase in cumulative impact, placing new structures alongside existing ones is often preferable. Such areas are already disturbed, and the overall impact is likely to be less significant than introducing similar structures into untouched landscapes. The cumulative impacts of the Ferrum–Mookodi 400kV Powerline from construction and operations are medium in significance. Construction causes temporary disturbances, while operations

result in permanent visual and ecological changes. In areas with existing infrastructure, these impacts may intensify landscape fragmentation. However, effective mitigation reduces the overall impact, ensuring it remains notable but manageable

9.7 Impact Assessment for the Decommissioning / Closure Phase

It is anticipated that the proposed powerline will stay operational for many decades before it becomes decommissioned. During the decommissioning phase various impacts of which some will be similar to current ones will occur, and these will need to be mitigated. The decommissioning phase will need to comply with all the legislation that will be applicable at the time.

9.8 The possible mitigation measures that could be applied and level of residual risk.

The possible mitigation measures that could be applied are included in Sections 9.3-9.5 and the EMPr attached in Appendices H.

9.9 The outcome of the site selection matrix

Section 6 outlined the basis on which the selected site was made. This included the following:

- The location of the proposed powerline within the Strategic Transmission Corridor. The proposed powerline route has therefore been pre-negotiated, subsequently, there is no other route alternative to be considered.
- During the initial engagements with the I&APs, landowners, authorities, and the public in general no objections have been raised pertaining to the proposed project and the pre-negotiated route.
- The specialist studies undertaken recommended that the project proceed.

In view of the above and all the assessments undertaken, the pre-selected powerline route is favourable and supported.

9.10 If no alternatives, including alternative locations for the activity were investigated, the motivation for not considering such.

The option of constructing the powerline underground was outlined in Section 6 above. The Alternative of installing cables underground has many negative impacts and the most prominent one is the fact that underground cables currently have a limited voltage capacity and cannot carry more than 66kV, whereas

the proposed project requires 400kV. This Alternative was therefore discarded and could not be continued with going forward in the project.

The proposed powerline project will take place in a pre-negotiated route and as such there are no other alternatives that are being considered.

9.11 A concluding statement indicating the preferred alternatives, including preferred location of the activity.

As indicated in Section 6, the Ferrum-Mookodi powerline route is a pre-negotiated route. The specialist works undertaken recommended that the project proceeds provided the mitigation measures outlined are implemented. During the public participation process undertaken, Competent Authorities, Landowners, Non-Governmental Organisation and Interested and Affected Parties were notified of the project, and to date none have objected. As such the pre-negotiated route is favourable for the proposed project.

10 SUMMARY OF THE FINDINGS AND IMPACT MANAGEMENT MEASURES IDENTIFIED IN ANY SPECIALIST REPORT

This section of the report details the information required as per Section 3(1)(k) of Appendix 1 of Environmental Impact Assessment (EIA) Regulations, Government Notice R982 of 2014 (as amended).

(k) where applicable, a summary of the findings and impact management measures identified in any specialist report complying with Appendix 6 to these Regulations and an indication as to how these findings and recommendations have been included in the final report

10.1 Screening Report

The identification and commissioning of the specialist studies was based on the preliminary site inspection undertaken by DIGES, the Screening/ Pre-Feasibility Assessment and the Proponent (NTCSA), to verify the environmental theme sensitivities as indicated in the Screening Reports generated for the powerline. The site sensitivity verification was undertaken as per the Gazetted General Requirement Assessment Protocols. Reference is made to the Site Sensitivity Verification and the Screening Reports attached in Appendices D-1 and G.

10.2 Site Sensitivity Verification Requirements

In addition, to the specialist studies indicated in the Screening Tool Report (STR), Social Impact Assessment was also commissioned. The Specialist studies that have been undertaken have been based on the Gazetted Protocols published in 2020. Where no protocol exists for a specific theme, the assessment and reporting of impacts on that feature or proposed area of development was done in accordance with Appendix 6 of the NEMA EIA Regulations Government Notice R982 of 2014 as amended. The requirements per theme are as follows:

10.2.1 Agriculture Assessment

The STR classifies the sensitivity regarding agriculture as high for the powerline. The specialist has however revised the sensitivity to low due the soil's suitability for successful dryland agriculture is low due to climatic constraints and a lack of irrigation options. The Agricultural protocol indicates a site identified as very high or high will require an Agricultural Agro-Ecosystem Specialist Assessment unless the impact is from an electricity pylon, then an Agriculture Compliance Statement must be submitted with the report. As the impacts are associated with pylons and the verification undertaken by the specialist has rated the sensitivity as low, a specialist was commissioned to compile the Statement. Table 1, Section 3, indicates the minimum information that is required in an Agricultural Compliance

Statement. In addition to complying with Section 3 of Table 1, the Terms of Reference indicated the need to also consider the following:

i. The soil forms occurring within the study area;
ii. The associated land capability and agricultural sensitivity of the soils occurring within the study area;
iii. Discussion of the land capability and sensitivity in terms of the soils, water availability, surrounding development, and current status of land;
iv. Discussion of potential and actual impacts as a result of the proposed development; and
v. Provide mitigation for the impacts as part of the Environmental Management Programme (EMPr).

The table below summarises the verification and output assessment requirements.

INFRASTRUCTURE	SCREENING TOOL SENSITIVITY	VERIFIED SENSITIVITY	OUTCOME STATEMENT/ PLAN OF STUDY	RELEVANT SECTION MOTIVATING VERIFICATION AND TERMS OF REFERENCE
Powerline	High	Low	Agricultural Compliance Statement	Table 1: Sections 1.2 and 3 of the Agricultural Protocol, Government Notice No. 320 of 20 March 2020.

10.2.2 Landscape/ Visual Impact Assessment

In the STR, no sensitivity level has been applied to the landscape/visual theme. However, based on the classification of the project and known impacts, a Landscape/ Visual Impact Assessment has been identified for inclusion. The EAP concurs with the recommendation since the project region has sparse vegetation, allowing for little absorption of the massive towers into the landscape. As a result, there is a need to assess the visual consequences of infrastructure on the landscape and people and offer strategies to mitigate the negative impacts. A Visual Impact Assessment has been undertaken and the Terms of Reference were:

- Assessing Visual Character by examining the environmental components along the proposed ±260 km route, including topography, vegetation, and existing land uses.
- Identifying Visual Sensitivity by highlighting elements with high visual quality or cultural significance that could be affected by the project.
- Analysing Visual Impacts and evaluating how the transmission line and upgrading the substations might alter the sense of place and visual integrity of the area.
- Determining Visibility and establishing the extent to which the infrastructure will be visible from surrounding areas and critical viewpoints.
- Proposing Mitigation Measures and Recommending strategies to minimize adverse visual impacts and enhance integration with the surrounding environment.

10.2.3 Archaeological and Cultural Impact Assessment

The route for the power line traverses a low sensitivity (low sensitive: green). However, the area is given a very high sensitivity because of the Grade I site which are said to be 5km from the powerline. The sensitivity rating was thus revised from high to low since the Grade 1I site is 10km from the proposed powerline servitude. No other graded sites were noted during the desktop study and field assessment. The Terms of Reference for the study were based on SAHRA's Interim Comments and from 2007 SAHRA and the Minimum Standards: Archaeological and Palaeontological Components of Impact Assessment Reports. The Terms of Reference of the Phase 1 Archaeological Impact Assessment per the Minimum Standards: Archaeological and Palaeontological Components of Impact Assessment Reports are:

- Identify archaeological and cultural heritage sites.
- Assesses their significance.
- Comment on the impact of the development.
- Make recommendations for their mitigation or conservation.

In addition, tower-specific walkdown has been done.

The table below summarises the verification and output assessment requirements.

INFRASTRUCTURE	SCREENING TOOL SENSITIVITY	VERIFIED SENSITIVITY	OUTCOME STATEMENT/ PLAN OF STUDY	RELEVANT SECTION MOTIVATING VERIFICATION AND TERMS OF REFERENCE
Powerline	Very High	Low	- Archaeological and Cultural Heritage Impact Assessment.	- Section 7.2. SAHRA Requirements. - Notification of Intent to Develop

10.2.4 Palaeontological Impact Assessment

According to the STR and the SAHRA PalaeoSensitivity map, the proposed development is located within an area of low, moderate, high and very high Palaeontological sensitivity. Features of high and medium sensitivity have also been recorded in areas the powerline traverses. The site verification confirmed the occurrence of stromatolite-bearing dolomite hence the classification of the study area as having a Very High Palaeontological Sensitivity was validated. The Terms of Reference for the study were based on the NID from SAHRA and the Minimum Standards: Palaeontological Component of Heritage Impact Assessment Reports. The SAHRA Interim comments indicated that a field assessment must be done. The Terms of Reference for the assessments are:

Phase 1 Palaeontological Impact Assessment

- Identify rock units that are found in the study area.

- Assessment of the sensitivity and importance of geological units in terms of their palaeontological significance.
- Description of the characteristics of each rock unit and known palaeontological resources.
- Assessment of the potential impact of the development on the palaeontological resources.
- Recommendation for conservation, if any.

The table below summarises the verification and output assessment requirements.

INFRASTRUCTURE	SCREENING TOOL SENSITIVITY	VERIFIED SENSITIVITY	OUTCOME STATEMENT/ PLAN OF STUDY	RELEVANT SECTION MOTIVATING VERIFICATION AND TERMS OF REFERENCE
Powerline	Very High	Very High	- Phase 1 Palaeontological Impact Assessment.	- Section 7.2. SAHRA Requirements. - Notification of Intent to Develop

10.2.5 Freshwater Assessment

The STR for the powerline has characterized the aquatic sensitivity of the rivers of the project area as 'Very High'. The sensitivities associated with the watercourses include CBAs, ESAs, Rivers, Wetland NFEPAs, Strategic Water Source Area's as well as being freshwater ecosystem priority areas (quinary catchments). The site verification undertaken by a registered aquatic ecologist confirmed the assigned sensitivity. Section 1.1.1 of the Protocol for the Specialist Assessment and Minimum Report Content Requirements for Environmental Impacts on Aquatic Biodiversity, Government Notice No. 320 of 20 March 2020 indicates that where a "very high sensitivity" is indicated, an Aquatic Biodiversity Specialist Assessment must be undertaken per Section 2 in Table 1.

In addition, as the ESAs indicated in the Screening Report under Terrestrial Biodiversity are attributed to the aquatic ecosystems, these were addressed under the aquatic biodiversity theme. The table below summarises the verification.

ASPECT	SCREENING TOOL SENSITIVITY	OVERALL VERIFIED SENSITIVITY	OUTCOME STATEMENT/ PLAN OF STUDY	RELEVANT SECTION MOTIVATING VERIFICATION AND TERMS OF REFERENCE
Powerline	Very High	Very High	- Aquatic Biodiversity Specialist Assessment	Section 2 of the Protocol for the Specialist Assessment and Minimum Report

ASPECT	SCREENING TOOL SENSITIVITY	OVERALL VERIFIED SENSITIVITY	OUTCOME STATEMENT/ PLAN OF STUDY	RELEVANT SECTION MOTIVATING VERIFICATION AND TERMS OF REFERENCE
				Content Requirements for Environmental Impacts on Aquatic Biodiversity, Government Notice No. 320

10.2.6 Terrestrial Animal Assessment (Animal and Avifauna)

The site sensitivity as identified by the National Web-Based Environmental Screening Tool shows that the animal species theme over the extent of the project varies form high (in the west), to medium and low in the east. All the species listed for the medium and high sensitivity rating are birds, no mammals, amphibia or reptiles have been noted; hence it has been assumed the fauna sensitivity is low. Though several red data species are indicated in the general animal list for the area, no species were found onsite. As such the low sensitivity assigned in the STR was maintained. Section 1.3 of the amended Animal Species Protocol, Government Notice No. 1150 of 30 October 2020, indicates that an applicant intending to undertake an activity identified in the scope of the protocol on a site identified by the screening tool as being of "low sensitivity" for terrestrial animal species must submit a Terrestrial Animal Species Compliance Statement.

In terms of avifauna, the high sensitivity indicated for the powerline is linked to the potential occurrence of Aves-Falco biarmicus (Lanner Falcon), Aves-Torgos tracheliotos (Lappet-faced vulture) and Aves-Gyps africanus (white-backed vulture). This rating has been confirmed during the site sensitivity assessment as vultures and other SCC were observed on-site. Since the protocol for avifauna is specifically for wind energy projects, the Avifauna Terms of Reference were guided by the Species Environmental Assessment guidelines as well as Section 2 (Table 1) of the amended Animal Species Protocol. In addition, to the assessment, a tower-specific walkdown was undertaken.

The table below summarises the verification.

ASPECT	SCREENING TOOL SENSITIVITY	VERIFIED SENSITIVITY	OUTCOME STATEMENT/ PLAN OF STUDY	RELEVANT SECTION MOTIVATING VERIFICATION AND TERMS OF REFERENCE
Terrestrial Animals	Low	Low	Terrestrial Animal Species Compliance Statement	Table 1: Sections 1.2 and 2 of the amended Animal Species Protocol, Government Notice No. 1150 of 30 October 2020.
Avifauna	High	High	Avifauna Specialist Assessment Report	Table 1: Sections 1.1 and 2 of the amended Animal Species Protocol, Government Notice No. 1150 of 30 October 2020. Species Environmental Assessment guidelines, 2020.

10.2.7 Civil Aviation

The STR has indicated a high civil aviation sensitivity of the project on account of its proximity to various aerodromes, including Kathu (FASS), Black Rock (FABP), Kuruman (FAKU) and Vryburg (FAVB), some of which lie inside the 8-15km trigger distance specified in the DFFE Protocol. The powerline route is also close to restricted airspace denoted FAR71, which is military airspace around the Lohatla SANDF facility.

The Civil Aviation Sensitivity Study amended the sensitivity from high to low. According to Section 1.1.2 (Table 1) of the Civil Aviation Installations, Government Notice No. 320 of March 2020, if site sensitivity verification differs from the designation of “very high”, “high” or “medium” sensitivity on the screening tool and it is found to be of a “low” sensitivity, no further assessment requirements are identified. No further assessment has therefore been done. The summary is given in the table below.

INFRASTRUCTURE	SCREENING TOOL SENSITIVITY	VERIFIED SENSITIVITY	OUTCOME STATEMENT/ PLAN OF STUDY	RELEVANT SECTION MOTIVATING VERIFICATION AND TERMS OF REFERENCE
Powerline	High	Low	No further assessment. SACAA are registered as stakeholders hence all reports will be submitted for their comments.	Table 1 Section 1.1.1 of Protocol for the Specialist Assessment and Minimum Report Content Requirements for Environmental

INFRASTRUCTURE	SCREENING TOOL SENSITIVITY	VERIFIED SENSITIVITY	OUTCOME STATEMENT/ PLAN OF STUDY	RELEVANT SECTION MOTIVATING VERIFICATION AND TERMS OF REFERENCE
				Impacts on Civil Aviation Installations, Government Notice No. 320 of March 2020

10.2.8 Terrestrial Plant Species Assessment

Section 1.2 of the amended Plant Species Protocol, Government Notice No. 1150 of 30 October 2020, indicates that an applicant intending to undertake an activity identified in the scope of this protocol, on a site identified by the screening tool as being of "medium sensitivity" for terrestrial plant species, must submit either a Terrestrial Plant Species Specialist Assessment Report or a Terrestrial Plant Species Compliance Statement, depending on the outcome of a site inspection. The STR rates the plant species theme as having a medium sensitivity due to the presence of Dicoma kurumanii and Barleria media. The site verification undertaken by specialist however indicated that there is a small possibility that either of these species could occur on site, but it is not considered to be likely. In addition, there are no threatened plant species that occur on site, and none that are likely to occur in the corridor. Based on the information gathered, the designation of the plant species sensitivity was amended to low. The table below summarises the requirements for the theme.

INFRASTRUCTURE	SCREENING TOOL SENSITIVITY	VERIFIED SENSITIVITY	OUTCOME STATEMENT/ PLAN OF STUDY	RELEVANT SECTION MOTIVATING VERIFICATION AND TERMS OF REFERENCE
Powerline	Medium	Low	Terrestrial Plant Species Compliance Statement	Table 1: Sections 1.2 and 5 of the Plant Species Protocol for the Specialist Assessment, Government Notice No. 1150 of 30 October 2020.

10.2.9 RFI and EMI Assessment

The Astronomy Geographic Advantage (AGA) Act of 2007 and its regulations protect areas suitable for astronomy studies by, among others, regulating radio and electrical interference. overleaf. The proposed development area is not located within any Astronomy Advantage Area as it is approximately 206km from the Karoo Central Astronomy Advantage Areas, however there is an SKA receptor 30km north of the servitude. A Sentech High Power Terrestrial Broadcasting Facility is 10 km of the corridor, and no weather radar installations have been indicated within the 60km distance limit. The South African Radio Astronomy Observatory (SARAO) and Sentech are registered stakeholders. As a norm, NTCSA has adopted a maximum L50 wet audible noise limit of 53.1 audible decibels (dBA) at the edge

of the servitudes; however, this is subjective, dependent on the area classification and time of the day and week.

10.2.10 Geotechnical

The screening tool does not indicate the sensitivity of the geological features; hence, no site sensitivity verification was completed for this project. The servitude underlain by the following: dune sand and aeolian sand in the west and east, surface limestone, dolomite, limestone and chert of the Ghaap Group of the Griqualand West Supergroup. A section of the line that crosses over the hills west of Hotazel, in the Ga-Motsemai region, is underlain by the rocks of the Daniëlskuil Member of the Asbesberge Formation of the Asbestos Hills Subgroup and a small section, southwest of Vryburg, is underlain by calcrete and south of Vryburg there are rocks of the Dwyka Group of the Karoo Supergroup. Based on the geology onsite, no subsidence is expected within the area. However, before the contractor constructs towers, they do soil nomination at tower positions to determine the foundation required for the load. The load encompasses the cable and support structure. In addition, load calculation is done to determine the correct foundation, considering wind, icing and bird load. Therefore, geotechnical investigations will be done after the line design has been completed.

10.2.11 Social

This study has not been indicated as a requirement in the STR and there is no specific Protocol that has been formulated for this theme. The Social Impact Assessment (SIA) has been undertaken to determine the direct and indirect benefits and costs of how the proposed Ferrum-Mookodi 400kV powerline affects the communities and the local municipalities. This entailed the review and updating of the Pre-Feasibility Social Impact Assessment. The approach to the SIA is based on the Guidelines for Social Impact Assessment prepared by Balfour (2007) on behalf of DEA&DP. The key activities to be undertaken as part of the SIA process as embodied in the guidelines included:

- Describing and obtaining an understanding of the proposed project (type, scale, location).
- Collecting baseline data on the current social environment and historical social trends.
- Identifying and collecting data on the Social Impact Assessment variables and social change processes related to the proposed project. This requires consultation with affected individuals and communities.
- Assessing and documenting the significance of social impacts associated with the proposed project.
- Semi-structured interviews with key stakeholders.
- Identification of enhancement and mitigation measures aimed at maximizing opportunities and avoiding and or reducing negative impacts.

The report has been compiled as per Appendix 6 of the NEMA Environmental Impact Assessment (EIA) Regulations, Government Notice R (GNR) 326 of 2017 as amended, as no theme protocol exists for Social Impact Assessment.

10.3 Summary of Specialist Studies

Summaries of the commissioned studies are given in Table 10-1 whilst the detailed reports are attached in Appendices D. The summaries are excerpts from the specialist assessment report.

Table 10-1: Summary of Specialists Findings and Management Measures

Name of the report	Findings and Impact Management Measures Identified	Section of the report where the information is included
Agricultural Compliance Statement	**Excerpt from the Agricultural Compliance Statement attached in Appendix D-8** **Methodology** ▪ The assessment of the study Area's agricultural potential was based on a combination of desktop studies to gather general information, site visits for status quo assessment, soil classification and characterisation, and validation of the information generated from the desktop studies. ▪ A literature review and background study were conducted to gather the study area's predetermined soil, land use, and land capability data. The data was sourced from the Soil and Terrain (SOTER) database and the Natural Agricultural Atlas of South Africa Version 3: ▪ (https://ndagis.nda.agric.za/portal/apps/webappviewer/index.html?id=8b72eb2a25c04660a1ab2b562f6ec0bf) ▪ The desktop assessment was followed by a field investigation to validate the predetermined soil results obtained at the desktop level. The field survey was conducted over three days in November 2024. During that time, soil auger tests were conducted, and soils were classified into soil forms according to the Soil Classification System: A Natural and Anthropogenic System for South Africa Soil Classification System (2018).	Refer to Sections 8, 9, 12 and 14 of this report and Section C of the EMPr attached as Appendix H.

Name of the report	Findings and Impact Management Measures Identified	Section of the report where the information is included

Findings

Based on the observations during the site assessment, the dominant soils within the study area are Clovelly, Plooysburg, Nkonkoni/Hutton, Mispah/Glenrosa, Dundee (associated with the watercourse), and Witbank/Johannesburg. The majority of the soils occurring within the study area meet the conditions for agricultural suitability to a certain extent, and these conditions include:

1. Adequate depth (greater than 60 cm) to accommodate root development for the majority of cultivated crops;
2. Good structure, as in water-stable aggregates, which allows for root penetration and water retention;
3. Sufficient distribution of high-quality and potential soils within the study area to constitute a viable economic management unit and
4. Good climatic conditions, such as sufficient rainfall and sunlight, increase crop variety.

The summary findings of the soils identified in the study area, along with their corresponding land capability and agricultural potential status, are illustrated in Tables 10-2 and 10-3 below.

Table 10-2: Soil forms in hectares (ha) occurring within the study area

Study Area (300 m assessment corridor)				
Soil Forms	**Area (Ha)**	**Percentage (%)**	**Land Capability**	**Agricultural Potential**
Clovelly	9842.54	63.1	Arable (Class II)	High
Nkonkoni/Hutton	3351.22	21.5	Arable (Class III)	Moderately High
PlooysburgTubatse	10005.50	6.4		
Dundee	34.77	0.2	Watercourse (Class V)	Low
Mispah/Glenrosa	1230.10	7.9	Grazing (Class VI)	Moderately Low
Witbank/Johannesburg	129.26	0.8	Wilderness (Class VIII)	Very Low
Total Enclosed	**15 593.40**	**100**		

Table 10-3: Land capability (DAFF, 2016) associated with the soils occurring within the study area.

Soil Form	Land Capability Groups	DAFF (2017) Classification
Clovelly	Arable Land	11. High
Nkonkoni/Hutton	Arable Land	9. Moderate to High
Plooysburg		
Dundee	Watercourse	4. Very Low to Low
Mispah/Glenrosa	Grazing Land	7. Low to Moderate
Witbank/Johannesburg	Wilderness/Disturbed	1. Very Low

The distribution of the dominant soil forms are shown in the maps overleaf, while the soil forms noted on-site are shown in Figure 10-1 to 10-6.

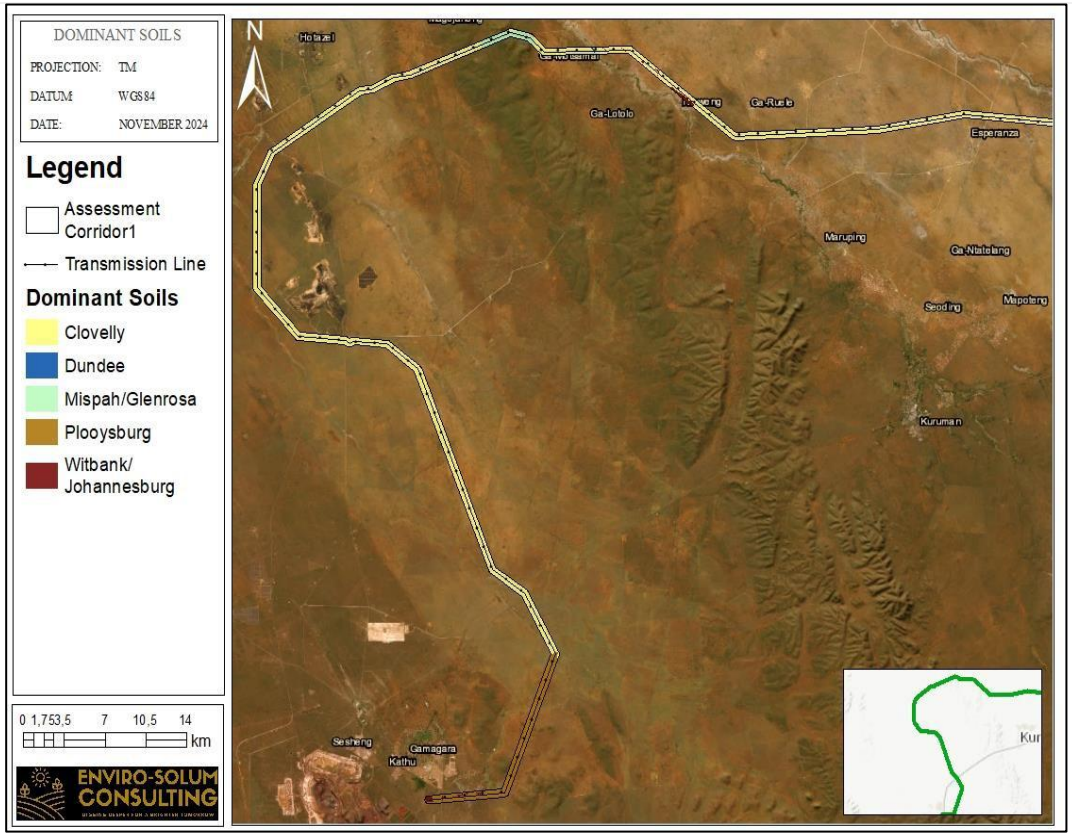


Figure 10-1: Dominant soils form within the western portion of the study area.

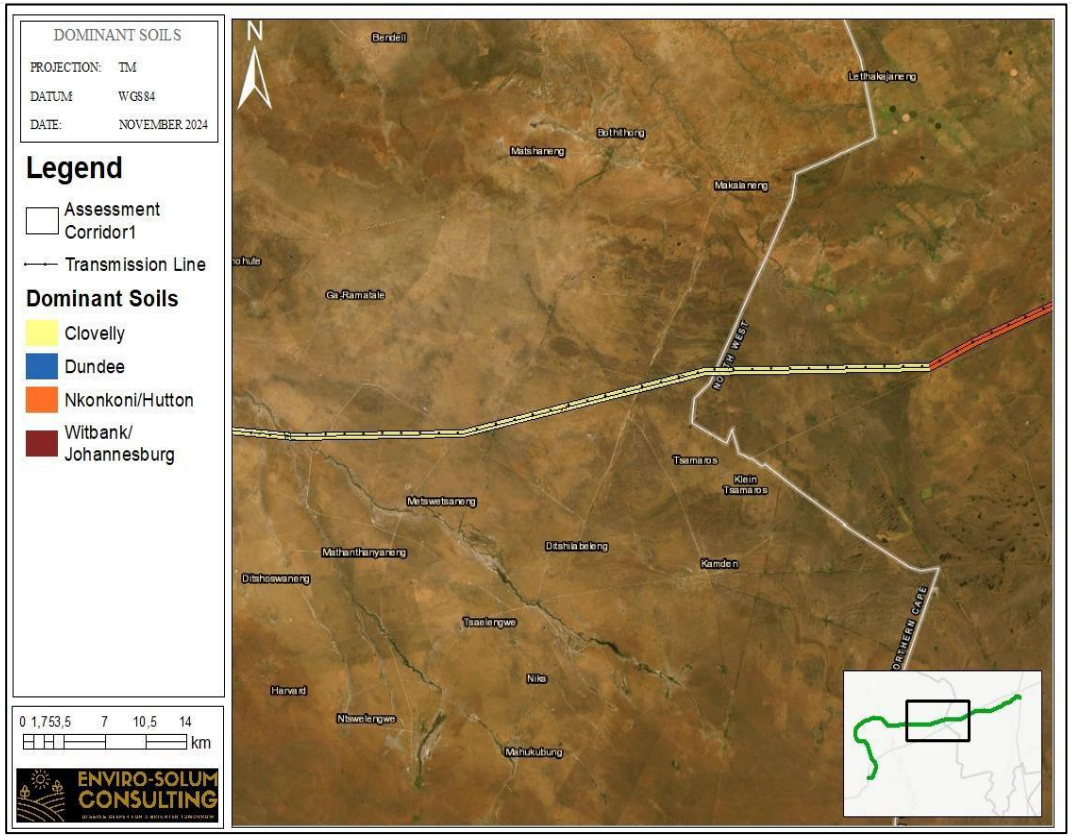


Figure 10-2: Dominant soils form within the middle portion of the study area.

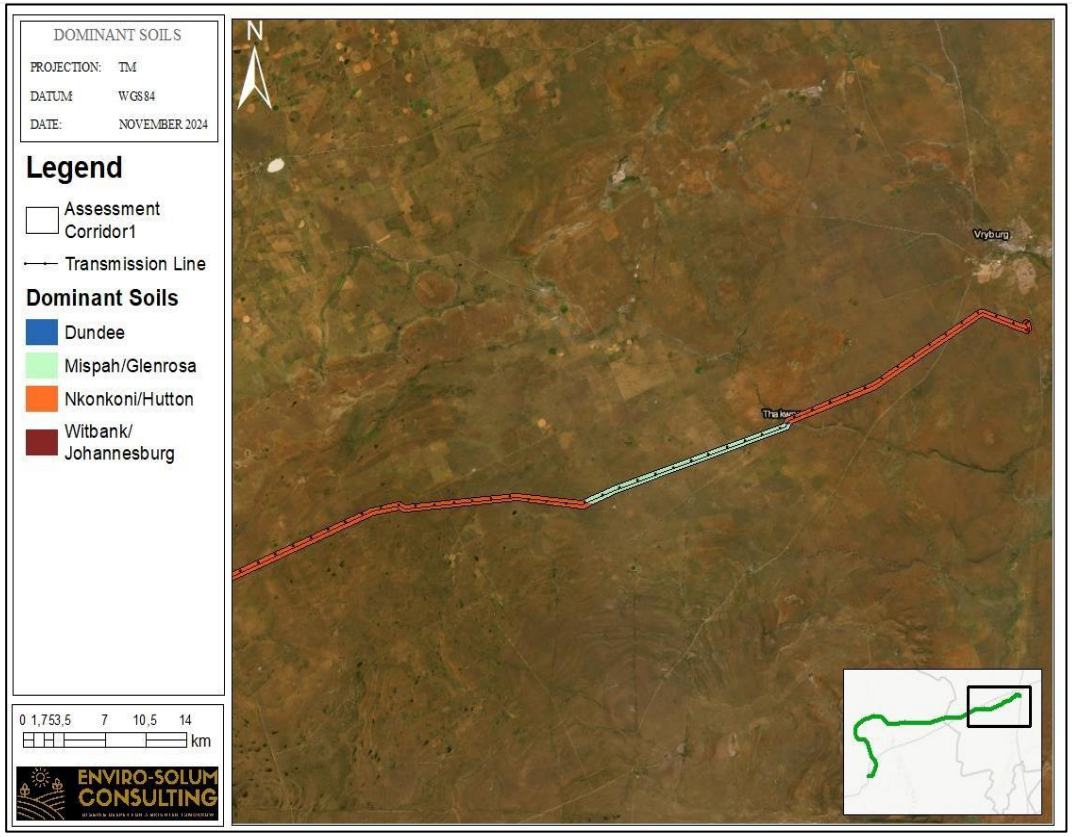


Figure 10-3: Dominant soils form within the eastern portion of the study area.

Figure 10-4: Yellow-brown apedal soils associated with the Clovelly soil formations.

Figure 10-5: View of the red apedal soils and the hard carbonate horizon associated with the Nkonkoni/Hutton and Plooysburg soil formation.

Figure 10-6: View of the identified shallow Mispah/Glenrosa soil forms.

Figure 10-7: View of the identified shallow Mispah/Glenrosa soil forms.

Figure 10-8: View of the identified Dundee soil forms

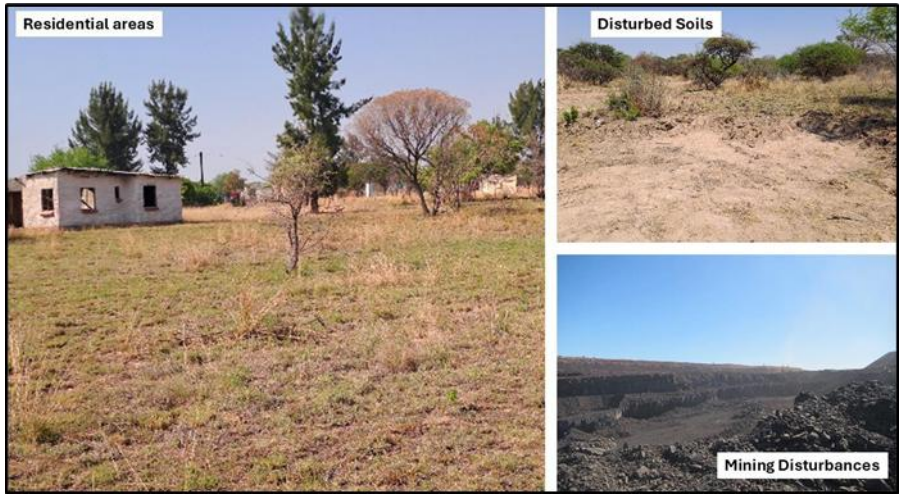


Figure 10-9: Disturbed soils of the Witbank/Johannesburg formation.

Name of the report	Findings and Impact Management Measures Identified	Section of the report where the information is included
	▪ Based on inherent soil properties, the majority of the study area is dominated by arable soils (91.1%) due to the weak apedal structure, which favours root and water penetration at greater depths. However, these soils possess an extremely low clay content. This deficiency has a direct impact on the soils' water-holding capacity, making them less viable for sustained agricultural activities, particularly under dryland farming conditions. ▪ While they could theoretically support some level of irrigation, the very low clay content significantly restricts this potential, as clay plays a key role in retaining moisture. ▪ Given the sandy composition of the soils, careful management and scheduling of water supply are imperative. Without a reliable and sufficient water source, the potential productivity of the area would be severely compromised, as these soils would struggle to maintain optimal moisture levels necessary for healthy crop growth. Consequently, successful irrigation strategies must be implemented to maximise agricultural output. ▪ Considering the overall agricultural potential of the region, it appears to be more conducive to livestock farming rather than crop production. The hot and arid climate characteristics suggest that the land is primarily suited for practices such as game farming or cattle ranching, which are better aligned with the environmental conditions and soil capabilities of the study area. **The Impact Management measures are indicated in Section 12.** **Conclusion** The proposed overhead powerline project is not anticipated to have a detrimental impact on the agricultural activities occurring within the study area, as it will not affect the future capacity of agricultural production in the study area. All existing agricultural operations, particularly those focused on cattle and game farming, will be able	

Name of the report	Findings and Impact Management Measures Identified	Section of the report where the information is included
	to proceed as they currently do without interruption or constraint beneath the powerline. However, it is important to consider that during both the construction and decommissioning phases of the powerline and pylons installation, there may be instances of topsoil loss and land degradation due to the necessary land disturbance. This could pose temporary challenges for land management and agricultural practices in the immediate vicinity. It is crucial for project planners to implement appropriate mitigation strategies to minimise these impacts and ensure that the agricultural land can be restored to its original condition as efficiently as possible following construction activities.	
Animal Species Compliance Statement	**Excerpt from the Terrestrial Animal Compliance Statement attached in Appendix D-2** **Methodology** ▪ The field survey was preceded by a desktop assessment to determine which animals are associated with the study area. ▪ The study was conducted when a physical site walk-down was conducted on 9 – 27 September 2024. ▪ In addition, a general animal list was compiled that will be consolidated in the final report after the walkdown assessment. Prior to the survey, some rain had occurred but had no direct impact on the survey. **Findings** <u>Animal Assessment</u> ▪ Many of the game animals (apart from livestock) in the study area are farmed intensively. These include many of the plain's animals such as springbok, eland blesbok and gemsbok and predators in some areas. ▪ During the assessment, most of the observations were active dens close to the tower positions and include the Hystrix africaeaustralis, Orycteropus afer and Xerus inauris.	Refer to Sections 8, 9, 12 and 14 of this report and Section C of the EMPr attached as Appendix H.

Name of the report	Findings and Impact Management Measures Identified	Section of the report where the information is included
	▪ Animals observed (sightings, scat, tracks or dens) during the walkdown include: Cryptomys hottentotus, Fukomys damarensis, Tragelaphus strepsiceros, Canis mesomelas, Antidorcas marsupialis Raphicerus campestris, Sylvicapra grimmia, Cynictis penicillata, Herpestes sanguineus, Hystrix africaeaustralis, Lepus capensis, Lepus saxatilis, Orycteropus afer, Elephantulus brachyrhynchus, Pedetes capensis, Procavia capensis, Xerus inauris, Phacochoerus africanus, Stigmochelys pardalis, Agama aculeata aculeata, Caracal caracal, Pedioplanis namaquensis, Bitis arietans, Acraea spp. and Stegodyphus dumicola.  	

Name of the report	Findings and Impact Management Measures Identified	Section of the report where the information is included
	  Figure 10-10: Examples of animals or signs found during the survey (BioAssets cc, 2024) <u>Habitat assessment</u> ▪ The larger part of the study area is modified by historic and current land use activities. ▪ The main impacts are over grazing, trampling, erosion, poor fire regimes and wood harvesting. The activity related to farming has impacted on the animal population is the area. ▪ Competition for food and hunting with rifles, snares and dogs have impacted on the larger animals in the area. ▪ The smaller animals are present but there are areas where little activities e.g. observation, dens of scat were noted. Game fences are increasing and many fences with jackal proof fencing limit the migration of many species. Only one tortoise was observed during the survey which is a concern.	

Name of the report	Findings and Impact Management Measures Identified	Section of the report where the information is included
	▪ The area has many tree clumps that are considered to be important habitat for animals in general. The tree clumps are small “islands” in the larger grassland landscape. These clumps have originated on termite mound and have utilised the higher presence of nutrients to establish the trees. It has been noted that many species utilise the mounds as habitat, i.e. for dens, food resources and cover from predators.  	

Name of the report	Findings and Impact Management Measures Identified	Section of the report where the information is included

Figure 10-11: Habitats that animals utilise in the landscape

Red Data Species

A number of red data species has been compiled for the general animal list for the area. The species include:

- **Hippotragus equinus** (EN) - Inhabit savannah woodlands and grasslands within the bushveld and Lowveld of southern Africa and prefer habitats with a cover of high grasses and woody plants which play an important role for both grazing and calving. As such, they may be especially sensitive to changes in grass height and composition, as Roan Antelope rely on grass to camouflage their young and for foraging. No free roaming animals in the area, none were noted on any of the properties evaluated.
- **Hippotragus niger** (VU) – A species that frequents the woodland/grassland ecotone and they are selective feeders with a preference for fresh growth grasses (40 - 140 mm) and are dependent on drinking water, travelling

Name of the report	Findings and Impact Management Measures Identified	Section of the report where the information is included
	to water at 2 - 4-day intervals. Burns that provide green re-growth and/or vleis are key resource areas in the dry season. No free roaming animals in the area, none were noted on any of the properties evaluated. ▪ **Lycaon pictus** (EN) - Wild Dogs can survive in most habitat types as long as the habitat is large enough, contains sufficient suitable prey and is free from direct threats such as accidental and deliberate persecution. No free roaming animals in the area, none were noted on any of the properties evaluated. ▪ **Atelerix frontalis** (NT) - Distribution mainly falls within savannah and grassland vegetation types, within which it is found in a wide variety of semi-arid and sub-temperate habitats, including scrub brush, western Karoo, grassland and suburban gardens. They require ample ground cover for cover, nesting and insect food sources. None observed during the assessment however they can occur in villages, town or in gardens on farms. ▪ **Acinonyx jubatus** (VU) - Cheetahs are habitat generalists and as such can survive where sufficient food is available and threats are tolerable. In South Africa, the free-roaming population and the two largest protected populations (KNP and KTP) occur in the Savannah biome. In addition, metapopulation reserves are in Savannah, Thicket, Grasslands, Nama Karoo, Fynbos and Succulent Karoo. No free roaming animals in the area, none were noted on any of the properties evaluated. ▪ **Felis nigripes** (VU) - It is a specialist of open, short grass areas with an abundance of small rodents and ground-roosting birds. It inhabits dry, open savannah, grasslands and Karoo semi-desert with sparse shrub and tree cover and a mean annual rainfall of between 100 and 500 mm at altitudes up to 2,000 m asl. It is not found in the driest and sandiest parts of the Namib and Kalahari Deserts. Suitable habitats present in the study area however none observed during the assessment.	

Name of the report	Findings and Impact Management Measures Identified	Section of the report where the information is included
	▪ **Panthera pardus** (VU) – has a wide habitat tolerance, including woodland, grassland savannah and mountain habitats but also occur widely in coastal scrub, shrubland and semi-desert. Densely wooded and rocky areas are preferred as choice habitat types. No evidence seen of the species in the area. ▪ **Crocuta crocuta** (NT) – This is predominantly a savannah species and occur in most habitat types including semi-desert, open woodland and dense dry woodlands. In many parts of its range, it occurs in close association with human habitation. No free roaming animals in the area, none were noted on any of the properties evaluated. ▪ **Smutsia temminckii** (VU) – This solitary, terrestrial species is present in various woodland and savannah habitats, preferring arid and mesic savannah and semi-arid environments at lower altitudes, often with thick undergrowth, where average annual rainfall ranges between 250 and 1,400 mm, It also occur in floodplain grassland, rocky slopes and sandveld up to 1,700 m, but are absent from Karroid regions, tropical and coastal forests, Highveld grassland and coastal regions. Can occur in the area, but it is known to have been persecuted by illegal hunting. ▪ **Otomys auratus** (NT) - This species is associated with mesic grasslands and wetlands within alpine, montane and sub-montane regions, typically occurring in dense vegetation in close proximity to water. In the Drakensberg Range, O. angoniensis occurs on the lower slopes in savannah habitats, O. auratus and O. laminatus occur at mid-elevation in grasslands and O. sloggetti at the highest elevations in alpine heath habitats. No suitable habitat observed during the assessment. ▪ **Rhinolophus denti** (NT) – A species associated with arid savannah habitats where suitable roosting sites occur, typically restricting it to broken country with rocky outcrops or suitable caves and even the most	

Name of the report	Findings and Impact Management Measures Identified	Section of the report where the information is included
	southeasterly record in Africa comes from the drier southwestern part of the Free State Province. Colonies are largely dependent on caves, caverns, crevices in rocky outcrops, abandoned mines. Can occur in the area, limited habitat associated with the corridor assessed. ▪ **Miniopterus schreibersii** (NT) - A species found to roost in caves, rock clefts, culverts, caverns, and galleries. Can occur in the area, limited habitat associated with the corridor assessed. Red data species not listed but recorded on other databases. ▪ **Aonyx capensis** (NT) - Cape Clawless Otters are predominantly aquatic and seldom found far from permanent water. Fresh water is an essential habitat requirement, not only for drinking but also for rinsing their fur. Not listed but a roadkill was recorded in April 2024 on the N14 near Vryburg. **Impact management measures identified are detailed in Section 12.**	
Avifauna Impact Assessment Report (Screening, BAR)	**Excerpt from the Avifauna Impact Assessments attached in Appendices D-3a and D-3b** **Methodology** ▪ Desktop Assessment: The avifauna assessment completed by Mora Ecological Services, 2021 for the proposed Ferrum-Mookodi powerline and substation upgrades was considered for background information. ▪ Walkdown: The walkdown assessment covered most of the powerline, but some sections had access restrictions. However, this might be expected, and mitigation measures have been recommended despite not	Refer to Sections 8, 9, 12 and 14 of this report and Section C of the EMPr attached as Appendix H.

Name of the report	Findings and Impact Management Measures Identified	Section of the report where the information is included

being thoroughly assessed. The walkdown included searching for sensitive habitats, nests and any avifauna SCC believed to occur within the area being searched.

Findings

Species List of the Field Survey

The field survey was undertaken from the 9th to 20th of September 2024, and 14th to 16th of October 2024, to determine the presence of Species of Conservation Concern (SCC). Effort was made to cover all the different habitat types, within the limits of time and access. During the assessment, three SCCs, were recorded during this field survey (Table 10-4).

Table 10-4 Summary of Species of Conservation Concern recorded within and around the proposed development

Common Name	Scientific Name	Regional*	Global+	Likelihood of occurrence
Kori Bustard	*Ardeotis kori*	NT	NT	Confirmed
Lappet-faced Vulture	*Torgos tracheliotos*	EN	EN	Confirmed
White-backed Vulture	*Gyps africanus*	CR	CR	Confirmed

Risk Species

Name of the report	Findings and Impact Management Measures Identified	Section of the report where the information is included

Priority Species are considered threatened, rare or prone to impacts from energy development (Ralston Paton *et al*, 2017). TBC has defined Risk Species as those species that are listed in Ralston Paton *et al* (2017) as Priority Species, as well as those listed in the Eskom poster of Birds and Power Lines (Eskom and EWT, no date), which together include all species, common or red-listed that may be at risk of collision, electrocution, or habitat loss as a result of the proposed activity. Twenty (20) of the species observed within the PAOI are regarded as priority species (Table 10-5).

Table 10-5 Summary of Priority Species recorded within and around the proposed development.

Common Name	Scientific Name	Collision	Electrocution	Habitat Loss
Black-chested Snake Eagle	*Circaetus pectoralis*	x	x	
Cape Crow	*Corvus capensis*	x	x	
Egyptian Goose	*Alopochen aegyptiaca*	x	x	
Gabar Goshawk	*Micronisus gabar*	x	x	
Greater Kestrel	*Falco rupicoloides*		x	
Hadada Ibis	*Bostrychia hagedash*		x	
Hamerkop	*Scopus umbretta*	x		
Helmeted Guineafowl	*Numida meleagris*	x	x	
Kori Bustard	*Ardeotis kori*	x	x	x
Lappet-faced Vulture	*Torgos tracheliotos*	x	x	x
Little Egret	*Egretta garzetta*	x	x	
Northern Black Korhaan	*Afrotis afraoides*	x		

Name of the report	Findings and Impact Management Measures Identified					Section of the report where the information is included
	Pale Chanting Goshawk	*Melierax canorus*	x	x		
	Pied Crow	*Corvus albus*	x	x		
	Red-billed Teal	*Anas erythrorhyncha*	x			
	Red-crested Korhaan	*Lophotis ruficrista*	x			
	South African Shelduck	*Tadorna cana*	x			
	Swainson's Spurfowl	*Pternistis swainsonii*	x			
	Western Barn Owl	*Tyto alba*	x	x		
	White-backed Vulture	*Gyps africanus*	x	x	x	
	Yellow-billed Duck	*Anas undulata*	x			

Dominant Species

Table 10-6 provides the relative abundance of the dominant species as well as the frequency with which each species appeared in the point count samples. The most abundant species was the Sociable Weaver (*Philetairus socius*), with a relative abundance of 0.137 and a frequency of occurrence of 5.263%.

Table 10-6 Relative abundance and frequency of occurrence of dominant avifauna species recorded during the standardised point counts within and around the proposed development during the field survey.

Common Name	Scientific Name	RD (Regional, Global)	Relative abundance	Frequency (%)
Sociable Weaver	*Philetairus socius*	Ploceidae	0,137	5,263
Chestnut-vented Warbler	*Curruca subcoerulea*	Sylviidae	0,049	44,737
Yellow Canary	*Crithagra flaviventris*	Fringillidae	0,047	21,053
Kalahari Scrub Robin	*Cercotrichas paena*	Muscicapidae	0,044	50,000

Name of the report	Findings and Impact Management Measures Identified					Section of the report where the information is included
	Little Swift	*Apus affinis*	Apodidae	0,042	2,632	
	Red-faced Mousebird	*Urocolius indicus*	Coliidae	0,036	13,158	
	Ring-necked Dove	*Streptopelia capicola*	Columbidae	0,034	34,211	
	Black-chested Prinia	*Prinia flavicans*	Cisticolidae	0,034	31,579	
	Black-throated Canary	*Crithagra atrogularis*	Fringillidae	0,032	7,895	
	Pied Crow	*Corvus albus*	Corvidae	0,030	18,421	
	Cape Penduline Tit	*Anthoscopus minutus*	Remizidae	0,027	23,684	
	Fawn-colored Lark	*Calendulauda africanoides*	Alaudidae	0,027	28,947	
	Scaly-feathered Weaver	*Sporopipes squamifrons*	Ploceidae	0,027	10,526	
	European Bee-eater	*Merops apiaster*	Meropidae	0,027	7,895	
	White-backed Mousebird	*Colius colius*	Coliidae	0,023	2,632	
	Yellow-bellied Eremomela	*Eremomela icteropygialis*	Cisticolidae	0,021	21,053	
	White-backed Vulture	*Gyps africanus*	Accipitridae	0,021	2,632	
	Red-crested Korhaan	*Lophotis ruficrista*	Otididae	0,017	21,053	
	Violet-eared Waxbill	*Granatina granatina*	Estrildidae	0,015	13,158	
	Tinkling Cisticola	*Cisticola rufilatus*	Cisticolidae	0,015	15,789	
	Marico Sunbird	*Cinnyris mariquensis*	Nectariniidae	0,015	10,526	
	Cape Starling	*Lamprotornis nitens*	Sturnidae	0,013	10,526	
	Pririt Batis	*Batis pririt*	Platysteiridae	0,013	13,158	
	Cape Sparrow	*Passer melanurus*	Passeridae	0,008	2,632	
	Southern Fiscal	*Lanius collaris*	Laniidae	0,008	10,526	

Name of the report	Findings and Impact Management Measures Identified					Section of the report where the information is included
	Desert Cisticola	*Cisticola aridulus*	Cisticolidae	0,008	5,263	
	White-browed Sparrow-Weaver	*Plocepasser mahali*	Ploceidae	0,008	5,263	
	Southern Yellow-billed Hornbill	*Tockus leucomelas*	Bucerotidae	0,008	7,895	
	▪ The high numbers of SCC observed, especially vultures, which have collision and electrocution incidents recorded nearby the proposed powerline in the EWT/Eskom Central Incident Register. This results in the project area being classified as high avifaunal Site Ecological Importance (SEI), see Figure 10-13.					

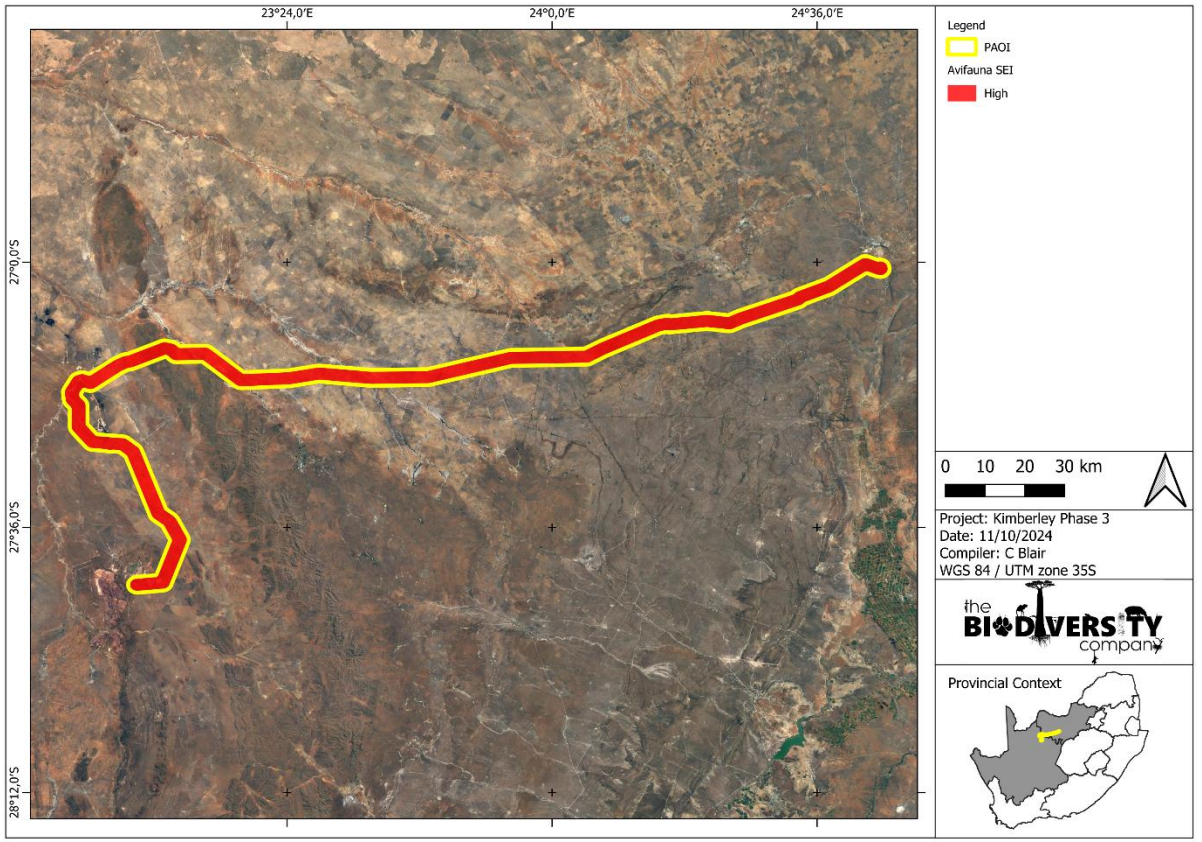


Figure 10-12: Sensitivities of the Ferrum Mookodi powerline project.

The different habitat types within the PAOI were delineated and identified based on observations during the field assessment, and available satellite imagery. These habitat types were assigned Site Ecological Importance (SEI) categories based on their ecological integrity, conservation value, the presence of avifauna species of conservation concern. The SEI for avifauna and the corresponding mitigation guidelines is summarised in Table 10-7.

Name of the report	Findings and Impact Management Measures Identified	Section of the report where the information is included

Table 10-7 Summary of habitat types delineated within field assessment area in relation to avifauna

	Conservation Importance	Functional Integrity	Biodiversity Importance	Receptor Resilience	Site Ecological Importance Guidelines
Avifauna	**High** Confirmed or highly likely occurrence of CR, EN, VU species that have a global EOO of > 10 km2. IUCN threatened species (CR, EN, VU) must be listed under any criterion other than A.	**High** Only minor current negative ecological impacts with no signs of major past disturbance and good rehabilitation potential.	**High**	**Medium** Will recover slowly (~ more than 10 years) to restore > 75% of the original species composition and functionality of the receptor functionality, or species that have a moderate likelihood of remaining at a site even when a disturbance or impact is occurring, or species that have a moderate likelihood of	**High** Avoidance mitigation wherever possible. Minimisation mitigation – changes to project infrastructure design to limit the amount of habitat impacted, limited development activities of low impact acceptable. Offset mitigation may be required for high impact activities.

Name of the report	Findings and Impact Management Measures Identified	Section of the report where the information is included
	returning to a site once the disturbance or impact has been removed.	
	The following are observations pertaining to project area recorded from the ecological walkdown. ▪ The SCC, Kori Bustard (Ardeotis kori), Lappet-faced Vulture (Torgos tracheliotos) and White-backed Vulture (Gyps africanus) were recorded; ▪ Additional priority species Black Sparrowhawk (Accipiter melanoleucus), Black-chested Snake Eagle (Circaetus pectoralis), Black-winged Stilt (Himantopus himantopus), Cape Crow (Corvus capensis), Egyptian Goose (Alopochen aegyptiaca), Gabar Goshawk (Micronisus gabar), Greater Kestrel (Falco rupicoloides), Hadada Ibis (Bostrychia hagedash), Hamerkop (Scopus umbretta), Helmeted Guineafowl (Numida meleagris), Little Egret (Egretta garzetta), Northern Black Korhaan (Afrotis afraoides), Orange River Francolin (Scleroptila gutturalis), Pale Chanting Goshawk (Melierax canorus), Pied Crow (Corvus albus), Red-billed Spurfowl (Pternistis adspersus), Red-billed Teal (Anas erythrorhyncha), Red-crested Korhaan (Lophotis ruficrista), South African Shelduck (Tadorna cana), Swainson's Spurfowl (Pternistis swainsonii), Western Barn Owl (Tyto alba), Western Cattle Egret (Bubulcus ibis) and Yellow-billed Duck (Anas undulata) were also recorded. Some of the species noted are shown in Figure 10-14.	

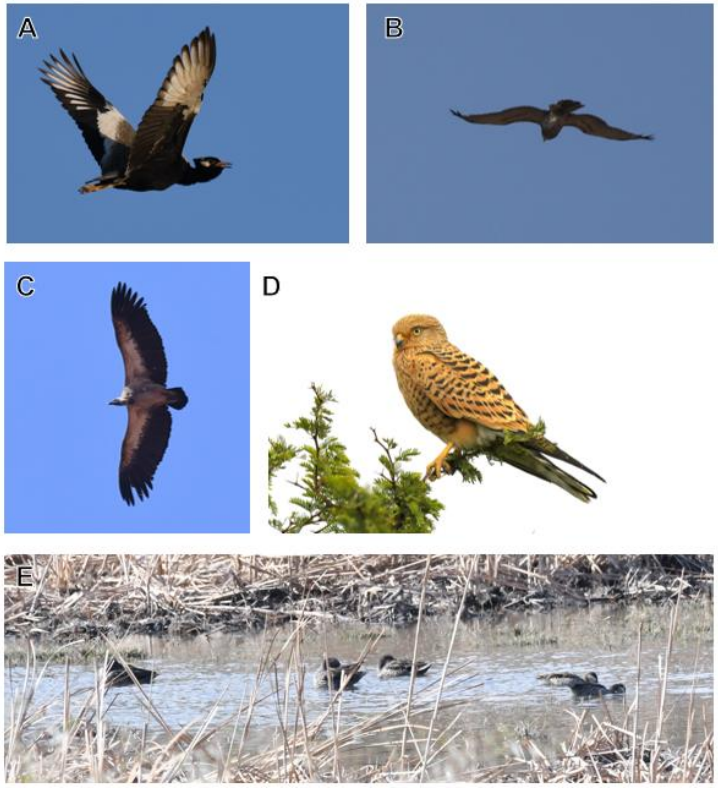


Figure 10-13: Some of the priority and SCC recorded, A) Northern Black Korhaan (Afrotis afraoides), B) Black-chested Snake Eagle (Circaetus pectoralis), C) White-backed Vulture (Gyps africanus), D) Greater Kestrel (Falco rupicoloides), E) Yellow-billed Duck (Anas undulata) and Red-billed Teal (Anas erythrorhyncha).

Impact management measures identified are detailed in Section 12.

Name of the report	Findings and Impact Management Measures Identified	Section of the report where the information is included
Archaeological and Cultural Heritage Impact Assessment and Walkdown Report	**Excerpt from the Archaeological and Cultural Heritage Impact Assessment and Walkdown Report attached in Appendix D-4** **<u>Methodology</u>** ▪ The desktop study was undertaken through SAHRIS for previous Cultural Heritage Impact Assessments conducted in the region of the proposed development, and also for research that has been carried out in the area over the past years, as well as historical aerial maps located in the Deeds Office. This literature was used to screen the proposed area and to understand the baseline of heritage sensitivities. ▪ The field survey was conducted from the 9th to the 19th of September 2024 by an archaeologist from Vhubvo. ▪ The general project area was documented by. taking photographs using a 14.1 mega-pixel Sony Cybershort Digital Camera. Recording findings was done by Garmin etrex Venture HC. **<u>Findings</u>** ▪ The Archaeological and Cultural Heritage walk-down and assessment of the construction and operational Kimberley Strengthening Phase 3 Project between Ferrum Substation and Mookodi substations did not reveal any heritage resources on the area proposed for the pylon positions. ▪ However, isolated Stone tools and graves were noted in the servitudes of the proposed powerline. The noted tools were found in secondary positions, with no provenance and were graded as of Medium-Low value. Stone tools are almost ubiquitous in the wider region of the area. The Stone tools, chiefly associated with ancestors of	Refer to Sections 8, 9, 12 and 14 of this report and Section C of the EMPr attached as Appendix H.

Name of the report	Findings and Impact Management Measures Identified	Section of the report where the information is included

the San and Khoekhoen were only noted in area where the Aeolian sands have eroded, exposing the underlying layers.

- In addition, burial grounds were also documented, however these were located away from the proposed pylon position. Note must be taken that, irrespective of their significance, these resources are protected from any form of alteration or demolition without a permit by the National Heritage Resources Act (No 25 of 1999). The Table below indicates the findings:

Table 10-8: Attributes of noted materials and respective significance.

DESCRIPTION	GPS	SIGNIFICANCE
A solitary grave was noted approximately 100m from tower position, the burial site is fenced, and four large granite stones used as fence line posts. The grave has an inscribed tombstone. The site shows signs of regular visitation as evidenced by the state and condition of the burial site.	27°05'30.00"S 24°32'6.00"E	High
A burial site with more than 33 graves including infant graves were noted about 110m from the power position. This burial site is not fenced and is overrun by vegetation. The site has one grave marked by	27°05'31.00"S 24°32'5.00"E	High

Name of the report	Findings and Impact Management Measures Identified			Section of the report where the information is included
	cement plastered headstones while the other graves are marked by stone cairns.			
	The site is a community cemetery, the burial site is fenced, the graves are under acacia tress which are scattered across the burial site. Most of the graves are marked by inscribed tombstone. The site shows signs of regular visitation as evidenced by the state and condition of the burial site.	27°14'23.81"S 23°15'21.59"E	High	
	The stone cairns were found at the edge of a wetland.	27°08'53.66"S 24°13'40.44"E	Medium-Low	
	The cores were found in an open field, they are out of context.	27°09'6.48"S 24°13'11.35"E	Low	
	The stone tools were found on a rocky outcrop.	27°09'1.84"S 24°13'12.97"E	Low	
	The two flakes were found on Tower point 466. The tower is close to a pan, and it's possible that the stone	27°07'57.50"S 24°21'5.01"E	Low	

<table>
<tr><th>Name of the report</th><th>Findings and Impact Management Measures Identified</th><th>Section of the report where the information is included</th></tr>
<tr><td></td><td>
<table>
<tr><td>tools came as a result of erosion, and hence out of context.</td><td></td><td></td></tr>
<tr><td>The blade was found isolated close to a pan which shows that it was brought by erosion.</td><td>27°12'51.00"S
24°03'1.24"E</td><td>Low</td></tr>
<tr><td>Late Iron Age Tswana pottery with surface finish red ochre</td><td>27°11'54.56"S
23°08'18.72"E</td><td>Medium-Low</td></tr>
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Some of the material noted is indicated in the Figures below.
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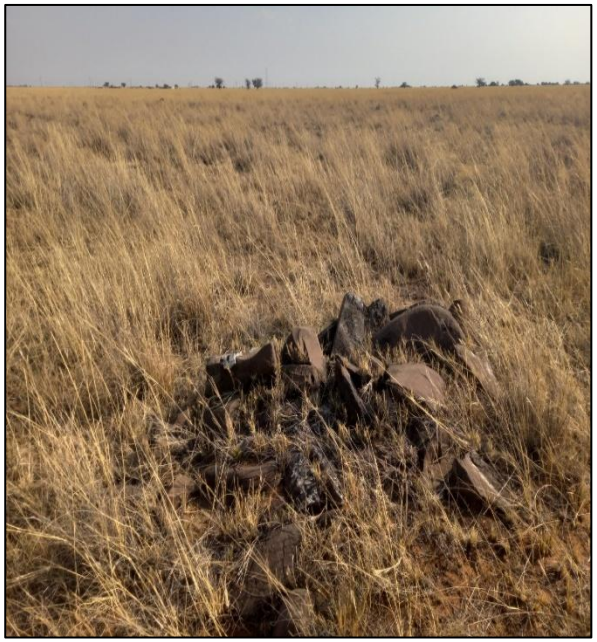
Figure 10-14: View of an isolated grave site noted approximately 100m of tower 507

Figure 10-15: View of the community cemetery noted approximately 130m of tower point 229.

Name of the report	Findings and Impact Management Measures Identified	Section of the report where the information is included
	  Figure 10-16: View of stone tools found adjacent to the river nearby tower point 184	

Name of the report	Findings and Impact Management Measures Identified	Section of the report where the information is included
	  Figure 10-17: View of the stone cairns noted on the buffer of the powerline. **Impact management measures are indicated in Section 12.** **<u>Conclusion</u>** A thorough background study and survey of the proposed development was conducted and findings were recorded in line with SAHRA guidelines. The proposed construction and operation of 400kv Ferrum–Mookodi Powerline	

Name of the report	Findings and Impact Management Measures Identified	Section of the report where the information is included
	and associated Substation upgrade within Northern Cape and North West Provinces can proceed on condition that recommendation will be adhered to.	
Civil Aviation Site Sensitivity Verification Report	**Excerpt from the Civil Aviation Site Sensitivity Verification Report attached in Appendix D-11** **<u>Methodology</u>** ▪ **Obstacle Assessment:** ICAO Annex 14 and the relevant SACAA CARS/CATS standards, relevant OLS's were reviewed and the risk to these surfaces presented by the proposed development and associated infrastructure assessed. ▪ **Airspace Analysis:** SACAA Aerodrome Directory and the Aeronautical Information Publication (AIP) information on the aerodromes, airspace classification sourced from the Air Traffic and Navigational Services Corporation (ATNS) and available topographical data, the proposed development site was overlaid on the airspace classification map of the environs and risk posed to aircraft operating in the area assessed. ▪ **Radar, Navigation and RF Interference Assessment:** Using information available from the SACAA and ATNS, the location of civil aviation radar and other navigational equipment and infrastructure within the guideline distances (per the US FAA) from the proposed development were determined and the risk posed to the operation of these installations assessed. **<u>Findings</u>**	Section 10.1

Name of the report	Findings and Impact Management Measures Identified	Section of the report where the information is included
	Kathu (FASS), Black Rock (FABP), Kuruman (FAKU) and Vryburg (FAVB), lie inside the 8-15km trigger distance specified in the DFFE Protocol. The powerline route is also close to restricted airspace denoted FAR71, which is military airspace around the Lohatla SANDF facility. The findings of the verification are indicated below: I. Obstacles ▪ The analysis concluded that there is no penetration of the powerline into either the ICAO or SACAA 45m obstacle limitation surfaces (OLS's) close to any of the affected aerodromes, nor into the approach and departure surface of the aerodromes (Figures 10-19 to 10-22), although the Mookodi substation is relatively close to the Vryburg Approach Surface and may require operational mitigation. ▪ The aerodromes at Black Rock and Kuruman are not affected at all since they are beyond 8km away, and at Kathu (FASS) the only sensitivity is the potential impact of the Ferrum substation, which is located 9,7km from the threshold of Runway 35 at FASS. At this distance, the altitudes of any aircraft lining up for an approach to FASS will be approximately 388m, and therefore well exceed the SACAA limitation of 45m above the runway surface within 8km of the aerodrome, notwithstanding that the substation is located 41m (1 221m-1180m) higher than the runway threshold. The aviation sensitivity in terms of DFFE Protocol 320 is however low.	

Figure 10-18: General Location of Powerline Servitude relative to various Aerodromes in the Northern Cape

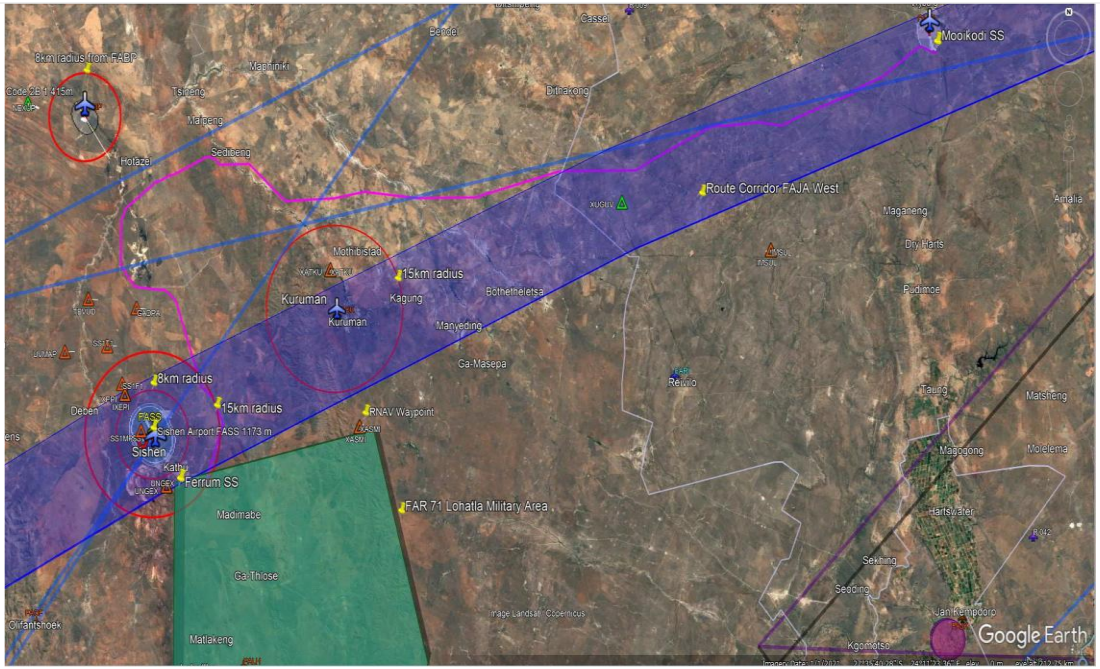


Figure 10-19: Classification of Airspace affected by the Proposed Powerline and the FAR 71 Restricted Area

Figure 10-20: Mookodi SS relative to ICAO Obstacle Limitation Surfaces at Vryburg (FAVB)

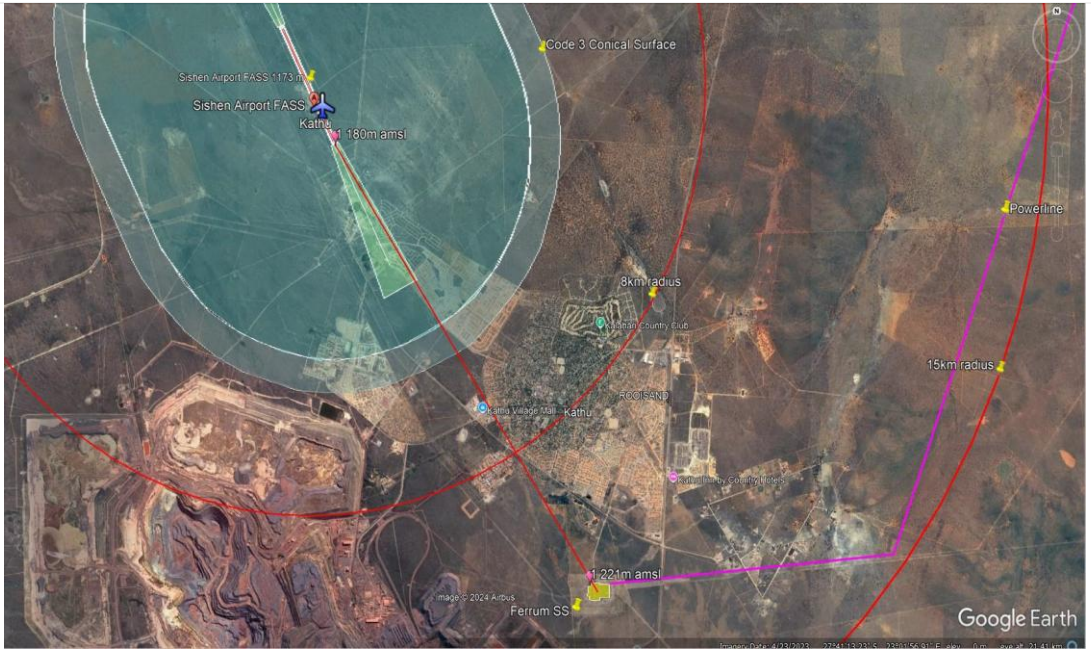


Figure 10-21: Ferrum SS relative to ICAO Obstacle Limitation Surfaces near Kathu (FASS)

II. Radar and Navigational Infrastructure

- The proposed sub-project will not materially impact civil aviation radar, navigational, or communications infrastructure in the environs, nor present any material additional risks to operations at the affected aerodrome or within adjacent airspace.
- While there is existing navigational infrastructure at Kathu Aerodrome (FASS), some 10km from the Ferrum substation, there is no evidence of other ground-based civil radar installations closer than 35km from the site. This is well outside the 500 ft guideline recommended by the US FAA, within which potential RF interference could occur. The civil aviation environmental sensitivity has been assessed as **low**.

Name of the report	Findings and Impact Management Measures Identified	Section of the report where the information is included
	▪ The only ground-based DVOR/DME installation is at Kathu Aerodrome, 10km from the Ferrum substation, and sensitivity is assessed as low. ▪ There are no ground-based NDB installations within 8-15km of the project site, and sensitivity is assessed as low. III. Civil Aviation Routes: Radio and Communications Interference ▪ The proposed project does not affect any conventional or satellite-based (GNSS and RNAV) route under air traffic control (ATC) of ATNS centres at OR Tambo International Airport (FAOR) (Figure 10-20). The guideline minimum distances prescribed by the FAA for the siting of facilities away from radar, navigational, and other communications devices they could potentially impact range from 250ft to 500ft. These are well below the distance of the proposed development from any ground-based communications infrastructure and radio equipment, the closest of which is beyond 15km, or overflying aircraft. The risk of such interference is thus low. ▪ The aerodromes at Black Rock and Kuruman are not affected at all since they are beyond 8km away, and at Kathu (FASS) the only sensitivity is the potential impact of the Ferrum substation, which is located 9,7km from the threshold of Runway 35 at FASS. At this distance, the altitudes of any aircraft lining up for an approach to FASS will be approximately 388m, and therefore well exceed the SACAA limitation of 45m above the runway surface within 8km of the aerodrome, notwithstanding that the substation is located 41m (1 221m-1180m) higher than the runway threshold.	

Name of the report	Findings and Impact Management Measures Identified	Section of the report where the information is included
	IV. Vryburg Aerodrome (FAVB) Classification The status of FAVB is summarised below: – The aerodrome is unmanned and unlicensed. – No aerodrome services exist at FAVB and there is no runway centreline or airfield lighting. – The aerodrome operates under Visual Flight Rules (VFR). – Vryburg RWY 18/36 is a 1 200x18m tar-surfaced runway in poor condition, classified ICAO Code 2B with RFL (reference field length) slightly over 800m under standard conditions. – Reference altitude is 3 920ft (1 194m) amsl. – Based on Google Earth reference standards utilised for the study, the runway bearings are 164o and 344o, with an allowance for a 10% variation in either direction on approaches or departures. – The circuit at FAVB is 'left-hand', which will take aircraft on the downwind leg over the proposed powerline, but away from the Mookodi substation (Figure 10-20). ▪ Inner Horizontal, Conical, Transitional and SACAA 8km limitation Surfaces: Vryburg (FAVB) is a minor aerodrome at ICAO Code 2B. The nearest runway threshold of the aerodrome is located 2 382m from closest point to the proposed powerline, which at one point is 118m inside the ICAO Inner Horizontal Surface	

Name of the report	Findings and Impact Management Measures Identified	Section of the report where the information is included
	▪ *ICAO Inner Horizontal Surface (IHS):* the powerline route is outside the approach surface but marginally inside the inner horizontal surface, at a point where the natural ground level is 1 218m amsl relative to a reference altitude of 1 210m on the point of the extended centreline adjacent to this point. The allowable obstacle height is thus 1 210+45-1 218=37m which is marginally higher than the Eskom standard of 35m for pylon heights. Thus, while compliant with ICAO and SACAA standards, mitigation will be required in the form of clear marking of the powerline in accordance with the relevant Technical Standards set out in SA-CATS139. ▪ The powerline route also lies within the SACAA 45m general obstacle limitation surface within 8km of the aerodrome and will require similar operational mitigation. Environmental sensitivity is therefore low, but operational mitigation will be required. ▪ *Conical Surface (CS):* The CS of FAVB extends 1 200m beyond the inner horizontal surface, to a total height of 105m above runway level, but this is superseded by the SACAA 8km radius, which imposes a 45m height limit, and the approach/departure surface to the south of the aerodrome. ▪ *Transitional Surface:* The Transitional Surface for FAVB commences 40m from the runway centreline, at the edge of the (Code 2) runway strip, and slopes upwards at a grade of 20%, at right angles to the runway. This surface governs the height limit for any non-friable objects to a height of 45m above the runway level, beyond which the IHS governs. This occurs 265m from the runway centreline. The powerline route lies outside this range and does not penetrate the transitional surface.	

Name of the report	Findings and Impact Management Measures Identified	Section of the report where the information is included
	▪ *Potential Obstacles within the SACAA 8km Surface:* The proposed powerline route lies within the 8km SACAA obstacle limitation surface, which imposes similar constraints to the inner horizontal surface. As described, the safety margin relative to a 35m pylon is thus only 2m which while still low risk environmentally, may pose a safety risk. Thus, once environmental approval is secured and the project is construction-ready, mitigation will be required in terms of an Obstacle Approval application to the SACAA in terms of CA139-27 and marking of the affected portion of the route in accordance with CATS139 to ensure adequate visibility of the powerline to SACAA approval. However, this is a navigation and operational safety (PANS-OPS) rather than an environmental issue. ▪ *Approach and Take-off Climb Surfaces to RWY18/36:* The closest point of the proposed development is the Mookodi substation, which while beyond 2,5km from the runway threshold, is 452 m from extended centreline of the runway at the point where the approach surface commences (Figure 3). At this point, aircraft beginning their final approach would be at an altitude of 1 212+4%x2 500=1 312 m amsl, which represents an altitude of 106m above ground level. For 35m structures within the substation footprint, this represents a safety margin of 71m, which is less severe than the margin of the powerline relative to the SACAA 45m limit within 8km of the aerodrome. The CASSV findings are that sensitivity is low, and no Civil Aviation Compliance Statement will, therefore, be required for the purposes of environmental authorization.	

Name of the report	Findings and Impact Management Measures Identified	Section of the report where the information is included
Palaeontological Impact Assessment Report	**Excerpt from the Palaeontological Impact Assessment Report in Appendix D-5** **Findings:** *Desktop Study* ▪ The western part of the proposed Ferrum-Mookodi 400kV power line is mainly underlain by dune sand and aeolian sand that are considered with moderate palaeontological sensitivity. The line crosses alluvium associated with a dry riverbed south of Hotazel at 27°17'09.96"S 22°54'59.36"E that has a high palaeontological sensitivity. ▪ The Ferrum Substation and the southern end of the power line, east of Kathu, are underlain by surface limestone that is considered to have a high palaeontological sensitivity. ▪ The eastern part of the proposed Ferrum-Mookodi 400kV power line is mainly underlain by aeolian sand that has a moderate palaeontological sensitivity. There are however sections that are underlain by dolomite, limestone and chert of the Ghaap Group of the Griqualand West Supergroup that include rocks that are considered of Very High Palaeosensitivity. ▪ A section of the line that crosses over the hills west of Hotazel, in the Ga-Motsemai region, is underlain by the rocks of the Daniëlskuil Member of the Asbesberge Formation of the Asbestos Hills Subgroup that is also considered to have a very high palaeontological sensitivity. ▪ A small section, southwest of Vryburg, is underlain by calcrete that has a high palaeontological sensitivity and south of Vryburg there are rocks of the Dwyka Group of the Karoo Supergroup that has a moderate palaeontological sensitivity.	Refer to Sections 8, 9, 12 and 14 of this report and Section C of the EMPr attached as Appendix H.

Name of the report	Findings and Impact Management Measures Identified	Section of the report where the information is included
	Site Assessment The stromatolites of the Ghaap Group of the Griqualand West Supergroup contain some of the oldest and best-preserved stromatolites on earth. These stromatolites are the subject of scientific research on the palaeoclimatic conditions of the early earth, the origin of photosynthesis and the origin of the oxygen-rich atmosphere. Where possible intact, well-preserved stromatolites should be preserved. The impact on the palaeontology of the study site is considered to be MEDIUM which implies that, although the stromatolites in the study are scientifically very important, the effect of the impact could be mitigated as long as the Change Find Procedures are followed. Ga-Mutsumi region with very high palaeosensitivity	

Figure 10-22: Sandy soil covering the rocks of the Daniëlskuil Formation at 27°12'35.74"S 23°05'04.36"E

Figure 10-23: Eroded rocks of the Daniëlskuil Formation at 27°12'13.30"S 23°05'48.69"E

Name of the report	Findings and Impact Management Measures Identified	Section of the report where the information is included
	Kruisaar-Colston region with very high palaeosensitivity	

Figure 10-24: Sandy soil covering the rocks of the Reivilo Formation north of Thotayamoku at 27°12'13.30"S 23°05'48.69"E

Figure 10-25: Sandy soil covering the rocks of the Reivilo Formation south of Kruisaar at 27°14'09.64"S 23°49'22.57"E

Figure 10-26: Sandy soil covering the rocks of the Reivilo Formation north of Colston at 27°13'40.94"S 23°51'21.97"E

Figure 10-27: Eroded dolomite east of Kokonye at 27°13'11.09"S 23°53'28.88"E

Figure 10-28: Sandy soil covering the rocks of the Reivilo Formation on the border of Northern Cape and Northwest at 27°12'57.76"S 23°54'50.29"E

Figure 10-29: Eroded dolomite of the Reivilo Formation exposed in a dry river bed at 27°12'57.65"S 23°55'29.16"E

Impact Management Measures are detailed in Section 12.

Conclusion

Although no significant fossil discovery was made during the field assessment, there is high probability of discovering scientifically important fossils when the sand, surface limestone, calcrete and overburden are removed during construction and uneroded rocks are exposed. The ECO needs to follow the stipulations as set out in the Chance Find Procedure in case well-preserved stromatolites are found during development.

Name of the report	Findings and Impact Management Measures Identified	Section of the report where the information is included
Plant Species Compliance Statement	**Excerpt from the Plant Species Compliance Statement attached in Appendix D-9** **Methodology** ▪ During the field survey of habitats on site, the entire corridor was assessed on foot or by vehicle. A meander approach was adopted with no time restrictions - the objective was to comprehensively examine all-natural variation. ▪ A hand-held Garmin GPSMap 64s was used to record a track within which observations were made. Digital photographs were taken of features and habitats on site, as well as of all plant species that were seen. All plant species recorded were uploaded to the iNaturalist website and are accessible by viewing the observations located at this site. ▪ Aerial imagery from Google Earth was used to identify and assess habitats on site. This included historical imagery that may show information not visible in any single dated image. Patterns identified from satellite imagery were verified on the ground. ▪ Desktop study was done using various databases. **Findings** The areas north of Kuruman are also heavily impacted by extensive settlements, whereas the remaining areas are mostly commercial farmland in relatively good condition. ▪ Three species of protected trees, Vachellia erioloba, Vachellia haematoxylon and Boscia albitrunca were found on site in high numbers.	Refer to Sections 8, 12, 14 and Section C of the EMPr

Name of the report	Findings and Impact Management Measures Identified	Section of the report where the information is included
	▪ The most commonly occurring species is camelthorn, *Vachellia erioloba*, which occurs along almost the entire corridor, sometimes as scattered trees, other times as dense groves, and elsewhere as high densities of juveniles. *Boscia albitrunca* (shepherds tree), mostly as scattered individuals. ▪ The highest densities are on the Hotazel side of the ridge, as well as on either bank of the one river system on the eastern side of the ridge. ▪ A total of 253 individual trees were seen within the corridor. The shepherd's trees in these areas were unusual in that they were all relatively large individuals, one almost 8 m tall, and there were few juveniles. ▪ The trees seen were also the eastern-most distribution records for this species in the Kuruman area. The population observed is therefore considered to have biogeographical and ecological importance. Note that this species is protected both under the National Forests Act, 1998 and under Schedule 2 of the Northern Cape Nature Conservation Act No. 9 of 2009.	

Figure 10-30: Typical example of Boscia albitrunca tree seen within the corridor.

Vachellia haematoxylon

- It was only seen in those parts of the corridor in line with Kuruman and westwards.
- The majority of the individuals seen on site were shorter than 2 m tall, many less than 1 m tall. The species coppices after fire and it appears as if the vegetation of large sections of the corridor were burnt relatively recently. It is probable that these individuals were probably not very large prior to the fire, but the current appearance is of clusters of low plants.
- In areas where these occur, they are at densities of up to 1000 individuals per km of corridor, counting clusters as single individuals.
- In unburnt areas, individuals of 3 m tall are rare and most are shorter. There are, however, exceptions, one being a grove of large individuals that meets the requirements for declaration as a forest patch (large trees

Name of the report	Findings and Impact Management Measures Identified	Section of the report where the information is included
	with touching crowns forming a continuous canopy). These large patches must be avoided, not only due to being protected trees, but also because of the high value they have as faunal habitat. **Olea europaea** (Wild Olive Trees) ▪ Other than the three species of protected tree, there are also several large wild olive trees in a part of the alignment that should be protected. These are large, old trees that are unusual in the landscape due to their age and size. ▪ These occurred mostly in a single area on the Kuruman side of the ridge, on either side of the river. This is the same area of habitat in which large *Boscia albitrunca* trees were observed. The species noted are indicated in the map below.	

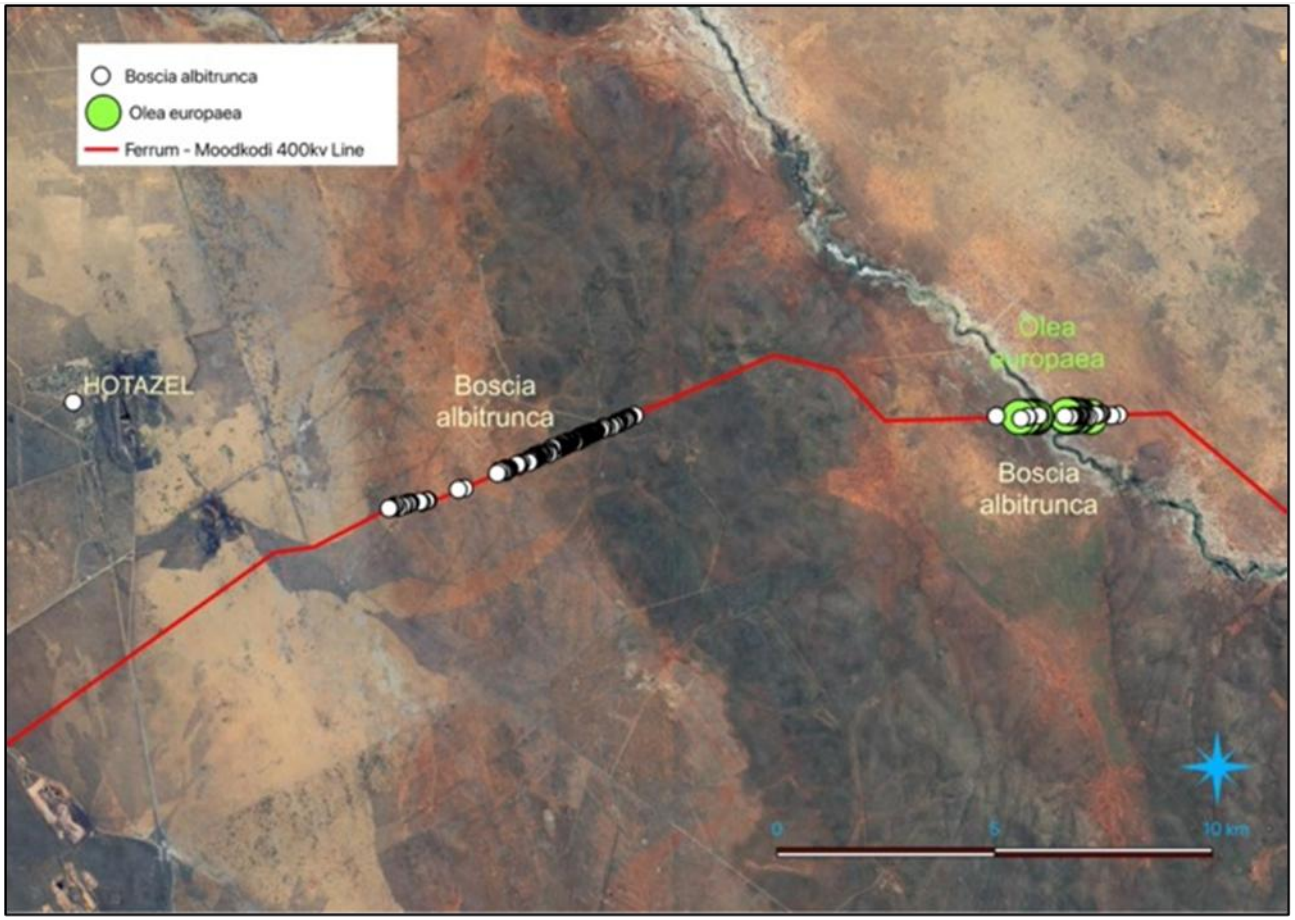


Figure 10-31: Location of Olea europaea and Boscia albitrunca

Protected plant species

One species was found on site that is protected under National Environmental Management: Biodiversity Act, 2004 (Act 10 of 2004), namely *Harpagophytum procumbens*. Only seeds of this plant were found on site (see Figure 10-

Name of the report	Findings and Impact Management Measures Identified	Section of the report where the information is included
	33), but it is an annual creeper and live plants are unexpected to be found at the time of the year that the field survey was undertaken. The seeds were seen 4 times on site, once near Vryburg and the other three times near Sedibeng. It is described as growing in well drained sandy habitats in open savanna and woodlands. It could therefore occur anywhere along the corridor where sandy soils dominate.  Figure 10-32: Seed of Harpagophytum procumbens seen within the corridor.	

Name of the report	Findings and Impact Management Measures Identified	Section of the report where the information is included
	Conclusion Desktop information, field data collection and analysis of aerial imagery provides the following verifications of patterns for the Plant Species Theme: 1. The corridor crosses a number of regional vegetation types. The published descriptions of these regional vegetation types conform to the patterns seen on site. They all fall within the Eastern Kalahari Bushveld Bioregion. Near to Vryburg are two vegetation types, namely Ghaap Plateau Vaasbosveld and Mafikeng Bushveld, which then transitions to Kuruman Vaalbosveld further west. This then becomes Kuruman Thornveld before crossing the hills, which are covered by Kuruman Mountain Bushveld. On the Kathu side is a single vegetation type, Kathu Bushveld. None of these are listed ecosystems. 2. One nationally protected species occurs on site (Harpagophytum procumbens). It is also possible that Dicoma kurumanii (listed as Rare) or Barleria media (listed as Vulnerable) may occur in the low hills, but they are both species that haven't been seen for many years and are unlikely to be encountered, especially in the preferred habitat type, which is in poor condition within the proposed corridor. The project therefore has low sensitivity with respect to the Plant Species Theme (as per the published Species Protocols). 3. A number of species protected under the Northern Cape Nature Conservation Act or the North West Biodiversity Management Act were observed within the corridor. Permits will be required for the loss of any individuals of any of these species.	

Name of the report	Findings and Impact Management Measures Identified	Section of the report where the information is included
	4. There are three protected tree species that occur within the corridor, namely camelthorn (Vachellia erioloba), grey camelthorn (Vachellia haematoxylon, and shepherd's bush (Boscia albitrunca). Permits will be required for the loss of any individuals of these species. 5. The proposed development is almost entirely within areas of natural habitat that have low to moderate biodiversity value and low sensitivity (plant species theme). There are some Ecological Support Areas crossed by the corridor that have Very High sensitivity with respect to the Terrestrial Biodiversity Theme, but the powerline will have little effect on the ecological functioning of these. Where local sensitivities have been identified, recommendations have been made to avoid these, therefore only landscape level ecological functioning is of concern and is not significantly affected by the powerline. Impact management measures are indicated in Section 12.	
Freshwater Walkdown and Risk Assessment Report	**Excerpt from the Freshwater Assessment Reports attached in Appendices D-6a and D-6b** **Findings:** Due to the scale of the project, three main hydrogeomorphic units have been used to classify the different watercourse features. The numerous features that are intercepted by the proposed powerline have been grouped into one of the three watercourse features, namely: ▪ Riverine systems including the associated riparian zone (HGM 1); ▪ Wetland systems (HGM 2); and ▪ Drainage features (HGM 3).	Refer to Sections 8, 9, 13 and 15 of this report and Section C of the EMPr attached as Appendix H.

Name of the report	Findings and Impact Management Measures Identified	Section of the report where the information is included
	The different watercourse features were grouped according to their sensitivity, functionality as well as the impacts of the pylons on the systems. Figure 10-34 shows some of the water resources noted onsite. (Limosella Consulting, 2020)  Figure 10-33: Examples of the different water resources found during the walk down. (A & B) Riverine systems; C) Riverine system with riparian zone; and D) Riparian zone (TBC, 2024)	

Name of the report	Findings and Impact Management Measures Identified	Section of the report where the information is included

According to Limosella Consulting, 2020, this section crosses 4 non-perennial drainage areas across one catchment area. The majority of the watercourses recorded in this section are impacted by the mining activities in Hotazel and Sishen Mine.

Table 10-9: Summary of the findings of the watercourses recorded on the proposed powerline crossing for the Ferrum-near Umntu Substation, (Ferrum-Umntu) (Limosella Consulting, 2020))

Catchment	Wetland and HGM Unit	Crossing Coordinates	PES (Macfarlane et al, 2009)/ VEGRAI (Kleynhans et al, 2008).	EIS (DWAF, 1999)/QHI (Seaman et al, 2010).	REC
D41K	**Drainage Area (Ga-Mogara)**	27° 13' 41.51"S 22° 55' 25.11"E	E	Low	D
	Drainage Area	27° 16' 42.32"S 22° 56' 55.50"E	E	Low	D
	Drainage Area	27° 36' 14.09"S 23° 8' 36.62"E	D	Low	D
	Drainage Area	27° 37' 26.13"S 23° 9' 19.90"E	D	Low	D

Name of the report	Findings and Impact Management Measures Identified	Section of the report where the information is included

3.2.5 Hotazel - Saracen

- This section crosses 13 watercourses of which the majority are perennial and non-perennial rivers and streams. Large sections of these streams and rivers are located high in the catchment in the remote mountainous areas and are thus far removed from most anthropogenic impacts and thus have better scores.
- All of the perennial and non-perennial watercourses crossed by this section of the powerline route ultimately flows into the Kuruman River. These rivers include the Moshaweng, Matlhwaring and Ga-Mogara Rivers.

Table 10-10: Summary of the findings of the watercourses recorded on the proposed powerline crossing for the Hotazel-Saracen (Umntu-Mookodi Section 1), (Limosella Consulting, 2020)

Catchment	Wetland and HGM Unit	Crossing Coordinates	PES (Macfarlane et al, 2009)/ VEGRAI (Kleynhans et al, 2008).	EIS (DWAF, 1999)/QHI (Seaman et al, 2010).	REC
D41G	**Drainage Area**	27° 12'58.02"S 23° 55'29.26"E	B	Moderate	B
	Drainage Area	27° 13'39.21"S 23° 51'27.00"E	C	Moderate	C

Name of the report	Findings and Impact Management Measures Identified						Section of the report where the information is included
	D41L	**Drainage Area**	27° 15'19.34"S 23° 44'20.83"E	C	Moderate	C	
		Riparian Area (Matlhwaring)	27° 15'40.99"S 23° 35'9.49"E	D	Moderate	D	
		Riparian Area	27° 15' 34.42"S 23° 33' 55.23"E	D	Moderate	D	
		Riparian Area	27° 15' 20.19"S 23° 31' 1.90"E	D	Moderate	D	
		Drainage Area	27° 15' 11.95"S 23° 27' 44.28"E	C	Moderate	C	
		Drainage Area	27° 15' 54.50"S 23° 20' 35.88"E	C	Moderate	C	
		Riparian Area (Kuruman)	27° 12' 26.29"S 23° 11' 13.60"E	D	Moderate	D	
		Drainage Area	27° 11' 47.47"S 23° 7' 55.75"E	B	Low	B	

Name of the report	Findings and Impact Management Measures Identified	Section of the report where the information is included

	Drainage Area	27° 12' 3.64"S 23° 6'21.68"E 27° 12' 26.14"S 23° 5' 24.20"E	B	Low	B
	Drainage Area	27° 12' 34.84"S 23° 4' 59.67"E; 27° 12' 50.87"S 23° 4' 19.08"E	B	Low	B
	Drainage Area (Ga-Mogara)	27° 13' 44.00"S 22° 55' 23.45"E	E	Low	D

Saracen-Mookodi (Umntu-Mookodi Section 2)

This section crosses over 17 watercourses in three catchments. The majority of these are also pans, these pans were however dry pans and are likely to be ephemeral pans and thus only retain water for a small period of the year. The pans were also located in areas used for grazing which has some impacts on the pans. The first section follows an existing powerline for approximately 10km before moving away where the final section runs parallel with the N14. Table 10-8 shows the position and extent of watercourses in this section, (Limosella Consulting Pty Ltd, 2020).

Table 10-11: Summary of the findings of the watercourses recorded on the proposed powerline crossing for the Saracen- Mookodi (Umntu-Mookodi Section 2), (Limosella Consulting, 2020).

Catchment	Wetland and HGM Unit	Crossing Coordinates	PES (Macfarlane et al, 2009)/ VEGRAI (Kleynhans et al, 2008).	EIS (DWAF, 1999)/QHI (Seaman et al, 2010).	REC
C32B	**Drainage Area**	27° 0' 23.75"S and 24° 43' 1.84"E	B	Low	B
	Depressional Pan	27° 2' 5.16"S and 24° 39' 32.14"E	B	Low	B
C32D	**Depressional Pan**	27° 3' 36.75"S 24° 36' 43.44"E	B	Moderate	B
	Depressional Pan	27° 3' 44.07"S 24° 36' 23.71"E	B	High	B
	Drainage Area	27° 4' 38.61"S 24° 33' 56.15"E	C	High	C
	Riparian Area (Korobela)	27° 5' 24.15"S 24° 32' 21.99"E	C	Moderate	C

Name of the report	Findings and Impact Management Measures Identified						Section of the report where the information is included
		Depressional Pan	27° 8' 5.73"S 24° 24' 33.52"E	D	Low	D	
		Depressional Pan	27° 8' 15.15"S 24° 23' 47.49"E	C	Low	C	
		Depressional Pan	27° 7' 59.53"S 24° 21' 0.85"E	C	Moderate	C	
		Depressional Pan	27° 8' 5.06"S 24° 19' 44.06"E	C	Moderate	C	
		Depressional Pan	27° 8' 12.03"S 24° 18' 22.02"E	C	Moderate	C	
		Depressional Pan	27° 8' 17.75"S 24° 17' 20.64"E	D	Moderate	D	
		Depressional Pan	27° 8' 24.87"S 24° 15' 13.91"E	C	Moderate	C	
		Depressional Pan	27° 8' 41.31"S 24° 14' 8.55"E	C	Moderate	C	
		Depressional Pan	27° 8' 51.58"S 24° 13' 41.20"E	C	Moderate	C	

Name of the report	Findings and Impact Management Measures Identified	Section of the report where the information is included

	Depressional Pan	27° 10' 2.22"S 24° 10' 52.81"E	C	Moderate	C
	Drainage Area	27° 11' 37.59"S 24° 7' 6.46"E	C	Moderate	C

- The majority of the watercourses in the study area are likely to have been impacted by mining, agriculture and cattle farming to some degree.
- However, the proposed route extends over parts of the country that is very sparsely inhabited.
- Significant impacts to watercourses in this area are less compared to denser populated areas.
- The proposed powerline further runs through two provinces that have very low annual rainfall and often has drought for extended periods of time. Although these watercourse networks respond quickly to rainfall events the lack of robust vegetation growth makes them prone to sedimentation and erosion.
- A large number of depressional pans occur within the 4 km corridor.

Conclusions

Several watercourse features were identified along the proposed powerline route, including riverine systems with riparian zones, perennial and non-perennial wetlands, as well as drainage lines. The majority of the proposed powerline posed no impact to the surrounding watercourses; however, several watercourse features intersect along the proposed powerline. In certain cases, the proposed pylon placements are within sensitivity freshwater areas, and

Name of the report	Findings and Impact Management Measures Identified	Section of the report where the information is included
	such as, suggested relocations for these specific pylons have been made. Due to the relatively low-impact nature of the proposed development, the majority of the anticipated impacts to the identified watercourses were rated as "Low". However, a few of these impacts were rated as "Moderate" risks to the watercourses, post-mitigation. Despite this, it is the opinion of the specialist that the proposed powerline development may be favourably considered for the appropriate application.	
Social Impact Assessment Report	**Excerpt from the Social Impact Assessment Report attached in Appendix D-7** In general, the transmission line will traverse several sensitive social areas such as high- to low-density residential areas, commercial farms and smallholdings, mines, business development, secondary and tertiary towns, and the crossing of the main road. Based on the technical process that needs to be followed as outlined above and the route assessment, the following social factors have been identified and are anticipated to impact the project. • Most of the impacts are negative, but the duration of occurrence is short-term, and the magnitude is either low or moderate; • From the ratings, economic opportunities such as job-creation and SME procurement opportunities, though positive, appear to be short-term at the local level. The impact is also anticipated to be regional, national and long-term in terms of its contribution to energy availability; • Crime and security are high in terms of magnitude, which is in line with crime statistics in a national context and is a problem in South Africa. However, the significance is medium, especially in that part of the country.	Refer to Sections 8, 9, 12 and 14 of this report and Section C of the EMPr attached as Appendix H.

Name of the report	Findings and Impact Management Measures Identified	Section of the report where the information is included
	• In terms of farming operations, the significance is low. Still, the land within the powerline servitude might not be used for any economic activity because of the proximity to electromagnetic field exposure under the 400kV powerline. If this land under the powerline route cannot be used for any purposes, the area will be permanently sterilised.	
Visual Impact Assessment Report	**Excerpt from the Visual Impact Assessment Report attached in Appendix D-10** **Methodology** The methodology to identify and evaluate the existing environmental values of the project area involves the following steps: i. GIS and Aerial Mapping: Geographical Information Systems (GIS) datasets and aerial photography are used to create a visual catchment map. This map defines the areas from which the project can potentially be seen. ii. Identification of Viewpoints: Viewpoints accessible to the public or in residential areas are identified using aerial imagery. Key receptors include residents, recreational users, and workers in areas where significant changes may occur. iii. Site Verification and Photographic Records: Publicly accessible viewpoints are visited for verification. Photographs are taken to illustrate current views and assess potential visual changes. iv. Review of Landscape Characteristics: Planning, land use, and regional landscape characteristics are reviewed to establish a baseline understanding of the area's visual and ecological integrity.	Refer to Sections 8, 9, 12 and 14 of this report and Section C of the EMPr attached as Appendix H.

Name of the report	Findings and Impact Management Measures Identified	Section of the report where the information is included
	Findings: **Description of the Natural Physical Elements** The proposed project traverses a single major landscape type and the Savannah biome, showcasing a diverse range of environmental features. These landscape categorizations are employed solely to delineate the components of the landscape for the purpose of this assessment. They are not intended to substitute for or overlap with findings from flora-specific studies conducted for this project. The natural physical elements of the project site are described in terms of the following categories: a) **Topology:** Refers to the physical form and relief of the land, including variations in elevation, slopes, and terrain features. b) **Vegetation Cover:** Describes the type and density of plant life across the landscape, which contributes to ecological value and aesthetic appeal. c) **Land Use:** Encompasses human activities and modifications to the natural landscape, reflecting the region's socio-economic patterns. d) **Visibility:** Relates to the extent to which features in the landscape can be seen from various viewpoints, influenced by terrain and vegetation. e) **Landscape Diversity:** Highlights the variety of physical and visual elements within the area, contributing to its aesthetic and ecological value. The study area focuses on a 15 km radius around each of the project components.	

Name of the report	Findings and Impact Management Measures Identified	Section of the report where the information is included
	Topology: The predominantly flat to gently undulating terrain increases the visibility of the powerline infrastructure across much of the project area. Slight elevation changes, including occasional hills and drainage lines, may create focal points where the infrastructure stands out visually. The simplicity of the terrain means that there are few natural barriers to obscure the project components, making topographical variations critical in shaping local visual impacts. See Figure 10-34.	

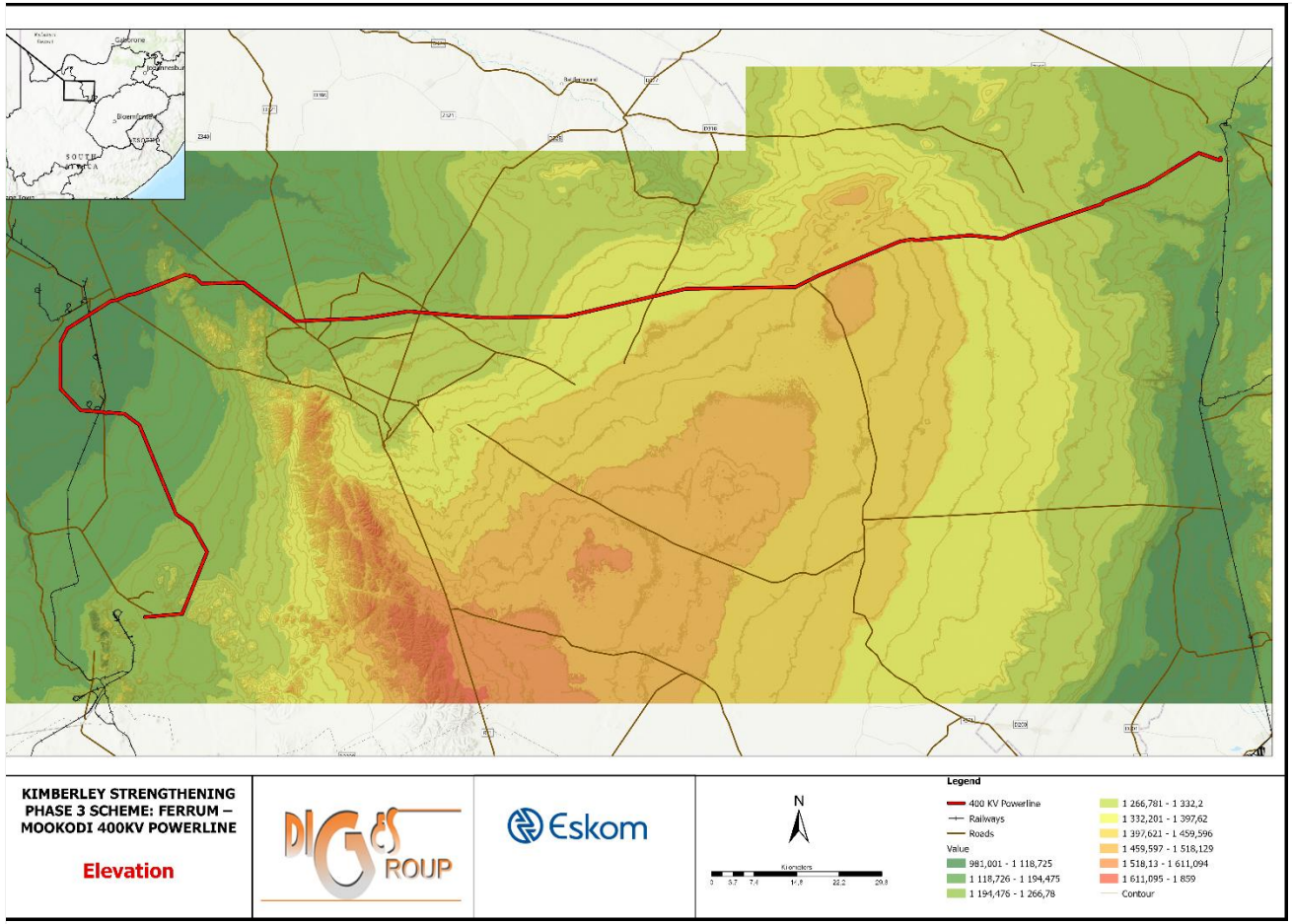


Figure 10-34: Topographic Map of the areas transverse Ferrum –Mookodi 400kV Powerline

Name of the report	Findings and Impact Management Measures Identified	Section of the report where the information is included
	Vegetation Cover: Sparse vegetation in the Northern Cape reduces natural screening, allowing the infrastructure to be highly visible over long distances. In contrast, the slightly denser vegetation in the North West provides limited visual buffering in localized areas. Vegetation cover influences the integration of the powerline into the landscape. The scattered trees and shrubs characteristic of the savannah biome may soften the visual impact but are insufficient to conceal large-scale infrastructure fully. **Land Use:** The rural and agricultural nature of the region means that local residents are accustomed to open landscapes, where changes to the visual environment are more immediately noticeable. Mining activities in the Northern Cape introduce an industrial character to certain areas, potentially reducing sensitivity to additional infrastructure. However, this does not negate the visual prominence of the powerline in less industrialized zones. **Visibility:** The expansive, flat terrain maximizes the visual catchment of the powerline, ensuring that it is visible from numerous vantage points, including roads and settlements. Key visual receptors include local residents, travellers along regional roads, and workers in agricultural and mining sectors. The infrastructure may alter their perception of the landscape's openness and natural character. **Landscape Diversity:** The moderate diversity of the landscape, including grassy plains interspersed with rocky outcrops and drainage features, creates visual interest and a sense of natural balance. The introduction of large-scale infrastructure may disrupt this balance, altering the visual harmony of the area. The presence of varied landforms amplifies the contrast between natural features and man-made elements, increasing the visual prominence of the powerline in some sections.	

Name of the report	Findings and Impact Management Measures Identified	Section of the report where the information is included
	Landscape Characteristics: The savannah biome's expansive horizons and tranquil rural character define the visual identity of the area. The introduction of tall, linear infrastructure may fragment this sense of openness and alter the perception of the region as an unspoiled landscape. The rural character of the site may make the visual changes more pronounced for local communities, who associate the landscape with cultural and natural heritage. Despite these challenges, careful design and mitigation measures, such as aligning infrastructure with existing features and using non-reflective materials, can help reduce the visual impact. This analysis underscores the significance of the physical elements in shaping the visual impacts of the project. Their interplay with the proposed infrastructure highlights the need for targeted mitigation strategies to preserve the area's aesthetic and cultural value. **The Viewshed** Local variations in topography and man-made structures would cause local obstruction of views. The viewshed, based on the GIS assessment and fieldwork, extends for the main part from 1 km to greater than 20 km (see figure 10-35).	

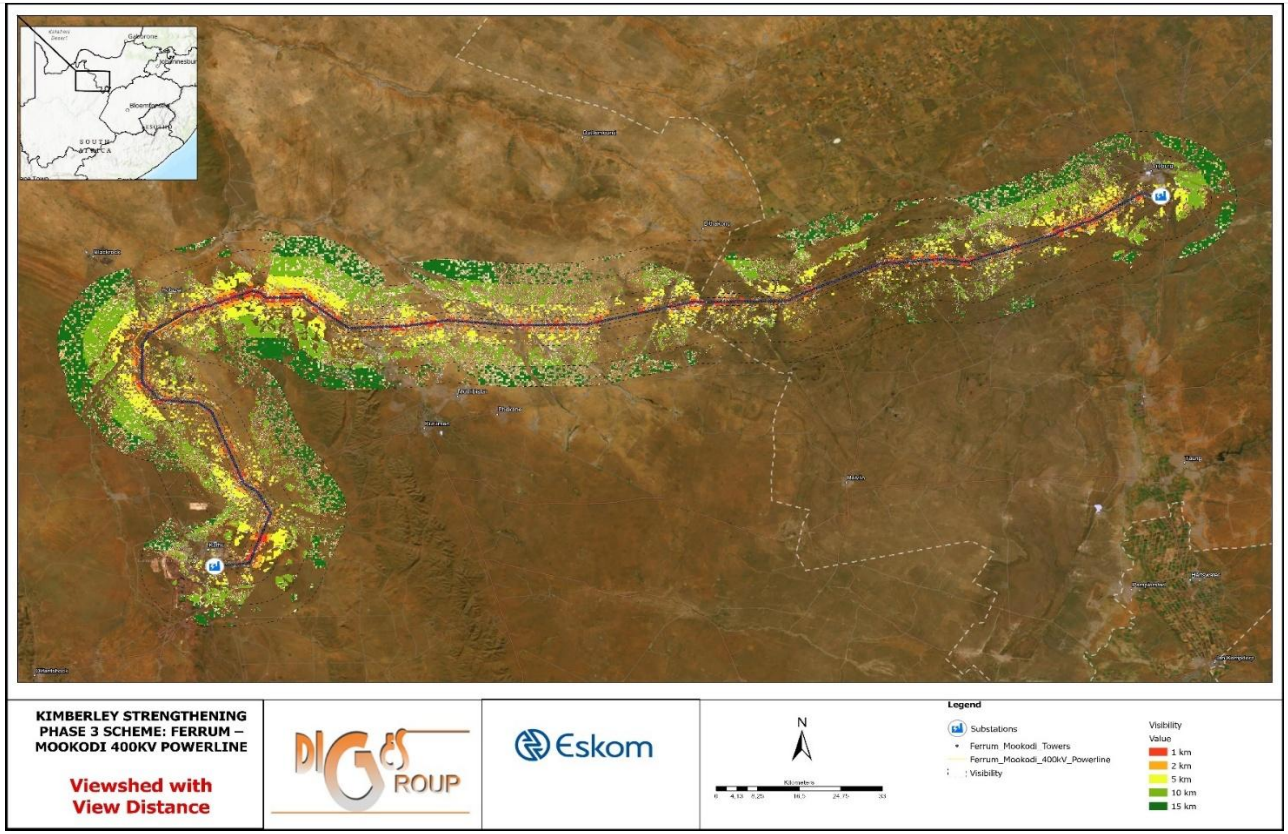


Figure 10-35: This map illustrates the visibility of the powerline across the landscape, highlighting areas within various viewing distances (1 km to15 km)

Viewshed Analysis of Ferrum Substation

Figure 10-36 depicts the viewshed of the Ferrum Substation, illustrating the extent of visibility across the surrounding landscape. Key viewing distances are highlighted, showcasing areas where the substation's infrastructure is most likely to be visible, considering topography and other visual barriers.

Name of the report	Findings and Impact Management Measures Identified	Section of the report where the information is included
	Viewshed Analysis of Mookodi Substation Figure 10-37 illustrates the viewshed of the Mookodi Substation, highlighting the visibility of the substation's infrastructure within key distances. The analysis considers the generally flat terrain and an observer offset of 55 m vertically, indicating that the construction and operation of the substation will be visually prominent across much of the surrounding landscape.	

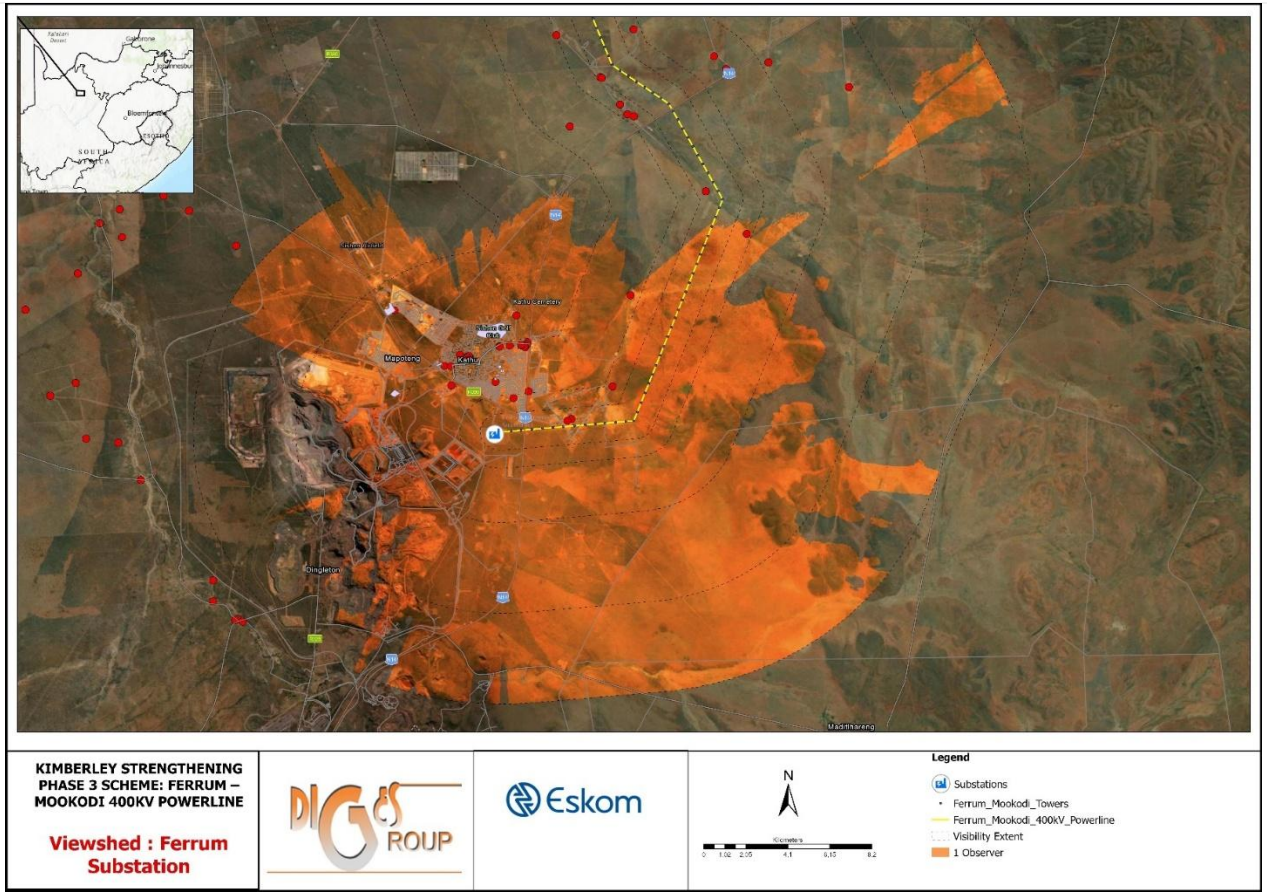


Figure 10-36: Viewshed Analysis of Ferrum Substation (Zara Capital, 2024)

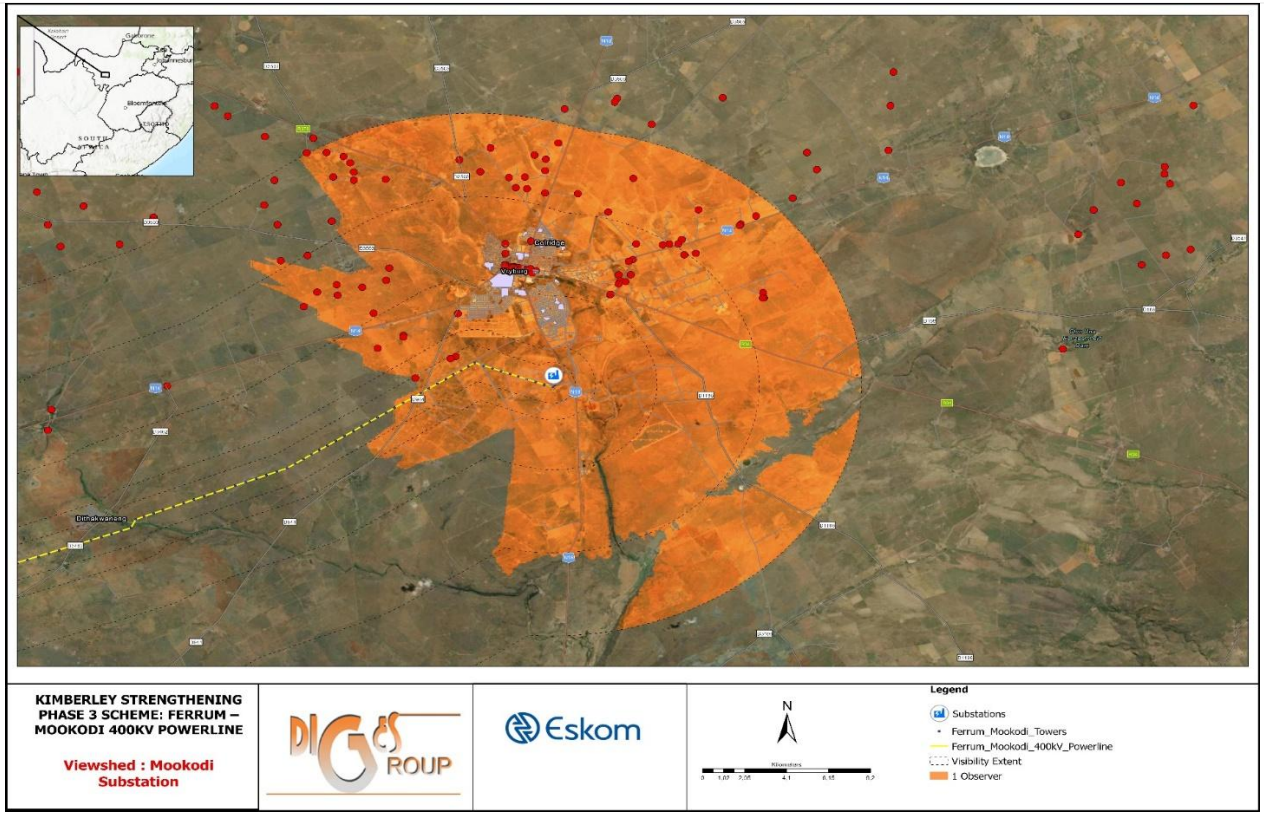


Figure 10-37: Viewshed Analysis of Mookodi Substation (Zara Capital, 2024)

Impact Review

The flat terrain of the project area minimizes natural barriers like hills or dense vegetation that could otherwise shield views of the substation. As a result, the infrastructure, including busbar reactors, line reactors, and feeder

Name of the report	Findings and Impact Management Measures Identified	Section of the report where the information is included
	bays, will stand out against the horizon. This is particularly true when viewed from close distances within 1 km, where the substation infrastructure will dominate the field of vision. **The Viewing Distance** The visual impact of an object in the landscape diminishes at an exponential rate as the distance between the observer and the object increases (Hull and Bishop, 1988). The visual impact of the project components from a distance of 500 metres or less would be at its maximum (Figure 10-35). Viewing distance categorizes the proximity of observers to the project components: • Foreground (0-1 km): The infrastructure will be highly prominent and dominate the visual field. • Middle ground (1-6 km): The powerline remains visible but integrates moderately with the landscape. • Background (6+ km): The infrastructure becomes less distinct, blending into the horizon. **The Visual Absorption Capacity (VAC)** The capacity of the landscape to visually absorb new structures depends on vegetation density, landform complexity, and existing infrastructure.The VAC was determined based on field experience, taking into account the following: • Slope • Visual Pattern with regard to vegetation and structures • Vegetation height	

Name of the report	Findings and Impact Management Measures Identified	Section of the report where the information is included

Table 10-12: Visual Absorption Capacity Factors

VAC Factor		Categories		
Slope	Range Numeric Value VAC	0-3 % 3 Low	3-6 % 2 Moderate	> 6 % 1 High
Vegetation Height	Range Numeric Value VAC	VAC < 1 m 3 Low	1-6 m 2 Moderate	>6 m 1 High
Visual Pattern	Description Numeric Value VAC	Uniform 3 Low	Moderate 2 Moderate	Diverse 1 High

VAC has a combined rating of 9 which equates with a **Low VAC** due to the open landscape and grassland. Areas within the deeper valleys have a moderate VAC due the steep topography. This implies that the areas with a **Low**

Name of the report	Findings and Impact Management Measures Identified	Section of the report where the information is included
	VAC are inherently unable to visually accommodate or accept the visual change made by the proposed development. **Conclusion** The Ferrum–Mookodi 400kV Powerline and associated substation upgrades will inevitably alter the visual character of the landscape, particularly in areas of high visual sensitivity. The visual impact is expected to be most pronounced within 1,000 meters of the infrastructure, with diminishing significance beyond 10 kilometers. Without mitigation, these impacts could detract from the natural landscape's aesthetic value and affect the local sense of place. However, with the implementation of the recommended measures, the visual impact can be reduced to **medium-low** significance during operations and low significance after construction rehabilitation. These recommendations, coupled with ongoing stakeholder engagement and environmental monitoring, aim to balance infrastructure development with preserving the region's visual and cultural integrity.	

11 ENVIRONMENTAL IMPACT STATEMENT

This section of the report details the information required as per Section 3(1)(l) of Appendix 1 of Environmental Impact Assessment (EIA) Regulations, Government Notice R982 of 2014 (as amended).

(l) an environmental impact statement which contains—

(i) a summary of the key findings of the environmental impact assessment.

(ii) a map at an appropriate scale which superimposes the proposed activity and its associated structures and infrastructure on the environmental sensitivities of the preferred site indicating any areas that should be avoided, including buffers; and

(iii) a summary of the positive and negative impacts and risks of the proposed activity and identified alternatives;

There has been an overreliance on coal fired power stations to generate electricity and this has contributed to the elevated Greenhouse Gases recorded in South Africa. In addition, the sporadic electrical supply being experienced is due to station equipment failure. The IRP, 2019, has indicated that the country is intensively pursuing a diversified energy mix to reduce a reliance on non-renewable resources and ensure a cleaner environment. It has been noted that the Northern Cape has around 3.3 GW of committed renewable generation, with over 10 GW expected by 2030. To date, DFFE, has authorised more than ten renewable energy plants near the Ferrum and Mookodi substations which makes strengthening the network necessary to create a network that will transmit electricity to other regions and provinces. As such, NTCSA intends to construct the second Ferrum-Mookodi 400kV powerline. The proposed powerline crosses state owned farms that are under the Tribal Councils custodianship and private farms within three local municipalities under the jurisdiction of John Taolo Gaetsewe District Municipality, Northern Cape and two local municipalities under the Dr Ruth District Municipality within the North-West Province.

The route runs through a semi-arid landscape consisting of extensive plains interspersed with intermittent hills, ridges, outcrops, and flattish uplands and crosses many rivers, tributaries, and drainage lines. Most of the watercourses have been classified as Ecological Support Areas. Apart from the shrubland, the route traverse agricultural areas, residential, and mining areas. Notable towns within the study area are Ellendale, Mogojaneng, Hotazel and Kathu. National, regional and other secondary roads traverse the study area. Most notably, the N14 which is deemed a tourist corridor. Secondary gravel and tar roads, as well as an extensive network of rural farm roads complete the transport network for vehicles. Rail infrastructure is also present near Hotazel.

As more than 50% of the route is within the Northern Strategic Transmission Corridor, a Basic Assessment has been undertaken per Government Notice 113 read in conjunction with the EIA

Regulations, 2014 (as amended). Specialist assessments commissioned have all concluded that there are no fatal flaws. The project has a positive national impact as it is key to social and economic development, and it also contributes to the achievement of the Sustainable Development Goals (SDGs).

The powerline will be placed along multiple single-circuit angle steel towers, which can be easily placed outside the buffers of the riparian areas; therefore, the potential risks to these watercourses are expected to be low. However, due to their height, towers are deemed to have a relatively high visual impact. The impact on burial grounds is medium with mitigation measures whilst the stone tools are rated low since they are found almost everywhere in the wider region of Namaqualand. As a result, their availability in the area is not unexpected. In terms of avifauna, the proposed infrastructure will result in impacts of medium to medium-low significance to birds occurring in the vicinity of the new infrastructure, which can be reduced further through the application of mitigation measures. There are no long-term tower impacts on the terrestrial animals due to displacement since they can return when construction is completed. No impacts are expected on threatened SCC, but several species of lower conservation concern and protected species may be affected by the project. To minimise vegetation clearance, the access roads utilised for the existing line must be used during construction and maintenance of the proposed powerline. Summaries of the impacts assessed, and their significance as well advantages and disadvantages are given in Tables 11-1 and 11-2.

Positive social cumulative impacts are expected on the local and national levels as there will be revenue generation and employment opportunities for local communities, adequate capacity for renewable plants to feed into the two substation, and the evacuation of electricity to other regions. Social negative cumulative effects are also expected in terms of community expectations and service infrastructure where construction activities occur simultaneously and in sufficient proximity. In addition, establishing more lines will have a cumulatively high negative impact on landscape aesthetics whilst the displacement of avifauna due to disturbance and habitat transformation is cumulatively medium due to the small size of the area where habitat transformation has occurred. The cumulative impact on the animal species is low, whilst for aquatic, the impact is medium. The aquatic impact cannot be well mitigated as some level of hydrological and habitat modification is unavoidable. As such, the avoidance of watercourse areas has been considered during line design and determining tower positions. Heritage and paleontological impacts are localised and impacts on air quality are insignificant.

The walkdown undertaken by the avifauna, ecology , surface water and archaeology specialists has fed into the final tower positions, and where possible, towers will be moved to avoid sensitive areas. The sensitive areas identified are shown in Figure 11-1 and tower specific maps attached in Appendices B-2 and H. During the notification of stakeholders and I&APs, no objections have been received from

either stakeholder departments or registered I&AP. In addition, all affected landowners have signed the servitude agreements. Based on the above, the EAP is of the opinion that the proposed project should be authorised.

Table 11-1: Summary of assessed impacts.

THEME	ACTIVITY	SIGNIFICANCE WITHOUT MITIGATION	SIGNIFICANCE WITH MITIGATION	PROPOSED MITIGATION MEASURES
Social	Movement of construction vehicles	Low (-)	Low (-)	See 9.4.12
	Hiring for construction	Medium (+)	High (+)	
	On the job training	Low (+)	Medium (+)	
	Procurement of materials Housing for laborer's	Low (+)	Medium (+)	
	Influx of job seekers	Medium (-)	Low (-)	
Avifauna	Vegetation clearance and construction activities	Medium (-)	Medium (-)	See 9.4.1
		Medium (-)	Low (-)	
	Construction activities	Medium (-)	Low (-)	
	Illegal poaching	Medium (-)	Low (-)	
	Movement of heavy machinery.	Low (-)	Low (-)	
Animals	Construction activities (Potential poaching activities)	Medium (-)	Low (-)	See 9.4.2

THEME	ACTIVITY	SIGNIFICANCE WITHOUT MITIGATION	SIGNIFICANCE WITH MITIGATION	PROPOSED MITIGATION MEASURES
Flora	Vegetation clearance	Medium (-)	Low (-)	See 9.4.2
Water (Aquatic) Land capability	Excavations and road upgrades	Medium (-)	Low (-)	See 9.4.7-9.4.10
		Medium (-)	Low (-)	
	Indiscriminate dumping of waste products or construction materials	Low (-)	Low (-)	
	Soil stripping and construction of infrastructure.	Medium (-)	Low (-)	
	Inadequate stormwater management	Low (-)	Low (-)	
	Clearing of vegetation for project infrastructure	Medium (-)	Low (-)	
	Storage of chemicals, mixes, and fuels with associated accident spills	Low (-)	Low (-)	
	Final landscaping and reshaping	Low (-)	Low (-)	
Land capability	Soil stripping and construction of infrastructure.	Medium (-)	Low (-)	See 9.4.4
Visual	Construction of a powerline And substation upgrades	Medium (-)	Low (-)	See 9.4.10
	Excavation	Medium	Medium	See 9.4.5-9.4.6

THEME	ACTIVITY	SIGNIFICANCE WITHOUT MITIGATION	SIGNIFICANCE WITH MITIGATION	PROPOSED MITIGATION MEASURES
Cultural Environment		(-)	(-)	
		Medium (-)	Low (-)	
		Medium (-)	Medium (-)	
Avifauna	Operation of powerline	High (-)	Medium (-)	See 9.5.1
		High (-)	Medium (-)	
		Medium (-)	Low (-)	
		Medium (-)	Low (-)	
Land Water	Maintenance of infrastructure (powerlines and roads) and movement across wetlands	Medium (-)	Low (-)	See 9.5.2 and 9.5.3
Flora	Maintenance of powerline	Low (-)	Low (-)	See 9.5.4
Visual	Operation of powerline and upgraded Mookodi substation	Medium (-)	Medium (-)	See 9.5.5
	Operation of the upgraded Ferrum substation	High (-)	Medium (-)	

The table below summarises the positive and negative impacts the proposed project will have on the environment.

Table 11-2: Positive and Negative Impacts of the proposed project

Aspect	Rating (Negative / Positive)	Impact Description
Positive and Negative Impacts that will be experienced if the powerline is constructed.		
Job creation	Positive	The proposed project will job opportunities during its various phases including planning and design, pre-construction, construction, operational and decommissioning phases.
Ecology (Flora)	Negative	There are three protected tree species that occur within the corridor, namely camelthorn (Vachellia erioloba), grey camelthorn (Vachellia haematoxylon, and shepherd's bush (Boscia albitrunca). In addition, one nationally protected species occurs on site (Harpagophytum procumbens). There are therefore no threatened plant species that occur on site, and none that are likely to occur in the corridor. The project will result in vegetation clearance and loss of protected tree species. Measures have been recommended to minimise the removal of these species .
Ecology (Fauna)	Negative	Dens of animals were noted in some sections of the powerline and measures have been recommended for implementation.
Heritage	Neutral	Stone tools have been identified within the proposed servitude with graves and cemeteries noted outside. The tools were found in secondary positions, with no provenance and are graded as of Medium-Low value. None of these can be of such significance that can prevent the proposed development from proceeding.

Aspect	Rating (Negative / Positive)	Impact Description
Palaeontology	Negative	The occurrence of stromatolite-bearing dolomite was confirmed during the field assessment and the impact on the palaeontology of the study site is considered to be MEDIUM which implies that, although the stromatolites in the study are scientifically very important, the effect of the impact could be mitigated as long as the Change Find Procedures in the EMPr are implemented.
Aquatic	Negative	The proposed powerline will cross many hydrological / freshwater resources. Looking at the current PES of the assessed systems as well as the potential risks which may result from the powerline routes, the negative impacts identified can be mitigated successfully.
Avifauna	Negative	The SCC, Kori Bustard (Ardeotis kori), Lappet-faced Vulture (Torgos tracheliotos) and White-backed Vulture (Gyps africanus) and other priority species were recorded including habitats where SCC are likely to occur. Habitat destruction, bird collisions and electrocutions have been identified as impacts that may occur. It has been concluded that these impacts can be mitigated to acceptable levels with the implementation of the EMPr.
Visual impact	Negative	Visual character is based on human perception and the observer's response to the relationships between and composition of the visible project components. The transmission line, i.e., the towers and the cables suspended between each tower, is the

Aspect	Rating (Negative / Positive)	Impact Description
		most visible and permanent project component. The transmission towers have an industrial character enforced by the double steel pole and the electrical cables between the towers. The entire transmission line will be perceived as a rhythmic arrangement of vertical towers forming a linear element through the landscape. The electrical cables emphasise the linear character of the transmission line but are easily absorbed in the background when viewed from distances greater than 1km.The impacts have been assessed and mitigation measures have been considered in line design.
Soil and land capability	Negative	Erosion as well as hydrocarbon spills and leaks of vehicles and heavy machinery is expected to impact upon the groundwater source given the permeability of the underlying bedrock. These impacts can however be mitigated to a certain extent. The laydown area, camp site, tower positions and movement of heavy machinery will result in disruption of the soil profile, erosion, compaction and soil chemical pollution. These impacts can be mitigated to acceptable levels with the implementation of the EMPr.
Traffic	Negative	Delivery of materials on site and workers travelling to work will lead to high traffic volumes. This impact has been assessed and can be mitigated to acceptable levels.
Waste	Negative	The proposed project will generate different waste streams. If the waste is not properly

Aspect	Rating (Negative / Positive)	Impact Description
		managed, it can cause pollution on site. This impact has been assessed and mitigation measure are provided.
Noise	Negative	Noise will be generated from the movement of construction vehicles and equipment. This may impact on the humans and animals. This impact has been assessed and can be mitigated to acceptable levels.
Social	Positive	The following are impacts are expected during construction: Benefits accruing to the local economy due to short term socio-economic spin-offs, skills training of local labourers, the use of clean energy and constant supply of electricity are anticipated during the project life cycle. These impacts have been assessed and mitigation measures to enhance the impact.
	Negative	Influx of labourers, encroaching on private property, spreading of transmitted diseases, decline in the affected property value, visual intrusion on residents, motorists and tourists are some of the negative impacts that can be expected during the implementation phase. Apart from the intrusion, which is permanent, mitigation measures to minimise the negative impacts have been recommended.
Positive and Negative Impacts that will be experienced if the no-go alternative is implemented		
No job creation	Negative	If the powerline is not built, there will be no employment opportunities created.
No provision of additional power	Negative	South Africa has been impacted by load shedding which has negatively impacts,

Aspect	Rating (Negative / Positive)	Impact Description
		schooling, businesses, the society, and many other aspects of life. If this project does not take place, the following will take place: • There will be no strengthening of the Transmission infrastructure network to evacuate the existing and expected renewable power to other load centres in the country. • Mining activities will not function efficiently. • Power cuts will continue.
Undisturbed environment	Positive	If the powerline is not built, there will be no disturbance of the environment including fauna, flora, soil, heritage, palaeontology, aquatic, topography and more.

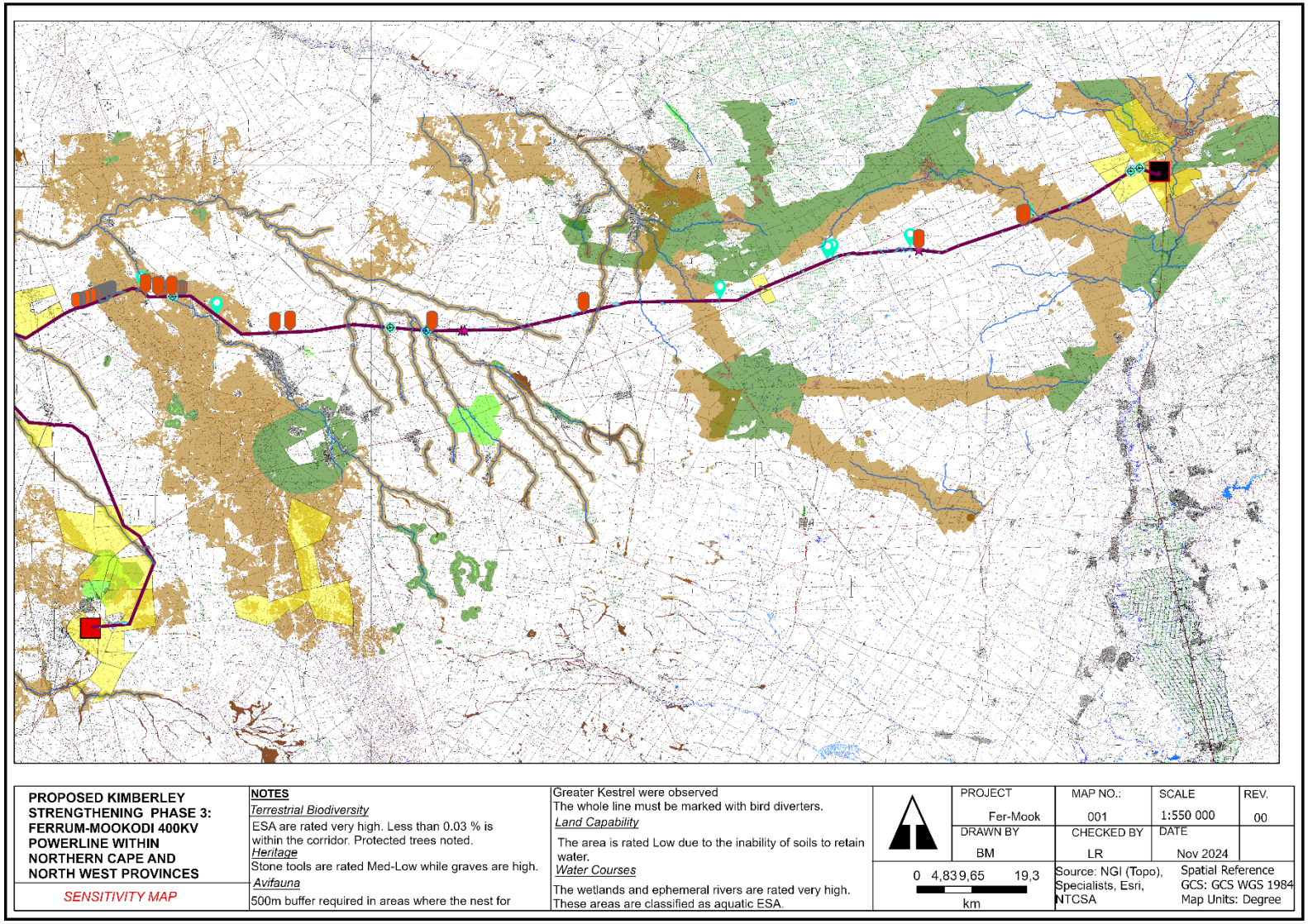


Figure 11-1: Sensitivity Map

12 IMPACT MANAGEMENT MEASURES FROM SPECIALIST REPORTS FOR INCLUSION IN THE EMPR

This section of the report details the information required as per Section 3(1)(m) of Appendix 1 of Environmental Impact Assessment (EIA) Regulations, Government Notice R982 of 2014 (as amended).

(m) based on the assessment, and where applicable, impact management measures from specialist reports, the recording of the proposed impact management outcomes for the development for inclusion in the EMPr;

The following impact management measures from specialist reports for inclusion into the EMPr.

12.1 Agricultural Assessment

Management of loss of land capability

- Direct surface disturbance of the identified arable soils can be avoided where possible to minimise loss of arable soils.
- Avoid construction on active agricultural soils where feasible;
- Minimise the development footprint within the actively cultivated soils;
- The footprint areas must be lightly ripped to alleviate compaction;
- Limit removal of vegetation to demarcated areas only;
- Limit earthworks and vehicle movement to demarcated paths and areas.

Soil compaction management

- Soil Compaction is usually greatest when soils are moist, so soils should be stripped when moisture content is as low as possible;
- Heavy equipment movement over replaced soils must be minimised;
- Minimise compaction during smoothing of replaced soils by using dozers rather than graders; and
- Following placement, compacted soils must be ripped to full rooting depth (30cm as the bare minimum seedbed) to allow penetration of plant root.

Soil contamination management

- Contamination prevention measures must be addressed in the Environmental Management Programme (EMPr) for the proposed development, and this must be always implemented and made available and accessible to the contractors and construction crew conducting the works on site for reference.
- A spill prevention and emergency spill response plan, as well as dust suppression, and fire prevention plans must also be compiled to guide the construction works.

- An emergency response contingency plan must be put in place to address clean-up measures must a spill and/or a leak occur, as well as preventative measures to prevent contamination; and
- Burying of any waste including rubble, domestic waste, empty containers on the site must be strictly prohibited and all construction rubble waste must be removed to an approved disposal site.

Soil erosion and dust management

- Removal of vegetation must be avoided until such time as soil stripping is required and similarly exposed surfaces, must be re-vegetated or stabilised as soon as is practically possible;
- All excavation/construction vehicles must be in good condition and inspected regularly to ensure there are no chemical spills (diesel/oil) which will negatively impact the receiving environment;
- After the powerline installation, the ground must be seeded with an indigenous grass or other native cover;
- Vegetation clearance and commencement of construction activities can be scheduled to coincide with low rainfall conditions when the erosive stormwater and wind are anticipated to be low whenever possible;
- Avoid vegetation clearance prior to periods of prolonged inactivity;
- All disturbed areas adjacent to the proposed development areas must be re-vegetated with an indigenous grass mix or vegetation mix, if necessary, to re-establish a protective cover, to minimise soil erosion;
- Temporary erosion control measures must be used to protect the disturbed soils during the construction phase until adequate vegetation has established.

12.2 Animal Impact Assessment

- Many of the active den sites are close to proposed tower positions and it is recommended that these dens must be marked prior to construction.
- Where possible, the dens must not be disturbed. It is probable that the animals will move from the dens once activity start.
- It will be important to limit deep excavations to areas where construction is starting. The concern is that animals can fall into the excavated holes.
- Many of the animals in the area are active at dusk or dawn or during the night. Safety nets must be placed around the excavated areas to lower the risk of animals entering the area.
- Use shade netting to ensure small animals such as small mammals and rodents can’t get through the nets.
- It is recommended that a ramp is left to help animals to escape during the night.
  Part of the daily routine must be to remove any animals trapped at night and release it away from the active site.

- Killing of trapped animals and use as bushmeat is prohibited.
- Any dead animals must be removed off site and dispersed at predetermined sites.

12.3 Avifauna Impact Assessment

12.3.1 Impact and Walkdown Assessment (The Biodiversity Company, 2024)

- 500 m seasonal no-go buffers need to be applied to the Greater Kestrel nests observed near the proposed powerline. No construction activities are permitted within 500 m of these nests between the months of July and February;
- The entire line should be mitigated against collisions and electrocutions by nest-proofing and installing anti-perch devices in regions of electrocution risk, as well as placing bird diverters according to industry standards;
- Identified areas of high collision risk must have the diverters placed 5 m apart.
- Due to the high sensitivities of the proposed line, a SACNASP registered avifauna specialist must compile a detailed ornithological management plan. Herewith are some preliminary recommendations:
    1. During the first year, the line needs to be monitored quarterly by a SACNASP registered avifauna specialist; monitoring should include carcasses searches to identify further hotspot areas along the power line that need further mitigations;
    2. During the second year, the line needs to be monitored bi-annually;
    3. Thereafter, it needs to be monitored every 3 – 5 years;
    4. If hotspots or excessive deaths are observed, additional mitigations must be implemented.

    All mitigation measures prescribed by Molepo (2020) remain applicable for the development and must be adhered to.

Vegetation and Habitats as described in the ecological walkdown report

- ECO walk ahead of clearance to ensure that no new nests are destroyed
- Areas of indigenous vegetation, even secondary communities outside of the direct footprint, should under no circumstances be fragmented or disturbed further. Clearing of vegetation should be minimised and avoided where possible.
- All activities must be restricted to flat areas as far as possible. It is recommended that areas to be developed be specifically demarcated so that during the construction phase, only the demarcated areas be impacted upon. All structure footprints to be rehabilitated and landscaped after installation is complete. Rehabilitation of the disturbed areas existing in the project area must be made a priority. Topsoil must also be utilised, and any disturbed area must be re-vegetated with plant and grass species which are indigenous to this vegetation type.

- Existing access routes, especially roads must be made use of where feasible. The development areas and access roads should be specifically demarcated so that during the construction phase, only the demarcated areas may be impacted upon
- Areas that are denuded during construction need to be re-vegetated with indigenous vegetation to prevent erosion during flood and wind events. This will also reduce the likelihood of encroachment by alien invasive plant species. Rehabilitated areas must be cordoned off and livestock access not permitted.

Avifauna

- The duration of the construction should be minimised to as short term as possible, to reduce the period of disturbance on avifauna.
- Outside lighting should be designed and limited to minimise impacts on avifauna. All outside lighting should be directed away from highly sensitive areas. Fluorescent and mercury vapor lighting should be avoided, and sodium vapor (green/red) lights should be used wherever possible.
- Noise must be kept to an absolute minimum during the evenings and at night to minimise all possible disturbances. Construction should be restricted to daylight hours.
- No trapping, killing, egg poaching or poisoning of any wildlife is to be allowed
- Signs must be put up in communal areas to enforce this. This must be communicated during toolbox talks.
- All construction and maintenance motor vehicle operators should undergo an environmental induction that includes instruction on the need to comply with speed limits, to respect all forms of wildlife. Speed limits must still be enforced to ensure that road killings, dust and erosion is limited. The speed limits should be restricted to maximum 40 km/h.
- Any holes/deep excavations must be dug and planted in a progressive manner and should not be left open overnight;
- Should the holes overnight they must be covered temporarily to ensure no avifauna species fall in.

Power line mitigations:

- Powerline construction must follow the guidelines as outlined in the “Generic Environmental Management Programme Relevant to an Application for Substation and Overhead Electricity Transmission and Distribution Infrastructure”, outlined in Government Gazette No. 42323 of 22 March 2019, must be adopted. However, diverters such as flapping devices (dynamic device) and thickened wire spirals (static device) that increase the visibility of the lines need to be placed every 5 - 10 m across the entire line due to the high presence of SCC in the area.

Areas identified as possible collision hotspots must have diverters placed at an interval of 5 m. The Inotec BFD88 bird diverter is highly recommended due to its visibility under low light conditions when most species move from roosting to feeding sites; BFDs should be fitted on the OHL during construction, in consultation with the bird specialist.

- Power lines must be fitted with bird diverters for the extent of the line
- The design of the proposed transmission line must be of a type or similar structure as endorsed by the Eskom-EWT Strategic Partnership on Birds and Energy, considering the mitigation guidelines recommended by Birdlife South Africa (2017). Bird diverters or spirals must be added to the transmission line to reduce fatalities.
- Any OHLs must be of a design that minimizes electrocution risk by using adequately insulated 'bird friendly' monopole structures, with clearances between live components of 2 m or greater.
- Ensure that the phase cables are spaced far enough apart to reduce the risk of large birds touching both simultaneously (2 m for large raptors and vultures) (Prinsen et al., 2012). If such separation (isolation) cannot be provided, exposed parts must be covered (insulated) to reduce electrocution risk.
- Post construction collision monitoring following the best practice guidelines must be performed. During the first year, the line needs to be monitored quarterly by a SACNASP registered avifauna specialist; monitoring should include carcasses searches to identify further hotspot areas along the power line that need further mitigations. During the second year, the line needs to be monitored bi-annually. Thereafter, it needs to be monitored every 3-5 years. If hotspots or excessive deaths are observed, additional mitigations must be implemented. If any vulture incidents are observed, they should be reported to Vulpro, and any other avian incidents need to be reported to EWT and BirdLife South Africa.
- All the parts of the infrastructure must be nest proofed and anti-perch devices placed on areas that can lead to electrocution
- No construction activity should occur within 500 m of the identified Greater Kestrel nests between the months of July to February.

Alien Species

- Compilation of and implementation of an alien vegetation management plan for the grid corridor.
- The footprint area of the construction should be kept to a minimum. The footprint area must be clearly demarcated to avoid unnecessary disturbances to adjacent areas. Footprint of the roads must be kept to prescribed widths.

- Waste management must be a priority and all waste must be collected and stored adequately. It is recommended that all waste be removed from site on a weekly basis to prevent rodents and pests entering the site.

Environmental Training Awareness

- All personnel and contractors to undergo Environmental Awareness Training. A signed register of attendance must be kept for proof. Discussions are required on sensitive environmental receptors within the project area to inform contractors and site staff of the presence of SCC and priority species, their identification, conservation status and importance, biology, habitat requirements and management requirements the Environmental Authorisation and within the EMPr.

12.3.2 EWT Recommendations based on the review of the Avifauna Assessment Report

Recommendations regarding bird collision risk

- The walkdown recommends that the entire power line or the parallel power line be installed with bird flight diverters. As mentioned in the walkdown report there are two vulture restaurants both at least 60km from the power line. Three vulture species use the project area intensively (based on previous site visits. (MO Mohale, based on previous visits on the northern side of the line). There have been a few records of the three species; Lappet-faced Vulture, Cape Vulture and White-backed Vulture. The common challenge faced by the vulture species with regards to high voltage (HV) power lines is collision. Electrocution is very rare on HV power lines due to large electrical spacing among live conductors and between live conductors and earthed structures.
- If for any reason the entire line cannot be marked, the spans near water from 202-319 must be installed with bird flight diverters especially where the power line crosses the river / water body. Towers 108 -201 where there are rocky ridges that may obscure the power line must be mitigated with bird flight diverters. Furthermore, there were many vultures observed in this section of the project area. In summary as per the two points above towers 108 to 319 are very high risk in addition to the line being high risk as per the avifaunal Site Ecological Importance.
- Bird flight diverters to be spaced 15m apart as per the known technical knowledge or industry standards.

Recommendations regarding nesting

- Construction to adhere to recommended seasonal no-go buffers for active Greater Kestrel nests near the proposed line during the breeding season as per the walkdown report.

- In this project area where trees are minimal especially further south to Ferrum, towers will provide a steady nesting platform for birds such as Greater Kestrel, Crow spp., white-backed Vulture, martial Eagle and Verreaux's Eagle, which are likely to lead to power supply issues and therefore may require anti-perch devices to prevent birds building above critical live conductors.
- Towers close to water bodies e.g. towers 291 to 319, are more at risk as the habitat feature attracts streamer causing aquatic bird species such as Egyptian Goose, South African Shelduck and Red-billed Teal, and thus need anti perch devices and any approved mitigation that can prevent bird streamer from reaching live conductors.
- Sociable Weaver nests cannot be prevented on HV lattice structures during construction. The nesting management guideline detailing responsible destruction and relevant procedure such breeding season and legislation of these nests need to be developed with avifaunal specialists.

Post construction monitoring and line maintenance to be part of the EMPr

- All data of fatalities need to be recorded in the national database (CIR) and incidents to undergo NTCSA environmental incidents management procedure.
- Any devices that become damaged or fall during the operational phase to be replaced within a year of being identified.
- The entire line to be monitored quarterly in the first year from the start of the line being built and second year line to be monitored biannually. First two years to be monitored by a registered avifaunal specialist. Quarterly and biannual ornithological management reports to be produced and actioned within a year of the reports being received. Further annual monitoring to be integrated into NTCSA's annual line maintenance schedules by internal Environmental practitioners.
- Should new knowledge and products that can significantly improve visibility for the species of concern be available, the products need to be considered for additional mitigation for this site.

12.4 Archaeology

- The developer is reminded that archaeological materials (e.g., pottery, stone tools, remnants of stone-walling, graves, etc) might be hidden underground, and only exposed once construction began, as such the client is reminded to take precautions during construction.

Pre-construction education and awareness training

Prior to construction, contractors should be given training on how to identify and protect archaeological remains that may be discovered during the project. The pre-construction training should include some limited site recognition training for the types of archaeological sites that may

occur in the construction areas. Below are some of the indicators of archaeological site that may be found during construction:

- Flaked stone tools, bone tools and loose pieces of flaked stone;
- Ash and charcoal;
- Bones and shell fragments;
- Artefacts (e.g., beads or hearths);
- Packed stones which might be uncounted underground, and might indicate a grave or collapse stone walling.

- In the event that any of the above are unearthed, construction on the affected pylon site should cease and the area be demarcated by a danger tape. Accordingly, a professional archaeologist or SAHRA officer should be contacted immediately. In the meantime, it is the responsibility of the contractor to protect the site from publicity (i.e., media) until a mutual agreement is reached. Noteworthy that any measures to cover up the suspected archaeological material or to collect any resources is 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 of SAHRA.

Tower Specific Measures

- An educational programme to construction workers is essential to avoid accidental damage. In addition, NTCSA must take note of the position of the graves and cemeteries and ensure that no negative impact take place during construction. A danger tape around the site is recommended.
- An ECO must monitor construction activities on tower position 199-203.
- In line with the NHRA, a 30m buffer must be established around graves.
- NTCSA must take note of the stone tool sites and ensure that the area is demarcated on the day of construction.

ACFP for Heritage Resources

The following procedures must be followed when heritage resources are encountered during the operational or construction phase:

- All construction/clearance activities in the vicinity of the heritage resources found by accident on site must cease immediately to avoid further damage to the chance finds
- Immediately report the chance finds to the supervisor/site manager or if they are unavailable, report to the project Environmental Officer (EO) who will provide further instructions.
- Record (note taking, photograph with a scale, GPS coordinates) of all the chance find exposed during the activity.

- All remains are to be stabilised in situ.
- Secure (e.g., barricade) the area to prevent further disturbance on heritage resources.
- The EO must contact the qualified archaeologist registered with the association for Association for Southern African Professional Archaeologist (ASAPA) or South African Heritage Resources Agency (SAHRA).
- The project archaeologist will conduct the inspection and assess the significance of the chance finds under SAHRA guidelines, give recommendation and mitigation measures.

12.5 Civil Aviation

- The proposed powerline and supporting infrastructure is compliant with all relevant ICAO Annex 14 and SACAA (CARS and CATS) standards with respect to obstacle limitation surfaces and can, therefore, be supported for purposes of environmental approval.
- A future Obstacle Approval from the SACAA will be required, but based on the aforegoing analysis there is no reason why this would not be granted.
- Sections of the powerline will need to be marked in compliance with SA-CATS 139.

12.6 Freshwater and Risk Assessment

The following general mitigation measures are provided:

- Avoid all sensitive freshwater features (river systems and wetlands) and buffers where feasible;
- Implement a rehabilitation plan for any disturbed watercourses. Cleared areas must be rehabilitated and stabilised to avoid impacts to downstream/adjacent watercourses and buffer areas;
- Reduce the disturbance footprint and the unnecessary clearing of vegetation when traversing the identified drainage lines;
- Make use of existing access routes as much as possible, before new routes are considered. Any selected “new” route must not encroach into the wetland areas;
- Keep tower base excavation and soil heaps neat and tidy;
- Limit construction activities in proximity (< 50 m) to watercourses to the dry season when storms are least likely to wash concrete and sand into wetlands. This is only where towers are within wetlands and buffer areas;
- Ensure soil stockpiles and concrete / building sand are sufficiently safeguarded against rain wash;

- Mixing of concrete must under no circumstances take place in any watercourse area or their buffers. Scrape the area where mixing and storage of sand and concrete occurred to clean once finished;
- Limit the placement of towers within wetlands and buffer areas where feasible;
- Do not situate any of the construction material laydown areas within any watercourse or buffer area. Try adhering to a 30 m buffer in these instances;
- No machinery should be allowed to be parked in any watercourse or buffer areas;
- Promptly remove all alien and invasive plant species that may emerge during construction (i.e. weedy annuals and other alien forbs) must be removed;
- Limit soil disturbance;
- The use of herbicides is not recommended in or near watercourses (opt for mechanical removal);
- Appropriately stockpile topsoil cleared from the powerline footprint;
- Clearly demarcate powerline construction footprint, and limit all activities to within this area;
- Minimize unnecessary clearing of vegetation beyond the tower footprints and powerline corridors;
- Lightly till any disturbed soil around the tower footprint to avoid compaction;
- See mitigation for increased bare surfaces, runoff and potential for erosion;
- Re-instate topsoil and lightly till transmission tower disturbance footprint;
- Make sure all excess consumables and building materials / rubble is removed from site and deposited at an appropriate waste facility;
- Appropriately contain any generator diesel storage tanks, machinery spills (e.g. accidental spills of hydrocarbons oils, diesel etc.) or construction materials on site (e.g. concrete) in such a way as to prevent them leaking and entering wetland or buffer areas;
- Check for oil leaks, keep a tidy operation, and promptly clean up any spills or litter;
- Provide appropriate sanitation facilities for workers during construction and service them regularly;
- The Contractor should supply sealable and properly marked domestic waste collection bins and all solid waste collected must be disposed of at a licensed disposal facility;
- The Contractor must be in possession of an emergency spill kit that must be complete and available at all times on site;
- Any possible contamination of topsoil by hydrocarbons must be avoided. Any contaminated soil must be treated in situ or be placed in containers and removed from the site for disposal in a licensed facility;
- Adherence to the buffer areas. These should be visibly demarcated to avoid encroachment into these areas. In the areas where infrastructure is required to be placed within the wetlands or

buffers (as a last resort) then all other applicable mitigation should be implemented with prompt rehabilitation of the disturbed areas;

- Silt traps and sediment trapping berms must be in place in areas of preferential flow or where erosion is observed;
- In the case where stormwater control is implemented, erosion and sediment control measures must be incorporated and only clean water must be released into the environment;
- Where excavations are undertaken, topsoil must be stockpiled separately from subsoil, to be reintroduced into the affected areas during the rehabilitative stages in a last-out first-in manner;
- Prevent uncontrolled access of vehicles through the watercourses and their respective buffers that can cause a significant adverse impact on the hydrology and alluvial soil structure of these areas;
- The storage and use of chemicals and concrete mixtures must be in bunded areas with sufficient volume allowances. Mixing must be conducted on impermeable materials;
- Should mixing of concrete occur, it must under no circumstances take place within the drainage or wetland systems. Scrape the area where mixing and storage of sand and concrete occurred to clean once finished and prevent rain-wash of residual materials into the downstream watercourses; and
- Appropriately rehabilitate the project area by ripping, landscaping and re-vegetating with locally indigenous species.

Erosion and sedimentation of catchment and downstream watercourses

- Loose soils are particularly prone to loss due to wind or water. It is therefore preferable that construction takes place during the dry season where feasible, to reduce the erosion potential of the exposed surfaces. Should higher rainfall during the construction be foreseen then excavation and backfilling activities should be suspended until drier conditions return;
- Avoid the creation of concentrated flow paths;
- Ensure soil stockpiles and concrete / building sand are sufficiently safeguarded against rain wash;
- Signs of erosion must be addressed immediately to prevent further erosion of the area to prevent head cut and gully erosion from forming. This can be addressed as it occurs by filling, and re-contouring to gentler gradients followed by re-vegetating;
- Temporary and permanent erosion control methods may include retention basins, detention ponds, interceptor ditches, seeding and sodding, riprap of exposed embankments, erosion mats, and mulching;

- Any exposed earth or cleared sites (includes the areas adjacent to the proposed infrastructure) should be rehabilitated promptly by planting suitable vegetation (vigorous indigenous grasses) to protect the exposed soil. Sandbags and geotextiles should be used to assist until vegetation has established in these reworked areas;
- Compacted soils should be lightly tilled to a maximum depth of 400mm without the use of heavy machinery to promote vegetation reestablishment and reduce the potential for preferential flow paths and subsequent erosion and sedimentation from occurring. Tilling can also be achieved manually with the use of forks; and
- Where required, the rehabilitation of watercourses and their banks must take place following construction. Key areas where erosion has occurred should be rehabilitated through bank reprofiling to gentler gradients and the revegetation of the wetland periphery areas.

Spread of alien invasive vegetation

- Revegetate bare or denuded areas as soon as possible;
- Once and if detected, control the spread of any existing colonies;
- Avoid working in areas with alien vegetation as dispersal into unaffected areas may be aided through vehicular movement; and
- Should alien vegetation infestation be considered a contributing factor to ecosystem degradation on the site, the implementation of an alien invasive management plan should be considered.

Impaired water quality and pollution

- All chemicals and toxicants to be used for the construction must be stored outside the watercourse areas and their respective buffers, preferably on flat terrain and in a bunded area;
- All machinery and equipment should be inspected regularly for faults and possible leaks, these should be serviced off-site in a designated area;
- All contractors and employees should undergo induction which is to include a component of environmental awareness. The induction is to include aspects such as the need to avoid littering, the reporting and cleaning of spills and leaks and general good “housekeeping”;
- Adequate sanitary facilities and ablutions must be provided for all personnel within the project area. These facilities should be placed outside of sensitive environmental areas (wetlands and buffers included). These facilities must be maintained to promote their use;
- Have action plans on site, and training for contactors and employees in the event of spills, leaks and other impacts to the freshwater systems;

- The contractors used for the project should have spill kits available to ensure that any fuel or oil spills are clean-up and discarded correctly; and
- All waste generated on-site during construction must be adequately managed. Separation and recycling of different waste materials should be supported and no waste should be allowed to accumulate for a period longer than two weeks.

Altering overland flow characteristics

- Minimise the extent of concreted / paved / gravel or compacted areas; and
- Re-vegetate denuded areas as soon as possible to increase surface roughness and promote infiltration.

12.7 Palaeontological Impact Assessment

The following procedure must be considered in the event that previously unknown fossils or fossil sites are exposed or found during the life of the project:

1. Surface excavations should continuously be monitored by the ECO and should any fossil material be unearthed the excavation must be halted.
2. If fossiliferous material has been disturbed during the excavation process it should be put aside to prevent it from being destroyed.
3. The ECO then has to take a GPS reading of the site and take digital pictures of the fossil material and the site from which it came.
4. The ECO then should contact a palaeontologist and supply the palaeontologist with the information (locality and pictures) so that the palaeontologist can assess the importance of the find and make recommendations.
5. If the palaeontologist is convinced that this is a major find an inspection of the site must be scheduled as soon as possible in order to minimise delays to the development.

From the photographs and/or the site visit the palaeontologist will make one of the following recommendations:

a) The material is of no value so development can proceed, or:
b) Fossil material is of some interest and a representative sample should be collected and put aside for further study and to be incorporated into a recognised fossil repository after a permit was obtained from SAHRA for the removal of the fossils, after which the development may proceed, or:
c) The fossils are scientifically important and the palaeontologist must obtain a SAHRA permit to excavate the fossils and take them to a recognised fossil repository, after which the development may proceed.

6. If any fossils are found then a schedule of monitoring will be set up between the developer and palaeontologist in case of further discoveries.

12.8 Social Assessment

- Community Liaisons must be made available to sensitise the public about disruptions in operational schedule that will impact access to residential and other public activities whenever the project schedule should affect public activities and alternative arrangements be agreed upon with stakeholders to be affected in all the areas where such impacts should arise;
- Communication measures to include farming communities and in order to make arrangement for Contractors to access farmlands to avoid exposure to criminals;
- Security personnel must ensure that access to people's properties be controlled;
- Where possible, local SMME's and labourers/jobseekers be considered for those opportunities that can be made available for localization;
- Safety and Health precautions be encouraged in the form of primary health care and safety training.

12.9 Terrestrial Plant Species Assessment

- An Alien Invasive Management Plan must be compiled for the project.
- A permit must be obtained for any plant species that are protected under the Northern Cape Nature Conservation Act, 2009 (Act 9 of 2009) and the National Environmental Management: Biodiversity Act, 2004 (Act 10 of 2004).
- For all individuals of the protected trees, Boscia albitrunca, Vachellia erioloba, and Vachellia haematoxylon that will be destroyed for construction of infrastructure, a permit is required according to the requirements of the National Forests Act.
- A permit may be required for loss of individuals of the protected plant, Harpagophytum procumbens.

12.10 Visual Impact Assessment

Landscape Integration

- Design the substations and powerline structures to minimize contrast with the surrounding environment by using neutral, non-reflective colours and materials that blend with the natural landscape.
- Position infrastructure to follow natural topographic lines and avoid prominent ridgelines or highly visible areas.

Vegetative Screening

- Establish vegetative buffers with indigenous plant species around substations and along critical sections of the powerline to obscure structures and reduce visibility from key viewpoints.
- Maintain and restore natural vegetation in disturbed areas to enhance visual absorption capacity and reduce the visual footprint of the development.

Viewshed Consideration

- Avoid locating infrastructure in areas with high visual sensitivity, such as near cultural or scenic landmarks, where the visual integrity is critical.
- Perform site-specific analyses to identify less intrusive locations and adjust alignments accordingly.

Construction Phase Mitigation

- Ensure temporary structures, materials, and equipment are placed out of sight from public areas and removed immediately after use.
- Limit construction activities to defined areas and avoid unnecessary clearing of vegetation.

Lighting Management

- Install downward-directed and shielded lighting to reduce light pollution during operational phases, particularly at substations.
- Use motion-sensitive lighting to minimize nighttime visual intrusion.

Stakeholder Collaboration

- Engage with local stakeholders to incorporate their concerns into the visual mitigation strategies, especially in areas of high cultural or aesthetic value.
- Provide visual simulations and renderings to communicate the expected visual impact and proposed mitigation measures effectively.

Monitoring and Adaptation

- Implement regular visual impact monitoring during both construction and operation phases to ensure the effectiveness of mitigation measures.
- Adapt mitigation measures based on monitoring results and feedback from stakeholders.

13 ANY ASPECTS WHICH WERE CONDITIONAL TO THE FINDINGS OF THE ASSESSMENT EITHER BY THE EAP OR SPECIALIST WHICH ARE TO BE INCLUDED AS CONDITIONS OF AUTHORISATION

This section of the report details the information required as per Section 3(1)(n) of Appendix 1 of Environmental Impact Assessment (EIA) Regulations, Government Notice R982 of 2014 (as amended).

(n) any aspects which were conditional to the findings of the assessment either by the EAP or specialist which are to be included as conditions of authorisation.

Various licenses/ permits must be applied for and approved prior to construction, including SACAA's obstacle assessment, General Authorisation and tree permits. These documents will include recommendations and conditions that should be implemented. As they are not included in this document and the EMPr, the EAP recommends that the following conditions be included in the EA:

- NTCSA Holdings SOC Ltd must obtain permits/authorisations from appropriate authorities, including General Authorization and Tree permits before beginning any work. The specified conditions must be implemented.
- The results and recommendations from SACAA obstacle assessment must be implemented to ensure the safety of flights.

14 ASSUMPTIONS, UNCERTAINTIES, AND GAPS IN KNOWLEDGE WHICH RELATE TO THE ASSESSMENT AND MITIGATION MEASURES PROPOSED

This section of the report details the information required as per Section 3(1)(o) of Appendix 1 of Environmental Impact Assessment (EIA) Regulations, Government Notice R982 of 2014 (as amended).

(o) a description of any assumptions, uncertainties, and gaps in knowledge which relate to the assessment and mitigation measures proposed.

The assumptions, uncertainties and gaps in knowledge specified are as follows:

14.1 Environmental Assessment Practitioner

- The EAP compiled the Draft BAR using many sources including specialist reports, Provincial, District and Local planning documents.
- The tower locations for the deviation around the mine were not provided at the time of assessment and thus the corridor was assessed, rather than the locations of individual towers.
- Spatial information on the different environmental themes were augmented by the specialist assessments hence it is assumed that the information from the specialists is correct.
- The EAP assumes that the information provided by NTCSA is correct.

14.2 Agriculture

The Specialist assumptions, limitations and gaps in knowledge are as follows:

- 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;
- During the site assessment and compilation of the report, employment figures pertaining to the study area could not be sourced, 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

14.3 Animal Assessment

The Specialist assumptions, limitations and gaps in knowledge are as follows:

- Weather conditions during the period were cool/cold with a light to moderate wind blowing. The region has received little rainfall prior to the site visit in September 2024 and rain has occurred during the survey. This will have obvious implications on the biodiversity (not applicable for this study) that are likely to occur in the area. Nevertheless, the conditions during the survey were suitable for a survey of this nature.
- Apart from the prevailing weather conditions at the site, there were no other significant constraints that would negatively impact upon the study. Access to all areas of the study site was possible. There is sufficient good quality data available in the literature that partially negates the negative effect that the type of survey had on the quality of the assessment.

14.4 Avifauna Specialist

The Specialists' assumptions, limitations and gaps in knowledge are as follows:

14.4.1 Screening

- The findings, results, observations, conclusions and recommendations provided in this report are based on the author's best scientific and professional knowledge as well as available information regarding the perceived impacts on wetland and terrestrial environment.
- Limited time in the field means that important components of the local avifauna (i.e.nest sites or localised areas of key habitats for rare or threatened species) could have been missed.
- The site visits as well as personal experience of the avifauna of the area and of similar species in different parts of South Africa, through the specialist's experience working across the country, goes some way to remedying any knowledge deficiencies.

14.4.2 Basic Assessment

- The assessment area was based on the geospatial file provided by the client and any alterations to the development area subsequent to the site visit may affect the results;
- The field survey was undertaken from the 9th to 20th of September 2024, and 14th to16th of October 2024, to determine the presence of Species of Conservation Concern (SCC). Effort was made to cover all the different habitat types;
- The BA field work and walk down were completed in the spring;
- Due to access issues associated with impenetrable vegetation or contact information not available, walking to the location of every proposed tower was not possible. Where possible, a drive assessment was conducted instead of alongside the corridor for these sites. As a result, our confidence in our findings was high except in areas where roadside surveys were done where our confidence was only medium or low;
- The tower locations for the deviation around the mine were not provided at the time of assessment and thus the corridor was assessed, rather than the locations of individual towers;
- The GPS used in the assessment has an accuracy of 5 m and consequently, any spatial features may be offset by 5 m.

14.5 Archaeology

- As with any survey, archaeological materials may be under the surface and therefore unidentifiable to the surveyor until they are exposed once construction resume. As a result, should any archaeological/ or grave site be observed during construction stage, a heritage specialist monitoring the development must immediately be notified. In the meantime, no further disturbance may be made until such time as the heritage specialist has been able to assess the find in question. It is the responsibility of the contractor to protect the site from publicity (i.e., media) until all assessments are made.

14.6 Civil Aviation

- The scope of the study is to undertake the CASSV assessment. While based primarily on the requirements of the DFFE Protocol and the minimum requirements as stipulated on NEMA GNR 982 Appendix 6, the study also references various standards and recommended practices of the International Civil Aviation Organisation (ICAO), the SA Civil Aviation Authority (SACAA) and Air Traffic and Navigational Services SOC Limited (ATNS).

14.7 Palaeontology Specialist

The Palaeontologist's assumptions, limitations and gaps in knowledge are as follows:

- Based on the geology of the area and the palaeontological record as we know it, it can be assumed that the formation and layout of the dolomites, sandstones, shales, and sands are typical for the country and only some do contain fossil plant, insect, invertebrate and vertebrate material. The sands of the Quaternary period would not preserve fossils. It is not known if there are fossils below the ground surface.

14.8 Freshwater and Risk Assessment

The following aspects were assumptions, limitations, and gaps in knowledge of the assessment:

- It is assumed that all information received from the client is relevant and correct;
- The assessment area was based on the spatial file provided by the client and any alterations to the development area subsequent to the site visit may affect the results;
- A single season survey was completed for this assessment. Thus, temporal trends were not investigated;
- All regional and site-specific environmental information are contained within the original (submitted) documents and were therefore not repeated within this document. This document focuses only on the very specific mandate and findings of the walkdown and its associated ecosystem evaluations; and
- The GPS used in the assessment has an accuracy of 5 m and consequently any spatial features may be offset by 5 m.

14.9 Social Assessment

a) Assumptions made for the study were as follows:

- Short-term employment opportunities for local unskilled and semi-skilled local labour will lessen migrant contractual labour and prevent problems such illegal and informal settlements, crime and undesired health hazards such as the spread of HIV in the area;
- The intended grid capacity enhancement will boost local industrialisation and create more opportunities in terms of more solar energy plants that can be transferred to the grid;

- The comments from JTGDM is that in terms of their District, Provincial and Municipal Development Plans there is anticipated future infrastructure development such as housing settlements, schools and health facilities which will require additional energy and electrification.
- A proactive public participation process that is based on effective consultation, informed prior consent and information sharing, will assist in lessening misunderstandings and prevent potential conflicts.
- Due to the identified future demand for electricity in the area, it is anticipated that there will be a stakeholder buy-in into the implementation of the project.

b) Limitations anticipated for the study were as follows:

- Prior input from the public participation process into the baseline study was necessary, however due to logistical issues the inputs from the I&AP's would be done later in the process;
- Government stakeholders, municipalities and provincial departments have not made their comments except John Taolo Gaetsewe District Municipality;
- Some of the information from the Municipal IDP documents relies on the statistics that were gathered 10 years ago due to the national lockdown in collecting recent statistics;
- The project is happening in various local municipalities and district municipalities and traditional authorities as well as different provinces; might hinder the information-gathering process in terms multi-sectoral stakeholders with varying expectations in terms of socio-economic development and political orientation, might render shortcomings in the application of our assessment tools if the methodology is not adequately applied in terms of context and inherent differences.

14.10 Terrestrial Plant Species

The following assumptions, limitations, uncertainties are listed regarding the assessment of the site:

- The assessment is based on a two site visits. The current study is based on an extensive site visit as well as a desktop study of the available information. The time spent on site was adequate for understanding general patterns across affected areas.
- Compiling the list of species that could potentially occur on site is limited by the paucity of collection records for the area. The list of plant species that could potentially occur on site was therefore taken from a wider area and from literature sources that may include species that do not occur on site and may miss species that do occur on site. In order to compile a comprehensive site-specific list of the biota on site, studies would be required that would

include different seasons, be undertaken over a number of years and include extensive sampling. Due to legislated time constraints for environmental authorisation processes, this is not possible.

- Rare and threatened plant species are, by their nature, usually very difficult to locate and can be easily missed. This addressed by undertaking careful searches in areas that are identified as being suitable for species of concern.
- Many plant species are only detectable during the growing season which, in a relatively arid area, is dependent on recent and seasonal rainfall. Surveys done during the incorrect season, or during periods of drought, are unlikely to detect the full suite of plant species that occur in an area. This is addressed by undertaking field surveys in the correct season, and/or undertaking multiple surveys.

14.11 Visual Specialist

- Core Focus on Scenic Areas- The assessment assumes that scenic wilderness areas and landscapes hold intrinsic eco-tourism and aesthetic value, influencing community perceptions and potential impacts.
- Demographic Assumptions- Viewer demographic data is assumed based on general observations. Detailed viewer-specific studies were not conducted; these can be undertaken during the design phase if necessary.
- Subjectivity in Landscape Evaluation- Evaluating visual resources involves qualitative standards. Individual perceptions vary due to experiences, cultural background, and social contexts, making absolute determination challenging.
- Localized Perceptions- Communities in economically depressed areas may prioritize economic opportunities over visual considerations, potentially influencing responses to visual changes.
- Viewshed Mapping Limitations- The viewshed map is computer-generated and may overstate visibility by not accounting for minor landscape interruptions like trees, small buildings, and landforms.
- Exclusion of Ancillary Infrastructure- Ancillary components like borrow pits, spoil dumps, and construction camp sites are excluded from this assessment. These should be assessed during detailed design phases.
- Detailed Mitigation Design- Site-specific mitigation measures for cut-and-fill slopes are not included; these will be addressed by landscape architects in subsequent project stages.
- Do-Nothing Alternative- The ‘Do-Nothing’ alternative has not been explicitly addressed, as it assumes the continuation of the existing landscape without project influence.

15 REASONED OPINION AS TO WHETHER THE PROPOSED ACTIVITY SHOULD OR SHOULD NOT BE AUTHORISED

This section of the report details the information required as per Section 3(1)(p) of Appendix 1 of Environmental Impact Assessment (EIA) Regulations, Government Notice R982 of 2014 (as amended).

(p) a reasoned opinion as to whether the proposed activity should or should not be authorised, and if the opinion is that it should be authorised, any conditions that should be made in respect of that authorisation;

This Basic Assessment has shown that the proposed project will result in negative impacts; however, when mitigated adequately, these impacts will result in low residual impacts. It has also shown that there will be positive impacts, such as the creation of employment opportunities, a boost in the local economy, and a positive step in achieving the targets set for the utlisation of clean (renewable) energy. The specialists' studies and assessments concluded that the project is viable if all the mitigation measures are effectively implemented. Refer to the map in Figure 11-1 for the sensitivities noted and Section 11 above for the impacts that have been identified and their ratings. Interested and Affected Parties and landowners have been notified about the proposed project, and none have objected. The authorities with jurisdiction over the proposed project are being engaged and to date, none have objected to the proposed development. Furthermore, the avifauna, animal, plant, freshwater and heritage specialists' walkdown indicated no fatal flaws and specified tower-specific mitigation measures. In the interest of sustainable development, and considering the specialists' recommendations, and my professional experience on related projects, I, as an EAP, recommend that the assessed powerline corridor be authorized subject to the following recommendations being included in the Environmental Authorization:

- The stipulations and provisions of the attached Environmental Management Programme in Appendices H must be conveyed to and familiarized by the contractor and workers responsible for construction.
- Tower specific measures recommended by the avifauna, animal, plant, surface water and archaeology specialists and indicated in Section C of the Generic EMPr must be adequately implemented and monitored.
- An Environmental Control Officer (ECO) must be appointed to oversee the construction process and ensure compliance with conditions of approval.
- Permits required by NTCSA SOC Ltd from other competent authorities should be acquired before the commencement of the activity, and all conditions stated must be implemented unless the respective authority has issued permission to deviate.
- Sensitive habitats near the development footprint must be avoided or demarcated as No-Go area (i.e. wetlands and drainage lines) and appropriate buffers must be established around those

sensitive habitats. The ECO and Project Manager must therefore demarcate the work areas, and all areas falling outside the work zone must be deemed No-Go areas.

- Laydown yards, camps and storage areas must be beyond the aquatic areas delineated watercourse extend and associated buffer zones. Where possible, the construction of the transmission line and substations upgrade must take place from the existing road servitudes and not from within the aquatic systems.
- Monitoring by an avifauna specialist must be done during the construction and operational phases of the powerline to monitor the effectiveness of the proposed mitigation measures.
- Management of alien invasive plant species must be as per NTCSA standard protocols and in compliance with relevant legislation.
- An integrated waste management approach must be implemented that is based on waste minimisation and must incorporate reduction, recycling, re-use and disposal where appropriate. Any solid waste must be disposed of at a landfill licensed in terms of Section 20 (b) of the National Environment Management Waste Act, 2008 (Act No.59of 2008).
- If heritage resources are uncovered during the course of the development, a professional archaeologist or palaeontologist, depending on the nature of the finds, must be contracted as soon as possible to inspect the heritage resource. If the newly discovered heritage resources prove to be of archaeological or palaeontological significance, a Phase 2 rescue operation may be required subject to permits issued by SAHRA.

16 THE PERIOD FOR WHICH THE ENVIRONMENTAL AUTHORISATION IS REQUIRED

This section of the report details the information required as per Section 3(1)(q) of Appendix 1 of Environmental Impact Assessment (EIA) Regulations, Government Notice R982 of 2014 (as amended).

(q) where the proposed activity does not include operational aspects, the period for which the environmental authorisation is required, the date on which the activity will be concluded, and the post construction monitoring requirements finalised

The Environmental Authorisation will be required for ten (10) years.

17 AN UNDERTAKING UNDER OATH OR AFFIRMATION BY THE EAP IN RELATION TO

I Brenda Makanza, declare that:

- The information provided in this Draft Basic Assessment Report is correct.
- I have included the comments and inputs from stakeholders and l&APs;
- I have included the inputs and recommendations from the specialist reports where relevant; and
- I have provided information to interested and affected parties for review and comment. Comments or input from the Interested and Affected Parties have been responded to and also included in this report.

Brenda Makanza

03.01.2025

Date

18 ANY SPECIFIC INFORMATION THAT MAY BE REQUIRED BY THE COMPETENT AUTHORITY

The EAP is not aware of any specific information that may be required by the Competent Authority.

19 ANY OTHER MATTERS REQUIRED IN TERMS OF SECTION 24 (4) (A) AND (B) OF THE ACT

None.

20 CONCLUSION

The independent EAP has undertaken the Basic Assessment process for the proposed project as per the legislation. The project poses positive and negative impacts on the environment. Specialist reports were prepared and recommendation for mitigation of the impacts have been provided. The Public Participation Process is being done in accordance with Chapter 6 of the EIA Regulations and comments and input received have been addressed and incorporated in this report. Based on the outcome of the specialist work done, the continuous engagement with the I&APs, authorities and landowners, the EAP recommends that the project be approved provided that the mitigation measures outlined in this report and the EMPr are implemented.

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