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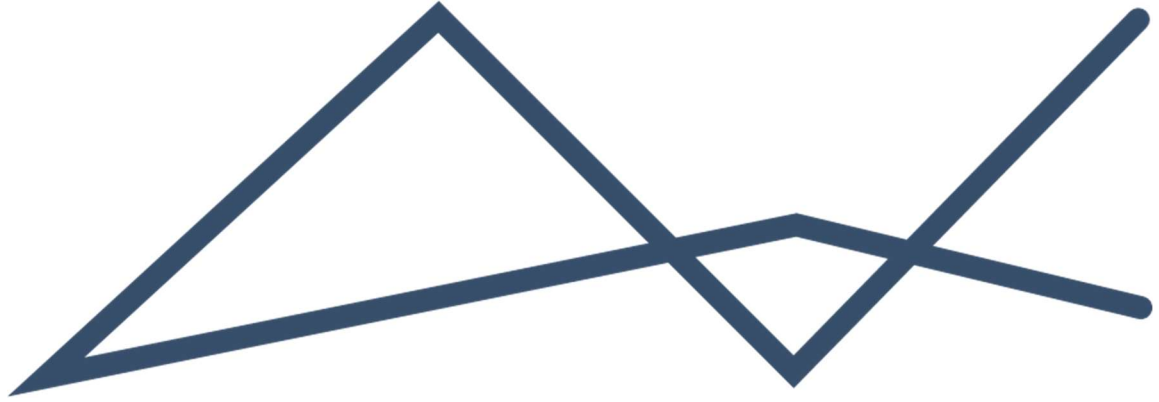
PART 2 EA AMENDMENT REPORT

TETRA4 33KV AND 132KV POWERLINES PROJECT NEAR VIRGINIA,
WITHIN THE MATJHABENG LOCAL MUNICIPALITY, FREE STATE
PROVINCE

EIMS REF: 1764

EA Ref: 14/12/16/3/3/1/2754



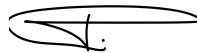


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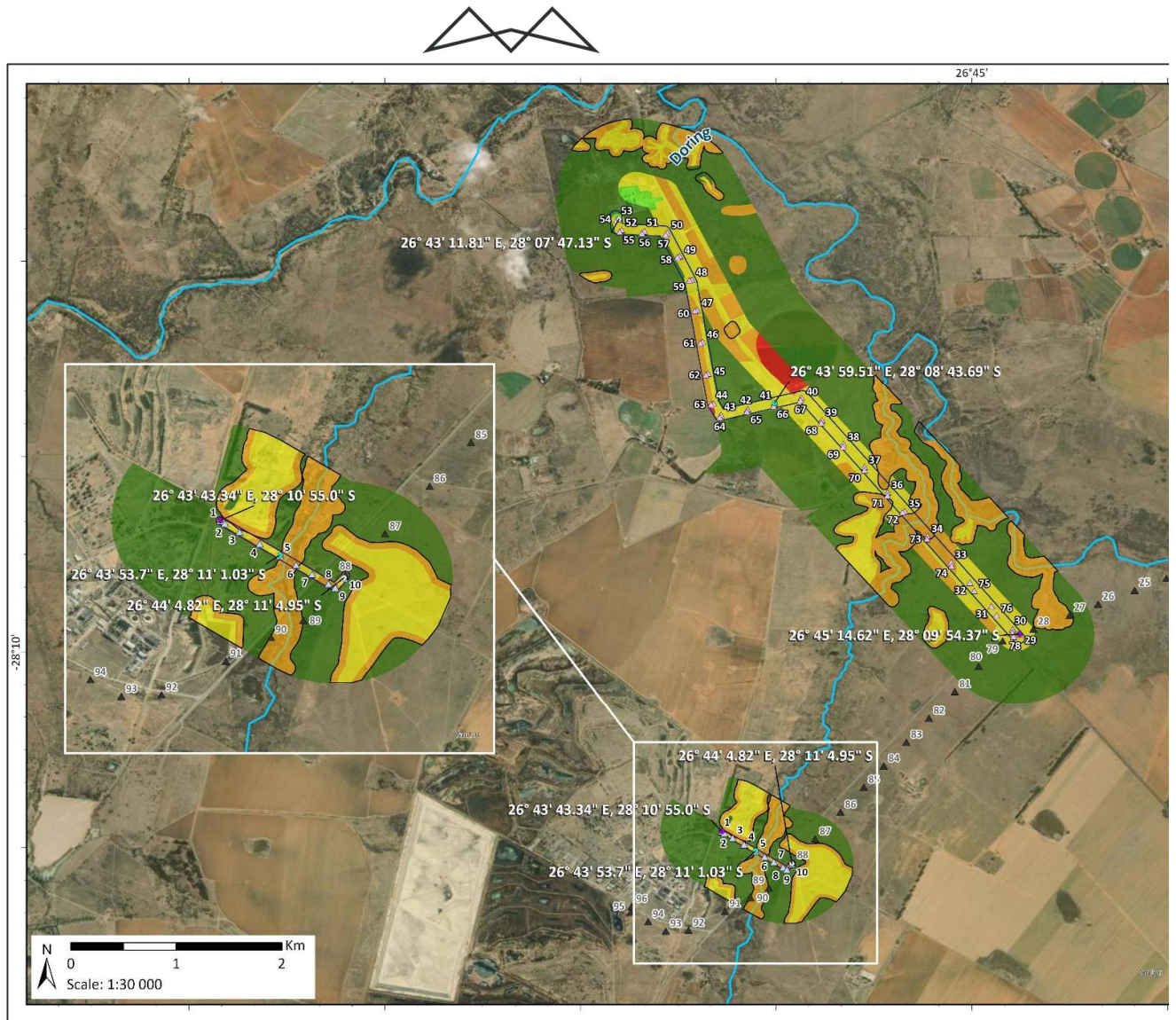


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- Appendix F: Public Participation Report
- Appendix G: Impact Assessment Matrix
- Appendix H: Generic EMPr



ACRONYMS AND ABBREVIATIONS

BA	Basic Assessment
BAR	Basic Assessment Report
CBA	Critical Biodiversity Area
DFFE	Department of Forestry, Fisheries and the Environment
DMPR	Department of Mineral and Petroleum Resources
DWS	Department of Water and Sanitation
EA	Environmental Authorisation
EAP	Environmental Assessment Practitioner
EAPASA	Environmental Assessment Practitioners Association of South Africa
EGI	Electrical Grid Infrastructure
EIA	Environmental Impact Assessment
EIMS	Environmental Impact Management Services (Pty) Ltd
EMPr	Environmental Management Programme
ESA	Ecological Support Area
EWT	Endangered Wildlife Trust
FSDESTE Affairs	Free State Department of Economic, Small Business Development, Tourism and Environmental Affairs
GIS	Geographic Information System
GN	Government Notice
HIA	Heritage Impact Assessment
I&APs	Interested and Affected Parties
IDP	Integrated Development Plan
IEM	Integrated Environmental Management
LNG	Liquefied Natural Gas
LHe	Liquid Helium
LDM	Lejweleputswa District Municipality
MLM	Matjhabeng Local Municipality
NEMA	National Environmental Management Act, 1998 (Act No. 107 of 1998)
NEMBA	National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004)
NHRA	National Heritage Resources Act, 1999 (Act No. 25 of 1999)
NWA	National Water Act, 1998 (Act No. 36 of 1998)
NTCSA	National Transmission Company South Africa
PES	Present Ecological State
PIA	Palaeontological Impact Assessment
PPP	Public Participation Process



PSDF	Provincial Spatial Development Framework
REDZ	Renewable Energy Development Zone
SACAA	South African Civil Aviation Authority
SACNASP	South African Council for Natural Scientific Professions
SAHRA	South African Heritage Resources Agency
SANBI	South African National Biodiversity Institute
SANRAL	South African National Roads Agency Limited
SDF	Spatial Development Framework
SEA	Strategic Environmental Assessment
SEI	Site Ecological Importance
SIP	Strategic Integrated Project
SPLUMA	Spatial Planning and Land Use Management Act, 2013 (Act No. 16 of 2013)
SSVR	Site Sensitivity Verification Report
TBC	The Biodiversity Company
VIA	Visual Impact Assessment
WUL	Water Use Licence
WWW	World Wide Web



EXECUTIVE SUMMARY

INTRODUCTION AND OVERVIEW

Tetra4 (Pty) Ltd (hereafter referred to as “the EA holder”) is the holder of the Environmental Authorisation (EA) for the Tetra4 33kV and 132kV Powerlines Project near Virginia, within the Matjhabeng Local Municipality, Free State Province issued in terms of the Environmental Impact Assessment Regulations, 2014 as amended by the Department of Forestry, Fisheries and the Environment in 2023 (Ref: 14/12/16/3/3/1/2754). The original EA authorised the following listed activities:

- | | |
|------------------------------------|------------------------------------|
| • Listing Notice 1: Activity(ies): | • Listing Notice 3: Activity(ies): |
| ○ Activity 11 | ○ Activity 12 |
| ○ Activity 19 | ○ Activity 14 |

For the following activities:

- A new 132kV dual Loop-In-Loop-Out (LILO) powerline of approximately 5.5km in length connecting to the Eskom Theseus-Oryx 132kV Line. The proposed powerline will feed into a new 40 MVA substation at the Liquid Natural Gas (LNG)/Liquid Helium (LHe) plant to provide the plant with operational power requirements.
- A new 33kV powerline to connect a gas compressor station to the existing 33kV Beatrix powerline. The 33kV powerline will be approximately 1km in length.

During the final design of the powerlines, undertaken in accordance with Condition 12 of the approved EA and informed by the conclusion of the necessary servitude agreements, the EA holder has deviated from portions of the originally approved corridor. As a result, the EA holder now seeks to amend the existing EA to accommodate these deviations (for the 132kV powerline). This deviation necessitates a Part 2 Amendment to the EA in order to assess the potential impacts associated with the changes to the originally approved corridor alignment.

A review of the National Environmental Management Act, 1998 (Act No. 107 of 1998, NEMA), and the EIA Regulations, 2014 as amended, confirmed that the proposed deviation triggers the need for an amendment to the existing EA through a Part 2 Amendment process. Regulation 31 (Part 2) of the 2014 NEMA EIA Regulations states that:

“An environmental authorisation may be amended by following the process prescribed in this Part if the amendment will result in a change to the scope of a valid environmental authorisation where such change will result in an increased level or nature of impact where such level or nature of impact was not (a) assessed and included in the initial application for environmental authorisation; or (b) taken into consideration in the initial environmental authorisation; and the change does not, on its own, constitute a listed or specified activity.”

PROJECT OVERVIEW

The proposed amendments include:

- Deviation of portions of the authorised 132 kV powerline alignment.
- Inclusion of Portions 6 and 8 of Farm Annex Glen Ross No. 562 and avoidance of Portions 1 and 2 of the same farm.
- Final micro-siting of pylons and associated infrastructure based on specialist walkdowns.
- Amendment of the Environmental Management Programme (EMPr) to incorporate site-specific mitigation measures.
- Amendment of Condition 33 of the EA relating to project commencement requirements.



- Administrative updates relating to the EA holder and project details.
- Integration of findings from specialist pre-construction walkdowns.

The amended alignment was specifically selected to avoid an existing centre-pivot irrigation system, reduce cumulative impacts associated with an existing powerline corridor, improve constructability and increase separation distances from nearby residences.

RECEIVING ENVIRONMENT

The project area is situated within a predominantly agricultural landscape characterised by cultivated fields, grazing areas, existing mining infrastructure and associated electricity networks. The receiving environment includes agricultural soils, grassland habitats, drainage lines, wetlands and watercourses associated with the Sand River, Doring River and Boschluisspruit catchments.

Specialist verification assessments confirmed that environmental conditions within the amended corridor remain substantially unchanged from those assessed during the original authorisation process. No significant new biodiversity, freshwater, heritage or palaeontological constraints were identified. The amended alignment primarily traverses previously disturbed and low-sensitivity areas while avoiding the most sensitive agricultural infrastructure

PUBLIC PARTICIPATION

The public participation process, in accordance with the requirements of NEMA and the EIA Regulations, comprises notification of Interested and Affected Parties (I&APs), government departments, landowners and relevant stakeholder organisations through site notices, newspaper advertisements, direct notifications and electronic correspondence; public access to the Amendment Report for review and comment; and incorporation of all comments received into the Final Amendment Report for submission to DFFE..

IMPACT ASSESSMENT AND MITIGATION

The assessment considered potential impacts associated with terrestrial biodiversity, avifauna, freshwater resources, agricultural resources, soils, visual resources, air quality, noise, socio-economic conditions and groundwater.

The specialist studies concluded that:

- No new significant terrestrial biodiversity constraints are introduced by the amended alignment.
- While the amended alignment does not introduce new avifaunal sensitivity areas, avifauna collision risk remains a Medium to High Negative residual impact, requiring the implementation of bird flight diverters and ongoing monitoring.
- The deviation avoids highly sensitive irrigated agricultural infrastructure and reduces direct impacts on certain agricultural operations.
- Impacts on farmers' livelihoods and the agricultural landscape remain of Medium to High Negative significance after mitigation due to the long-term presence of the transmission infrastructure within an active farming area.
- Freshwater systems and wetlands can be effectively protected through micro-siting and implementation of mitigation measures.
- No Heritage and palaeontological resources were identified, however, a Chance Find Procedure is recommended..
- Most identified impacts reduce to Low or Medium-Low significance following implementation of mitigation measures contained in the amended EMPr. However, impacts relating to livelihoods, avifauna collisions, and the agricultural landscape remain of Medium to High Negative residual significance.



Recommended mitigation measures include avoidance of sensitive areas, implementation of erosion and stormwater controls, rehabilitation of disturbed areas, installation of bird flight diverters, protection of agricultural infrastructure, engagement with affected landowners, spill prevention measures, and ongoing environmental monitoring.

ENVIRONMENTAL IMPACT STATEMENT

The environmental assessment concludes that the proposed amendments will not result in unacceptable environmental impacts and do not introduce any environmental fatal flaws. In several respects, the amended alignment represents an environmental improvement over the originally authorised route by reducing impacts on irrigated agricultural land, minimising cumulative land-use constraints and increasing separation from nearby receptors.

Subject to implementation of the amended EMPr and specialist recommendations, the impacts associated with the proposed amendments are considered acceptable and manageable. It is therefore the reasoned opinion of the Environmental Assessment Practitioner that the Part 2 Amendment to the Environmental Authorisation should be approved, allowing the project to proceed in a manner consistent with the principles of sustainable development and the objectives of the National Environmental Management Act.



1 INTRODUCTION

1.1 PROJECT BACKGROUND

Tetra4 (Pty) Ltd (hereafter referred to as “the EA holder”) is the holder of the Environmental Authorisation (EA) for the Tetra4 33kV and 132kV Powerlines Project near Virginia, within the Matjhabeng Local Municipality, Free State Province issued in terms of the Environmental Impact Assessment Regulations, 2014 as amended by the Department of Forestry, Fisheries and the Environment in 2023 (Ref: 14/12/16/3/3/1/2754). The originally approved include the following listed activities:

Listed Activity(ies)	Activity Description
GNR 983 (Listing Notice 1: Activity 11 (i)): The development of facilities or infrastructure for the transmission and distribution of electricity- (i) outside urban areas or industrial complexes with a capacity of more than 33 but less than 275 kilovolts;	The applicant wishes to construct a 132kV powerline of approximately 5.5km in length. It is noted that the 33kV powerline falls below this listed activity threshold however it is included in this application as the 33kV powerline does impact on watercourses (refer to Activity 19 below).
GNR 983 (Listing Notice 1: Activity 19): The infilling or depositing of any material of more than 10 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 10 cubic metres from a watercourse; but excluding where such infilling, depositing, dredging, excavation, removal or moving- (a) will occur behind a development setback; (b) is for maintenance purposes undertaken in accordance with a maintenance management plan; (c) falls within the ambit of activity 21 in this Notice, in which case that activity applies; (d) occurs within existing ports or harbours that will not increase the development footprint of the port or harbour; or (e) where such development is related to the development of a port or harbour, in which case activity 26 in Listing Notice 2 of 2014 applies	Wetlands are present within the two powerline development corridors in which the powerlines are to be constructed. The construction of the powerlines (specifically the tower foundations/ footprint) will therefore result in more than 10m ³ of material being impacted within a watercourse.
GNR 985 (Listing Notice 3: Activity 12): 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. b. Free State i. Within any critically endangered or endangered ecosystem listed in terms of section 52 of the NEMBA or prior to the publication of such a list, within an area that has been identified as critically endangered in the National Spatial Biodiversity Assessment 2004; ii. Within critical biodiversity areas identified in bioregional plans; iv. Areas within a watercourse or wetland; or within 100 metres from the edge of a watercourse or wetland	The proposed powerlines traverse across wetland areas.
GNR 985 (Listing Notice 3: Activity 14): The development of-	The pylons to be erected for the 33 kV and 132 kV powerline have will have a combined physical footprint of over 10 square metres where sections of



Listed Activity(ies)	Activity Description
(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; excluding the development of infrastructure or structures within existing ports or harbours that will not increase the development footprint of the port or harbour. b. Free State i. Outside urban areas: (dd) Sensitive areas as identified in an environmental management framework as contemplated in chapter 5 of the Act and as adopted by the competent authority; (ff) Critical biodiversity areas or ecosystem service areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans;	the powerlines are constructed across watercourses (thereby being constructed within a watercourse, and within 32m of a water course. The 132kV powerline development footprint area intersects CBA 1, ESA 1 and ESA 2 regions.

For the following activities:

- A new 132kV dual Loop-In-Loop-Out (LILO) powerline of approximately 5.5km in length connecting to the Eskom Theseus-Oryx 132kV Line. The proposed powerline will feed into a new 40 MVA substation at the Liquid Natural Gas (LNG)/Liquid Helium (LHe) plant to provide the plant with operational power requirements.
- A new 33kV powerline to connect a gas compressor station to the existing 33kV Beatrix powerline. The 33kV powerline will be approximately 1km in length.

During the final design of the powerlines, undertaken in accordance with **Condition 12** of the approved EA and informed by the conclusion of the necessary servitude agreements, the EA holder has deviated from portions of the originally approved corridor. As a result, the EA holder now seeks to amend the existing EA to accommodate these deviations (for the 132kV powerline).

This deviation necessitates a Part 2 Amendment to the EA in order to assess the potential impacts associated with the changes to the originally approved corridor alignment.

A review of the National Environmental Management Act, 1998 (Act No. 107 of 1998, NEMA), and the EIA Regulations, 2014 as amended, confirmed that the proposed deviation triggers the need for an amendment to the existing EA through a Part 2 Amendment process. Regulation 31 (Part 2) of the 2014 NEMA EIA Regulations states that:

“An environmental authorisation may be amended by following the process prescribed in this Part if the amendment will result in a change to the scope of a valid environmental authorisation where such change will result in an increased level or nature of impact where such level or nature of impact was not (a) assessed and included in the initial application for environmental authorisation; or (b) taken into consideration in the initial environmental authorisation; and the change does not, on its own, constitute a listed or specified activity.”

In line with sub-regulations (a) and (b), the proposed deviation from the originally authorised corridor represents a change to the scope of the project that may result in impacts that were not previously assessed or considered during the initial EA process. Consequently, a Part 2 Amendment application is required to ensure that the potential environmental impacts associated with the revised alignment are appropriately assessed and managed in accordance with the applicable regulatory framework.



1.2 PURPOSE OF THE REPORT

This Amendment Report is compiled in accordance with the conditions of the existing Environmental Authorisation (EA) (Ref: 14/12/16/3/3/1/2754), specifically Conditions 12 to 17, which require final layout confirmation, specialist walkdowns, and the amendment and approval of a site-specific EMPr prior to commencement of the activity, as well as Conditions 33 to 34, which relate to project commencement dependencies and the undertaking of specialist pre-construction walkdowns.

The report highlights the following proposed amendments to the EA:

- Amendments to the approved powerline alignments (corridors) following the final design process and servitude agreements, resulting in deviations from the originally authorised corridors;
- Amendments to the project layout and associated infrastructure positioning, informed by specialist walkdowns and micro-siting requirements in line with EA Condition 12;
- Amendments to the Environmental Management Programme (EMPr) to incorporate site-specific mitigation measures identified during specialist walkdowns, as required by Conditions 13 to 17;
- Amendment to Condition 33 of the EA, to address the commencement requirement which currently states that construction of the powerline development may only commence once the associated Tetra4 Cluster 2 Gas Gathering and Production Project has commenced construction. The amendment seeks to align the commencement provisions with the current project implementation programme;
- Administrative amendment to update the details of the EA holder; and
- Confirmation and integration of findings from the required pre-construction specialist walk-throughs, as stipulated in Condition 34.

This report therefore seeks to amend the EA to accommodate deviations in the authorised activity, fulfil specific EA conditions (including commencement requirements), and incorporate the outcomes of detailed design and specialist inputs.

This report presents the following:

- The details and relevant expertise of the Environmental Assessment Practitioner (EAP) and specialists involved in the amendment process;
- A description of the amended project and its locality, including revised powerline alignments;
- A description of the receiving environment, including biophysical and socio-economic baseline conditions;
- The legislative and policy framework applicable to the proposed amendments;
- The outcomes of the National Web-Based Environmental Screening Tool;
- The findings of specialist walkdowns and any additional specialist inputs;
- An assessment of potential environmental impacts associated with the proposed deviations;
- Recommended mitigation measures and updates to the EMPr; and
- The process undertaken to engage I&APs and the status of the public participation process.

The report provides a description of the pre-development receiving environment and assesses the significance of potential impacts, both positive and negative, associated with the proposed amendments to the powerline corridors/pylon positions. Appropriate and site-specific mitigation measures are identified to address potential negative impacts.



Furthermore, the report provides a comprehensive account of the amended activity description, the results of the specialist walkdowns undertaken in compliance with the EA, and the public participation process (PPP) conducted as part of the Part 2 Amendment process.

The report concludes with recommendations, conclusions, and proposed amendments to the EMPr, ensuring that all changes remain aligned with the requirements of the EA and the provisions of the NEMA EIA Regulations, 2014 as amended.

1.3 REQUIREMENTS OF AN AMENDMENT REPORT

As indicated in Sections 1.1 and 1.2 above, a Part 2 Amendment is required for the proposed deviation for the Tetra4 132kV and 33kv powerlines project. As such, the amendment process prescribed by Part 2 of the EIA Regulations, 2014 will be followed. Section 32 of the EIA Regulations, 2014 (as amended) note the following in respect to Part 2 Amendments:

The Applicant must within 90 days of receipt by the competent authority of the application made in terms of regulation 31, submit to the competent authority, (a.) a report, reflecting-

- i. *an assessment of all impacts related to the proposed change;*
- ii. *advantages and disadvantages associated with the proposed change;*
- iii. *measures to ensure avoidance, management, and mitigation of impacts associated with such proposed change; and*
- iv. *any changes to the EMPr.*

which report-

(aa) had been subjected to a public participation process, which had been agreed to by the competent authority, and which was appropriate to bring the proposed change to the attention of potential and registered interested and affected parties, including organs of state, which have jurisdiction in respect of any aspect of the relevant activity, and the competent authority, and

(bb) reflects the incorporation of comments received, including any comments of the competent authority.

The Amendment Process for the Tetra4 Powerlines Project aims to ensure that the requirements described above are met. In line with this, an outline of the Amendment Report (and its relationship to the requirements of Regulation 32 of the 2014 EIA Regulations, as amended) is provided in below

Section Name	Section of the Report	Requirement in terms of Regulation 32 of the EIA Regulations, 2014 as amended
Introduction	Section 1	No
Environmental Assessment Practitioner Details	Section 1.5 and Appendix A	No
Legislative Framework	Section 4	No
Proposed Amendments	Section 3.1	No
Motivation for the proposed amendments	Section 3.2	No
Public Participation	Section 8 and Appendix F	Yes
Summary of Specialist Studies	Section 9.1	No



Section Name	Section of the Report	Requirement in terms of Regulation 32 of the EIA Regulations, 2014 as amended
Impact Assessment	Section 6 and Appendix G	Yes
Advantages and Disadvantages of the Proposed Change	Section 7	Yes
Recommended Mitigation Measures	Section 6.3, 9.4 and Appendix H	Yes
Proposed Changes to the Construction Environmental Management Plan and Operational Environmental Management Plan	Appendix H: Generic EMPr	Yes
EAP's Reasoned Opinion	Section 9.3	No
EAP Undertaking	Page 10	No

1.4 ASSESSMENT METHODOLOGY AND APPROACH

The Amendment Report made use of available information background information from the original EA application approved in 2023 (Ref: 14/12/16/3/3/1/2754), information received from the applicant, GIS-Desktop studies, National Web-Based Environmental Screening Tool Report (Appendix B), specialist assessments and site sensitivity verification undertaken by the EAP (Appendix C).

- Appendix A: EAP CV and Registration
- Appendix B: Screening Tool Report
- Appendix C: Site Sensitivity Verification
- Appendix D: Maps
- Appendix E: Specialist Reports
- Appendix F: Public Participation Report
- Appendix G: Impact Assessment Matrix
- Appendix H: Generic EMPr

1.5 DETAILS OF THE EAP

EIMS has been appointed by Tetra4 (Pty) Ltd as the independent Environmental Assessment Practitioner (EAP) to prepare and submit the EA amendment application, Amendment Report, and to undertake the statutory a Public Participation Process (PPP). The contact details of the EIMS consultant and EAP who compiled this Report are as follows:

- Name: Qaphela Magaqa
- Tel No: + 27 11 789 7170
- Fax No: +27 86 571 9047
- E-mail address: tetra4powerline@eims.co.za

In terms of NEMA EIA Regulations, 2014 as amended, an independent EAP, must be appointed by the applicant to manage the application. EIMS is compliant with the definition of an EAP as defined in Regulations 1 and 13 of the EIA Regulations, as well as Section 1 of the NEMA. This includes, inter alia, the requirement that EIMS is:



- Objective and independent;
- Has expertise in conducting EIA's;
- Comply with the NEMA, the environmental regulations and all other applicable legislation;
- Considers all relevant factors relating to the application; and
- Provides full disclosure to the applicant and the relevant environmental authority.

EIMS was appointed by Tetra4 as the independent EAP to assist in preparing and submitting the Amendment Application for the Environmental Authorisation, compile an Amendment Report and final heritage walkdown and EMP update including the required public participation process for the Tetra4 132kV and 33kV Powerlines project. EIMS is a private and independent environmental management consulting firm that was founded in 1993. EIMS is an independent specialised environmental consulting firm offering the full spectrum of environmental management services across all sectors within the African continent. EIMS has successfully completed many hundreds of assignments over the years with an excess of 30 years' experience in conducting EIA's for both the government and private sector. Please refer to the EIMS website (www.eims.co.za) for examples of EIA documentation currently available. In terms of Regulation 13 of the NEMA EIA Regulations (GNR 982) 2014 as amended, an independent EAP, must be appointed by the applicant to manage the application for an environmental authorisation. The compiler of this report is compliant with the definition of an EAP as defined in Regulations 1 and 13 of the NEMA EIA Regulations, as well as Section 1 of the NEMA. This includes, inter alia, the requirement that EIMS is:

- Objective and independent;
- Has expertise in conducting EIA's;
- Comply with the NEMA, the environmental regulations and all other applicable legislation;
- Considers all relevant factors relating to the application; and
- Provides full disclosure to the applicant and the relevant environmental authority.

Mr Qaphela Magaqa is an Environmental Consultant at EIMS with over five (5) years of professional experience in environmental management and related disciplines. He holds a Bachelor of Science Honours degree in Geographic Information Systems (GIS) (2019) and a Bachelor of Science degree in Geosciences (Geography and Geology) (2019), both obtained from Nelson Mandela University, Gqeberha (formerly Port Elizabeth), South Campus. Mr Magaqa is a registered Environmental Assessment Practitioner (EAP) with the Environmental Assessment Practitioners Association of South Africa (EAPASA) and is also registered with the South African Council for Natural Scientific Professions (SACNASP) as a Certificated Natural Scientist. His professional expertise includes environmental management, GIS analysis and mapping, environmental research, waste management, environmental auditing, and technical reporting. Mr Magaqa has been involved in a wide range of projects, including but not limited to waste management and advisory services, GIS-based environmental analyses, environmental compliance monitoring, Water Use Licence (WUL) monitoring, Water Use Licence Applications (WULA), Environmental Authorisation (EA) applications, legal compliance audits, and public participation processes. He has gained experience across various sectors, including mining, oil and gas, construction, and engineering projects.

The Curriculum Vitae of the EAP responsible for the compilation of this Report is included in Appendix A of this report.

1.6 INFORMATION CONSIDERED IN REACHING RECOMMENDATIONS

Potential impacts associated with the proposed amendments were identified by the Environmental Assessment Practitioner (EAP) through a review of the original Environmental Authorisation application documentation approved in 2023 (Ref: 14/12/16/3/3/1/2754), specialist verification studies undertaken for the proposed



powerline deviations, field verification assessments, GIS analysis, the National Web-Based Environmental Screening Tool Report, and stakeholder inputs received during the public participation process

The assessment focused on determining whether the proposed amendments to the authorised 132 kV powerline alignment, associated infrastructure positioning and Environmental Authorisation conditions would introduce environmental impacts that differ materially from those assessed during the original authorisation process.

The following specialist inputs and technical information were considered in reaching the conclusions and recommendations contained in this Amendment Report:

- The Biodiversity Company (2026). *Terrestrial Biodiversity and Avifauna Verification Assessment for the Proposed Tetra4 132 kV and 33 kV Powerline Amendment, Matjhabeng Local Municipality, Free State Province.*
- The Biodiversity Company (2026). *Freshwater Verification Assessment for the Proposed Tetra4 132 kV and 33 kV Powerline Amendment, Matjhabeng Local Municipality, Free State Province.*
- The Biodiversity Company (2026). *Soil and Agricultural Specialist Input for an Amendment to an Environmental Authorisation for the Proposed Construction of the Tetra4 132 kV and 33 kV Powerline Deviation, Matjhabeng Local Municipality, Free State Province.*
- PGS Heritage (2026). *Heritage Walkdown Assessment for the Tetra4 132 kV and 33 kV Powerlines Project, Matjhabeng Local Municipality, Free State Province.*
- Banzai Environmental (2026). *Palaeontological Specialist Input for the Part 2 Amendment of the Environmental Authorisation: Proposed Deviation to the Authorised 132 kV Transmission Powerline Alignment near Virginia, Matjhabeng Local Municipality, Free State Province.*
- National Web-Based Environmental Screening Tool Report.
- Site Sensitivity Verification Report.

The specialist verification studies concluded that the proposed amendments do not introduce any significant new environmental sensitivities, fatal flaws or impacts that were not previously considered during the original authorisation process. The revised alignment was specifically designed to avoid a centre-pivot irrigation system, minimise interference with existing agricultural operations, reduce cumulative servitude impacts associated with existing powerline infrastructure, and maximise separation from nearby residential receptors.

The main potential impacts associated with the proposed amendments relate to temporary construction-phase disturbance of vegetation and fauna, impacts on agricultural resources and soils, visual impacts, erosion risks, avifaunal interactions with powerline infrastructure, and nuisance impacts associated with construction activities. These impacts were assessed by the EAP and relevant specialists and were found to be of Low to Medium-Low significance after mitigation. Appropriate mitigation measures have been incorporated into the amended Environmental Management Programme (EMPr).

Based on the information reviewed and specialist findings, the proposed amendments are considered environmentally acceptable and can be implemented without resulting in unacceptable environmental impacts, provided that the recommended mitigation measures and amended EMPr provisions are implemented.



1.7 ASSUMPTIONS, GAPS AND LIMITATIONS

- The information presented in this report was the most relevant and accurate at the time of compilation;
- The information provided by the applicant is assumed to be accurate, adequate, unbiased, and no information that could change the outcome of the assessment has been withheld;
- The information obtained from the specialist studies is assumed to be accurate, adequate, unbiased, and no information that could change the outcome of the assessment has been withheld;
- The assumptions and limitations from the respective specialist studies are noted and upheld;
- The report was prepared prior to initial public engagement and therefore, public consent and/or objection against the proposed additional activities will be highlighted in the Final Amendment Report;
- In accordance with the Protection of Personal Information Act (Act 4 of 2013), personal information (names, emails, contact numbers, address, etc. of I&APs) are excluded during the Public Participation and only provided to the competent authority officials; and
- Personal information of I&APs made available to the competent authority shall only be used by the authorities to confirm or obtain information regarding this specific project.



2 DESCRIPTION OF THE PROJECT AREA

Table 1 indicates the details of the project area for the proposed project including details on the project location as well as the distance from the proposed project area to the nearest towns.

Table 1: Locality details

Project Area	The proposed new 132 kV LILO line route will run from the Tetra4 plant along the R30 provincial road, in a southerly direction, towards the Theseus-Oryx 132 kV line to which it will be connected. The line crosses the Bosluisspruit stream before it reaches the Theseus-Oryx 132 kV line. The 33kV powerline runs from the existing Tetra4 compressor station near the Beatrix Shaft 4 mine crossing and will run in a north-westerly direction. The line will cross the Bosluisspruit stream towards an existing 33kV line near the Beatrix mine to which it is to be connected.	
GPS Coordinates of 132kV LILO (5.8 km)	Start: 28° 09' 54.37" S, 26° 45' 14.62" E	
	Middle: 28° 08' 43.69" S, 26° 43' 59.51" E	
	End: 28° 07' 47.13" S, 26° 43' 11.81" E	
GPS Coordinates of 33kV (1km)	Start: 28 10' 55.0" S, 26 43' 43.34" E	
	Middle: 28 11' 1.03" S, 26 43' 53.70" E	
	End: 28 11' 4.95" S, 26 44' 4.82" E	
Cadastral description and 21 Digit Surveyor General Code	Remainder of Farm Annex Glen Ross 562 Portion 3 of Farm Annex Glen Ross 562 Portion 4 of Farm Annex Glen Ross 562 Portion 5 of Farm Annex Glen Ross 562 Portion 6 of Farm Annex Glen Ross 562 Portion 8 of Farm Annex Glen Ross 562 Remainder of Farm Kalkoenkrans 225 Portion 1 of Farm Kalkoenkrans 225 Portion 2 of Farm Kalkoenkrans 225 Mond van Doornrivier 38 (RE), and Portion 6 of Farm Palmietkuil 328	F03300000000056200000; F03300000000056200003; F03300000000056200004; F03300000000056200005; F03300000000056200006; F03300000000056200008; F03300000000022500000; F03300000000022500001; F03300000000022500002; F0330000000003800000; and F03300000000032800006
Magisterial District	Lejweleputswa Magisterial District	
District Municipality	Lejweleputswa District Municipality	
Local Municipalities	Matjhabeng Local Municipality	

The locality of the proposed project is shown in Figure 1. Figure 2 shows a map of properties affected by the powerline development.

The extent to which the project interacts with the Electric Grid Infrastructure (EGI) / Renewable Energy Development Zone (REDz) is shown in Figure 3. Refer to Section 4.1.2.2 for a discussion of the extent to which this is applicable.

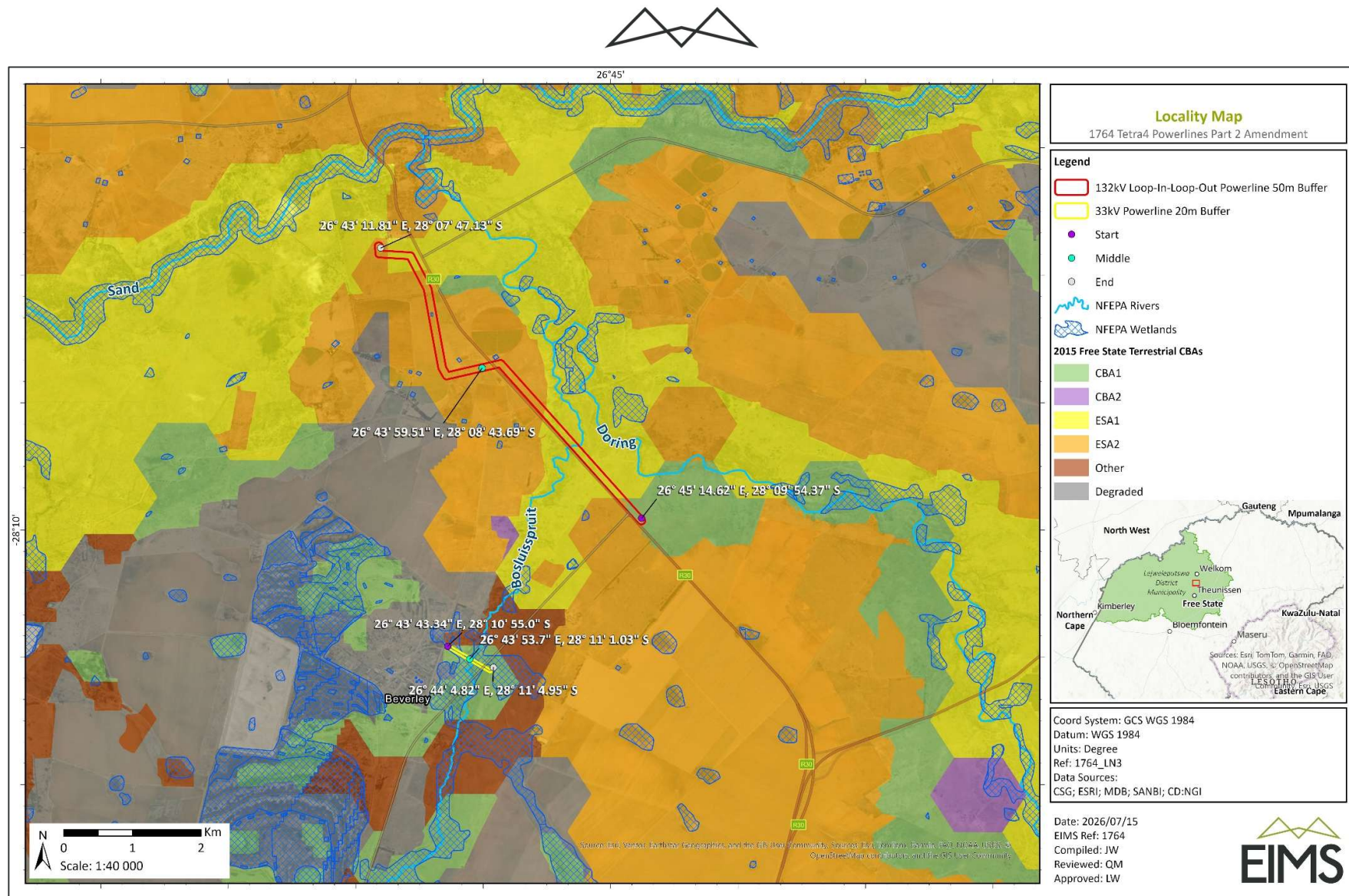


Figure 1: Locality map

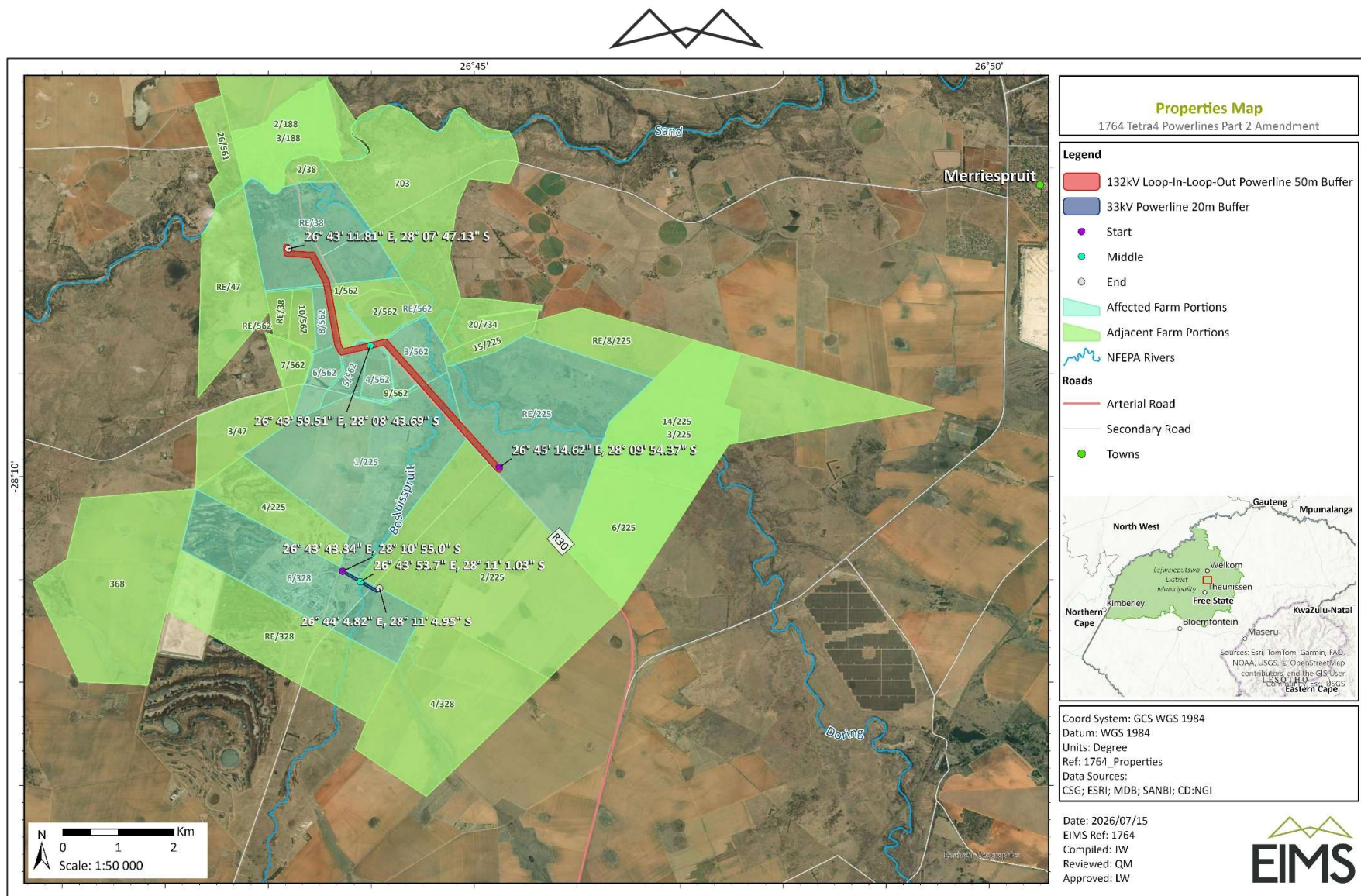


Figure 2: Map showing affected properties

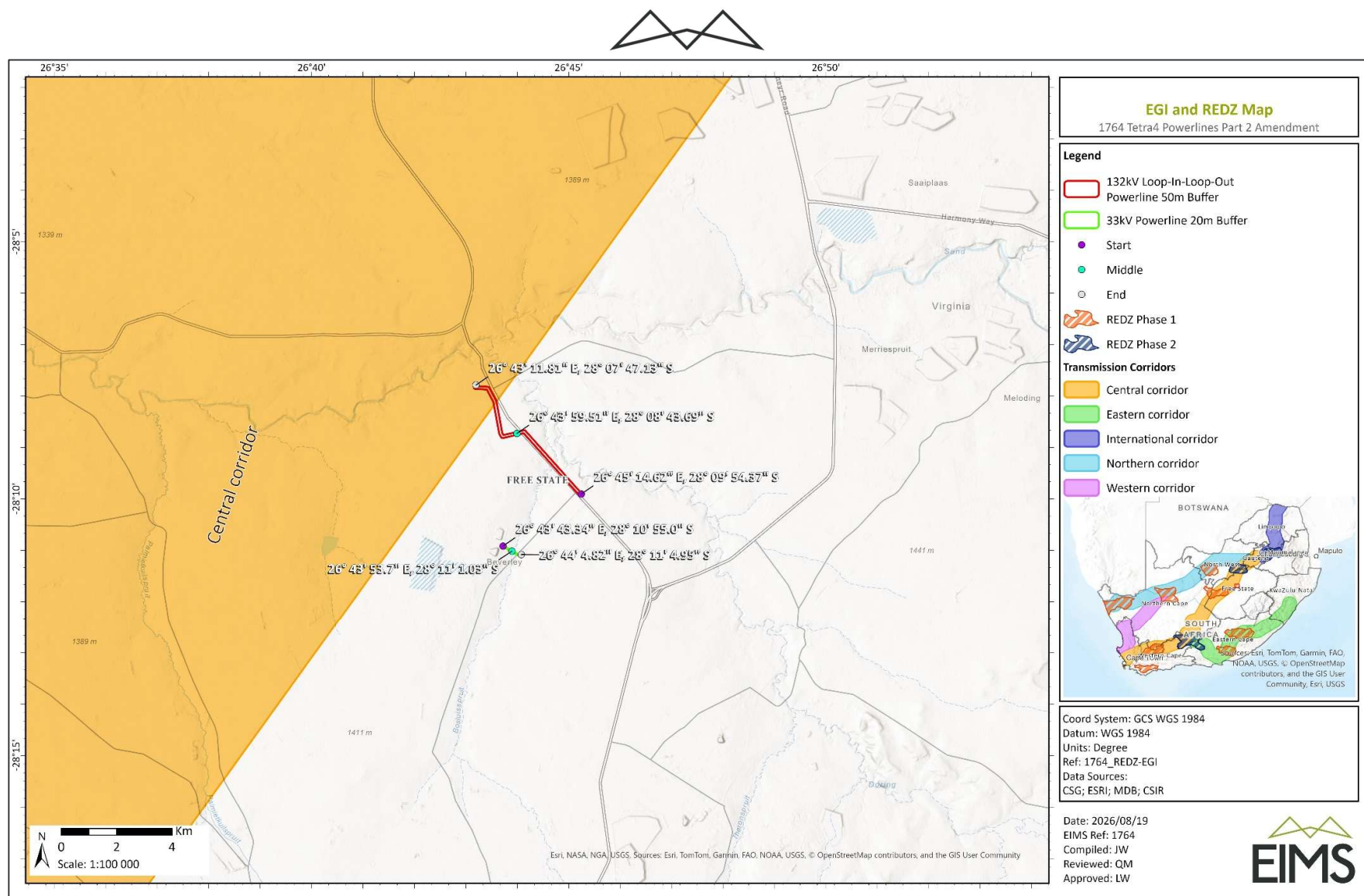


Figure 3: Proposed Tetra4 Powerline and Electrical Grid Infrastructure (EGI) Map



3 DESCRIPTION AND SCOPE OF THE PROPOSED ACTIVITY

3.1 PROJECT DESCRIPTION

Tetra4 holds a valid EA for the 33kV and 132kV Powerlines Project near Virginia, within the Matjhabeng Local Municipality, Free State Province issued in terms of the Environmental Impact Assessment Regulations, 2014 as amended by the Department of Forestry, Fisheries and the Environment in 2023 (Ref: 14/12/16/3/3/1/2754). The EA authorises the following activities:

- A new 132kV dual Loop-In-Loop-Out (LILO) powerline of approximately 5.5km in length connecting to the Eskom Theseus-Oryx 132kV Line. The proposed powerline will feed into a new 40 MVA substation at the Liquid Natural Gas (LNG)/Liquid Helium (LHe) plant to provide the plant with operational power requirements.
- A new 33kV powerline to connect a gas compressor station to the existing 33kV Beatrix powerline. The 33kV powerline will be approximately 1km in length.

The report highlights the following proposed amendments to the EA:

- Amendments to the approved powerline alignments (corridors) following the final design process and servitude agreements, resulting in deviations from the originally authorised corridors, including the inclusion of Portions 6 and 8 of Farm Annex Glen Ross No. 562 and the exclusion/avoidance of Portions 1 and 2 of the same farm;
- Amendments to the project layout and associated infrastructure positioning, informed by specialist walkdowns and micro-siting requirements in line with EA Condition 12;
- Amendments to the Generic Environmental Management Programme (EMPr) to incorporate site-specific mitigation measures identified during specialist walkdowns, as required by Conditions 13 to 17;
- Amendment to Condition 33 of the EA, to address the commencement requirement which currently links the powerline construction to the commencement of the Tetra4 Cluster 2 Gas Gathering and Production Project. The proposed amendment seeks to align the commencement provisions with the updated project implementation programme;
- Administrative amendment to update the details of the EA holder and responsible person/contact, in accordance with regulatory requirements; and
- Confirmation and integration of findings from the required pre-construction specialist walk-throughs, as stipulated in Condition 34, including identification of sensitive features and final micro-siting inputs.

3.2 MOTIVATION FOR THE PROPOSED AMENDMENTS

The proposed amendments are required to accommodate project refinements that arose during the detailed design phase of the authorised Tetra4 33 kV and 132 kV Powerlines Project. Following the granting of the EA, the final engineering design, landowner consultations, servitude negotiations, specialist walkdowns and infrastructure optimisation processes identified the need to adjust portions of the authorised powerline alignments and associated infrastructure positions. These refinements are necessary to ensure that the project remains technically feasible, environmentally responsible and practically implementable while continuing to fulfil its intended purpose of supplying reliable electrical infrastructure to support Tetra4's helium and natural gas operations.

A key driver for the amendment application is the refinement of the authorised 132 kV powerline alignment following detailed engineering design, servitude negotiations and specialist walkdowns. The revised alignment includes Portions 6 and 8 of Farm Annex Glen Ross No. 562 and excludes Portions 1 and 2 of the same farm. The amendment was informed by the presence of an operational centre-pivot irrigation system, which would have been affected by the originally authorised alignment. By avoiding these portions of the property, the amended



route reduces potential interference with existing agricultural operations and associated irrigation infrastructure. Furthermore, the deviation was designed to avoid the existing 132 kV powerline traversing the property. Constructing a second transmission line corridor in close proximity to the existing line would have increased the area of land affected by servitudes and associated infrastructure constraints on the farm. The amended alignment therefore reduces the cumulative loss and fragmentation of agricultural land on the affected property. The revised route also takes cognisance of a nearby dwelling and has been designed to maximise separation from this receptor where reasonably practicable, thereby reducing potential visual and land-use impacts on the resident. Consequently, the amended alignment represents a more practical, landowner-sensitive and environmentally responsible alternative while maintaining the operational requirements and objectives of the authorised development.

The amendment application also seeks approval for final micro-siting adjustments and amendments to infrastructure positioning resulting from specialist walkdowns undertaken in accordance with Condition 12 of the EA. These specialist assessments were conducted to verify site sensitivities, identify environmentally sensitive features, and confirm the optimal positioning of pylons and associated infrastructure. Incorporating these refinements into the authorised layout will assist in avoiding or minimising impacts on sensitive environmental features, agricultural resources and existing land uses.

The amendment application furthermore includes administrative changes relating to the details of the EA holder and responsible contact person. These updates are necessary to ensure that the authorisation accurately reflects the current organisational and administrative arrangements associated with the project and facilitates effective communication between the applicant, competent authority and stakeholders.

Overall, the proposed amendments are considered necessary to facilitate implementation of the project in a manner that is technically practical, environmentally responsible and consistent with the intent of the original Environmental Authorisation, while ensuring that all potential impacts associated with the revised alignment and project layout are appropriately assessed and managed through the Part 2 Amendment process. Refer to Table 2 for details of the proposed amendments and the motivations for the amendment.

This EA amendment process will identify and assess potential environmental impacts and make recommendations for relevant alternatives, management and mitigation measures.



Table 2: Details of proposed amendments and motivation

Condition	Proposed Amendment/Change	Motivation
Mr Gerhard Muller Tetra4 (Pty) Ltd 1 Bompas Road, Johannesburg 2196 Telephone Number: 010 045 6000 Cellphone Number: 082 067 4833 Email Address: gerhard@renergen.co.za	Mr Tinashe Maramba Tetra4 (Pty) Ltd Sandton Gate, 2nd Floor, 25 Minerva Ave, Glenadrienne, Sandton, 2196 Telephone: 010 045 6000 Cellphone: 072 309 0502 Email Address: Tinashe@renergen.co.za	It is requested that the administrative details contained in the Environmental Authorisation be amended to reflect a change in personnel within Tetra4 (Pty) Ltd. Mr Gerhard Muller, previously identified as the responsible person and/or environmental contact for the project, is no longer employed by Tetra4 (Pty) Ltd and is therefore no longer able to fulfil the responsibilities associated with this role. Tetra4 (Pty) Ltd has appointed Mr Tinashe Maramba as the new Environmental Manager, who has assumed responsibility for environmental management and compliance matters relating to the project. It is therefore requested that all references to Mr Gerhard Muller in the Environmental Authorisation be replaced with Mr Tinashe Maramba as the authorised representative and responsible person acting on behalf of Tetra4 (Pty) Ltd.
Location of activity: Portions 1, 2, 3, 4, 5 and the Remainder of Farm Annex Glen Ross No. 562; Portions 1, 2 and the Remainder of Farm Kalkoenkrans No. 225; Portion 6 of Farm Palmietkuil No. 328; the Remainder of Farm Mond van Doornrivier No.38, within the Matjhabeng Local Municipality, Lejwaleputswa District Municipality, Free State Province.	Location of activity: Portions 3, 4, 5, 6, 8 and the Remainder of Farm Annex Glen Ross No. 562; Portions 1, 2 and the Remainder of Farm Kalkoenkrans No. 225; Portion 6 of Farm Palmietkuil No. 328; the Remainder of Farm Mond van Doornrivier No. 38, within the Matjhabeng Local Municipality, Lejwaleputswa District Municipality, Free State Province.	The amendment was informed by the presence of an operational centre-pivot irrigation system, which would have been affected by the originally authorised alignment. By avoiding these portions of the property, the amended route reduces potential interference with existing agricultural operations and associated irrigation infrastructure. Furthermore, the deviation was designed to avoid the existing 132 kV powerline traversing the property. Constructing a second transmission line corridor in close proximity to the existing line would have increased the area of land affected by servitudes and associated infrastructure constraints on the farm. The amended alignment therefore reduces the cumulative loss and fragmentation of agricultural land on the affected property. The revised route also takes cognisance of a nearby dwelling and has been designed to maximise separation from this receptor where reasonably practicable, thereby reducing potential visual and land-use impacts on the resident. Consequently, the amended alignment represents a more practical, landowner-sensitive and environmentally responsible alternative while maintaining the operational requirements and objectives of the authorised



Condition	Proposed Amendment/Change	Motivation
		development. The 21-Digit Surveyor General Codes, start, midpoint and end point coordinates are contained in Table 1.
12. A copy of the final site layout map must be made available for comments by registered Interested and Affected Parties and the holder of this environmental authorisation must consider such comments. Once amended, the final development layout map must be submitted to the Department for written approval prior to commencement of the activity.	12. This application includes the final development layout map, which has been assessed through the Environmental Authorisation process. The layout contained in the approved Environmental Authorisation shall be regarded as the final approved layout, and no further submission of a final layout map for comment or written approval by the Department shall be required prior to commencement of the activity, unless material changes to the authorised layout are proposed.	The amendment application also seeks approval for final micro-siting adjustments and amendments to infrastructure positioning resulting from specialist walkdowns undertaken in accordance with Condition 12 of the EA. These specialist assessments were conducted to verify site sensitivities, identify environmentally sensitive features, and confirm the optimal positioning of pylons and associated infrastructure. Incorporating these refinements into the authorised layout will assist in avoiding or minimising impacts on sensitive environmental features, agricultural resources and existing land uses.
13. The Generic Environmental Management Programme (EMPr) submitted as part of the BAR is not approved and must be amended to include measures as dictated by the final site lay-out map and micrositing, and the provisions of this environmental authorisation. The Generic EMPr must be made available for comments by registered Interested and Affected Parties and the holder of this environmental authorisation must consider such comments. Once amended, the final EMPr must be submitted to the Department for written approval prior to commencement of the activity. Once approved the Generic EMPr must be implemented and adhered to.	13. The Generic Environmental Management Programme (EMPr) submitted as part of the Amendment of Environmental Authorisation Amendment Application shall constitute the approved EMPr for the development. No further circulation of the EMPr to registered Interested and Affected Parties, or submission to the Department for separate written approval prior to commencement of the activity, shall be required, provided that the approved development layout remains substantially unchanged. The approved EMPr must be implemented and adhered to throughout all phases of the development. Should material changes to the approved layout or project scope be required, the EMPr must be updated accordingly and submitted to the competent authority in	The final development layout forms part of the current application and has been assessed through the environmental impact assessment process. Accordingly, the requirement for a subsequent amendment, re-circulation for public comment, and separate departmental approval of both the layout and EMPr is considered unnecessary and duplicative. The EMPr should instead be approved together with the Environmental Authorisation, subject to incorporation of all conditions of authorisation and specialist recommendations.



Condition	Proposed Amendment/Change	Motivation
	terms of the applicable legislative requirements.	
33. Construction of this development may only commence once the proposed Tetra4 Cluster 2 gas Gathering and Production Project, near Virginia, within the Matjhabeng Local Municipality, Free State Province, has commenced with the construction phase.	33. Construction of the authorised development may commence upon compliance with all applicable conditions of this Environmental Authorisation and any other statutory requirements, irrespective of the commencement date of the Tetra4 Cluster 2 Gas Gathering and Production Project near Virginia within the Matjhabeng Local Municipality, Free State Province.	The powerline is ancillary infrastructure intended to service the Tetra4 Cluster 2 Gas Gathering and Production Project. Requiring the powerline construction to commence only after commencement of the gas project may create unnecessary implementation constraints without providing additional environmental protection. As both projects have been environmentally assessed, commencement should rather be linked to compliance with the conditions of the Environmental Authorisation and applicable legislative requirements. This would allow efficient project scheduling while maintaining environmental compliance.



4 POLICY AND LEGISLATIVE CONTEXT

This section provides an overview of the governing legislation identified which relates to the proposed amendment process. Please note that only pertinent legislation related to the amendment is described below but is by no means an exhaustive list of the legal obligations of the applicant in respect of environmental management for the proposed activities. There are numerous other pieces of legislation governed by many acts, regulations, standards, guidelines and treaties on an international, national, provincial and local level, which should be considered in order to assess the potential applicability of these for the proposed activities

4.1 NATIONAL LEGISLATION

4.1.1 CONSTITUTION OF THE REPUBLIC OF SOUTH AFRICA

The constitution of any country is the supreme law of that country. The Bill of Rights in chapter 2 section 24 of the Constitution of South Africa Act (Act No. 108 of 1996) makes provisions for environmental issues and declares that: *“Everyone has the right -*

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

The Amendment application and associated impact mitigation actions are conducted to fulfil the requirement of the Bill of Rights.

4.1.2 NATIONAL ENVIRONMENTAL MANAGEMENT ACT (NEMA)

The main aim of the National Environmental Management Act, 1998 (Act 107 of 1998 – NEMA) is to provide for co-operative governance by establishing decision-making principles on matters affecting the environment. In terms of the NEMA EIA Regulations, the applicant is required to appoint an EAP to undertake the EIA process, as well as conduct the public participation process towards an application for EA. In South Africa, EIA’s became a legal requirement in 1997 with the promulgation of regulations under the Environment Conservation Act (ECA). Subsequently, NEMA was passed in 1998. Section 24(2) of NEMA empowers the Minister and any MEC, with the concurrence of the Minister, to identify activities which must be considered, investigated, assessed and reported on to the competent authority responsible for granting the relevant EA. On 21 April 2006, the Minister of Environmental Affairs and Tourism (now Department of Forestry, Fisheries and the Environment – DFFE) promulgated regulations in terms of Chapter 5 of the NEMA. These regulations, in terms of the NEMA, were amended a number of times between 2010 and 2022. The NEMA EIA Regulations, 2014, as amended, are applicable to this project.

The objective of the EIA Regulations is to establish the procedures that must be followed in the consideration, investigation, assessment and reporting of the listed activities that are triggered by the proposed project. The purpose of these procedures is to provide the competent authority with adequate information to make informed decisions which ensure that activities which may impact negatively on the environment to an unacceptable degree are not authorised, and that activities which are authorised are undertaken in such a manner that the environmental impacts are managed to acceptable levels. In accordance with the provisions of Sections 24(5) and Section 44 of the NEMA the Minister has published Regulations (GN R. 982) pertaining to the required process for conducting EIAs in order to apply for, and be considered for, the issuing of an EA. These EIA Regulations provide a detailed description of the EIA process to be followed when applying for EA for any listed activity. Based on review on the NEMA EIA Regulations, 2014 as amended, the applicant is required to appoint an EAP to undertake a Part 2 Amendment Application process for the proposed project, which includes conducting the public participation process.



NEMA sets out the general objectives of IEM in South Africa, including to (section 23(2)), of which the following two are of relevance for this report:

- Identify, predict and evaluate the actual and potential impact on the environment, socio-economic conditions and cultural heritage, the risks and consequences and alternatives and options for mitigation of activities. This is to be done with a view to minimising negative impacts, maximising benefits and promoting compliance with the principles of environmental management set out in section 2 (of NEMA).
- Ensure that the effects of activities on the environment receive adequate consideration before actions are taken in connection with them.

4.1.2.1 NEMA ENVIRONMENTAL IMPACT ASSESSMENT REGULATIONS, 2014 AS AMENDED

In terms of section 24(2) of NEMA, the Minister and or any MEC in concurrence with the Minister may identify activities that require authorisation as these activities may negatively affect the environment. The Act requires that in such cases the impacts must be considered, investigated and assessed before their implementation, and reported to the organ of state charged by law with authorising, permitting, or otherwise allowing the implementation of an activity. The NEMA EIA Regulations guide the processes required for the assessment of impacts of Listed Activities.

The requirement for the undertaking of Environmental Impact Assessments and Basic Assessments began in 1997 with the promulgation of the EIA Regulations under the Environment Conservation Act, 1989 (ECA) (Act No. 73 of 1989). These were followed by the 2006, 2010 and 2014 regulations.

Chapter 5 of the EIA Regulations (GN 982 of 4 December 2014) provides the process that must be followed in respect to amendment of authorisations. The Regulations provide for two types of amendments that may be undertaken. The type of amendment is dependent on the type of changes. The two types of amendments are as follows:

- Part 1 Amendments where there is no change of scope, or a change of ownership occurs; and
- Part 2: Amendments where a change in scope occurs.

As indicated in **Section 4.1.2**, a Part 2 Amendment is required for the proposed amendment of the powerline alignment activities for the Tetra4 Powerline project as Regulation 31 (Part 2) of the 2014 NEMA EIA Regulations states that:

“An environmental authorisation may be amended by following the process prescribed in this Part if the amendment will result in a change to the scope of a valid environmental authorisation where such change will result in an increased level or nature of impact where such level or nature of impact was not (a) assessed and included in the initial application for environmental authorisation; or (b) taken into consideration in the initial environmental authorisation; and the change does not, on its own, constitute a listed or specified activity.”

As per sub-regulation (a) and (b) the proposed re-alignment of the powerline and its associated impacts of the were not considered as part of the in the initial Basic Assessment (BA) process undertaken nor taken into consideration in the EA, therefore these (potential) impacts need to be assessed according to the change in level or nature of impact. Due to the fact that the amendments result in a change of scope, a Part 2 Amendment Process in terms of Regulation 31 of NEMA EIA Regulations of 2014 (as amended) is applicable and required to be followed

4.1.2.2 THE STRATEGIC TRANSMISSION CORRIDORS

In 2016, the Department of Forestry, Fisheries and the Environment (DFFE) appointed the Council for Scientific and Industrial Research (CSIR) and the South African National Biodiversity Institute (SANBI) to complete a series of Strategic Environmental Assessments (“SEAs”) to determine the environmental implications of the Government’s renewable energy policies and plans. Through the SEAs, the CSIR identified eight Renewable Energy Development Zones (“REDZs”) across South Africa that are of strategic importance for large-scale wind and solar PV energy development as well as five Strategic Transmission Corridors that are important for the



rollout of the large-scale electricity infrastructure required for the energy projects within these areas. The corridors are representative of South Africa's future transmission backbone up to 2040. The corridors were identified to support Strategic Integrated Project 10 (SIP 10), which pertains to electricity transmission and distribution. Given the strategic importance of these corridors in balancing the country's future generation and load requirements, the SEA was advocating that electricity grid infrastructure development inside of the corridors benefit from improved regulatory treatment in the form of faster and more efficient environmental authorisation and permitting procedures.

In order to encourage the development of large-scale wind and solar PV projects and the associated large-scale electricity infrastructure, DFFE published Government Notices 113 and 114 on 16 February 2018 which provide that wind and solar PV projects that take place within a REDZ and electricity infrastructure that takes place within a Strategic Transmission Corridor only require a Basic Assessment ("BA") and do not need to undergo the longer and more comprehensive Scoping and Environmental Impact Reporting ("S&EIR") process in order to obtain an EA. This is because these areas have already been scoped for environmental risks as part of the SEA process. In addition, DFFE reduced the timeframe for the processing of these applications from 107 days to 57 days to help fast-track EA applications. It must be noted that any large-scale wind and solar PV or electricity infrastructure development activities that take place outside these specified areas are subject to the normal NEMA EIA Regulations.

The SEA processes identified geographical areas which are of strategic importance for the rollout of electricity transmission and distribution infrastructure in terms of SIP 10. These geographical areas consist of seven (7) strategic transmission corridors for the development of transmission and distribution infrastructure (Figure 4) that have been pre-assessed for environmental sensitivities.

2016 EGI SEA:

- **Central Corridor;**
- Eastern Corridor;
- International Corridor;
- Northern Corridor; and
- Western Corridor
- 2019 Expanded EGI SEA:
 - Expanded Eastern Corridor; and
 - Expanded Western Corridor.

A review of the strategic corridors map found that the proposed Tetra4 Powerlines Project intersects the Strategic Transmission Corridor-Central corridor. As the proposed development is an electrical infrastructure project and falls within the ITC, the proposed development would only require a Basic Assessment process and the timeframe for the processing of these applications would only be up to a maximum of 57 days in terms of DFFE Government Notices 113 and 114. In July 2020, however, DFFE published draft Government Notice 835 which provided that where 90% or more of the electricity transmission and distribution infrastructure or the expansion of such infrastructure is to take place within a Strategic Transmission Corridor, an EA will not be required. This ultimately led to the adoption of the "Standard for the Development of Powerlines and Substations within Identified Geographical Areas" adopted in terms of section 24(10)(a) of NEMA in June 2022. It is, however, noteworthy that more than 90% of the Tetra4 powerline falls outside the ITC, with only 600m of the 5.8 km of the powerline being within the Central Corridor. Refer to Figure 4 for a map of the Strategic Transmission Corridors.

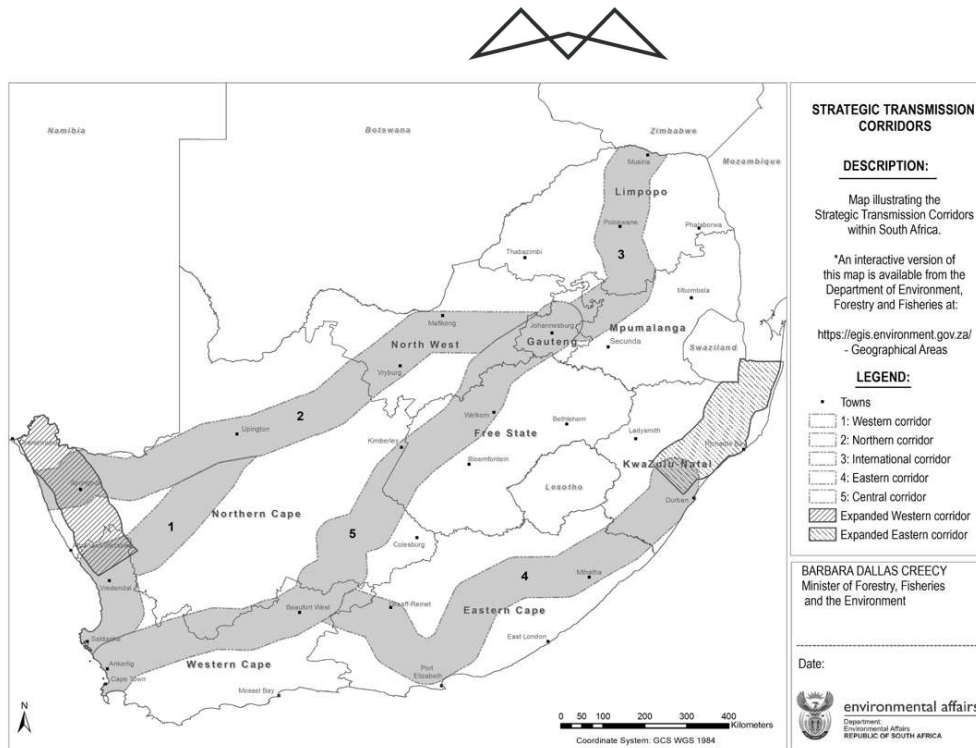


Figure 4: SA Strategic Transmission Corridors (DFFE, 2022)

4.1.2.3 SCREENING TOOL

A Screening Tool Report was generated from the DFFE Screening tool as per the requirements of Regulation 16 (1)(b)(v) of the EIA Regulations 2014, as amended, and was included in the Application for EA. The screening Tool provided a list of specialist studies for consideration and inclusion in the process. The Screening Tool identified environmental sensitivities are presented in Table 3.

Table 3: Screening Tool environmental sensitivities.

Theme	Sensitivity			
	Very High	High	Medium	Low
Agriculture Theme	X			
Animal Species Theme			X	
Aquatic Biodiversity Theme				X
Archaeological and Cultural Heritage Theme				X
Civil Aviation Theme			X	
Defence Theme				X
Paleontology Theme			X	
Plant Species Theme				X
Terrestrial Biodiversity Theme	X			



In this regard, as Site Sensitivity Verification Report (SSVR) has been compiled to consider the recommendations of the DFFE Screening Tool Report and to provide a rationale for the selection of specialist studies included in the assessment report. Please refer to Table 4 for a summary of the verification process. Please refer to Appendix B for the SSVR.

Table 4: SSVR findings and motivation.

Screening Tool Specialist Study Required:	Level of Sensitivity:	EAP Suggested Sensitivity:	Required level of Assessment	Motivation
Agriculture Impact Assessment	Very High	Very High	Full Study	A full pedological (agricultural potential and soils) assessment was undertaken as part of the Tetra4 Cluster 2 Gas Production Project. The powerline was assessed by the specialist. The Agricultural Specialist has undertaken an assessment and prepared amendment letters to confirm/dispute findings of the 2023 assessments.
Landscape/Visual Impact Assessment	Medium	Medium	N/A	A Visual Impact Assessment was undertaken as part of the original application in (2023). The EAP has undertaken the Site Sensitivity Verification and has confirmed that the landscape character of the site has not changed and thus confirms that the recommendations/findings of the VIA remain valid.
Archaeological and Cultural Heritage Impact Assessment	Low	Low	Other	A heritage specialist was appointed to undertake a walkdown of the final alignment of the proposed powerlines for micro-siting as per the EA conditions. The amendment alignment was also assessed in the walkdown report.
Palaeontology Impact Assessment	Low	Low	Other	A full Palaeontology Impact Assessment was undertaken as part of the original application in (2023). A deviation letter has been prepared by the palaeontology specialist.
Terrestrial Biodiversity Impact Assessment	Very High	Low	Compliance Statement	A terrestrial biodiversity specialist has undertaken a site verification and deviation letter based on the findings of the original 2023 report. This confirms whether any changes from the findings of the original assessment findings and recommendations have been identified for the deviation.



Screening Tool Specialist Study Required:	Level of Sensitivity:	EAP Suggested Sensitivity:	Required level of Assessment	Motivation
Aquatic Biodiversity Impact Assessment	Low	Low	Compliance Statement	The powerline deviation does not traverse any wetlands. The Aquatic specialist undertook a site verification and prepared a deviation letter based on the findings of the original 2023 report. This confirms whether any changes from the findings of the original assessment findings and recommendations have been identified for the deviation.
Avian Biodiversity Impact Assessment	Low	Low	Other	An ecologist has assessed and confirmed the site's (deviation) low avian sensitivity and provided a supplementary statement included in the Terrestrial and Avifauna deviation letter.
Civil Aviation Assessment	Medium	Low	None	The powerline deviation will be along existing powerlines. The obstacles/ATNS will be included in the I&AP database and invited to comment on the project.
RFI Assessment	Low	Low	None	The powerline is anticipated to have very low radio frequency and mostly contained within the servitude. It is not anticipated to cause any health impacts as the powerline mostly traverses agricultural crop fields.
Geotechnical Assessment	Low	Low	None	No geotechnical assessment required. The proposed powerline is located within an area of known Geotech with no issues flagged previously.
Plant Species Assessment	Low	Low	Other	A terrestrial biodiversity specialist has undertaken a site verification and deviation letter based on the findings of the original 2023 report. This confirms whether any changes from the findings of the original assessment findings and recommendations have been identified for the deviation.
Animal Species Assessment	Medium	Low	Other	A terrestrial biodiversity specialist has undertaken a site verification and deviation letter based on the findings of the original 2023 report. This confirms whether any changes from the findings of the original assessment findings and recommendations have been identified for the deviation.



4.1.3 THE NATIONAL WATER ACT (NWA)

The purpose of the NWA is to ensure that the nation's water resources are protected, used, developed, conserved, managed and controlled in ways which take into account amongst other factors:

- a) meeting the basic human needs of present and future generations;
- b) promoting equitable access to water;
- c) redressing the results of past racial and gender discrimination;
- d) promoting the efficient, sustainable and beneficial use of water in the public interest;
- e) facilitating social and economic development;
- f) providing for growing demand for water use;
- g) protecting aquatic and associated ecosystems and their biological diversity;
- h) reducing and preventing pollution and degradation of water resources;
- i) meeting international obligations;
- j) promoting dam safety;
- k) managing floods and droughts,

and for achieving this purpose, to establish suitable institutions and to ensure that they have appropriate community, racial and gender representation.

The NWA makes provision for two types of applications for water use licences, namely individual applications and compulsory applications. The NWA also provides that the responsible authority may require an assessment by the applicant of the likely effect of the proposed licence on the resource quality, and that such assessment be subject to the NEMA EIA Regulations. A person may use water if the use is –

- Permissible as a continuation of an existing lawful water use (ELWU);
- Permissible in terms of a general authorisation (GA);
- Permissible under Schedule 1; or
- Authorised by a licence.

The above water use processes are described in Figure 5.

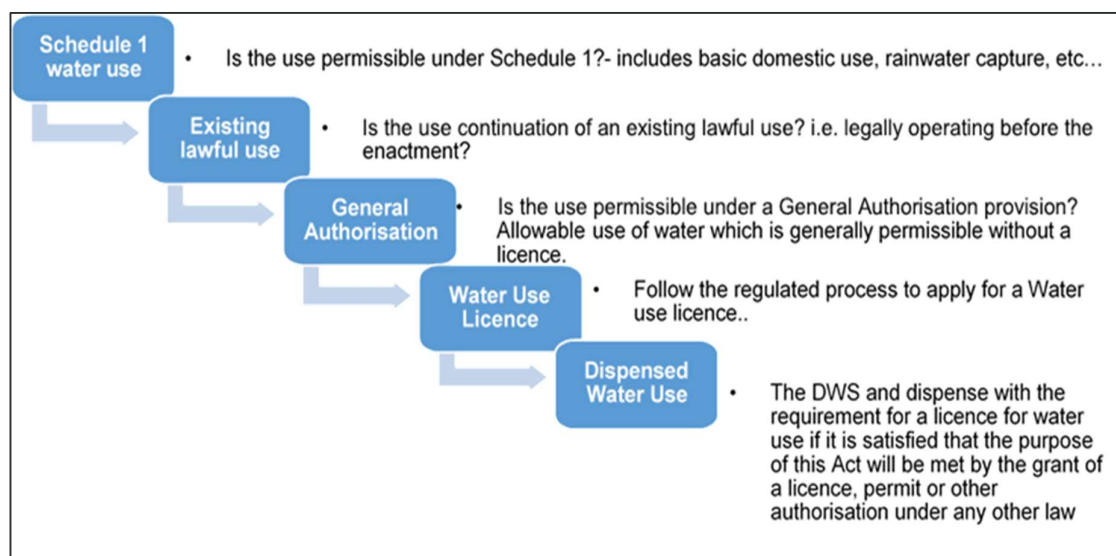


Figure 5: Authorisation processes for new water uses.



The NWA defines 11 water uses in Section 21 of the Act. A water use may only be undertaken if authorised by the DWS. The water uses for which an authorisation or licence can be issued include:

- a) Taking water from a water resource;
- b) Storing water;
- c) Impeding or diverting the flow of water in a watercourse;
- d) Engaging in a stream flow reduction activity contemplated in section 36;
- e) Engaging in a controlled activity identified as such in section 37(1) or declared under section 38(1);
- f) Discharging waste or water containing waste into a water resource through a pipe, canal, sewer, sea outfall or other conduits;
- g) Disposing of waste in a manner which may detrimentally impact on a water resource;
- h) Disposing in any manner of water which contains waste from, or which has been heated in, any industrial or power generation process;
- i) Altering the bed, banks, course or characteristics of a watercourse;
- j) Removing, discharging or disposing of water found underground if it is necessary for the efficient continuation of an activity or for the safety of people; and
- k) Using water for recreational purposes.

A watercourse is defined in terms of the Act as follows:

- a) a river or spring;
- b) a natural channel in which water flows regularly or intermittently;
- c) a wetland, lake or dam into which, or from which, water flows; and
- d) any collection of water which the Minister may, by notice in the Gazette, declare to be a watercourse, and a reference to a watercourse includes, where relevant, its bed and banks;

The regulated area of a watercourse for section 21(c) or (i) of the Act water uses, is similarly defined in terms of the Act as follows:

- a) The outer edge of the 1 in 100-year flood line and/or delineated riparian habitat, whichever is the greatest distance, measured from the middle of the watercourse of a river, spring, natural channel, lake or dam;
- b) In the absence of a determined 1 in 100-year flood line or riparian area the area within 100m from the edge of a watercourse where the edge of the watercourse is the first identifiable annual bank fill flood bench (subject to compliance to section 144 of the Act); or
- c) A 500 m radius from the delineated boundary (extent) of any wetland or pan.

The Tetra4 Powerlines Project, was confirmed by the DWS to fall within the ambit of a GA for (c) and (i) water uses and registered as such in July 2023. The powerline deviation / section was noted to not interact with any wetlands and as such no additional water use (s) were deemed necessary for the Tetra4 powerline project.

4.1.4 NATIONAL ENVIRONMENTAL MANAGEMENT BIODIVERSITY ACT (NEMBA)

The National Environmental Management Biodiversity Act (Act No. 10 of 2004 – NEMBA) provides for the management and conservation of South Africa's biodiversity within the framework of the NEMA as well as the protection of species and ecosystems that warrant national protection. Within the framework of this act, various regulations are promulgated which provide specific requirements and management measures relating to



protecting threatened ecosystems, threatened or protected species as well as the control of alien and invasive species. A summary of these regulations is presented below.

The National List of Ecosystems that are Threatened and Need of Protection (GN 1002 of 2011) are promulgated under the NEMBA and these Regulations provide for listing of threatened or protected ecosystems in one of the following categories:

- Critically Endangered (CR) ecosystems, being ecosystems that have undergone severe degradation of ecological structure, function or composition as a result of human intervention and are subject to an extremely high risk of irreversible transformation;
- Endangered (EN) ecosystems, being ecosystems that have undergone degradation of ecological structure, function or composition as a result of human intervention, although they are not critically endangered ecosystems;
- Vulnerable (VU) ecosystems, being ecosystems that have a high risk of undergoing significant degradation of ecological structure, function or composition as a result of human intervention, although they are not critically endangered ecosystems or endangered ecosystems; and
- Protected ecosystems, being ecosystems that are of high conservation value or of high national or provincial importance, although they are not listed as critically endangered, endangered or vulnerable.

Further regulations published under the NEMBA are the threatened or protected Species Regulations (GN R 152 OF 2007) which aims to:

- (a) further regulate the permit system set out in Chapter 7 of the Biodiversity Act insofar as that system applies to restricted activities involving specimens of listed threatened or protected species;
- (b) provide for the registration of captive breeding operations, commercial exhibition facilities, game farms, nurseries, scientific institutions, sanctuaries and rehabilitation facilities and wildlife traders;
- (c) provide for the regulation of the carrying out of a specific restricted activity, namely hunting;
- (d) provide for the prohibition of specific restricted activities involving specific listed threatened or protected species;
- (e) provide for the protection of wild populations of listed threatened species; and
- (f) provide for the composition and operating procedure of the Scientific Authority.

The Alien and Invasive Species Lists are promulgated under the NEMBA with the aim of protecting the quality and quantity of arable land in South Africa. Loss of arable land should be avoided and declared Weeds and Invaders in South Africa are categorised according to one of the following categories, and require control or removal:

- Category 1a Listed Invasive Species: Category 1a Listed Invasive Species are those species listed as such by notice in terms of section 70(1)(a) of the Act as species which must be combated or eradicated;
- Category 1b Listed Invasive Species: Category 1b Listed Invasive Species are those species listed as such by notice in terms of section 70(1)(a) of the Act as species which must be controlled;
- Category 2 Listed Invasive Species: Category 2 Listed Invasive Species are those species listed by notice in terms of section 70(1)(a) of the Act as species which require a permit to carry out a restricted activity within an area specified in the Notice or an area specified in the permit, as the case may be; and
- Category 3 Listed Invasive Species: Category 3 Listed Invasive Species are species that are listed by notice in terms of section 70(1)(a) of the Act, as species which are subject to exemptions in terms of section 71(3) and prohibitions in terms of section 71A of Act, as specified in the Notice.

In giving effect to the above, the Alien and Invasive Species Regulations (GNR 1020 of 2020) provide for amongst others, the prevention of the spread or allowing the spread of, any specimen of a listed invasive species.



The provisions of this Act have been considered and where relevant incorporated into the proposed mitigation measures and requirements of the EMP.

4.1.5 NATIONAL HERITAGE RESOURCES ACT (NHRA)

The National Heritage Resources Act (Act 25 of 1999 – NHRA) stipulates that cultural heritage resources may not be disturbed without authorisation from the relevant heritage authority. Section 34(1) of the NHRA states that, *“no person may alter or demolish any structure or part of a structure which is older than 60 years without a permit issued by the relevant provincial heritage resources authority...”* The NHRA is utilised as the basis for the identification, evaluation and management of heritage resources and in the case of Cultural Resource Management (CRM) those resources specifically impacted on by development as stipulated in Section 38 of NHRA, and those developments administered through the NEMA, MPRDA and the Development Facilitation Act (FDA) legislation. In the latter cases the feedback from the relevant heritage resources authority is required by the State and Provincial Departments managing these Acts before any authorisations are granted for a development. The last few years have seen a significant change towards the inclusion of heritage assessments as a major component of Environmental Impact Processes required by the NEMA and MPRDA.

The NEMA 23(2)(b) gives effect to the NHRA and states that an integrated environmental management plan should, *“...identify, predict and evaluate the actual and potential impact on the environment, socio-economic conditions and cultural heritage”*. A study of subsections (23)(2)(d), (29)(1)(d), (32)(2)(d) and (34)(b) and their requirements reveals the compulsory inclusion of the identification of cultural resources, the evaluation of the impacts of the proposed activity on these resources, the identification of alternatives and the management procedures for such cultural resources for each of the documents noted in the Environmental Regulations. A further important aspect to be taken into account of in the EIA Regulations under the NEMA relates to the Specialist Report requirements (Appendix 6 of EIA Regulations 2014, as amended) which apply to Heritage Impact Assessments.

The MPRDA also gives effect to the NHRA as this Act defines ‘environment’ as it is in the NEMA and, therefore, acknowledges cultural resources as part of the environment. Section 39(3)(b) of this Act specifically refers to the evaluation, assessment and identification of impacts on all heritage resources as identified in Section 3(2) of the NHRA that are to be impacted on by activities governed by the MPRDA. Section 40 of the MPRDA requires the consultation with any State Department administering any law that has relevance on such an application through Section 39 of the MPRDA. This implies the evaluation of Heritage Assessment Reports in Environmental Management Plans or Programmes by the relevant heritage authorities.

In accordance with the legislative requirements and EIA rating criteria, the regulations of the South African Heritage Resources Agency (SAHRA) and Association of Southern African Professional Archaeologists (ASAPA) have also been incorporated to ensure that a comprehensive and legally compatible Heritage Report is compiled.

A Heritage Walkdown was undertaken by a Heritage Specialist along the powerline route following the pylon positions and no heritage sensitivities were identified. No further applications are therefore deemed necessary.

4.1.6 ENVIRONMENT CONSERVATION ACT (ECA)

The ECA (Act 73 of 1989) was, prior to the promulgation of the NEMA, the backbone of environmental legislation in South Africa. To date the majority of the ECA has been repealed by various other Acts, however Section 25 of the Act and the Noise Regulations (GN R. 154 of 1992) promulgated under this section are still in effect. These Regulations serve to control noise and general prohibitions relating to noise impact and nuisance.

In terms of section 25 of the ECA, the National Noise Control Regulations (GN R. 154 – NCRs) published in Government Gazette No. 13717 dated 10 January 1992, were promulgated. The NCRs were revised under GN R. 55 of 14 January 1994 to make it obligatory for all authorities to apply the regulations. Provincial noise control regulations have been promulgated in Gauteng, Free State and Western Cape Provinces.

The NCRs will need to be considered in relation to the potential noise that may be generated mainly during the construction phase of the proposed project. The two key aspects of the NCRs relate to disturbing noise and noise nuisance.



Section 4 of the Regulations prohibits a person from making, producing or causing a disturbing noise, or allowing it to be made produced or caused by any person, machine, device or apparatus or any combination thereof. A disturbing noise is defined in the Regulations as *“a noise level which exceeds the zone sound level or if no zone sound level has been designated, a noise level which exceeds the ambient sound level at the same measuring point by 7 dBA or more.”*

Section 5 of the NCRs in essence prohibits the creation of a noise nuisance. A noise nuisance is defined as *“any sound which disturbs or impairs or may disturb or impair the convenience or peace of any person”*. The South African National Standard 10103 also applies to the measurement and consideration of environmental noise and should be considered in conjunction with these Regulations.

There are a few South African National Standards (SANS) relevant to noise from mines, industry and roads. They are:

- South African National Standard (SANS) 10103:2008 – ‘The measurement and rating of environmental noise with respect to annoyance and to speech communication’;
- SANS 10210:2004 – ‘Calculating and predicting road traffic noise’;
- SANS 10328:2008 – ‘Methods for environmental noise impact assessments’;
- SANS 10357:2004 – ‘The calculation of sound propagation by the Concave method’;
- SANS 10181:2003 – ‘The Measurement of Noise Emitted by Road Vehicles when Stationary’; and
- SANS 10205:2003 – ‘The Measurement of Noise Emitted by Motor Vehicles in Motion’.

The relevant standards use the equivalent continuous rating level as a basis for determining what is acceptable. The levels may take single event noise into account, but single event noise by itself does not determine whether noise levels are acceptable for land use purposes. With regards to SANS 10103:2008, the recommendations are likely to inform decisions by authorities, but non-compliance with the standard will not necessarily render an activity unlawful per se.

4.1.7 THE CONSERVATION OF AGRICULTURAL RESOURCES ACT (CARA)

The law on Conservation of Agricultural Resources (Act 43 of 1983) aims to provide for the conservation of the natural agricultural resources of the Republic by the maintenance of the production potential of land, by the combating and prevention of erosion and weakening or destruction of the water sources, and by the protection of the vegetation and the combating of weeds and invader plants. In order to achieve the objectives of this Act, control measures related to the following may be prescribed to land users to whom they apply:

- The cultivation of virgin soil;
- The utilisation and protection of land which is cultivated;
- The irrigation of land;
- The prevention or control of waterlogging or salination of land;
- The utilisation and protection of vleis, marshes, water sponges, water courses and water sources;
- The regulating of the flow pattern of run-off water;
- The utilisation and protection of the vegetation;
- The grazing capacity of veld, expressed as an area of veld per large stock unit;
- The maximum number and the kind of animals which may be kept on veld; The prevention and control of veld fires;
- The utilisation and protection of veld which has burned;
- The control of weeds and invader plants;



- The restoration or reclamation of eroded land or land which is otherwise disturbed or denuded;
- The protection of water sources against pollution on account of farming practices;
- The construction, maintenance, alteration or removal of soil conservation works or other structures on land; and
- Any other matter which the Minister may deem necessary or expedient in order that the objects of this Act may be achieved.

Further, different control measures may be prescribed in respect of different classes of land users or different areas or in such other respects as the Minister may determine. Impacts on the soil, biodiversity and water resources have been identified with regards to the proposed project, and mitigation and management measures recommended.

4.1.8 THE SPATIAL PLANNING AND LAND USE MANAGEMENT ACT (SPLUMA)

The Spatial Planning and Land Use Management Act (Act 16 of 2013 – SPLUMA) is set to aid effective and efficient planning and land use management, as well as to promote optimal exploitation of minerals and mineral resources. The SPLUMA was developed to legislate for a single, integrated planning system for the entire country. Therefore, the Act provides a framework for a planning system for the country and introduces provisions to cater for development principles; norms and standards; inter-governmental support; Spatial Development Frameworks (SDFs) across national, provincial, regional and municipal areas; Land Use Schemes (LUS); and municipal planning tribunals.

4.2 OTHER APPLICABLE ACTS AND LOCAL OR INTERNATIONAL GUIDELINES OR STANDARDS

Other applicable acts and guidelines include: The National Veld and Forest Fire Act 101 of 1998; and Matjhabeng Local Municipality Integrated Development Plans (IDPs). In addition, the municipal planning documents such as the Local Municipality By-laws on Spatial Planning and Land-use Management are also applicable to the project. These Acts, Ordinances, plans and guidelines have been considered in the preparation of this report.

In addition to the relevant provincial or local guidelines, there exists various international guidelines or standards that have relevance to this project and application, and these are described below.

4.2.1 FREE STATE NATURE CONSERVATION ORDINANCE 8 OF 1969

This Ordinance makes provision with respect to the protection and conservation of wildlife in the Free State Province. It makes provision for, among other things, hunting and the protection of wild animals, fishing and the protection of aquatic resources, the protection of indigenous plants and the establishment and management of nature reserves. The Ordinance defines, in Schedule 1, protected game and, in Schedule 2, ordinary game and sets out specific rules relating to hunting of each class of game. It also defines prohibited acts in respect of wild or exotic game and rules regarding the importation and exportation of endangered or exotic animals. According to the list of protected species under the Schedule, if any individuals of these plant species are to be disturbed, permits must be obtained from the Free State Department of Economic, Small Business Development, Tourism and Environmental Affairs (FSDESTEA). An assessment of floral and faunal species within the study area is covered by the Terrestrial Biodiversity Assessment and discussed in detail in subsequent sections of the report.

4.2.2 FREE STATE PROVINCIAL SPATIAL DEVELOPMENT PLAN

The Free State Provincial Spatial Development Framework (PSDF) is a policy document that promotes a 'developmental state' in accordance with national and provincial legislation and directives. It aligns with the Free State Provincial Growth and Development Strategy which has committed the Free State to 'building a prosperous, sustainable and growing provincial economy which reduces poverty and improves social development'. The PSDF includes comprehensive plans and strategies that collectively indicate which type of land-use should be promoted in the Free State Province, where such land-use should take place, and how it should be implemented and managed. The proposed powerlines project is in line with the development/upgrade



of electrical infrastructure and supply of electricity within the Free State province. The development of the electrical infrastructure is in line with the Natural Gas Extraction and Distribution in the Free State and as such, the project fits the PSDF.

4.2.3 FREE STATE BIODIVERSITY PLAN, 2015

The development of provincial biodiversity plans is a key component of the systematic biodiversity planning in South Africa and therefore a strong focus of the Biodiversity Planning Forum. Many of the innovative approaches and methodologies have been initiated and established through the development of these provincial biodiversity plans. A key objective of the Provincial Spatial Development Framework (PSDF) is to integrate and standardize planning at all spheres of government in the province with specific reference to amongst others facilitating land-use classification of the entire land surface of the province. To this extent a set of dedicated Spatial Planning Categories (SPCs) were developed which provide a spatial framework to guide decision-making regarding land-use at all levels of planning. The SPCs represent a classification system that indicates the most suitable, or a range of, land-use options for a certain piece of land. Associated with each SPC category is land-use guidelines which when implemented ensures a balance between development and conservation. Mainstreaming of the biodiversity plan into spatial planning process will be achieved by aligning the biodiversity plan categories with those of the SPCs so that planning according to SPC will then automatically also adopt the biodiversity plan categories and their associated land-use guidelines. Various biodiversity layers were overlaid to the study area and used to determine the sensitivity and/or certain requirements thereof. The results are provided in in subsequent sections of the report.

5 DESCRIPTION OF THE EXISTING ENVIRONMENT

As the proposed EA amendment falls within the Tetra4 Production Right/Cluster 2 area previously assessed in detail as part of the original EA application, the site description and attributes associated with this amendment remain unchanged from what was presented in the original environmental assessment. However, although a detailed site condition analysis is not a requirement for an amendment report, the initial study and analysis of site conditions were undertaken in 2023 and there may have been changes to the site environmental conditions. Subsequently, the site environmental conditions are discussed in this Section of the Report. This Chapter describes the environmental conditions of the study area and the surrounding environment. A description of the environment that may be affected by the activities proposed and the way the biophysical, social, economic and cultural aspects of the environment may be affected by the proposed development is presented in this chapter. The information provided in this section was compiled in consultation with specialists that were undertaken to support the amendment application process.

5.1 PHYSICAL ENVIRONMENT

This subsection describes the physical environmental characteristics of the project area that may be directly or indirectly affected by the proposed powerline amendment. The discussion provides a baseline overview of key physical components, including climate, geology, soils, topography, and hydrological features. This information is derived from available desktop data and specialist studies and serves to contextualise the receiving environment, support the identification of environmental sensitivities, and inform the subsequent assessment of potential impacts associated with the proposed activity.

5.1.1 CLIMATE

The study area's rainfall is strongly seasonal, and the weather pattern reflects a typical summer rainfall region, with > 80 % of precipitation occurring as convective thunderstorms from October to March. Patched rainfall and evaporation data were sourced from the WR2012 database (Rainfall zone 4C4) and span a period of some 90 years (1920 – 2009). The calculated mean annual precipitation (MAP) for this rainfall zone is 521 mm/a, with the 5th percentile of the data set (roughly equivalent to a 1:20 year drought period) calculated at 343.38 mm/a while the 95th percentile (representing a 1:20 flood period) is calculated at 752.43 mm/a. The highest MAP for the 90 years of rainfall data was recorded as 860.3 mm (1942) while the lowest MAP of 264 mm was recorded during 2006.



Both catchment areas are categorised under evaporation zone 19C which have a mean annual evaporation (span) ranging between 1600 mm/a to 1680 mm/a. The highest evaporation is usually experienced in December (215 mm) while the lowest evaporation is in June (61 mm). The peak rainfall months are December and January, and the annual evaporation volumes are more than threefold the annual precipitation.

5.1.2 GEOLOGY AND PALAEOLOGY

The Tetra 132 kV transmission line near Virginia is underlain predominantly by Quaternary superficial deposits, comprising alluvium, colluvium, eluvium, gravel and aeolian sands. In the southern portion of the authorised alignment, the route also traverses the Adelaide Subgroup (Balfour Formation) of the Beaufort Group within the Karoo Supergroup, consisting of Permian-aged sandstones, mudstones and shales (Banzai Environmental, 2023). A simplified geology map is included in Figure 8.

According to the South African Heritage Resources Information System (SAHRIS) PalaeoMap, the Quaternary deposits underlying most of the powerline corridor are assigned a Moderate palaeontological sensitivity, while the Adelaide Subgroup is classified as Very High palaeontological sensitivity because of its documented fossil-bearing potential (Banzai Environmental, 2023) (Refer to Figure 6).

The Quaternary deposits of the Virginia-Welkom region are known to preserve significant fossil resources associated with past river systems, including mammal remains, ostrich eggshell fragments, molluscs, plant material and trace fossils. The broader region has yielded important Plio-Pleistocene fossil assemblages from the Sand, Doring, Vals and Vet River systems, including remains of the extinct elephant *Mammuthus subplanifrons* and a diversity of vertebrate fauna (Banzai Environmental, 2023).

The Balfour Formation of the Adelaide Subgroup has internationally significant palaeontological value because it preserves fossils associated with the Permian-Triassic transition. Fossils recorded from these strata include therapsids, reptiles, amphibians, fish, trace fossils and *Glossopteris* flora, making this geological unit particularly sensitive from a heritage perspective (Banzai Environmental, 2023).

Despite the regional fossil potential, the site-specific palaeontological investigation undertaken during the 2021 field assessment found no visible fossiliferous outcrops within the development footprint. The absence of exposed fossil-bearing strata was attributed to the generally low-relief landscape, extensive vegetation cover and the scarcity of natural rock exposures in the project area. Consequently, the overall palaeontological impact associated with the powerline development was considered low, provided that a Chance Finds Protocol is implemented during construction (Banzai Environmental, 2023).

The specialist review found that the deviation is entirely underlain by Quaternary sands (Qs) and Quaternary alluvial deposits, which are mapped as having Moderate palaeontological sensitivity. Importantly, the revised alignment does not intersect the Adelaide Subgroup (Balfour Formation) or associated higher-sensitivity geological units that occur further south and east along the Doringrivier area. The SAHRIS PalaeoMap confirms that the deviation remains within the same Moderate sensitivity zone as much of the originally authorised corridor (Banzai Environmental, 2026).

The specialist therefore concluded that the deviation does not introduce any new geological formations, palaeontological sensitivities or fossil heritage risks that were not already considered in the original assessment.

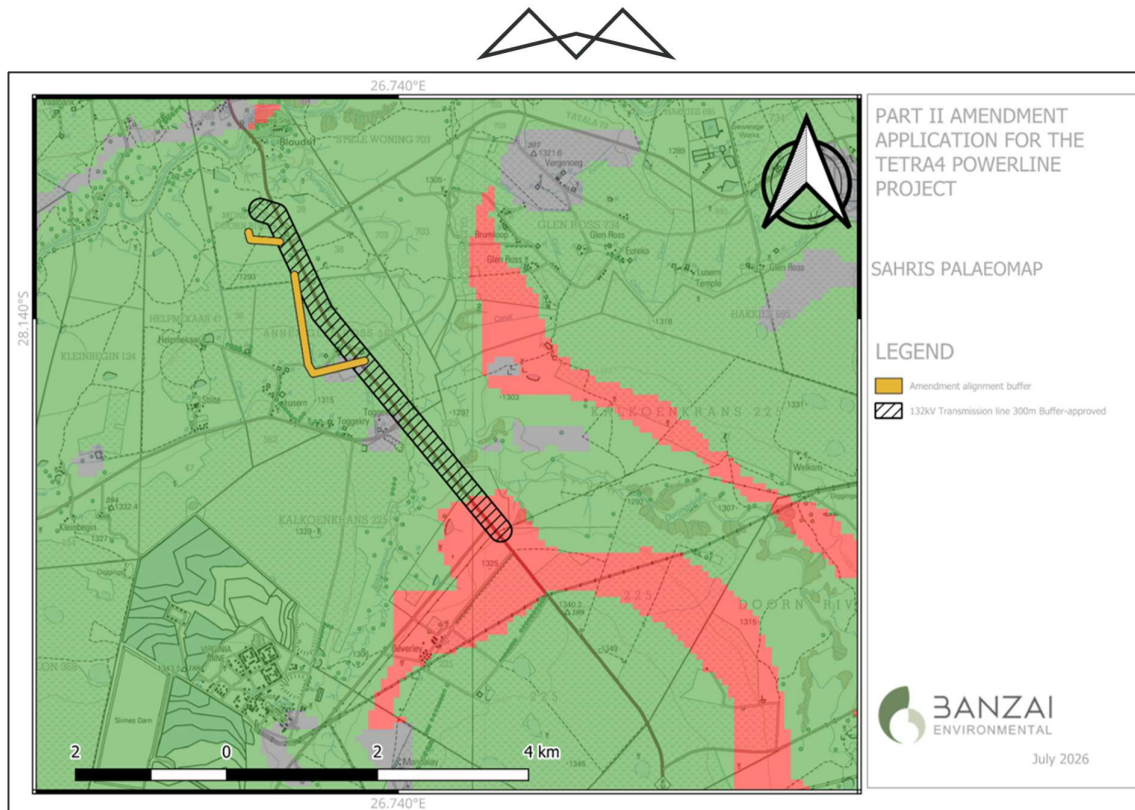


Figure 6: Palaeontology sensitivity of the approved 132kV powerline (black) buffer and the proposed deviation

5.1.3 SOILS AND AGRICULTURAL POTENTIAL

The soil and agricultural assessment undertaken for the original Tetra4 Cluster 2 Project (2022) and the subsequent amendment review for the 132 kV and 33 kV powerline deviations (2026) concluded that the proposed powerline infrastructure is located within an agricultural landscape comprising cultivated fields, grazing land and isolated areas of higher agricultural sensitivity. However, due to the linear nature of the development and the availability of micro-siting opportunities, impacts on agricultural resources are expected to remain low to moderate and manageable.

The original assessment recognised that portions of the proposed 132 kV and 33 kV powerline alignments traverse active agricultural land and cultivated fields. The DEA Screening Tool identified some areas as having High to Very High field crop sensitivity owing to their current agricultural productivity. Nevertheless, the assessment found that the underlying land capability is generally lower than the crop sensitivity mapping suggests because climatic limitations, including relatively low rainfall and high evapotranspiration rates, restrict overall agricultural potential. Consequently, the project area was assessed as having predominantly Low to Moderate-High agricultural sensitivity from a land capability perspective.

Field verification confirmed that soil conditions within the proposed deviation corridor remain substantially unchanged from those recorded during the 2022 assessment. Four soil forms were identified within the deviation area, namely the Ermelo, Swartland, Sepane and Johannesburg soil forms, with the Johannesburg form occurring only in previously disturbed areas. The specialist found that the overall soil and agricultural sensitivity of the deviation corridor remains consistent with the findings of the original assessment.

The proposed 132 kV deviation traverses areas containing active cultivation and centre-pivot irrigation infrastructure. While these areas represent agricultural constraints, the specialist concluded that impacts associated with the deviation would remain minimal because the development comprises a narrow linear servitude and much of the corridor follows already disturbed areas associated with existing roads and infrastructure.



The deviation corridor traverses areas ranging from Low to Very High agricultural sensitivity; however, the majority of the alignment avoids the most sensitive agricultural resources. The assessment confirmed that no changes have occurred in the mapped sensitivity classes since the 2022 assessment and that the deviation introduces no new agricultural constraints not previously considered.

The specialist further noted that where the powerline crosses cultivated land, agricultural activities can largely continue beneath the conductors following construction. Crop production and grazing are therefore expected to continue across most of the servitude, limiting the long-term loss of productive agricultural land.

5.1.4 TOPOGRAPHY

The powerline amendment is largely within the section from the midpoint to the endpoint (Figure 10) which traverses a moderately undulating landscape associated with the Doring River and Bosluisspruit catchment. The alignment extends from the valley floor at approximately 1,300 mamsl and gradually ascends north-westwards onto slightly elevated terrain reaching approximately 1,320-1,340 mamsl. Topography along this section is characterised by broad, gently sloping interfluvies separated by incised drainage lines and river valleys. The corridor crosses riverine and riparian areas near the midpoint before transitioning onto higher, gently rolling terrain towards the endpoint. Overall, the terrain presents low to moderate relief with no significant ridges, escarpments, or steep slopes that would impose substantial engineering constraints on the proposed infrastructure.

5.1.5 LANDSCAPE QUALITY AND VISUAL

Landscape and visual impacts were assessed by Environmental Planning and Design and the specialist assessment was undertaken as part of the Cluster 2 Production EIA. The powerline was also assessed as part of this assessment. The baseline receiving environment findings are presented in the subsections below.

5.1.5.1 LANDSCAPE CHARACTER AREAS AND VISUAL ABSORPTION CAPACITY (VAC)

Landscape Character Areas (LCAs) are defined as “single unique areas which are the discrete geographical areas of a particular landscape type”. The overriding character differentiating factors within the subject landscape appear to be landform /drainage and vegetation cover. The landform appears to divide the landscape into Four discrete areas including;

1. Cultivated Rural Landscape Character Area. This area has gently undulating topography and a predominance of cultivated fields that are generally separated by areas of natural grassland. This is a relatively open landscape with little VAC which is only provided by minor ridgelines and alien vegetation;
2. Natural Landscape Character Area. This area is comprised of the shallow valleys surrounding watercourses and is generally covered in Natural Vegetation including grassland and woody alien species that occur in alluvial areas. VAC within these areas is generally moderate due to the fact that much of the woody vegetation extends above eye level;
3. Mining Landscape Character Area. This area includes all mining operations and the extensive stockpiles and infrastructure that associated with them; and
4. The Urban / Residential LCA. This area is comprised entirely of the urban areas of Virginia and Welkom. VAC is generally high within these areas due to the extent of structures and urban vegetation. Also due to distance (minimum 2.7km) surrounding rural vegetation and mining activities are likely to provide an effective screen.

Visual Receptors are defined as “individuals and / or defined groups of people who have the potential to be affected by the proposal”. The significance of a change in a view for a visual receptor is likely to relate to use. Uses such as guest houses, recreation and tourism related areas are likely to rely on the maintenance of an outlook for successfully attracting guests and users. Residential areas could depend on outlook for the enjoyment of the area by residents and for maintaining property values. A route that is particularly important for tourism may also be dependent on outlook for the maintenance of a suitable experience for users.



Visual receptors within the affected landscape that due to use could be sensitive to landscape change are indicated below.

- Area Receptors may include;
 - Urban areas within the towns of Virginia and Welkom which are located approximately 2.7km to the east and 7.3km north of the proposed Cluster 2 Boundary Extension respectively; and
 - The H Joel Private Nature Reserve which, at its closest, is located approximately 1.0km to the south of the proposed Cluster 2 Extension area.
- Point Receptors that include;
 - There are a number of Local Farmsteads and Homesteads located both within the surrounding landscape. From the site visit it appears that the farmsteads within the proposed site have a primarily agricultural use.
- Linear Receptors or routes through the area that include;
 - The R30, the R730 and the unsurfaced local roads that that run through the proposed Cluster 2 Extension area. All of these are used mainly by local people with little or no tourism / recreational importance.

The landscape character areas and visual receptors within the study area are presented in Figure 7 below.



Site (Landscape) sensitivity is largely related to the way that the site fits into the surrounding landscape i.e. is it an important component. The sensitivity of potential receptors generally relates to whether views are important to support current or potential usage. However, they also relate to nuisance and whether for instance a proposed use could impose on and make an existing use uncomfortable or even untenable.

The landscape within which the proposed projects is located is not highly sensitive. It has largely been transformed by large scale mining operations and commercial agriculture. The topography and vegetation patterns are also such that there is little VAC, receptors are therefore to a large degree affected by views of mining operations. However, the development proposal is likely to result in a finer grain industrial character which could mean that even though most individual elements are relatively small they will be considerably closer to most potential receptors. The visual sensitivity of the landscape has been categorised into no-go, high, medium and low (non-sensitive) areas as described below.

- No-Go Areas:
 - Since the affected landscape is highly transformed by both agriculture and mining and because protected areas are highly unlikely to be affected, there are no potentially affected areas where development should not happen due to potential landscape or visual impacts.
- Areas with High Sensitivity:
 - There are potentially affected areas that could be sensitive to potential development, these include:
 - All Natural areas that are largely located within the shallow river valleys. These areas have largely survived in a natural state due to their unsuitability for large scale mining and agriculture, they are therefore relatively intact. In addition to the provision of key environmental services such as attenuation of storm run-off, they provide visual buffers between intensive agriculture and mining operations. There are therefore sound reasons to maintain the integrity of these areas. From a landscape and visual perspective however, it is likely that the location of wells, compressor stations and pipelines might occur within these areas with minimal impact. However, this is subject to minimal disturbance and appropriate mitigation to ensure that the natural landscape character remains intact;
 - All areas within close proximity to homesteads. Currently there are views from many homesteads of large-scale mining operations. However, there are very few homesteads that have close range views over industrial operations. It is possible that the development of the various elements associated with the proposed project could be located in close proximity to homesteads and, subject to distance, these could dominate views of residents. Due to the small scale of the majority of proposed elements, the screening ability of natural areas in which many of the proposed elements are located, a 250 m buffer has been indicated around homesteads. It is not proposed that development in these areas is prevented, however, development must be undertaken in a way that views from affected homesteads are not dominated by views of the elements, appropriate mitigation is undertaken, and appropriate consultation is undertaken with residents.
 - All areas within close proximity to roads. Views from the main “R” roads that pass through the affected area are currently largely comprised of large-scale arable agriculture in the foreground and middle distance backed by large scale mining operations. These views are punctuated by natural landscape areas as the motorist crosses the shallow river valleys. Subject to distance, the majority of proposed elements are such that their location within the current large scale open agricultural landscape is unlikely to be highly obvious. Due to their scale, a well, compressor station or LV overhead power line located 250 m away from a road is unlikely to the



highly visible from the road. A pipeline at any distance from the road, as long as appropriate rehabilitation is undertaken, is unlikely to be highly visible.

- Areas with Medium Sensitivity
 - Areas with medium sensitivity to development include all arable agricultural areas outside 250 m from homesteads and roads.
- Non-Sensitive Areas
 - All non-sensitive areas including mining areas outside 250m from homesteads and roads.

The proposed powerline deviation traverses through an area of agricultural arable land with farms and as such is located in an area of medium sensitivity from a visual perspective.

5.1.6 TERRESTRIAL BIODIVERSITY AND AVIFAUNA

The proposed amendment relates to deviations of portions of the authorised 132 kV powerline corridor and the final alignment of the 33 kV powerline within the Tetra4 Powerline Project area. A terrestrial and avifaunal assessment was originally undertaken by The Biodiversity Company (TBC) in 2022, with a verification assessment completed in June 2026 to confirm whether environmental conditions and ecological sensitivities associated with the powerline corridors have changed since the original assessment.

The powerline corridors occur within a landscape characterised by agricultural land, transformed areas, disturbed grassland and watercourse-associated habitats. The National Environmental Screening Tool identifies portions of the area as having elevated terrestrial sensitivity due to the presence of Critical Biodiversity Areas (CBAs), Ecological Support Areas (ESAs) and watercourse-related ecological infrastructure.

5.1.6.1 TERRESTRIAL ECOLOGY FINDINGS

The 2026 field verification confirmed that the habitats occurring within the amended powerline corridors remain consistent with those assessed in 2022. Four habitat types were identified within the Project Area, namely:

- Degraded Grassland;
- Disturbed Grassland;
- Water Resources; and
- Transformed Areas.

No additional protected plant species, Species of Conservation Concern, or terrestrial ecological constraints were identified during the 2026 verification survey. The specialist concluded that the habitat characteristics, ecological sensitivities and Site Ecological Importance (SEI) ratings remain unchanged from those recorded in the original assessment.

The majority of the proposed 132 kV powerline deviations occur within areas previously identified as having low terrestrial sensitivity. Portions of the 33 kV alignment traverse areas of moderate to moderately high sensitivity associated primarily with grassland and watercourse habitats; however, these sensitivities were already identified and assessed during the original authorisation process

5.1.6.2 AVIFAUNA FINDINGS

The 2026 specialist review confirmed that the avifaunal environment remains substantially unchanged from that assessed in 2022. Habitat availability, ecological sensitivities and potential avifaunal risk areas remain consistent with the original findings.

The most sensitive avifaunal habitats remain associated with drainage features, wetlands and watercourse crossings, which may provide foraging and movement corridors for bird species. Due to the linear nature of powerline infrastructure, crossings of these habitats cannot always be avoided entirely. The specialist therefore focused on minimising impacts through careful infrastructure placement and application of bird-friendly design measures.



The purpose of the 2026 verification assessment was to determine whether the proposed powerline deviations introduce new terrestrial or avifaunal constraints that would warrant amendment of the original specialist conclusions. The assessment found that no material environmental changes have occurred within the amended corridors and that the original findings remain applicable.

The proposed 132 kV deviations are located within previously assessed areas and do not introduce any new terrestrial or avifaunal constraints. Similarly, the final 33 kV alignment does not result in any significant change to the impact profile previously assessed for the project.

The specialist acknowledged that complete avoidance of all moderate and moderately high sensitivity habitats is not always achievable for linear infrastructure such as powerlines, particularly at watercourse crossings. The preferred approach is therefore to minimise disturbance through final pylon placement and micro-siting, while limiting the construction footprint within sensitive areas.

5.1.7 SURFACE WATER AND DRAINAGE

The proposed amendment area falls within the Vaal Water Management Area and is associated with the Sand River, Doring River, Boschluispruit and a network of ephemeral drainage features and wetlands. The broader Tetra4 Cluster 2 area was assessed through an Aquatic Baseline and Risk Assessment undertaken by The Biodiversity Company (2022), with a supplementary freshwater verification assessment completed in June 2026 specifically for the amended 132 kV and 33 kV powerline alignments.

The aquatic environment within the project area has been subject to historical agricultural, mining and infrastructure-related disturbances. As a result, the Present Ecological Status (PES) of the Sand River was determined to be Class C (moderately modified), while the Doring River and Boschluispruit were assessed as Class D (largely modified). Key drivers of ecological change include catchment-scale erosion, sedimentation, altered flow regimes, alien vegetation invasion and water quality impacts associated with agricultural and mining activities.

Despite these existing pressures, the watercourses and associated wetlands continue to provide important ecological functions and ecosystem services and remain sensitive to further disturbance. The National Web-based Environmental Screening Tool classifies the aquatic biodiversity sensitivity of the broader project area as Very High, while the proposed deviation area is predominantly classified as Low sensitivity, necessitating specialist input and verification. A comprehensive Aquatic Biodiversity and Wetland Assessment was undertaken in 2022 as part of the original environmental assessment process. For the current Part 2 Amendment application, a Freshwater Verification Assessment was conducted in 2026 to confirm site conditions and assess the implications of the proposed alignment deviation.

The 2026 freshwater verification survey confirmed the findings of the 2022 wetland assessment and identified the presence of channelled valley-bottom wetlands, unchannelled valley-bottom wetlands, seep wetlands, depressions, non-perennial drainage features and artificial water bodies within the project area. The identified natural wetland systems were assigned ecological sensitivity ratings ranging from Moderate to Moderately High, indicating that their protection should remain a priority. No material changes in wetland extent, character or sensitivity were recorded between the 2022 and 2026 assessments.

The aquatic assessment further concluded that the freshwater systems within the area support moderately sensitive aquatic communities, including macroinvertebrates and indigenous fish species, although these communities have been influenced by historical habitat and water quality degradation. Sensitive aquatic taxa remain vulnerable to changes in water quality, sediment inputs and hydrological alteration.

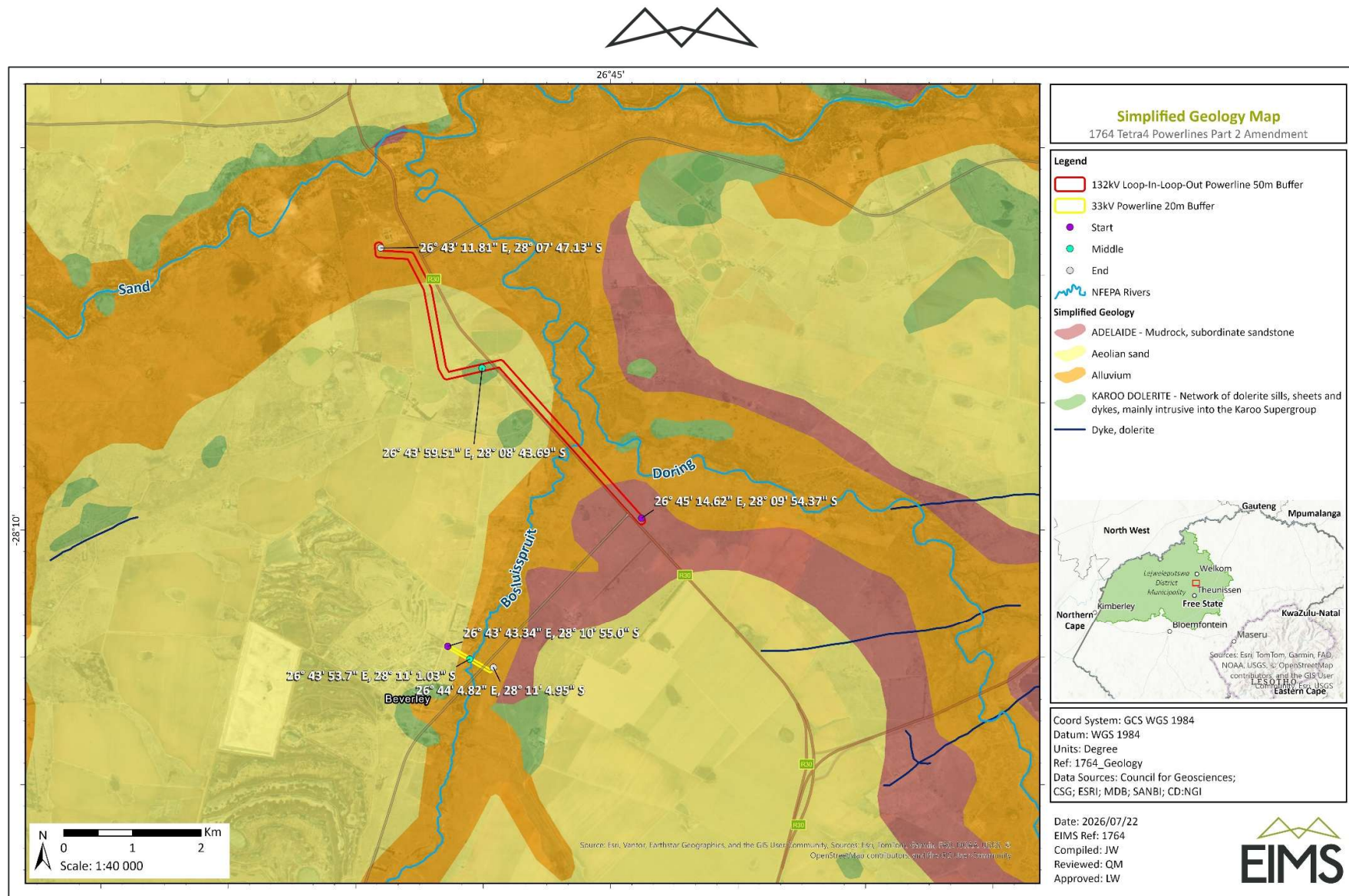
The 2026 specialist assessment was undertaken specifically to determine whether the amended powerline alignments introduce new freshwater constraints or alter the findings of the original environmental assessment. The assessment concluded that the amended alignments do not materially alter the freshwater impact profile of the authorised development.

The proposed 132 kV powerline deviations are located predominantly within areas previously identified as having low freshwater sensitivity and do not overlap mapped freshwater sensitivity areas. The final 33 kV alignment has also been refined such that it avoids previously identified wetland buffer encroachments that



were noted during earlier planning stages. Consequently, no freshwater-related layout changes are considered necessary.

The specialist confirmed that complete avoidance of delineated wetlands and associated wetland buffers can be achieved at an infrastructure level, provided that all pylons are positioned outside wetland boundaries and buffer zones, and that wetlands are spanned where crossings are required



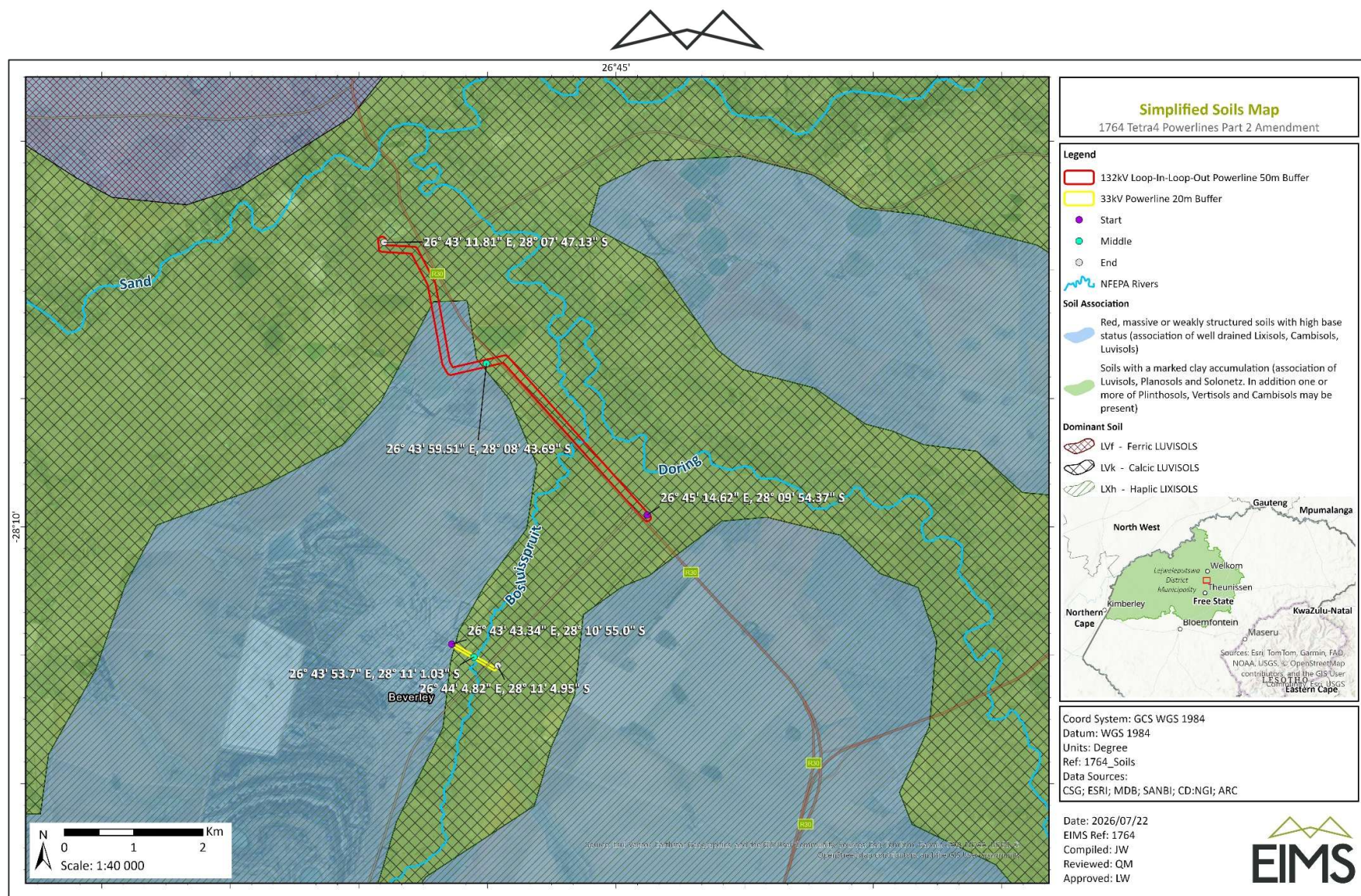
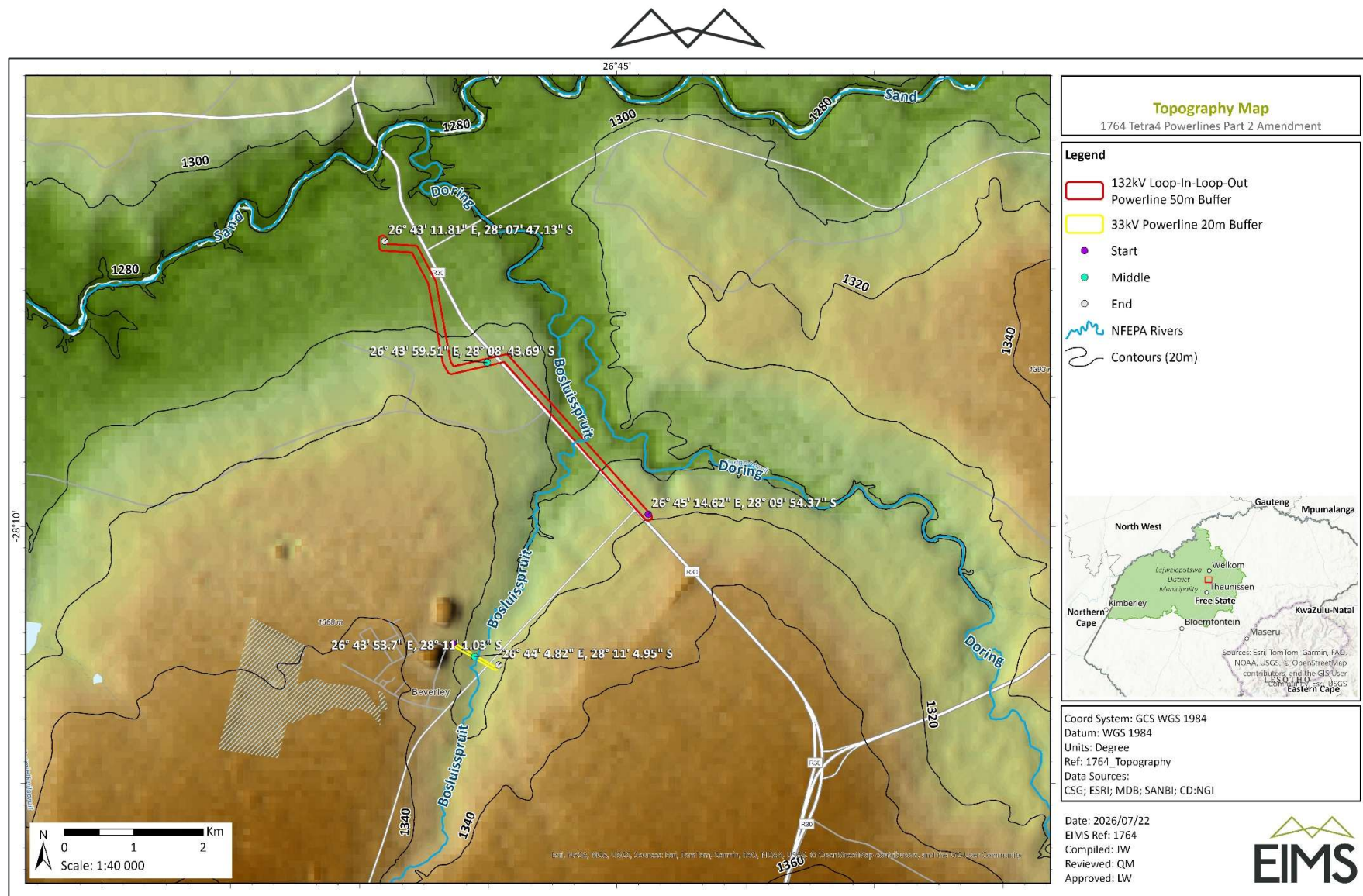


Figure 9: Simplified Soils Map



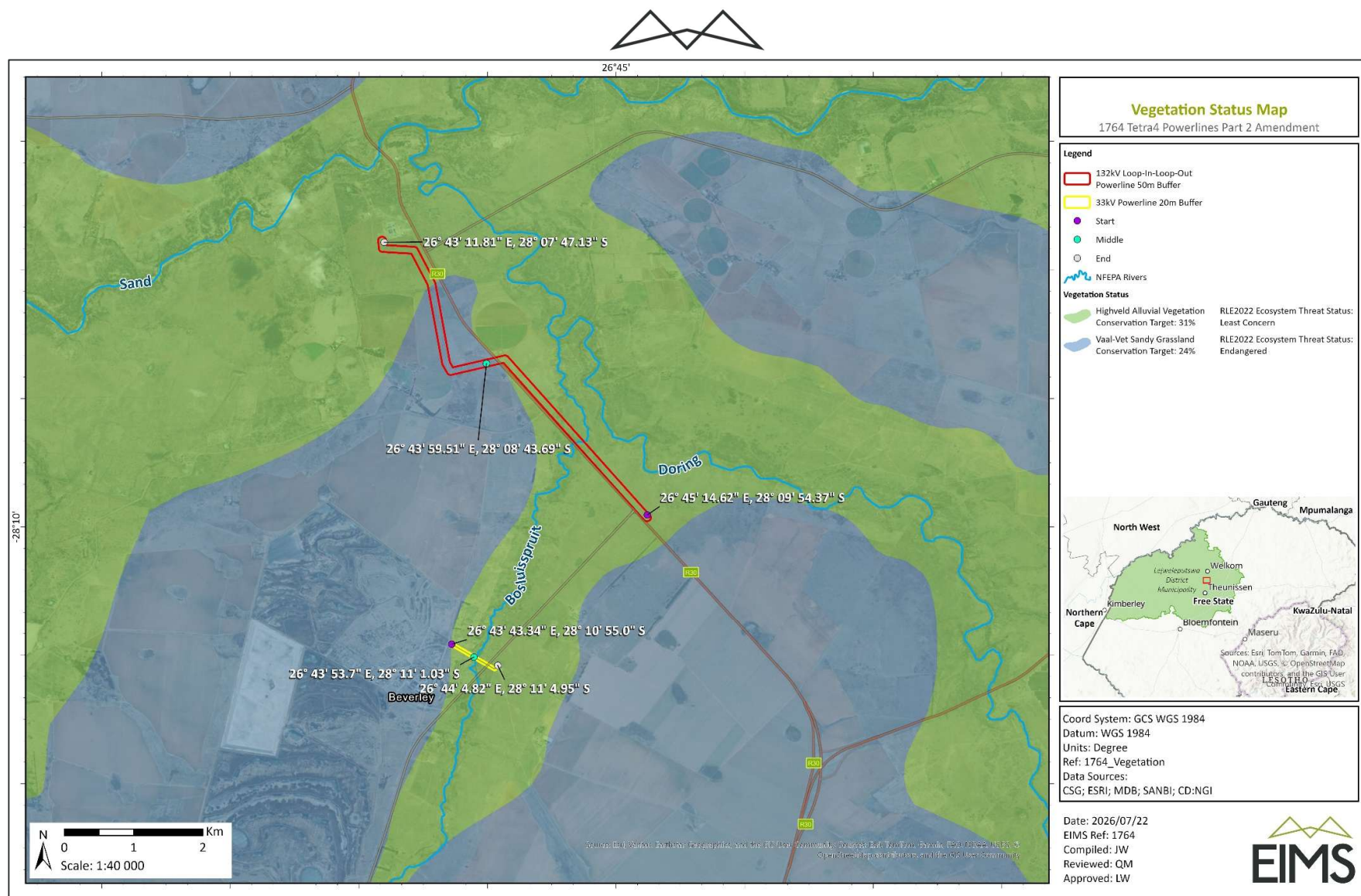
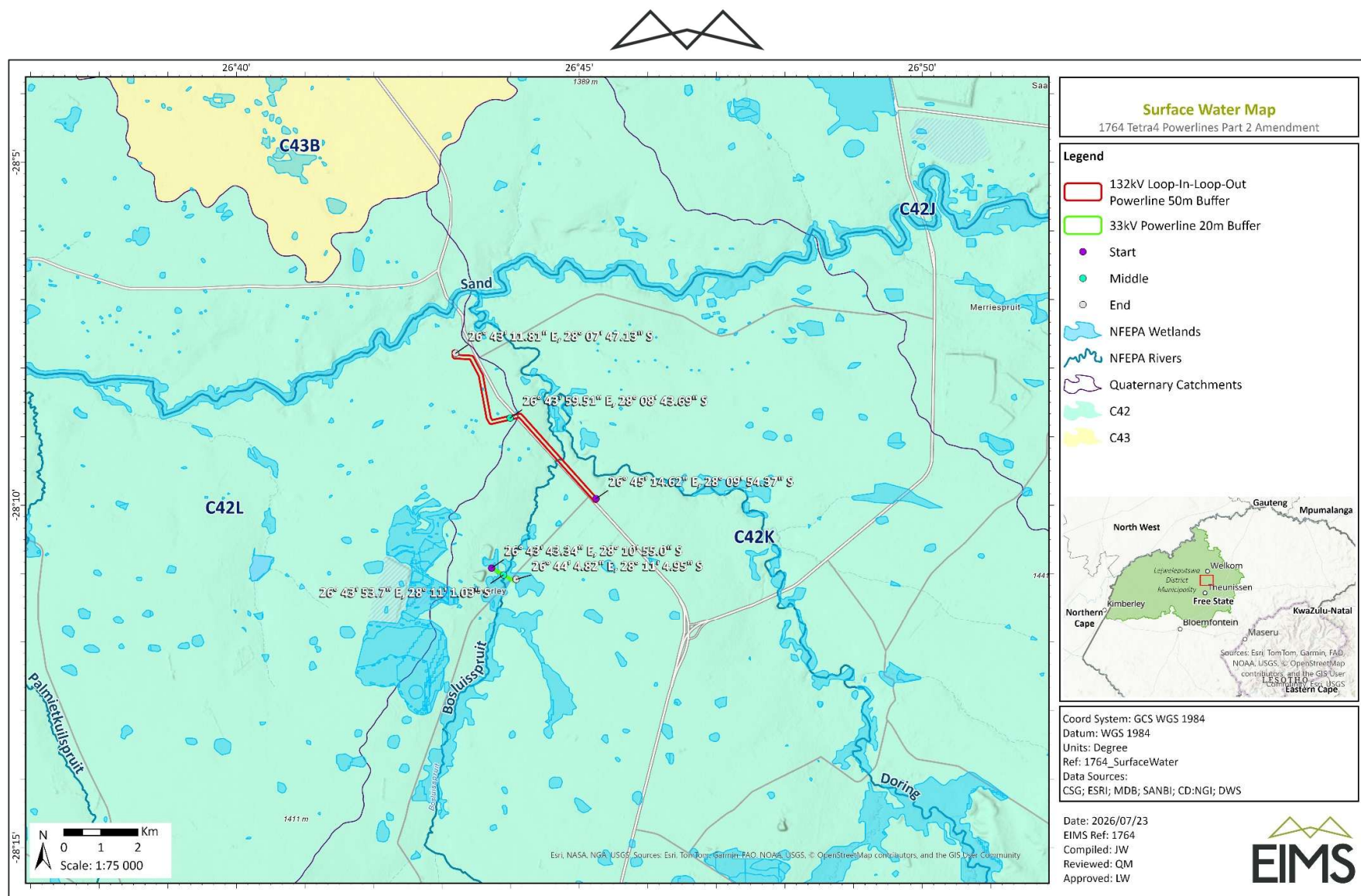


Figure 11: Vegetation Map





5.2 SOCIO-ECONOMIC ENVIRONMENT

The socio-economic development context of the proposed powerline development is informed by the strategic priorities and objectives contained within the Lejweleputswa District Municipality and Matjhabeng Local Municipality Integrated Development Plans (IDPs). These planning instruments provide the framework for guiding development, infrastructure investment, service delivery, and economic growth within the region, with a strong emphasis on economic diversification, infrastructure enhancement, investment attraction, and employment creation. The proposed powerline, which will support Tetra4's helium production operations, is assessed against these development objectives to determine its alignment with municipal priorities and its potential contribution to sustainable socio-economic development in the area.

5.2.1 LEJWELEPUTSWA INTEGRATED DEVELOPMENT PLAN (IDP)

The Integrated Development Plan (IDP) 2022-2027 for the Lejweleputswa District Municipality serves as a strategic blueprint focused on reversing the economic decline of a region historically dependent on gold mining. The report highlights that while the mining sector still contributes nearly half of the district's Gross Value Added (GVA), it has faced a steady downturn as a result of processes of restructuring for some years and is still retrenching staff. This challenge particularly affects the mining towns of Welkom, Virginia, Odendaalsrus and Allanridge. To combat this, the IDP emphasizes Local Economic Development (LED) and the prioritization of investment in high-potential "Economic Nodes" like Welkom. The municipality's vision is to leverage its existing infrastructure to foster sustainable growth, with a particular focus on creating opportunities for its large, energetic youth population that currently faces high levels of emigration due to a lack of local jobs.

The proposed powerline development is planned for helium and methane gas fits directly into the IDP's core objective of diversifying the regional economy and "harnessing new mining potential." Since the plan explicitly seeks to minimize the impact of declining gold production, the discovery of alternative natural resources represents a vital lifeline for the district's industrial future. By exploring for gas near Welkom, a town classified in the Spatial Development Framework as having "Very High" growth potential, the project aligns with the district's goal of directing fixed investment toward established urban centers. This ensures that the exploration phase and any subsequent extraction can benefit from existing logistical networks and specialized services centered in the Matjhabeng area.

Furthermore, the project supports the IDP's social mandates regarding poverty alleviation and job creation. The district is currently grappling with the social fallout of mining retrenchments, and a new extractive industry could provide the necessary stimulus to revitalize the manufacturing and heavy industry sectors, which have slumped alongside the gold mines. Because the IDP is premised on facilitating external investment through the Lejweleputswa Development Agency, this project acts as a catalyst for the "vibrant economy" the municipality aims to build. Ultimately, the exploration aligns with the district's strategic move toward becoming a diversified energy and commercial hub, rather than a single-commodity mining region.

5.2.2 MATJHABENG IDP 2025/2026

The Matjhabeng Local Municipality Draft Review Integrated Development Plan (IDP) 2025/2026 remains the municipality's principal strategic planning instrument, guiding service delivery, infrastructure investment, economic development, and budget allocation. The IDP acknowledges the continued economic importance of the mining sector within Matjhabeng while emphasizing the need to diversify the local economy, attract new investment, improve infrastructure reliability, strengthen revenue generation, and create sustainable employment opportunities. The municipality's development priorities continue to focus on basic service delivery, infrastructure maintenance and expansion, local economic development LED, sound financial management, and institutional strengthening.

The proposed powerline development in support of Tetra4's helium and natural gas production operations is consistent with these strategic objectives. The project will contribute to the provision and strengthening of critical energy infrastructure required to sustain industrial activity, support private sector investment, and enhance the long-term viability of one of the region's emerging economic sectors. By facilitating reliable electricity supply to Tetra4's operations, the powerline will support continued production, operational



efficiency, and potential future expansion, thereby contributing to local economic growth and employment opportunities within the municipality.

The 2025/2026 IDP further recognizes the importance of creating an enabling environment for investment and economic recovery in a region that continues to experience socio-economic pressures, including unemployment and constrained economic growth. Infrastructure investment is identified as a key catalyst for development, while municipal planning seeks to encourage economic activities that broaden the local economic base beyond conventional mining. The Tetra4 operation represents such diversification, introducing investment into the helium and natural gas value chain and reinforcing Matjhabeng's role as an important industrial and resource-based economy within the Free State Province.

From a spatial and infrastructure perspective, the proposed powerline development will support the municipality's objectives of maintaining and expanding strategic infrastructure networks necessary for economic development. The project will utilize and strengthen existing infrastructure corridors, enabling secure power supply to industrial activities while supporting broader regional development goals contained within the IDP. As such, the proposed development aligns with the municipality's vision of promoting economic resilience, attracting investment, and supporting sustainable development within Matjhabeng.



6 ENVIRONMENTAL IMPACT ASSESSMENT

6.1 IMPACTS IDENTIFIED

This Section presents the impacts that were originally identified and assessed in the BA and reassessed or verified for this amendment. Potential environmental impacts were identified by the EAP, the appointed specialists (where applicable), as well as the preliminary input from the public. The impacts are included in Table 6 below.

When considering cumulative impacts, it is important to bear in mind the scale at which different impacts occur. The identification of impacts is an objective iterative process of considering the project components and activities and how these may interact with the different environmental components. An activity/ environmental component matrix is presented in Table 5 below. The matrix represents which environmental components are likely to be impacted upon by the project activities. Table 6 provides a list of the identified impacts associated with each environmental component.



Table 5: Impact identification matrix.

Phase			Activity	Environmental Component												
				Climate and Air Quality (AQ)	Geology and soils (G)	Groundwater (GW)	Surface water/ wetlands (W)	Noise (N)	Topography (T)	Visual/ Landscape (V)	Flora (FL)	Fauna/Avifauna (FA)	Ecosystems/ habitats (EH)	Social (S)	Cultural Heritage (C)	Economic (E)
Planning and Design			Project planning, design development, procurement and contracting activities											+		+
			Landowner access agreements												+	
Construction (incl construction and construction rehab)	pre post	Site establishment and preparations	-	-			-		-	-	-	-				
		Movement of construction vehicles, equipment and machinery	-				-			-	-	-	-			+
		Excavations, pylon construction	-	-	-	-	-	-	-	-	-	-	-	-	-	+
		Stringing and/or grid connection							-		-		-			+
Key: + = Potential positive interaction – = Potential negative interaction (blank) = No meaningful interaction anticipated																



Table 6: Impacts Identified and Assessed during the BA.

#	Impact	Activity/ Aspect	Phase
6,3,1,1	Temporary disturbance of wildlife due to increased human presence and possible use of machinery and/or vehicles.	Ecosystems and Ecology	Construction
6,3,1,2	Destruction, further loss and fragmentation of the vegetation community	Ecosystems and Ecology	Construction
6,3,1,3	Introduction of alien species, especially plants	Ecosystems and Ecology	Construction
6,3,2,1	Bird collisions and electrocutions with newly established powerlines	Avifauna	Operation
6,3,3,1	Increase in air quality impacts due to construction of the powerline	Air Quality	Construction
6,3,3,2	Increase in air quality impacts due to the operation of vehicles on unpaved roads	Air Quality	Construction / Operation
6,3,4,1	Increase in noise levels due to construction of the powerline	Noise	Construction
6,3,5,1	Impact on livelihoods	Socio-economic	Construction / Operation
6,3,5,2	Nuisance factor due to increase in ambient dust and noise levels	Social	Construction
6,3,5,3	Damage to farm roads, existing services, and infrastructure	Social	Construction
6,3,6,1	Impact on Existing Agricultural Landscape Character	Visual	Construction
6,3,6,2	Impact on Existing Natural Landscape Character	Visual	Construction
6,3,6,3	The visual impact on views from local roads	Visual	Construction
6,3,6,4	Change of Natural of Views from Homesteads	Visual	Construction
6,3,6,5	Impact on Existing Agricultural Landscape Character	Visual	Operation
6,3,6,6	Impact on Existing Natural Landscape Character	Visual	Operation
6,3,6,7	The visual impact on views from local roads	Visual	Operation
6,3,6,8	Change of Natural of Views from Homesteads	Visual	Operation
6,3,7,1	Impact on agricultural land use	Soils / Agriculture	Operation
6,3,7,1	Construction of transmission loop	Soils / Agriculture	Operation
6,3,8,1	Erosion	Clearing of vegetation / Construction activities	Construction



#	Impact	Activity/ Aspect	Phase
6,3,9,1	Mobilisation and maintenance of heavy vehicle and machinery on-site may cause hydrocarbon contamination of groundwater resources.	Groundwater	Construction

6.2 IMPACT ASSESSMENT METHODOLOGY

The broad approach to the significance rating methodology is to determine the significance (S) of an environmental risk or impact by considering the consequence (C) of each impact (comprising Nature, Extent, Duration, Magnitude, and Reversibility) and relating this to the probability/ likelihood (P) of the impact occurring. The S is determined for the pre- and post-mitigation scenario. In addition, other factors, including cumulative impacts and potential for irreplaceable loss of resources, are used to determine a prioritisation factor (PF) which is applied to the S to determine the overall final significance rating (FS).

6.2.1 DETERMINATION OF SIGNIFICANCE

The final significance (FS) of an impact or risk is determined by applying a prioritisation factor (PF) to the post-mitigation environmental significance. The significance is dependent on the consequence (C) of the particular impact and the probability (P) of the impact occurring. Consequence is determined through the consideration of the Nature (N), Extent (E), Duration (D), Magnitude (M), and Reversibility (R) applicable to the specific impact.

For the purpose of this methodology the consequence of the impact is represented by:

$$C = \frac{(E + D + M + R) * N}{4}$$

Each individual aspect in the determination of the consequence is represented by a rating scale as defined in Table 7 below.

Table 7: Criteria for Determining Impact Consequence

Aspect	Score	Definition
Nature	- 1	Likely to result in a negative/ detrimental impact
	+1	Likely to result in a positive/ beneficial impact
Extent	1	Activity (i.e. Highly localised, limited to the area applicable to the specific activity)
	2	Site (i.e. within the development property or site boundary, or the area within a few hundred meters of the site)
	3	Local (i.e. beyond the site boundary within the Local administrative boundary (e.g. Local Municipality) or within consistent local geographical features, or the area within 5 km of the site)
	4	Regional (i.e. Far beyond the site boundary, beyond the Local administrative boundaries within the Regional administrative boundaries (e.g. District Municipality), or extends into different distinct geographical features, or extends between 5 and 50 km from the site).
	5	Provincial / National / International (i.e. extends into numerous distinct geographical features, or extends beyond 50 km from the site).
Duration	1	Immediate (<1 year, quickly reversible)
	2	Short term (1-5 years, less than project lifespan)



	3	Medium term (6-15 years)
	4	Long term (15-65 years, the impact will cease after the operational life span of the project)
	5	Permanent (>65 years, no mitigation measure of natural process will reduce the impact after construction/ operation/ decommissioning).
Magnitude/ Intensity	1	Minor (where the impact affects the environment in such a way that natural, cultural and social functions and processes are not affected)
	2	Low (where the impact affects the environment in such a way that natural, cultural and social functions and processes are slightly affected, or affected environmental components are already degraded)
	3	Moderate (where the affected environment is altered but natural, cultural and social functions and processes continue albeit in a modified way; moderate improvement for +ve impacts; or where change affects area of potential conservation or other value, or use of resources).
	4	High (where natural, cultural or social functions or processes are altered to the extent that it will temporarily cease; high improvement for +ve impacts; or where change affects high conservation value areas or species of conservation concern)
	5	Very high / don't know (where natural, cultural or social functions or processes are altered to the extent that it will permanently cease, substantial improvement for +ve impacts; or disturbance to pristine areas of critical conservation value or critically endangered species)
Reversibility	1	Impact is reversible without any time and cost.
	2	Impact is reversible without incurring significant time and cost.
	3	Impact is reversible only by incurring significant time and cost.
	4	Impact is reversible only by incurring very high time and cost.
	5	Irreversible Impact.

Once the C has been determined, the significance is determined in accordance with the standard risk assessment relationship by multiplying the C and the P. Probability is rated/ scored as per Table 8.

It is noted that both environmental risks as well as environmental impacts should be identified and assessed. Environmental Risk can be regarded as the potential for something harmful to happen to the environment, and in many instances is not regarded as something that is expected to occur during normal operations or events (e.g. unplanned fuel or oil spills at a construction site). Probability and likelihood are key determinants or variables of environmental risk. Environmental Impact can be regarded as the actual effect or change that happens to the environment because of an activity and is typically an effect that is expected from normal operations or events (e.g. vegetation clearance from site development results in loss of species of concern). Typically, the probability of an unmitigated environmental impact is regarded as highly likely or certain (management and mitigation measures would ideally aim to reduce this likelihood where possible). In summary, environmental risk is about what could happen, while environmental impact is about what does happen.



Table 8: Probability/ Likelihood Scoring

Probability	1	Improbable (Rare, the event may occur only in exceptional circumstances, the possibility of the impact materialising is very low as a result of design, historic experience, or implementation of adequate corrective actions; <5% chance).
	2	Low probability (Unlikely, impact could occur but not realistically expected; >5% and <20% chance).
	3	Medium probability (Possible, the impact may occur; >20% and <50% chance).
	4	High probability (Likely, it is most probable that the impact will occur- > 50 and <90% chance).
	5	Definite (Almost certain, the impact is expected to, or will, occur, >90% chance).

The result is a qualitative representation of relative significance associated with the impact. Significance is therefore calculated as follows:

$$S = C \times P$$

Table 9: Determination of Significance

Consequence	5- Very High ^a	5	10	15	20	25
	4- High	4	8	12	16	20
	3- Medium	3	6	9	12	15
	2- Low	2	4	6	8	10
	1- Very low	1	2	3	4	5
		1- Improbable	2- Low	3- Medium/ Possible	4- High/ Probable	5- Highly likely/ Definite
	Probability					

The outcome of the significance assessment will result in a range of scores, ranging from 1 through to 25. These significance scores are then grouped into respective classes as described in Table 10.

Table 10: Significance Scores

S Score	Description
≤4.25	Low (i.e. where this impact is unlikely to be a significant environmental risk/ reward).
>4.25, ≤8.5	Low-Medium (i.e. where the impact could have a significant environmental risk/ reward).
>8.5, ≤13.75	High-Medium (i.e. where the impact could have a significant environmental risk/ reward).
>13.75	High (i.e. where the impact will have a significant environmental risk/ reward).

^a In the event that an impact or risk has very high or catastrophic consequences, but the likelihood/ probability is low, then the resultant significance would be Low-medium. This does in certain instances detract from the relative important of this impact or risk and must consequently be flagged for further specific consideration, management, mitigation, or contingency planning.



The impact significance will be determined for each impact without relevant management and mitigation measures (pre-mitigation significance), as well as post implementation of relevant management and mitigation measures (post-mitigation significance). This allows for a prediction in the degree to which the impact can be managed/mitigated.

6.2.2 IMPACT PRIORITIZATION

Further to the assessment criteria presented in the section above, it is necessary to consider each potentially significant impact in terms of:

1. Cumulative impacts; and
2. The degree to which the impact may cause irreplaceable loss of resources.

To ensure that these factors are considered, an impact prioritisation factor (PF) will be applied to each impacts' post-mitigation significance (post-mitigation). This prioritisation factor does not aim to detract from the significance ratings but rather to focus the attention of the decision-making authority on the higher priority/significance issues and impacts. The PF will be applied to the post-mitigation significance based on the assumption that relevant suggested management/mitigation impacts are implemented.

Table 11: Criteria for Determining Prioritisation

Cumulative Impact (CI)	Low (1)	Considering the potential incremental, interactive, sequential, and synergistic cumulative impacts, it is unlikely that the impact will result in spatial and temporal cumulative change.
	Medium (2)	Considering the potential incremental, interactive, sequential, and synergistic cumulative impacts, it is probable that the impact will result in spatial and temporal cumulative change.
	High (3)	Considering the potential incremental, interactive, sequential, and synergistic cumulative impacts, it is highly probable/ definite that the impact will result in spatial and temporal cumulative change.
Irreplaceable Loss of Resources (LR)	Low (1)	Where the impact is unlikely to result in irreplaceable loss of resources.
	Medium (2)	Where the impact may result in the irreplaceable loss (cannot be replaced or substituted) of resources but the value (services and/or functions) of these resources is limited.
	High (3)	Where the impact may result in the irreplaceable loss of resources of high value (services and/or functions).

The value for the final impact priority is represented as a single consolidated priority, determined as the sum of each individual criteria represented in Table 11. The impact priority is therefore determined as follows:

$$\text{Priority} = CI + LR$$

The result is a priority score which ranges from 2 to 6 and a consequent PF ranging from 1 to 1.5 (Refer to Table 12).

Table 12: Determination of Prioritisation Factor

Priority	Prioritisation Factor
2	1
3	1.125



Priority	Prioritisation Factor
4	1.25
5	1.375
6	1.5

In order to determine the final impact significance (FS), the PF is multiplied by the post-mitigation significance scoring. The ultimate aim of the PF is an attempt to increase the post mitigation environmental risk rating by a factor of 0.5, if all the priority attributes are high (i.e. if an impact comes out with a high medium environmental risk after the conventional impact rating, but there is significant cumulative impact potential and significant potential for irreplaceable loss of resources, then the net result would be to upscale the impact to a higher significance).

Table 13: Final Environmental Significance Rating

Significance Rating	Description
<-25	Very High (Impacts in this class are extremely significant and pose a very high environmental risk. In certain instances these may represent a fatal flaw. They are likely to have a major influence on the decision and may be difficult or impossible to mitigate. Offset's may be necessary.
<-13.75 to -25	High negative (These impacts are significant and must be carefully considered in the decision-making process. They have a high environmental risk or impact and require extensive mitigation measures).
-8.5 to -13.75	Medium-High negative (i.e. Impacts in this class are more substantial and could have a significant environmental risk. They may influence the decision to develop in the area and require more robust mitigation measures).
<-4.25 to <-8.5	Medium- Low negative (i.e. These impacts are slightly more significant than low impacts but still do not pose a major environmental risk. They might require some mitigation measures but are generally manageable).
-1 to -4.25	Low negative (i.e. Impacts in this class are minor and unlikely to have a significant environmental risk. They do not influence the decision to develop in the area and are typically easily mitigated.
0	No impact
1 to 4.25	Low positive
>4.25 to <8.5	Medium-Low positive
8.5 to 13.75	Medium-High positive
>13.75	High positive

The significance ratings and additional considerations applied to each impact will be used to provide a quantitative comparative assessment of the alternatives being considered. In addition, professional expertise and opinion of the specialists and the environmental consultants will be applied to provide a qualitative



comparison of the alternatives under consideration. This process will identify the best alternative for the proposed project.

6.3 DESCRIPTION AND ASSESSMENT OF IMPACTS

This section describes each identified environmental impact in the context of the activity and associated aspect and provides reasons why specific ranking/ rating of the component attributes of the impact assessment are given.

6.3.1 TERRESTRIAL ECOLOGY

6.3.1.1 TEMPORARY DISTURBANCE OF FAUNA DURING PLANNING AND CONSTRUCTION

Description: Project planning, site establishment, increased human activity, vehicle movements and construction activities may temporarily disturb fauna utilizing habitats within and adjacent to the proposed powerline deviations.

Impact	Phase	Pre-mitigation Impact	Post-mitigation Impact	Final Significance
Temporary disturbance of wildlife due to increased human presence and possible use of machinery and/or vehicles.	Planning	Low – (ve)	Low – (ve)	Low – (ve)
Potential cumulative/ confounding effects	The temporary disturbance of wildlife resulting from increased human presence and the use of machinery and/or vehicles may contribute to cumulative impacts when combined with other existing or planned activities in the area. Repeated disturbances can increase stress on wildlife, alter movement patterns, reduce habitat use, and potentially affect feeding, breeding, or resting behaviour. However, given the temporary and localized nature of the activity, and assuming the implementation of mitigation measures, the cumulative effect is expected to be low and limited to the duration of the works. Any confounding effects with other anthropogenic disturbances in the area are therefore unlikely to result in significant long-term impacts on wildlife populations.			
Alternatives	No additional alternative is considered necessary, as this impact is temporary and can be adequately managed through the implementation of the prescribed mitigation measures.			
Mitigation Measures				
- Unnecessary disturbance to flora and fauna must be prevented, this includes amongst others: - Laydown and construction preparation activities (such as cement mixing, temporary toilets, etc.) must be limited to the ‘Low’ sensitivity areas. - The clearing of vegetation must be minimized where possible. All activities must be restricted to within the authorised areas. It is recommended that areas to be developed be specifically and responsibly demarcated so that during the construction phase only the demarcated areas be impacted upon. - No workers or machinery is to be allowed outside of the construction areas, especially where these occur adjacent to high-sensitivity wetland habitat. - Existing access routes, especially roads, must be made use of.				



Impact	Phase	Pre-mitigation Impact	Post-mitigation Impact	Final Significance
- A hydrocarbon spill management plan must be put in place to ensure that should there be any chemical spill out or over that it does not run into the surrounding areas. The Contractor shall be in possession of an emergency spill kit that must always be complete and available on site. - Drip trays or any form of oil absorbent material must be placed underneath vehicles/machinery and equipment when not in use. - No servicing of equipment on site unless necessary. - All contaminated soil / yard stone shall be treated in situ or removed and be placed in containers. - Appropriately contain any generator diesel storage tanks, machinery spills (e.g., accidental spills of hydrocarbons oils, diesel etc.) in such a way as to prevent them from leaking and entering the environment. - Construction activities and vehicles could cause spillages of lubricants, fuels and waste material negatively affecting the functioning of the ecosystem. - All vehicles and equipment must be maintained, and all re-fuelling and servicing of equipment is to take place in demarcated areas outside of the project area. - The duration of the activities should be minimized to as short a term as possible, to reduce the period of disturbance on fauna. - No trapping, killing, or poisoning of any wildlife is to be allowed. Monitoring must take place in this regard.				

6.3.1.2 HABITAT LOSS, DEGRADATION AND FRAGMENTATION

Description: Construction of pylons, temporary work areas and access routes may result in loss of vegetation and localised habitat fragmentation.

Impact	Phase	Pre-mitigation Impact	Post-mitigation Impact	Final Significance
Terrestrial – Destruction, fragmentation and loss of the vegetation community (6.3.1.2)	Construction	Medium to high -	Low -	Low -
Terrestrial - Introduction of alien species, especially plants (6.3.1.3)	Construction	Medium to low -	Low -	Low -
Potential cumulative/ confounding effects	The destruction, fragmentation and loss of vegetation associated with the powerline infrastructure may contribute to cumulative impacts when considered together with existing and future land transformation activities in the area. These combined disturbances may result in a gradual reduction in habitat availability and connectivity, potentially affecting ecosystem functioning and biodiversity. However, the extent of vegetation loss associated with the proposed development is limited and linear in nature. With the implementation of mitigation measures, including minimisation of the development footprint and rehabilitation of disturbed areas, the cumulative impact is expected to remain low and unlikely to result in significant long-term ecological consequences.			



Impact	Phase	Pre-mitigation Impact	Post-mitigation Impact	Final Significance
Alternatives	No additional alternative is considered necessary, as the proposed alignment has been identified as the feasible alternative. The impact can be adequately managed through the implementation of prescribed mitigation measures, including minimising vegetation clearing, restricting disturbance to demarcated work areas, and rehabilitating disturbed areas. Compliance with these measures will reduce the impact to an acceptable level.			
Mitigation Measures				
- The areas to be developed must be specifically demarcated to prevent movement into surrounding environments, especially wetlands and watercourses. Areas of indigenous vegetation, even secondary communities outside of the direct project footprint, should under no circumstances be fragmented or disturbed further. Clearing of vegetation should be minimized and avoided where possible. - Environmental Awareness: - All personnel should undergo environmental awareness and induction training. A register should be kept of all attendees. Toolbox talks should be scheduled to ensure continuous environmental awareness training. Emergency procedures should be communicated and displayed prominently on the site. A copy of the EMPr should be available on the work site at all times. Appointed sub-contractors must be made aware of their obligations under this EMPr. - Management of flora and fauna: - Vegetation should be retained as far as possible. Establish an alien invasive plant eradication programme for the control of weed species. This must be monitored for a period of time following rehabilitation to ensure that alien invasive plants do not establish themselves. Unnecessary damage or disturbance to vegetation should be prevented. No trees or shrubs should be felled or damaged for the purpose of obtaining firewood, unless otherwise agreed to with the landowner. Areas outside the footprint (including all infrastructure) should be considered as no-go areas. No faunal species are allowed to be purposefully killed. Any potential protected or sensitive areas should be clearly demarcated and noted as no-go areas. - Habitat fragmentation and edge effects: - Undertake activities in previously disturbed areas and/or habitats with lower sensitivity where possible. Locate activities on the boundaries of existing disturbance where possible. Use existing access roads as much as possible. Rehabilitate disturbed areas as soon as possible.				

6.3.2 AVIFAUNA IMPACT ASSESSMENT

6.3.2.1 BIRD COLLISIONS WITH POWERLINES

The operation of the proposed powerlines may result in bird collisions with overhead conductors and, in certain circumstances, electrocutions on associated infrastructure. Species that regularly utilise the area for foraging, commuting, or breeding may be vulnerable, particularly larger bird species and those with limited manoeuvrability. The impact is primarily associated with the operational phase of the development.



Impact	Phase	Pre-mitigation Impact	Post-mitigation Impact	Final Significance
Avifauna – collisions with and/or electrocution by newly constructed powerlines.	Operational	Low – (ve)	Low – (ve)	Low – (ve)
Potential cumulative/ confounding effects	Bird collisions with and electrocutions on powerline infrastructure may contribute to cumulative impacts when considered alongside existing powerlines and other linear infrastructure within the broader area. These impacts may result in incremental mortality, particularly for large-bodied, threatened, or collision-prone species, potentially reducing local population viability over time. However, where the powerline route selection has considered avifaunal sensitivities and appropriate mitigation measures, such as the installation of bird flight diverters and the use of bird-friendly pole designs, are implemented, the cumulative impact is expected to be low to moderate and unlikely to result in significant long-term impacts on regional avifaunal populations.			
Alternatives	No additional alternative is considered necessary, as the proposed powerline alignment has been identified as the feasible alternative. The risk of bird collisions and electrocutions can be adequately reduced through the implementation of prescribed mitigation measures, including the installation of bird flight diverters on high-risk spans, the application of bird-friendly infrastructure design principles, and ongoing monitoring of the line. Compliance with these mitigation measures will reduce the impact to an acceptable level.			
Mitigation Measures				
The design of the proposed OHLs 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 (Jenkins et al., 2015). 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. Monitoring of the OHL route must be undertaken to detect bird carcasses, to enable the identification of any potential areas of high impact to be marked with bird flappers if not already done so. Monitoring should be undertaken at least once a month for the first year of operation. OHLs, especially over the water resource areas, must be fitted with bird diverters throughout the whole area and not just the portions adjacent to the poles.				

6.3.3 AIR QUALITY

6.3.3.1 INCREASE IN AIR QUALITY IMPACTS DUE TO CONSTRUCTION OF THE POWERLINE

Construction activities may generate dust and exhaust emissions from vehicles, machinery, excavation works, and vegetation clearing. These emissions may temporarily reduce local air quality and create short-term nuisance conditions for nearby receptors. Impacts are expected to be localised and restricted to the construction period.

Impact	Phase	Pre-mitigation Impact	Post-mitigation Impact	Final Significance
Air Quality - Increase in air quality impacts due	Construction	Medium to low -	Medium to low -	Medium to low -



Impact	Phase	Pre-mitigation Impact	Post-mitigation Impact	Final Significance
to construction of the powerline				
Potential cumulative/ confounding effects	Dust and exhaust emissions generated during construction may contribute to cumulative air quality impacts when combined with emissions from existing agricultural activities, mining operations, vehicle traffic and other construction activities in the surrounding area. These cumulative effects are expected to be localised and temporary in nature. With the implementation of appropriate dust suppression and vehicle maintenance measures, the cumulative impact is anticipated to remain low and not result in significant deterioration of ambient air quality.			
Alternatives	No additional alternative is considered necessary, as the proposed development represents the feasible alternative. The impact can be effectively managed through the implementation of the prescribed mitigation measures, including dust suppression, speed restrictions and the maintenance of construction vehicles and equipment. Compliance with these measures will reduce the impact to an acceptable level.			
Mitigation Measures				
- Dust-reducing mitigation measures must be put in place and must be strictly adhered to. This includes wetting of exposed soft soil surfaces - No non-environmentally friendly suppressants may be used as this could result in the pollution of water sources				

6.3.3.2 INCREASE IN AIR QUALITY IMPACTS DUE TO THE OPERATION OF VEHICLES ON UNPAVED ROADS

The movement of operational and maintenance vehicles on unpaved roads may generate dust emissions, particularly during dry and windy conditions. Dust generation may affect nearby land users, vegetation, and road users, although impacts are expected to remain localised and intermittent.

Impact	Phase	Pre-mitigation Impact	Post-mitigation Impact	Final Significance
Air Quality - Increase in air quality impacts due to the operation of vehicles on unpaved roads	Construction / Operation	Medium to low -	Medium to low -	Medium to low -
Potential cumulative/ confounding effects	Vehicle movement on unpaved roads may contribute to cumulative dust generation when combined with existing agricultural, mining and transport activities in the area. However, the frequency of vehicle use associated with the project is expected to be low, and the impact will remain localised. With mitigation measures in place, cumulative impacts on ambient air quality are expected to be of low significance.			
Alternatives	No additional alternative is considered necessary. The impact can be adequately managed through implementation of the recommended mitigation measures, including speed control, road maintenance and dust suppression where necessary			
Mitigation Measures				



Impact	Phase	Pre-mitigation Impact	Post-mitigation Impact	Final Significance
- Dust-reducing mitigation measures must be put in place and must be strictly adhered to. This includes wetting of exposed soft soil surfaces - No non-environmentally friendly suppressants may be used as this could result in the pollution of water sources				

6.3.4 NOISE

Construction equipment, heavy vehicles, and associated activities may generate elevated noise levels within and around the development area. Temporary increases in ambient noise may affect nearby landowners, farm workers, and fauna. Noise impacts are expected to be limited to daylight construction periods

Impact	Phase	Pre-mitigation Impact	Post-mitigation Impact	Final Significance
Noise impacts	Construction	Medium to high -	Medium to low -	Medium to low -
Potential cumulative/ confounding effects	Construction-related noise may act cumulatively with existing noise sources such as farming activities, mining operations, vehicular traffic and other infrastructure projects. The impact will be temporary and restricted to the construction period. Provided that construction activities are conducted during daylight hours and equipment is properly maintained, cumulative noise impacts are expected to remain low.			
Alternatives	No additional alternative is considered necessary, as the identified alignment is the feasible alternative. Compliance with noise management and mitigation measures will adequately reduce the impact to acceptable levels.			
Mitigation Measures				
- The use of smaller/quieter equipment when operating near receptors. Ensuring that equipment is well maintained and fitted with the correct and appropriate noise abatement measures. - Engine bay covers over heavy equipment could be pre-fitted with sound absorbing material. Heavy equipment that fully encloses the engine bay should be considered, ensuring that the seam gap between the hood and vehicle body is minimised. - Where possible only undertake construction activities during the day. If night-time activities are required, do not operate closer than 500 m from any sensitive receptors. Ensure a good working relationship between the developer and all potentially noise-sensitive receptors. - Communication channels should be established to ensure prior notice to the sensitive receptor if work is to take place close to them (especially if work is to take place within 500 m from them at night). Information that should be provided to potentially sensitive receptor(s) includes: Proposed working dates, the duration that work will take place in an area, and working times; The reason why the activity is taking place; The construction methods that will be used; and Contact details of a responsible person where any complaints can be lodged should there be an issue of concern. - When simultaneous noise emitting activities are to take place close to potential noise-sensitive receptors, co-ordinate the working time with periods when the receptors are not at home.				



6.3.5 SOCIAL IMPACTS

6.3.5.1 SOCIAL - IMPACT ON LIVELIHOODS

The establishment and operation of the powerline servitude may temporarily or permanently affect existing land uses and livelihood activities, particularly agricultural operations. Restrictions associated with the servitude and construction activities may interfere with farming practices or access to portions of properties.

6.3.5.2 SOCIAL - NUISANCE FACTOR DUE TO INCREASED AMBIENT DUST AND NOISE LEVELS

Dust generation and elevated noise levels associated with construction activities may create temporary nuisance conditions for surrounding landowners, occupants, and road users. These disturbances may affect comfort levels and the perceived quality of the local environment during construction.

6.3.5.3 SOCIAL - DAMAGE TO FARM ROADS, EXISTING SERVICES AND INFRASTRUCTURE

The movement of heavy construction vehicles and equipment may result in damage to existing farm roads, fences, drainage structures, utilities, and other infrastructure. Such damage could temporarily affect landowner access and operations if appropriate management measures are not implemented.

Impact	Phase	Pre-mitigation Impact	Post-mitigation Impact	Final Significance
Social – livelihoods (6.3.5.1)	Construction / Operation	Medium to high -	Medium to high -	Medium to high -
Social – Dust and noise nuisance (6.3.5.2)	Construction	Medium to high -	Low -	Low -
Social – damage to existing services and infrastructure (6.3.5.3)	Construction	Medium to high -	Medium to low -	Medium to low -
Potential cumulative/ confounding effects	The project may contribute to cumulative pressures on agricultural operations and land use when considered together with existing infrastructure and development activities in the area. However, the linear nature of the powerline and the limited permanent footprint are expected to minimise effects on livelihoods. With the implementation of mitigation measures and compensation agreements where applicable, cumulative impacts are expected to remain of low significance.			
Alternatives	No additional alternative is considered necessary. The impact can be effectively managed through stakeholder engagement, fair compensation agreements and implementation of mitigation measures designed to minimise disruption to existing livelihoods. Compliance with the prescribed mitigation measures relating to dust suppression, noise management and stakeholder communication will reduce the impact to acceptable levels.			
Mitigation Measures				
• Identification of access restricted areas is to be informed by the environmental assessment, site walk through and any additional areas identified during development; • Erect, demarcate and maintain a temporary barrier with clear signage around the perimeter of any access restricted area, colour coding could be used if appropriate; and • Unauthorised access and development related activity inside access restricted areas is prohibited. • Dust-reducing mitigation measures must be put in place and must be strictly adhered to. This includes wetting of exposed soft soil surfaces.				



6.3.6 VISUAL IMPACTS

The proposed amendments to the authorised 132 kV powerline alignment and the finalisation of the 33 kV powerline route have the potential to alter the visual character of the receiving environment during both the construction and operational phases of the project. The study area is characterised by a predominantly agricultural landscape comprising cultivated fields, farmsteads, rural road networks and isolated natural drainage features. Although the broader landscape has been substantially transformed by agricultural activities, mining infrastructure and existing utility corridors, the introduction of additional powerline infrastructure may influence the visual quality of the area through the presence of pylons, conductors, construction activities and associated infrastructure.

Visual impacts are expected to be most noticeable to receptors located along local access roads, nearby homesteads and agricultural properties situated in proximity to the proposed alignments. The significance of these impacts is influenced by factors such as the visibility of the infrastructure, viewing distance, landscape sensitivity, and the duration of the impact. This section assesses the potential impacts of the amended powerline alignments on landscape character and visual amenity, taking into account both temporary construction-related effects and the longer-term presence of the powerline infrastructure. The assessment has been informed by the findings of the original Visual Impact Assessment and subsequent site verification undertaken as part of the amendment process.

Impact	Phase	Pre-mitigation Impact	Post-mitigation Impact	Final Significance
Visual – Agricultural landscape character (6.3.6.1)	Construction	Medium to low -	Medium to low -	Medium to low -
Visual – Natural landscape character (6.3.6.2)	Construction	Medium to low -	Medium to low -	Medium to low -
Visual – views from local roads (6.3.6.3)	Construction	Medium to low -	Low -	Low -
Visual – natural views from homesteads (6.3.6.4)	Construction	Medium to high -	Medium to low -	Medium to low -
Potential cumulative/ confounding effects	No additional alternative is considered necessary, as the identified alignment represents the feasible alternative and visual impacts can be adequately managed through mitigation.			
Alternatives	No additional alternative is considered necessary, as the identified alignment represents the feasible alternative and visual impacts can be adequately managed through mitigation.			
Mitigation Measures				
- Rehabilitate disturbed areas and reinstate agricultural usage. - Minimise disturbance of the natural landscape - Rehabilitate disturbed natural areas. - Ensure that temporary lighting is of sufficient power to ensure safety but not so powerful that it creates glare that could cause danger for drivers or nuisance for neighbours.				

6.3.7 IMPACTS ON AGRICULTURAL RESOURCES/SOILS

The proposed powerline amendments traverse an area dominated by commercial agricultural activities, including cultivated fields, grazing areas and irrigated agricultural land. Although the development footprint associated with the powerline infrastructure is relatively small and linear in nature, construction and operation



of the infrastructure have the potential to affect agricultural resources and soil characteristics within the affected servitude.

Potential impacts may arise from soil disturbance during excavation and pylon foundation construction, temporary restrictions on agricultural operations, soil compaction resulting from construction vehicle movement, and the permanent exclusion of limited areas from agricultural production due to the placement of infrastructure. The extent of these impacts is expected to be constrained by the narrow footprint of the development and the ability to continue most farming activities beneath and around the powerline infrastructure once construction has been completed.

This section evaluates the potential impacts of the amended alignment on soil resources and agricultural land use, drawing on the findings of the agricultural and soil specialist assessments undertaken for both the original project and the amendment review process. Particular consideration is given to the preservation of productive agricultural land, maintenance of irrigation infrastructure, and the rehabilitation of disturbed areas following construction.

Impact	Phase	Pre-mitigation Impact	Post-mitigation Impact	Final Significance
Agricultural land use	Operation	Medium to high -	Medium to low -	Medium to low
Pedology	Operation	Medium to low -	Medium to low -	Medium to low -
Potential cumulative/ confounding effects	The loss or restriction of agricultural land associated with the powerline servitude may combine with other infrastructure developments and land transformation activities in the area, resulting in cumulative impacts on agricultural production.			
Alternatives	No additional alternative is considered necessary. Compliance with soil management and rehabilitation measures will sufficiently reduce impacts on soil resources.			
Mitigation Measures				
• Ensure that as much of the powerline infrastructure as possible is sited away from agricultural lands. Utilize servitudes, farm roads and any other routes to avoid sensitive areas. Attempt to avoid interference with arable agriculture activities. • The final powerline route should, where possible, not infringe on the landowners surface activities. Irrigation Pivot points should remain unaffected by infrastructure, and must be deviated around for continued pivot irrigation operation.				

6.3.8 IMPACTS DUE TO HYDROLOGY

Hydrological resources within the project area include ephemeral drainage features, watercourses, wetlands and associated catchment systems linked to the Sand River, Doring River and Boschluispruit drainage network. These features play an important role in regulating surface water flow, controlling erosion, supporting ecological processes and maintaining downstream water quality. Construction activities associated with the proposed powerline amendments have the potential to influence these hydrological functions if not appropriately managed.

Potential hydrological impacts are primarily associated with vegetation clearing, earthworks, excavation activities and the movement of vehicles and machinery. These activities may increase the risk of soil erosion, sediment generation and altered stormwater runoff patterns, particularly in areas located near watercourses or drainage features. Although the amended alignments were designed to avoid sensitive aquatic features where



possible, temporary disturbances during construction could result in localised hydrological impacts if suitable erosion and stormwater controls are not implemented.

This section assesses the potential impacts of the proposed amendments on hydrological processes within the study area, with specific focus on erosion risk, sediment transport and the protection of surrounding water resources. The assessment is based on the findings of the aquatic specialist studies and site verification assessments undertaken in support of the amendment application.

Impact	Phase	Pre-mitigation Impact	Post-mitigation Impact	Final Significance
Hydrology - erosion	Construction	Medium to low -	Low -	Low -
Potential cumulative/ confounding effects	Project-related erosion may contribute to cumulative sedimentation and land degradation when combined with existing erosion sources in the catchment. If left unmanaged, these effects may increase downstream impacts on water resources. However, implementation of erosion control measures and rehabilitation will reduce cumulative impacts to low significance.			
Alternatives	No additional alternative is considered necessary. The impact can be effectively managed through the implementation of erosion prevention, stormwater management and rehabilitation measures.			
Mitigation Measures				
• Locate powerline alignments outside of buffered watercourses (sensitive watercourse habitat) as far as possible. Buffered watercourses should be demarcated on site for the entire construction process to help indicate sensitive areas and prevent unauthorised access. • Long crossings along the length of wetlands, rivers and drainage lines should be avoided as far as practically possible. • Limited topsoil stripping is conditional on the prevention of soil compaction by heavy motorised vehicles (HMs) through the use and maintenance of running tracks. Examples of running tracks include bogmats or rock aggregate combined with geotextile fabric and flume pipes. Alternatively topsoil across the entire width of the construction servitude (often referred to as the right of way) can be stripped and stored separately outside of buffered watercourses. Removed topsoil and subsoil should be sorted separately in stockpiles and protected from erosion when required. Additional erosion protection measures should be implemented for stockpiles that are to be stored for an extended duration.				

6.3.9 GEOHYDROLOGY - HYDROCARBON CONTAMINATION OF GROUNDWATER RESOURCES

Groundwater represents an important environmental resource within the project area and supports agricultural activities, ecosystem functioning and broader regional water resource sustainability. Although the proposed powerline development does not require significant groundwater abstraction or direct interaction with aquifers, construction activities involving vehicles, generators, fuel storage and heavy machinery present a potential risk of groundwater contamination through accidental spills or leaks of hydrocarbons and other hazardous substances.

The greatest risk to groundwater resources is associated with the inadvertent release of fuels, oils, lubricants or other contaminants onto exposed soils during construction. If unmanaged, these substances could infiltrate the soil profile and migrate into shallow groundwater systems, particularly where spills occur repeatedly or in environmentally sensitive areas. However, the likelihood of contamination is generally low due to the limited scale and duration of the construction activities and the availability of well-established spill prevention and response measures.



This section assesses the potential for hydrocarbon contamination of groundwater resources arising from the implementation of the proposed powerline amendments and evaluates the effectiveness of mitigation measures aimed at preventing pollution of subsurface water resources during construction activities.

Impact	Phase	Pre-mitigation Impact	Post-mitigation Impact	Final Significance
Geohydrology	Construction	Medium to low -	Low -	Low -
Potential cumulative/ confounding effects	Hydrocarbon spills associated with construction vehicles and machinery or wastewater from ablution facilities may contribute cumulatively to groundwater contamination risks when considered alongside existing sources of pollution in the area. However, such impacts are generally limited to accidental events and can be effectively prevented and managed through appropriate controls. Consequently, the cumulative impact is expected to be low.			
Alternatives	No additional alternative is considered necessary, as the proposed development is the feasible alternative. Compliance with spill prevention and response measures, proper fuel handling procedures and good housekeeping practices will reduce the impact to an acceptable level.			
Mitigation Measures				
- Inspect vehicles for leaks and repair all leaks immediately. Any generators used in watercourses should be used with a functional drip tray. Ensure that sufficient ablution facilities are available on site and that they are located outside of buffered watercourses. - A hydrocarbon spill management plan must be put in place to ensure that should there be any chemical spill out or over that it does not run into the surrounding areas. The Contractor shall be in possession of an emergency spill kit that must always be complete and available on site. - Drip trays or any form of oil absorbent material must be placed underneath vehicles/machinery and equipment when not in use.				

7 ADVANTAGES AND DISADVANTAGES OF THE PROPOSED AMENDMENTS

The proposed amendments are intended to optimise the implementation of the authorised Tetra4 33 kV and 132 kV Powerlines Project while ensuring continued compliance with the requirements of the EA and applicable environmental legislation. The amendments have been informed by detailed engineering design, servitude negotiations, specialist walkdowns and environmental considerations. The key advantages and disadvantages associated with the proposed amendments are discussed below.

7.1 ADVANTAGES AND DISADVANTAGES OF THE PROPOSED CHANGE

The proposed Tetra4 132 kV powerline deviation has been assessed in terms of the practical and environmental benefits it may provide, together with the constraints that require management through detailed design, authorisation compliance and implementation. The principal considerations relevant to this Part 2 EA amendment are summarised below.



Consideration	Advantage of Proposed Amendment	Disadvantage / Constraint
Agricultural Resources	The amended alignment avoids a Very High agricultural sensitivity centre-pivot irrigation system located on Portion 2 of Farm Annex Glen Ross No. 562, thereby reducing impacts on irrigated crop production and existing agricultural infrastructure.	The amended alignment remains located within an agricultural landscape and will therefore result in some unavoidable impacts on agricultural resources. These include the permanent occupation of small areas by pylon foundations and temporary disruption of farming activities during the construction phase. Notwithstanding these impacts, the deviation was specifically designed to avoid a Very High sensitivity centre-pivot irrigation system and associated cultivated land, thereby significantly reducing the magnitude of agricultural impacts relative to the originally authorised corridor. As a result, while agricultural impacts cannot be entirely avoided, the amended alignment represents the preferred option from an agricultural perspective.
Agricultural Land Fragmentation	The deviation avoids routing the new powerline adjacent to the existing 132 kV powerline on Portion 1 of Farm Annex Glen Ross No. 562, thereby reducing cumulative servitude constraints.	A new powerline servitude is still required and may impose localised restrictions on certain farming activities within the servitude area.
Impacts on Existing Landowners	The revised alignment was informed by landowner engagement and servitude negotiations, allowing for improved accommodation of existing farming activities and property use.	Negotiations may affect program certainty, while unresolved access or compensation matters could require further localised refinement.
Residential Receptors	The amended route increases separation from a nearby dwelling (Portion 1 of Farm Annex Glen Ross No. 562), reducing potential visual intrusion and disturbance associated with the powerline infrastructure.	Visual impacts associated with overhead powerline infrastructure cannot be completely avoided.
Environmental Sensitivities	Specialist walkdowns enabled the refinement of pylon positions and infrastructure placement to avoid or minimise impacts on identified sensitive environmental features.	Some temporary disturbance of soils, vegetation and habitats remains unavoidable during construction.
Environmental Management	The amendment of the EMPr ensures that environmental management measures are tailored to actual site conditions and specialist recommendations.	Additional environmental monitoring and management measures may be required during construction and operation.
Project Implementation	The revised alignment improves constructability and accommodates final engineering design requirements while maintaining the overall project objectives.	The amendment requires approval through the Part 2 Amendment process prior to implementation.
Socio-economic Benefits	The amendment facilitates implementation of infrastructure required to support Tetra4's helium and	Temporary construction-related impacts such as noise, dust and increased vehicle activity will occur.



Consideration	Advantage of Proposed Amendment	Disadvantage / Constraint
	natural gas operations, thereby contributing to regional investment and economic development.	



The proposed amendments are considered preferable to the originally authorised alignment as they provide a more practical and environmentally responsible route while maintaining the operational objectives of the project. The amended alignment avoids a Very High sensitivity centre-pivot irrigation system, reduces cumulative impacts on agricultural land associated with existing powerline infrastructure, increases the separation distance from a nearby dwelling, and incorporates the findings of specialist walkdowns undertaken during the detailed design phase. While limited residual impacts on agricultural resources, visual amenity and the biophysical environment remain unavoidable, these impacts are generally lower than those associated with the originally authorised alignment and can be effectively managed through the implementation of the amended EMPr and specialist recommendations. Accordingly, the advantages of the proposed amendments are considered to outweigh the identified disadvantages.

8 STAKEHOLDER ENGAGEMENT

This section provides details on the notifications that were distributed as part of the consultation process to date.

8.1 LEGAL COMPLIANCE

The PPP must comply with all environmental legislation that requires public participation as part of an application for authorisation or approval; namely, the National Environmental Management Act (NEMA, Act No. 107 of 1998).

Adherence to the requirements of the above-mentioned Act will allow for an Integrated PPP to be conducted, and in so doing, satisfy the requirements for public participation referenced in the Act. The details of the Integrated PPP are provided below.

8.2 IDENTIFICATION OF INTERESTED AND AFFECTED PARTIES (I&APS)

An initial I&AP database has been compiled from historic projects in the area, and Windeed searches were conducted to obtain the contact details of the surrounding landowners. The I&APs referred to in the PPR include:

- Pre-identified and registered landowners and surrounding landowners;
- Pre-identified and registered key stakeholders;
- Regulatory authorities;
- Specialist interest groups; and
- All I&APs who responded to the initial notifications and requested to be registered.

Efforts to pre-identify key I&APs involved various avenues such as consultation with the proponent and known landowners within the study area, review of related previously conducted studies, and identification of key interest groups and authorities within the vicinity of the study area and municipality. Refer to Appendix F for the Key Stakeholder/I&AP Database.

8.2.1 LIST OF ORGANS OF STATE IDENTIFIED AND NOTIFIED

The following key I&APs, but not limited to, were notified of the proposed project and invited to participate in the public participation process:

- | | |
|--|---|
| • Eskom Soc | • Free State Department of Community Safety, Roads and Transport |
| • Free State Department of Agriculture & Rural Development | • Free State Department of Cooperative Governance and Traditional Affairs |
| • Free State Department of Agriculture & Rural Development | |



- Free State Department of Economic, Small Business Development, Tourism and Environmental Affairs
- Free State Department of Mineral and Petroleum Resources
- Free State Department of Mineral Resources and Energy
- Free State Department of Public Works and Infrastructure
- Free State Department of Water and Sanitation
- Free State Development Corporation
- Free State Heritage Resources Authority
- Lejweleputswa District Municipality
- Matjhabeng Local Municipality
- National Department Of Agriculture (NDA)
- National Department Of Land Reform And Rural Development (DLRRD)
- National Department Of Forestry, Fisheries and Environment (DFFE)
- National Department of Mineral and Petroleum Resources (DMPR)
- National Department of Transport
- National Department of Water and Sanitation (DWS)
- National House of Traditional Leaders
- National Transmission Company South Africa (NTCSA)
- South African Civil Aviation Authority (SACAA)
- South African Heritage Resources Agency (SAHRA)
- South African National Biodiversity Institute (SANBI)
- South African National Roads Agency Ltd (SANRAL)
- Traditional Leaders of Southern Africa
- Transnet Soc Ltd

8.2.2 LIST OF OTHER KEY I&APS IDENTIFIED AND NOTIFIED

- Pre-identified and registered landowners and surrounding landowners.
- Afgri Agri Services
- African Conservation Trust
- Afriforum
- Agri South Africa
- Birdlife SA
- Botanical Society
- Conservation South Africa (CSA)
- Earth Life Africa
- Endangered Wildlife Trust
- Free State Wetland Forum
- Lejweleputswa Development Agency
- Matjhabeng Ratepayers Association
- Piscis Energy
- Red Rocket Energy
- Subsolar Energy
- Vrystaat Landbou/ Free State Agriculture

8.3 INITIAL NOTIFICATION OF KEY I&APS

The PPP commenced on the 24th July 2026 with an initial call to register notification. Notification during this initial consultation was given in the manner described below.



8.3.1 FAXES, REGISTERED MAIL AND EMAILS

Notification letters (in English, Afrikaans, and Sesotho) were distributed to pre-identified I&APS through either faxes, SMSs, registered mail, and/or emails on the 30th of July 2026.

The notification documents included the following information:

- Authorisations required;
- Sufficient detail of the proposed development to enable I&APs to assess/surmise what impact the development will have on them or the use of their land;
- The purpose of the proposed project;
- Details of the application processes associated with proposed activities;
- Details of the affected properties;
- Details of the South African environmental legislation that must be adhered to;
- Relevant EIMS contact person for the project.

Please refer to Appendix F for initial notification and proofs.

8.3.2 NEWSPAPER ADVERTISEMENTS

Advertisements (in English, Afrikaans, and Sesotho) describing the proposed EA Part 2 Amendment process were placed in the Vista Newspaper with circulation in the vicinity of the study area on the 23rd of July 2026. The newspaper adverts included the following information:

- Project name;
- Applicant name;
- Project location;
- Nature of the activity;
- Legislative requirements; and
- Relevant EIMS contact person for the project.

Please refer to Appendix F for proof of the advert and gazette notice placed.

8.3.3 SITE NOTICE PLACEMENT

Five (5) A1 Correx site notices (in English, Afrikaans, and Sesotho) were placed at 5 locations around the proposed project study area on the 24th of July 2026. The on-site notices included the following information:

- Project name;
- Applicant name;
- Project location;
- Map of proposed project area;
- Project description;
- Legislative requirements; and
- Relevant EIMS contact person for the project.

Please refer to Appendix F for proof of site notice and site notice distribution.



8.4 NOTIFICATION OF INTERESTED AND AFFECTED PARTIES OF AMENDMENT REPORT AVAILABILITY

Notification (in English, Afrikaans, and Sesotho) regarding the availability of the Amendment Report for public review and comment will be provided to pre-identified and registered I&APs. The notifications will be distributed through either email, fax, and/or SMS, where contact details are available.

Contact details will be provided to I&APs should they require assistance accessing the information or require copies of the reports.

8.5 SUMMARY OF PUBLIC PARTICIPATION OPPORTUNITIES

The table below provides a summary of the opportunities provided to I&APs for participation in the public participation process to date.

Table 14: Summary of Public Participation Opportunities

Action	Description	Publication/Place	Date
Initial Call to Register	Notification of landowners, occupiers, and other key I&APs.	Affected landowners and key I&APs were notified via email, fax, and/or SMSs.	30 July 2026
	Placement of site notices.	Five (5) A1 Correx site notices (in English, Afrikaans, and Setswana) were placed at 5 locations along the proposed project study area.	24 July 2026
	Newspaper advertisement.	Advertisements (in English, Afrikaans, and Sesotho) describing the proposed project and part 2 amendment process were placed in the Vista Newspaper.	23 July 2026



Action	Description	Publication/Place	Date
Availability of Amendment Report for public review	Placement of Amendment Report for public review hard copy and electronic copy.	One (1) hard copy of the report has been placed at a suitable location where members of the public could access the report. An electronic copy of the report has been placed on the EIMS website. A data free service will be made available to anyone who has limitations with respect to data downloads.	TBA

8.6 RECORD OF ISSUES RAISED

Comments on the proposed project were solicited from pre-identified and registered I&APs and key stakeholders. To date, the following comments have been received:

- I&AP registration
- The DFFE Biodiversity and Conservation Directorate assigned case officers.
- The Free State Department of Economic, Small Business Development, Tourism and Environmental Affairs confirmed that they are the Provincial Commenting Authority for this application.

All comments and/or queries received to date are included in this report and presented in Appendix F. Please refer to Appendix F for proof of correspondence. All comments received during the public review period of this report will be incorporated into this report and submitted to the DFFE for consideration in their decision making process.

9 CONCLUSIONS AND RECOMMENDATIONS

The Part 2 Amendment process undertaken for the Tetra4 33 kV and 132 kV Powerlines Project assessed the environmental implications associated with the proposed amendments to the authorised powerline alignment, project layout, EMPr, and associated Environmental Authorisation conditions. The amendment process was informed by specialist walkdowns, environmental sensitivity verification, detailed engineering design, servitude negotiations, and stakeholder engagement.

The assessment confirmed that the proposed amendments do not introduce any new environmental fatal flaws that would prevent implementation of the project. Specialist verification studies concluded that the revised alignment remains within a receiving environment that was previously assessed during the original authorisation process and that the identified environmental sensitivities, impact pathways and mitigation measures remain largely unchanged. The proposed amendments provide an opportunity to improve the practicality and implementability of the project while reducing certain site-specific impacts identified during the final design phase.

The amendment alignment was specifically refined to avoid an existing centre-pivot irrigation system and associated agricultural infrastructure, reduce cumulative impacts associated with an existing 132 kV powerline corridor on the same property, and increase separation distances from a nearby dwelling. In addition, specialist walkdowns enabled final micro-siting of infrastructure to minimise impacts on sensitive environmental features identified within the project area.



The impact assessment determined that the majority of identified impacts are of Low to Medium-Low significance following the implementation of appropriate mitigation and management measures. No impacts were identified that are considered unacceptable or that cannot be effectively mitigated through implementation of the amended EMPr and specialist recommendations.

The findings of this Amendment Report therefore indicate that the proposed amendments are environmentally acceptable and represent a practical improvement on the originally authorised layout. It is consequently recommended that the Environmental Authorisation be amended to incorporate the revised alignment, associated infrastructure positions, amended EMPr requirements, administrative changes and amendments to commencement provisions.

9.1 CONCLUSIONS FROM SPECIALIST STUDIES

The specialist verification studies undertaken as part of the amendment process assessed whether the proposed deviations and amendments would result in impacts that differ materially from those previously authorised. The specialists generally concluded that the proposed amendments do not introduce any significant new environmental constraints and that the recommendations and mitigation measures identified during the original assessment remain applicable.

9.1.1 TERRESTRIAL BIODIVERSITY AND AVIFAUNA

The specialist verification assessment confirmed that environmental conditions within the amended corridor remain substantially unchanged from those assessed during the original authorisation process. No additional protected plant species, species of conservation concern, or significant ecological constraints were identified. The proposed deviations occur predominantly within previously disturbed or low-sensitivity habitat and do not introduce new terrestrial biodiversity constraints. The specialist concluded that the original findings and mitigation measures remain applicable.

With regard to avifauna, the specialist confirmed that the proposed alignment does not materially alter the avifaunal impact profile previously assessed. Potential bird collision and electrocution risks remain low and can be appropriately managed through the installation of bird flight diverters and application of bird-friendly powerline design principles.

9.1.2 AGRICULTURAL RESOURCES AND SOILS

The agricultural specialist confirmed that soil conditions and agricultural sensitivities within the deviation corridor remain consistent with those identified during the original assessment. The amendment avoids a centre-pivot irrigation system and reduces interference with existing farming operations. Although the amended alignment still traverses agricultural land, the specialist concluded that impacts on agricultural resources are reduced relative to the originally approved alignment and remain acceptable with the implementation of recommended mitigation measures.

9.1.3 FRESHWATER ECOLOGY AND HYDROLOGY

The freshwater specialist confirmed that no material changes to freshwater features or aquatic sensitivities have occurred since the original assessment. The amended alignment does not introduce additional wetland or watercourse constraints and avoids previously identified freshwater-sensitive areas. Provided that pylons are located outside delineated wetlands and that appropriate erosion and stormwater control measures are implemented, the specialist concluded that the amended layout remains acceptable from an aquatic perspective.

9.1.4 HERITAGE AND PALAEOLOGY

The heritage walkdown investigation identified no heritage resources of significance within the amended development footprint and confirmed that no additional heritage approvals are required. Similarly, the palaeontological specialist confirmed that the deviation remains within geological units of moderate palaeontological sensitivity and does not introduce any additional fossil heritage risks not previously assessed. The implementation of the existing Chance Finds Procedure remains appropriate.



9.2 SENSITIVITY MAP AND FINAL LAYOUT

Environmental sensitivity mapping provides a strategic overview of the environmental, cultural and social assets in a region. The sensitivity mapping technique integrates numerous datasets (base maps and shapefiles) into a single consolidated layer making use of Geographic Information System (GIS) software and analysis tools. Environmental sensitivity mapping is a rapid and objective method applied to identify areas which may be particularly sensitive to development based on environmental, cultural and social sensitivity weightings – which is refined by specialists' input within each respective specialist field based on aerial or ground-surveys. Therefore, the sensitivity mapping exercise assists in the identification of sensitive areas within and surrounding the proposed application area

The environmental sensitivity mapping exercise was undertaken to identify environmentally sensitive features within and surrounding the proposed powerline amendment area and to inform the final routing and infrastructure layout. The sensitivity mapping integrates terrestrial biodiversity, aquatic features, wetlands, watercourses and associated buffers into a consolidated environmental constraints map.

The combined sensitivity map indicates that the broader project area is largely characterised by areas of least concern to low sensitivity, associated with transformed and disturbed agricultural landscapes. These areas have been subject to historical cultivation and other anthropogenic activities and therefore represent the preferred areas for the placement of linear infrastructure (Figure 13).

The mapping identifies several areas of medium to high sensitivity, primarily associated with delineated wetlands, drainage lines, valley-bottom features and water resources occurring along portions of the proposed alignment. These features are concentrated predominantly within the central and southern sections of the corridor, where the alignment intersects drainage features linked to the surrounding river systems. The associated wetland and watercourse buffers are reflected as higher sensitivity zones that require avoidance, minimisation of disturbance and implementation of appropriate mitigation measures during construction and operation. Engineering constraints were identified with the maximum tower spans and accordingly a minimisation of towers within sections of the watercourse was considered the most viable alternative.

A limited area of very high sensitivity is present within the central portion of the corridor. This sensitivity is associated with active agricultural land and central-pivots. The Pivot has been avoided entirely by the layout, necessitating the amendment of the EA. High sensitive areas of crop-production are noted, the proposed powerline is to traverse the boundary of these existing farms and may cause reduction of available production land, albeit limited. Through the application of mitigation measures, including micro-siting of infrastructure, adherence to prescribed buffer requirements and implementation of the Environmental Management Programme (EMPr), impacts to these sensitive features are expected to remain acceptable.

The layout map demonstrates that the proposed 132 kV loop-in-loop-out powerline and associated 33 kV powerline are predominantly located within transformed and disturbed environments and generally avoid the most environmentally sensitive areas identified through the specialist studies. Where crossings of wetlands, drainage features and associated buffers are unavoidable due to the linear nature of the development, the final alignment has been positioned to minimise the number and extent of such crossings.

The sensitivity analysis therefore confirms that the proposed amendment area and associated infrastructure can be accommodated within the receiving environment without resulting in unacceptable impacts on identified environmental features, provided that all mitigation measures, specialist recommendations and EMPr requirements are implemented. The sensitivity mapping further demonstrates that the preferred layout represents a practical balance between engineering constraints and environmental considerations and has sought to avoid and minimise impacts on high and very high sensitivity areas as far as reasonably possible.

Figure 14 superimposes the proposed activity and its associated structures and infrastructure on the combined environmental sensitivities of the preferred site indicating any areas that should be avoided, including buffers.

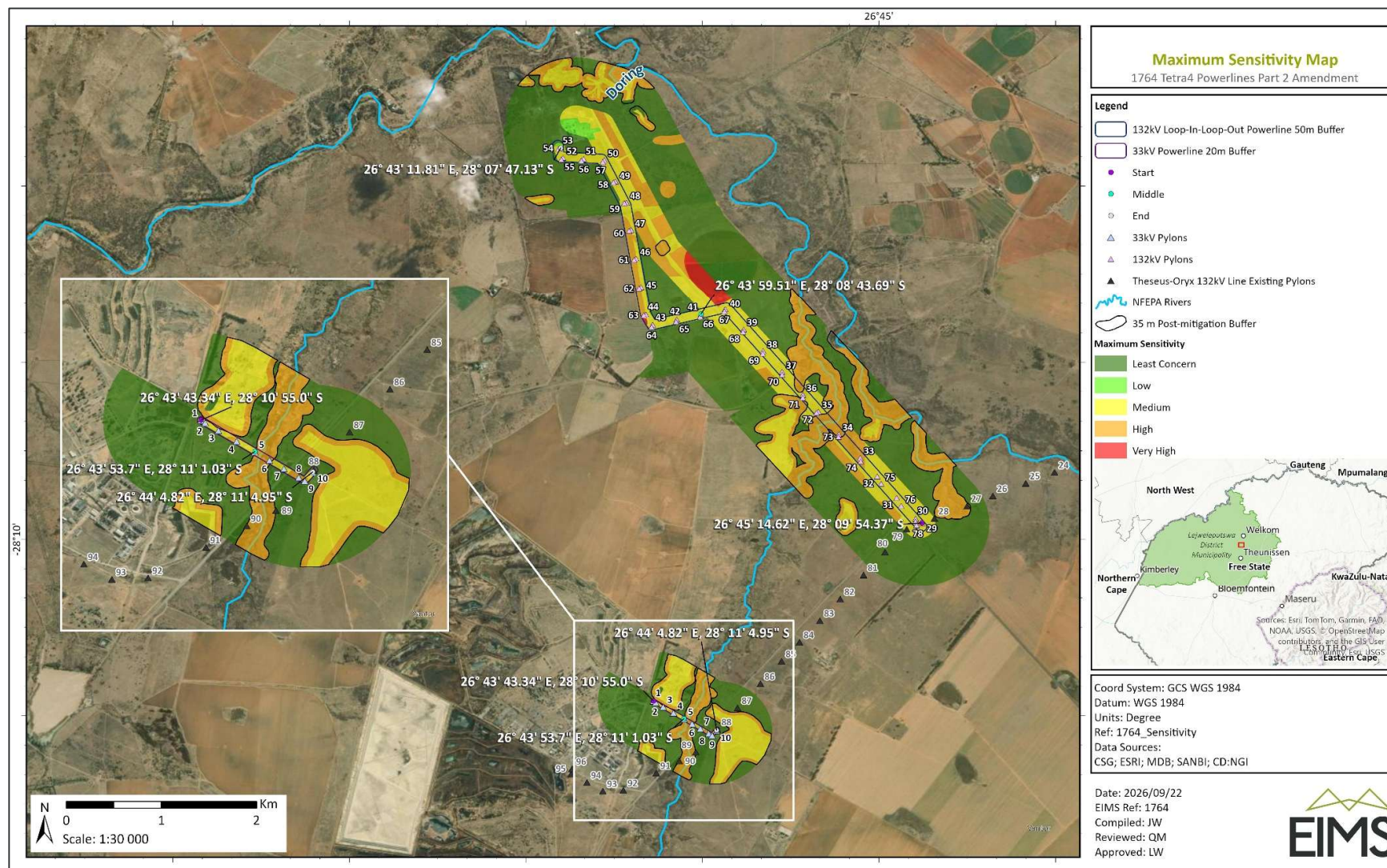


Figure 13: Composite sensitivity map.

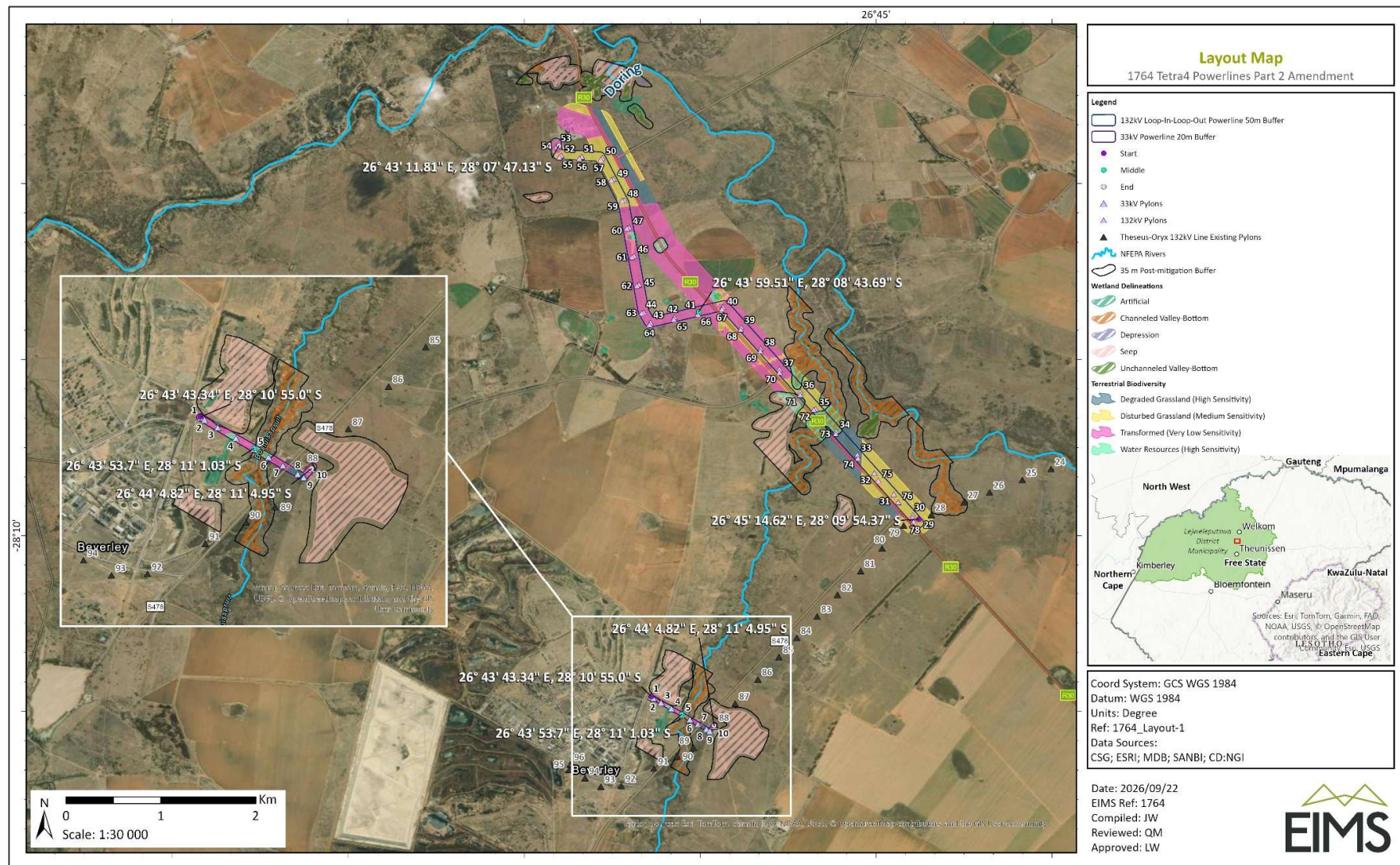


Figure 14: Final Layout Map



9.3 EAP'S REASONED OPINION

The environmental assessment undertaken as part of this Part 2 Amendment application has demonstrated that the proposed amendments will not result in unacceptable environmental impacts. The revised alignment and associated project refinements have been informed by specialist assessments, environmental sensitivity verification, landowner engagement and detailed engineering design. These processes have assisted in reducing impacts where possible and ensuring that environmental considerations have been incorporated into the final development layout.

The majority of impacts identified during the assessment are of Low to Medium-Low significance following the implementation of mitigation measures. However, the assessment identified several impacts that remain of Medium to High Negative significance after mitigation, namely impacts on farmers' livelihoods, avifauna collision risk, and the agricultural landscape. While these impacts are of elevated significance, they are localised in extent, have been thoroughly assessed, and can be managed through the implementation of the recommended mitigation, monitoring and management measures. No impacts were identified that are considered fatal flaws or of such significance that they would preclude the amendment from proceeding. In several instances, the proposed amendments reduce impacts relative to the originally authorised alignment, particularly with respect to agricultural infrastructure, cumulative land-use constraints and potential impacts on nearby receptors.

Based on the findings of the specialist studies, the impact assessment and the proposed mitigation measures, it is the reasoned opinion of the Environmental Assessment Practitioner that the proposed amendments are environmentally acceptable and should be authorised. Although impacts relating to livelihoods, avifauna collisions and the agricultural landscape are assessed as having a Medium to High Negative residual significance, these impacts are considered acceptable within the context of the project benefits, the absence of fatal environmental constraints, and the implementation of the prescribed mitigation and environmental management measures. The amendments do not alter the overall viability of the development and will allow implementation of the project in a manner that remains consistent with the principles of sustainable development and the requirements of the NEMA (Act 107 of 1998).

It is therefore recommended that the Environmental Authorisation be amended to incorporate the revised powerline alignment, final infrastructure layout, amended EMPr provisions, administrative amendments and associated conditions proposed in this report.

9.4 EAP'S RECOMMENDATIONS

This section contains recommendations from the EAP and various specialist's for inclusion in the EA.

Based on the findings of the environmental assessment, specialist verification studies, environmental sensitivity verification, public participation process, and consideration of the applicable legislative framework, the EAP is of the opinion that the proposed amendments to the Tetra4 33 kV and 132 kV Powerlines Project are environmentally acceptable and should be approved by the competent authority.

The proposed amendments do not introduce any significant new environmental constraints, fatal flaws, or impacts that were not previously assessed during the original Environmental Authorisation process. In several respects, the amended alignment represents an improvement on the authorised alignment by:

- Avoiding an existing centre-pivot irrigation system and associated agricultural infrastructure on Portion 2 of Farm Annex Glen Ross No. 562.
- Reducing cumulative impacts associated with the co-location of infrastructure adjacent to an existing 132 kV powerline corridor.
- Increasing separation distances between the proposed powerline and nearby residential receptors.
- Facilitating final micro-siting of infrastructure to avoid sensitive environmental features identified during specialist walkdowns.
- Incorporating site-specific specialist recommendations into the EMPr and final project layout.



The EAP therefore recommends that the Environmental Authorisation (Ref: 14/12/16/3/3/1/2754) be amended to incorporate:

- The revised 132 kV powerline alignment and associated infrastructure layout.
- The inclusion of Portion 8 of Farm Annex Glen Ross No. 562 and the exclusion of Portions 1 and 2 where reflected in the amended servitude alignment.
- Final infrastructure positioning and micro-siting informed by specialist walkdowns.
- Amendments to Condition 33 relating to project commencement requirements.
- Administrative amendments relating to the EA holder and responsible contact details.
- The amended EMPr incorporating all specialist recommendations and site-specific mitigation measures.

The EAP further recommends that the following key specialist mitigation measures be included as conditions of approval and implemented throughout the construction and operational phases of the project:

- All construction activities must remain within demarcated development footprints and approved access routes.
- Wetlands, drainage lines and associated buffer areas must be avoided wherever possible, and all watercourse crossings must be spanned.
- Appropriate erosion, stormwater and rehabilitation measures must be implemented during construction.
- Bird flight diverters must be installed on powerline spans identified as having elevated avifaunal risk.
- Existing agricultural infrastructure, including irrigation systems, farm roads and fences, must be protected and reinstated where disturbed.
- A hydrocarbon spill prevention and emergency response procedure must be implemented throughout construction.
- Disturbed areas must be rehabilitated as soon as practicable following construction.
- The Chance Finds Procedure for heritage and palaeontological resources must be implemented during construction.

Provided that the mitigation measures contained in the amended EMPr and specialist reports are fully implemented, the majority of identified impacts are expected to remain of Low to Medium-Low significance and are considered acceptable within the receiving environment.

The EAP therefore recommends that the Department of Forestry, Fisheries and the Environment approve the Part 2 Amendment Application for the Tetra4 33 kV and 132 kV Powerlines Project.



10 AFFIRMATION REGARDING CORRECTNESS OF INFORMATION

I, **Qaphela Magaqa**, declare that:

General declaration:

- I act as the independent environmental practitioner in this application
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting environmental impact assessments, including knowledge of the Act, regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the Act, regulations and all other applicable legislation;
- I will take into account, to the extent possible, the matters listed in regulation 8 of the regulations when preparing the application and any report relating to the application;
- I have no, and will not engage in, conflicting interests in the undertaking of the activity;
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
- I will ensure that information containing all relevant facts in respect of the application is distributed or made available to interested and affected parties and the public and that participation by interested and affected parties is facilitated in such a manner that all interested and affected parties will be provided with a reasonable opportunity to participate and to provide comments on documents that are produced to support the application;
- I will ensure that the comments of all interested and affected parties are considered and recorded in reports that are submitted to the competent authority in respect of the application, provided that comments that are made by interested and affected parties in respect of a final report that will be submitted to the competent authority may be attached to the report without further amendment to the report;
- I will keep a register of all interested and affected parties that participated in a public participation process; and I will provide the competent authority with access to all information at my disposal regarding the application, whether such information is favourable to the applicant or not all the particulars furnished by me in this form are true and correct;
- I will perform all other obligations as expected from an environmental assessment practitioner in terms of the Regulations; and
- I realise that a false declaration is an offence in terms of regulation 48 and is punishable in terms of section 24F of the Act.

**Disclosure of Vested Interest**

I do not have and will not have any vested interest (either business, financial, personal or other) in the proposed activity proceeding other than remuneration for work performed in terms of the Environmental Impact Assessment Regulations, 2014.

Signature of the EAP

Environmental Impact Management Services (Pty) Ltd

Name of company:

2026/09/25

Date



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