

Draft Basic
Assessment
Report

Lomond Safari 88kV Powerline
DFFE Ref Nr.: 2022-01-0005



TABLE OF CONTENTS

LIST OF FIGURES	6
LIST OF TABLES.....	6
APPENDICES.....	7
DEFINITIONS	7
ABBREVIATIONS	12
REFERENCES	13
DECLARATION OF INDEPENDENCE	15
1. PROJECT TITLE	16
2. APPLICANT DETAILS	16
3. ENVIRONMENTAL ASSESSMENT PRACTITIONER DETAILS.....	16
4. LOCATION OF THE PROPOSED DEVELOPMENT AND ACTIVITIES	16
5. SCOPE OF THE PROPOSED DEVELOPMENT AND ACTIVITIES	22
5.1 DESCRIPTION OF THE ACTIVITIES TO BE UNDERTAKEN.....	22
5.1.1 Background to Applicant and Existing Operations	22
5.1.2 Proposed project.....	22
5.2 LISTED ACTIVITIES TRIGGERED BY THE PROPOSED DEVELOPMENT	28
5.3 WATER USE LICENCE ACTIVITIES.....	28
6. POLICY AND LEGISLATIVE CONTEXT OF THE APPLICATION.....	29
7. MOTIVATION FOR THE NEED AND DESIRABILITY OF THE PROPOSED DEVELOPMENT.....	31
7.1 NEED AND DESIRABILITY OF THE DEVELOPMENT IN THE CONTEXT OF THE PREFERRED LOCATION	31
7.1.1 The Applicant	31
7.1.2 The Local Community.....	31
7.2 NEED AND DESIRABILITY IN TERMS OF THE GUIDELINE ON NEED AND DESIRABILITY	32



7.3 MOTIVATION FOR THE PREFERRED SITE, ACTIVITY AND TECHNOLOGY ALTERNATIVE.....	59
8. PROCESS FOLLOWED TO REACH THE PROPOSED PREFERRED ACTIVITY, SITE AND LOCATION WITHIN THE SITE	59
8.1 ALTERNATIVES CONSIDERED	59
8.1.1 Demand.....	60
8.1.2 “No-Go Option”	60
8.1.3 Routing	61
8.1.4 Design or Layout.....	61
8.1.5 Activity	62
8.1.6 Technological	62
8.1.7 Input.....	63
8.1.8 Location	64
8.1.9 Scheduling and Timing.....	64
8.1.10 Scale and Magnitude.....	64
8.2 PUBLIC PARTICIPATION PROCESS UNDERTAKEN IN TERMS OF SECTION 41 OF THE EIA REGULATIONS, 2014, AS AMENDED	64
8.2.1 Summary of the issues raised by the Interested and Affected Parties and how the issues were addressed or incorporated into the Environmental Impact Assessment process	67
8.3 ENVIRONMENTAL ATTRIBUTES ASSOCIATED WITH THE ALTERNATIVES CONSIDERED – ENVIRONMENTAL ATTRIBUTES OF THE PROPOSED, PROJECT PROPERTIES (THE PREFERRED ALTERNATIVE).....	72
8.3.1 Geographical.....	72
8.3.2 Physical	72
8.3.3 Biological	75
8.3.4 Social	96
8.3.5 Economic	96
8.3.6 Archaeological and Cultural Heritage	96
8.3.7 Paleontological	99
8.3.8 Visual.....	101



8.4 IMPACTS AND RISKS IDENTIFIED FOR EACH ALTERNATIVE	105
8.4.1 Planning and Design Phase	105
8.4.2 Construction Phase	105
8.4.3 Operational Phase	110
8.4.4 Rehabilitation Phase	114
8.4.5 Decommissioning and Post-decommissioning Phases	115
8.4.6 Cumulative Impacts	115
8.5 METHODOLOGY USED IN DETERMINING AND RANKING THE NATURE, SIGNIFICANCE, CONSEQUENCES, EXTENT, DURATION AND PROBABILITY OF POTENTIAL ENVIRONMENTAL IMPACTS AND RISKS ASSOCIATED WITH THE ALTERNATIVES	118
8.6 POSITIVE AND NEGATIVE IMPACTS THAT THE PROPOSED ACTIVITY AND ALTERNATIVES WILL HAVE ON THE ENVIRONMENT AND ON THE COMMUNITY THAT MAY BE AFFECTED.....	118
8.7 POSSIBLE MITIGATION MEASURES THAT COULD BE APPLIED AND LEVEL OF RESIDUAL RISK	118
8.8 OUTCOME OF THE SITE SELECTION MATRIX	134
8.9 MOTIVATION FOR NOT CONSIDERING ALTERNATIVES	134
8.10 CONCLUDING STATEMENT.....	134
9. THE PROCESS UNDERTAKEN TO IDENTIFY, ASSESS AND RANK THE IMPACTS THAT THE ACTIVITY WILL IMPOSE ON THE PREFERRED LOCATION THROUGH THE LIFE OF THE ACTIVITY	135
9.1 DESCRIPTION OF ALL ENVIRONMENTAL ISSUES AND RISKS THAT WERE IDENTIFIED DURING THE ENVIRONMENTAL IMPACT ASSESSMENT PROCESS – PROCESS UNDERTAKEN.....	135
9.2 ASSESSMENT OF THE SIGNIFICANCE OF EACH ISSUE AND RISK AND AN INDICATION OF THE EXTENT TO WHICH THE ISSUE AND RISK COULD BE AVOIDED OR ADDRESSED BY THE ADOPTION OF MITIGATION MEASURES – PROCESS UNDERTAKEN.....	136
9.3 ASSESSMENT OF EACH IDENTIFIED POTENTIALLY SIGNIFICANT IMPACT AND RISK, INCLUDING CUMULATIVE IMPACTS; THE NATURE, SIGNIFICANCE AND CONSEQUENCES OF THE IMPACT AND RISK; THE EXTENT AND DURATION OF THE IMPACT AND RISK; THE PROBABILITY OF THE IMPACT AND RISK OCCURRING; THE DEGREE TO WHICH THE IMPACT AND RISK CAN BE REVERSED; THE DEGREE TO WHICH THE IMPACT AND RISK MAY CAUSE IRREPLACEABLE LOSS OF RESOURCES; AND THE DEGREE TO WHICH THE IMPACT AND RISK CAN BE AVOIDED, MANAGED OR MITIGATED	137
9.3.1 Preferred Alternative – Lomond Safari 88kV Powerline	139



9.4 A SUMMARY OF THE FINDINGS AND IMPACT MANAGEMENT MEASURES IDENTIFIED IN ANY SPECIALIST REPORTS COMPLYING WITH APPENDIX 6 OF THE EIA REGULATIONS, 2014, AND AN INDICATION AS TO HOW THESE FINDINGS AND RECOMMENDATIONS HAVE BEEN INCLUDED IN THIS BASIC ASSESSMENT REPORT	148
10. ENVIRONMENTAL IMPACT STATEMENT	151
10.1 SUMMARY OF THE KEY FINDINGS OF THE ENVIRONMENTAL IMPACT ASSESSMENT	151
10.2 ENVIRONMENTAL SENSITIVITY OVERLAY MAP	153
10.3 SUMMARY OF THE POSITIVE AND NEGATIVE IMPACTS AND RISKS OF THE PROPOSED ACTIVITY AND IDENTIFIED ALTERNATIVES	154
10.4 IMPACT MANAGEMENT MEASURES FROM SPECIALIST REPORTS AND THE RECORDING OF THE PROPOSED IMPACT MANAGEMENT OUTCOMES FOR THE DEVELOPMENT, FOR INCLUSION IN THE EMPR	155
10.5 ASPECTS WHICH WERE CONDITIONAL TO THE FINDINGS OF THE ASSESSMENT EITHER BY THE EAP OR SPECIALISTS AND WHICH ARE TO BE INCLUDED AS CONDITIONS OF AUTHORISATION	155
10.6 DESCRIPTION OF ASSUMPTIONS, UNCERTAINTIES AND GAPS IN KNOWLEDGE WHICH RELATE TO THE ASSESSMENT AND MITIGATION MEASURES	155
10.7 REASONED OPINION AS TO WHETHER THE PROPOSED ACTIVITY SHOULD OR SHOULD NOT BE AUTHORISED, AND IF THE OPINION IS THAT IT SHOULD BE AUTHORISED, ANY CONDITIONS THAT SHOULD BE MADE IN RESPECT OF THAT AUTHORISATION.....	162
10.8 WHERE THE PROPOSED ACTIVITY DOES NOT INCLUDE OPERATIONAL ASPECTS, THE PERIOD FOR WHICH THE ENVIRONMENTAL AUTHORISATION IS REQUIRED, THE DATE ON WHICH THE ACTIVITY WILL BE CONCLUDED, AND THE POST CONSTRUCTION MONITORING REQUIREMENTS FINALISED.....	162
11. ENVIRONMENTAL ASSESSMENT PRACTITIONER UNDERTAKING/ AFFIRMATION	163
12. DETAILS OF ANY FINANCIAL PROVISION FOR THE REHABILITATION, CLOSURE, AND ONGOING POST DECOMMISSIONING MANAGEMENT OF NEGATIVE ENVIRONMENTAL IMPACTS.....	163
13. SPECIFIC INFORMATION REQUIRED BY THE COMPETENT AUTHORITY.....	163
14. OTHER MATTERS REQUIRED IN TERMS OF SECTION 24(4)(A) AND (B) OF NEMA	163



LIST OF FIGURES

Figure 1: Project site locality map.....	18
Figure 2: Single steel pole structure pylon.....	24
Figure 3: Sub-transmission lines - Guyed strain structure - General Arrangement	25
Figure 4: Safari Rural Substation Refurbishment	26
Figure 5: Elevation of the project site	74
Figure 6: Terrestrial Critical Biodiversity Areas of the project site	76
Figure 7: Site Ecological Importance for each vegetation group.....	78
Figure 8: Vegetation groups on the site and within 20m buffer	80
Figure 9: Site Ecological Sensitivity for the proposed powerline	81
Figure 10: Terrestrial Fauna overall site sensitivity.....	88
Figure 11: Desktop hydrology map of the project site.....	94
Figure 12: Delineated wetland and watercourses applicable to the project site	95
Figure 13: Palaeontological Potential of the project site (Integrated Specialist Services, 2022).	100
Figure 14: Population areas within close proximity of the proposed Lomond Safari 88kV Powerline project	102
Figure 15: Possible VAC of the Landcover in a 5 km buffer area surrounding the proposed Lomond Safari 88kV Powerline project	103
Figure 16: Viewpoint sensitive receptors overlaid on the Visual Exposure Ranking	104
Figure 17: Sensitivity overlay map.....	153

LIST OF TABLES

Table 1: Listed activities triggered by the proposed development	28
Table 2: Need and desirability of the proposed project, in terms of the Guideline on Need and Desirability	33
Table 3: Types of alternatives (Western Cape Department of Environmental Affairs and Development Planning, 2010).....	59
Table 4: Comments and Responses Report.....	68
Table 5: Terrestrial Flora Protocol summary (Dimela Eco Consulting, 2021).....	82
Table 6: Results of the Phase 1 Archaeological/Heritage Impact Assessment (Integrated Specialist Services, 2021)	97
Table 7: Impact significance rating	136
Table 8: Impact Assessment: Planning and Design Phase	139
Table 9: Impact Assessment: Construction Phase	139
Table 10: Impact Assessment: Operational Phase.....	143



APPENDICES

Appendix A	-	Plans and Maps
Appendix B	-	Photographs
Appendix C	-	Public Participation
Appendix D	-	Specialist Studies
Appendix E	-	Other Information

DEFINITIONS

Alternatives

In relation to a proposed activity, means different means of meeting the general purpose and requirements of the activity, which may include alternatives to the-

- a) property on which or location where the activity is proposed to be undertaken;
- b) type of activity to be undertaken;
- c) design or layout of the activity;
- d) technology to be used in the activity; or
- e) operational aspects of the activity;

and includes the option of not implementing the activity.

Application

An application for Environmental Authorisation (EA).

Basic Assessment Report

A report contemplated in regulation 21 of the EIA Regulations, 2014, as amended in 2017 and 2021.

Buffer Area

Unless specifically defined, means an area extending 10 kilometres from the proclaimed boundary of a world heritage site or national park and 5 kilometres from the proclaimed boundary of a nature reserve, respectively, or that defined as such for a biosphere.

Canal

An open structure, that is lined or reinforced, for the conveying of a liquid or that serves as an artificial watercourse.



Channel

An excavated hollow bed for running water or an artificial underwater depression to make a water body navigable in a natural watercourse, river or the sea.

Contaminated

In relation to Part 8 of Chapter 4, means the presence in or under any land, site, buildings or structures of a substance or micro-organism above the concentration that is normally present in or under that land, which substance or micro-organism directly or indirectly affects or may affect the quality of soil or the environment adversely.

Cumulative Impact

In relation to an activity, means the past, current and reasonably foreseeable future impact of an activity, considered together with the impact of activities associated with that activity, that in itself may not be significant, but may become significant when added to the existing and reasonably foreseeable impacts eventuating from similar or diverse activities.

Dangerous Good

Goods containing any of the substances as contemplated in South African National Standard No. 10234, supplement 2008 1.00: designated “List of classification and labelling of chemicals in accordance with the Globally Harmonized Systems (GHS)” published by Standards South Africa, and where the presence of such goods, regardless of quantity, in a blend or mixture, causes such blend or mixture to have one or more of the characteristics listed in the Hazard Statements in section 4.2.3, namely physical hazards, health hazards or environmental hazards.

Development

The building, erection, construction or establishment of a facility, structure or infrastructure, including associated earthworks or borrow pits, that is necessary for the undertaking of a listed or specified activity, including any associated post development monitoring, but excludes any modification, alteration or expansion of such a facility, structure or infrastructure, including associated earthworks or borrow pits, and excluding the redevelopment of the same facility in the same location, with the same capacity and footprint.

Development footprint

Any evidence of physical alteration as a result of the undertaking of any activity.



Disposal

The burial, deposit, discharge, abandoning, dumping, placing or release of any waste into, or onto, any land.

EAP

An environmental assessment practitioner as defined in section 1 of NEMA.

EMPr

An environmental management programme contemplated in regulations 19 and 23 of the EIA Regulations, 2014, as amended in 2017 and 2021.

Environment

The surroundings (biophysical, social and economic) within which humans exist and that are made up of:

- (i) the land, water and atmosphere of the earth;
- (ii) micro-organisms, plant and animal life;
- (iii) any part or combination of (i) and (ii) and the interrelationships among and between them; and
- (iv) the physical, chemical, aesthetic and cultural properties and conditions of the foregoing that influence human health and wellbeing.

Environmental Impact Assessment

A systematic process of identifying, assessing and reporting environmental impacts associated with an activity and includes Basic Assessment and Scoping and Environmental Impact Reporting.



Independent

In relation to an EAP, a specialist or the person responsible for the preparation of an environmental audit report, means-

a) that such EAP, specialist or person has no business, financial, personal or other interest in the activity or application in respect of which that EAP, specialist or person is appointed in terms of the EIA Regulations; or

b) that there are no circumstances that may compromise the objectivity of that EAP, specialist or person in performing such work;

excluding -

(i) normal remuneration for a specialist permanently employed by the EAP; or

(ii) fair remuneration for work performed in connection with that activity, application or environmental audit.

Indigenous Vegetation

Vegetation consisting of indigenous plant species occurring naturally in an area, regardless of the level of alien infestation and where the topsoil has not been lawfully disturbed during the preceding ten years.

Industrial Complex

An area used or zoned for industrial purposes, including bulk storage, manufacturing, processing or packaging purposes.

Linear activity

An activity that is arranged in or extending along one or more properties and which affects the environment or any aspect of the environment along the course of the activity, and includes railways, roads, canals, channels, funiculars, pipelines, conveyor belts, cableways, powerlines, fences, runways, aircraft landing strips, firebreaks and telecommunication lines.

Maintenance

Actions performed to keep a structure or system functioning or in service on the same location, capacity and footprint.



Mitigation

To anticipate and prevent negative impacts and risks, then to minimise them, rehabilitate or repair impacts to the extent feasible.

Phased Activities

An activity that is developed in phases over time on the same or adjacent properties to create a single or linked entity.

Registered Interested and Affected Party

In relation to an application, means an Interested and Affected Party whose name is recorded in the register opened for that application in terms of regulation 42 of the EIA Regulations, 2014, as amended in 2017 and 2021.

Significant Impact

An impact that may have a notable effect on one or more aspects of the environment or may result in non-compliance with accepted environmental quality standards, thresholds or targets and is determined through rating the positive and negative effects of an impact on the environment based on criteria such as duration, magnitude, intensity and probability of occurrence.

Specialist

A person that is generally recognised within the scientific community as having the capability of undertaking, in conformance with generally recognised scientific principles, specialist studies or preparing specialist reports, including due diligence studies and socio-economic studies.

Systematic Biodiversity Plan

A plan that identifies important areas for biodiversity conservation, taking into account biodiversity patterns (i.e. the principle of representation) and the ecological and evolutionary processes that sustain them (i.e. the principle of persistence). A systematic biodiversity plan must set quantitative targets/thresholds for aquatic and terrestrial biodiversity features in order to conserve a representative sample of biodiversity pattern and ecological processes.

Waste

(a) any substance, material or object, that is unwanted, rejected, abandoned, discarded or disposed of, or that is intended or required to be discarded or disposed of, by the holder of that substance, material or object, whether or not such substance, material or object can be



re-used, recycled or recovered and includes all wastes as defined in Schedule 3 to this Act;
or

(b) any other substance, material or object that is not included in Schedule 3 that may be defined as a waste by the Minister by notice in the Gazette, but any waste or portion of waste, referred to in paragraphs (a) and (b), ceases to be a waste-

(i) once an application for its re-use, recycling or recovery has been approved or, after such approval, once it is, or has been re-used, recycled or recovered;

(ii) where approval is not required, once a waste is, or has been re-used, recycled or recovered;

(iii) where the Minister has, in terms of section 74, exempted any waste or a portion of waste generated by a particular process from the definition of waste; or

(iv) where the Minister has, in the prescribed manner, excluded any waste stream or a portion of a waste stream from the definition of waste.

Watercourse

(a) a river or spring;

(b) a natural channel in which water flows regularly or intermittently;

(c) a wetland, pan, lake or dam into which, or from which, water flows; and

any collection of water which the Minister may, by notice in the Gazette, declare to be a watercourse as defined in the National Water Act, 1998 (Act No. 36 of 1998); and

a reference to a watercourse includes, where relevant, its bed and banks.

Wetland

Land which is transitional between terrestrial and aquatic systems where the water table is usually at or near the surface, or the land is periodically covered with shallow water, and which land in normal circumstances supports or would support vegetation typically adapted to life in saturated soil.

ABBREVIATIONS

BAR	-	Basic Assessment Report
BID	-	Background Information Document
CRR	-	Comments and Response Report
DFFE	-	Department of Forestry, Fisheries and the Environment (National)
DWS	-	Department of Water and Sanitation
EA	-	Environmental Authorisation
EAP	-	Environmental Assessment Practitioner



EIA	-	Environmental Impact Assessment
EMF	-	Environmental Management Framework
EMPr	-	Environmental Management Programme
GN	-	Government Notice
I&AP	-	Interested and Affected Party
MTS	-	Main Transmission Substation
NEMA	-	National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended
NHRA	-	National Heritage Resources Act, 1999 (Act No. 25 of 1999), as amended
PAOI	-	Project Area of Influence
R	-	Regulation
SAHRA	-	South African Heritage Resources Agency
SEI	-	Site Ecological Importance
SCC	-	Species of Conservation Concern (specifically listed in the SANBI's 2020 Species Guideline)
TOP	-	Threatened or Protected (Species)

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Western Cape Department of Environmental Affairs and Development Planning, 2010. EIA Guideline and Information Document Series. Guideline on Alternatives. August 2010.



DECLARATION OF INDEPENDENCE

I, Lizette Kloppers, in my capacity as Environmental Assessment Practitioner, hereby declare that I –

- Act as an independent consultant;
- Do not have any business, financial, personal or other interest in the activity or application in respect of which I have been appointed in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), other than fair remuneration for the work performed; and
- That there are no circumstances that may compromise my objectivity in performing the work that I have been appointed for.



Lizette Kloppers (Reg. EAP)

Environmental Assessment Practitioner

SACNASP Reg. No. 115453

EAPASA Reg No. 2019/767

2022-03-31

Date



1. PROJECT TITLE

Lomond Safari 88kV Powerline.

2. APPLICANT DETAILS

- Applicant Name: Eskom Holdings SOC Limited.
- Postal Address: 16 Kgwebo Street, Mabe Park, Waterfall East, Rustenburg, 0321.

3. ENVIRONMENTAL ASSESSMENT PRACTITIONER DETAILS

- Environmental Assessment Practitioner Company: MuTingati Environmental and Projects.
- Contact Person: Lizette Kloppers
- Postal Address: 476 Felstead Avenue, 121 Grand Rapids, Northriding, 2169
- Telephone Number: 061 524 2211
- Fax Number: 086 552 6837
- Email Address: lizette@earthnsky.co.za / lizette.earthnsky@gmail.com
- Qualifications and expertise of the EAP to prepare the Report: MSc Environmental Management – University of London External Programme; More than 12 years' experience as an EAP
- Professional affiliation/registration: SACNASP Reg. No. 115453; EAPASA Reg No. 2019/767

The EAP's Curriculum Vitae is attached to this report under Appendix E.

4. LOCATION OF THE PROPOSED DEVELOPMENT AND ACTIVITIES

The property for the proposed project and its associated activities is as follows:

- Property/Land Parcel: Portion 0 of the Farm Weldaba 567 JQ
- 21-digit Surveyor General Code: TOJQ00000000056700000
- Property size: 2 361.6963Ha
- Project site GPS coordinates (please also refer to the image below):



Point 1: Starting point of powerline at Lomond Main Transmission Substation: 25° 48.141'S; 27° 56.315'E

Point 2: 25° 48.183'S; 27° 56.137'E

Point 3: 25° 48.215'S; 27° 55.617'E

Point 4: 25° 48.157'S; 27° 55.093'E

Point 5: 25° 48.089'S; 27° 55.052'E

Point 6: End point of powerline at Safari Rural Substation: 25° 48.067'S; 27° 55.111'E



The project site is located in the Madibeng Local Municipality, Bojanala Platinum District Municipality, North West Province. The project location is entirely within the confines of the NECSA Pelindaba property, situated south of the town Hartbeespoort, North West Province.

The project site is situated within one of the Gazetted Electricity Grid Infrastructure (EGI) Corridors as per GN 113.

A locality map, provided on the next page, shows the proposed route of the powerline.



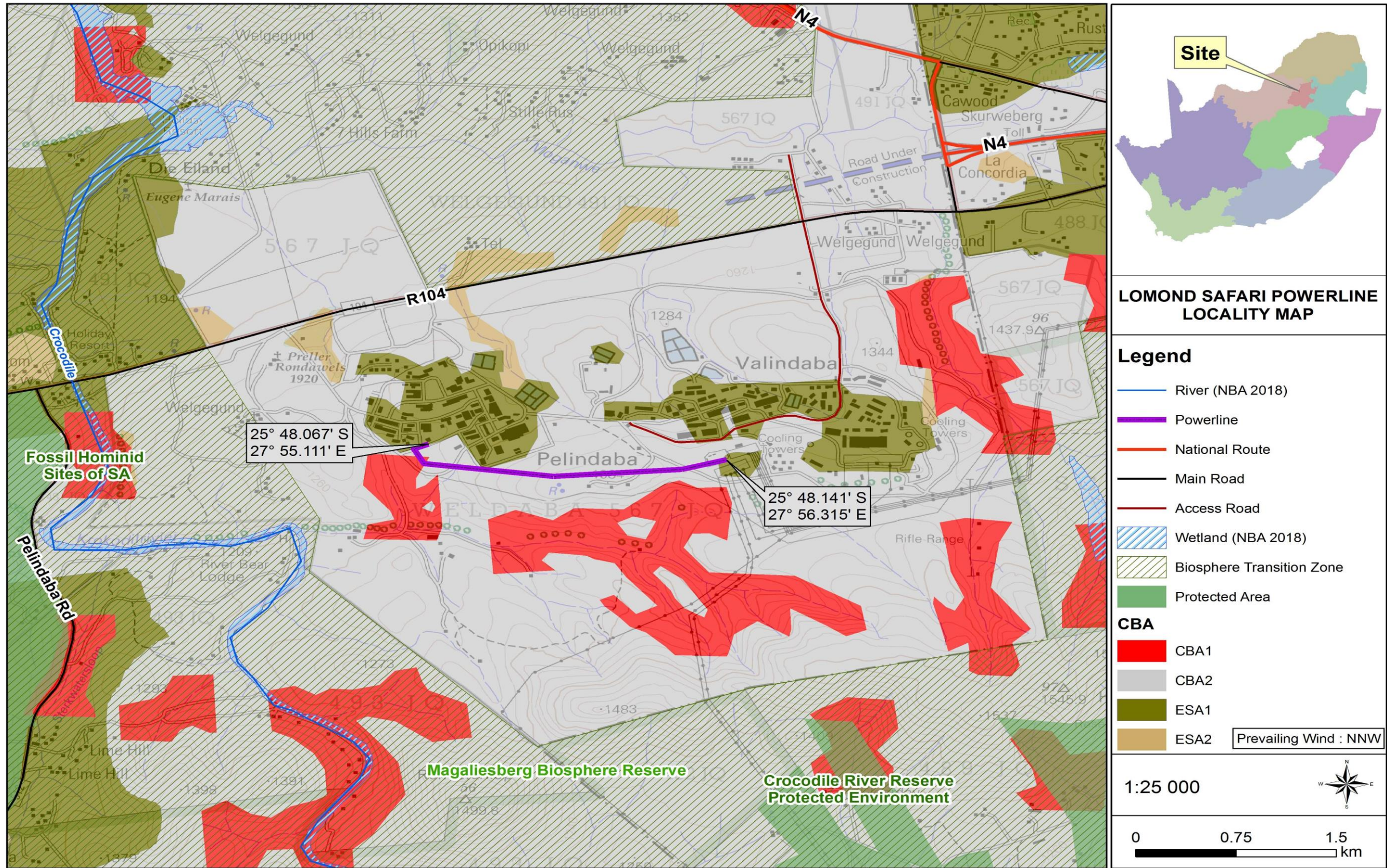


Figure 1: Project site locality map

The following photographs give an indication of the current status of the project property. Photographs are also given under Appendix B.



The following photographs give an indication of the current status of the Safari Rural Substation. Photographs are also given under Appendix B.





5. SCOPE OF THE PROPOSED DEVELOPMENT AND ACTIVITIES

5.1 Description of the activities to be undertaken

5.1.1 Background to Applicant and Existing Operations

The Safari Rural substation is an 88/11kV substation supplying the South African Nuclear Energy Corporation SOC Limited (NECSA). The substation is currently supplied through 2 x 88kV underground oil filled cables from the Lomond Main Transmission Substation (MTS). The existing underground oil filled cables are approximately 4.5m in length. The cables sometimes lose pressure and this results in loss of supply to the Safari Rural substation. The cables also seem to be leaking oil, causing environmental pollution.

NECSA requested Eskom to provide a solution to the above situation. In response to this request, Eskom identified the proposed powerline project, to be built by Eskom, in order to supply power to NECSA. NECSA is currently on premium supply as it is a National Key Point responsible for undertaking research and development in the field of nuclear energy and related technologies.

5.1.2 Proposed project

The proposed project includes the following:

Proposed powerline

Construction of a 1 x 88kV chickadee powerline of ± 2.3 km from Lomond MTS to Safari Rural substation. Steel monopole structures will be utilised to build the HV powerline. The powerline will transmit 88kV, but will be built according to the 132kV specifications, as is the norm for 88kV powerlines constructed by Eskom. Refer to Figure 2 and Figure 3 below for a visual representation of the proposed monopole pylons. The conductor attachment height will be dependent upon the specific monopole in question. The intermediates will be D-DT 7649 monopoles and the strain will be D-DT 7645 and D-DT 7618 monopoles. Terminal structures will be D-DT 7808 H – poles. Refer to the drawings attached under Appendix A of the Basic Assessment Report. The Applicant has confirmed that all of the structures are bird friendly. The span length will be between 150m to 250m. The pylon heights take into consideration safety clearance, slopes, span length, sagging etc. and Eskom standards are used by engineers when designing the power lines. The pylon heights will range between 20 and 24m from the ground to the top of the pylons.

As per Eskom's Vegetation Management and Maintenance within Eskom Land, Servitudes and Rights of Way Standard an area of 8m of vegetation will be cleared on either side of the centre line

of the proposed powerline. Grass and shrubs will be managed in line with the specific biome and vegetation type of the site. The clearance and management of the vegetation of either side of the powerline is required as the vegetation poses a fire risk to the powerline infrastructure and/or to the operation of the powerlines.

Part of the 2 x 88kV underground oil filled cables will be dismantled and sealed off. Some of the cables' length extends underneath buildings on site and the cables can therefore not be dismantled entirely.

The Safari Rural substation will be refurbished by replacing old and redundant equipment. This will ensure that the equipment is up to standard and able to provide a reliable electricity supply to NECSA. A new fence will also be built around the substation to improve security and access control to the substation.

The following Eskom Method Statements will be used during the proposed powerline construction process and have been attached under Appendix E of this report:

- Assembly and Erection of Towers.
- Stringing and Regulation of Conductors and Earth wires.

Waste generated during the construction activities will be removed off site and taken to a licensed landfill site.

Refurbishment of the Safari Rural substation

- Refurbish Transformer 1 bays (Red), Line bay, Transformer HV and MV bays.
- Dismantle Transformer 2 bays (Yellow), Line bay, Transformer HV & MV bays.
- Repair bund wall around the transformer plinth.
- Build Oil Holding Dam.
- Supply 3 sets of 10kA earths/applicator stick with lock up box.
- Install an environmental loo at the substation.
- Install 4 x 21m lighting/lightning mast.
- Replace the existing fence with a palisade fence with sliding gates.
- Install substation electric wire.
- Building of a runway (4,5m x 20m) for truck access during the delivery of the transformer inside the substation.
- Replace yard stones.

- Test earth mat and repair if necessary.
- Extend earth mat by 1m (earth mat outside the substation).
- Transformer replacement not required.

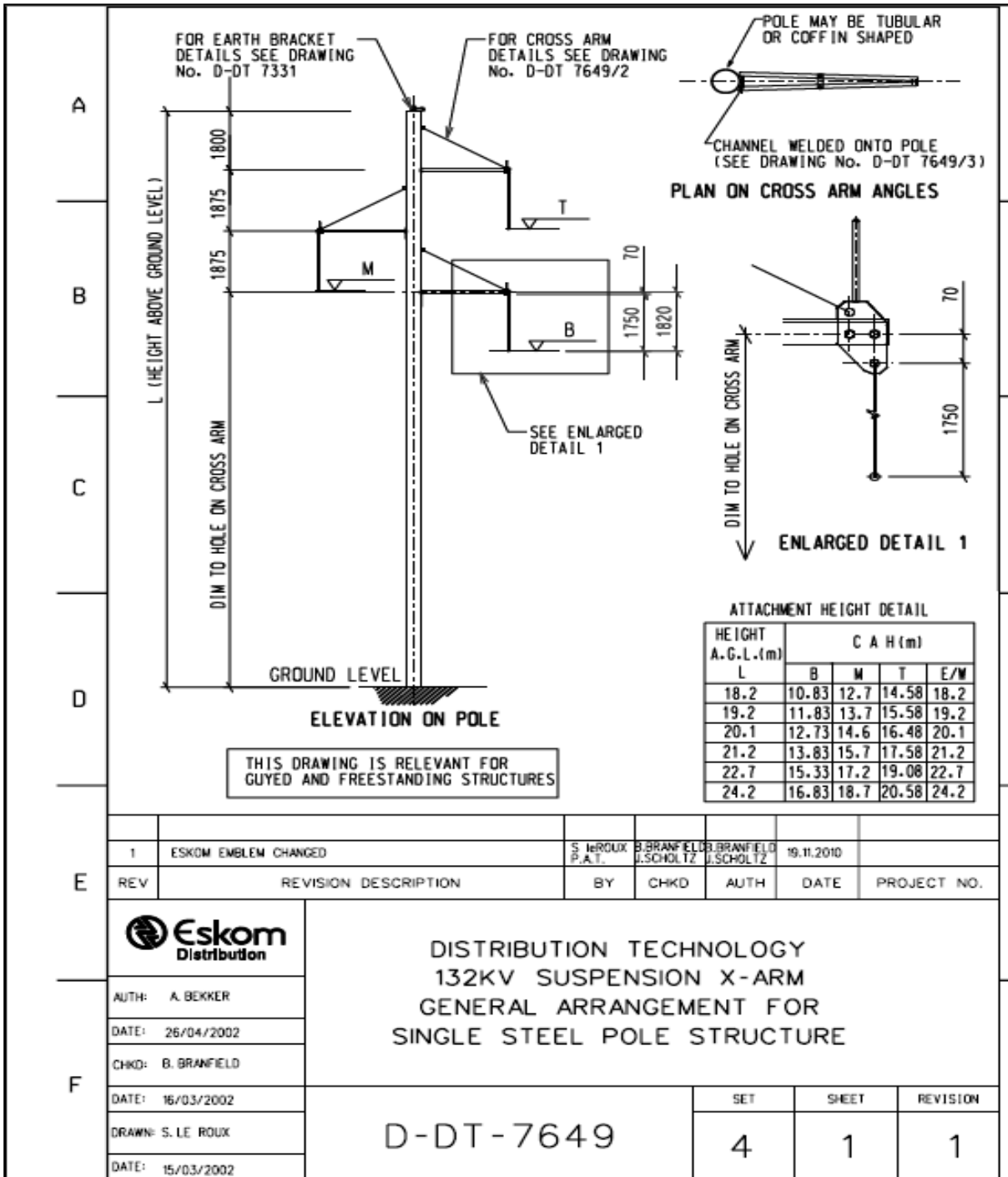


Figure 2: Single steel pole structure pylon

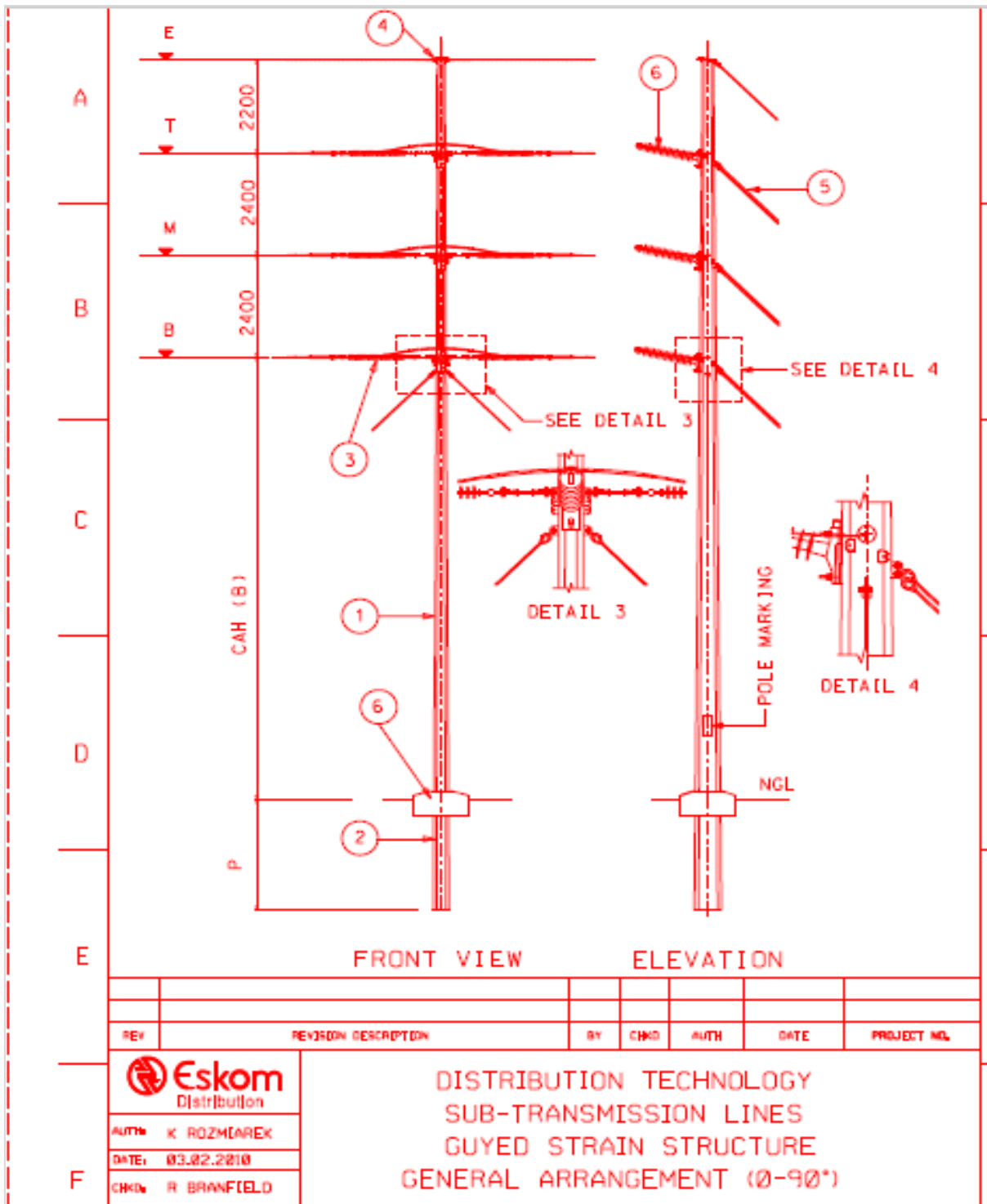


Figure 3: Sub-transmission lines - Guyed strain structure - General Arrangement

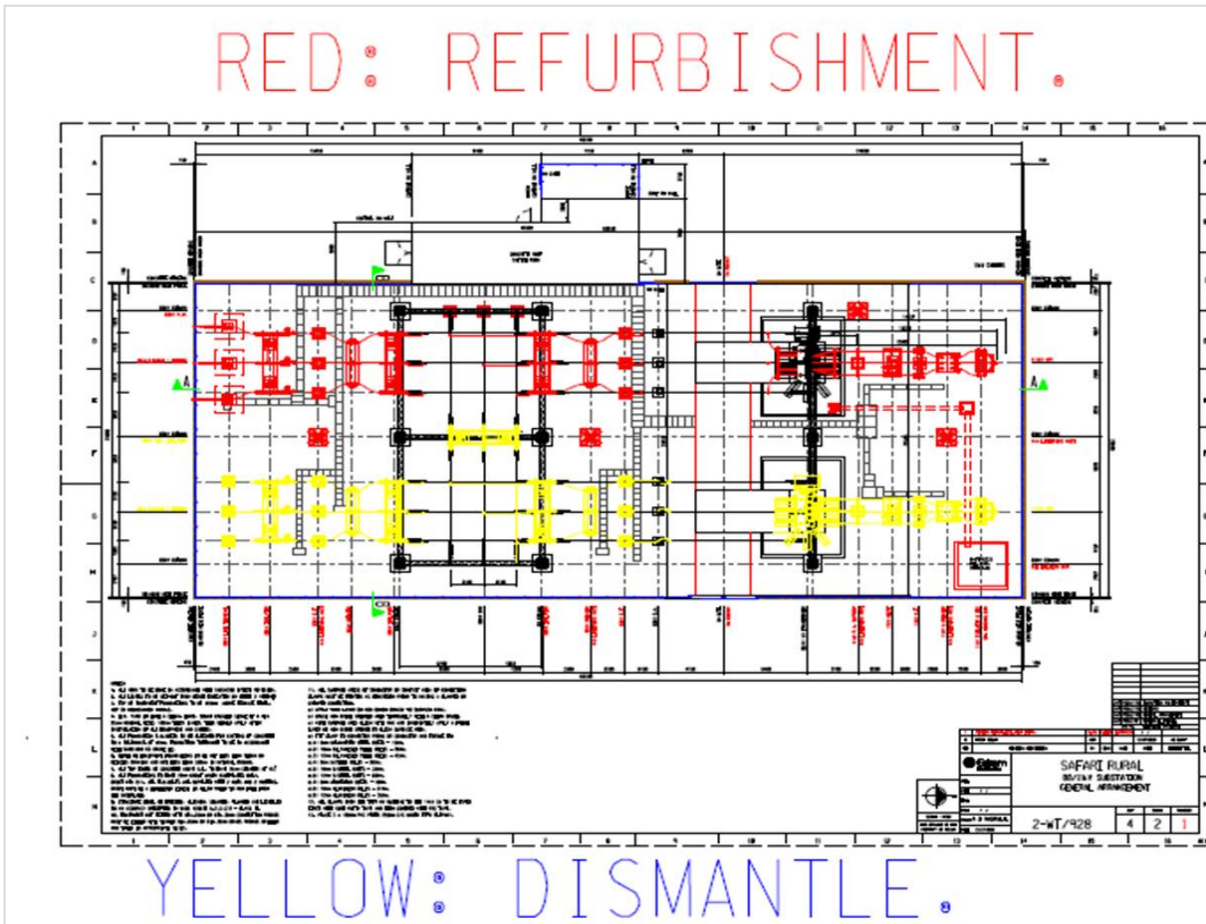


Figure 4: Safari Rural Substation Refurbishment

Lightning Risk

A Regional Lightning Analysis was conducted for the proposed Lomond Safari powerline route for the period of April 2017 to March 2018. The analysis found that the route is located within a high lightning risk vicinity and that the impact of any lightning strike on the power lines could cause major disruptions on the operations of NECSA. It was, however, also concluded that the risk of lightning exposure on short lines, such as the proposed powerline, is minimal.

Eskom employs adequate methods to ensure protection against lightning strikes on overhead lines. The following protection strategies are standard to overhead line designs:

- a. OPGW and Shield Wires.
- b. Line Surge Arrestors.
- c. Improved Footing Resistance.

Dismantling of the existing underground oil filled cables

The existing underground oil filled cables are more than 40 years old and have reached their desired system end of life span duration. The cables were the only available self-contained fluid filled “oil

filled” HV cable technology available in the late 1960’s up to early 1980’s. Maintenance costs for repairs and the top up of oil in the cables are excessive and unsustainable. The environmental impact of the oil filled cables leaking into the environment is a concern and the necessary measures will need to be taken should it be confirmed that oil has leaked into the environment. If soil contamination is confirmed, the National Department of Forestry, Fisheries and the Environment Directorate: Land remediation section will need to be contacted to confirm whether a Remediation Order is required before remediation of the contamination can be commenced with. The remediation of contaminated land is no longer a listed activity in terms of the Waste Act and no longer requires a Waste Management Licence. The determination of possible soil pollution is outside of the scope of this EIA process and will be dealt with by Eskom should Environmental Authorisation be granted for this proposed development.

5.2 Listed Activities triggered by the proposed development

The following listed activities are triggered by the proposed development and therefore require Environmental Authorisation, in terms of the Environmental Impact Assessment Regulations of 4 December 2014, as amended.

Table 1: Listed activities triggered by the proposed development

Government Notice and Activity Number	Wording as per the Listing Notice	Description as per the project description relating to each listed activity
Government Notice R983 (Listing Notice 1), as amended, Activity No. 11	The development of facilities or infrastructure for the transmission and distribution of electricity– (i) Outside urban areas or industrial complexes with a capacity of more than 33 but less than 275kilovolts.	The construction of a 1 x 88kV chickadee powerline of approximately 2.3km. The powerline will run from the Lomond MTS to the Safari Rural substation (the entire route is situated on the NECSA property) and steel monopole structures will be utilised to build the HV powerline.
Government Notice R985 (Listing Notice 3), as amended, Activity No. 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. (h) North West iv. Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority.	The construction of a 1 x 88kV chickadee powerline of approximately 2.3km and 8m of indigenous vegetation will be cleared on either side of the centre line of the powerline (16m in total). The site is situated within an Aquatic CBA and a Terrestrial CBA (1 and 2).

5.3 Water Use Licence Activities

No Water Use Registrations and/or Licence applications in terms of Chapter 4 of the National Water Act, 1998 (Act No. 36 of 1998) are included in the scope of work for this EIA process. A meeting has been requested with the National Department of Water and Sanitation to confirm whether any Water Use Registration and/or Licence applications are required for the proposed powerline project. Such requirements will be dealt with as a separate application process, if required.

6. POLICY AND LEGISLATIVE CONTEXT OF THE APPLICATION

The following legislation, policies, plans, guidelines, spatial tools, municipal development planning frameworks and instruments are/may be applicable to the proposed project and have been considered in this Basic Environmental Impact Assessment process. It has been indicated how the proposed project complies with and/or responds to the legislation and policy context, plans, guidelines, tools frameworks, and instruments.

Legislation

- The Constitution of South Africa, 1996 (Act No. 108 of 1996), as amended - The project needs to adhere to the provisions of this legislation.
- The National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended - The application is lodged in terms of the provisions of this legislation.
- The Environmental Impact Assessment Regulations of 4 December 2014, as amended in 2017 and 2021 - The application is lodged in terms of the provisions of this legislation.
- The National Heritage Resources Act, 1999 (Act No. 25 of 1999), as amended - This legislation is possibly applicable to the proposed project and will be confirmed by the South African Heritage Resources Agency.
- The National Environmental Management Act, 1998 (Act No. 107 of 1998): Protocol for the Specialist Assessment and Minimum Report Content Requirements for Environmental Impacts on Terrestrial Animal and or Avifaunal Species – This has been considered by the Fauna specialist in their report.
- The National Appeal Regulations – Government Notice No. R.993 of 8 December 2014 - This legislation would be applicable should the decision on the application be appealed.
- National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004) (NEMBA) - This has been considered by the Fauna and Flora specialists in their reports.
- National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004): Threatened or Protected Species Regulations, February 2007 (TOPS Regulations) – This has been considered by the Fauna and Flora specialists in their reports.
- National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004): Publication of lists of species that are threatened or protected, activities that are prohibited and exemption from restriction, February 2007 – This has been considered by the Fauna and Flora specialists in their reports.

- National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004): Alien and Invasive Species Lists, September 2020 – This has been considered by the Fauna and Flora specialists in their reports.
- National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004): Alien and Invasive Species Regulations, September 2020 – This has been considered by the Fauna and Flora specialists in their reports.
- North West Biodiversity Management Act, 2016 (Act No. 4 of 2016) - This has been considered by the Fauna and Flora specialists in their reports.

Plans

- 2015 North West Biodiversity Sector Plan - Indicates the desktop sensitivity of the project site.

Standards

- Standard for Electricity Transmission and Distribution Power Line Development within Identified Geographical Areas, 2020.

Guidelines

- Guideline on Need and Desirability in terms of the Environmental Impact Assessment (EIA) Regulations, 2010 - Used to adequately discuss the need and desirability of the proposed project.

Conventions/Agreements

- Convention on Biological Diversity (CBD) - This has been considered by the Fauna and Flora specialists in their reports.
- Convention on the Conservation of Migratory Species of Wild Animals - This has been considered by the AviFauna specialist in her report.
- Agreement on the Conservation of African-Eurasian Migratory Water Birds - This has been considered by the AviFauna specialist in her report.

Spatial tools

- SANBI Biodiversity GIS Database - Indicates the desktop sensitivity of the project site.
- National Web-based Environmental Screening Tool - Indicates the desktop sensitivity of the project site.

Municipal development planning frameworks

- Madibeng Local Municipality – Spatial Development Framework 2015. Draft SDF.
- Madibeng Local Municipality –Integrated Development Plan Review 2020/2021.
- Bojanala Platinum District Municipality Environmental Management Framework. Final EMF report. June 2018.

Provincial development planning frameworks

- Department of Economic Development, Environment, Conservation and Tourism, North West Provincial Government: Adoption and publication of the North West Provincial Environmental Implementation Plan (EIP) 2020 – 2025.

Municipal By-Laws

- Madibeng Local Municipality Water and Sanitation By-Law, 2016
- Madibeng Local Municipality Waste Management By-Law, 2008

7. MOTIVATION FOR THE NEED AND DESIRABILITY OF THE PROPOSED DEVELOPMENT

7.1 Need and desirability of the development in the context of the preferred location

7.1.1 The Applicant

The existing underground oil filled cables are more than 40 years old and have reached their desired system end of life span duration. The cables were the only available self-contained fluid filled “oil filled” HV cable technology available in the late 1960’s up to early 1980’s. Maintenance costs for repairs and the top up of oil in the cables are excessive and unsustainable. The environmental impact of the oil filled cables leaking into the environment is a concern. The applicant therefore wishes to rather construct a new 1 x 88kV chickadee powerline of approximately 2.3km to ensure reliable electricity supply to NECSA and the elimination of potential environmental pollution through the use of the existing underground oil filled cables. The overhead powerlines are considered a cost effective option and are easier to operate than underground cables.

7.1.2 The Local Community

The construction of the Lomond Safari 88kV Powerline will result in short term job creation during the construction phase. The use of the outdated oil filled underground electricity cables

will be ceased and with it the potential for soil and groundwater contamination will also be eliminated. This is a positive impact in terms of the environment on a local level.

7.2 Need and Desirability in terms of the Guideline on Need and Desirability

The Department of Environmental Affairs published a Guideline on Need and Desirability in terms of the Environmental Impact Assessment (EIA) Regulations, 2010, in Government Notice 891 of 2014 (20 October 2014).

The table below indicates how the guideline requirements have been addressed.

Table 2: Need and desirability of the proposed project, in terms of the Guideline on Need and Desirability

Requirement	Response
<p>1. How will this development (and its separate elements/aspects) impact on the ecological integrity of the area?¹</p>	<p>Ecological integrity is the ability of an ecosystem to support and maintain a diverse community of organisms as well as ecological processes. Impacts of the proposed project on the ecological integrity of the area have been assessed in Section 9.3 of this report. The ecological integrity of the site has already been negatively impacted upon through historical disturbance of the site. The proposed development should have a positive impact on the ecological integrity through the discontinued use of the underground oil filled cables, with their associated pollution risks from leakages. Any historical oil leakages and pollution will also be rehabilitated once the proposed powerline has been constructed (if authorised) and there will be less disturbance to the environment during maintenance activities as trenches do not need to be dug with overhead powerlines as is the case with underground power cables.</p>
<p>1.1. How were the following ecological integrity considerations taken into account?</p>	
<p>1.1.1 <i>Threatened Ecosystems.</i>²</p>	<p>The powerline route is not situated in a listed ecosystem. However, the Gauteng Shale Mountain Bushveld is poorly protected and classified as a Vulnerable vegetation unit. The vegetation on site was found to be in a secondary state and can be rehabilitated to such a state post construction (Dimela Eco Consulting, 2021). Impacts of the proposed project have been assessed in Section 9.3 of this report.</p>

¹ Section 24 of the Constitution and section 2(4)(a)(vi) of NEMA refer.

² Must consider the latest information including the notice published on 9 December 2011 (Government Notice No. 1002 in Government Gazette No. 34809 of 9 December 2011 refers) listing threatened ecosystems in terms of Section 52 of National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004).

Requirement	Response
<p>1.1.2 Sensitive, vulnerable, highly dynamic or stressed ecosystems, such as coastal shores, estuaries, wetlands, and similar systems require specific attention in management and planning procedures, especially where they are subject to significant human resource usage and development pressure.³</p>	<p>To take into consideration any sensitive, vulnerable, highly dynamic or stressed ecosystems that may be present on the project site, the following specialist studies were commissioned as part of this Environmental Impact Assessment process:</p> <ul style="list-style-type: none"> • A Terrestrial Fauna Assessment; • A Terrestrial Biodiversity (Flora/Vegetation) Assessment; and • An Aquatic Assessment, including wetland delineation.
<p>1.1.3 Critical Biodiversity Areas ("CBAs") and Ecological Support Areas ("ESAs").</p>	<p>The site is situated within an Aquatic CBA and a Terrestrial CBA (1 and 2). Impacts of the proposed project have been assessed in Section 9.3 of this report.</p>
<p>1.1.4 Conservation targets.</p>	<p>The powerline traverses the Gauteng Shale Mountain Bushveld vegetation type which is poorly protected (less than 1% protected in statutory reserves) and classified as a Vulnerable vegetation unit. The conservation target is 24% (Mucina & Rutherford, 2006). Good condition vegetation should thus be regarded as sensitive (Dimela Eco Consulting, 2021).</p>
<p>1.1.5 Ecological drivers of the ecosystem.</p>	<p>Mitigation measures have been incorporated into the Basic Assessment Report and Environmental Management Programme for this project. The measures aim to mitigate the influence of ecological drivers such as the influence of uncontrolled fires, human activity and alien invasive plant species.</p>
<p>1.1.6 Environmental Management Framework.</p>	<p>The site does not intersect with any Environmental Management Framework areas according to the National Screening Tool Report.</p>
<p>1.1.7 Spatial Development Framework.</p>	<p>As the proposed development is situated within the already developed NECSA property it is not expected that the proposed powerline would impact upon the Spatial Development Framework for the Madibeng Local Municipality.</p>

³ Section 2(4)(r) of NEMA refers.

Requirement	Response
<p>1.1.8 <i>Global and international responsibilities relating to the environment (e.g. RAMSAR sites, Climate Change, etc.).</i>⁴</p>	<p>It is not expected for the proposed development to have significant impacts on global and international responsibilities. Construction vehicles will emit relatively small volumes of greenhouse gases during the construction phase which will contribute towards climate change.</p>
<p>1.2 How will this development disturb or enhance ecosystems and/or result in the loss or protection of biological diversity? What measures were explored to firstly avoid these negative impacts, and where these negative impacts could not be avoided altogether, what measures were explored to minimise and remedy (including offsetting) the impacts? What measures were explored to enhance positive impacts?⁵</p>	<p>Biodiversity (Flora, Fauna and Avifauna) Assessments were conducted for the proposed development. The purpose of the studies was to determine the current status of the project site and the impact that the proposed development will have on fauna and flora assemblages.</p> <p>Impacts of the proposed project have been assessed in Section 9.3 of this report. Mitigation measures have been identified and recommended in the EMPr to mitigate negative environmental impacts.</p>
<p>1.3 How will this development pollute and/or degrade the biophysical environment? What measures were explored to firstly avoid these impacts, and where impacts could not be avoided altogether, what measures were explored to minimise and remedy (including offsetting) the impacts? What measures were explored to enhance positive impacts?⁶</p>	<p>Negative environmental impacts associated with the proposed development have been identified and assessed in Sections 9.3 of this report. Mitigation measures have also been identified and recommended in the Basic Assessment Report and EMPr to mitigate negative environmental impacts.</p>

⁴ Section 2(4)(n) of NEMA refers.

⁵ Section 24 of the Constitution and Sections 2(4)(a)(i) and 2(4)(b) of NEMA refer.

⁶ Section 24 of the Constitution and Sections 2(4)(a)(ii) and 2(4)(b) of NEMA refer.

Requirement	Response
<p>1.4 What waste will be generated by this development? What measures were explored to firstly avoid waste, and where waste could not be avoided altogether, what measures were explored to minimise, reuse and/or recycle the waste? What measures have been explored to safely treat and/or dispose of unavoidable waste?⁷</p>	<p>During the construction phase of the proposed development waste, such as building rubble and domestic waste, will be generated. Some hazardous waste, such as spilt oil or diesel may also be generated. Mitigation measures to minimise, reuse and/or recycle the waste have been recommended in the Basic Assessment Report and Environmental Management Programme for the project.</p>
<p>1.5 How will this development disturb or enhance landscapes and/or sites that constitute the nation's cultural heritage? What measures were explored to firstly avoid these impacts, and where impacts could not be avoided altogether, what measures were explored to minimise and remedy (including offsetting) the impacts? What measures were explored to enhance positive impacts?⁸</p>	<p>Please refer to Section 8.3.6 of this report. The South African Heritage Resources Agency (SAHRA) has been notified of the proposed project as part of the general public participation process, seeing as SAHRA is considered to be an Interested and Affected Party of the proposed project. Any feedback from SAHRA will be considered and acted upon accordingly.</p>
<p>1.6 How will this development use and/or impact on non-renewable natural resources? What measures were explored to ensure responsible and equitable use of the resources? How have the consequences of the depletion of the non-renewable natural resources been considered? What measures were explored to firstly avoid these impacts, and where impacts could not be</p>	<p>Environmental impacts associated with the proposed development have been identified and assessed in Sections 9.3 of this report. Mitigation measures have also been identified and recommended in the Basic Assessment Report and EMPr to mitigate negative environmental impacts.</p>

⁷ Section 24 of the Constitution and Sections 2(4)(a)(iv) and 2(4)(b) of NEMA refer.

⁸ Section 24 of the Constitution and Sections 2(4)(a)(iii) and 2(4)(b) of NEMA refer.

Requirement	Response
<p>avoided altogether, what measures were explored to minimise and remedy (including offsetting) the impacts? What measures were explored to enhance positive impacts?⁹</p>	
<p>1.7 How will this development use and/or impact on renewable natural resources and the ecosystem of which they are part? Will the use of the resources and/or impact on the ecosystem jeopardise the integrity of the resource and/or system taking into account carrying capacity restrictions, limits of acceptable change, and thresholds? What measures were explored to firstly avoid the use of resources, or if avoidance is not possible, to minimise the use of resources? What measures were taken to ensure responsible and equitable use of the resources? What measures were explored to enhance positive impacts?¹⁰</p>	<p>The proposed project will not use or impact upon any renewable natural resources.</p>
<p>1.7.1 <i>Does the proposed development exacerbate the increased dependency on increased use of resources to maintain economic growth or does it reduce resource dependency (i.e. de-materialised growth)? (note: sustainability requires that settlements reduce their</i></p>	<p>The proposed development will not exacerbate the increased dependency on increased use of resources. It is a replacement for the distribution of electricity within an existing electricity distribution system.</p>

⁹ Section 24 of the Constitution and Sections 2(4)(a)(v) and 2(4)(b) of NEMA refer.

¹⁰ Section 24 of the Constitution and Sections 2(4)(a)(vi) and 2(4)(b) of NEMA refer.

Requirement	Response
<p><i>ecological footprint by using less material and energy demands and reduce the amount of waste they generate, without compromising their quest to improve their quality of life)</i></p>	
<p>1.7.2 <i>Does the proposed use of natural resources constitute the best use thereof? Is the use justifiable when considering intra- and intergenerational equity, and are there more important priorities for which the resources should be used (i.e. what are the opportunity costs of using these resources this the proposed development alternative?)</i></p>	<p>The resource use is justifiable and should not affect intra- and intergenerational equity. Mitigation measures have been recommended in the Environmental Management Programme for this proposed development, to minimise the usage of resources.</p>
<p>1.7.3 <i>Do the proposed location, type and scale of development promote a reduced dependency on resources?</i></p>	<p>No. The proposed project will not use or impact upon any renewable natural resources.</p>
<p>1.8 How were a risk-averse and cautious approach applied in terms of ecological impacts?¹¹</p>	<p>A risk-averse and cautious approach was applied to the Basic Environmental Impact Assessment by keeping in mind the gaps in knowledge and limitations.</p>

¹¹ Section 24 of the Constitution and Section 2(4)(a)(vii) of NEMA refer.

Requirement	Response
<p>1.8.1 <i>What are the limits of current knowledge (note: the gaps, uncertainties and assumptions must be clearly stated)?</i></p>	<p>The following assumptions were made during this Basic Environmental Impact Assessment process:</p> <ul style="list-style-type: none"> • That the project information, as provided by the applicant, is correct. • That all research and reference sources or material is accurate and up to date. • That the development of the proposed powerline will be undertaken as per the information provided by the applicant. • That Eskom will be responsible for any required land remediation identified before the existing underground power cables are removed and that they will conduct said remediation, if it is found that the underground cables have leaked and caused soil contamination. This is not required to be completed before the proposed powerline is constructed. • That the development of the proposed powerline will be conducted according to the Environmental Management Programme for this application. <p>Please also refer to Section 10.6 of this report.</p>
<p>1.8.2 <i>What is the level of risk associated with the limits of current knowledge?</i></p>	<p>It is the EAP's opinion that the level of risk associated with the limits of current knowledge is <i>low</i>.</p>
<p>1.8.3 <i>Based on the limits of knowledge and the level of risk, how and to what extent was a risk-averse and cautious approach applied to the development?</i></p>	<p>A risk-averse and cautious approach was applied to the Basic Environmental Impact Assessment by keeping in mind the gaps in knowledge and limitations.</p>
<p>1.9 How will the ecological impacts resulting from this development impact on people's environmental right in terms following:¹²</p>	

¹² Section 24 of the Constitution and Sections 2(4)(a)(viii) and 2(4)(b) of NEMA refer.

Requirement	Response
<p>1.9.1 <i>Negative impacts: e.g. access to resources, opportunity costs, loss of amenity (e.g. open space), air and water quality impacts, nuisance (noise, odour, etc.), health impacts, visual impacts, etc. What measures were taken to firstly avoid negative impacts, but if avoidance is not possible, to minimise, manage and remedy negative impacts?</i></p>	<p>Section 8.4 of this report provides a list of the anticipated impacts from the proposed development. Section 8.7 provides mitigation measures for these impacts and the Environmental Management Programme for the proposed development has more detailed mitigation measures that should be applied to minimise the impacts on the environment from the development.</p>
<p>1.9.2 <i>Positive impacts: e.g. improved access to resources, improved amenity, improved air or water quality, etc. What measures were taken to enhance positive impacts?</i></p>	<p>To enhance the positive impacts, local people will be employed during the construction and operational phases of the development, as far as possible.</p>
<p>1.10 Describe the linkages and dependencies between human wellbeing, livelihoods and ecosystem services applicable to the area in question and how the development's ecological impacts will result in socio-economic impacts (e.g. on livelihoods, loss of heritage site, opportunity costs, etc.)?</p>	<p>It is not expected for the proposed project to result in negative socio-economic impacts relating to livelihoods, loss of heritage sites and/or opportunity costs.</p>
<p>1.11 Based on all of the above, how will this development positively or negatively impact on ecological integrity objectives/targets/considerations of the area?</p>	<p>Ecological integrity is the ability of an ecosystem to support and maintain a diverse community of organisms as well as ecological processes. Impacts of the proposed project on the ecological integrity of the area have been assessed in Section 9.3 of this report. The ecological integrity of the site has already been negatively impacted upon through historical disturbance of the site. The proposed development should have a positive impact on the ecological integrity through the discontinued use of the underground oil filled cables, with</p>

Requirement	Response
	<p>their associated pollution risks from leakages. Any historical oil leakages and pollution will also be rehabilitated once the proposed powerline has been constructed (if authorised) and there will be less disturbance to the environment during maintenance activities as trenches do not need to be dug with overhead powerlines as is the case with underground power cables.</p>
<p>1.12 Considering the need to secure ecological integrity and a healthy biophysical environment, describe how the alternatives identified (in terms of all the different elements of the development and all the different impacts being proposed), resulted in the selection of the "best practicable environmental option" in terms of ecological considerations?¹³</p>	<p>“No-Go Option” Alternative</p> <p>The No-Go Option would be where the Lomond Safari 88kV overhead Powerline is not constructed and where the two existing 88kV underground oil filled cables would need to continue be used. The existing underground oil filled cables are more than 40 years old and have reached their desired system end of life span duration. The cables were the only available self-contained fluid filled “oil filled” HV cable technology available in the late 1960’s up to early 1980’s. Maintenance costs for repairs and the top up of oil in the cables are excessive and unsustainable. The environmental impact of the oil filled cables leaking into the environment is a concern and the necessary measures will need to be taken should it be confirmed that oil has leaked into the environment. Considering the previously mentioned aspects, the no-go option is not deemed to be a feasible alternative and would also result in a supply risk in terms of the provision of electricity to NECSA. An alternative electricity distribution solution is therefore necessitated.</p> <p>Design or Layout Alternatives</p> <p>Monopole pylons have been chosen as the preferred alternative for the proposed powerline project as they are less suitable as bird nest sites.</p>

¹³ Section 2(4)(b) of NEMA refer.

Requirement	Response
	<p>Scheduling and Timing Alternatives</p> <p>Scheduling and timing alternatives were considered for the construction of the proposed powerline. The proposed powerline route crosses an artificial wetland, as identified in the Watercourses Assessment, and the scheduling of the construction activities therefore needs to be such that the impact of the construction activities on the artificial wetland is minimised. It has therefore been recommended in the Watercourses Assessment that the construction activities should take place during the winter months (low flow season).</p>
<p>1.13 Describe the positive and negative cumulative ecological/biophysical impacts bearing in mind the size, scale, scope and nature of the project in relation to its location and existing and other planned developments in the area?¹⁴</p>	<p>The following cumulative impacts have been identified for the proposed project:</p> <p><u>Terrestrial Fauna:</u></p> <ul style="list-style-type: none"> • Loss and alteration of faunal habitat: The disturbed nature of the area and the limited buffer value of the site in terms of terrestrial fauna means that cumulative impacts are considered negligible. • Hindrance, trapping, killing of fauna, focussing on TOP species, particularly Sensitive Species 12 and provincially protected dung beetles: No significant cumulative impacts expected in terms of the proposed project if faunal mortalities are kept to an absolute minimum. • Contamination of fauna environment through use and storage of hazardous substances, littering and dumping of waste: Large or continuous leaks / spills and dumping will enter the environment through run-off or leachate and contaminate the environment and poison the fauna. The likelihood of this occurring is considered low, but must be managed on site (BK Zoology, 2022).

¹⁴ Regulations 22(2)(i)(i), 28(1)(g) and 31(2)(1) in Government Notice No. R. 543 refer.

Requirement	Response
	<p><u>Heritage and Palaeontology:</u></p> <p>Heritage resources such as burial grounds and graves and archaeological as well as historical sites are common occurrences within the greater study area. These sites are often not visible and as a result, can be easily affected or lost. Furthermore, many heritage resources in the greater study area are informal, unmarked and may not be visible, particularly during the wet season when grass cover is dense. As such, construction workers may not see these resources, which results in increased risk of resource damage and/or loss. Vibrations and earth moving activities associated with drilling and excavation have the potential to crack/damage rock art covered surfaces, which are known to occur in the greater study area. In addition, vibration from traffic has the potential to impact buildings and features of architectural and cultural significance. Earth moving and extraction of gravel have the potential to interact with archaeology, architectural and cultural heritage.</p> <p>Cumulative impacts that need attention are related to the impacts of access roads and impacts to buried heritage resources. Allowing the impact of the proposed development to go beyond the surveyed area would result in a significant negative cumulative impact on sites outside the surveyed area. A significant cumulative impact that needs attention is related to stamping by especially construction vehicles during clearance and excavation within the development sites. Movement of heavy construction vehicles must be monitored to ensure they do not drive beyond the approved sites. No significant cumulative impacts, over and above those already considered in the impact assessment, are foreseen at this stage of the assessment process. Cumulative impacts can be significant, if construction vehicles are not monitored to avoid driving through undetected heritage resources (IS Solutions, 2021).</p>

Requirement	Response
	<p data-bbox="954 264 1462 292"><u>Terrestrial Biodiversity (Flora / Vegetation):</u></p> <ul data-bbox="954 320 2045 1331" style="list-style-type: none"> <li data-bbox="954 320 1518 347">• Destruction of natural vegetation: None. <li data-bbox="954 368 2045 491">• Exposure to erosion and subsequent sedimentation or pollution of proximate watercourses: Erosion of the development footprint upslope from the watercourses could increase sedimentation. However, this could be mitigated. <li data-bbox="954 512 2045 587">• Removal / Destruction of protected plants and plants of conservation concern: If mitigation measures are adequately implemented, no cumulative impacts are expected. <li data-bbox="954 608 2045 815">• Potential increase in invasive vegetation: The area that the proposed development is situated in is already infested with alien invasive plant species. Therefore, if mitigation measures to limit and prevent the spread of alien species are not implemented, the cumulative impact could lead to remaining natural vegetation transformed by alien plant species. <li data-bbox="954 836 2045 1043">• Clearing of land for construction camps and potential pollution of the soil and water: If mitigation measures are not strictly implemented, erosion of the development area, contamination of ground water and the spread and establishment of invasive species can take place. This will lead to the increase in modified areas and fragmentation of natural and semi-natural vegetation. <li data-bbox="954 1064 2045 1235">• Compaction and destruction of soils: Failed rehabilitation and soil compaction associated with the development could lead to a cumulative invasion by alien invasion plant species from the surrounding transformed vegetation that can easily spread into the compacted soils. <li data-bbox="954 1256 2045 1331">• Bush densification: Possible bush densification on the site and loss of indigenous species diversity (Dimela Eco Consulting, 2021).

Aquatic:

Impacts that are predominantly associated with cumulative impacts include increased levels of erosion/sedimentation due to increased runoff, proliferation of alien invasive species and possible water quality alterations (Oasis Environmental Specialists, 2022).

Visual:

Cumulative landscape and visual effects (impacts) result from additional changes to the landscape or visual amenity caused by the proposed development in conjunction with other developments (associated with or separate to it), or actions that occurred in the past, present or are likely to occur in the foreseeable future. They may also affect the way in which the landscape is experienced. Cumulative effects may be positive or negative. Where they comprise of a range of benefits, they may be considered to form part of the mitigation measures.

Cumulative effects can also arise from the inter-visibility (visibility) of a range of developments and/or the combined effects of individual components of the proposed development occurring in different locations or over a period of time. The separate effects of such individual components or developments may not be significant, but together they may create an unacceptable degree of adverse effects on visual receptors within their combined visual envelopes. Inter-visibility depends upon general topography, aspect, tree cover or other visual obstruction, elevation and distance, as this affects visual acuity, which is also influenced by weather and light conditions. (Institute of Environmental Assessment and The Landscape Institute, 1996).

Requirement	Response
	<p>The cumulative visual intrusion of the proposed Lomond Safari 88kV Powerline structures, will be MODERATE as it is a powerline. The visual impact and impact on sense of place of the proposed project will contribute to the cumulative negative effect on the aesthetics of the area. The site location is how ever inside the Pelindaba complex, which is already a manmade visual intrusion of the natural landscape, and thus decreases the visual impact of the project further.</p> <p>The construction of the proposed Lomond Safari 88kV Powerline project with its associated infrastructure will increase the cumulative visual impact within the region. In context of the existing bushveld, and dispersed homesteads, the construction phase of Lomond Safari 88kV Powerline structures will contribute to a regional increase in heavy vehicles on the roads in the region, with construction activity noticeable (Eco Elementum, 2022).</p>
2.1 What is the socio-economic context of the area, based on, amongst other considerations, the following considerations?	
2.1.1 <i>The IDP (and its sector plans' vision, objectives, strategies, indicators and targets) and any other strategic plans, frameworks of policies applicable to the area,</i>	The proposed development will create job opportunities. This is in line with the goals of the Madibeng IDP 2020/2021.
2.1.2 <i>Spatial priorities and desired spatial patterns (e.g. need for integrated of segregated communities, need to upgrade informal settlements, need for densification, etc.),</i>	The proposed project will not impact upon spatial settlement patterns.
2.1.3 <i>Spatial characteristics (e.g. existing land uses, planned land uses, cultural landscapes, etc.), and</i>	It is not expected for the proposed project to impact upon spatial characteristics.

Requirement	Response
2.1.4 <i>Municipal Economic Development Strategy ("LED Strategy")</i> .	The proposed development will create job opportunities. This is in line with the goals of the LED Strategy in the Madibeng IDP 2020/2021.
2.2 Considering the socio-economic context, what will the socio-economic impacts be of the development (and its separate elements/aspects), and specifically also on the socio-economic objectives of the area?	The socio-economic impacts have been addressed under Section 9.3 of this report.
2.2.1 <i>Will the development complement the local socio-economic initiatives (such as local economic development (LED) initiatives), or skills development programs?</i>	The proposed development will create job opportunities. This is in line with the goals of the LED Strategy in the Madibeng IDP 2020/2021.
2.3 How will this development address the specific physical, psychological, developmental, cultural and social needs and interests of the relevant communities? ¹⁵	The proposed development will create job opportunities and stimulate the local economy. Environmental pollution will also be prevented (from the existing underground oil filled cables).
2.4 Will the development result in equitable (intra- and inter-generational) impact distribution, in the short- and long-term? ¹⁶ Will the impact be socially and economically sustainable in the short- and long-term?	It is expected for the proposed development to result in equitable impact distributions in the short- and long-term as well as to be socially and economically sustainable in the short- and long-term.
In terms of location, describe how the placement of the proposed development will: ¹⁷	

¹⁵ Section 2(2) of NEMA refers.

¹⁶ Sections 2(2) and 2(4)(c) of NEMA refers.

¹⁷ Section 3 of the Development Facilitation Act, 1995 (Act No. 67 of 1995) ("DFA") and the National Development Plan refer.

Requirement	Response
2.4.1 result in the creation of residential and employment opportunities in close proximity to or integrated with each other,	The development will generate a number of employment opportunities.
2.4.2 reduce the need for transport of people and goods,	Not applicable. The proposed project is for the construction of powerline.
2.4.3 result in access to public transport or enable non-motorised and pedestrian transport (e.g. will the development result in densification and the achievement of thresholds in terms public transport),	Not applicable. The proposed project is for the construction of powerline. It is not expected for the proposed project to have an impact upon access to public transport or the enabling of non-motorised and pedestrian transport.
2.4.4 compliment other uses in the area,	The proposed development will improve the reliability of electricity supply to NECSA and ties in with the existing infrastructure on site, such as the Lomond MTS and the Safari Rural substation.
2.4.5 be in line with the planning for the area,	The proposed development as it is for the replacement of existing electricity distribution infrastructure within the NECSA property. The planning of the area is therefore not applicable to the proposed development.
2.4.6 for urban related development, make use of underutilised land available with the urban edge,	Not applicable. The proposed project is for the construction of powerline and not located in urban area.
2.4.7 optimise the use of existing resources and infrastructure,	The proposed development will make use of existing road infrastructure to the project site.
2.4.8 opportunity costs in terms of bulk infrastructure expansions in non-priority areas (e.g. not aligned with the bulk infrastructure planning for the settlement that reflects the spatial reconstruction priorities of the settlement),	The proposed development will make use of existing road infrastructure to the project site.

Requirement	Response
2.4.9 <i>discourage "urban sprawl" and contribute to compaction/densification,</i>	It is not expected that the proposed project will have any impacts (positive or negative) on "urban sprawl" or compaction/densification.
2.4.10 <i>contribute to the correction of the historically distorted spatial patterns of settlements and to the optimum use of existing infrastructure in excess of current needs,</i>	The proposed development will make use of existing road infrastructure to the project site.
2.4.11 <i>encourage environmentally sustainable land development practices and processes,</i>	Environmentally sustainable land development practices and processes will be encouraged through specific mitigation measures that have been included in the Environmental Management Programme for this project.
2.4.12 <i>take into account special locational factors that might favour the specific location (e.g. the location of a strategic mineral resource, access to the port, access to rail, etc.),</i>	No specific locational factors were applicable to the proposed development as it is for the replacement of existing electricity distribution infrastructure within the NECSA property.
2.4.13 <i>the investment in the settlement or area in question will generate the highest socio-economic returns (i.e. an area with high economic potential),</i>	Investment in the proposed development will result in socio-economic returns for the area. It is expected to create employment opportunities and stimulate the local economy in the short term.
2.4.14 <i>impact on the sense of history, sense of place and heritage of the area and the socio-cultural and cultural-historic characteristics and sensitivities of the area, and</i>	Please refer to Section 8.3.6 of this report. The South African Heritage Resources Agency (SAHRA) has been notified of the proposed project as part of the general public participation process, seeing as SAHRA is considered to be an Interested and Affected Party of the proposed project. Any feedback from SAHRA will be considered and acted upon accordingly.
2.4.15 <i>in terms of the nature, scale and location of the development promote or act as a catalyst to create a more integrated settlement?</i>	Not applicable. The proposed project is not expected to have any impact (positive or negative) on integrated settlements. The development would be situated entirely within the NECSA property.

Requirement	Response
2.5 How were a risk-averse and cautious approach applied in terms of socio-economic impacts?: ¹⁸	A risk-averse and cautious approach was applied to the Basic Environmental Impact Assessment by keeping in mind the gaps in knowledge and limitations.
2.5.1 <i>What are the limits of current knowledge (note: the gaps, uncertainties and assumptions must be clearly stated)?</i> ¹⁹	<p>The following assumptions were made during this Basic Environmental Impact Assessment process:</p> <ul style="list-style-type: none"> • That the project information, as provided by the applicant, is correct. • That all research and reference sources or material is accurate and up to date. • That the development of the proposed powerline will be undertaken as per the information provided by the applicant. • That Eskom will be responsible for any required land remediation identified before the existing underground power cables are removed and that they will conduct said remediation, if it is found that the underground cables have leaked and caused soil contamination. This is not required to be completed before the proposed powerline is constructed. • That the development of the proposed powerline will be conducted according to the Environmental Management Programme for this application. <p>Please also refer to Section 10.6 of this report.</p>
2.5.2 <i>What is the level of risk (note: related to inequality, social fabric, livelihoods, vulnerable communities, critical resources, economic vulnerability and sustainability) associated with the limits of current knowledge?</i>	It is the EAP's opinion that the level of risk associated with the limits of current knowledge is low.

¹⁸ Section 2(4)(a)(vii) of NEMA refers.

¹⁹ Section 24(4) of NEMA refers.

Requirement	Response
2.5.3 <i>Based on the limits of knowledge and the level of risk, how and to what extent was a risk-averse and cautious approach applied to the development?</i>	A risk-averse and cautious approach was applied to the Basic Environmental Impact Assessment by keeping in mind the gaps in knowledge and limitations.
2.6 How will the socio-economic impacts resulting from this development impact on people's environmental right in terms following:	
2.6.1 <i>Negative impacts: e.g. health (e.g. HIV-Aids), safety, social ills, etc. What measures were taken to firstly avoid negative impacts, but if avoidance is not possible, to minimise, manage and remedy negative impacts?</i>	It is not expected for the proposed project to negatively impact on people's health, safety and social ills.
2.6.2 <i>Positive impacts. What measures were taken to enhance positive impacts?</i>	The main positive impacts of the proposed development are the generation of job opportunities and the elimination of environmental pollution from the underground oil filled cables. To enhance the positive impacts, local people will be employed during the construction and operational phases of the development, as far as possible.
2.7 Considering the linkages and dependencies between human wellbeing, livelihoods and ecosystem services, describe the linkages and dependencies applicable to the area in question and how the development's socioeconomic impacts will result in ecological impacts (e.g. over utilisation of natural resources, etc.)?	The proposed development's socioeconomic impacts are not expected to result in ecological impacts.
2.8 What measures were taken to pursue the selection of the "best practicable environmental option" in terms of socio-economic considerations? ²⁰	Various alternatives were considered in order for the best practicable environmental option to be selected. Refer to Section 1.12 of this Table. In terms of the socio-economic considerations, the preferred alternative (the overhead monopole powerline) is deemed the

²⁰ Section 2(4)(b) of NEMA refers.

Requirement	Response
	<p>best option as it will result in reliable electricity supply to NECSA and will have quicker fault fixing times, as opposed to the current underground oil filled cables or lattice pylon powerlines. This is a positive in terms of the socio-economic environment at NECSA, allowing their National Key Point activities to proceed with less electricity disruptions.</p>
<p>2.9 What measures were taken to pursue environmental justice so that adverse environmental impacts shall not be distributed in such a manner as to unfairly discriminate against any person, particularly vulnerable and disadvantaged persons (who are the beneficiaries and is the development located appropriately)?²¹ Considering the need for social equity and justice, do the alternatives identified, allow the "best practicable environmental option" to be selected, or is there a need for other alternatives to be considered?</p>	<p>Refer to Section 8.1 of this report. The alternatives considered allow for the "best practicable environmental option" to be selected.</p>
<p>2.10 What measures were taken to pursue equitable access to environmental resources, benefits and services to meet basic human needs and ensure human wellbeing, and what special measures were taken to ensure access thereto by categories of persons disadvantaged by unfair discrimination?²²</p>	<p>Local labourers will be employed, as far as possible and up to certain skill levels, depending on the work involved.</p>

²¹ Section 2(4)(c) of NEMA refers.

²² Section 2(4)(d) of NEMA refers.

Requirement	Response
2.11 What measures were taken to ensure that the responsibility for the environmental health and safety consequences of the development has been addressed throughout the development's life cycle? ²³	To ensure that responsibility for the environmental health and safety consequences of the development have been addressed, mitigation measures have been identified in this report and the EMPr. The responsibility for implementing the mitigation measures lies with the applicant.
2.12 What measures were taken to:	
<i>2.12.1 ensure the participation of all interested and affected parties,</i>	The Public Participation Plan was approved by the Competent Authority prior to it being implemented. The public participation processes were conducted in accordance with the EIA Regulations, 2014, as amended, and also taking the following into consideration: GN 807 - Public Participation Guideline in the Environmental Impact Assessment Process, 2012 and The Promotion of Access to Information Act (PAIA), 2000.
<i>2.12.2 provide all people with an opportunity to develop the understanding, skills and capacity necessary for achieving equitable and effective participation,²⁴</i>	The public participation process for this project is open to all parties. Site notices and a newspaper advertisement were placed to encourage participation from a wider audience than simply the adjacent land owners. These notices were in the two languages mostly spoken by people in the area.
<i>2.12.3 ensure participation by vulnerable and disadvantaged persons,²⁵</i>	The public participation processes were open to all individuals, also to vulnerable and disadvantaged persons.
<i>2.12.4 promote community wellbeing and empowerment through environmental education, the raising of</i>	All employees, contractors and sub-contractors will be required to attend environmental awareness inductions (training).

²³ Section 2(4)(e) of NEMA refers.

²⁴ Section 2(4)(f) of NEMA refers.

²⁵ Section 2(4)(f) of NEMA refers.

Requirement	Response
<i>environmental awareness, the sharing of knowledge and experience and other appropriate means,²⁶</i>	
<i>2.12.5 ensure openness and transparency, and access to information in terms of the process,²⁷</i>	<p>The Public Participation Plan was approved by the Competent Authority prior to it being implemented. The public participation processes were conducted in accordance with the EIA Regulations, 2014, as amended, and also taking the following into consideration: GN 807 - Public Participation Guideline in the Environmental Impact Assessment Process, 2012.</p> <p>The public participation process was open to participation from any members of the public and was a fully transparent process. All comments received from Interested and Affected Parties have been included in the reports for this project and have also been responded to/addressed. The reports were available to any person wishing to review and comment upon the reports.</p>
<i>2.12.6 ensure that the interests, needs and values of all interested and affected parties were taken into account, and that adequate recognition were given to all forms of knowledge, including traditional and ordinary knowledge²⁸, and</i>	<p>The Public Participation Plan was approved by the Competent Authority prior to it being implemented. The public participation processes were conducted in accordance with the EIA Regulations, 2014, as amended, and also taking the following into consideration: GN 807 - Public Participation Guideline in the Environmental Impact Assessment Process, 2012.</p>
<i>2.12.7 ensure that the vital role of women and youth in environmental management and development were</i>	<p>The Public Participation Plan was approved by the Competent Authority prior to it being implemented. The public participation processes were conducted in accordance with the EIA</p>

²⁶ Section 2(4)(h) of NEMA refers.

²⁷ Section 2(4)(k) of NEMA refers.

²⁸ Section 2(4)(g) of NEMA refers.

Requirement	Response
<i>recognised and their full participation therein were be promoted?</i> ²⁹	Regulations, 2014, as amended, and also taking the following into consideration: GN 807 - Public Participation Guideline in the Environmental Impact Assessment Process, 2012.
2.13 Considering the interests, needs and values of all the interested and affected parties, describe how the development will allow for opportunities for all the segments of the community (e.g. a mixture of low-, middle-, and high-income housing opportunities) that is consistent with the priority needs of the local area (or that is proportional to the needs of an area)? ³⁰	Local labourers will be employed, as far as possible and up to certain skill levels, depending on the work involved.
2.14 What measures have been taken to ensure that current and/or future workers will be informed of work that potentially might be harmful to human health or the environment or of dangers associated with the work, and what measures have been taken to ensure that the right of workers to refuse such work will be respected and protected? ³¹	All employees, contractors and sub-contractors will be required to attend environmental awareness inductions (training). This will include informing workers that they have the right to refuse work should the work be harmful to human health or the environment.
2.15 Describe how the development will impact on job creation in terms of, amongst other aspects:	
2.15.1 <i>the number of temporary versus permanent jobs that will be created,</i>	The proposed development will generate job opportunities during the construction and operational phases.

²⁹ Section 2(4)(q) of NEMA refers.

³⁰ x

³¹ Section 2(4)(j) of NEMA refers.

Requirement	Response
2.15.2 <i>whether the labour available in the area will be able to take up the job opportunities (i.e. do the required skills match the skills available in the area),</i>	Local labourers will be employed, as far as possible and up to certain skill levels, depending on the work involved.
2.15.3 <i>the distance from where labourers will have to travel,</i>	Labourers will be transported to and from the construction site. Using local labourers (as far as possible) will decrease travel distances.
2.15.4 <i>the location of jobs opportunities versus the location of impacts (i.e. equitable distribution of costs and benefits), and</i>	Job opportunities will be created at the proposed development site. The impacts will mostly be limited to the development site.
2.15.5 <i>the opportunity costs in terms of job creation (e.g. a mine might create 100 jobs, but impact on 1000 agricultural jobs, etc.).</i>	The proposed development will create job opportunities and should not impact upon employment opportunities in other sectors.
2.16 What measures were taken to ensure:	
2.16.1 <i>that there were intergovernmental coordination and harmonisation of policies, legislation and actions relating to the environment, and</i>	Relevant environmental and town planning legislation was considered and incorporated into this report. Comments were also requested from various stakeholders, including the local municipality and other governmental Departments. Also refer to Chapter 6 of this report.
2.16.2 <i>that actual or potential conflicts of interest between organs of state were resolved through conflict resolution procedures?</i>	There have been no such conflicts to resolve to date.
2.17 What measures were taken to ensure that the environment will be held in public trust for the people, that the beneficial use of environmental resources will	The proposed development has positive environmental impacts. Mitigation measures have been included in the Environmental Management Programme for this development to minimise the impacts of the proposed development on the environment.

Requirement	Response
<p>serve the public interest, and that the environment will be protected as the people's common heritage?³²</p>	
<p>2.18 Are the mitigation measures proposed realistic and what long-term environmental legacy and managed burden will be left?³³</p>	<p>Realistic mitigation measures have been proposed in detail in the EMPr for this project. Should these mitigation measures be implemented by the applicant, it is not expected for there to be any long-term environmental legacy or burden remaining.</p>
<p>2.19 What measures were taken to ensure that the costs of remedying pollution, environmental degradation and consequent adverse health effects and of preventing, controlling or minimising further pollution, environmental damage or adverse health effects will be paid for by those responsible for harming the environment?³⁴</p>	<p>The applicant will be responsible for any costs associated with the remediation of pollution, environmental degradation and consequent adverse health effects and of preventing, controlling or minimising further pollution, environmental damage or adverse health effects.</p>
<p>2.20 Considering the need to secure ecological integrity and a healthy bio-physical environment, describe how the alternatives identified (in terms of all the different elements of the development and all the different impacts being proposed), resulted in the selection of the best practicable environmental option in terms of socio-economic considerations?³⁵</p>	<p>Refer to Section 2.8 of this Table.</p>

³² Section 2(4)(o) of NEMA refers.

³³ Section 240(1)(b)(iii) of NEMA and the National Development Plan refer.

³⁴ Section 2(4)(p) of NEMA refers.

³⁵ Section 2(4)(b) of NEMA refers.

Requirement	Response
2.21 Describe the positive and negative cumulative socio-economic impacts bearing in mind the size, scale, scope and nature of the project in relation to its location and other planned developments in the area? ³⁶	Refer to Section 1.13 of this Table.

³⁶ Regulations 22(2)(i)(i), 28(1)(g) and 31(2)(1) in Government Notice No. R. 543 refer.

7.3 Motivation for the preferred site, activity and technology alternative

Refer to Section 8.1 of this report.

8. PROCESS FOLLOWED TO REACH THE PROPOSED PREFERRED ACTIVITY, SITE AND LOCATION WITHIN THE SITE

8.1 Alternatives considered

The following alternatives could be applicable to the proposed project and could be assessed, according to the Western Cape Department of Environmental Affairs and Development Planning's Guideline on Alternatives (2010):

Table 3: Types of alternatives (Western Cape Department of Environmental Affairs and Development Planning, 2010)

Type of alternative	Description/explanation
Location	Refers to both alternative properties as well as alternative sites on the same property.
Activity	Incineration of waste rather than disposal at a landfill site/provision of public transport rather than increasing the capacity of roads.
Design or Layout	Design: e.g. Different architectural and or engineering designs . Site Layout: Consideration of different spatial configurations of an activity on a particular site (e.g. siting of a noisy plant away from residences).
Technological	Consideration of such alternatives is to include the option of achieving the same goal by using a different method or process (e.g. 1 000MW of energy could be generated using a coal-fired power station or wind turbines).
Demand	Arises when a demand for a certain product or service can be met by some alternative means (e.g. the demand for electricity could be met by supplying more energy or using energy more efficiently, by managing demand).
Input	Input alternatives are applicable to applications that may use different raw materials or energy sources in their process (e.g. industry may consider using either high sulphur coal or natural gas as a fuel source).
Routing	Consideration of alternative routes generally applies to linear developments such as power line servitudes, transportation and pipeline routes.

Type of alternative	Description/explanation
Scheduling and Timing	Where a number of measures might play a part in an overall programme, but the order in which they are scheduled will contribute to the overall effectiveness of the end result.
Scale and Magnitude	Activities that can be broken down into smaller units and can be undertaken on different scales (e.g. for a housing development there could be the option of 10, 15 or 20 housing units. Each of these alternatives may have different impacts).
"No-Go Option"	This is the option of not implementing the proposed activity.

Alternative Assessments must always include the "No-Go Option" as the baseline against which all other alternatives must be measured. The following alternatives could be considered for the proposed project:

8.1.1 Demand

The demand in the context of the proposed project is meeting the electricity demand at NECSA by improving or changing infrastructure to maintain a reliable electricity supply. Electricity is already available at the Lomond MTS and needs to be distributed to the Safari Rural Substation. It is therefore not feasible to consider other ways of meeting the electricity demand, apart from the provision of an electricity distribution system. For example, it would not make sense to consider a renewable energy system, as the electricity is already present and extensive infrastructure in the form of the Lomond MTS and Safari Rural Substation is already present on site. No demand alternatives have therefore been considered.

8.1.2 "No-Go Option"

The No-Go Option would be where the Lomond Safari 88kV overhead Powerline is not constructed and where the two existing 88kV underground oil filled cables would need to continue be used. The existing underground oil filled cables are more than 40 years old and have reached their desired system end of life span duration. The cables were the only available self-contained fluid filled "oil filled" HV cable technology available in the late 1960's up to early 1980's. Maintenance costs for repairs and the top up of oil in the cables are excessive and unsustainable. The environmental impact of the oil filled cables leaking into the environment is a concern and the necessary measures will need to be taken should it be confirmed that oil has leaked into the environment. Considering the previously mentioned aspects, the no-go option is not deemed to be a feasible alternative and would also result in a supply risk in terms of the provision of electricity to NECSA. An alternative electricity distribution solution is therefore necessitated.

8.1.3 Routing

The Powerline will run along a mostly disturbed route. The proposed route was also selected in conjunction with NECSA in order to avoid existing infrastructure on the NECSA property. Eskom and NECSA have determined that the proposed route is the only viable option for this project. The proposed powerline route crosses an artificial wetland, as identified in the Watercourses Assessment. Eskom have confirmed that due to existing infrastructure and the characteristics on site, it is not feasible to have the proposed powerline route circumvent the artificial wetland. Should any Water Use Registration and/or Water Use Licence applications be required, Eskom will submit the necessary applications to the Department of Water and Sanitation. No other routing alternatives have therefore been considered.

8.1.4 Design or Layout

In terms of the design for the proposed powerline, two alternatives were considered. One is a lattice and the other is a monopole design for the powerline pylons. A summary of the advantages and disadvantages of each type of pylon is given below:

Monopole Pylon advantages:

- Monopole structures are suitable for heavily populated and congested areas as they can be erected within a foot print of 2 meters.
- Monopoles structures are more flexible than lattice structures.
- Less components are required as compared to Lattice structures.
- Takes less time for installation as compared to Lattice structures.
- Poles are subjected to lesser wind load due to its built –in flexibility and lower aerodynamic coefficient.
- Poles are not easily vandalized due to being a more continuum type structures.

Monopole Pylon disadvantages:

- Monopoles require heavy cranes for transportation and installation.
- Monopole's load carrying capacity is only up to 765kV due to having cantilever-type structures which have higher over-turning moments at the base. This necessitate the use of heavy pile foundations.

Lattice Pylon advantages:

- Lattice structures have a load carrying capacity is up to 1,200kV and higher.
- Lattice structures' configuration can be easily adjusted to accommodate several electric circuits and various types of conductor configurations.

- Lattice structures are cheaper as they use angle sections which are easy to fabricate with quick factory setup, compared to Monopoles which require a specialised plate bending machine with high capital costs.
- Lattice structures can be easily transported due to the fact that angle sections can be bundled as per available capacity of trucks.
- Lattice structures are stronger than monopoles.
- Lattice structures' height is much more to keep sufficient ground clearance.

Lattice Pylon disadvantages:

- One tower requires many fittings.
- Erection costs are much higher than for monopoles.
- Fault finding takes more time compared to monopoles.
- Lattice pylons have a higher tendency for use by wildlife, especially birds that use the pylons for nest sites.

Monopole pylons have therefore been chosen as the preferred alternative for the proposed powerline project as they are less suitable as bird nest sites, are cheaper and quicker to construct and allow for quicker fault finding when compared to lattice pylons.

8.1.5 Activity

The activity is the provision of electricity supply to NECSA. No other activity alternatives could be identified in addition to the proposed construction of electricity distribution infrastructure in order to provide electricity to the NECSA operations.

8.1.6 Technological

Two technology alternatives were considered for the proposed project. The first was to replace the existing underground oil filled cables with an underground XLPE cable. The second alternative was to replace the existing underground oil filled cables with an Overhead Line System.

High voltage underground cables are usually used as an option in areas where it is not feasible to build overhead lines. At NECSA, it is feasible to build overhead lines. The overhead powerlines are considered a cost effective option and are easier to operate than underground cables. Overhead lines are, however, more prone to lightning strikes and wildlife activities. Lightning strikes play a very important role in the overall performance of the overhead lines and is often the cause of faults and outages. For this reason the protection against lightning

strikes is very crucial in maintaining good power quality. Eskom employs adequate methods to ensure protection against lightning strikes on overhead lines. The following protection strategies are standard to overhead line designs:

- a. OPGW and Shield Wires.
- b. Line Surge Arrestors.
- c. Improved Footing Resistance.

Lightning strikes are therefore not deemed to be a fatal flaw when considering an Overhead Line System.

An underground XLPE cable was deemed to not be a feasible option due to the following reasons:

- a. The terrain is fairly mountainous which could make underground cable installation complex and costly.
- b. The repair times for underground cables could be lengthy as it is difficult to find faults, thus exposing NECSA to electricity supply reliability risks and instability.
- c. Underground cables have a severe impact on the environment whereby the structure of the terrain will be significantly disturbed due to excavations and rehabilitation when the cables are decommissioned.
- e. Automatic-reclose functionality is often used on overhead line systems to re-energize the line in case of transient faults, therefore minimising outage time. This automatic-reclose functionality is, however, not possible for underground cables, leading to longer electricity outage times.
- f. Underground cables are expensive.

Based on the discussion above, an Overhead Line System was deemed to be the preferred alternative for the proposed project.

8.1.7 Input

No input alternatives could be identified. Eskom makes use of a standard Method Statements for the assembly and erection of powerlines. The Method Statements stipulate the powerline infrastructure to be used and no input alternatives could therefore be considered.

8.1.8 Location

The location for the proposed development is within the NECSA property, in order to supply NECSA with electricity. No other location alternatives could therefore be considered.

8.1.9 Scheduling and Timing

Scheduling and timing alternatives were considered for the construction of the proposed powerline. The proposed powerline route crosses an artificial wetland, as identified in the Watercourses Assessment, and the scheduling of the construction activities therefore needs to be such that the impact of the construction activities on the artificial wetland is minimised. It has therefore been recommended in the Watercourses Assessment that the construction activities should take place during the winter months (low flow season).

8.1.10 Scale and Magnitude

The scale and magnitude of the proposed powerline has been determined by Eskom and NECSA to be the most viable option in order to distribute electricity from the Lomond MTS to the Safari Rural Substation, given the specific site conditions and electricity requirements at NECSA. The pylon heights take into consideration safety clearance, slopes, span length, sagging etc. and Eskom standards are used by engineers when designing the power lines. No scale and magnitude alternatives could therefore be considered.

8.2 Public Participation Process undertaken in terms of Section 41 of the EIA Regulations, 2014, As Amended

The following potentially Interested and Affected Parties were identified as part of the proposed project's Environmental Impact Assessment process:

- Madibeng Local Municipality
- Bojanala Platinum District Municipality
- North West Department of Agriculture and Rural Development
- North West Department of Finance
- North West Department of Human Settlements
- North West Department of Community Safety and Transport Management
- North West Department of Public Works and Roads
- North West Department of Economic Development, Environment, Conservation and Tourism
- North West Department of Social Development

- North West Department of Mineral Resources
- North West Department of Health
- North West Department of Department of Local Government and Traditional Affairs
- North West Department of Economy and Enterprise Development
- Department of Water and Sanitation (A21H quaternary catchment)
- South African Heritage Resources Agency (SAHRA)
- North West Provincial Heritage Resources Authority
- South African Civil Aviation Authority (SACAA)
- The South African Nuclear Energy Corporation SOC Ltd. (NECSA)
- Lion and Safari Park
- BirdLife South Africa
- Magaliesberg Protected Natural Environment
- Magaliesberg Biosphere Reserve
- Cradle of Humankind World Heritage Site (COHWHS)
- Crocodile River Reserve
- Adjacent landowner: Portion 49 of the Farm Welgegund 491 JQ
- Adjacent landowner: Portion 26 of the Farm Welgegund 491 JQ
- Adjacent landowner: Portion 88 of the Farm Welgegund 491 JQ
- Adjacent landowner: Remaining Extent of the Farm Welgegund 491 JQ
- Adjacent landowner: Portion 2 of the Farm Welgegund 491 JQ
- Adjacent landowner: Portion 20 of the Farm Welgegund 491 JQ
- Adjacent landowner: Portion 21 of the Farm Welgegund 491 JQ
- Adjacent landowner: Portion 22 of the Farm Welgegund 491 JQ
- Adjacent landowner: Portion 25 of the Farm Welgegund 491 JQ
- Adjacent landowner: Portion 38 of the Farm Welgegund 491 JQ
- Adjacent landowner: Portion 40 of the Farm Welgegund 491 JQ
- Adjacent landowner: Portion 41 of the Farm Welgegund 491 JQ
- Adjacent landowner: Portion 42 of the Farm Welgegund 491 JQ
- Adjacent landowner: Portion 43 of the Farm Welgegund 491 JQ
- Adjacent landowner: Portion 44 of the Farm Welgegund 491 JQ
- Adjacent landowner: Portion 45 of the Farm Welgegund 491 JQ
- Adjacent landowner: Portion 46 of the Farm Welgegund 491 JQ
- Adjacent landowner: Portion 47 of the Farm Welgegund 491 JQ
- Adjacent landowner: Portion 48 of the Farm Welgegund 491 JQ
- Adjacent landowner: Portion 61 of the Farm Welgegund 491 JQ

- Adjacent landowner: Portion 65 of the Farm Welgegund 491 JQ
- Adjacent landowner: Portion 79 of the Farm Welgegund 491 JQ
- Adjacent landowner: Portion 27 of the Farm Welgegund 491 JQ
- Adjacent landowner: Portion 122 of the Farm Hennopsrivier 489 JQ
- Adjacent landowner: Portion 120 of the Farm Hennopsrivier 489 JQ
- Adjacent landowner: Portion 121 of the Farm Hennopsrivier 489 JQ
- Adjacent landowner: Portion 227 of the Farm Hennopsrivier 489 JQ
- Adjacent landowner: Remaining Extent of the Farm Kalkheuvel 493 JQ
- Adjacent landowner: Portion 142 of the Farm Kalkheuvel 493 JQ
- Adjacent landowner: Portion 143 of the Farm Kalkheuvel 493 JQ
- Adjacent landowner: Portion 144 of the Farm Kalkheuvel 493 JQ
- Adjacent landowner: Portion 145 of the Farm Kalkheuvel 493 JQ
- Adjacent landowner: Portion 141 of the Farm Kalkheuvel 493 JQ
- Adjacent landowner: Portion 4 of the Farm Rietfontein 485 JQ
- Adjacent landowner: Portion 188 of the Farm Rietfontein 485 JQ
- Adjacent landowner: Portion 8 of the Farm Roodekrans 492 JQ
- Adjacent landowner: Portion 7 of the Farm Schurveberg 488 JQ
- Adjacent landowner: Portion 66 of the Farm Schurveberg 488 JQ
- Adjacent landowner: Portion 67 of the Farm Schurveberg 488 JQ
- Adjacent landowner: Portion 68 of the Farm Schurveberg 488 JQ
- Adjacent landowner: Portion 69 of the Farm Schurveberg 488 JQ
- Adjacent landowner: Portion 17 of the Farm Schurveberg 488 JQ
- Adjacent landowner: Portion 65 of the Farm Schurveberg 488 JQ
- Adjacent landowner: Portion 72 of the Farm Schurveberg 488 JQ
- Adjacent landowner: Portion 58 of the Farm Schurveberg 488 JQ
- Adjacent landowner: Portion 70 of the Farm Schurveberg 488 JQ

The Public Participation Process was approved by the National Department of Forestry, Fisheries and the Environment before being conducted. The Public Participation Plan was approved by the Department on the 21st of February 2022.

For the initial Public Participation Process (notification of potentially Interested and Affected Parties), Background Information Documents were distributed to the above-mentioned list of identified Interested and Affected Parties. The notifications were sent via email, WhatsApp and hand delivered, as applicable depending on the contact information that was available for each party. The Background Information Document was loaded onto the SAHRIS website, as

required by the South African Heritage Resources Agency. Site notices were placed on the boundary of the project property on the 3rd of March 2022. A newspaper advertisement was placed in the Kormorant Newspaper on the 3rd of March 2022.

Proof of the above mentioned initial Public Participation Process is attached under Appendix C of this report. In order to protect personal information, certain proofs and documents, such as the Interested and Affected Party Register will only be made available to the Competent Authority for review, in order to give effect to the requirements of the Protection of Personal Information Act, 2013 (Act No. 14 of 2013) (POPIA).

8.2.1 Summary of the issues raised by the Interested and Affected Parties and how the issues were addressed or incorporated into the Environmental Impact Assessment process

Comments received from Interested and Affected Parties are summarised in the following table:

Table 4: Comments and Responses Report

Name and Surname	Comment received on	Comment submitted via	Comment(s) raised	Response to comment(s) raised
Anza Murovhi	07-03-2022	Email	<ul style="list-style-type: none"> • What is the protection of these overhead lines as Necsa has high lightning stikes. In the instance were this is destosn • What is the risk comparison between overhead and underground cables and how is the risk for overhead cables mitigated • In cases of a trip, what is the turnaround time to restore power 	<p>A Regional Lightning Analysis was conducted for the proposed Lomond Safari powerline route for the period of April 2017 to March 2018. The analysis found that the route is located within a high lightning risk vicinity and that the impact of any lightning strike on the power lines could cause major disruptions on the operations of NECSA. It was, however, also concluded that the risk of lightning exposure on short lines, such as the proposed powerline, is minimal. Changing from underground to overhead lines will not negatively affect NECSA's operations and contingency should be discussed with NECSA should one of the lines be lost due to lightning.</p>

Name and Surname	Comment received on	Comment submitted via	Comment(s) raised	Response to comment(s) raised
				<p>Eskom employs adequate methods to ensure protection against lightning strikes on overhead lines. The following protection strategies are standard to overhead line designs:</p> <ul style="list-style-type: none"> a. OPGW and Shield Wires b. Line Surge Arrestors c. Improved Footing Resistance <p>The turnaround time in the event of a power trip cannot be determined as this is dependent on the cause of a trip, the extent of the damage and the availability of materials for repair work. This would need to be determined on a case by case basis.</p>
Roel Jansen	08-03-2022	Email	Consideration be given for the pylons to be painted/powder coated or similar, in a brown or green colour to enhance the blending into the environment.	The Applicant has confirmed that the pylons are galvanised during the manufacturing process and are received as such from the manufacturers. Painting of the pylons would increase maintenance requirements due to the paint flaking

Name and Surname	Comment received on	Comment submitted via	Comment(s) raised	Response to comment(s) raised
				off (lifting up and peeling away) and requiring re-application of paint with time. Flaking also causes rust. The paint flakes would also enter into the environment, leading to a negative environmental impact as paint often contains oil, lead, iron and/or copper.
Dr. Eurika van Heerden	08-03-2022	Email	Support the project because the existing lines are leaking oil into the environment.	Comment noted.
Laura Brits	18-03-2022	Email	<p>Please consider Motozi Lodge as a supplier of Accommodation for visiting contractors.</p> <p>We are located 3km from NECSA gate 3, and</p> <p>We have the facilities to comfortably host Senior Managers / Middle Management / Short Stay / Long Stay / Self Catering / 3 Meals a day.</p>	The comments have been provided to the Applicant for consideration during the construction phase of the proposed project (should Environmental Authorisation be granted by the Competent Authority).

Name and Surname	Comment received on	Comment submitted via	Comment(s) raised	Response to comment(s) raised
			Please would you be so kind as to connect me with the right people, who will be responsible for arranging accommodation for this contract?	
Jenny Smith	29-03-2022	Email	I do not have a problem with the proposed as long as it is not an eyesore on the horizon which will affect our view.	Feedback from the Applicant is that the powerline should not be visible from this I&APs property.

8.3 Environmental attributes associated with the alternatives considered

– Environmental attributes of the proposed, project properties (the preferred alternative)

8.3.1 Geographical

Geology and Soils

The area that the site is situated in is dominated by shale and some coarser clastic sediments as well as significant andesite from the Pretoria Group (Transvaal Supergroup), all sedimentary rocks. Soils are mostly shallow Mispah. The site is situated within the Ib4 Land type, which is characterized by a steep topography. Here the soil cover on most of the slope areas is very shallow or absent and the hill crests and lower slopes have less than 0.5m of loamy soils (Dimela Eco Consulting, 2021).

Agricultural Potential

According to the National Environmental Screening Tool Report for the proposed powerline route (attached under Appendix E), the relative agricultural land capability of the site is “Low”. Most of the proposed powerline route has been historically disturbed (Dimela Eco Consulting, 2021).

8.3.2 Physical

Rainfall

The site falls within the summer rainfall region of South Africa, with most rain falling between November and March (Dimela Eco Consulting, 2021).

Wind

The closest weather station to the site and for which data is available on www.windfinder.com, is the Lanseria Airport weather station. The weather station is approximately 14.5km south of the project site. According to www.windfinder.com, the prevailing wind direction at the Lanseria Airport weather station is North northwest (wind blowing from the North northwest). The prevailing wind direction has been determined from yearly wind direction data from December 2011 to February 2022 (https://www.windfinder.com/report/lanseria_airport).

Temperature

Average summer temperature can reach up to 30°C, with the lowest winter temperatures dropping to about 5°C. Frost is experienced in winter (Dimela Eco Consulting, 2021).

Topography

This region has a complex topography that varies from lowlands, hills and mountains to closed hills and mountains with the relief varying from moderate to high. The study site can be characterised as

having rolling hills with relatively steep sloping topography. The site ranges in altitude from 1 180 m to 1 475 m above sea level. A Digital Elevation Model (DEM) of the aerial photography of the site revealed depression in landscape associated with the Crocodile River to the West associated with the A21H Quaternary Catchments (Oasis Environmental Specialists, 2022). The desktop elevation of the project site also shown in the figure below.

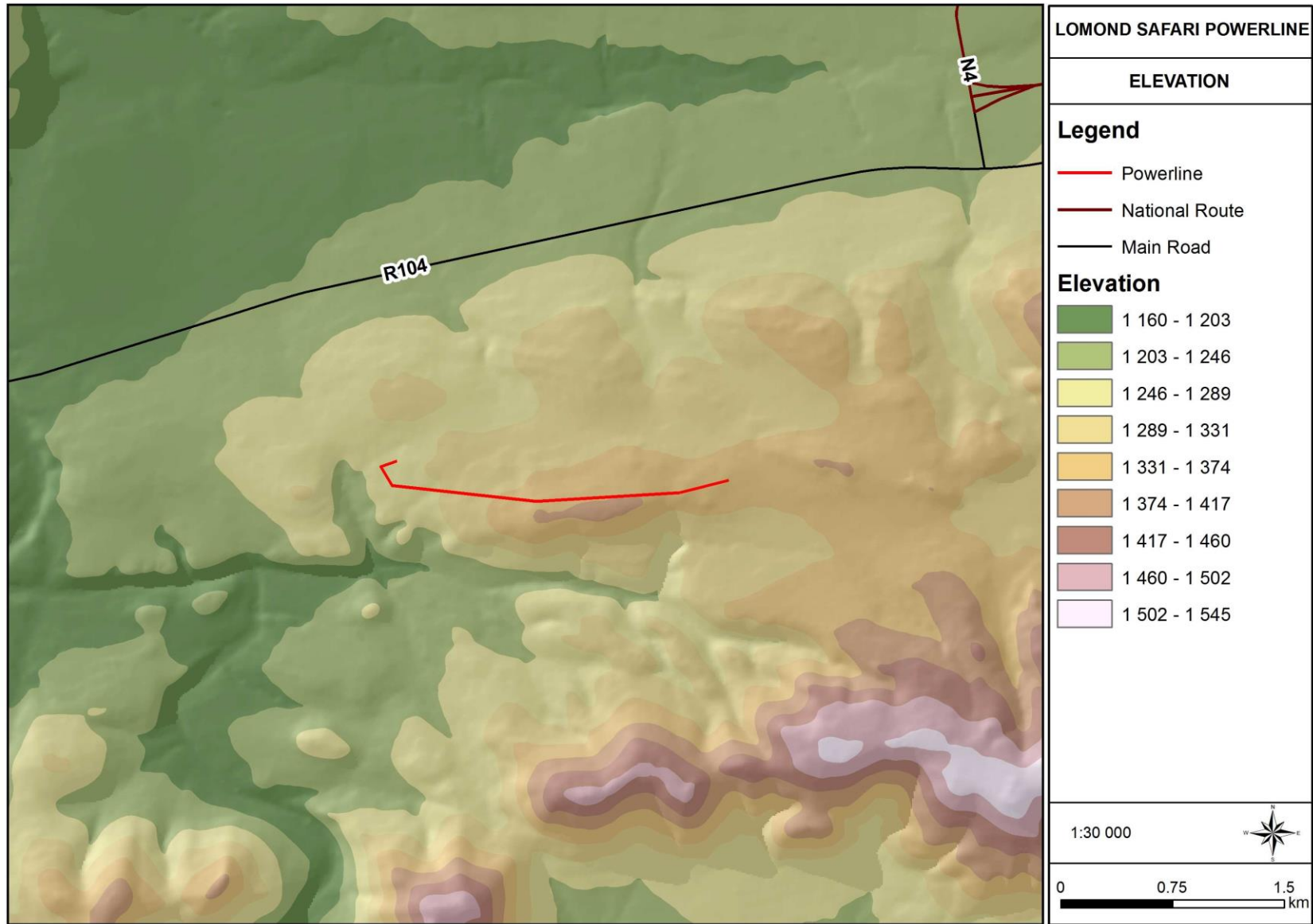


Figure 5: Elevation of the project site

8.3.3 Biological

Flora (Vegetation)

A Terrestrial Biodiversity (Vegetation) Assessment and Plant Compliance Statement was conducted for the project site by Dimela Eco Consulting (2021). The study entailed a comprehensive assessment, which included a site verification, assessment of the proposed powerline route and at least 20m on either side of the route, mapping of vegetation and potential habitat for plant species of conservation concern and an impact assessment. The full report is attached under Appendix D.

The site is classified as 'very high terrestrial biodiversity sensitivity' by the National Web based Environmental Screening Tool. The powerline area is also classified as medium for plant species, indicating that suitable habitat may be present, but no confirmed habitat or records for such species were previously recorded on the site.

The powerline traverses the Gauteng Shale Mountain Bushveld vegetation type which is poorly protected and classified as a Vulnerable vegetation unit. The proposed powerline route does not fall within a listed ecosystem; however it traverses a Critical Biodiversity Area 2 (CBA2), with a small portion of a CBA1 in the most western extent. Refer to Figure 6 below. The site is embedded within the Magaliesberg Biosphere Reserve but is excluded from it.

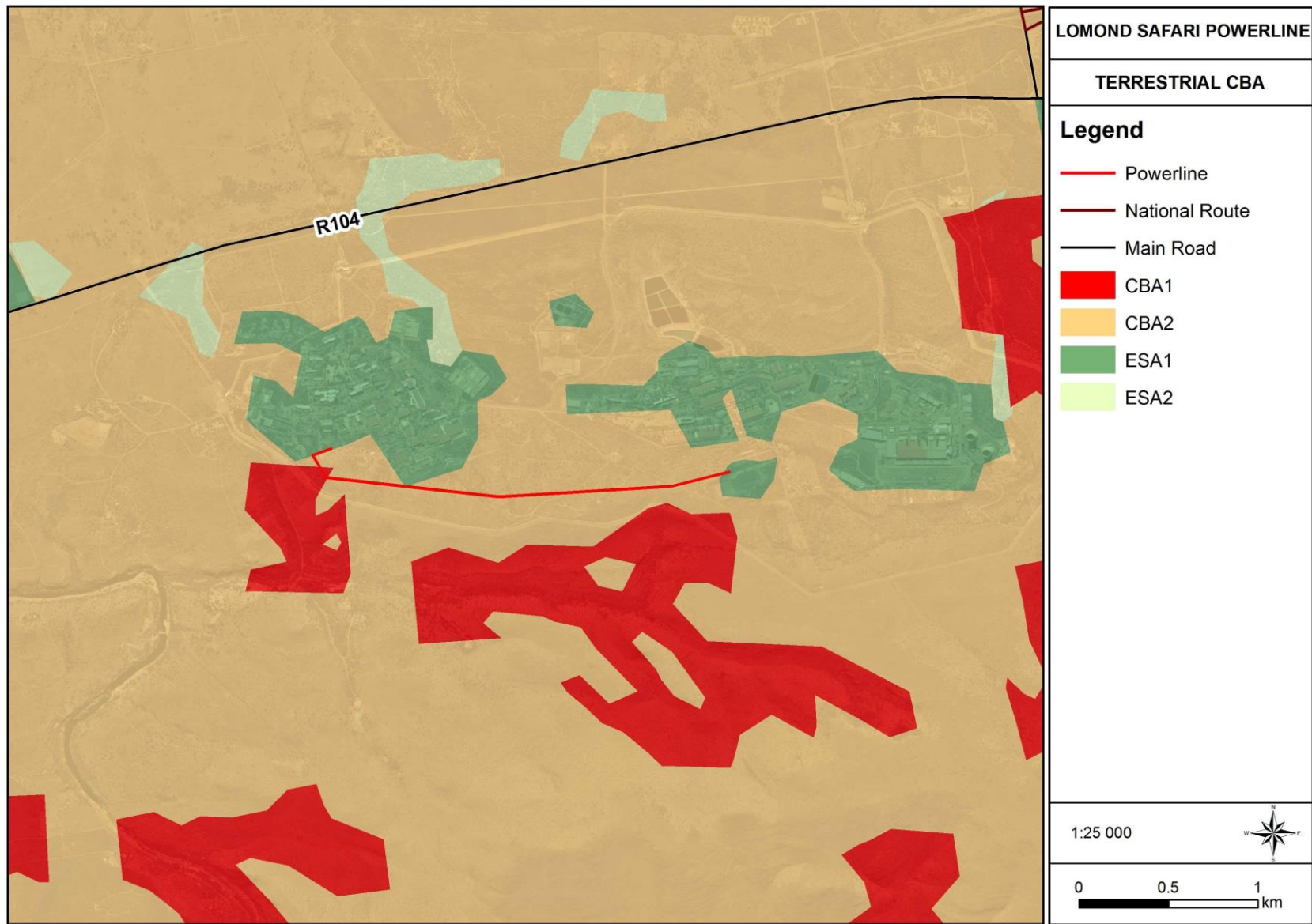


Figure 6: Terrestrial Critical Biodiversity Areas of the project site

Historic aerial imagery show that in 1969 the area that the powerline is proposed in, comprised grassland with some tree cover in drainage lines or historically disturbed areas. The existing reservoirs can already be seen as well as the commencement of construction activities to the north-west of the route. From the reservoir, the water pipeline route towards the newly constructed facilities can be noted. By 1985 additional pipeline routes can be seen from the reservoir, as well as additional disturbances of unknown origins. Lomond substation was already constructed; however, it seems Safari was not yet in existence. The vegetation comprised grassland with limited tree cover noted. By the year 1996, several additional infrastructures were constructed and dirt roads traverse the area. Google Earth Satellite image of the area in 2010 and the recent 2021 image, show a significant increase in the tree layer.

During the site visit, it was found that earthworks have compacted the soils close to the Safari Rural Substation in the west, which is currently sparsely vegetated. Building rubble was noted directly west of the Safari Rural Substation. The route in the eastern extent was also historically disturbed and it is thought that an existing pipeline / cable might follow much of the same route. Several historic dirt tracks are still compacted and only sparsely colonised by vegetation, while heaps of shale were found along most of the western extent of the route. It is likely that shale was mined from the site, or that it was excavated for the construction of the reservoirs, pipelines and other underground infrastructure.

Vegetation groups and Site Ecological Importance (SEI)

Much of the site comprised open bushveld with densely invaded Lantana-thicket along historically disturbed pipeline routes. A dense tree layer is present around the drainage line in the western extent of the route. The vegetation is representative of the Gauteng Shale Mountain Bushveld, albeit dominated by pioneer and encroacher tree species. Several disturbances were noted throughout the proposed powerline route extent and has degraded the bushveld to a secondary state. The vegetation around the substations has been modified by infrastructure and related activities, planted gardens and mowing. However, several trees typical to the Gauteng Shale Mountain Bushveld persist.

The vegetation delineated on the site was grouped as per Figure 7 and Figure 8. The Site Ecological Importance for each vegetation groups is discussed thereafter and illustrated in Figure 9.

Broad vegetation group		Site Ecological Importance (SEI) – mitigation
1. Secondary Gauteng Shale Mountain Bushveld	<i>Senegalia caffra-Loudetia simplex</i> bushveld	Medium (Minimise & Restore)
	<i>Searsia</i> dominated bushveld	Very Low (Minimise)
	<i>Lantana</i> thicket	Low (Minimise & Restore)
2. <i>Searsia</i> dominated drainage line		Medium (Minimise & Restore)
3. Modified vegetation		Very Low (Minimise)

Figure 7: Site Ecological Importance for each vegetation group

Plant species of conservation concern

Most of the threatened species that have been recorded in the area that the site is situated in, occur on quartz and southern slopes, which are absent from the site. However, suitable habitat is present for four species and the possibility of occurrence for these species range from medium to low. Historic disturbances within the area renders it unlikely to support such species. However, as most of the four species flower in late summer (Feb-March), the possibility of occurring can therefore not be ruled out.

Concluding statement

The site falls in an area that is listed by the National Screening Tool as being of 'High' terrestrial biodiversity. Furthermore, the Screening Tool lists a 'Medium' sensitivity for plant species, indicating That there is a likelihood of plant species of conservation concern being present. However, much of the proposed development footprint was found to be in a secondary state. Due to the largely modified and secondary nature of the vegetation, the proposed development of the powerline route will have a limited impact on sensitive vegetation. The entire powerline route is within proximity of existing roads. Therefore, limited to no additional access roads are needed, further limiting the proposed developments impacts on vegetation. Most of the powerline route follows a previously disturbed footprint, likely of a cable or pipeline.

According to the North West Biodiversity Sector Plan [(North West Department of Rural, Environment and Agricultural Development (READ), 2015], the site falls within a CBA2. The land use objective in a CBA2 should be to maintain the land in a natural or near-natural state that maximises the retention of biodiversity pattern and ecological process. The powerline may fragment fauna habitat, however, vegetation can regrow and can rehabilitate well. Eskom must strictly manage edge effects and

prevent, monitor and rehabilitate negative impacts into adjacent vegetation. The implementation of a rehabilitation and monitoring plan to ensure that the vegetation is returned to sustainable bushveld post construction must be implemented.

Protocol summary

Table 5 below summaries results of the assessment as per the main requirements of the Protocols for Specialist Assessment and Minimum Report Content Requirements for Environmental Impacts on Terrestrial (Vegetation) Biodiversity as published on 20 March 2020 (Dimela Eco Consulting, 2021).

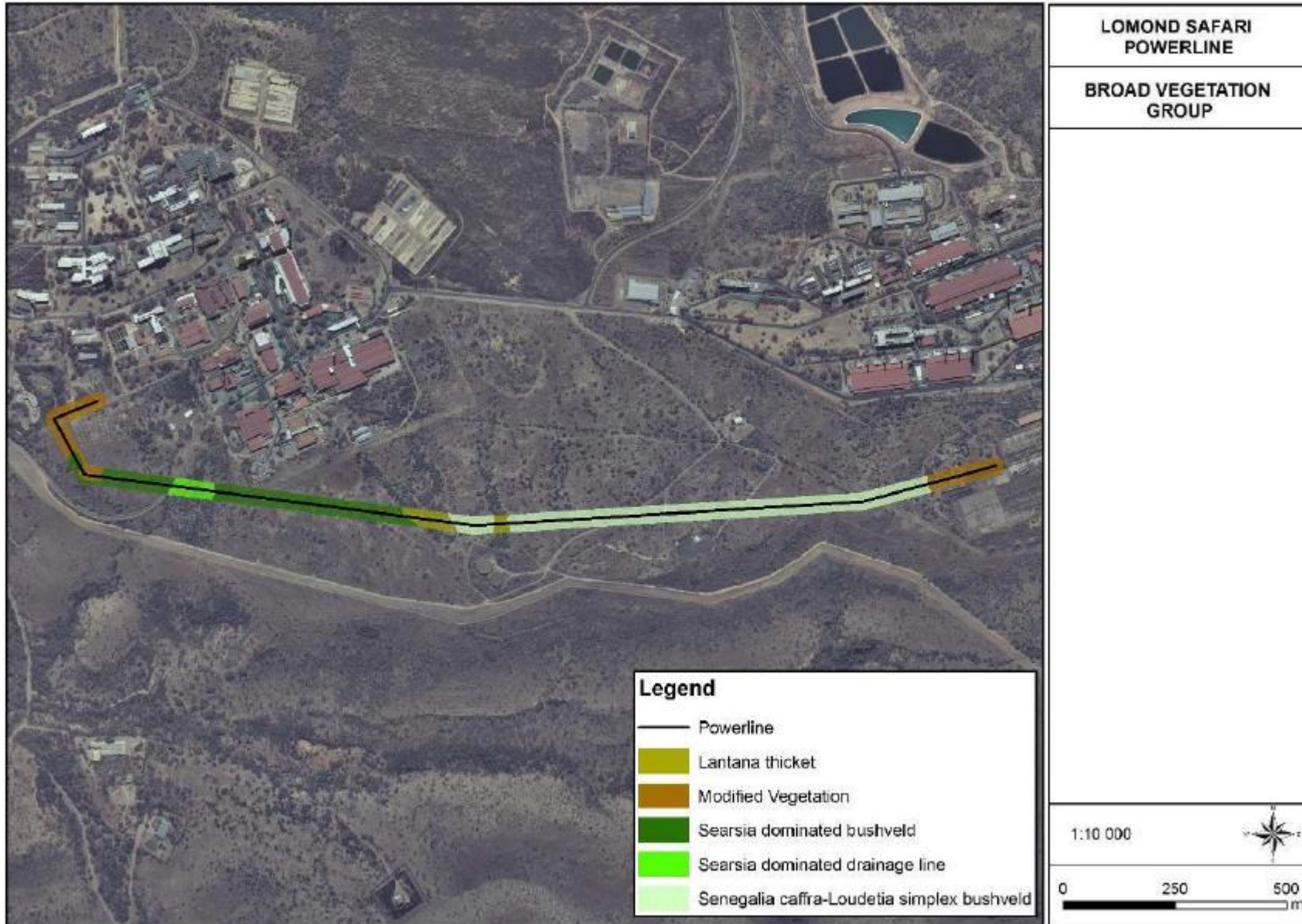


Figure 8: Vegetation groups on the site and within 20m buffer

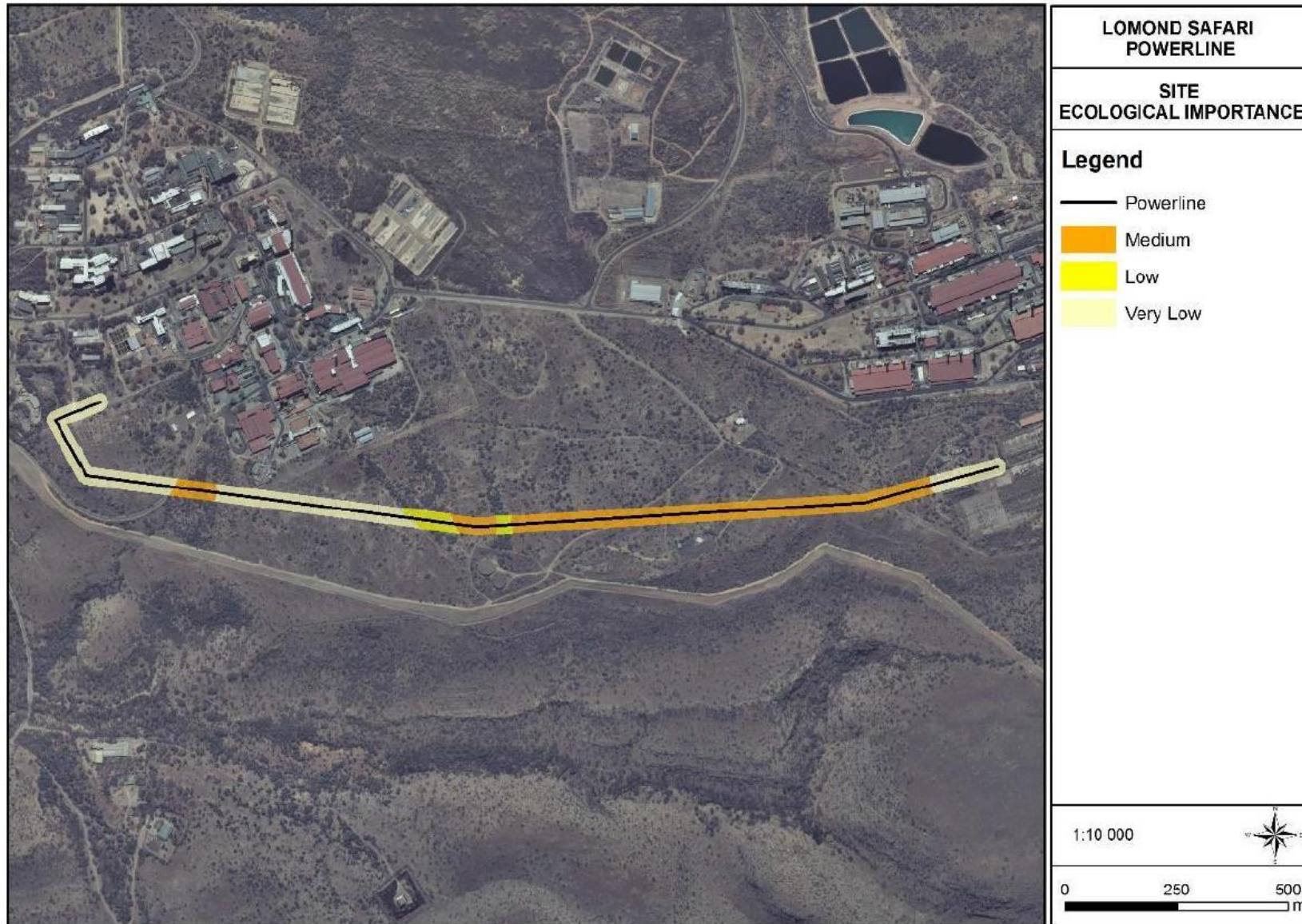


Figure 9: Site Ecological Sensitivity for the proposed powerline

Table 5: Terrestrial Flora Protocol summary (Dimela Eco Consulting, 2021)

Biodiversity (vegetation) aspect	Result
Conservation Plan Category: CBA2	<p>Reason for the CBA2</p> <p>The CBA2 was classified by the North West Biodiversity Sector Plan based on:</p> <ul style="list-style-type: none"> • the potential habitat for plant species of conservation concern • the potential presence of primary vegetation • special habitats or important ecological features <p>Can the CBA2 be maintained?</p> <p>Yes. The vegetation is currently in a secondary state and with adequate rehabilitation, can return to a secondary state. If the powerline servitude remain naturally vegetated and only pruned to Eskom standards, the CBA can be maintained.</p> <p>Impact on species composition and structure of vegetation</p> <p>Clearing of the servitude will destroy the species composition and vegetation structure within the development footprint. Edge effects and failed rehabilitation could result in a dominance of bush encroacher species. The resulting vegetation will have a much lower species diversity and an altered structure. However, mitigation measures can be implemented to reduce this impact.</p> <p>Impact on ecosystem threat status</p> <p>The powerline route is not situated in a listed ecosystem. However, the Gauteng Shale Mountain Bushveld is poorly protected and classified as a Vulnerable vegetation unit. The vegetation within the PAOI was found to be in a secondary state and can be rehabilitated to such a state post construction.</p>
Protected Areas	The site is embedded within the Magaliesberg Biosphere Reserve but is excluded from it. The Cradle of Humankind is to the south-west of the powerline route and the Crocodile River Reserve Protected Environment is situated to the south-east of the proposed powerline. No impacts to the protected areas are expected.
Strategic Water Source Areas (SWSA)	<p>Impact(s) on the terrestrial habitat of a SWSA</p> <p>The site is not situated within a SWSA, however, clearing of vegetation can have an impact on water infiltration and flow dynamics to the downstream watercourses.</p>
NFEPAs	See aquatic / wetland assessment
Indigenous forest	Not applicable

Biodiversity (vegetation) aspect	Result
Sensitive Areas	Other than the medium to low potential occurrence of plant species of conservation concern, the vegetation is not regarded as sensitive to the proposed development of the powerline route.
No go areas	Any vegetation that are not within the 20m buffer area on either side of the powerline (PAOI) as assessed in this report.
Plant species of conservation concern	<ul style="list-style-type: none"> • No plant species of conservation concern were recorded within walked transects and sample points at the time of this assessment. • Suitable habitat is present for four species, none of which was recorded during the site visit undertaken in December 2021. These species were not in flower at the time of the assessment or could have been obscured by dense vegetation (due to the preceding summer rains). • The possibility of occurrence for these species range from medium to low. Historic disturbances within the PAOI renders it unlikely to support such species. However, as most of the four species flower in late summer (Feb-March), it is recommended that the final footprint, especially pylon footprints, be scanned for such species during the flowering period.
Main impacts	<p>The main impacts expected are as follows:</p> <ul style="list-style-type: none"> • Destruction of natural vegetation. • Exposure to erosion and subsequent sedimentation or pollution of proximate non-perennial drainage line. • Potential increase in invasive vegetation. • Bush encroachment. • Compaction and destruction of soils. • Edge effects to surrounding vegetation.
Cumulative impacts	If mitigation measures are adequately implemented, no cumulative impacts are expected.
Residual impacts	<ul style="list-style-type: none"> • Due to the high frequency of alien invasive plant species, the likelihood of the colonization of areas disturbed by the development being infested remain high. • The risk of introduction of new alien invasive plant species. • Pruning of trees and impact on vegetation as part of Eskom maintenance along the powerlines. • Species removed and relocated as part of rehabilitation could die due to transplantation shock or damage during replanting. • If mitigation measures are adequately undertaken, the residual risk is moderate to low as the impacts are unlikely to be exceed the construction impacts and can be remedied if corrective action is taken immediately.

Fauna

A Terrestrial Fauna Assessment was conducted for the project site by BK Zoology (2022). The full report is attached under Appendix D.

The site is ranked as very high for terrestrial biodiversity triggered by the Critical Biodiversity Areas (CBAs), Ecological Support Areas (ESAs) (Figure 6) and Focus Areas for National Protected Area Expansion Strategies (NPAES).

The site is rated as medium sensitivity for animal species, based on potential appropriate habitat for trigger Species of Conservation Concern and a habitat assessment is included for the potential Species of Conservation Concern. No additional detailed species-specific studies are deemed necessary in terms of this study.

Site Characterisation

Most of the area is fairly homogeneous hillside, rocky bushveld of varying degrees of density and also varying degrees of historical disturbance (generally focussed around existing infrastructure along the powerline route). The small stream traversed by the powerline provided some limited exposed surface water with emergent vegetation and marshy, vegetated edges.

Although disturbance was evident along most of the length of the powerline, the bushveld habitat has recovered and the bushveld and rocky bushveld species with distribution over the area cannot be excluded from occurring along the powerline route, although less disturbed habitat is present in the areas surrounding the Pelindaba Complex. It must be stressed that most of the larger species would be excluded from site (unless actively stocked) due to the fences around the Complex. Wetland and aquatic species will be more limited in the proposed powerline route, but small home-range species cannot be excluded where micro-habitat requirements are met within the limited wetland habitat in the area.

Animal Species

The following is relevant in terms of vertebrate fauna species:

- Of the listed vertebrate Species of Conservation Concern, the site has appropriate habitat for Sensitive Species 12 and the species is likely to utilise the general rocky bushveld habitat. The conspicuous species was not noted within the surveyed meander. The following can be stated regarding the species:
 - The status of the species: IUCN status is Vulnerable (2017) (criterion A – population reduction due to habitat loss).

- No species were confirmed during the survey meander of the powerline route and no information can be provided on the local distribution, location, viability and population size of the Species of Conservation Concern on site. The species is fairly conspicuous and should be easily noted if contractors and staff are vigilant and therefore the species can easily be spared any direct impact.
 - It is more likely that the reproductive populations are present in the surrounding areas. If the species does occur in the immediate area it means it can tolerate the disturbed nature of the current habitat and would be likely to do so into the future, and in the long term should persist in the area if present, if bush management around the powerline route is completed with the same vigilance.
 - The main threats to the species include habitat transformation and collection of species from the wild (trade and bushmeat). Bush clearing by fire is also considered a major threat to the species. Within the Pelindaba Complex the habitat has already been disturbed and the public-related threats should not be significant in the immediate area due to the strict access control to the site.
- In terms of other Threatened or Protected species recorded in the greater area or with distribution over the area:
 - Rocky bushveld and bushveld species cannot be excluded from site, but less disturbed and more appropriate habitat for such species occurs outside the fenced off Pelindaba Complex.
 - Wetland and aquatic species would be very limited on site with any large home-range species unlikely to utilise the very limited aquatic habitat in the powerline route.
 - The site is not within a significant area of faunal endemism.

In terms of invertebrates:

- *Clonia uvarovi* (bush cricket) (Orthoptera: Tettigoniidae) (IUCN Vulnerable) is a Species of Conservation Concern for the area.
 - There is no reliable information on the species distribution range or habitat preferences and the species cannot be excluded from site. The site has been historically disturbed by various small developments and populations are more likely to occur in the less disturbed neighbouring areas. If the species has survived the historical impacts on site then it should persist in the area of the proposed powerline route into the future.
- Dung beetles are protected in the North West. They provide essential ecosystem services and impacts to these species would negatively impact the landscape into the long term. The species are relatively closely associated with on-site animal dung which should make the group of beetles fairly easy to manage in terms of impact mitigation.

- A Threatened or Protected spider and Threatened or Protected scorpions were recorded in the QDGS. Species are often associated with rockier habitats and cannot be excluded from the area, although the species should persist in the area after the powerlines have been erected.

Terrestrial Biodiversity

The only significant desktop features were the CBAs incorporating critical habitat patches, ecological corridors and nodes to ecological corridors. In terms of the powerline route specifically, the area does not directly fall into these CBA services as far as these may be relevant to the potential terrestrial fauna; the area may, at best, act as a buffer area to neighbouring critical habitats and ecological corridors and may have limited value as a node to the ecological corridor south of site. The buffer capacity of the area must be maintained to prevent edge impacts on nearby habitats and corridors and the site is therefore considered to have moderate sensitivity in terms of terrestrial fauna biodiversity features.

The establishment of the powerline will add to the historical disturbances already present along the powerline route and will alter the immediate habitat by trimming and maintaining the bushveld areas around the powerline but the area will continue to serve as a buffer and minor node if mitigation is applied.

Site Ecological Importance and Impact Statements

The overall site sensitivity is presented in Figure 10. The potentially moderately significant impacts assessed in this report include:

- Loss / alteration of habitat through clearance for pylon construction and vegetation management
- along a 10m buffer area during operations.
- Hampering or killing of fauna, particularly Sensitive Species 12 and provincially protected dung beetles.

Conclusion and recommendations

In terms of the findings if the following is implemented then there is no reason for not authorising the activity in terms of terrestrial fauna:

- Completing species-specific trapping is not likely to provide additional information that would alter these findings, and the cautionary approach is likely to be relevant regardless. Considering the type of activity proposed and the current existing anthropogenic impact on site, no additional species specific trapping is recommended.

- The managing body of the Cradle of Humankind World Heritage Site Protected Area must be consulted and any recommendation regarding activities within the PA's buffer zones, as stipulated in the PA's EMP, adhered to.
- Recommendations of the flora and aquatic biodiversity specialist must be implemented on site.
- The mitigation measures stipulated in the Fauna report must be included within the environmental management plan report and implemented on site.
- The monitoring plan in Section 6 of Fauna report must be included within the environmental management plan report and implemented on site (BK Zoology, 2022).

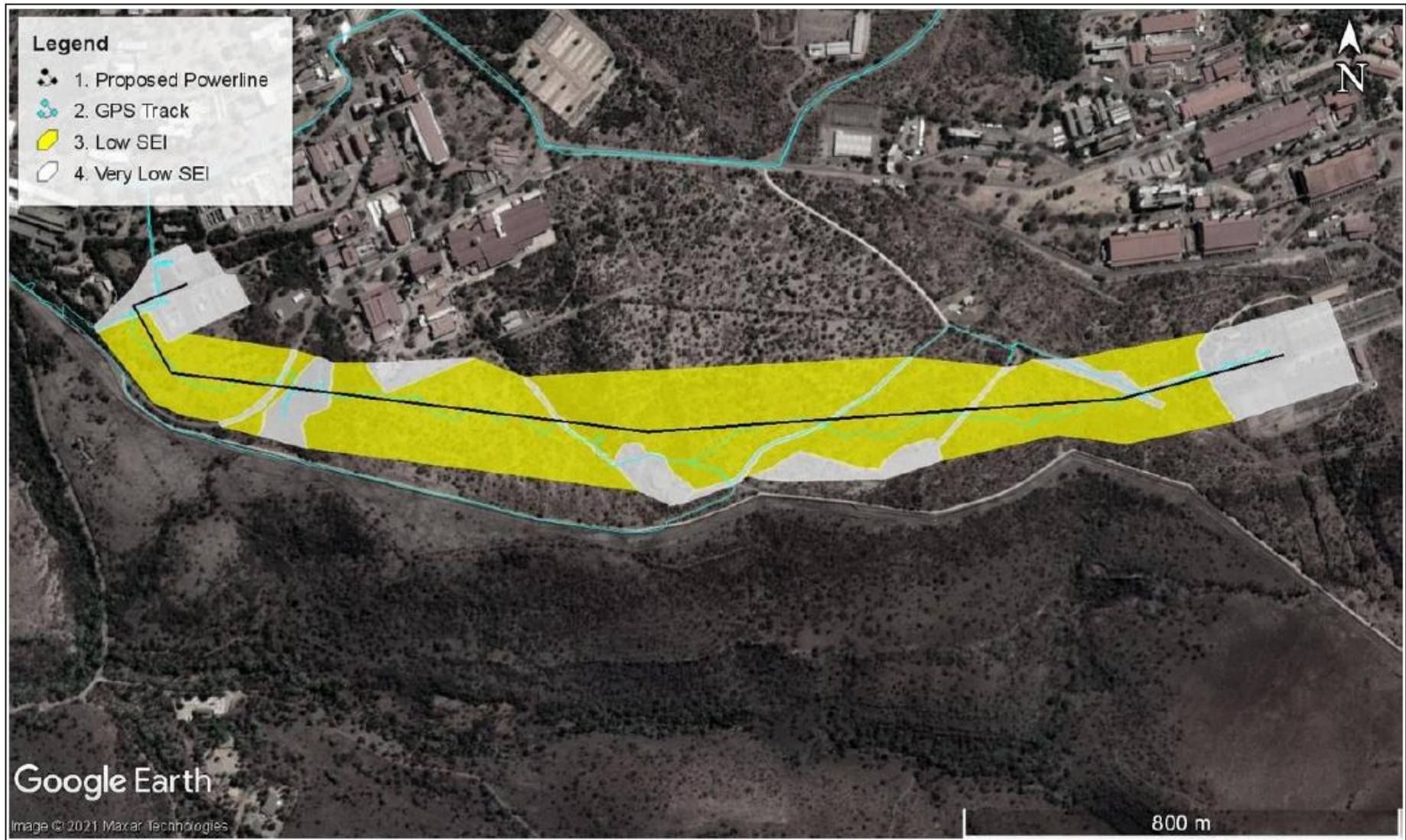


Figure 10: Terrestrial Fauna overall site sensitivity

Avifauna

An Avifaunal Impact Assessment was conducted for the project site by Feathers Environmental Services (2021). The full report is attached under Appendix D.

The proposed study area is considered to have a MEDIUM Animal Species sensitivity, based on the possible presence of African Grass Owl *Tyto capensis*. A site sensitivity verification was conducted through the use of a desktop analysis and a field survey, which concurs with the MEDIUM sensitivity rating assigned to the study area, however this is based on the confirmed presence of Cape Vulture *Gyps coprotheres*, a species that is particularly vulnerable to power line interactions and not the presence of African Grass Owl. The study area does not contain habitat that will support African Grass Owl.

A total of 381 bird species have been recorded within the relevant pentads during the SABAP2 atlassing period to date. The presence of these species in the broader area provides an indication of the diversity of species that could potentially occur within the areas earmarked for the proposed Lomond-safari 88kV power line project. Of the 381 species, 26 of these are considered to be of regional conservation concern i.e., regional Red List species (*Taylor et al.*, 2015) and five are endemic to South Africa, Lesotho and Swaziland.

It is important to note that with the exception of Verreaux's Eagle *Aquila verreauxii* (n=51), Lanner Falcon *Falco biarmicus* (n=26), Greater Flamingo *Phoenicopterus roseus* (n=53), Yellow-billed Stork *Mycteria ibis* (n=33), Caspian Tern *Hydroprogne caspia* (n=65) and Cape Vulture (n=226), the remaining 20 Red List species have been recorded in very low numbers, with 1-15 individual birds being recorded over the fourteen-year survey period. It is also important to note that Cape Vulture and Abdim's Stork are the only Red List species that have been observed in the SABAP2 pentad within which the proposed alignment is located (2545_2755). This is a more accurate reflection of the diversity of Red List species that are likely to be found within the area surrounding the proposed 88kV power line given the habitat present in the study area. This premise is confirmed with Cape Vulture being the only Red List species observed during the field survey.

The site visit produced a combined list of 35 species, covering both the study area and to a limited extent, the surrounding area. Cape Vulture is the only Red List species observed with the proposed study area. The majority of observations were of passerine species that are common to this area. Each of these species has the potential to be displaced by the construction of proposed Lomond-Safari 88kV power line project as a result of habitat transformation and disturbance. However, these species have persisted despite existing disturbance (i.e., industrial activity) within the study area.

This resilience, coupled with the fact that similar habitat is available throughout the broader area, means that the displacement impact will not be of regional or national significance.

The proposed Lomond-Safari 88kV power line alignment and surrounding study area are located within a single primary vegetation division namely the Savanna Biome, specifically the Gauteng Shale Mountain Bushveld vegetation unit . The savanna/woodland biome contains a large variety of bird species (it is the most species-rich community in southern Africa) but very few bird species are restricted to this biome. It is also relatively well conserved compared to the grassland biome. Savanna is particularly rich in raptors and forms the stronghold for priority species such as Martial Eagle *Polemaetus bellicosus*, Wahlberg's Eagle *Hieraaetus wahlbergi*, Black-chested Snake-Eagle *Circaetus pectoralis*, Brown Snake-Eagle *Circaetus cinereus*, Lappet-faced Vulture *Torgos tracheliotos*, White-backed Vulture *Gyps africanus* and a multitude of medium-sized raptors, for example Jackal Buzzard *Buteo rufofuscus*, Steppe Buzzard *Buteo vulpinus*, African Harrier Hawk (Gymnogene) *Polyboroides typus* and African Hawk Eagle *Aquila spilogaster*. Apart from raptors, woodland in its undisturbed state is suitable for a wide range of other, non-raptorial sensitive species i.e., Secretarybird *Sagittarius serpentarius*, Abdim's Stork *Ciconia abdimii*, Marabou Stork *Leptoptilos crumenifer*.

It is important to note that the broader study area has experienced significant transformation in the form of urbanisation and industrial activity which dominate the landscape and fairly significant levels of disturbance persist within the study area in the form of urban and industrial related activities and vehicle traffic in the immediate surrounds. SABAP2 reporting rates for the majority of Red List avifauna potentially occurring in savanna habitat in the study area are low and the absence of these species within the study area is an indication of the significant levels of human activity and disturbance. Therefore, the potential displacement impacts as a result of habitat loss and disturbance associated with the construction and operation of the proposed 88kV power line are likely to be moderate to low for the aforementioned species.

In conclusion, the habitat within which the proposed study area is located is low to moderately sensitive from a potential bird impact perspective. The construction of the proposed Lomond-Safari 88kV power line will result in impacts of MODERATE significance to birds occurring in the vicinity of the new infrastructure, which can be reduced through the application of mitigation measures. It is anticipated that the proposed Lomond-Safari 88kV power line can be constructed within the study area with acceptable levels of impact on the resident avifauna, subject to the following recommendations:

- Construction activities (i.e. all staff, vehicle and machinery) should be restricted to the immediate footprint of the infrastructure. The recommendations of the botanical study must be strictly implemented.
- Access to the remainder of the site should be strictly controlled to prevent unnecessary disturbance of avifaunal species.
- Maximum use should be made of existing roads and the construction of new roads must be kept to a minimum. New roads are to be located in areas of existing high disturbance, and not encroach upon sensitive habitats.
- The 88kV power lines must be constructed using a bird friendly structure (i.e., DT 7641/7649).
- Additional mitigation in the form of insulating sleeves on jumpers present on strain poles, terminal poles and box transformers must also be implemented.
- Dead animals/carcasses found at/close to the Lomond-Safari 88kV power line during routine power line patrols and/or maintenance by Eskom must be removed from the property and donated to VulPro to ensure that the Cape Vultures utilising the study area are fed in a safe environment.
- The historical vulture restaurant/feeding site on the NECSA property must remain closed.
- If collision or electrocution impacts are recorded once the 88kV power lines are operational, it is recommended that an avifaunal specialist investigate the mortalities and provide recommendations for site-specific mitigation to be applied reactively.
- In addition to this, the normal suite of environmental good practices should be applied, such as ensuring strict control of staff, vehicles and machinery on site and limiting the creation of new roads as far as possible (Feathers Environmental Services, 2021).

Groundwater

The aquifers below the site are classified as minor aquifers (DWA, 2012) and specifically b3 fractured aquifers, with borehole yields of between 0.5 and 2.0 litres per second (Geohydrological Map Sheet 2526: Johannesburg 1:500 000).

Wetlands and watercourses

A Watercourses Assessment was conducted for the project site by Oasis Environmental Specialists (2022). The full report is attached under Appendix D.

The site falls within the quaternary drainage region the A21H Quaternary Catchments, and forms part of the Limpopo Water Management Area (WMA) (DWS 2016). The Crocodile River passes the study site in the West (approximately 1 km from the nearest edges) (refer to Figure 11). The land

use features within the study site are mainly agriculture in the form of subsistence farming, industry, bushveld crops and grazing.

According to the ecological importance classification for the quaternary catchments A21H; the Crocodile system is classified as a seriously modified system (Category E). The default ecological management class for the relevant quaternary catchments is considered to be a moderate sensitive system in terms of ecological importance with a moderate ecological sensitivity. The attainable ecological management class for the system is a Category B (largely natural).

A site assessment was conducted on the 8th of December 2021. During the site visit it was evident that there was no water input from the channels to the Crocodile River, even after heavy recent rains in the area. It must be noted that these channels were dry and macroinvertebrate samples could not be obtained, therefore all watercourses were delineated within the regulated areas of the proposed Lomond-Safari powerline.

No NFEPA wetlands were identified within 500m of the proposed powerline during the desktop assessment. The Bench wetlands shown on the desktop data were confirmed to be drying ponds on the NECSA property. The site ranges in altitude from 1 180 m to 1 475 m above sea level. A Digital Elevation Model (DEM) of the aerial photography of the site revealed depression in landscape associated with the Crocodile River to the West associated with the A21H Quaternary Catchments.

No hydrophytic vegetation or wetland/riparian soils were observed within wetland and channel areas assessed. The channel areas were classified as 'non-perennial A' section channels, where these channels do not have baseflow and convey surface runoff immediately after a storm event and lacks a riparian zone.

The artificially created wetland area does not illustrate any soil or vegetation characteristics associated with natural occurring wetlands, therefore this system is classified as an **artificial seasonal wetland system**. Through assessing historical imagery, this area had a historical dam and was linked with the drainage channel on the western portion.

At the time of this assessment, the drainage channels and artificial wetland area comprised of mainly *Searsia* spp. and a dense tree layer of *Celtis africana*, *Vachellia karroo*, *V. robusta*, *Ziziphus mucronata* and *Searsia pyroides*. Alien invasive *Xanthium spinosum*, *Verbena brasiliensis* and *Persicaria* species were dominant within the channel areas. The main soils identified within these areas were dominated by a terrestrial Hutton soil form with a rocky composition.

The area is currently impacted by industrial development, alien invasive plant species, and sedimentation. The impacts of the proposed powerline on the artificial wetland and non-perennial channels will be **very low**, due to all the anthropogenic impacts and alterations within the area. The artificial wetland system is a manmade system and should not occur naturally in that specific area. The findings from the avifaunal assessment stated that this system is unlikely to support any of the Red Listed species, therefore holding no ecological significance.

It is therefore recommended that a small trench/pipeline be created with the purpose of draining any water from the artificial wetland. This will aid in the flow of the 'A' section channels and will avoid any further accumulation of rain water that could be affected by construction activities of the power line.

Mitigation measures, aimed at minimising the afore-mentioned impacts, include (but are not limited to):

- Design and implementation of a suitable stormwater system.
- Construction activities must take place during winter months (low flow season).
- Limiting instream sedimentation.
- Minimising pollutants entering the watercourse.
- Correct managing of stockpiles and construction materials.
- Active stormwater management must be implemented to stop silt and sediments from entering the wetland systems.
- Disturbed soils and stockpiled soils must be protected from erosional features.
- The prevention of alien invasive vegetation encroachment.
- Any disturbed areas should be rehabilitated in line with the rehabilitation guidelines, this includes the clearing of alien vegetation, following the guidelines of a suitable alien invasive plant management plan.
- The site must be regularly monitored for re-growth of alien invasive species, and any new seedlings etc. eradicated using methods appropriate for the particular species, whether mechanical, chemical or biological.
- Protect as much indigenous vegetation as possible.
- Mitigation measures must be implemented with a suitable EMPr (Oasis Environmental Specialists, 2022).

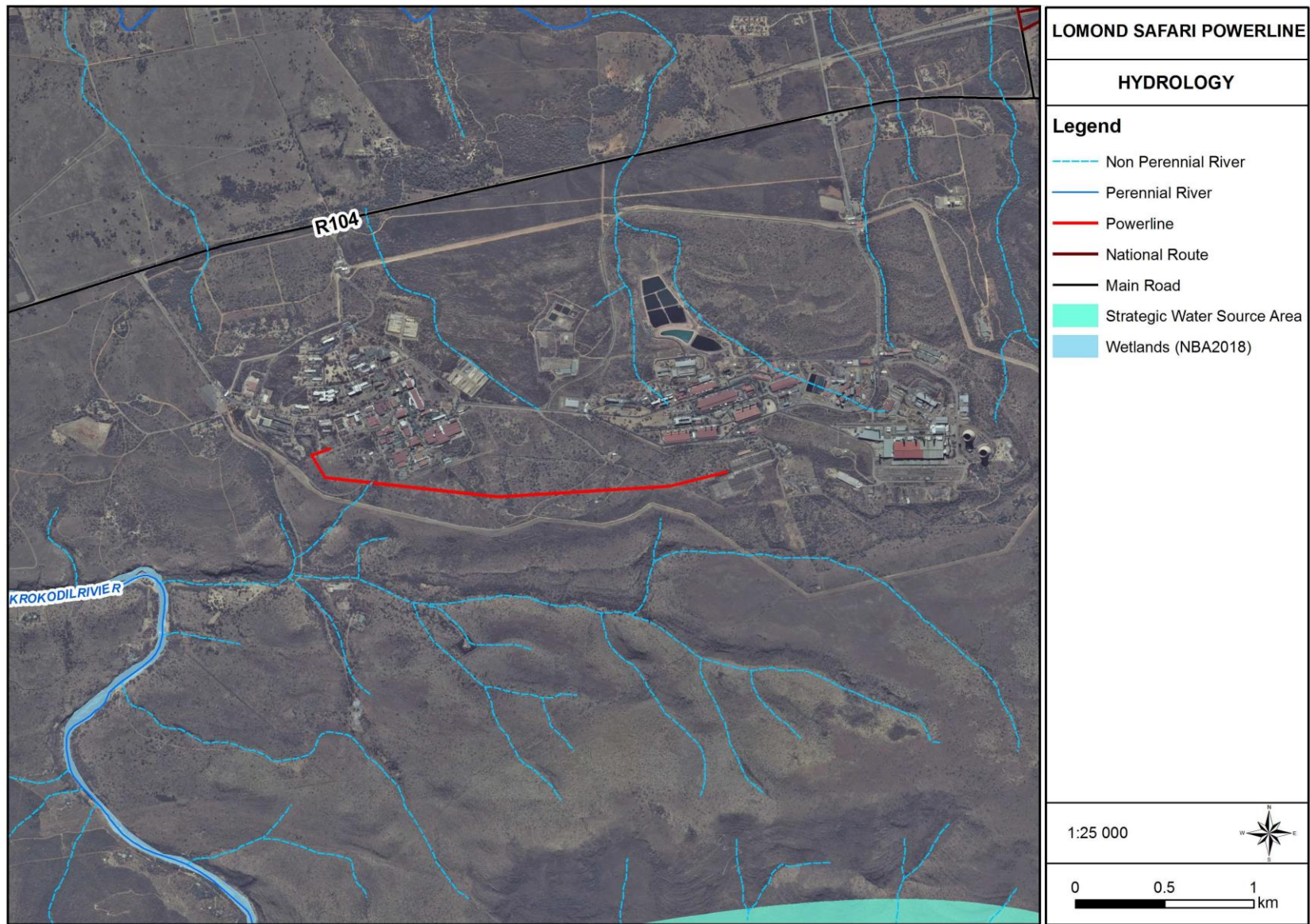


Figure 11: Desktop hydrology map of the project site

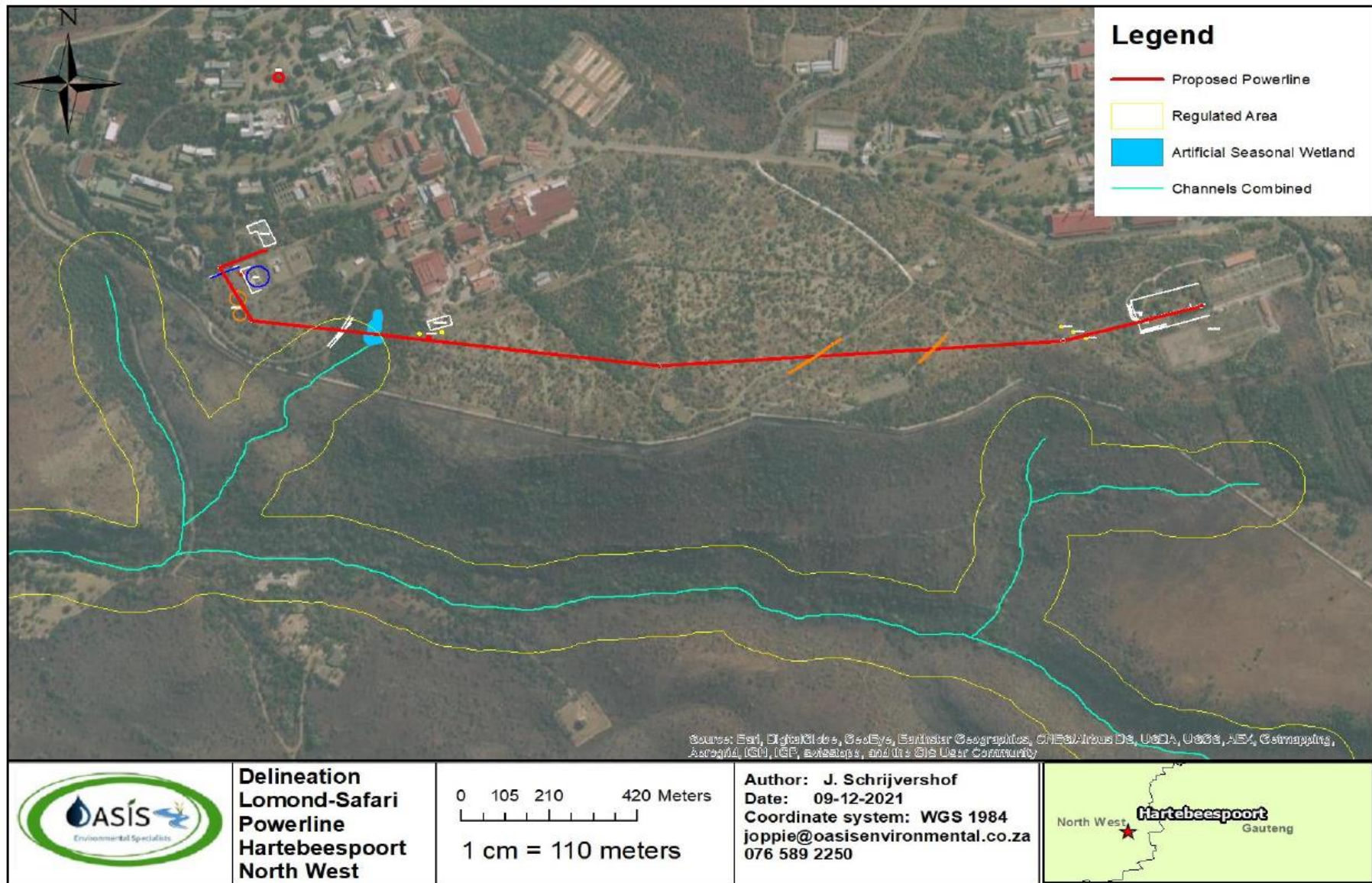


Figure 12: Delineated wetland and watercourses applicable to the project site

8.3.4 Social

The project site is situated within the Madibeng Local Municipality. According to the 2011 Census, the municipality had a population of 477 381 people, distributed between 160 724 households.

The age structure of the municipal area was as follows:

- <15 years of age: 25.7%;
- 15-64 years of age: 69.2%; and
- 65+ years of age: 5.1%.

The official unemployment rate was 30,4% and the youth unemployment rate (15-34 years of age) was 38,2%. The population growth rate was 3.17% between 2001 and 2011. The dependency ratio was 44.4 persons per 100 persons and there were 113,7 men per 100 women in 2011 (Statistics South Africa, 2011).

8.3.5 Economic

The Madibeng Local Municipality is a category B municipality, functioning through the Executive Mayoral System. Madibeng consists of several urban and rural areas, villages, farm portions, as well as a proper established and serviced industrial area. Madibeng is characterized by diverse economy sectors, i.e. agriculture, mining, manufacturing and tourism. Mining is predominant with Madibeng being the world's third largest chrome producer which also includes the richest Platinum Group Metals Reserve (situated on the Merensky Reef). Granite is another mining component. The turf soil is ideal for vegetation and Brits is known for the big variety and quality of fruit and vegetables supplied to, amongst others, the Tshwane Market. Due to the industrial area, consisting of a wide variety of industries, manufacturing is viewed as one of the dominant sectors (<https://www.madibeng.gov.za/about-us/>).

8.3.6 Archaeological and Cultural Heritage

A Phase 1 Archaeological/Heritage Impact Assessment was conducted for the project site by Integrated Specialist Services (2021). The full report is attached under Appendix D.

Several LIA stone walled settlements were previously recorded in the general project area. The area north west of Tshwane is known for its archaeological stone walled sites especially to the mountains in the south of the study area. Although the project area is heavily degraded from previous and current land use such as NECSA infrastructure, there is a possibility of encountering archaeological remains buried beneath the ground. It is the considered opinion of the author that the chances of recovering significant archaeological materials is low to medium on the project site.

The study concluded that the impacts will be negligible since the entire development site has been altered by NECSA infrastructure developments. Table 6 presents results of the archaeological and heritage survey conducted within the proposed development project site (Integrated Specialist Services, 2021).

Table 6: Results of the Phase 1 Archaeological/Heritage Impact Assessment (Integrated Specialist Services, 2021)

Heritage resource	Status/Findings
Buildings, structures, places and equipment of cultural significance	None exist within the development footprint
Areas to which oral traditions are attached or which are associated with intangible heritage	None exist
Historical settlements and townscapes	None survives along the proposed powerline route
Landscapes and natural features of cultural significance	None
Archaeological and palaeontological sites	LIA sites occur in the general project area but not within the study area
Graves and burial grounds	None exist or are identifiable on the basis of a surface survey
Movable objects	None
Overall comment	The surveyed area has no identifiable heritage resources on the surface but sub-surface chance finds are still possible

Cumulative Impacts

Heritage resources such as burial grounds and graves and archaeological as well as historical sites are common occurrences within the greater study area. These sites are often not visible and as a result, can be easily affected or lost. Furthermore, many heritage resources in the greater study area are informal, unmarked and may not be visible, particularly during the wet season when grass cover is dense. As such, construction workers may not see these resources, which results in increased risk of resource damage and/or loss. Vibrations and earth moving activities associated with drilling and excavation have the potential to crack/damage rock art covered surfaces, which are known to occur in the greater study area. In addition, vibration from traffic has the potential to impact buildings and features of architectural and cultural significance. Earth moving and extraction of gravel have the potential to interact with archaeology, architectural and cultural heritage.

Cumulative impacts that need attention are related to the impacts of access roads and impacts to buried heritage resources. Allowing the impact of the proposed development to go beyond the

surveyed area would result in a significant negative cumulative impact on sites outside the surveyed area. A significant cumulative impact that needs attention is related to stamping by especially construction vehicles during clearance and excavation within the development sites. Movement of heavy construction vehicles must be monitored to ensure they do not drive beyond the approved sites. No significant cumulative impacts, over and above those already considered in the impact assessment, are foreseen at this stage of the assessment process. Cumulative impacts can be significant, if construction vehicles are not monitored to avoid driving through undetected heritage resources.

Mitigation

Mitigation is not required for the proposed powerline development. Work may be allowed to commence without any further studies and monitoring.

Statement of significance

Aesthetic Value: The proposed development site will be situated within an environment and associated cultural landscape, which, although developed by existing settlements and infrastructure developments, remains representative of the original historical environment and cultural landscape of this part of North West Province. The local communities consider the project area a cultural landscape linked to their ancestors and history. However, the proposed development will not alter this aesthetic value in any radical way since it will add to the constantly changing and developing settlements.

Conclusion

Based on the significance assessment criterion employed in the Phase 1 Archaeological/Heritage Impact Assessment, the proposed powerline route was rated low from an archaeological perspective. In terms of the archaeology and heritage in respect of the proposed power distribution development, there are no obvious 'Fatal Flaws' or 'No-Go' areas. However, the potential for chance finds still remains and the developer and contractors are advised to be diligent and observant during construction of the proposed development site. A Chance Find Procedure was compiled and is included in the Phase 1 Archaeological/Heritage Impact Assessment Report. If the Phase 1 Archaeological/Heritage Impact Assessment is adopted by SAHRA, then there are no archaeological reasons why the proposed powerline construction cannot proceed.

Recommendations

1. From a heritage perspective supported by the findings of this study, the proposed Safari-Lomond

88 KV powerline is feasible. However, the proposed powerline development should be approved to proceed as planned under observation that the development dimensions do not extend beyond the surveyed route.

2. The foot print impact of the proposed Lomond Safari 88KV powerline construction development and associated infrastructure should be kept to minimal to limit the possibility of encountering chance finds.

3. Should chance archaeological materials or human remains be exposed during subsurface construction work on any section of the proposed powerline servitude, work should cease on the affected area and the discovery must be reported to the heritage authorities immediately so that an investigation and evaluation of the finds can be made. The overriding objective, where remedial action is warranted, is to minimize disruption in construction scheduling while recovering archaeological and any affected cultural heritage data as stipulated by the NHRA regulations.

4. Subject to the recommendations herein made and the implementation of the mitigation measures and adoption of the project EMP, there are no significant cultural heritage resources barriers to the proposed development. The Heritage authority may approve the proposed Lomond Safari 88 KV powerline construction to proceed as planned with the view to implement the recommendations here in made (Integrated Specialist Services, 2021).

The Phase 1 Archaeological/Heritage Impact Assessment was uploaded onto the South African Heritage Resources Information System and comments on the report have been requested from the South African Heritage Resources Agency (SAHRA). Feedback from SAHRA will be considered and acted upon accordingly.

8.3.7 Paleontological

A Palaeontological Desktop Assessment was conducted for the project site by Integrated Specialist Services (2021). The full report is attached under Appendix D.

The proposed powerline route is underlain by 2.2 Ga lacustrine and fluvio-deltaic deposits of the Timeball Hill Formation of the Pretoria Group of the Transvaal Supergroup. For this reason, the areas is considered to have a High Palaeontological Sensitivity due to the probability of finding stromatolites in this region (refer to Figure 13). The chances of exposing stromatolites during construction are good and for this reason a Chance Find Procedure has been compiled and included in the Palaeontological Desktop Assessment.

Although stromatolites are considered to be fossils, there are hundreds of square kilometres of stromatolites in South Africa and it is not considered to be so scarce that every stromatolite has to

be preserved. Even though it is not essential to salvage every piece of stromatolite exposed because of its ubiquitous distribution in the dolomites of South Africa, it will be prudent not to destroy a major stromatolite find for scientific and heritage reasons. In the event of the discovery of an exceptional stromatolite formation, it is advised that it should on principle not be destroyed if an alternative position for the placing of a specific pylon can be found.

Although the chances of finding an exceptional site that surpasses those already known to science are small, it remains important to alert the palaeontological community and SAHRA if a major fossil find is made and to prevent the destruction of those fossiliferous areas by moving the pylon further away. In the event of an exceptional fossil site being discovered during construction, the ECO should follow the Chance Find Procedure (Integrated Specialist Services, 2021).

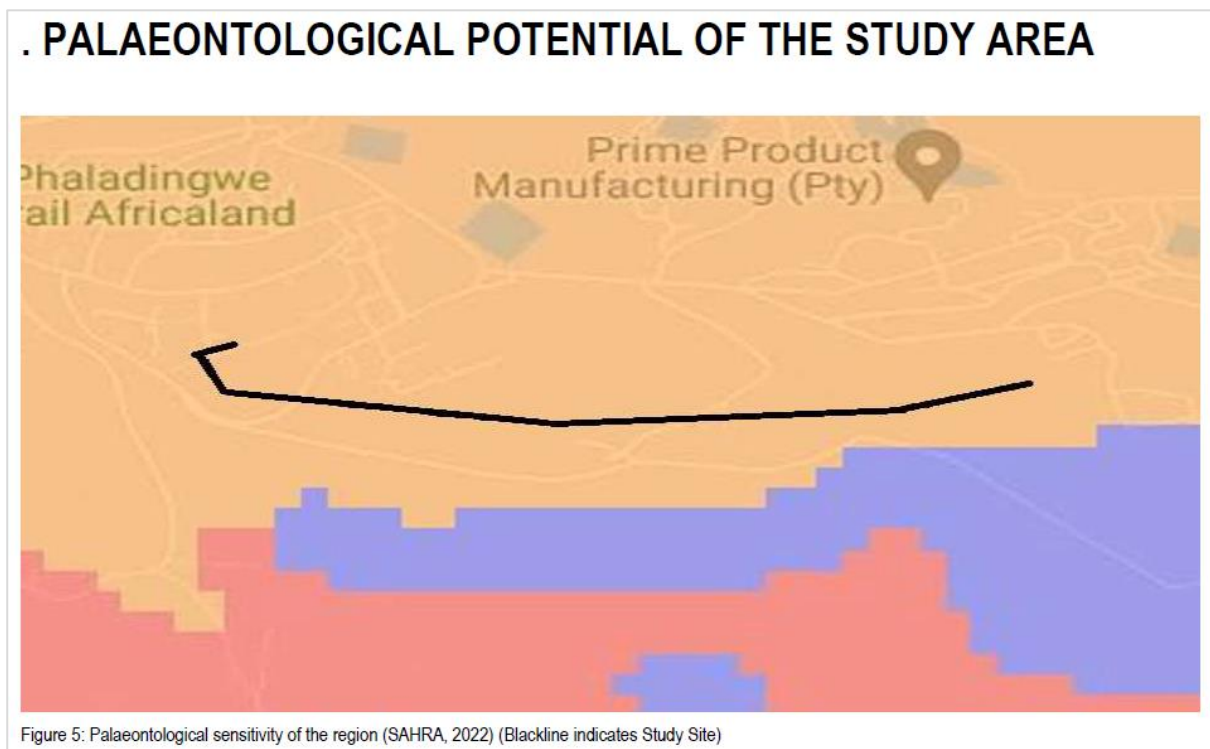


Table 8: Palaeontological legend of the Map

Colour	Palaeontological Significance	Action
RED	VERY HIGH	Field assessment and protocol for finds are required.
ORANGE	HIGH	A desktop study is required and based on the outcome of the desktop study, a field assessment is likely.
BLUE	LOW	No palaeontological studies are required however a protocol for finds is required.

Figure 13: Palaeontological Potential of the project site (Integrated Specialist Services, 2022).

Cumulative Impacts

No specific paleontological resources were found in the project area during the time of this study; however, this does not preclude the fact that paleontological resources may exist within the greater study area. As such, the proposed development has the potential to impact on possible paleontological resources in the area. Sites of archaeological, paleontological, or architectural significance were not specifically identified and cumulative effects are not applicable. The nature and severity of the possible cumulative effects may differ from site to site depending on the characteristics of the sites and variables (Integrated Specialist Services, 2021).

The Palaeontological Desktop Assessment was uploaded onto the South African Heritage Resources Information System and comments on the report have been requested from the South African Heritage Resources Agency (SAHRA). Feedback from SAHRA will be considered and acted upon accordingly.

8.3.8 Visual

A Visual Impact Assessment (VIA) was conducted for the project site by Eco Elementum (2022). The full report is attached under Appendix D.

The scope of work for the Visual Impact Assessment included:

1. Describing the existing visual characteristics of the proposed sites and its environs;
2. Viewshed and viewing distance using GIS analysis up to 15 km from the proposed structures.
3. Visual Exposure Analysis comprising the following aspects:
 - Terrain Slope: Slope angle is determined from the Digital Terrain Model (DTM) and the location of the proposed structures given a ranking depending on the steepness of the slope.
 - Aspect of structure location: Aspect of the slope where the structures are to be built, are calculated from the DTM and given a ranking determined by the Sun angle.
 - Landforms: Landform of the location of the proposed structures are determined from the DTM and ranked according to the type of landform. Structures built on certain landforms, e.g., ridges, will be more visible than structures built in valleys.
 - Slope Position of structure: Using GIS analysis, the position of the proposed structure is determined and ranked according to the position on the slope the structure is to be built.
 - Relative elevation of structure: Using the DEM the elevation of the proposed structure relative to the surrounding elevation is determined and ranked according to the difference in height of the surrounding areas.

- Terrain Ruggedness: The terrain ruggedness is determined from the DEM and given a ranking based on the homogeneousness of the terrain.
- Viewer Sensitivity: The Viewer sensitivity ranking of the surrounding areas is determined using various land cover and land use datasets and ranked according to the sensitivity of the related structures to the environment.
- Overall Visual Impact: Combining all the above dataset a final visual impact of the proposed structures is calculated.

From a desktop study of satellite imagery various sensitive receptors in the form of human habitation areas, consisting of various dispersed homes in the vicinity of the proposed Lomond Safari 88kV Powerline project area can be seen in Figure 14. It should be noted that the sensitive receptors in the area may differ from those identified as not all areas may have been identified from the imagery successfully.

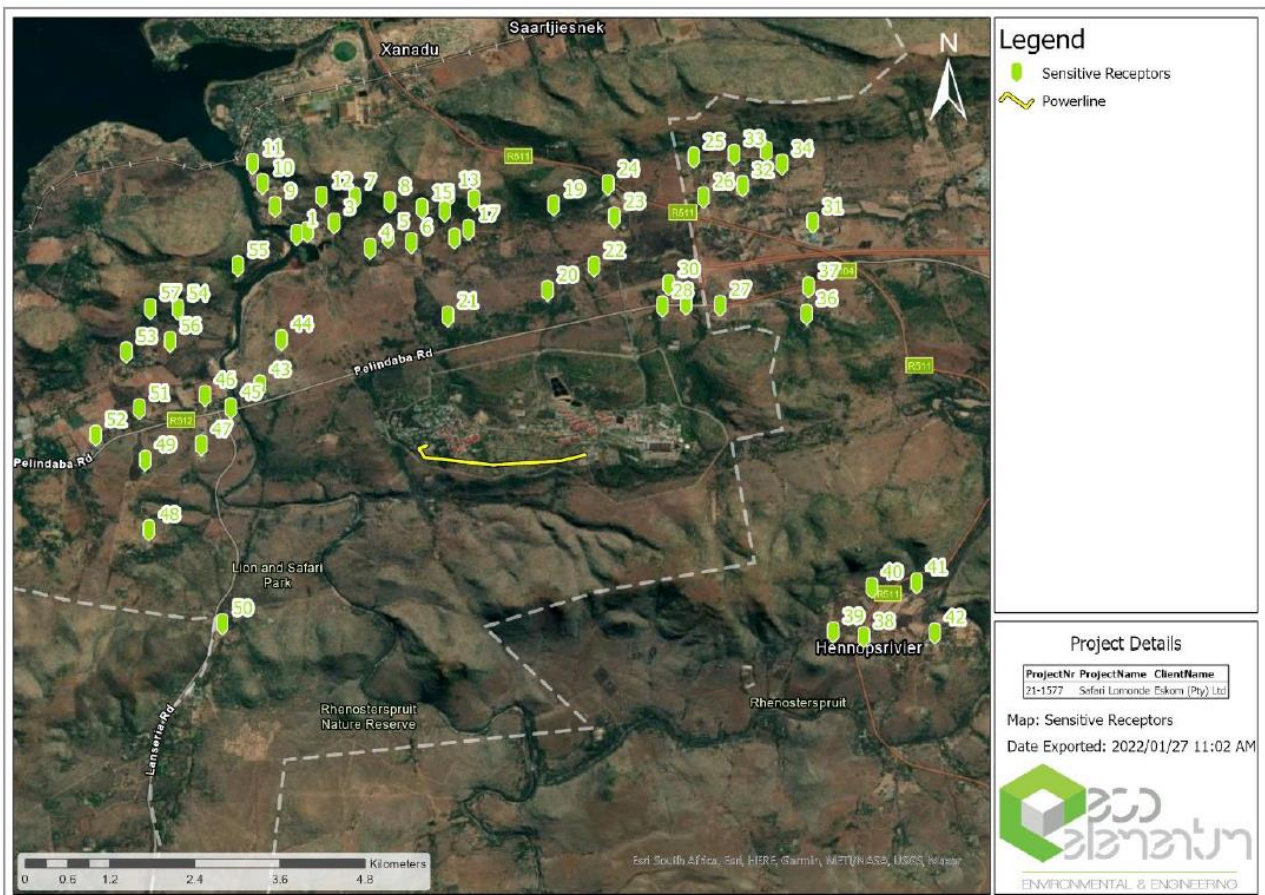


Figure 14: Population areas within close proximity of the proposed Lomond Safari 88kV Powerline project

For the assessment of the visibility of the study area, the viewshed has been calculated for the amount of surface infrastructure features that can be seen from any point on the map as seen in Figure 15.

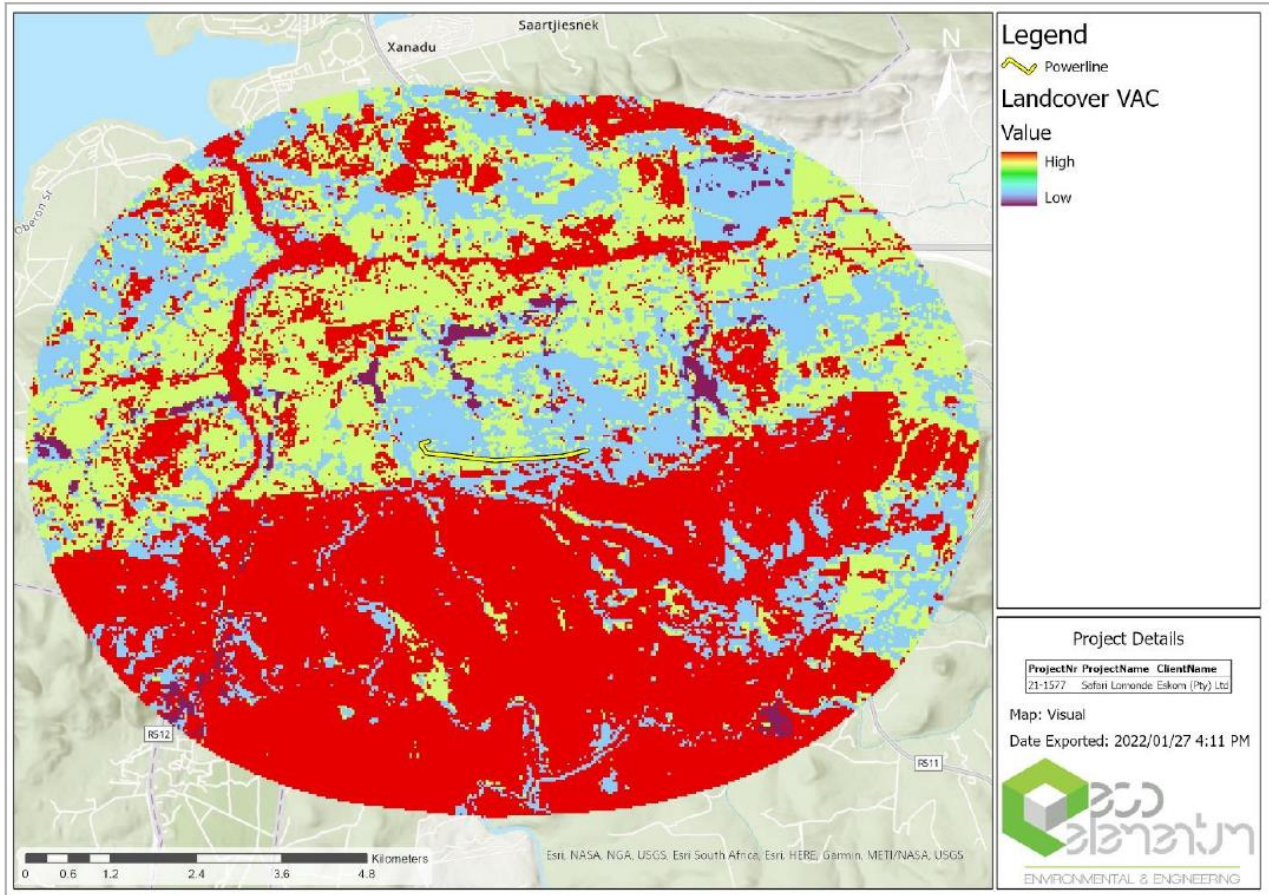


Figure 15: Possible VAC of the Landcover in a 5 km buffer area surrounding the proposed Lomond Safari 88kV Powerline project

Each identified sensitive receptor was overlaid on the Visual Exposure Ranking and the value extracted to that pixel to give a quantitative ranking for each of the identified sensitive receptors as can be seen in Figure 16. Ranking is done from 1 to 5, 1 being very low and 5 very high.

Due to fact that topographic modification can take place by agricultural, vegetation and other activities in the area, the viewshed is only a theoretical study. The viewpoints have been identified based on the sensitivity of the areas to visual disturbance and areas that can be negatively impacted by the related structures.

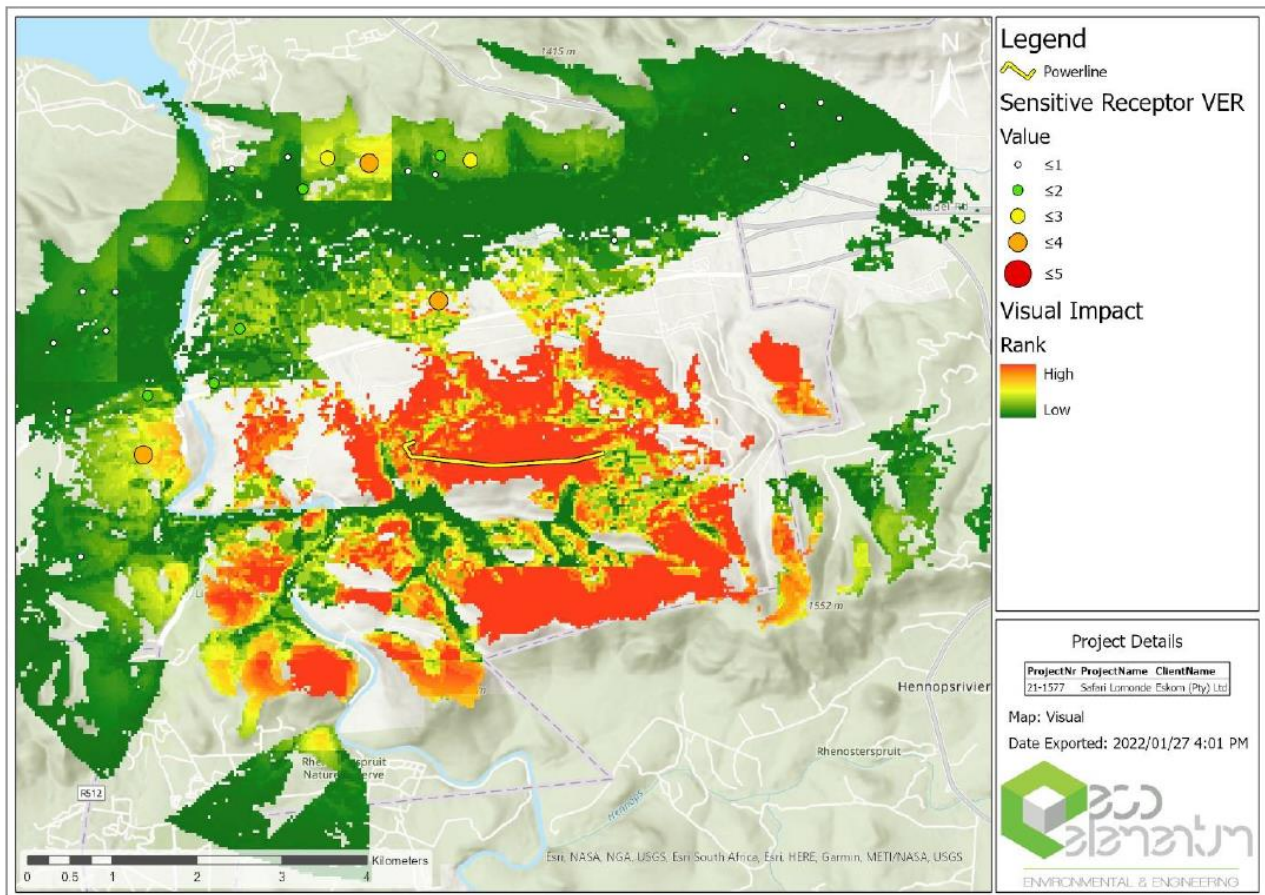


Figure 16: Viewpoint sensitive receptors overlaid on the Visual Exposure Ranking

Results and discussion

The construction and operation phase of the proposed Lomond Safari 88kV Powerline project related activities and its associated infrastructure will have a MODERATE visual impact on the natural scenic resources and the topography. However, with the correct mitigation measures the impact might decrease to a point where the visual impact can be seen as less significant. The moderating factors of the visual impact of the proposed powerline in close range are the following:

- The few numbers of human inhabitants located in the area.
- Natural hilly topography and dense vegetation.
- The length of the powerline.
- High absorption capacity of the landscape being inside the Pelindaba complex.

The Visual Impact due to powerline infrastructure can be seen as having a MODERATE impact on the surrounding environment and inhabitants before mitigation measures are implemented. After mitigation, the visual impact can be seen as MODERATE although lower. If the mitigation measures

are not done correctly then the visual impact will remain moderate (a higher moderate) and become a concern. However, with correct mitigation, the impact will be low-moderate.

Mitigation Measures

Mitigation measures may be considered in two categories:

- Primary measures that intrinsically comprise part of the development design through an iterative process. Mitigation measures are more effective if they are implemented from project inception when alternatives are being considered.
- Secondary measures designed to specifically address the remaining negative effects of the final development proposals.

Primary measures to be implemented will mainly be measures that will minimise the visual impact by softening the visibility of the structures by “blending” with the surrounding areas. Such measures will include:

- Rehabilitation of the construction areas by re-vegetation of the sites and surrounding area.
- Building the Powerlines and pylons next to existing linear structures as far as possible.
- Clear vegetation only by cutting and not earth moving equipment.
- Use of existing roads for access roads where possible.

Cumulative Impacts

The construction of the proposed Lomond Safari 88kV Powerline structures with its associated infrastructure will increase the cumulative visual impact of powerline infrastructure within the region (Eco Elementum, 2022).

8.4 Impacts and risks identified for each alternative

The following impacts and risks have been identified for the preferred alternative:

8.4.1 Planning and Design Phase

Environment in general:

- Ineffective planning for the proposed Lomond Safari Powerline leading to environmental impacts during the construction and post-construction phases.

8.4.2 Construction Phase

Terrestrial Fauna:

- **Loss and alteration of faunal habitat:** The site has been historically disturbed and, although the rocky bushveld habitat on site is adequate habitat for most bushveld and rocky habitat

species, the surrounding areas outside the fence line of Pelindaba Complex provide less disturbed habitat, more likely to be utilised by fauna. The area is considered a buffer zone to the more natural surrounds and the powerline should be constructed and maintained in a manner that will allow the area to continue to serve as a buffer area.

- **Hindrance, trapping, killing of fauna, focusing on Threatened or Protected species, particularly Sensitive Species 12 and provincially protected dung beetles:** Threatened or Protected species cannot be excluded from site if unhindered by the Pelindaba Complex fences. Two Species of Conservation Concern cannot be excluded from site (Sensitive Species 12 and *Clonia uvarovi*), the one a conspicuous species which must be monitored, and the latter expected to persist if present in the area and unlikely to be permanently impacted if habitat in surrounds is maintained as per Impact 1 above.
- **Contamination of fauna environment through use and storage of hazardous substances, littering and dumping of waste:** The project is largely on hill slopes, which means that any contamination along the powerline route will find its way into the streams and downstream environments quickly during a high rainfall event. All contaminating substances, including waste, must be stored and handled properly on site (BK Zoology, 2022).

Avifauna:

- **Displacement of Red Listed species as a result of habitat loss or transformation:** This impact is dependent on the location and the scale of the facility. Relevant to this project, vegetation (habitat) may need to be cleared to accommodate the required power line infrastructure, reducing the amount of habitat available to birds for foraging, roosting and breeding (Smallie, 2013). The effect of the vegetation clearing is always more marked in woodland areas, where construction necessitates the removal of woody plants, and especially large trees. Relevant to this project, the loss of habitat will be more significant in densely wooded area surrounding the wetland. The proposed Lomond-Safari 88kV power line traverses largely across degraded and heavily disturbed bushveld habitat which is likely to result in minimal habitat loss if the construction activity is restricted to the immediate footprint of the infrastructure and strictly managed according to generally accepted environmental best practice standards, so as to avoid any unnecessary impact on the receiving environment. The loss of habitat may potentially be more significant for the more common passerine species with small home ranges as entire territories could be removed during construction activities. While each of these species has the potential to be displaced by the construction of the power line infrastructure, identical habitat features prominently in the surrounding areas providing alternate foraging, roosting and breeding areas for the species observed.

- **Displacement of Red Listed species as a result of disturbance:** Excavation and construction activities are a source of significant disturbance particularly as a result of the machinery and construction personnel that are present on site for the duration of the construction of the proposed Lomond-Safari 88kV power line. For most bird species, construction activities are likely to be a cause of temporary disturbance impacting on foraging, and roosting behaviours but in more extreme cases, construction may impact on the breeding success of certain species particularly if the disturbance happens during a critical part of the breeding cycle, resulting in temporary breeding failure or permanent nest abandonment. The proposed route alignment is already subjected to a degree of disturbance in the form of industrial activities along certain sections of the proposed route which is likely to result in the temporary displacement as opposed to permanent displacement of species from the area.
- **Direct mortality as a result of construction activities:** Bird mortality as a result of construction activities is improbable because birds are incredibly mobile and able to move out of harm's way. If mortality does occur, it is likely to be confined to a localised area and restricted to immobile species e.g., nestlings. No terrestrial bird species (ground) nest locations were observed during the site visit to the study area (Feathers Environmental Services, 2021).

Heritage and Palaeontology:

- Possible destruction of archaeological remains.
- Possible disturbance of graves.
- Possible disturbance of buildings and structures older than 60 years old (IS Solutions, 2021).

Terrestrial Biodiversity (Flora / Vegetation):

- **Destruction of natural vegetation:** The development will require the removal of vegetation for the purpose of access roads, servitudes and the footprint of the development. Illegal disposal of construction material such as oil, cement etc. could destroy natural vegetation: The sources of this impact include:
 - Clearing of and damage to vegetation in construction footprint, access roads, construction camps, vehicle / machinery traffic and trampling by workers (stepping on small plants).
 - Illegal disposal and dumping of construction material such as cement or oil, as well as maintenance materials during construction.
 - Edge effects e.g., heavy vehicles turning in adjacent areas.
 - Storage of equipment within vegetation.
 - Maintenance vehicles driving within natural or rehabilitated vegetation, not impacted on during the construction, will lead to the destruction of naturally occurring vegetation and

compaction of soils and subsequent erosion or colonisation by alien invasive plant species.

In addition, failed rehabilitation could lead to soil erosion during rainfall events and flooding.

- **Exposure to erosion and subsequent sedimentation or pollution of proximate watercourses:** The removal of surface vegetation will expose the soils, which in rainy events would wash down into the watercourses, causing sedimentation. In addition, indigenous vegetation communities are unlikely to colonise eroded soils successfully, particularly due to the high occurrence of invasive plant species in the study area. Seeds from proximate alien invasive plant species can spread easily into these eroded soils. After construction, a lack of rehabilitation or failed rehabilitation will result in bare soils that are susceptible to erosion. Furthermore, maintenance vehicles could disturb rehabilitated areas which could lead to soil erosion, habitat modification, trampling of vegetation as well as the destruction of protected plants and plants of conservation concern. The sources of this impact include:
 - Removal of vegetation in proximity to the *Searsia* dominated drainage line, without proper rehabilitation or failure of rehabilitation.
 - Access roads, especially on slopes, channels rainfall and causes erosion.
 - Lack of rehabilitation or failed rehabilitation.
 - Maintenance vehicles disturbing rehabilitated areas.
 - Spillages of construction material and harmful chemicals.
 - Failure of rehabilitation of the construction footprint.
- **Removal / Destruction of protected plants and plants of conservation concern:** The construction of the powerline could result in the removal of plant species of conservation concern and provincially protected plants, impact on their habitat, pollinators and inevitably the persistence of these species. This could put further strain on the already declining populations.
- **Potential increase in invasive vegetation:** The seed of alien invasive plant species that occur on and in the vicinity of the construction areas could spread into the disturbed and stockpiled soil. Also, the construction vehicles and equipment were likely used on various other sites and could introduce alien invasive plant seeds or indigenous plants not belonging to this vegetation unit to the construction site. In addition, if rehabilitation of the indigenous vegetation along the route, are unsuccessful or is not enforced, exotic and invasive vegetation may further invade the area.
- **Clearing of land for construction camps and potential pollution of the soil and water:** These may be at one or several locations where the area will be cleared and levelled where necessary, site offices may be temporary structures, machinery, building supplies and temporary staff facilities (excluding accommodation) will be housed here. The impacts could include:
 - Removal of vegetation.

- Levelling and compaction of soils.
- Storage of machinery, supplies and staff facilities.

This could lead to the loss of vegetation and/or species of conservation concern, alteration, and loss of microhabitats, altered vegetation cover, increased erosion and contamination of soil and groundwater.

- **Compaction and destruction of soils:** The movement of heavy machinery over vegetated areas during construction and maintenance will result in soil compaction that will modify habitats, destroy vegetation, and inhibit re-vegetation. Soil compaction because of vehicles and traffic, could lead to a decrease of water infiltration and an increase of water runoff. Such areas are more likely to be colonised by pioneer, alien invasive plant species, than indigenous species. This will further transform the vegetation of the area. The health of the topsoil is imperative for re-vegetation. Incorrect stripping, handling and storage could lead to failed rehabilitation.
- **Bush densification:** The savanna is prone to bush densification e.g., "stands of plants of the kinds specified in Table 4 of Regulation 16 (CARA), where individual plants are closer to each other than three times the mean crown diameter" (Agricultural Research Council, 2013). Plants in this group are not alien plants, but indigenous plants that tend to become abnormally abundant when the area is degraded (Agricultural Research Council, 2013). The plants themselves are thus not the problem, but their increased abundance or encroachment into open bushveld serves as an indicator of poor land management practices and. This is exasperated by a lack of fire and large herbivores. Encroacher species are highly likely to establish in disturbed and degraded areas if not managed (Dimela Eco Consulting, 2021).

Aquatic Environment:

- Flow alternations due to erosion and sedimentation.
- Pollution of watercourse.
- Spread of alien vegetation (Oasis Environmental Specialists, 2022).

Visual:

- Potential visual impact on the viewpoints that had a visual exposure rating for the construction phase (Eco Elementum, 2022).

Soil and groundwater:

- Pollution of soil and/or groundwater resources due to the potential release of pollutants, such as chemicals, oil and fuel.
- Pollution of soil and/or groundwater resources due to the potential release of sewage from chemical toilets.
- Unsustainable utilisation of water.

- Pollution of soil and/or groundwater resources due to the mismanagement of waste.

Air quality and noise:

- Generation of dust.
- Generation of noise, vibrations and possible nuisance.
- Release of emissions from construction vehicles and machinery.

8.4.3 Operational Phase

Terrestrial Fauna:

- **Loss and alteration of faunal habitat:** The site has been historically disturbed and, although the rocky bushveld habitat on site is adequate habitat for most bushveld and rocky habitat species, the surrounding areas outside the fence line of Pelindaba Complex provide less disturbed habitat, more likely to be utilised by fauna. The area is considered a buffer zone to the more natural surrounds and the powerline should be constructed and maintained in a manner that will allow the area to continue to serve as a buffer area.
- **Hindrance, trapping, killing of fauna, focusing on TOP species, particularly Sensitive Species 12 and provincially protected dung beetles:** TOP species cannot be excluded from site if unhindered by the Pelindaba Complex fences. Two SCCs cannot be excluded from site (Sensitive Species 12 and *Clonia uvarovi*), the one a conspicuous species which must be monitored, and the latter expected to persist if present in the area and unlikely to be permanently impacted if habitat in surrounds is maintained as per Impact 1 above.
- **Contamination of fauna environment through use and storage of hazardous substances, littering and dumping of waste:** The project is largely on hill slopes, which means that any contamination along the powerline route will find its way into the streams and downstream environments quickly during a high rainfall event. All contaminating substances, including waste, must be stored and handled properly on site (BK Zoology, 2022).

Avifauna:

- **Mortality due to collisions with the 88kV power line conductors:** Collisions are the biggest single threat posed by power lines to birds in southern Africa (van Rooyen 2004). Most heavily impacted upon are bustards, storks, cranes and various species of waterbirds. These species are mostly heavy-bodied birds with limited maneuverability, which makes it difficult for them to take the necessary evasive action to avoid colliding with power lines (van Rooyen 2004, Anderson 2001). Unfortunately, many of the collision sensitive species are considered threatened in southern Africa. A potential impact of the proposed 88kV power line is collisions with the overhead conductors. Quantifying this impact in terms of the likely number of birds that

will be impacted, is very difficult because a number of variables play a role in determining the risk, for example weather, rainfall, wind, age, flocking behaviour, power line height, light conditions, topography, population density and so forth. However, from incidental record keeping by the Endangered Wildlife Trust: Wildlife & Energy Programme it is possible to give a measure of what species are likely to be impacted upon. This only gives a measure of the general susceptibility of the species to power line collisions, and not an absolute measurement for any specific line. Relevant to this development, collisions are unlikely given the woodland habitat, the species observed and existing disturbance in the study area. Several ungulate species occur on the NECSA property should these animals die as a result of natural causes or as part of a management procedure, the presence of carcasses will attract vultures which will result in an increased risk of collision, should the carcasses be in close proximity to the proposed 88kV power line.

- **Mortality due to electrocutions on the 88kV power line infrastructure:** Electrocution refers to the scenario where a bird is perched or attempts to perch on the electrical structure and causes an electrical short circuit by physically bridging the air gap between live components and/or live and earthed components (van Rooyen 2004). Electrocution risk is strongly influenced by the power line voltage and design of the tower/pole structure and mainly affects larger, perching species that are capable of spanning the spaces between energized components. This is particularly likely when more than one bird attempts to sit on the same pole, a behaviour that is typical of gregarious species (i.e., Cape Vulture) when perching or roosting. Although the proposed power line has a voltage size of 88kV, the power line will be constructed using the 132kV tower specifications. The clearance distances between the live components and/or live and earthed components of the 132kV tower structure should be sufficient to reduce the risk of electrocutions for most raptor species. Relevant to this development, Cape Vulture are susceptible to electrocution on the power line infrastructure.
- **Impact on the quality of electrical supply:** Although this does not form part of the brief, it is important to mention that birds could have an impact on the proposed power line infrastructure. Both bird streamers and bird pollution occur as a result of birds perching and defecating on the pole tops and, often directly above live conductors causing electrical faults on power lines. The more faults that occur on a line, the poorer the quality of electrical supply to the end users. Site specific mitigation can be applied reactively should this impact occur. Bird nests may also cause faults through nest material, protruding into the air gap between live components on the power line infrastructure. Crows in particular often incorporate wire and other conductive material into their nests. When nests cause flashovers, the nesting material may catch fire. This in turn can lead to equipment damage or a general veld fire. Apart from the cost of replacing damaged equipment, the resultant veld fire can lead to claims for damages from landowners. Power line

poles in turn provide nesting substrate for certain bird species, some of which might benefit through the increased availability of nesting substrates on the power line infrastructure. Site specific mitigation can be applied reactively should this impact occur (Feathers Environmental Services, 2021).

Heritage and Palaeontology:

- Destruction public monuments and plaques (IS Solutions, 2021).

Terrestrial Biodiversity (Flora / Vegetation):

- **Destruction of natural vegetation:** The development will require the removal of vegetation for the purpose of access roads, servitudes and the footprint of the development. Illegal disposal of construction material such as oil, cement etc. could destroy natural vegetation: The sources of this impact include:
 - Clearing of and damage to vegetation in construction footprint, access roads, construction camps, vehicle / machinery traffic and trampling by workers (stepping on small plants).
 - Illegal disposal and dumping of construction material such as cement or oil, as well as maintenance materials during construction.
 - Edge effects e.g., heavy vehicles turning in adjacent areas.
 - Storage of equipment within vegetation.
 - Maintenance vehicles driving within natural or rehabilitated vegetation, not impacted on during the construction, will lead to the destruction of naturally occurring vegetation and compaction of soils and subsequent erosion or colonisation by alien invasive plant species. In addition, failed rehabilitation could lead to soil erosion during rainfall events and flooding.
- **Exposure to erosion and subsequent sedimentation or pollution of proximate watercourses:** The removal of surface vegetation will expose the soils, which in rainy events would wash down into the watercourses, causing sedimentation. In addition, indigenous vegetation communities are unlikely to colonise eroded soils successfully, particularly due to the high occurrence of invasive plant species in the study area. Seeds from proximate alien invasive plant species can spread easily into these eroded soils. After construction, a lack of rehabilitation or failed rehabilitation will result in bare soils that are susceptible to erosion. Furthermore, maintenance vehicles could disturb rehabilitated areas which could lead to soil erosion, habitat modification, trampling of vegetation as well as the destruction of protected plants and plants of conservation concern. The sources of this impact include:
 - Removal of vegetation in proximity to the *Searsia* dominated drainage line, without proper rehabilitation or failure of rehabilitation.
 - Access roads, especially on slopes, channels rainfall and causes erosion.
 - Lack of rehabilitation or failed rehabilitation.

- Maintenance vehicles disturbing rehabilitated areas.
- Spillages of construction material and harmful chemicals.
- Failure of rehabilitation of the construction footprint.
- **Removal / Destruction of protected plants and plants of conservation concern:** The construction of the powerline could result in the removal of plant species of conservation concern and provincially protected plants, impact on their habitat, pollinators and inevitably the persistence of these species. This could put further strain on the already declining populations.
- **Potential increase in invasive vegetation:** The seed of alien invasive plant species that occur on and in the vicinity of the construction areas could spread into the disturbed and stockpiled soil. Also, the construction vehicles and equipment were likely used on various other sites and could introduce alien invasive plant seeds or indigenous plants not belonging to this vegetation unit to the construction site. In addition, if rehabilitation of the indigenous vegetation along the route, are unsuccessful or is not enforced, exotic and invasive vegetation may further invade the area.
- **Clearing of land for construction camps and potential pollution of the soil and water:** These may be at one or several locations where the area will be cleared and levelled where necessary, site offices may be temporary structures, machinery, building supplies and temporary staff facilities (excluding accommodation) will be housed here. The impacts could include:
 - Removal of vegetation.
 - Levelling and compaction of soils.
 - Storage of machinery, supplies and staff facilities.

This could lead to the loss of vegetation and/or species of conservation concern, alteration, and loss of microhabitats, altered vegetation cover, increased erosion and contamination of soil and groundwater.
- **Compaction and destruction of soils:** The movement of heavy machinery over vegetated areas during construction and maintenance will result in soil compaction that will modify habitats, destroy vegetation, and inhibit re-vegetation. Soil compaction because of vehicles and traffic, could lead to a decrease of water infiltration and an increase of water runoff. Such areas are more likely to be colonised by pioneer, alien invasive plant species, than indigenous species. This will further transform the vegetation of the area. The health of the topsoil is imperative for re-vegetation. Incorrect stripping, handling and storage could lead to failed rehabilitation.
- **Bush densification:** The savanna is prone to bush densification e.g., “stands of plants of the kinds specified in Table 4 of Regulation 16 (CARA), where individual plants are closer to each other than three times the mean crown diameter” (Agricultural Research Council, 2013). Plants in this group are not alien plants, but indigenous plants that tend to become abnormally

abundant when the area is degraded (Agricultural Research Council, 2013). The plants themselves are thus not the problem, but their increased abundance or encroachment into open bushveld serves as an indicator of poor land management practices and. This is exasperated by a lack of fire and large herbivores. Encroacher species are highly likely to establish in disturbed and degraded areas if not managed (Dimela Eco Consulting, 2021).

Aquatic:

- Flow alternations due to erosion and sedimentation.
- Pollution of watercourse.
- Spread of alien vegetation (Oasis Environmental Specialists, 2022).

Visual:

- Potential visual impact on the viewpoints that had a visual exposure rating (Eco Elementum, 2022).

Soil and groundwater:

- Pollution of soil and/or groundwater resources due to the potential release of pollutants, such as chemicals, oil and fuel, used during maintenance activities.
- Pollution of soil and/or groundwater resources due to the mismanagement of waste generated during maintenance activities.

Positive impacts:

- Reliable electricity supply to NECSA.
- The existing underground oil filled cables will no longer be used and any oil leakages and pollution will no longer occur.
- Any historical oil leakages and pollution will have been rehabilitated once the proposed powerline has been constructed (if authorised).
- Less disturbance to the environment during maintenance activities as trenches do not need to be dug to access underground power cables.
- Nesting of birds on the powerline infrastructure.

8.4.4 Rehabilitation Phase

- Ineffective rehabilitation leading to prolonged residual risks and impacts on site as a result of the construction activities associated with the proposed powerline.

8.4.5 Decommissioning and Post-decommissioning Phases

The decommissioning of the proposed powerline is not foreseen and no impacts have therefore been identified for this phase.

8.4.6 Cumulative Impacts

The following cumulative impacts have been identified for the proposed project:

Terrestrial Fauna:

- **Loss and alteration of faunal habitat:** The disturbed nature of the area and the limited buffer value of the site in terms of terrestrial fauna means that cumulative impacts are considered negligible.
- **Hindrance, trapping, killing of fauna, focussing on TOP species, particularly Sensitive Species 12 and provincially protected dung beetles:** No significant cumulative impacts expected in terms of the proposed project if faunal mortalities are kept to an absolute minimum.
- **Contamination of fauna environment through use and storage of hazardous substances, littering and dumping of waste:** Large or continuous leaks / spills and dumping will enter the environment through run-off or leachate and contaminate the environment and poison the fauna. The likelihood of this occurring is considered low, but must be managed on site (BK Zoology, 2022).

Avifauna:

None.

Heritage and Palaeontology:

Heritage resources such as burial grounds and graves and archaeological as well as historical sites are common occurrences within the greater study area. These sites are often not visible and as a result, can be easily affected or lost. Furthermore, many heritage resources in the greater study area are informal, unmarked and may not be visible, particularly during the wet season when grass cover is dense. As such, construction workers may not see these resources, which results in increased risk of resource damage and/or loss. Vibrations and earth moving activities associated with drilling and excavation have the potential to crack/damage rock art covered surfaces, which are known to occur in the greater study area. In addition, vibration from traffic has the potential to impact buildings and features of architectural and cultural significance. Earth moving and extraction of gravel have the potential to interact with archaeology, architectural and cultural heritage.

Cumulative impacts that need attention are related to the impacts of access roads and impacts to buried heritage resources. Allowing the impact of the proposed development to go beyond the surveyed area would result in a significant negative cumulative impact on sites outside the surveyed area. A significant cumulative impact that needs attention is related to stamping by especially construction vehicles during clearance and excavation within the development sites. Movement of heavy construction vehicles must be monitored to ensure they do not drive beyond the approved sites. No significant cumulative impacts, over and above those already considered in the impact assessment, are foreseen at this stage of the assessment process. Cumulative impacts can be significant, if construction vehicles are not monitored to avoid driving through undetected heritage resources (IS Solutions, 2021).

Terrestrial Biodiversity (Flora / Vegetation):

- **Destruction of natural vegetation:** None.
- **Exposure to erosion and subsequent sedimentation or pollution of proximate watercourses:** Erosion of the development footprint upslope from the watercourses could increase sedimentation. However, this could be mitigated.
- **Removal / Destruction of protected plants and plants of conservation concern:** If mitigation measures are adequately implemented, no cumulative impacts are expected.
- **Potential increase in invasive vegetation:** The area that the proposed development is situated in is already infested with alien invasive plant species. Therefore, if mitigation measures to limit and prevent the spread of alien species are not implemented, the cumulative impact could lead to remaining natural vegetation transformed by alien plant species.
- **Clearing of land for construction camps and potential pollution of the soil and water:** If mitigation measures are not strictly implemented, erosion of the development area, contamination of ground water and the spread and establishment of invasive species can take place. This will lead to the increase in modified areas and fragmentation of natural and semi-natural vegetation.
- **Compaction and destruction of soils:** Failed rehabilitation and soil compaction associated with the development could lead to a cumulative invasion by alien invasion plant species from the surrounding transformed vegetation that can easily spread into the compacted soils.
- **Bush densification:** Possible bush densification on the site and loss of indigenous species diversity (Dimela Eco Consulting, 2021).

Aquatic:

Impacts that are predominantly associated with cumulative impacts include increased levels of erosion/sedimentation due to increased runoff, proliferation of alien invasive species and possible water quality alterations (Oasis Environmental Specialists, 2022).

Visual:

Cumulative landscape and visual effects (impacts) result from additional changes to the landscape or visual amenity caused by the proposed development in conjunction with other developments (associated with or separate to it), or actions that occurred in the past, present or are likely to occur in the foreseeable future. They may also affect the way in which the landscape is experienced. Cumulative effects may be positive or negative. Where they comprise of a range of benefits, they may be considered to form part of the mitigation measures.

Cumulative effects can also arise from the inter-visibility (visibility) of a range of developments and/or the combined effects of individual components of the proposed development occurring in different locations or over a period of time. The separate effects of such individual components or developments may not be significant, but together they may create an unacceptable degree of adverse effects on visual receptors within their combined visual envelopes. Inter-visibility depends upon general topography, aspect, tree cover or other visual obstruction, elevation and distance, as this affects visual acuity, which is also influenced by weather and light conditions. (Institute of Environmental Assessment and The Landscape Institute, 1996).

The cumulative visual intrusion of the proposed Lomond Safari 88kV Powerline structures, will be MODERATE as it is a powerline. The visual impact and impact on sense of place of the proposed project will contribute to the cumulative negative effect on the aesthetics of the area. The site location is however inside the Pelindaba complex, which is already a manmade visual intrusion of the natural landscape, and thus decreases the visual impact of the project further.

The construction of the proposed Lomond Safari 88kV Powerline project with its associated infrastructure will increase the cumulative visual impact within the region. In context of the existing bushveld, and dispersed homesteads, the construction phase of Lomond Safari 88kV Powerline structures will contribute to a regional increase in heavy vehicles on the roads in the region, with construction activity noticeable (Eco Elementum, 2022).

The impacts have been fully assessed under Section 9.3 of this report.

8.5 Methodology used in determining and ranking the nature, significance, consequences, extent, duration and probability of potential environmental impacts and risks associated with the alternatives

Please refer to Sections 9.1 and 9.2 of this report.

8.6 Positive and negative impacts that the proposed activity and alternatives will have on the environment and on the community that may be affected

As detailed under Section 8.4 and 9.3.

8.7 Possible mitigation measures that could be applied and level of residual risk

The following section contains possible mitigation measures that can be applied to mitigate the identified impacts. Detailed mitigation measures have also been included in the Environmental Management Programme (EMPr) that forms part of this Basic Assessment Report.

Environment in general:

Impact: Ineffective planning for the proposed Lomond Safari Powerline leading to environmental impacts during the construction and post-construction phases.

Residual risk: None anticipated.

Possible mitigation measures: Refer to the Generic EMPr for this project for mitigation measures.

Terrestrial Fauna

Impact: Loss and alteration of faunal habitat

Residual risk: Edge effects are expected through the operational maintenance activities, but are not considered as significant residual impacts due to the existing status of the site.

Possible mitigation measures:

STOP:

- The aquatic habitat and associated wetland and riverine area should not be targeted for any physical development or activity (pedestrian or otherwise).
- No activity may proceed within the aquatic habitat, the associated wetland or its buffer zone without the necessary Water Use authorisation.
- Fires are not allowed as a means to implement vegetation maintenance along the powerline route once established.

MODIFY:

- Arrange for storage areas within existing cleared areas only. Do not clear vegetation for any other purpose than the dedicated footprints of the pylons.
- Where pylons can be shifted, select areas near existing infrastructure (existing light masts, solar panels and reservoirs) to keep activity footprints within a single area.
- Where possible, select areas devoid of vegetation for pylons.
- Vegetation maintenance along the powerline route, once established, should focus on trimming the existing bushveld vegetation rather than removing the shrubs where this is possible.

CONTROL:

- Demarcate pylon areas and keep these areas as compact as possible.
- Mark out dedicated routes (for machinery, vehicles and pedestrians) to each pylon construction site. When moving through the area to access construction sites, utilise these paths only.

REMEDY:

- Where areas not targeted for development and/or neighbouring areas are inadvertently impacted and/or damaged, clear any material dumped in the area, fill any excavation, and rehabilitate the site as soon as possible.

Impact: Hindrance, trapping, killing of fauna, focussing on TOP species, particularly Sensitive Species 12 and provincially protected dung beetles

Residual risk: Destruction of any TOPS (or prey-base of TOPS) could cause a cascade effect on populations and, in extreme circumstances, local extinctions. Predicting the extent and significance of such changes is not possible, but is not expected to be significant in terms of this project on this site.

Possible mitigation measures:

STOP:

- No deliberate killing/handling of indigenous fauna (vertebrates and invertebrates) is allowed.
- Fires are not allowed to implement vegetation maintenance along the powerline route once established.
- Electrified fences are only allowed at the perimeter of the Safari Rural substation; interventions will need to be implemented if high fauna mortalities are noted around electrified fences.

MODIFY:

- Ensure unhindered access on site to allow fauna to leave the area on their own.
- If Sensitive Species 12 is noted on site, then consider stopping activity (construction and maintenance) in the specific area until the specimen has moved off and return to complete activities later. Where this is not possible appoint permitted specialists to move the species from site.

CONTROL:

- All contractors on site must undergo environmental awareness training which must include the prohibition of any harm or hindrance to any indigenous fauna species and explicitly indicate consequences of any such deliberate action.
- At the start of every day (construction and maintenance) walk the demarcated routes and the pylon construction footprints and gently remove all dung from these areas to neighbouring areas (approximately 10m from activity areas) to prevent the attraction of dung beetles to activity areas.
- Ensure safe speed limits and safe working conditions in the development area.

REMEDY:

- Should any fauna be trapped within the development area, activities will cease, and specialists brought in to safely remove the animals from site. This must be done in line with NEM:BA and the North West Biodiversity Management Act.

Impact: Contamination of fauna environment through use and storage of hazardous substances, littering and dumping of waste.

Residual risk: If toxic substances and waste are not properly handled or spills not cleared immediately, the environment will suffer extended residual impacts, particularly if toxins seep into the soils or are washed to downstream environments and impact is considered significant if not managed.

Possible mitigation measures:

STOP:

- Discontinue use of all faulty machinery/equipment on site until properly repaired.

MODIFY:

- Facilities will be provided for storage of all hazardous substances, waste, equipment and cement within the existing development areas (within the existing footprints of the substations) to prevent the exposure of these substances to the environment.
- If possible, completed pylon construction during the dry season. Otherwise implement local and temporary storm-water management within each footprint to prevent downstream sedimentation.

CONTROL:

- All equipment/machinery will be serviced and maintained within operating specifications to prevent the risks of leaks.
- All hazardous substances and waste must be properly stored and handled according to prescribed manner and must in no way be exposed to the environmental elements.
- Collect all waste from site before departing the area and dispose of appropriately.

- Cement bags will be stored under a tarpaulin and on an impervious sheet. Cement mixing will take place within a designated area only, preferably within the existing development footprint.

REMEDY:

- All hydrocarbon spills on bare ground will be cleared immediately.
- Inspect and clear all litter and waste from the site and surrounds.
- All dry and wet cement spills on bare ground will be cleared immediately (BK Zoology, 2022).

Avifauna

Impact: Displacement of Red List species as a result of habitat loss or transformation.

Residual risk: Species are likely return once the construction activity is completed and the vegetation re-establishes itself.

Possible mitigation measures:

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

Impact: Displacement of Red List species as a result of disturbance.

Residual risk: The majority of species observed in the study area may return once the construction activity is completed.

Possible mitigation measures:

- Access to the remainder of the site should be strictly controlled to prevent unnecessary disturbance of priority species.
- Measures to control noise should be applied according to current best practice in the industry.

Impact: Direct mortality as a result of construction activities.

Residual risk: None listed in the specialist report.

Possible mitigation measures: None listed in the specialist report.

Impact: Mortality due to collisions with the 88kV power line conductors.

Residual risk: It is envisaged that mitigation, if required, will reduce but not eliminate collision mortality.

Possible mitigation measures:

- Eskom line and servitude managers are requested to report all bird collisions encountered during routine line patrols of the Lomond-Safari 88kV power line to the Eskom-Endangered Wildlife Trust Strategic Partnership.
- If power line marking is required, bird flight diverters must be installed according to industry standard guidelines.
- Bird flight diverters to be maintained on sections of power line during the operational life span of the Lomond-Safari 88kV power line.

Impact: Mortality due to electrocutions on the 88kV power line infrastructure.

Residual risk: Mitigation will reduce electrocution mortality to negligible levels.

Possible mitigation measures:

- The 88kV power line must be constructed using a bird friendly structure (i.e. (DT 7641/7649).
- Additional mitigation in the form of insulating sleeves on jumpers present on strain poles, terminal poles and box transformers must be applied.
- Dead animals/carcasses found at/close to the Lomond-Safari 88kV power line during routine power line patrols and/or maintenance by Eskom must be removed from the property entirely and donated to VulPro to ensure that the Cape Vultures utilising the study area are fed in a safe environment.
- It is also vitally important that the historical vulture restaurant/feeding site on the NECSA property remain closed.
- Eskom line and servitude managers are requested to report all bird electrocutions encountered during routine line patrols of the Lomond-Safari 88kV power line to the Eskom-Endangered Wildlife Trust Strategic Partnership.
- Insulating material (if applied) to be maintained during the operational life span of the Lomond-Safari 88kV power line.

Impact: Impact on the quality of electrical supply (nest building).

Residual risk: None listed in the specialist report.

Possible mitigation measures:

- If on-going impacts are recorded once the Lomond-Safari 88kV power line is operational, it is recommended that these impacts be assessed by Eskom-Endangered Wildlife Trust Strategic Partnership and site-specific mitigation be applied reactively.
- While it is not illegal to remove an unoccupied nest that is posing a quality of supply risk, the removal of nests that contain eggs or chicks will require a permit to do so. Nest management strategies to be identified and implemented reactively, if required (Feathers Environmental Services, 2021).

Heritage and Palaeontology

Impact: Possible destruction of archaeological remains.

Residual risk: None listed in the specialist report.

Possible mitigation measures:

- None required because no archaeological remains were recorded.
- Use chance find procedure to cater for accidental finds.

Impact: Possible disturbance of graves.

Residual risk: None listed in the specialist report.

Possible mitigation measures: None required.

Impact: Possible disturbance of buildings and structures older than 60 years old.

Residual risk: None listed in the specialist report.

Possible mitigation measures: None required.

Impact: Destruction public monuments and plaques

Residual risk: None listed in the specialist report.

Possible mitigation measures: Mitigation is not required because there are no public monuments within the proposed development site (IS Solutions, 2021).

Terrestrial Biodiversity (Flora / Vegetation)

Impact: Destruction of natural vegetation.

Residual risk:

- Localised alteration of soil surface characteristics and loss of flora.
- Increased fragmentation of remaining vegetation along the powerline.
- Possible erosion and invasion by alien invasive plant species and densification of bush encroacher species.

Possible mitigation measures:

Planning:

- Removal of vegetation must be restricted to the pylon footprint and trees underneath the powerline must be pruned to acceptable heights, instead of clear-felling. This will limit degradation of the vegetation and the subsequent invasion by alien invasive plant species.
- Keep the work area (e.g., area to be disturbed) to a minimum. Manual labour is recommended to keep the servitude as small as possible, with no heavy vehicles driving over or turning within the high SEI areas.

Construction:

- An independent Environmental Control Officer (ECO) should be appointed to oversee construction.
- Keep the development footprint in Medium SEI categories as small as possible.
- Keep the work area (e.g., area to be disturbed) to a minimum. Manual labour is recommended to keep the servitude as small as possible, with no heavy vehicles driving over or turning within the high SEI areas.
- A temporary fence or demarcation must be erected around the construction area (include the actual footprint, as well as areas where material is stored and needed for e.g., trenching) to prevent access to adjacent vegetation.
- Prohibit vehicular or pedestrian access into natural areas beyond the demarcated boundary of the construction area.
- No open fires are permitted within naturally vegetated areas.
- Formalise access roads and make use of existing roads and tracks where feasible, rather than creating new routes through naturally vegetated areas.
- Implement a vegetation rehabilitation plan. Due to the dry climate, natural colonisation could take a long time, in which vegetation may degrade (bush encroachment) or be invaded by alien invasive plant species. Therefore, timeous rehabilitation is imperative.
- Construction workers may not remove flora, and neither may anyone collect seed from the plants without permission from the local authority.
- Introduce adequate sedimentation control measures at watercourse crossings and when excavation or disturbance along watercourses takes place.
- Where topsoils need to be removed, store such in a separate area where such soils can be protected until they can be re-used for post-construction rehabilitation.
- Never mix topsoils with subsoils or other spoil materials.
- Maintain site demarcations in position until the cessation of construction work.
- After construction, the land must be cleared of rubbish, surplus materials, and equipment, and all parts of the land must be left in a condition as close as possible to that prior to construction.

Maintenance:

- After construction, the land must be cleared of rubbish, surplus materials, and equipment, and all parts of the land must be left in a condition as close as possible to that prior to construction.
- Ensure that maintenance work does not take place haphazardly, but according to a fixed plan.
- Cordon off areas that are under rehabilitation as no-go areas using danger tape and steel droppers. If necessary, these areas should be fenced off to prevent vehicular, pedestrian and livestock access.
- Maintenance workers may not trample natural vegetation and work should be restricted to previously disturbed footprint. In addition, mitigation measures as set out for the construction phase should be adhered to.
- Address erosion donga crossings, applying soil erosion control and bank stabilisation procedures as specified by the ECO.
- Do not allow erosion to develop on a large scale before effecting repairs. When in doubt, seek advice from the ECO.
- Repair all erosion damage as soon as possible and in any case not later than six months before the termination of the Maintenance Period to allow for sufficient rehabilitation growth.
- The servitude must be naturally vegetated, and trees pruned instead of removed (where possible).

Impact: Exposure to erosion and subsequent sedimentation or pollution of proximate watercourses.

Residual risk:

- No indigenous vegetation cover in disturbed areas (failed rehabilitation).
- Colonisation by alien invasive plant species.

Possible mitigation measures:

Planning:

- Avoid direct impacts into *Searsia* dominated drainage line and buffer area as recommended by the wetland specialist.
- Plan to remove as little indigenous vegetation as possible.
- Compile a stormwater management plan that will safeguard the proximate watercourses from construction and operational impacts.

Construction:

- Do not allow erosion to develop on a large scale before acting.
- Make use of existing roads and tracks where feasible, rather than creating new routes through grassland areas.
- Retain vegetation and soil in position for as long as possible, removing it immediately ahead of construction/earthworks in that area (DWAF, 2005).

- Runoff from roads must be managed to avoid erosion and pollution problems.
- Ensure that runoff from compacted or sealed surfaces is slowed down and dispersed sufficiently to prevent accelerated erosion from being initiated (erosion management plan required).
- Remove only the vegetation where essential for construction and do not allow any disturbance to the adjoining natural vegetation cover.
- Colonisation of the disturbed areas by indigenous plants species from the surrounding natural vegetation must be monitored to ensure that vegetation cover is sufficient within one growing season. If not, then the areas need to be rehabilitated with a grass seed mix containing species that naturally occur within the study area.
- Protect all areas susceptible to erosion and ensure that there is no undue soil erosion resultant from activities within and adjacent to the construction camp and work areas.
- Prevent spillage of construction material, oils or other chemicals, strictly prohibit other pollution. Ensure there is a method statement in place to remedy any accidental spillages immediately.
- After construction clear any temporarily impacted areas of all foreign materials, re-apply and/or loosen topsoils and landscape to surrounding level.

Operational:

- Do not disturb soil or indigenous vegetation unnecessarily during maintenance. Ensure that maintenance work does not take place haphazardly, but according to a fixed plan.
- Cordon off areas that are under rehabilitation as no-go areas using danger tape and steel droppers. If necessary, these areas should be fenced off to prevent vehicular, pedestrian and livestock access.
- Monitor rehabilitation and ensure that rehabilitated areas do not erode.
- If monitoring finds that indigenous vegetation from the surrounding bushveld is not colonising the site, implement a re-vegetation plan to ensure that grass species that naturally occur in the area, are sowed in order to re-establish indigenous plant cover.
- Maintenance workers may not trample natural vegetation and work should be restricted to previously disturbed footprint. In addition, mitigation measures as set out for the construction phase should be adhered to.

Impact: Removal/Destruction of protected plants and plants of conservation concern.

Residual risk: Species removed (if any) and relocated as part of rehabilitation could die due to transplantation shock or damage during replanting.

Possible mitigation measures:

Planning:

- Most of the four species flower in late summer (Feb-March), and it is recommended that the final footprint, especially pylon footprints, be scanned for such species during the flowering period.

- Where such species are deemed to be under threat from the construction activity, these plants must be removed by a suitably qualified specialist and replanted as part of vegetation rehabilitation after the construction (note, these plants may only be removed with the permission of the provincial authority).
- Implement a plant relocation plan for plant species of concern that was recorded during the walkdown, if any. For species that cannot be relocated (e.g., large trees), apply for permit for the pruning/removal thereof.

Construction:

- Where possible, the species of conservation concern that were confirmed to occur (if any), should be avoided by construction and related activities. The species should be marked or cordoned off to protect them from construction activities and vehicles. Construction workers should be made aware of the species and the aim to protect them from damage.
- The ECO should take note of any unearthed geophytes or orchids and contact a specialist for the correct naming and threat status of the species. This will determine whether any follow-up action is required.
- Construction workers may not tamper or remove these plants, and neither may anyone collect seed from the plants without permission from the local authority.

Maintenance:

- Maintenance workers may not trample natural vegetation and work should be restricted to previously disturbed footprint. In addition, mitigation measures as set out for the construction phase should be adhered to.

Impact: Potential increase in invasive vegetation.

Residual risk: Due to the high occurrence of alien invasive plant species in the area, the residual risk of increased alien vegetation cover is moderate to high.

Possible mitigation measures:

Construction:

- Alien invasive species, in particular category 1b species that were identified within the study area, should be removed from the development footprint and immediate surrounds, prior to construction or soil disturbances. By removing these species, the spread of seeds will be prevented into disturbed soils which could thus have a positive impact on the surrounding natural vegetation.
- All alien seedlings and saplings must be removed as they become evident for the duration of construction.

- All construction vehicles and equipment, as well as construction material should be free of plant material. Therefore, all equipment and vehicles should be thoroughly cleaned prior to access on to the construction areas. This should be verified by the ECO.
- If filling material is to be used, this should be sourced from areas free of invasive species.

Maintenance:

- Implement an alien invasive plant monitoring and management plan whereby the spread of alien and invasive plant species into the areas disturbed by the construction are regularly removed and re-infestation monitored.

Impact: Clearing of land for construction camps and potential pollution of the soil and water.

Residual risk: Compaction on construction camps could result in altered topsoil characteristics and vegetation composition. These areas are also prone to invasion by alien invasive plant species.

Possible mitigation measures:

Construction:

- Keep the clearing of natural veld to a minimum and locate construction camps within transformed or modified areas.
- No building of temporary infrastructure allowed in watercourses and buffers as recommended by the wetland specialist.
- After the final layout has been approved, conduct a thorough footprint investigation to determine any protected plant species population location and size.
- Stay within demarcated temporary construction areas and strictly prohibit any off-road driving or parking of vehicles and machinery outside designated areas
- Prevent spillage of construction material and other pollutants, contain, and treat any spillages immediately, strictly prohibit any pollution/littering according to the relevant EMPr.
- No open fires may be lit for cooking or any other purposes, unless in specifically designated and secured areas.
- Facilities may not be used as staff accommodation.
- No vehicles may be washed on the property, except in suitably designed and protected areas.
- No vehicles may be serviced or repaired on the property unless it is an emergency in which case adequate spillage containment must be implemented.
- After construction remove all foreign material prior to starting the rehabilitation.
- The rehabilitation plan for all temporarily affected areas must aim to re-introduce species naturally occurring in the Gauteng Shale Mountain bushveld.
- Monitor the establishment of invasive species and remove as soon as detected, whenever possible before regenerative material can be formed.

Maintenance:

- Monitor all sites disturbed by construction activities for colonisation by exotics or invasive plants and control these as they emerge. Monitoring should continue for at least two years after construction is complete.

Impact: Compaction and destruction of soils.

Residual risk: Altered soil characteristics and vegetation that remain in an unstable, pioneer phase or invaded by alien invasive plant species.

Possible mitigation measures:

Construction:

- Vehicles and machinery may not veer from the dedicated roads.
- Once construction is complete, obsolete roads should be obliterated by breaking the surface crust and erecting earth embankments to prevent erosion, while the natural species composition should be re-established.
- Prior to construction, the topsoil must be removed and stored separately from subsoil. The topsoil is imperative for the successful re-establishment of indigenous vegetation, and it carries seed from the existing vegetation.
- Topsoil (the upper 25 cm of soil) is an important natural resource; where it must and can be stripped, never mix it with subsoil or any other material, store and protect it separately until it can be re-applied, minimise handling of topsoil.
- Topsoil is typically stored in berms with a width of 150 – 200 cm, and a maximum height of 100 cm, preferably lower, ideally in a disturbed but weed-free area. Place berms along contours or perpendicular to the prevailing wind direction.
- Rapid decomposition of organic material in warm, moist topsoils decreases microbial activity necessary for nutrient cycling, and reduces the number of beneficial micro-organisms in the soil. Therefore, topsoil should therefore not be stored for extensive periods, and it is recommended that the reapplication of topsoil takes place as soon as possible. Adhere to the following general rule: the larger the pile of topsoil storage needs to be, the shorter should be the time it is stored
- Topsoil handling should be limited to stripping, piling (once), and re-application.
- Any movement of heavy machinery or vehicles over stored topsoils must be strictly prohibited.

Maintenance:

- Maintenance vehicles may not deviate from dedicated roads.

Impact: Bush densification.

Residual risk: Bush densification.

Possible mitigation measures:

Construction:

- Leave as much natural vegetation intact as possible.
- Do not disturb soil unnecessarily.
- Monitor rehabilitation and do not allow grazing to take place until such time that re-vegetation was found to be successful.
- Ensure that areas outside of the operational footprint that were disturbed, are adequately rehabilitated and that dense stands of encroacher species are prevented.

Operation:

- Monitor the establishment of dense stands of encroacher species and remove as soon as detected.
- A rehabilitation plan, using indigenous species from the study area, must be implemented that will restore disturbed areas beyond the footprint of the infrastructure to what it was prior to construction, thereby making the impact on the remainder of the site negligible in the long term (Dimela Eco Consulting, 2021).

Aquatic

Impacts:

- Flow alternations due to erosion and sedimentation.
- Pollution of watercourse.
- Spread of alien vegetation.

Residual risk: None listed in the specialist report.

Possible mitigation measures:

Construction Phase

- It is therefore recommended that a small trench/pipeline be created with the purpose of draining any water from the artificial wetland by Eskom. This will aid in the flow of the 'A' section channels and will avoid any further accumulation of rain water that could be affected by construction activities of the power line.
- Construction activities must take place during winter months (low flow season).
- Prevent spillage of construction material and other pollutants, contain, and treat any spillages immediately, strictly prohibit any pollution/littering according to the relevant EMPr.
- No open fires may be lit for cooking or any other purposes, unless in specifically designated and secured areas.
- Facilities may not be used as staff accommodation.
- No vehicles may be washed on the property, except in suitably designed and protected areas.
- No vehicles may be serviced or repaired on the property unless it is an emergency in which case adequate spillage containment must be implemented.

- Ensure that all stockpiles are well managed and have measures such as to minimise the mobilisation of sediments by the use of sand bags, hessian sheets, etc..
- Dumping of any excess rubble, construction material or refuse must be prohibited.
- Dumping of materials must only take place at designated and properly managed areas.
- Make use of existing infrastructure such as existing roads as to minimise impacts.
- Construction activities (excavations, etc.) must take place within the low flow period of the channels.
- Building material, ablution facilities or construction vehicles should not be stored in areas containing natural vegetation but the disturbed areas adjacent to the study area should be used.

Operational Phase

- Should any signs of erosion be found, remedial action such as backfilling, compaction and re-vegetation must be taken immediately to avoid exacerbation of the erosion.
- No stockpiling of any materials may take place adjacent to the channels and wetland areas.
- Ensure that all stockpiles are well managed and have measures to minimise the mobilisation of sediments such as the use of sand bags, hessian sheets, etc..
- Erosion control measures must be implemented in areas sensitive to erosion and where erosion has already occurred such as edges of slopes, exposed soil etc. These measures include but are not limited to - the use of sand bags, hessian sheets, silt fences, retention or replacement of vegetation and geotextiles such as soil cells which are used in the protection of slopes.
- Do not allow surface water or storm water to be concentrated, or to flow down cut or fill slopes without erosion protection measures being in place.
- Maintenance vehicles may not deviate from dedicated roads.
- It is crucial that the contamination of the surface waters through deleterious effluents and runoff water be avoided.
- Maintenance of stormwater drains must be undertaken as sensitively as possible to prevent adverse impacts to the environment and any watercourses.
- Any disturbed areas should be rehabilitated in line with the rehabilitation guidelines, this includes the clearing of alien vegetation, following the guidelines of a suitable alien invasive plant management plan.
- The site must be regularly monitored for re-growth of alien invasive species, and any new seedlings etc. eradicated using methods appropriate for the particular species, whether mechanical, chemical or biological.
- Protect as much indigenous vegetation as possible.
- Mitigation measures must be implemented with a suitable EMPr (Oasis Environmental Specialists, 2022).

Visual

Impact: Potential visual impact on the viewpoints that had a visual exposure rating for the construction phase.

Residual risk: None listed in the specialist report.

Possible mitigation measures:

- The construction area will be cleared of construction camps and equipment as soon as construction of the infrastructure is finished.

Impact: Potential visual impact on the viewpoints that had a visual exposure rating.

Residual risk: None listed in the specialist report.

Possible mitigation measures:

- Building the powerlines and pylons next to existing linear structures as far as possible.
- Clear vegetation only by cutting and not earth moving equipment.
- Use of existing roads for access where possible (Eco Elementum, 2022).

Soil and groundwater

Impact: Pollution of soil and/or groundwater resources due to the potential release of pollutants, such as chemicals, oil and fuel.

Residual risk: None anticipated.

Possible mitigation measures: Refer to the Generic EMPr for this project for mitigation measures.

Impact: Pollution of soil and/or groundwater resources due to the potential release of sewage from chemical toilets.

Residual risk: None anticipated.

Possible mitigation measures: Refer to the Generic EMPr for this project for mitigation measures.

Impact: Unsustainable utilisation of water.

Residual risk: None anticipated.

Possible mitigation measures: Refer to the Generic EMPr for this project for mitigation measures.

Impact: Pollution of soil and/or groundwater resources due to the mismanagement of waste.

Residual risk: None anticipated.

Possible mitigation measures: Refer to the Generic EMPr for this project for mitigation measures.

Impact: Pollution of soil and/or groundwater resources due to the potential release of pollutants, such as chemicals, oil and fuel, used during maintenance activities.

Residual risk: None anticipated.

Possible mitigation measures: Refer to the Generic EMPr for this project for mitigation measures.

Impact: Pollution of soil and/or groundwater resources due to the mismanagement of waste generated during maintenance activities.

Residual risk: None anticipated.

Possible mitigation measures: Refer to the Generic EMPr for this project for mitigation measures.

Air quality and noise

Impact: Generation of dust.

Residual risk: None anticipated.

Possible mitigation measures: Refer to the Generic EMPr for this project for mitigation measures.

Impact: Generation of noise, vibrations and possible nuisance.

Residual risk: None anticipated.

Possible mitigation measures: Refer to the Generic EMPr for this project for mitigation measures.

Impact: Release of emissions from construction vehicles and machinery.

Residual risk: None anticipated.

Possible mitigation measures: Refer to the Generic EMPr for this project for mitigation measures.

Positive impacts

Impact: Reliable electricity supply to NECSA.

Residual risk: None anticipated.

Possible mitigation measures: Not applicable – Positive impact.

Impact: The existing underground oil filled cables will no longer be used and any oil leakages and pollution will no longer be occurring.

Residual risk: Unknown extent of possible underground contamination from leaking oil filled cables.

Possible mitigation measures: Soil rehabilitation.

Impact: Any historical oil leakages and pollution will have been rehabilitated once the proposed powerline has been constructed (if authorised).

Residual risk: None anticipated.

Possible mitigation measures: Not applicable – Positive impact.

Impact: Less disturbance to the environment during maintenance activities as trenches do not need to be dug to access underground power cables.

Residual risk: None anticipated.

Possible mitigation measures: Not applicable – Positive impact.

Impact: Nesting of birds on the powerline infrastructure.

Residual risk: None anticipated.

Possible mitigation measures: Not applicable – Positive impact

8.8 Outcome of the site selection matrix

The outcome of the site selection matrix was discussed under Section 8.1 of this report.

8.9 Motivation for not considering alternatives

The motivation for not considering certain alternatives was discussed under Section 8.1 of this report.

8.10 Concluding statement

The preferred alternative is the proposed project (the Lomond Safari 88kV Powerline) and the preferred location for the project is the project property, as detailed under Section 4 of this report.

9. THE PROCESS UNDERTAKEN TO IDENTIFY, ASSESS AND RANK THE IMPACTS THAT THE ACTIVITY WILL IMPOSE ON THE PREFERRED LOCATION THROUGH THE LIFE OF THE ACTIVITY

According to the Environmental Impact Assessment Regulations, 2014, as amended in 2017 and 2021, the objective of the basic environmental impact assessment process is to, through a consultative process-

- (a) determine the policy and legislative context within which the proposed activity is located and how the proposed activity complies with and responds to the policy and legislative context;
- (b) identify the alternatives considered, including the activity, location, and technology alternatives;
- (c) describe the need and desirability of the proposed alternatives;
- (d) through the undertaking of an impact and risk assessment process, inclusive of cumulative impacts which focused on determining the geographical, physical, biological, social, economic, heritage, and cultural sensitivity of the sites and locations within sites and the risk of impact of the proposed activity and technology alternatives on these aspects to determine—
 - (i) the nature, significance, consequence, extent, duration, and probability of the impacts occurring to; and
 - (ii) the degree to which these impacts—
 - (aa) can be reversed;
 - (bb) may cause irreplaceable loss of resources; and
 - (cc) can be avoided, managed or mitigated.
- (e) through a ranking of the site sensitivities and possible impacts the activity and technology alternatives will impose on the sites and location identified through the life of the activity to—
 - (i) identify and motivate a preferred site, activity and technology alternative;
 - (ii) identify suitable measures to avoid, manage or mitigate identified impacts; and
 - (iii) identify residual risks that need to be managed and monitored.

9.1 Description of all environmental issues and risks that were identified during the Environmental Impact Assessment process – process undertaken

Elements of the proposed project that can interact with the environment are deemed to be environmental aspects. These have been identified during the Environmental Impact Assessment process, for each phase of the proposed project. Thereafter, the potential impacts that can result

from the project's aspects have been identified. The impacts, whether positive or negative, are defined as any change to the environment resulting from the identified environmental aspects.

All environmental issues and risks that were identified as part of this Basic Environmental Impact Assessment process have been listed under Section 8.4 of this report. The aspects can be seen in the tables under Section 9.3 of this report.

9.2 Assessment of the significance of each issue and risk and an indication of the extent to which the issue and risk could be avoided or addressed by the adoption of mitigation measures – process undertaken

Assessing the significance of the potential impacts has been conducted using the parameters listed in the table below. Direct, indirect and cumulative impacts have been assessed.

Table 7: Impact significance rating

Nature of the impact	This will include a qualitative description of what caused the impact and how it will affect the environment.
Extent of the impact	The size (physical/geographical) that will be affected by the impact: <ul style="list-style-type: none"> Onsite impact: Weighting value 1: The impact is confined to the project site/property Local impact: Weighting value 2: The impact is confined to the project site/property and a 10km radius around the project site/property Regional impact: Weighting value 3: The impact extends further than a 10km radius around the project site/property
Duration of the impact	The length of time over which the impact will persist: <ul style="list-style-type: none"> Short term impact: Weighting value 1: The impact will persist for up to one year Medium term impact: Weighting value 2: The impact will persist for longer than one year, but shorter than five years Long term impact: Weighting value 3: The impact will persist for longer than five years
Magnitude of the impact	The intensity of the impact on the environment: <ul style="list-style-type: none"> Low impact: Weighting value 1: Natural processes continue, albeit in an altered manner Medium impact: Weighting value 2: Natural processes cease temporarily High impact: Weighting value 3: Natural processes cease indefinitely
Probability of the impact occurring	How likely it is that the impact will happen:

	<ul style="list-style-type: none"> • Improbable: Weighting value 1: It is unlikely that the impact will occur • Probable: Weighting value 2: There is a chance that the impact will occur • Definite: Weighting value 3: The impact will most certainly occur
Status of the impact	<p>A qualitative description of the impact:</p> <ul style="list-style-type: none"> • Whether the impact is positive or negative in nature • The degree to which the impact can be reversed • The degree to which the impact can be mitigated • The degree to which the impact may cause irreplaceable loss of resources
Significance of the impact	<p>This will be calculated using the formula below:</p> <p>Significance = (Extent + Duration + Magnitude) x Probability</p> <p>The significance of each impact will be divided into the following ratings, according to the results of the Significance calculation given above:</p> <ul style="list-style-type: none"> • Low Impact: Significance value: 1-9 • Medium Impact: Significance value: 10-18 • High Impact: Significance value: 19-27

The aspects to be assessed by specialists have been listed under Section 9.4. (where applicable) and will be undertaken according to the same methodology as provided in Table 7 above.

9.3 Assessment of each identified potentially significant impact and risk, including cumulative impacts; the nature, significance and consequences of the impact and risk; the extent and duration of the impact and risk; the probability of the impact and risk occurring; the degree to which the impact and risk can be reversed; the degree to which the impact and risk may cause irreplaceable loss of resources; and the degree to which the impact and risk can be avoided, managed or mitigated

The following aspects have been assessed as part of the Basic Environmental Impact Assessment process:

- Environment in general.
- Terrestrial Fauna.
- Heritage and Paleontological resources.
- Terrestrial Biodiversity (Flora/Vegetation).

- Aquatic environment.
- Visual.
- Soil and groundwater.
- Air quality and noise.
- Social.
- Positive impacts.

The following tables discuss the impacts and risks identified for each alternative, including the nature, significance, consequences, extent, duration and probability of the impacts, the degree to which the impacts can be reversed; may cause irreplaceable loss of resources; and can be avoided, managed or mitigated.

9.3.1 Preferred Alternative – Lomond Safari 88kV Powerline

9.3.1.1 Planning and Design Phase

Table 8: Impact Assessment: Planning and Design Phase

Aspect and nature of the potential impacts	Impact Significance rating before mitigation	Impact Significance rating after mitigation	The status of the impact	Risk of the impact and mitigation not being implemented
Environment in general				
Ineffective planning for the proposed Lomond Safari 88kV Powerline leading to environmental impacts during the construction and post-construction phases.	Extent of impact: 2 Duration of impact: 1 Magnitude of impact: 2 Probability of impact: 2 Significance of impact: 10 - Medium	Extent of impact: 1 Duration of impact: 1 Magnitude of impact: 2 Probability of impact: 1 Significance of impact: 4 – Low	Nature of impact: Negative The degree to which the impact can be reversed: High The degree to which the impact can be mitigated: High The degree to which the impact may cause irreplaceable loss of resources: Medium	Low

9.3.1.2 Construction Phase

Table 9: Impact Assessment: Construction Phase

Aspect and nature of the potential impacts	Impact Significance rating before mitigation	Impact Significance rating after mitigation	The status of the impact	Risk of the impact and mitigation not being implemented
Fauna				
Loss and alteration of faunal habitat.	Moderate *Rating as per specialist report	Low *Rating as per specialist report	Nature of impact: Negative The degree to which the impact can be reversed: Moderate The degree to which the impact can be mitigated: High The degree to which the impact may cause irreplaceable loss of resources: Moderate *Ratings as per specialist report	Low
Hindrance, trapping, killing of fauna, focussing on TOP species, particularly Sensitive Species 12 and provincially protected dung beetles.	Moderate *Rating as per specialist report	Low *Rating as per specialist report	Nature of impact: Negative The degree to which the impact can be reversed: Moderate The degree to which the impact can be mitigated: High The degree to which the impact may cause irreplaceable loss of resources: Moderate *Ratings as per specialist report	Low
Contamination of fauna environment through use and storage of hazardous substances, littering and dumping of waste.	Moderate *Rating as per specialist report	Low *Rating as per specialist report	Nature of impact: Negative The degree to which the impact can be reversed: Moderate The degree to which the impact can be mitigated: High The degree to which the impact may cause irreplaceable loss of resources: Moderate *Ratings as per specialist report	Low
Avifauna				
Displacement of Red Listed species as a result of habitat loss or transformation.	Moderate *Rating as per specialist report	Low *Rating as per specialist report	Nature of impact: Negative The degree to which the impact can be reversed: Medium	Low

Aspect and nature of the potential impacts	Impact Significance rating before mitigation	Impact Significance rating after mitigation	The status of the impact	Risk of the impact and mitigation not being implemented
			The degree to which the impact can be mitigated: High The degree to which the impact may cause irreplaceable loss of resources: Medium *Ratings as per specialist report	
Displacement of Red Listed species as a result of disturbance.	Moderate *Rating as per specialist report	Low *Rating as per specialist report	Nature of impact: Negative The degree to which the impact can be reversed: High The degree to which the impact can be mitigated: High The degree to which the impact may cause irreplaceable loss of resources: Medium *Ratings as per specialist report	Low
Direct mortality as a result of construction activities.	Low *Rating as per specialist report	Low *Rating as per specialist report	Nature of impact: Negative The degree to which the impact can be reversed: High The degree to which the impact can be mitigated: High The degree to which the impact may cause irreplaceable loss of resources: High *Ratings as per specialist report	Low
Heritage and Palaeontological Resources				
Possible destruction of archaeological remains.	Low *Rating as per specialist report	Low *Rating as per specialist report	Nature of impact: Negative The degree to which the impact can be reversed: Low The degree to which the impact can be mitigated: Medium The degree to which the impact may cause irreplaceable loss of resources: Medium *Ratings as per specialist report	Low
Possible disturbance of graves.	Low *Rating as per specialist report	Low *Rating as per specialist report	Nature of impact: Negative The degree to which the impact can be reversed: Low The degree to which the impact can be mitigated: Medium The degree to which the impact may cause irreplaceable loss of resources: Medium *Ratings as per specialist report	Low
Possible disturbance of buildings and structures older than 60 years old.	Low *Rating as per specialist report	Low *Rating as per specialist report	Nature of impact: Negative The degree to which the impact can be reversed: Low The degree to which the impact can be mitigated: Medium The degree to which the impact may cause irreplaceable loss of resources: Medium *Ratings as per specialist report	Low
Terrestrial Biodiversity (Flora / Vegetation)				
Destruction of natural vegetation.	Moderate *Rating as per specialist report	Moderate *Rating as per specialist report	Nature of impact: Negative The degree to which the impact can be reversed: Low	Low

Aspect and nature of the potential impacts	Impact Significance rating before mitigation	Impact Significance rating after mitigation	The status of the impact	Risk of the impact and mitigation not being implemented
			<p>The degree to which the impact can be mitigated: High</p> <p>The degree to which the impact may cause irreplaceable loss of resources: Moderate</p> <p>*Ratings as per specialist report</p>	
Exposure to erosion and subsequent sedimentation or pollution of proximate watercourses.	<p>Moderate</p> <p>*Rating as per specialist report</p>	<p>Low</p> <p>*Rating as per specialist report</p>	<p>Nature of impact: Negative</p> <p>The degree to which the impact can be reversed: Moderate</p> <p>The degree to which the impact can be mitigated: High</p> <p>The degree to which the impact may cause irreplaceable loss of resources: Low</p> <p>*Ratings as per specialist report</p>	Low
Removal / Destruction of protected plants and plants of conservation concern.	<p>Moderate</p> <p>*Rating as per specialist report</p>	<p>Low</p> <p>*Rating as per specialist report</p>	<p>Nature of impact: Negative</p> <p>The degree to which the impact can be reversed: Moderate</p> <p>The degree to which the impact can be mitigated: Moderate</p> <p>The degree to which the impact may cause irreplaceable loss of resources: Low</p> <p>*Ratings as per specialist report</p>	Low
Potential increase in invasive vegetation.	<p>Moderate</p> <p>*Rating as per specialist report</p>	<p>Low</p> <p>*Rating as per specialist report</p>	<p>Nature of impact: Negative</p> <p>The degree to which the impact can be reversed: Moderate</p> <p>The degree to which the impact can be mitigated: Moderate</p> <p>The degree to which the impact may cause irreplaceable loss of resources: Low</p> <p>*Ratings as per specialist report</p>	Low
Clearing of land for construction camps and potential pollution of the soil and water.	<p>Moderate</p> <p>*Rating as per specialist report</p>	<p>Low</p> <p>*Rating as per specialist report</p>	<p>Nature of impact: Negative</p> <p>The degree to which the impact can be reversed: Moderate</p> <p>The degree to which the impact can be mitigated: Moderate</p> <p>The degree to which the impact may cause irreplaceable loss of resources: Not applicable</p> <p>*Ratings as per specialist report</p>	Low
Compaction and destruction of soils.	<p>Moderate</p> <p>*Rating as per specialist report</p>	<p>Low</p> <p>*Rating as per specialist report</p>	<p>Nature of impact: Negative</p> <p>The degree to which the impact can be reversed: Moderate</p> <p>The degree to which the impact can be mitigated: Moderate</p> <p>The degree to which the impact may cause irreplaceable loss of resources: Moderate</p> <p>*Ratings as per specialist report</p>	Low
Bush densification.	<p>Moderate</p> <p>*Rating as per specialist report</p>	<p>Low</p> <p>*Rating as per specialist report</p>	<p>Nature of impact: Negative</p> <p>The degree to which the impact can be reversed: Rehabilitation is possible but could take several years</p> <p>The degree to which the impact can be mitigated: Moderate</p>	Low

Aspect and nature of the potential impacts	Impact Significance rating before mitigation	Impact Significance rating after mitigation	The status of the impact	Risk of the impact and mitigation not being implemented
			The degree to which the impact may cause irreplaceable loss of resources: Moderate *Ratings as per specialist report	
Aquatic Environment				
Flow alternations due to erosion and sedimentation.	Low *Rating as per specialist report	Low *Rating as per specialist report	Nature of impact: Negative The degree to which the impact can be reversed: Medium The degree to which the impact can be mitigated: Medium The degree to which the impact may cause irreplaceable loss of resources: Medium	Low
Pollution of watercourse.	Low *Rating as per specialist report	Low *Rating as per specialist report	Nature of impact: Negative The degree to which the impact can be reversed: Medium The degree to which the impact can be mitigated: Medium The degree to which the impact may cause irreplaceable loss of resources: Medium	Low
Spread of alien vegetation.	Low *Rating as per specialist report	Low *Rating as per specialist report	Nature of impact: Negative The degree to which the impact can be reversed: Medium The degree to which the impact can be mitigated: Medium The degree to which the impact may cause irreplaceable loss of resources: Medium	Low
Visual				
Potential visual impact on the viewpoints that had a visual exposure rating for the construction phase.	Moderate *Rating as per specialist report	Low *Rating as per specialist report	Nature of impact: Negative The degree to which the impact can be reversed: High The degree to which the impact can be mitigated: Medium The degree to which the impact may cause irreplaceable loss of resources: Medium	Low
Soil and groundwater				
Pollution of soil and/or groundwater resources due to the potential release of pollutants, such as chemicals, oil and fuel.	Extent of impact: 2 Duration of impact: 2 Magnitude of impact: 2 Probability of impact: 2 Significance of impact: 12 - Medium	Extent of impact: 2 Duration of impact: 2 Magnitude of impact: 2 Probability of impact: 1 Significance of impact: 6 - Low	Nature of impact: Negative The degree to which the impact can be reversed: Medium The degree to which the impact can be mitigated: High The degree to which the impact may cause irreplaceable loss of resources: Medium	Low-Medium
Pollution of soil and/or groundwater resources due to the potential release of sewage from chemical toilets.	Extent of impact: 2 Duration of impact: 2 Magnitude of impact: 2 Probability of impact: 2 Significance of impact: 12 - Medium	Extent of impact: 2 Duration of impact: 2 Magnitude of impact: 2 Probability of impact: 1 Significance of impact: 6 - Low	Nature of impact: Negative The degree to which the impact can be reversed: Medium The degree to which the impact can be mitigated: High The degree to which the impact may cause irreplaceable loss of resources: Medium	Low

Aspect and nature of the potential impacts	Impact Significance rating before mitigation	Impact Significance rating after mitigation	The status of the impact	Risk of the impact and mitigation not being implemented
Unsustainable utilisation of water.	Extent of impact: 2 Duration of impact: 1 Magnitude of impact: 2 Probability of impact: 2 Significance of impact: 10 - Medium	Extent of impact: 1 Duration of impact: 1 Magnitude of impact: 2 Probability of impact: 1 Significance of impact: 4 - Low	Nature of impact: Negative The degree to which the impact can be reversed: Low The degree to which the impact can be mitigated: High The degree to which the impact may cause irreplaceable loss of resources: Medium	Low-Medium
Pollution of soil and/or groundwater resources due to the mismanagement of waste.	Extent of impact: 2 Duration of impact: 2 Magnitude of impact: 2 Probability of impact: 2 Significance of impact: 12 - Medium	Extent of impact: 2 Duration of impact: 2 Magnitude of impact: 2 Probability of impact: 1 Significance of impact: 6 - Low	Nature of impact: Negative The degree to which the impact can be reversed: Medium The degree to which the impact can be mitigated: High The degree to which the impact may cause irreplaceable loss of resources: Medium	Low-Medium
Air Quality and Noise				
Generation of dust.	Extent of impact: 2 Duration of impact: 1 Magnitude of impact: 2 Probability of impact: 2 Significance of impact: 10 - Medium	Extent of impact: 1 Duration of impact: 1 Magnitude of impact: 2 Probability of impact: 1 Significance of impact: 4 - Low	Nature of impact: Negative The degree to which the impact can be reversed: High The degree to which the impact can be mitigated: High The degree to which the impact may cause irreplaceable loss of resources: Low	Low-Medium
Generation of noise, vibrations and possible nuisance.	Extent of impact: 2 Duration of impact: 1 Magnitude of impact: 1 Probability of impact: 2 Significance of impact: 8 - Low	Extent of impact: 1 Duration of impact: 1 Magnitude of impact: 1 Probability of impact: 1 Significance of impact: 3 - Low	Nature of impact: Negative The degree to which the impact can be reversed: High The degree to which the impact can be mitigated: High The degree to which the impact may cause irreplaceable loss of resources: Low	Low-Medium
Release of emissions from construction vehicles and machinery.	Extent of impact: 3 Duration of impact: 1 Magnitude of impact: 2 Probability of impact: 2 Significance of impact: 12 - Medium	Extent of impact: 2 Duration of impact: 1 Magnitude of impact: 1 Probability of impact: 1 Significance of impact: 4 - Low	Nature of impact: Negative The degree to which the impact can be reversed: Low The degree to which the impact can be mitigated: Medium The degree to which the impact may cause irreplaceable loss of resources: High	Low-Medium

9.3.1.3 Operational Phase

Table 10: Impact Assessment: Operational Phase

Aspect and nature of the potential impacts	Impact Significance rating before mitigation	Impact Significance rating after mitigation	The status of the impact	Risk of the impact and mitigation not being implemented
Terrestrial Fauna				
Loss and alteration of faunal habitat.	Moderate *Rating as per specialist report	Low *Rating as per specialist report	Nature of impact: Negative The degree to which the impact can be reversed: Moderate The degree to which the impact can be mitigated: High	Low

Aspect and nature of the potential impacts	Impact Significance rating before mitigation	Impact Significance rating after mitigation	The status of the impact	Risk of the impact and mitigation not being implemented
			The degree to which the impact may cause irreplaceable loss of resources: Moderate *Ratings as per specialist report	
Hindrance, trapping, killing of fauna, focussing on TOP species, particularly Sensitive Species 12 and provincially protected dung beetles.	Moderate *Rating as per specialist report	Low *Rating as per specialist report	Nature of impact: Negative The degree to which the impact can be reversed: Moderate The degree to which the impact can be mitigated: High The degree to which the impact may cause irreplaceable loss of resources: Moderate *Ratings as per specialist report	Low
Contamination of fauna environment through use and storage of hazardous substances, littering and dumping of waste.	Low *Rating as per specialist report	Low *Rating as per specialist report	Nature of impact: Negative The degree to which the impact can be reversed: Moderate The degree to which the impact can be mitigated: High The degree to which the impact may cause irreplaceable loss of resources: Moderate *Ratings as per specialist report	Low
Avifauna				
Mortality due to collisions with the 88kV power line conductors.	Low *Rating as per specialist report	Low *Rating as per specialist report	Nature of impact: Negative The degree to which the impact can be reversed: High The degree to which the impact can be mitigated: High The degree to which the impact may cause irreplaceable loss of resources: Medium *Ratings as per specialist report	Low
Mortality due to electrocutions on the 88kV power line infrastructure.	Moderate *Rating as per specialist report	Low *Rating as per specialist report	Nature of impact: Negative The degree to which the impact can be reversed: High The degree to which the impact can be mitigated: High The degree to which the impact may cause irreplaceable loss of resources: Medium *Ratings as per specialist report	Low
Heritage and Palaeontological Resources				
Destruction public monuments and plaques.	Low *Rating as per specialist report	Low *Rating as per specialist report	Nature of impact: Negative The degree to which the impact can be reversed: Low The degree to which the impact can be mitigated: Medium The degree to which the impact may cause irreplaceable loss of resources: Medium *Ratings as per specialist report	Low
Terrestrial Biodiversity (Flora / Vegetation)				
Destruction of natural vegetation.	Moderate *Rating as per specialist report	Low *Rating as per specialist report	Nature of impact: Negative The degree to which the impact can be reversed: Low	Low

Aspect and nature of the potential impacts	Impact Significance rating before mitigation	Impact Significance rating after mitigation	The status of the impact	Risk of the impact and mitigation not being implemented
			<p>The degree to which the impact can be mitigated: High</p> <p>The degree to which the impact may cause irreplaceable loss of resources: Moderate</p> <p>*Ratings as per specialist report</p>	
Exposure to erosion and subsequent sedimentation or pollution of proximate watercourses.	<p>Moderate</p> <p>*Rating as per specialist report</p>	<p>Low</p> <p>*Rating as per specialist report</p>	<p>Nature of impact: Negative</p> <p>The degree to which the impact can be reversed: Moderate</p> <p>The degree to which the impact can be mitigated: High</p> <p>The degree to which the impact may cause irreplaceable loss of resources: Low</p> <p>*Ratings as per specialist report</p>	Low
Removal / Destruction of protected plants and plants of conservation concern.	<p>Low</p> <p>*Rating as per specialist report</p>	<p>Low</p> <p>*Rating as per specialist report</p>	<p>Nature of impact: Negative</p> <p>The degree to which the impact can be reversed: Moderate</p> <p>The degree to which the impact can be mitigated: Moderate</p> <p>The degree to which the impact may cause irreplaceable loss of resources: Low</p> <p>*Ratings as per specialist report</p>	Low
Potential increase in invasive vegetation	<p>Moderate</p> <p>*Rating as per specialist report</p>	<p>Low</p> <p>*Rating as per specialist report</p>	<p>Nature of impact: Negative</p> <p>The degree to which the impact can be reversed: Moderate</p> <p>The degree to which the impact can be mitigated: Moderate</p> <p>The degree to which the impact may cause irreplaceable loss of resources: Low</p> <p>*Ratings as per specialist report</p>	Low
Clearing of land for construction camps and potential pollution of the soil and water	<p>Moderate</p> <p>*Rating as per specialist report</p>	<p>Low</p> <p>*Rating as per specialist report</p>	<p>Nature of impact: Negative</p> <p>The degree to which the impact can be reversed: Moderate</p> <p>The degree to which the impact can be mitigated: Moderate</p> <p>The degree to which the impact may cause irreplaceable loss of resources: Not applicable</p> <p>*Ratings as per specialist report</p>	Low
Compaction and destruction of soils.	<p>Low</p> <p>*Rating as per specialist report</p>	<p>Low</p> <p>*Rating as per specialist report</p>	<p>Nature of impact: Negative</p> <p>The degree to which the impact can be reversed: Moderate</p> <p>The degree to which the impact can be mitigated: Moderate</p> <p>The degree to which the impact may cause irreplaceable loss of resources: Moderate</p> <p>*Ratings as per specialist report</p>	Low
Bush densification.	<p>Moderate</p> <p>*Rating as per specialist report</p>	<p>Low</p> <p>*Rating as per specialist report</p>	<p>Nature of impact: Negative</p> <p>The degree to which the impact can be reversed: Rehabilitation is possible but could take several years</p> <p>The degree to which the impact can be mitigated: Moderate</p>	Low

Aspect and nature of the potential impacts	Impact Significance rating before mitigation	Impact Significance rating after mitigation	The status of the impact	Risk of the impact and mitigation not being implemented
			The degree to which the impact may cause irreplaceable loss of resources: Moderate *Ratings as per specialist report	
Aquatic Environment				
Flow alternations due to erosion and sedimentation (applicable to the channels and artificial wetland system on site).	Low *Rating as per specialist report	Low *Rating as per specialist report	Nature of impact: Negative The degree to which the impact can be reversed: Medium The degree to which the impact can be mitigated: Medium The degree to which the impact may cause irreplaceable loss of resources: Medium	Low
Pollution of watercourse (applicable to the channels and artificial wetland system on site).	Low *Rating as per specialist report	Low *Rating as per specialist report	Nature of impact: Negative The degree to which the impact can be reversed: Medium The degree to which the impact can be mitigated: High The degree to which the impact may cause irreplaceable loss of resources: Medium	Low
Spread of alien vegetation (applicable to the channels and artificial wetland system on site).	Low *Rating as per specialist report	Low *Rating as per specialist report	Nature of impact: Negative The degree to which the impact can be reversed: Medium The degree to which the impact can be mitigated: Medium The degree to which the impact may cause irreplaceable loss of resources: Medium	Low
Visual				
Potential visual impact on the viewpoints that had a visual exposure rating.	Moderate *Rating as per specialist report	Moderate *Rating as per specialist report	Nature of impact: Negative The degree to which the impact can be reversed: High The degree to which the impact can be mitigated: Low The degree to which the impact may cause irreplaceable loss of resources: Medium	Low
Soil and groundwater				
Pollution of soil and/or groundwater resources due to the potential release of pollutants, such as chemicals, oil and fuel, used during maintenance activities.	Extent of impact: 2 Duration of impact: 2 Magnitude of impact: 2 Probability of impact: 2 Significance of impact: 12 - Medium	Extent of impact: 2 Duration of impact: 2 Magnitude of impact: 2 Probability of impact: 1 Significance of impact: 6 - Low	Nature of impact: Negative The degree to which the impact can be reversed: Medium The degree to which the impact can be mitigated: High The degree to which the impact may cause irreplaceable loss of resources: Medium	Low-Medium
Pollution of soil and/or groundwater resources due to the mismanagement of waste generated during maintenance activities.	Extent of impact: 2 Duration of impact: 2 Magnitude of impact: 2 Probability of impact: 2 Significance of impact: 12 - Medium	Extent of impact: 2 Duration of impact: 2 Magnitude of impact: 2 Probability of impact: 1 Significance of impact: 6 - Low	Nature of impact: Negative The degree to which the impact can be reversed: Medium The degree to which the impact can be mitigated: High The degree to which the impact may cause irreplaceable loss of resources: Medium	Low-Medium
Positive Impacts				
Reliable electricity supply to NECSA.	Not applicable (positive impact)	Not applicable (positive impact)	Nature of impact: Positive	Not applicable (positive impact)

Aspect and nature of the potential impacts	Impact Significance rating before mitigation	Impact Significance rating after mitigation	The status of the impact	Risk of the impact and mitigation not being implemented
			<p>The degree to which the impact can be reversed: Not applicable (positive impact)</p> <p>The degree to which the impact can be mitigated: Not applicable (positive impact)</p> <p>The degree to which the impact may cause irreplaceable loss of resources: Not applicable (positive impact)</p>	
The existing underground oil filled cables will no longer be used and any oil leakages and pollution will no longer be occurring.	Not applicable (positive impact)	Not applicable (positive impact)	<p>Nature of impact: Positive</p> <p>The degree to which the impact can be reversed: Not applicable (positive impact)</p> <p>The degree to which the impact can be mitigated: Not applicable (positive impact)</p> <p>The degree to which the impact may cause irreplaceable loss of resources: Not applicable (positive impact)</p>	Not applicable (positive impact)
Any historical oil leakages and pollution will have been rehabilitated once the proposed powerline has been constructed (if authorised).	Not applicable (positive impact)	Not applicable (positive impact)	<p>Nature of impact: Positive</p> <p>The degree to which the impact can be reversed: Not applicable (positive impact)</p> <p>The degree to which the impact can be mitigated: Not applicable (positive impact)</p> <p>The degree to which the impact may cause irreplaceable loss of resources: Not applicable (positive impact)</p>	Not applicable (positive impact)
Less disturbance to the environment during maintenance activities as trenches do not need to be dug to access underground power cables.	Not applicable (positive impact)	Not applicable (positive impact)	<p>Nature of impact: Positive</p> <p>The degree to which the impact can be reversed: Not applicable (positive impact)</p> <p>The degree to which the impact can be mitigated: Not applicable (positive impact)</p> <p>The degree to which the impact may cause irreplaceable loss of resources: Not applicable (positive impact)</p>	Not applicable (positive impact)
Nesting on the Lomond-Safari 88kV power line infrastructure.	Not applicable (positive impact)	Not applicable (positive impact)	<p>Nature of impact: Positive</p> <p>The degree to which the impact can be reversed: Not applicable (positive impact)</p> <p>The degree to which the impact can be mitigated: Not applicable (positive impact)</p> <p>The degree to which the impact may cause irreplaceable loss of resources: Not applicable (positive impact)</p>	Not applicable (positive impact)

9.4 A summary of the findings and impact management measures identified in any specialist reports complying with Appendix 6 of the EIA Regulations, 2014, and an indication as to how these findings and recommendations have been included in this Basic Assessment Report

Herewith a summary of the findings and recommendations of the various specialist reports:

Terrestrial Fauna

In terms of the findings if the following is implemented then there is no reason for not authorising the activity in terms of terrestrial fauna:

- Completing species-specific trapping is not likely to provide additional information that would alter these findings, and the cautionary approach is likely to be relevant regardless. Considering the type of activity proposed and the current existing anthropogenic impact on site, no additional species specific trapping is recommended.
- The managing body of the Cradle of Humankind World Heritage Site Protected Area must be consulted and any recommendation regarding activities within the PA's buffer zones, as stipulated in the PA's EMP, adhered to.
- Recommendations of the flora and aquatic biodiversity specialist must be implemented on site.
- The mitigation measures stipulated in the impact tables and Section 6 of the Fauna report must be included within the environmental management plan report and implemented on site.
- The monitoring plan in Section 6 of the Fauna report must be included within the environmental management plan report and implemented on site (BK Zoology, 2022).

Avifauna

In conclusion, the habitat within which the proposed study area is located is low to moderately sensitive from a potential bird impact perspective. The construction of the proposed Lomond-Safari 88kV power line will result in impacts of MODERATE significance to birds occurring in the vicinity of the new infrastructure, which can be reduced through the application of mitigation measures. It is anticipated that the proposed Lomond-Safari 88kV power line can be constructed within the study area with acceptable levels of impact on the resident avifauna, subject to the following recommendations:

- Construction activities (i.e., all staff, vehicle and machinery) should be restricted to the immediate footprint of the infrastructure. The recommendations of the botanical study must be strictly implemented.
- Access to the remainder of the site should be strictly controlled to prevent unnecessary disturbance of avifaunal species.

- Maximum use should be made of existing roads and the construction of new roads must be kept to a minimum. New roads are to be located in areas of existing high disturbance, and not encroach upon sensitive habitats.
- The 88kV power lines must be constructed using a bird friendly structure (i.e., DT 7641/7649).
- Additional mitigation in the form of insulating sleeves on jumpers present on strain poles, terminal poles and box transformers must also be implemented.
- Dead animals/carcasses found at/close to the Lomond-Safari 88kV power line during routine power line patrols and/or maintenance by Eskom must be removed from the property and donated to VulPro to ensure that the Cape Vultures utilising the study area are fed in a safe environment.
- The historical vulture restaurant/feeding site on the NECSA property must remain closed.
- If collision or electrocution impacts are recorded once the 88kV power lines are operational, it is recommended that an avifaunal specialist investigate the mortalities and provide recommendations for site-specific mitigation to be applied reactively.
- In addition to this, the normal suite of environmental good practices should be applied, such as ensuring strict control of staff, vehicles and machinery on site and limiting the creation of new roads as far as possible (Feathers Environmental Services, 2021).

Heritage and Palaeontology

Based on the significance assessment criterion employed in the Phase 1 Archaeological/Heritage Impact Assessment, the proposed powerline route was rated low from an archaeological perspective. In terms of the archaeology and heritage in respect of the proposed power distribution development, there are no obvious 'Fatal Flaws' or 'No-Go' areas. However, the potential for chance finds, still remains and the developer and contractors are advised to be diligent and observant during construction of the proposed development site. A Chance Find Procedure was compiled and is included in the Phase 1 Archaeological/Heritage Impact Assessment Report. If the Phase 1 Archaeological/Heritage Impact Assessment is adopted by SAHRA, then there are no archaeological reasons why the proposed powerline construction cannot proceed (IS Solutions, 2021).

Terrestrial Biodiversity (Flora / Vegetation)

The site falls in an area that is listed by the National Screening Tool as being of 'High' terrestrial biodiversity. Furthermore, the Screening Tool lists a 'Medium' sensitivity for plant species, indicating that there is a likelihood of plant species of conservation concern being present. However, much of the proposed development footprint was found to be in a secondary state. Due to the largely modified and secondary nature of the vegetation, the proposed development of the powerline route will have a limited impact on sensitive vegetation. The entire powerline route is within proximity of existing

roads. Therefore, limited to no additional access roads are needed, further limiting the proposed developments impacts on vegetation. Most of the powerline route follows a previously disturbed footprint, likely of a cable or pipeline.

According to the North West Biodiversity Sector Plan ((North West Department of Rural, Environment and Agricultural Development (READ), 2015), the site falls within a CBA2. The land use objective in a CBA2 should be to maintain the land in a natural or near-natural state that maximises the retention of biodiversity pattern and ecological process. The powerline may fragment fauna habitat; however, vegetation can regrow and can rehabilitate well. Eskom must strictly manage edge effects and prevent, monitor and rehabilitate negative impacts into adjacent vegetation. The implementation of a rehabilitation and monitoring plan to ensure that the vegetation is retuned to sustainable bushveld post construction must be implemented (Dimela Eco Consulting, 2021).

Aquatic

No NFEPA wetlands were identified within 500 m of the proposed powerline during the desktop assessment. The Bench wetlands shown on the desktop data were confirmed to be drying ponds on the NECSA property.

No hydrophytic vegetation or wetland/riparian soils were observed within wetland and channel areas assessed. The channel areas were classified as 'non-perennial A' section channels, where these channels do not have baseflow and convey surface runoff immediately after a storm event and lacks a riparian zone.

The artificially created wetland area does not illustrate any soil or vegetation characteristics associated with natural occurring wetlands, therefore this system is classified as an artificial seasonal wetland system. Through assessing historical imagery, this area had a historical dam and was linked with the drainage channel on the western portion.

The area is currently impacted by industrial development, alien invasive plant species, and sedimentation. The impacts of the proposed powerline on the artificial wetland and non-perennial channels will be **very low**, due to all the anthropogenic impacts and alterations within the area. The artificial wetland system is a manmade system and should not occur naturally in that specific area. The findings from the avifaunal assessment stated that this system is unlikely to support any of the Red Listed species, therefore holding no ecological significance.

It is therefore recommended that a small trench/pipeline be created with the purpose of draining any water from the artificial wetland by Eskom. This will aid in the flow of the 'A' section channels and will avoid any further accumulation of rain water that could be affected by construction activities of the power line (Oasis Environmental Specialists, 2022).

Visual

The construction and operation phase of the proposed Lomond Safari 88kV Powerline project related activities and its associated infrastructure will have a MODERATE visual impact on the natural scenic resources and the topography. However, with the correct mitigation measures the impact might decrease to a point where the visual impact can be seen as less significant. The moderating factors of the visual impact of the proposed powerline in close range are the following:

- The few numbers of human inhabitants located in the area.
- Natural hilly topography and dense vegetation.
- The length of the powerline.
- High absorption capacity of the landscape being inside the Pelindaba complex.

The Visual Impact due to powerline infrastructure can be seen as having a MODERATE impact on the surrounding environment and inhabitants before mitigation measures are implemented. After mitigation, the visual impact can be seen as MODERATE although lower.

If the mitigation measures are not done correctly then the visual impact will remain moderate (a higher moderate) and become a concern. However, with correct mitigation, the impact will be low-moderate (Eco Elementum, 2022).

10. ENVIRONMENTAL IMPACT STATEMENT

10.1 Summary of the key findings of the Environmental Impact Assessment

The summary of the key findings of this Basic Environmental Impact Assessment process is as follows:

- The project site (the preferred powerline route and location) is in a mostly disturbed state.
- The proposed project will result in positive environmental- and social impacts as jobs will be created and the electricity supply to NECSA will be improved, while also eliminating the use of oil filled cables and the associated risk of environmental pollution due to oil leakages.

- In this report, the potential environmental impacts associated with the proposed project have been identified and assessed in terms of their significance. The most significant impacts relate to visual impacts to receptors in the vicinity of the site; bush densification; clearance of indigenous vegetation and loss of faunal habitat; increase in invasive vegetation; erosion and sedimentation of watercourses; mortality of birds; loss and disturbance of TOPS animals, particularly Sensitive Species 12 and the Provincially protected dung beetle; compaction and destruction of soils; and the loss of protected plants and plants of conservation concern; and
- The majority of the impacts are rated as having a “Medium” significance before mitigation, and a “Low” significance after mitigation.
- The findings of all of the specialist reports indicate that the project should be allowed to proceed, with the strict implementation of the mitigation measures recommended in each specialist report. There are therefore no “fatal flaws” identified for the proposed development.

10.2 Environmental sensitivity overlay map

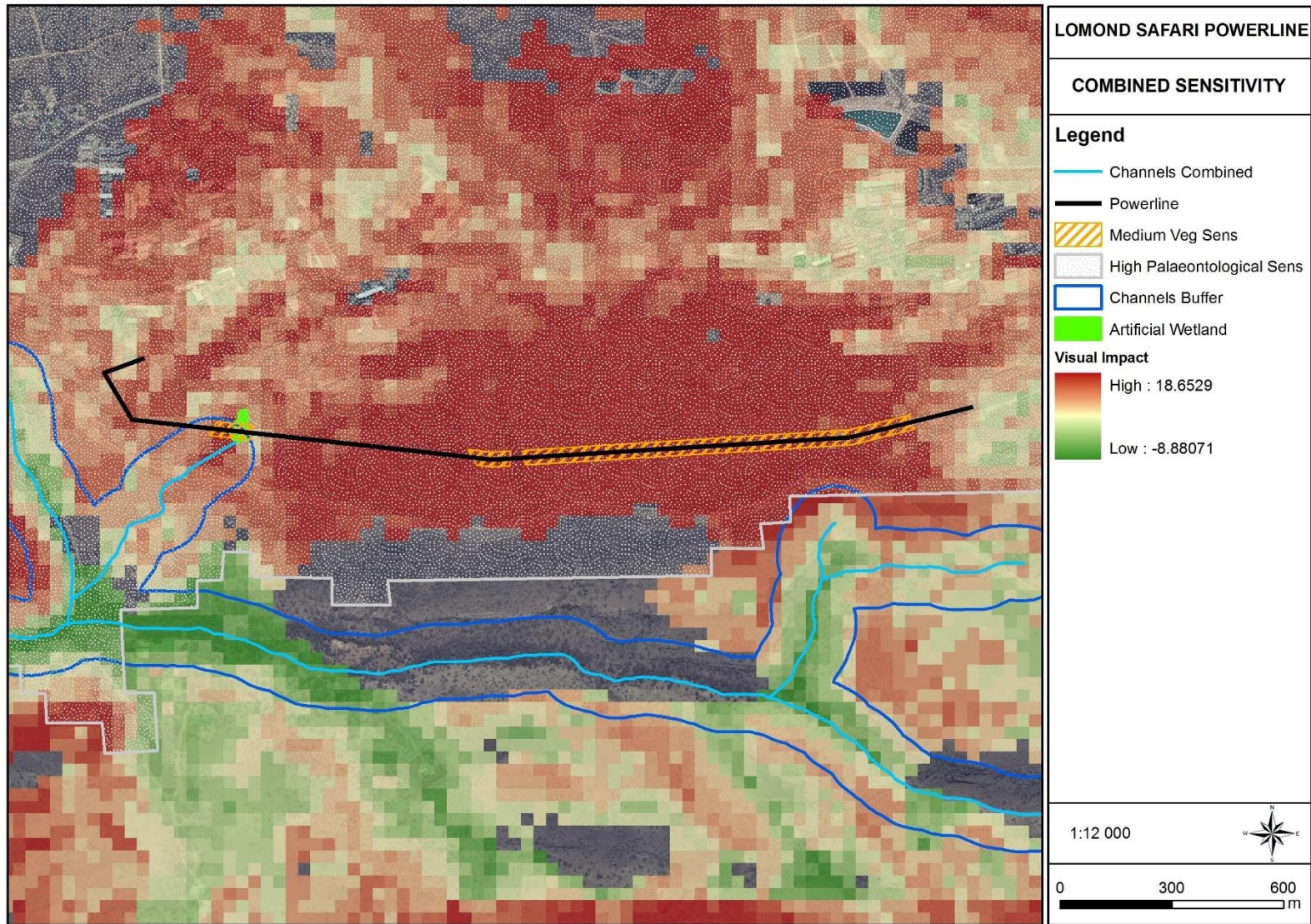


Figure 17: Sensitivity overlay map

10.3 Summary of the positive and negative impacts and risks of the proposed activity and identified alternatives

The following main positive and potential negative impacts and risks have been identified for the proposed project:

Potential positive impacts

- Creation of job opportunities.
- Reliable electricity supply to NECSA.
- The existing underground oil filled cables will no longer be used and any oil leakages and pollution will no longer occur.
- Any historical oil leakages and pollution will have been rehabilitated once the proposed powerline has been constructed (if authorised).
- Less disturbance to the environment during maintenance activities as trenches do not need to be dug to access underground power cables.

Potential negative impacts

- Loss and alteration of faunal habitat.
- Hindrance, trapping, killing of fauna, focusing on TOP species, particularly Sensitive Species 12 and provincially protected dung beetles.
- Displacement of Red Listed avifauna.
- Direct avifauna mortality.
- Destruction of natural vegetation.
- Exposure to erosion and subsequent sedimentation or pollution of proximate watercourses.
- Removal/Destruction of protected plants and plants of conservation concern.
- Potential increase in invasive vegetation.
- Clearing of land for construction camps and potential pollution of the soil and water.
- Compaction and destruction of soils.
- Bush densification.
- Flow alternations due to erosion and sedimentation.
- Potential visual impact on the viewpoints that had a visual exposure rating.

10.4 Impact management measures from specialist reports and the recording of the proposed impact management outcomes for the development, for inclusion in the EMPr

Please refer to the mitigation measures listed under Section 8.7 of this report. All of the mitigation measures proposed in the specialist reports have been included in this section of the BAR. The mitigation measures have also been included under Part C of the Generic EMPr for this project.

10.5 Aspects which were conditional to the findings of the assessment either by the EAP or specialists and which are to be included as conditions of authorisation

The following conditions must be included in the Environmental Authorisation, should the proposed project be authorised:

- The mitigation measures contained in the Environmental Management Programme must be implemented during each phase of the proposed project.
- An independent Environmental Control Officer must be appointed to audit compliance to the Environmental Management Programme.

10.6 Description of assumptions, uncertainties and gaps in knowledge which relate to the assessment and mitigation measures

The following assumptions were made during this Basic Environmental Impact Assessment process:

- That the project information, as provided by the applicant, is correct.
- That all research and reference sources or material is accurate and up to date.
- That the development of the proposed powerline will be undertaken as per the information provided by the applicant.
- That Eskom will be responsible for any required land remediation identified before the existing underground power cables are removed and that they will conduct said remediation, if it is found that the underground cables have leaked and caused soil

contamination. This is not required to be completed before the proposed powerline is constructed.

- That the development of the proposed powerline will be conducted according to the Environmental Management Programme for this application.

Specific assumptions, uncertainties and gaps in knowledge for each specialist study have been listed below:

Terrestrial Biodiversity (Vegetation) Assessment

The following limitations is applicable, although not considered fatal flaws to the study:

- Vegetation studies should be conducted during the growing season of all plant species that may potentially occur. This may require more than one season's survey with two visits undertaken preferably during November and February. This report relied on a single site visit undertaken on the 10th of December 2021, after good summer rains.
- The area has not recently burnt, and some areas were overgrown with either the invasive *Lantana camara* or moribund grasses. This limited visibility and smaller species may have been overlooked (Dimela Eco Consulting, 2021).

Terrestrial Fauna Assessment

Specialist studies are conducted to certain levels of confidence, and in all instances known and accepted methodologies have been used and confidence levels are generally high. This means that in most cases the situation described in the report is accurate at high certainty levels, but there exists a low probability that some aspects have not been identified/captured during the studies. Such situations cannot be avoided simply due to the nature of field work.

Habitat units identified in this report are approximations extrapolated from Google Earth satellite imagery. It must be kept in mind that changes between habitat units are gradual with transitional zones rather than hard edges.

Sections of the powerline were impenetrable and the bushveld vegetation was dense providing limited access. Habitat units were fairly homogeneous across site and this is not considered an issue.

The SEI assessment proposed in SANBI's guideline (SANBI, 2020) must be understood in terms of the activity (it is not a stand-alone assessment):

- Not all the necessary information is available for all SCCs (particularly invertebrates) to adequately complete SEI methodology as per the guideline requirements.
- SEI has been developed to assess discrete habitat units and is difficult to apply to generalist fauna that may utilise more than one specific habitat unit or large home-range or migrant species.
- Unfortunately, the SEI assessment requires a post-impact assessment (requires an activity to take place within the area in order to obtain the ecological importance of the area) which means that the ecological importance of an area varies depending on the type of activity and the level or density of activity that takes place in the specified area. It is not a baseline rank assessment of the site, which would be more useful in terms of impact assessment.
- Due to the above, the ecological importance of a site that will not be directly or indirectly impacted (where receptor resilience is very high) can only attain SEI scores of very low, low or medium, regardless of the habitat type (for example areas of endemism, streams and rivers, ridges).
- Due to the fact that the SEI is activity-dependent, a sensitive habitat that is spared direct and indirect impact is likely to score a lower SEI than a general/slightly disturbed habitat that will be fully and permanently developed.
- **All persons reading this report must understand that the SEI rank in no way relates to the preference of the site for development (lower SEI ranks do not mean the site is preferred for development) and only goes to inform the level of mitigation and management required in respect of the specific activity being assessed.**

The animal species guidelines (SANBI, 2020) requires assessment of potential areas of influence. Although visual assessment is completed of neighbouring open space areas, this report does explore larger areas of influence where relevant (for example downstream and catchment level impacts to potential fauna habitats and ecological corridors, or the migration/dispersion pathways of animals from conservation areas). Working with various fauna means the area of influence varies, but the discussion within this report is deemed to more than adequately address the areas of potential influence, although they are not necessarily mapped.

The Animal Species Guidelines (SANBI, 2020) only requires the assessment of SCCs (largely IUCN species), which excludes many of our nationally protected and Red-listed species. This report therefore also includes a synopsis of other potential TOP species that may be relevant to site based on citizen science databases, distribution data and broader habitat requirements.

It must be stressed that the survey area is a much smaller area within the larger QDGS and Pentad areas utilised for desktop species, and species presented in these databases may not have been recorded at the specific site.

Larger herbivores have not been fully evaluated within this report as these species are actively fenced in and managed within selected areas. Where they are historically recorded TOP species they are included in the relevant tables, but are not further discussed at length. This is further extended to large carnivore predators of such species (e.g., Lion and Cheetah). Rhinos and elephants are completely excluded due to sensitivity of information. As these species are largely restricted to reserves and farms this is not seen as a significant omission.

Some species are confirmed through signs rather than actual sightings. This is not always ideal as the age of the signs are not always known and many species have similar scat tracks /marks on the environment and species cannot always be fully determined. The more signs the more confidence in the identification of the animal. This limitation must be kept in mind where species are discussed based on signs.

There are inherent errors in mapping programmes which must be considered with all mapping information presented.

Citizen Science projects were used for bird (SABAP2) and animal (ADU) baseline data. When utilising data from Citizen Science projects, the following must be kept in mind:

- Public interest in sites may be fickle, and may wane and increase, which could have a direct effect on the number of records available and therefore the number of species recorded.
- Populated areas or popular tourist destinations may have more participants and therefore higher biodiversity data than less populated areas.
- Misidentification of species by the public cannot be excluded but is not seen as a major problem as this is likely to be a consistent issue from year to year, and a degree of vetting does take place.
- It must also be considered that animals observed in captivity may be recorded by citizens. Such animals should not be considered part of the natural biodiversity but as the data provided by citizen science sites do not make such distinctions, it cannot be separated from the biodiversity data presented in this report.

SANBI's Biodiversity Advisor Animal Checklist website stipulates specifically that the Checklist author and the SANBI website must be cited in order to ensure that the intellectual input of scientists is acknowledged. The checklists are utilised solely for distribution information for invertebrate SCCs and TOP invertebrates and thus only the web-site and name of the list is referenced. The site can be visited for the specific authors of the species discussed in this report as may be relevant.

Due to the low resolution of some distribution maps and the mobility of animals, distribution data utilised to present animal lists are not 100% accurate. Proper distribution data for the TOP invertebrates is scant and it is difficult to conclusively state if every species does or does not occur in the area (BK Zoology, 2022).

Avifaunal Impact Assessment

The avifaunal specialist assumed that the sources of information used for this assessment are reliable. However, it must be noted that there are limiting factors and these may potentially detract from the accuracy of the predicted results.

- The report is the result of a short-term study and is based on a one-day site visit to the proposed study area. No long-term, seasonal monitoring was conducted by the avifaunal specialist. This assessment relies upon secondary data sources with regards to bird occurrence and abundance such as the SABAP2 and IBA projects. These comprehensive datasets provide a valuable baseline against which any changes in species presence, abundance, and distribution can be monitored. However, primary information on bird habitat and avifaunal species occurrence collected during the site visit and together with professional judgement, based on extensive field experience since 2006, was used directly in determining which species of conservation importance are likely to occur within suitable avifaunal habitat types within the proposed study area. Based on these findings, the specialist was able to identify and assess the anticipated impacts and provide recommendations for mitigation.
- The site visit to the proposed Lomond-Safari 88kV power line project study area and the resultant observations were made in a single season (austral summer), during which time nesting raptors could not have observed and assessed.
- The focus of this assessment is primarily on the potential impacts on regional Red List and priority species i.e., species that are vulnerable to the displacement, collision and electrocution impacts associated with the construction and operation of the proposed Lomond-Safari 88kV power line project. The impact on non-Red List species is also

assessed, albeit in less detail. Furthermore, much of the mitigation recommended for Red List species will also protect non-Red List species in the study area.

- Predictions in this study are based on experience of these and similar species in different parts of South Africa, through the authors' experience working in the avifaunal specialist field since 2006. However, bird behaviour can't be reduced to formulas that will hold true under all circumstances. It must also be noted that, it is often not possible to entirely eliminate the risk of the disturbance and displacement impacts associated with the construction and operational activities. Our best possible efforts can probably not ensure zero impact on birds. Assessments such as this attempt to minimise the risk as far as possible, and although the displacement impacts associated with the proposed Lomond-Safari 88kV power line project will be unavoidable, they are likely to be temporary and of moderate significance.

The above limitations need to be stated as part of this assessment so that the reader fully understands the complexities. However, they do not detract from the confidence that this author has in the findings of this impact assessment report and subsequent recommendations for this project (Feathers Environmental Services CC, 2021).

Watercourses Assessment

It is difficult to apply pure scientific methods within a natural environment without limitations, and consequential assumptions need to be made. The following constraints may have affected this assessment:

- A hand-held Garmin eTrex 30 was used to delineate the watercourses and had an accuracy of 3 m to 6 m.
- The findings, results, observations, conclusions and recommendations provided in this report are based on the author's best scientific and professional knowledge as well as available information regarding the perceived impacts on the watercourses and biodiversity.
- It must be noted that during the time of the assessment the channels surrounding the proposed powerline were dry (Oasis Environmental Specialists (Pty) Ltd, 2022).

Phase 1 Archaeological/Heritage Impact Assessment

The investigation has been influenced by the unpredictability of buried archaeological remains (absence of evidence does not mean evidence of absence) and the difficulty in establishing intangible heritage values. It should be noted that archaeological deposits (including graves and traces of archaeological heritage) usually occur below the ground level. Should artefacts

or skeletal material be revealed at the site during construction, such activities should be halted immediately, and a competent heritage practitioner, SAHRA must be notified in order for an investigation and evaluation of the find(s) to take place (see NHRA, Section 36(6). Recommendations contained in this document do not exempt the applicant from complying with any national, provincial, and municipal legislation or other regulatory requirements, including any protection or management or general provision in terms of the NHRA. The author assumes no responsibility for compliance with conditions that may be required by SAHRA in terms of this report.

The field survey did not include any form of subsurface inspection beyond the inspection of burrows, road Cut sections, and the sections exposed by erosion. Some assumptions were made as part of the study and therefore some limitations, uncertainties and gaps in information would apply. It should, however, be noted that these do not invalidate the findings of this study in any significant way:

- The proposed project activities will be limited to specific right of site as detailed in the development layout.
- The construction team to provide link and access to the proposed powerline route by using the existing access roads and there will be no construction beyond the demarcated site.
- No excavations or sampling were undertaken since a permit from heritage authorities is required to disturb a heritage resource. As such the results are based on solely observed indicators. However, these surface observations concentrated on exposed sections such as road cuts and clear farmland.
- This study did not include any ethnographic and oral historical studies, nor did it investigate the settlement history of the area (IS Solutions, 2021).

Visual Impact Assessment

Assumptions:

- It is assumed that there are no alternative locations for the structures and that the visual assessment, therefore, assessed only the proposed site.
- The assessment was undertaken during the planning stage of the project and is based on the information available at that time.

Limitations:

- Visual perception is by nature a subjective experience, as it is influenced largely by personal values. For instance, what one-viewer experiences as an intrusion in the landscape, another may regard as positive. Such differences in perception are greatly

influenced by culture, education and socio-economic background. A degree of subjectivity is therefore bound to influence the rating of visual impacts. In order to limit such subjectivity, a combination of quantitative and qualitative assessment methods was used. A high degree of reliance has been placed on GIS-based analysis viewshed, visibility analysis, and on making transparent assumptions and value judgements, where such assumptions or judgements are necessary.

- The viewshed generated in GIS cannot be guaranteed as 100% accurate. Some viewpoints, which are indicated on the viewshed as being inside of the viewshed, can be outside of the viewshed. This is due to the change of the natural environment by surrounding activities as well as natural vegetation that play a significant role and can have a positive or negative influence on the viewshed (Eco Elementum (Pty) Ltd, 2022).

10.7 Reasoned opinion as to whether the proposed activity should or should not be authorised, and if the opinion is that it should be authorised, any conditions that should be made in respect of that authorisation

It is MuTingati's independent and reasoned opinion that the identified and assessed environmental impacts can be sufficiently mitigated and that an Environmental Authorisation should therefore be issued for the proposed Lomond Safari 88kV Powerline.

Please refer to Section 10.5 above for conditions that should be included in respect of the Environmental Authorisation.

10.8 Where the proposed activity does not include operational aspects, the period for which the environmental authorisation is required, the date on which the activity will be concluded, and the post construction monitoring requirements finalised

The proposed activity does include operational aspects.

11. ENVIRONMENTAL ASSESSMENT PRACTITIONER UNDERTAKING/ AFFIRMATION

I, Lizette Kloppers, hereby confirm the following:

- The correctness of information provided in this Basic Assessment Report.
- The inclusion of all comments and inputs from stakeholders and I&APs.
- The inclusion of inputs and recommendations from the specialist reports, where relevant.
- Any information provided by the EAP to I&APs and any responses by the EAP to comments or inputs made by I&APs have been included in this report.

I further confirm that I have no business, financial, personal or other interest in the activity or application in respect of which I have been appointed as EAP, in terms of the National Environmental Management Act and the EIA Regulations, other than fair remuneration for work performed in connection with this application for an Environmental Authorisation.

12. DETAILS OF ANY FINANCIAL PROVISION FOR THE REHABILITATION, CLOSURE, AND ONGOING POST DECOMMISSIONING MANAGEMENT OF NEGATIVE ENVIRONMENTAL IMPACTS

No financial provisioning is applicable to the proposed project.

13. SPECIFIC INFORMATION REQUIRED BY THE COMPETENT AUTHORITY

No specific information has been required by the Competent Authority at this stage of the application process.

14. OTHER MATTERS REQUIRED IN TERMS OF SECTION 24(4)(A) AND (B) OF NEMA

At this stage, no other matters to address have been identified or required.