



DRAFT BASIC ASSESSMENT REPORT

DEVELOPMENT OF THE GANSPAN PERING 132 KV
OVERHEAD LINE NEAR PAMPIERSTAD, NORTH
WEST AND NORTHERN CAPE PROVINCES



OCES

ENVIRONMENTAL AND SOCIAL ADVISORY SERVICES

**PROPOSED DEVELOPMENT OF THE GANSPAN PERING 132 KV
OVERHEAD LINE NEAR PAMPIERSTAD, NORTH WEST AND
NORTHERN CAPE PROVINCES**

DFFE REF: 2021-06-0017

DRAFT BASIC ASSESSMENT REPORT

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PROJECT TEAM

CES has been appointed by Eskom Holdings SOC Ltd as independent consultants to undertake a Basic Assessment (BA) process for the Proposed Development of the Ganspan Pering 132 kV Overhead Line near Pampierstad, North West and Northern Cape Provinces as required by the NEMA EIA Regulations, 2014 (as amended 2017). The BA process is largely dependent on the information and assessments provided by the independent specialists and the input received during the public participation process in order to inform the overall environmental assessment of the proposed development on both environmental and social aspects.

The process where the environmental impacts associated with a project are assessed is a collective effort from a team of appropriate and independent specialists, as well as an independent Environmental Assessment Practitioner (EAP). The EIA is required to assess the planned development from a holistic perspective, considering all aspects and characteristics within the affected natural and social environment.

The following specialist consultants have provided expert input and a detailed assessment of the project in order to assess the environmental and social impacts within the affected environment as well as the acceptability of the application.

CES team and responsibilities

CES TEAM MEMBER	PROJECT RESPONSIBILITIES
<i>Dr Ted Avis</i>	Environmental Assessment Practitioner
<i>Mr Gregory Shaw</i>	Project Leader, Report Reviewer
<i>Mr Aidan Gouws</i>	Project Manager, Public Participation Manager
<i>Mr Alex Ndlovu</i>	Lead Report Writer



EXECUTIVE SUMMARY

BACKGROUND

Eskom Holdings SOC Ltd proposes the development of the 132 kV Ganspan Pering powerline in the Pampierstad area, in the Northern Cape and North West Province. The intention of the project is to provide electricity in an efficient and sustainable manner, including its generation, transmission and distribution, and retail. The mission of Eskom is to provide sustainable electricity solutions to grow the economy and improve the quality of life of the people in South Africa and in the region.

CES has been appointed by Eskom Holdings SOC Ltd as an independent Environmental Assessment Practitioner (EAP) to undertake a Basic Assessment (BA), including specialist studies, and apply for the necessary Environmental Authorisation (EA) for the proposed project.

LOCATION, SITE AND PROJECT DESCRIPTION

Eskom Holdings SOC Ltd is proposing the development of a 3-kilometre 132 kV Overhead Line (OHL). The proposed Ganspan Pering 132 kV OHL will connect to Eskom’s Sidiba Substation. The proposed OHL is located near Pampierstad on the border of the North West and Northern Cape Provinces. (Figure 1).

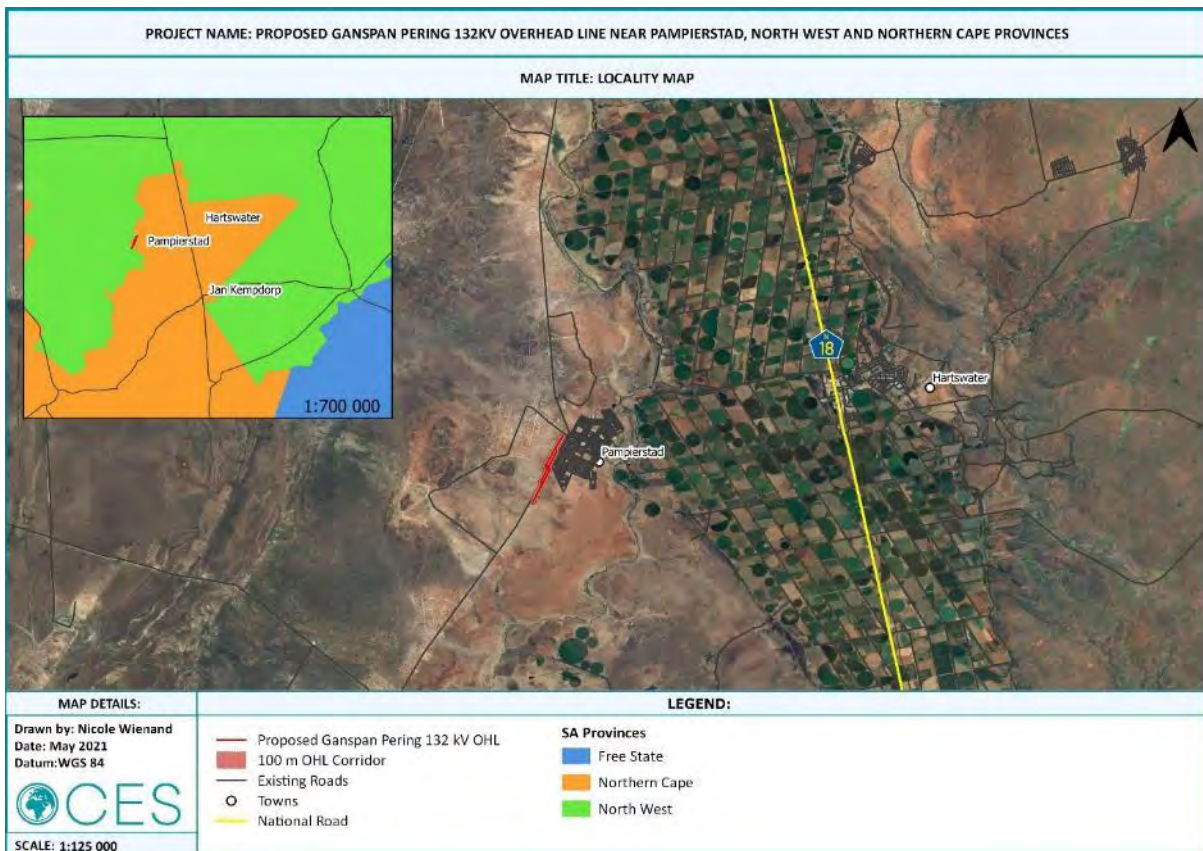


Figure 1: Locality Map of the proposed Ganspan Pering 132 kV OHL



In terms of the Environmental Impact Assessment (EIA) regulations of 2014 (as amended), the Ganspan Pering 132 kV OHL project requires an Environmental Authorisation, from the Northern Cape Department of Environment, Nature and Conservation (DENC). The triggered activities are listed under Listing Notices 1 & 3 (published in Government Notices No. R 983 and No. R 985 respectively), and as such, the BA Process needs to be followed. The listed activities that have been applied for are provided in Table 1 below.

Table 1: Listed Activities triggered in the 2014 NEMA EIA Regulations (as amended 2017) - (Basic Assessment)

ACTIVITY NUMBER	ACTIVITY DESCRIPTION	DESCRIPTION OF PROJECT ACTIVITY THAT TRIGGERS LISTED ACTIVITY
GN R 983 – Listing 1		
11	<p>The development of facilities or infrastructure for the transmission and distribution of electricity—</p> <p>(i) Outside urban areas or industrial complexes with a capacity of more than 33 but less than 275 kilovolts.</p>	<p>The proposed development will be a powerline, with the capacity of 132 kilovolts. The powerline servitude will cover an area of 10.54 ha, with a length of 3.4 km width of 31 m. However, vegetation clearance will occur within an area of 3.4 km and width of 8m (2.72 ha). The powerline falls outside the Pampierstad urban edge, as verified with the Pampierstad Local Development Framework (2008) and the Phokwane Local Municipality Spatial Development Framework (2008).</p>
12	<p>The development of—</p> <p>(ii) Infrastructure or structures with a physical footprint of 100 square metres or more; where such development occurs—</p> <p>(a) Within a watercourse;</p> <p>(c) If no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse; —</p>	<p>The proposed development will be a powerline, with the capacity of 132 kilovolts. The powerline will cover an area of 5.44 ha, with a length of 3.4 km width of 16 m. The powerline falls across drainage lines and artificial wetlands.</p>
28	<p>Residential, mixed, retail, commercial, industrial or institutional developments where such land was used for agriculture, game farming, equestrian purposes or afforestation on or after 01 April 1998 and where such development:</p> <p>(ii) Will occur outside an urban area, where the total land to be developed is bigger than 1 hectare;</p>	<p>The proposed development occurs outside of an urban area and will encompass an area of 5.44 ha, with a length of 3.4 km width of 16 m, on land previously zoned for agriculture.</p>
GN R 985 – Listing 3		
10	<p>The development and related operation of facilities or infrastructure for the storage, or storage and handling of a dangerous good, where such storage occurs in containers with a combined capacity of 30 but not exceeding 80 cubic metres.</p> <p>g. Northern Cape</p>	<p>The proposed development may require the storage and handling of dangerous goods. The powerline falls across and within 100 m of drainage lines and artificial wetlands in Northern Cape and North West.</p>



ACTIVITY NUMBER	ACTIVITY DESCRIPTION	DESCRIPTION OF PROJECT ACTIVITY THAT TRIGGERS LISTED ACTIVITY
	ii. Areas within a watercourse or wetland; or within 100 metres from the edge of a watercourse or wetland; h. North West vi. Areas within a watercourse or wetland, or within 100 metres from the edge of a watercourse or wetland.	

PUBLIC PARTICIPATION PROCESS

Public consultation is a legal requirement throughout the BA process. The Public Participation Process included:

- Placing notice boards on site;
- Identifying and registering Interested and Affected Parties (I&APs) and relevant stakeholders;
- Providing notice to I&APs and stakeholders of the intent to submit an application for EA and the release of the Draft Basic Assessment Report (BAR) for public review.
- Publishing an advertisement in a local newspaper notifying the public of the release of the Draft BAR for public review;
- Keeping a register of all comments by and responses to registered I&APs and stakeholders for inclusion in the Final BAR.

IMPACT ASSESSMENT

Table 2 provides an overall summary of the negative (cost) and positive (benefit) environmental impacts associated with the proposed powerline.

Table 2: Summary of impacts before and after mitigation across phases.

Theme	Before Mitigation			After Mitigation		
	Low	Moderate	High	Low	Moderate	High
<i>Environmental policy</i>			-3	-3		
<i>Built environment</i>		-8 (+1)		-8	(+1)	
<i>Terrestrial Biodiversity and Ecology</i>	-16	-4		-10	-3	
<i>Avifaunal Impact</i>	-7			-7		
<i>Socio-economic</i>	3	-10		-10(+3)		
<i>Rehabilitation and maintenance</i>		-3		-3		
<i>Visual Impact</i>	-1			-1		
<i>Heritage Impact</i>	-4			-4		
<i>Wetland Assessment</i>	-8			-8		
Total	-36 (+3)	-25 (+1)	-3	-54 (+3)	-3 (+1)	0



CONCLUDING REMARKS AND RECOMMENDATIONS

It is the professional opinion of CES and specialists that:

- **NO FATAL FLAWS** are currently associated with the proposed development, as all identified impacts can be adequately mitigated to reduce the risk or significance of impacts to an acceptable level, provided mitigation measures recommended in this report are implemented and maintained throughout the life of the project.
- If any changes to these layouts are made, the input of the relevant specialist must be obtained and incorporated into any changes.
- The information in the report is sufficient to allow DFFE to make an informed decision

It is the recommendation of CES that the proposed 132 kV Overhead line should be approved provided that the proposed mitigation measures are implemented and that the EMPr is implemented, maintained and adapted to incorporate relevant legislation, standard requirements and audit reporting, throughout the life of the development. The mitigation measures for all impacts identified in the BAR must be incorporated into the EMPr and must be used by the engineers during the detailed Planning & Design Phase, by the contractors during the Construction Phase and by Eskom Holdings SOC Ltd during the Operation Phase.



TABLE OF CONTENTS

1	<u>INTRODUCTION</u>	1
1.1	Background.....	1
1.2	Purpose of this Report	1
1.3	Details and Experience of the Environmental Assessment PRACTITIONER ...	1
1.4	Nature and Structure of the Report	3
1.5	Scope of Assessment and Content of the Basic Assessment Report	4
2	<u>PROJECT DESCRIPTION</u>	7
2.1	Project Location.....	7
2.2	General Site Observations	7
2.3	Technical Details.....	10
2.3.1	<i>Proposed Overhead Line</i>	10
2.3.2	<i>Access Roads</i>	10
2.3.3	<i>Emissions</i>	10
2.3.4	<i>Noise</i>	10
2.3.5	<i>Power Supply</i>	11
2.3.6	<i>Waste Management</i>	11
2.3.7	<i>Stormwater Management</i>	11
2.3.8	<i>Water use</i>	11
3	<u>PROJECT NEED AND DESIRABILITY</u>	12
3.1	Development Planning	12
3.2	Infrastructure development.....	12
3.3	Environmental management	12
3.4	Integrated Environmental Management (Section 23 of NEMA).....	12
3.5	Rights of the local community	13
3.6	Benefits and drawbacks	13
4	<u>RELEVANT LEGISLATION</u>	14
4.1	Environmental Authorisation in South Africa	14
4.2	Applicable Legislation	16
4.2.1	<i>National</i>	16
4.2.1.1	<i>The Constitution Act, 1996 (Act No. 108 of 1996)</i>	16
4.2.1.2	<i>National Environmental Management Act, 1998 (Act No. 107 of 1998)</i>	16
4.2.1.3	<i>National Environment Management: Biodiversity Act, 2004 (Act No. 10 of 2004)</i> ...	18
4.2.1.4	<i>National Environmental Management: Waste Management Act, 2008 (Act No. 59 of 2008)</i>	19



4.2.1.5	Occupational Health and Safety Act, 1993 (Act No. 85 of 1993)	19
4.2.1.6	National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004)	19
4.2.1.7	National Water Act, 1998 (Act No. 36 of 1998)	20
4.2.1.8	National Road Traffic Act, 1996 (Act No. 93 of 1996)	21
4.2.1.9	Other Relevant National Legislation	21
4.2.2	Provincial	21
4.2.2.1	Northern Cape and North West Biodiversity Plans	21
4.2.2.2	The Government of the Northwest Territories (GNWT) 2030 Energy Strategy	22
4.2.2.3	The Government of the Northern Cape Territories (GNNC) 2040 Energy Strategy	22
4.2.3	District	23
4.2.3.1	Dr Ruth Segomotsi Mompati District Municipality Environmental Management Framework	23
4.2.3.2	Frances Baard District Municipality Environmental Management Framework	23
4.2.4	Other	24
5	<u>DESCRIPTION OF THE AFFECTED ENVIRONMENT</u>	25
5.1	Biophysical Environment	25
5.1.1	Climate	25
5.1.2	Topography	25
5.1.3	Geology and Soils	26
5.1.4	Land Use and Cover	28
5.1.5	Drainage, River and Wetland Ecosystem Context	28
5.1.5.1	Aquatic Critical Biodiversity Areas	29
5.1.5.2	National Biodiversity Assessment and Freshwater Ecosystem Priority Areas	29
5.1.5.3	Wetland Classification, Delineation and Habitat Characteristics	31
5.1.5.4	Present Ecological State	37
5.1.5.5	Ecosystem Services	37
5.1.5.6	Vaalharts Irrigation Scheme	38
5.1.6	Vegetation and Floristics	39
5.1.6.1	National Vegetation Map (SA VEGMAP, 2018)	39
5.1.6.2	Critical Biodiversity Areas and broad-scale processes	40
5.1.6.3	Ecosystem Threat Status	42
5.1.6.4	Protected and Priority Areas	43
5.1.7	Fauna	44
5.1.7.1	Amphibians	44
5.1.7.2	Reptiles	44
5.1.7.3	Mammals	45
5.2	Socio-Economic Profile	49
5.2.1	Population	49
5.2.2	Economy	50



5.2.3	<i>Employment, Education, Income and Poverty</i>	51
6	<u>PUBLIC PARTICIPATION PROCESS</u>	53
6.1	Site Notices	53
6.2	I&AP and Stakeholder Notifications	53
6.3	Newspaper Advertisement	54
6.4	Register of Stakeholders and I&APs	54
6.5	Public Review of Draft Basic Assessment Report.....	55
6.6	Public Meeting	55
6.7	Issues Raised by I&APs	55
7	<u>ALTERNATIVES</u>	56
7.1	Fundamental, Incremental and No-go Alternatives	56
7.1.1	<i>Fundamental Alternatives</i>	56
7.1.2	<i>Incremental Alternatives</i>	56
7.1.3	<i>No-go Alternative</i>	56
7.2	Alternatives Considered.....	57
7.2.1	<i>Location Alternatives</i>	57
7.2.2	<i>Technology Alternatives</i>	58
7.2.3	<i>Activity Alternatives</i>	58
7.2.4	<i>No-go Alternative</i>	58
8	<u>IMPACT ASSESSMENT METHODOLOGY</u>	61
8.1	Aims of Environmental Impact Assessment.....	61
8.2	Impact Assessment Criteria.....	61
8.3	Assessment of Cumulative Impacts	63
9	<u>IMPACT ASSESSMENT</u>	65
9.1	Planning and Design Phase Impacts.....	66
9.2	Construction Phase Impacts.....	70
9.3	Operational Phase Impacts	88
9.4	Decommissioning Phase Impacts	93
10	<u>SENSITIVITY ANALYSIS</u>	94
11	<u>SUMMARY OF KEY ENVIRONMENTAL FINDINGS</u>	103
12	<u>CONCLUSIONS AND RECOMMENDATIONS</u>	104
12.1	Description of the Proposed Activity	104
12.2	Assumptions, Uncertainties and Gaps.....	104
12.2.1	<i>Assumptions</i>	104



12.2.2 Gaps..... 104

12.3 Consideration of alternatives..... 105

12.3.1 Location Alternatives..... 105

12.3.2 Technology Alternatives..... 105

12.3.3 Layout Alternatives 105

12.3.4 No-go Alternative 105

12.4 Opinion of the EAP 105

12.5 Recommendation of the EAP and SpecialistS 105

13 APPENDICES 107





LIST OF TABLES

Table 2.1: Locality details of the proposed project.....	7
Table 2.2: Summary of development parameters.....	10
Table 4.1: Listed Activities triggered in the 2014 NEMA EIA Regulations (as amended 2017) - (Basic Assessment)	14
Table 4.2: NEMA Environmental Management Principles	16
Table 5.1: Present Ecological State (PES) of the wetlands	37
Table 5.2: Ecosystem Services provided by drainage line units	38
Table 5.3: Biodiversity maintenance ecosystem services provided by artificial wetland units	37
Table 5.4: South African Endemic Reptile likely to occur within the project area.....	44
Table 5.5: Threatened mammal SCC likely to occur within the study area	45
Table 7.1: Analysis of the proposed alternatives for the 132 kV Powerline, near Pampierstad,	59
Table 8.1: Ranking of Evaluation Criteria	61
Table 8.2: Description of significance ratings	63
Table 9.1: Summary of impacts associated with the proposed 132 kV Powerline during the planning and design phase.	66
Table 9.2: Summary of impacts associated with the proposed 132 kV Powerline during the construction phase.	70
Table 9.3: Summary of impacts associated with the proposed 132 kV Powerline during the operational phase.	88
Table 9.4: Summary of impacts associated with the proposed 132 kV Powerline during the decommissioning phase.....	93
Table 4.1: Evaluation of Site Ecological Importance (SEI) of habitat and SCC.	94
Table 4.1: Summary of EIS scores and ratings	96
Table 11.1: Summary of impacts before and after mitigation across phases.	103



LIST OF FIGURES

Figure 2.1: Location Map of the proposed Ganspan Pering 132 Kv OHL 8

Figure 2.1: Layout Map of the proposed Ganspan Pering 132 Kv OHL 9

Figure 5.1: Climatic data for Pampierstad, Northern Cape (Meteoblue, 2021) 25

Figure 5.2: Contour Map of the study area 26

Figure 5.3: Geology map of the study site 27

Figure 5.4: SOTER SAF Soil Map of the project area..... 27

Figure 5.5: South African National Land-Cover (SANLC, 2018) Map of the project area 28

Figure 5.6: North West BSP (2015) Aquatic CBAs within the project area..... 29

Figure 5.7: Surface water features affected by the proposed development. 30

Figure 5.8: Assessment units potentially affected by the proposed development. 31

Figure 5.9: Delineation and time-series map of unit W1. 32

Figure 5.10: Delineation and time-series map of unit W2. 33

Figure 5.11: Delineation and time-series map of unit W3. 34

Figure 5.12: Delineation and time-series map of unit W4. 34

Figure 5.13: Delineation and time-series map of unit W5. 35

Figure 5.14: Delineation and time-series map of unit W6 and W7. 36

Figure 5.15: Delineation and time-series map of unit W8. 36

Figure 5.16: National Vegetation Map of the project site. 40

Figure 5.17: North West BSP (2015) Terrestrial CBAs within the project area 41

Figure 5.18: Northern Cape Terrestrial CBA Map (2016) 42

Figure 5.19: Threatened Ecosystem Map of the project area 43

Figure 5.20: NPAES Focus Areas and Protected Areas..... 44

Figure 7.1: Alternative 1 for the proposed 132 kV Powerline, near Pampierstad 57

Figure 7.2: Alternative 2 (preferred) for the proposed 132 kV Powerline, near Pampierstad 58

Figure 10.1: North West BSP (2015) Terrestrial CBAs within the project area **Error!**
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Figure 10.2: Northern Cape Terrestrial CBA Map (2016) **Error! Bookmark not defined.**

Figure 10.3: North West BSP (2015) Aquatic CBAs within the project area**Error! Bookmark not defined.**



ACRONYMS

AIS	Alien Invasive Species
BID	Background Information Document
BAR	Basic Assessment Report
CA	Competent Authority
CBA	Critical Biodiversity Area
CES	Coastal and Environmental Services (Pty) Ltd. (t/a CES)
DEDECT	Department of Economic Development, Environment, Conservation and Tourism
DENC	Department of Environment, Nature and Conservation
DFFE	Department of Forestry, Fisheries and the Environment
EA	Environmental Authorisation
EAP	Environmental Assessment Practitioner
ECO	Environmental Control Officer
EIA	Environmental Impact Assessment
EMPr	Environmental Management Programme
ESA	Ecological Support Area
GN	Government Notice
IDP	Integrated Development Plan
I&AP	Interested and Affected Party
MEC	Member of the Executive Council
NEMA	National Environmental Management Act
NEMBA	National Environmental Management Biodiversity Act
NFEPA	National Freshwater Ecosystem Priority Area
NDP	National Development Plan
PPP	Public Participation Process
SACNASP	South African Council for Natural Scientific Professions
SANBI	South African National Biodiversity Institute
SDF	Spatial Development Framework
SCC	Species of Conservation Concern
SG	Surveyor General



1 INTRODUCTION

1.1 BACKGROUND

Eskom Holdings SOC Ltd proposes for the development of the 132 kV Ganspan Pering powerline in the Pampierstad area, in the Northern Cape and North West Province. CES has been appointed by Eskom Holdings SOC Ltd as an independent Environmental Assessment Practitioner (EAP) to undertake a Basic Assessment (BA), including specialist studies, and apply for the necessary Environmental Authorisation (EA) for the proposed project.

1.2 PURPOSE OF THIS REPORT

In accordance with the National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA) and the NEMA EIA Regulations (2014), as amended, the issuing of an Environmental Authorisation (EA) requires the undertaking of a BA process, with associated Public Participation Process (PPP) and required specialist studies. This will enable the competent authority to decide whether to issue an EA for the proposed development, and if so, on what conditions. The EIA Regulations (2014) (as amended) allow for a BA process for activities with limited environmental impact (listed in GN R 983 and 985) and a more rigorous two-tiered approach, known as a Scoping/EIA process, for activities with potentially greater environmental impact (listed in GN R 984).

In terms of the EIA regulations of 2014 (as amended), the triggered activity for this project is listed under Listing Notice 1 and 3 (published in Government Notices No. R 983 and No. R 985), and as such, the BA Process will be followed and include the following specialist studies:

- Avifaunal assessment;
- Heritage and Palaeontological assessment;
- Ecological assessment;
- Visual assessment; and
- Wetland assessment.

This report documents the process and findings of the BA for the proposed powerline and associated infrastructure. This report was subject to a public comment period after which it was finalised and hereby submitted to the competent authority for review.

1.3 DETAILS AND EXPERIENCE OF THE ENVIRONMENTAL ASSESSMENT PRACTITIONER

In fulfilment of the legislative requirement (see Section 4.1 below) the details of the EAP that prepared this Basic Assessment Report (BAR) as well as the expertise of the individual members of the study team are provided below.

CES was established in 1990 as a specialist environmental consulting company based in Grahamstown, with branches in East London, Cape Town, Port Elizabeth and Centurion. CES has considerable experience in terrestrial, marine and freshwater ecology, the Social Impact Assessment (SIA) process, and state of environment reporting (SOER), Integrated Waste



Management Plans (IWMP), Spatial Development Frameworks (SDF), public participation, as well as the management and co-ordination of all aspects of the Environmental Impact Assessment (EIA) and Strategic Environmental Assessment (SEA) processes. CES has been active in all of the above fields, and in so doing have made a positive contribution to towards environmental management and sustainable development in the Eastern Cape, South Africa and many other African countries.

Dr Ted Avis (*Role: Environmental Assessments Practitioner [EAP]*)

Ted Avis is a leading expert in the field of Environmental Impact Assessments, having project-managed numerous large-scale ESIA's to international standards, especially those of the International Finance Corporation (IFC). Ted also has experience in large scale Strategic Environmental Assessments in southern Africa and has been engaged by the IFC on a number of projects. Between 1994 and 1996 Ted was instrumental in establishing the Environmental Science Department at Rhodes University, whilst a Senior lecturer in Botany at that time. This resulted from his experience running honours modules in EIA practice and environmental management, as well as the applied research he undertook in these disciplines. He was an Honorary Visiting Fellow in the Department of Environmental Sciences at Rhodes between 1998 and 2003. He was one of the first certified Environmental Assessment Practitioner in South Africa, gaining certification in April 2002. He has delivered papers and published in the field of EIA, Strategic Environmental Assessment and Integrated Coastal Zone Management, and has been a principal of CES since its inception in 1990 and Managing Director since 1998.

Mr Gregory Shaw is a Principal Environmental Consultant and the Business Development Manager at CES. Greg has 12 years' experience in conducting environmental consultancy services in the energy, transport, maritime and agricultural sectors on behalf of South African and oversees government departments and agencies, local government authorities, private developers, international funding organisations, and non-government organisations. He has a strong track record of projects completed within budget, on time and in accordance with national and/or international environmental legislation and guidelines. Greg's skills include ESIA, environmental survey development, management, execution and monitoring, report writing, project management and strategic planning.

Mr Aidan Gouws obtained his MSc in Environmental Science (*Cum laude*) from Rhodes University, having conducted research on the spatio-temporal dynamics of *Acacia dealbata* invasions and broader land-use and cover changes in the northern Eastern Cape, funded through a study bursary awarded by the Agricultural Research Council (ARC). Prior to this, he obtained his BSc Honours in Geographical and Environmental Sciences (*Cum laude*) from the University of Pretoria, studying plant ecology and EIA methodology amongst others. He is also member of the Golden Key Honours Society. Aidan joined CES in 2018 and has been involved in several projects, including Basic Assessments, Full Scoping and Environmental Impact Assessments, Environmental Audits and Resettlement Action Plan (RAP) Audit. He works from the Johannesburg office and his interests include the general Environmental Impact Assessment (EIA) process, GIS mapping, ecological studies and the Public Participation Process (PPP).

Mr Alex Ndlovu obtained his BSc Honours degree in Geography from University of South Africa, having conducted a research proposal on solid waste problems in the Mamelodi



Township. Funded by Gauteng Campus Regional Academy (GCRA) throughout his studies as being the top achiever in high school. Prior to this, he obtained his BA in Environmental Management majoring in Geography from University of South Africa. Did an internship at Leapenviro Consulting where he managed to write BAR, EIA, WULA and GA reports. Alex joined CES in May 2021 and is already involved in several projects, including Basic Assessment, General Authorisation and Environmental Audit reports. He works from the Gauteng office and his interests include the general Environmental Impact Assessments (EIA) process, Environmental Audits and Public Participation Process (PPP).

Full Curricula Vitae (CV) for individual members of the project team are attached as Appendix F1.

1.4 NATURE AND STRUCTURE OF THE REPORT

The structure of this report is based on Appendix 1 of GN R 982, of the EIA Regulations (2014) (as amended), which clearly specifies the required content of a Basic Assessment Report.

- **Chapter 1** introduces the proposed project and describes the purpose of this report and its structure.
- **Chapter 2** details the project location and describes the proposed project in detail, including primary infrastructure such as the powerline, access roads and electrical distribution infrastructure.
- **Chapter 3** describes the needs and desirability of the project.
- **Chapter 4** describes the legislation that is applicable to the project.
- **Chapter 5** describes the biophysical and social environment of the proposed project site.
- **Chapter 6** describes the Public Participation Process (PPP) undertaken.
- **Chapter 7** provides a description of the alternatives to the proposed development, or components of the proposed development.
- **Chapter 8** covers the impact assessment methodology.
- **Chapter 9** provides a summary of the key findings of the specialist study for the proposed project.
- **Chapter 10** covers the impact assessment for the proposed project.
- **Chapter 11** provides a sensitivity analysis.
- **Chapter 12** provides a summary of the key environmental findings.
- **Chapter 13** provides recommendations and concludes this report.



1.5 SCOPE OF ASSESSMENT AND CONTENT OF THE BASIC ASSESSMENT REPORT

Section 3 of Appendix 1 of GN R982, as amended, specifies the content requirements for a Basic Assessment Report. The table below indicates how this document complies with these requirements.

SECTION 3	NEMA EIA REGULATIONS – APPENDIX 1 REQUIREMENT	SECTION
(a)	details of- (i) the EAP who prepared the report; and (ii) the expertise of the EAP, including a curriculum vitae;	Section 1.3 Appendix F1
(b)	the location of the activity, including- (i) the 21-digit Surveyor General code of each cadastral land parcel; (ii) where available, the physical address and farm name; (iii) where the required information in items (i) and (ii) is not available, the coordinates of the boundary of the property or properties;	Section 2.1
(c)	a plan which locates the proposed activity or activities applied for at an appropriate scale, or, if it is- (i) a linear activity, a description and coordinates of the corridor in which the proposed activity or activities is to be undertaken; or (ii) on land where the property has not been defined, the coordinates within which the activity is to be undertaken;	Section 2.1 and Appendix A1
(d)	a description of the scope of the proposed activity, including- (i) all listed and specified activities triggered; (ii) a description of the activities to be undertaken, including associated structures and infrastructure;	Section 4.1 and Section 4.2
(e)	a description of the policy and legislative context within which the development is proposed including (i) an identification of all legislation, policies, plans, guidelines, spatial tools, municipal development planning frameworks, and instruments that are applicable to this activity and have been considered in the preparation of the report; and (ii) how the proposed activity complies with and responds to the legislation and policy context, plans, guidelines, tools frameworks, and instruments;	Section 4.2
(f)	a motivation for the need and desirability for the proposed development including the need and desirability of the activity in the context of the preferred location;	Chapter 3
(g)	a motivation for the preferred site, activity and technology alternative;	Chapter 7
(h)	a full description of the process followed to reach the proposed preferred alternative within the site, including - (i) details of all the alternatives considered; (ii) details of the PPP undertaken in terms of regulation 41 of the Regulations, including copies of the supporting documents and inputs; (iii) a summary of the issues raised by I&APs, and an indication of the manner in which the issues were incorporated, or the reasons for not including them;	Chapter 7 Chapter 6 and Appendix D Appendix D6



SECTION 3	NEMA EIA REGULATIONS – APPENDIX 1 REQUIREMENT	SECTION
	<ul style="list-style-type: none"> (iv) the environmental attributes associated with the alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects; (v) the impacts and risks which have informed the identification of each alternative, including the nature, significance, consequence, extent, duration and probability of such identified impacts, including the degree to which these impacts- <ul style="list-style-type: none"> (aa) can be reversed; (bb) may cause irreplaceable loss of resources; and (cc) can be avoided, managed or mitigated; (vi) the methodology used in identifying and ranking the nature, significance, consequences, extent, duration and probability of potential environmental impacts and risks associated with the alternatives; (vii) positive and negative impacts that the proposed activity and alternatives will have on the environment and on the community that may be affected focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects; (viii) the possible mitigation measures that could be applied and level of residual risk; (ix) the outcome of the site selection matrix; (x) if no alternatives, including alternative locations for the activity were investigated, the motivation for not considering such; and (xi) a concluding statement indicating the preferred alternatives, including preferred location of the activity; 	<p>Chapter 9, Chapter 10 and Appendix B</p> <p>Chapter 8</p> <p>Chapter 9, Chapter 10 and Appendix B</p> <p>Chapter 9, Chapter 10 and Appendix B N/A Chapter 7</p> <p>Section 13.3</p>
(i)	<p>a full description of the process undertaken to identify, assess and rank the impacts the activity will impose on the preferred location through the life of the activity, including -</p> <ul style="list-style-type: none"> (i) a description of all environmental issues and risks that were identified during the EIA process; and (ii) an assessment of the significance of each issue and risk and an indication of the extent to which the issue and risk could be avoided or addressed by the adoption of mitigation measures; 	<p>Chapter 8, Chapter 9, Chapter 10 and Appendix B</p>
(j)	<p>an assessment of each identified potentially significant impact and risk, including—</p> <ul style="list-style-type: none"> (i) cumulative impacts; (ii) the nature, significance and consequences of the impact and risk; (iii) the extent and duration of the impact and risk; (iv) the probability of the impact and risk occurring; (v) the degree to which the impact and risk can be reversed; (vi) the degree to which the impact and risk may cause irreplaceable loss of resources; and (vii) the degree to which the impact and risk can be avoided, managed or mitigated; 	<p>Chapter 9, Chapter 10 and Appendix B</p>
(k)	<p>where applicable, a summary of the findings and impact management measures identified in any specialist report complying with Appendix 6 to these Regulations and an indication as to how these findings and recommendations have been included in the final report;</p>	<p>Chapter 9</p>



SECTION 3	NEMA EIA REGULATIONS – APPENDIX 1 REQUIREMENT	SECTION
(l)	an environmental impact statement which contains— (i) a summary of the key findings of the EIA; (ii) a map at an appropriate scale which superimposes the proposed activity and its associated structures and infrastructure on the environmental sensitivities of the preferred site indicating any areas that should be avoided, including buffers; and (iii) a summary of the positive and negative impacts and risks of the proposed activity and identified alternatives;	Chapter 12 Chapter 10 Chapter 12
(m)	based on the assessment, and where applicable, impact management measures from specialist reports, the recording of the proposed impact management outcomes for the development for inclusion in the EMP;	Appendix E
(n)	any aspects which were conditional to the findings of the assessment either by the EAP or specialist which are to be included as conditions of authorisation;	Chapter 13
(o)	a description of any assumptions, uncertainties, and gaps in knowledge which relate to the assessment and mitigation measures proposed;	Chapter 13
(p)	a reasoned opinion as to whether the proposed activity should or should not be authorised, and if the opinion is that it should be authorised, any conditions that should be made in respect of that authorisation;	Chapter 3
(q)	where the proposed activity does not include operational aspects, the period for which the environmental authorisation is required, the date on which the activity will be concluded, and the post construction monitoring requirements finalised;	N/A
(r)	an undertaking under oath or affirmation by the EAP in relation to— (i) the correctness of the information provided in the reports; (ii) the inclusion of comments and inputs from stakeholders and I&APs; (iii) the inclusion of inputs and recommendations from the specialist reports where relevant; and (iv) any information provided by the EAP to I&APs and any responses by the EAP to comments or inputs made by I&APs; and	Appendix F2
(s)	where applicable, details of any financial provision for the rehabilitation, closure, and ongoing post decommissioning management of negative environmental impacts;	N/A
(t)	any specific information that may be required by the competent authority; and	N/A
(u)	any other matters required in terms of section 24(4)(a) and (b) of the Act.	N/A



2 PROJECT DESCRIPTION

2.1 PROJECT LOCATION

Eskom Holdings SOC Ltd is proposing the development of a 3-kilometre 132 kV Overhead Line (OHL). The proposed Ganspan Pering 132 kV OHL will connect to Eskom's Sidiba Substation. The proposed OHL is located near Pampierstad on the border of the North West and Northern Cape Provinces. Locality details are provided in Table 2.1 below. Figure 2.1 and Figure 2.2 illustrate the project location and layout, respectively (A3 maps provided in Appendix A1).

Table 2.1. Locality details of the proposed project.

GEOGRAPHICAL ENTITY	LOCATION	
Province	Northern Cape	North West
District Municipality	Frances Baard	Dr Ruth Segomotsi Mompati
Local Municipality	Phokwane	Greater Taung
Nearest Towns	Pampierstad (2 km), Hartswater (16 km) and Jan Kempdorp (22 km)	
Ward Number(s)	1, 2 and 4	21
Farm portions	Portion 1 and RE of Farm 316	RE of Farm 1043 HN
CO-ORDINATES	ALTERNATIVE 1	ALTERNATIVE 2
Starting point	27°46'36.0"S, 24°40'46.4"E	27°46'36.0"S, 24°40'46.4"E
	27°46'39.7"S, 24°40'43.7"E	27°46'39.7"S, 24°40'43.7"E
	27°46'53.6"S, 24°40'35.6"E	27°47'19.3"S, 24°40'20.8"E
	27°46'58.2"S, 24°40'37.7"E	27°47'22.0"S, 24°40'22.5"E
	27°47'41.7"S, 24°40'14.5"E	27°47'18.6"S, 24°40'24.3"E
	27°47'44.4"S, 24°40'16.5"E	27°47'24.1"S, 24°40'27.9"E
End point	27°48'11.3"S, 24°40'2.9"E	27°48'11.3"S, 24°40'2.9"E

2.2 GENERAL SITE OBSERVATIONS

The project area is located adjacent to the 5115 tertiary road and falls within an Eskom servitude in which a number of existing powerlines occur. The site is bordered by residential areas and is often utilised by local community members as a thorough fire and illegal dumping sites which has resulted in the degradation of the vegetation within the project area. The site is also utilised for livestock grazing.

During the site visit conducted on the 29th of April 2021, it was confirmed that the vegetation of the study site is Schmidtsdrift Thornveld. The Schmidtsdrift Thornveld vegetation of the site is homogenous (uniform) and highly degraded due to frequent access by local community members, illegal dumping, and grazing by livestock. A recent runaway fire also resulted in the loss of a large portion of the vegetation within the project area. Site photographs can be found in Appendix A2.

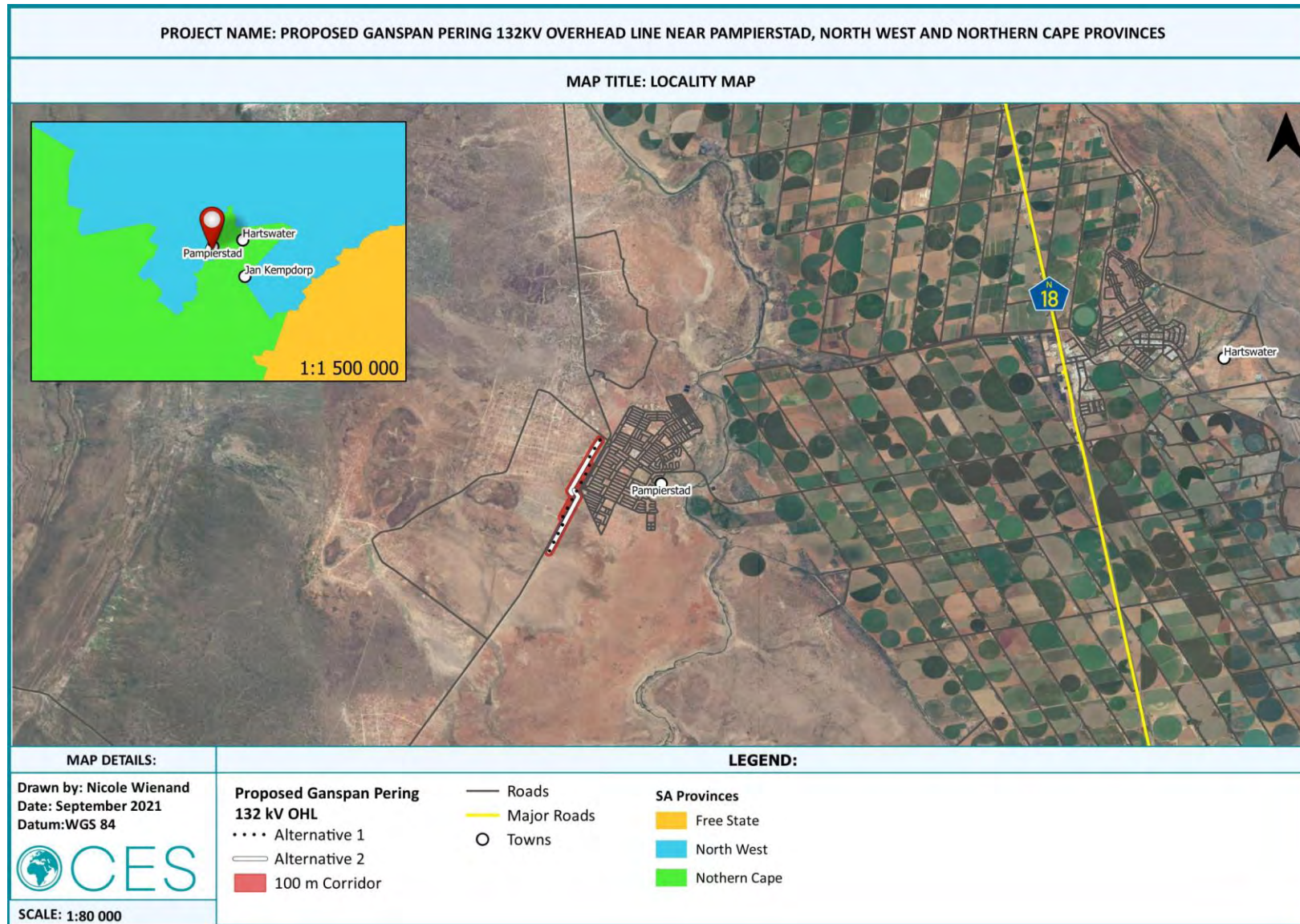


Figure 2.1: Location Map of the proposed Ganspan Pering 132 Kv OHL

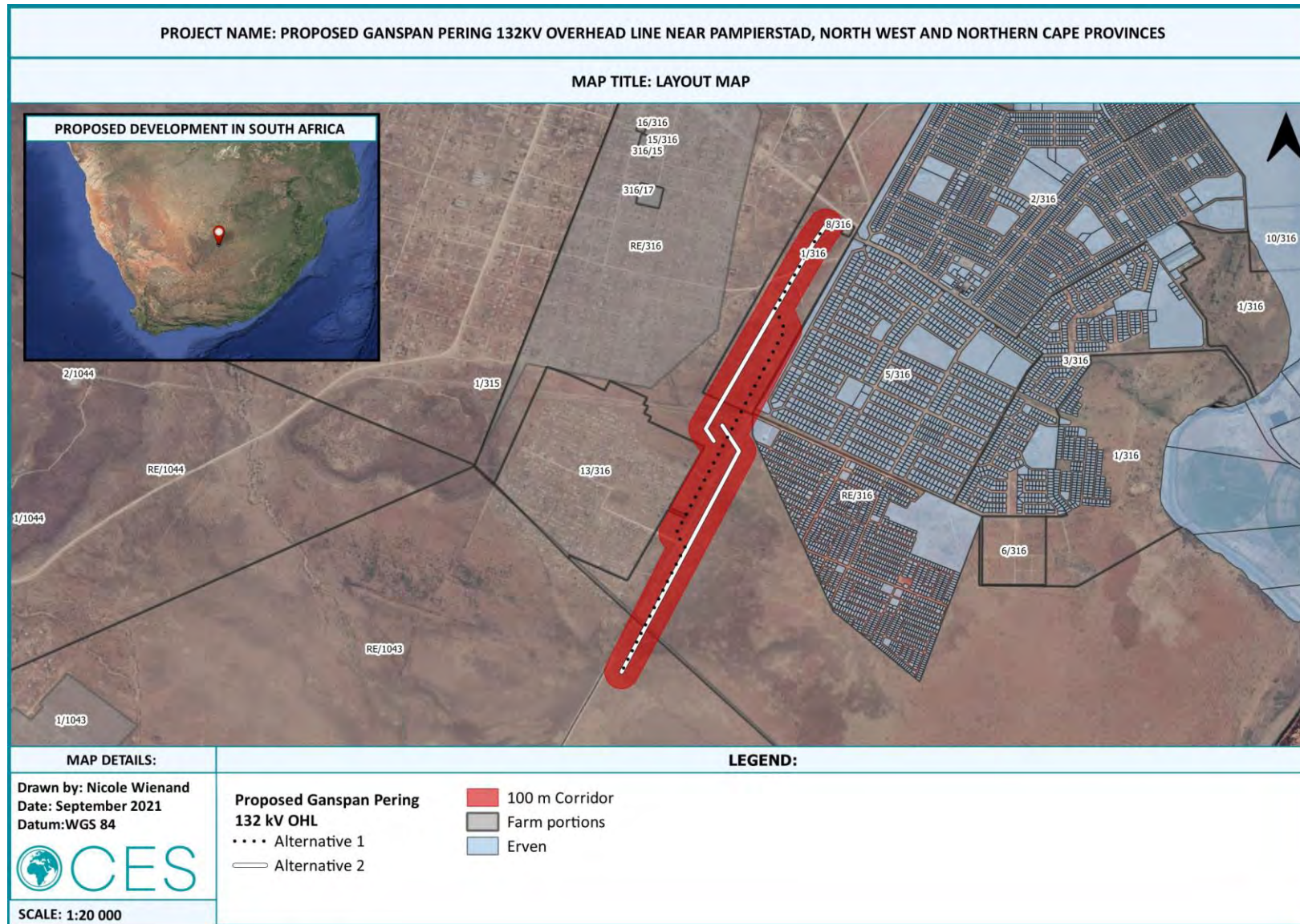


Figure 2.2: Layout Map of the proposed Ganspan Pering 132 Kv OHL



2.3 TECHNICAL DETAILS

2.3.1 PROPOSED OVERHEAD LINE

The following table provides a preliminary description of the development parameters:

Table 2.2: Summary of development parameters

PARAMETER	SPECIFICATIONS	
Exiting Substation		
Sidiba Substation	Area	0.6 ha
Pylons		
Individual pylon footprint	Area	About 20m radius if it has a stay
Number of towers	No.	Unknown at this point
Type of towers	Type	Monopole/Steel Masts
Tower spacing (mean and maximum)	Length	4.8m (cross-arms)
Tower height (lowest, mean and height)	Height	Varies from 20m to 26m
Conductor attachment height (mean)	Height	Varies from 11m to 15m
Minimum ground clearance	Height	6.8m
Powerlines		
Alternative 1	Length	3.2 km
Alternative 2 (preferred)	Length	A = 1.6 km B = 1.8 km Total = 3.4 km
Servitudes		
Existing registered Eskom servitudes	Width	100 m
	Area	87.5 ha

2.3.2 ACCESS ROADS

The proposed development site can be accessed via existing roads, namely Kolong Street and the tarred 5115 tertiary road. Several existing dirt roads also intersect the site.

2.3.3 EMISSIONS

Nuisance dust as a result of construction activities and general smoke emissions from construction vehicles are not anticipated to exceed acceptable norms, taking into account the relatively short term of the construction period and the existing use of the site, which accommodates vehicular traffic with similar emissions.

2.3.4 NOISE

Noise generated will be typical construction noise as a result of the movement of hauling trucks and graders. The noise nuisance will be managed in terms of the CEMP and the applicable sections of the Occupational Health and Safety Act (OHSA) and relevant Construction Regulations (CR). Normal construction equipment (trucks, graders, bulldozers, compactors etc.) will be used primarily. Noise levels may reach between 80-85 dBA per 15 m at an anticipated maximum. In the rural environment, such noise levels are expected to be negligible.



2.3.5 POWER SUPPLY

Energy requirements during the construction and operational phases will be met by the Eskom Sidiba and Ganspan substations.

2.3.6 WASTE MANAGEMENT

The below describes the waste management for the construction phase. No waste will be produced during the operational phase.

Solid waste shall be stored in an appointed area in covered, tip-proof metal drums or similar container for collection and disposal. Disposal of solid waste shall be at a licensed landfill site or at a site approved by the relevant authority in the event that an existing operating landfill site is not within reasonable distance from the project area. No waste shall be burned or buried at or near the project area. All solid waste (inert earth material) or construction camp wastes (domestic wastes) will be collected at a central location and will be stored temporarily (less than 89 days) (storage for greater than 90 days will incur waste licence activities. Waste will not be stored for longer that) until it can be removed to an appropriately permitted municipal landfill site near the construction site. The contractor must make all attempt to follow the waste hierarchy in dealing with wastes produced (i.e. landfilling should be the final option and not the first response to treatment of any material).

No littering by construction workers shall be allowed. During the construction period, the various contractor's facilities shall be maintained in a neat and tidy condition and the site shall be kept free of litter. At all places of work the contractor shall provide litter collection facilities for later safe disposal at approved sites.

The opportunity for recycling and reuse of construction and demolition waste as fill for road embankments, land reclamation and drainage control must first be explored and take priority before the option of declaring these materials a 'waste'. The contractor is encouraged to actively engage with authorities and landowners adjacent to the site and identify where such 'waste' materials can be usefully deployed to repair existing environmentally damaged areas such as erosion dongas.

2.3.7 STORMWATER MANAGEMENT

Stormwater will be managed in accordance with the best practice guidelines.

2.3.8 WATER USE

Approximately 400 litres per month will sourced from the Phokwane municipal water supply during the construction phase. No water will be required during the operational phase.



3 PROJECT NEED AND DESIRABILITY

The need and desirability of the proposed powerline were evaluated in terms of the Integrated Environmental Management Guideline on Need and Desirability (General Notice 891 of 2014, as amended). This guideline outlines the legislative, strategic and statutory considerations for identifying and describing the need and desirability of proposed developments, which trigger NEMA listed activities. The need and desirability of a proposed development is described in terms of its ecological sustainability, socio-economic justifiability and overall contribution to sustainable development. The following considerations were taken into account in determining the need and desirability of the proposed powerline.

3.1 DEVELOPMENT PLANNING

The National Development Plan (NDP) represents a new approach by Government to promote sustainable and inclusive development in South Africa. The proposed powerline contributes to the NDP goals indirectly by addressing climate change commitments through the reduced reliance on carbon-based power generation.

3.2 INFRASTRUCTURE DEVELOPMENT

The Dr Ruth Segomotsi Mompati and Francis Baard District Municipalities' Integrated Development Plan (IDP) (2020/2021) identifies energy as a key limitation to the development of industry and economic sustainability. The proposed activity does not compromise any of the objectives set within IDP (2020/2021). The proposed project will also be supportive of the IDP's objective of creating more job opportunities. This proposed powerline will provide the municipality directly with electricity, the sustainable energy produced will feed the society living in that area. The proposed project will create job opportunities and economic spin-offs during the construction and operational phases (if an EA is granted by DFFE). Therefore, the proposed powerline would help to address the need for increased and stable electricity supply while also be providing advanced skills transfer and training to the local communities and creating contractual and permanent employment in the area.

3.3 ENVIRONMENTAL MANAGEMENT

The basic needs of landowners and the public were taken into account during the planning phase of the proposed project, which aims to stimulate economic growth, create employment opportunities and make significant contribution towards food security. Minimisation of potential negative impacts and optimisation of potential positive impacts will be ensured by way of effective implementation of the EMP. Thus, the proposed project is deemed to be socially, environmentally and economically sustainable.

3.4 INTEGRATED ENVIRONMENTAL MANAGEMENT (SECTION 23 OF NEMA)

The general objectives of Integrated Environmental Management were taken into account by considering all the potential negative and positive impacts of the proposed project on both the biophysical and socio-economic environments. In order to avoid potentially significant impacts,



specialist inputs were obtained in relation to terrestrial and aquatic ecology. Based on the findings of the specialist studies a number of recommendations / mitigation measures have been identified for consideration in further project design and implementation. The public and authorities were given adequate opportunity to comment on the proposed project and to participate in the Basic Assessment Process.

3.5 RIGHTS OF THE LOCAL COMMUNITY

The project will not affect the rights of the local community. The project developer has ensured community engagement in order to ensure that people's rights are not affected; in fact the project will economically benefit the local community by creating job opportunities during the construction phase and upskill the community on energy solutions as well as create jobs outside the agricultural industry which is something that dominates in the community currently.

3.6 BENEFITS AND DRAWBACKS

The project benefits outweigh the negative impacts. Although the project will result in the loss of vegetation and infringe on the natural environment, habitat fragmentation will be minimized due to the proposed site falling on the edge of the natural area. The development will be undertaken in a manner that aims to minimise environmental impacts. The project will make a positive contribution to sustainable economic growth, skills development and employment opportunities in Dr Ruth Segomotsi Mompati District Municipality and Francis Baard District Municipality.



4 RELEVANT LEGISLATION

4.1 ENVIRONMENTAL AUTHORISATION IN SOUTH AFRICA

The regulation and protection of the environment within South Africa, occurs mainly through the application of various items of legislation, within the regulatory framework of the Constitution, 1996 (Act No. 108 of 1996).

The primary legislation regulating Environmental Impact Assessment (EIA) within South Africa is the National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA). NEMA makes provision for the Minister of Environmental Affairs to identify activities which may not commence prior to authorisation from either the Minister or the provincial Member of the Executive Council (“the MEC”). In addition to this, NEMA also provides for the formulation of regulations in respect of such authorisations.

The EIA Regulations (2014) (as amended) allow for a Basic Assessment (BA) process for activities with limited environmental impact (listed in GN R 983 and 985, 2014, as amended) and a more rigorous two-tiered approach to activities with potentially greater environmental impact (listed in GN R 984, 2014, as amended). This two-tiered approach includes both a Scoping and EIA process.

In terms of the Environmental Impact Assessment (EIA) regulations of 2014 (as amended), the development of the 132 kV Ganspan Pering powerline project requires Environmental Authorisation, from the National Department of Forestry, Fisheries and the Environment (DFFE). The triggered activities are listed under Listing Notices 1 and 3 (published in Government Notices No. R 983 and No. R 985 respectively), and as such, the BA Process needs to be followed. The listed activities that have been applied for are provided in Table 4.1 below.

Table 4.1: Listed Activities triggered in the 2014 NEMA EIA Regulations (as amended 2017) - (Basic Assessment)

ACTIVITY NUMBER	ACTIVITY DESCRIPTION	DESCRIPTION OF PROJECT ACTIVITY THAT TRIGGERS LISTED ACTIVITY
GN R 983 – Listing 1		
11	<p>The development of facilities or infrastructure for the transmission and distribution of electricity—</p> <p>(iii) Outside urban areas or industrial complexes with a capacity of more than 33 but less than 275 kilovolts.</p>	<p>The proposed development will be a powerline, with the capacity of 132 kilovolts. The powerline servitude will cover an area of 10.54 ha, with a length of 3.4 km width of 31 m. However, vegetation clearance will occur within an area of 3.4 km and width of 8m (2.72 ha). The powerline falls outside the Pampierstad urban edge, as verified with the Pampierstad Local Development Framework (2008) and the Phokwane Local Municipality Spatial Development Framework (2008).</p>



ACTIVITY NUMBER	ACTIVITY DESCRIPTION	DESCRIPTION OF PROJECT ACTIVITY THAT TRIGGERS LISTED ACTIVITY
12	The development of— (iv) Infrastructure or structures with a physical footprint of 100 square metres or more; where such development occurs— (b) Within a watercourse; (d) If no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse; —	The proposed development will be a powerline, with the capacity of 132 kilovolts. The powerline will cover an area of 5.44 ha, with a length of 3.4 km width of 16 m. The powerline falls across drainage lines and artificial wetlands.
28	Residential, mixed, retail, commercial, industrial or institutional developments where such land was used for agriculture, game farming, equestrian purposes or afforestation on or after 01 April 1998 and where such development: (iii) Will occur outside an urban area, where the total land to be developed is bigger than 1 hectare;	The proposed development occurs outside of an urban area and will encompass an area of 5.44 ha, with a length of 3.4 km width of 16 m, on land previously zoned for agriculture.
GN R 985 – Listing 3		
10	The development and related operation of facilities or infrastructure for the storage, or storage and handling of a dangerous good, where such storage occurs in containers with a combined capacity of 30 but not exceeding 80 cubic metres. i. Northern Cape iii. Areas within a watercourse or wetland; or within 100 metres from the edge of a watercourse or wetland; j. North West vii. Areas within a watercourse or wetland, or within 100 metres from the edge of a watercourse or wetland.	The proposed development may require the storage and handling of dangerous goods. The powerline falls across and within 100 m of drainage lines and artificial wetlands in Northern Cape and North West.

The competent authority that must consider and decide on the application for authorisation in respect of the activities listed in Table 4.1 is the Department of Forestry, Fisheries and Environment. DFFE is required to provide a decision regarding the proposed project based on comments from state stakeholders. This decision has been made in terms of Section 24(C) (3) of the National Environmental Management Act, 1998 (Act No 107 of 1998). It is important to note that in addition to the requirements for an authorisation in terms of NEMA, there may be additional legislative requirements which need to be considered prior to commencing with the activity, for example:

- National Heritage Resources Act, 1999 (Act No. 25 of 1999).
- Aviation Act, 1962 (Act No. 74 of 1962): 13th Amendment of the Civil Aviation Regulations (1997).
- NEM: Biodiversity Act, 2004 (Act No. 10 of 2004).
- National Water Act, (Act No. 36 of 1998).



4.2 APPLICABLE LEGISLATION

This section describes the South African (national), provincial and municipal legislation considered during the Basic Assessment process of the proposed development.

4.2.1 NATIONAL

4.2.1.1 *The Constitution Act, 1996 (Act No. 108 of 1996)*

This is the supreme law of the land. As a result, all laws, including those pertaining to the proposed development, must conform to the Constitution. The Bill of Rights - Chapter 2 of the Constitution, includes an environmental right (Section 24) according to which, “everyone has the right –

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

RELEVANCE TO THE PROPOSED PROJECT

- *The developer has an obligation to ensure that the proposed activity will not result in pollution and ecological degradation.*
- *The developer has an obligation to ensure that the proposed activity is ecologically sustainable, while demonstrating economic and social development.*

4.2.1.2 *National Environmental Management Act, 1998 (Act No. 107 of 1998)*

The National Environmental Management Act, 1998 (Act No.107 of 1998) (NEMA) provides for the basis for environmental governance in South Africa by establishing principles and institutions for decision-making on matters affecting the environment.

A key aspect of NEMA is that it provides a set of environmental management principles that apply throughout the Republic to the actions of all organs of state that may significantly affect the environment. Section 2 of NEMA contains principles (see Table 4.1) relevant to the proposed development, and likely to be utilised in the process of decision making by DFFE.

Table 4.2: NEMA Environmental Management Principles

NUMBER	DESCRIPTION OF PRINCIPLES
(2)	Environmental management must place people and their needs at the forefront of its concern, and serve their physical, psychological, developmental, cultural and social interests equitably.
(3)	Development must be socially, environmentally and economically sustainable.
(4)(a)	Sustainable development requires the consideration of all relevant factors including the following: <ul style="list-style-type: none"> i. That the disturbance of ecosystems and loss of biological diversity are avoided, or, where they cannot be altogether avoided, are minimised and remedied; ii. That pollution and degradation of the environment are avoided, or, where they cannot be altogether avoided, are minimised and remedied;



NUMBER	DESCRIPTION OF PRINCIPLES
	iii. That waste is avoided, or where it cannot be altogether avoided, minimised and re-used or recycled where possible and otherwise disposed of in a responsible manner.
(4)(e)	Responsibility for the environmental health and safety consequences of a policy, programme, project, product, process, service or activity exists throughout its life cycle.
(4)(i)	The social, economic and environmental impacts of activities, including disadvantages and benefits, must be considered, assessed and evaluated, and decisions must be appropriate in the light of such consideration and assessment.
(4)(j)	The right of workers to refuse work that is harmful to human health or the environment and to be informed of dangers must be respected and protected.
(4)(p)	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 must be paid for by those responsible for harming the environment.
(4)(r)	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.

As these principles are utilised as a guideline by the competent authority in ensuring the protection of the environment, the proposed development should, where possible, be undertaken in accordance with these principles. Where this is not possible, deviation from these principles would have to be very strongly motivated.

NEMA introduces the duty of care concept, which is based on the policy of strict liability. This duty of care extends to the prevention, control and rehabilitation of significant pollution and environmental degradation. It also dictates a duty of care to address emergency incidents of pollution. A failure to perform this duty of care may lead to criminal prosecution and may lead to the prosecution of managers or directors of companies for the conduct of the legal persons. Employees who refuse to perform environmentally hazardous work, or whistle blowers, are protected in terms of NEMA.

In addition, NEMA introduces a new framework for environmental impact assessments, the EIA Regulations (2010), which aims to avoid detrimental environmental impacts through the regulation of specific activity that cannot commence without prior environmental authorisation (discussed in Section 4.1).

RELEVANCE TO THE PROPOSED PROJECT

- An application for Environmental Authorisation (as triggered by the EIA Regulations 2014 (as amended) will be required. In terms of Section 28, every person who causes, has caused, or may cause significant pollution or degradation of the environment, must take reasonable measures to prevent pollution or rectify the damage caused. The undertaking of various specialist studies, in order to identify potential impacts on the environment and to recommend mitigation measures to minimise these impacts, complies with Section 28 of NEMA. The developer must apply the NEMA principles, the fair decision-making and conflict management procedures that are provided for in NEMA. The developer must apply the principles of Integrated Environmental Management and consider, investigate and assess the potential impact of existing and planned activities on the environment, socio-economic conditions and the cultural heritage.*



- *In terms of the EIA regulations, the construction of the proposed powerline and associated infrastructure will trigger the need for a Basic Assessment process under the NEMA EIA Regulations of 2014 (as amended) in Listing Notice 3 (refer to Section 4.1 for a detailed description of the listed activity applied for).*

4.2.1.3 National Environment Management: Biodiversity Act, 2004 (Act No. 10 of 2004)

The National Environment Management: Biodiversity Act, 2004 (Act No. 10 of 2004) (NEMBA) provides for the management and conservation of South Africa's biodiversity and the protection of species and ecosystems that warrant national protection.

The objectives of NEMBA are:

- (a) *within the framework of the National Environmental Management Act, to provide for—*
 - (i) *the management and conservation of biological diversity within the Republic and of the components of such biological diversity;*
 - (ii) *the use of indigenous biological resources in a sustainable manner; and*
 - (iii) *the fair and equitable sharing among stakeholders of benefits arising from bioprospecting involving indigenous biological resources;*
- (b) *to give effect to' ratified international agreements relating to biodiversity which are binding on the Republic;*
- (c) *to provide for co-operative governance in biodiversity management and conservation; and*
- (d) *to provide for a South African National Biodiversity Institute to assist in achieving the objectives of this Act.*

The Act provides for the management and conservation of South Africa's biodiversity within the framework of the NEMBA. In terms of the Biodiversity Act, the developer has a responsibility for:

- The conservation of endangered ecosystems and restriction of activities according to the categorisation of the area (including The Endangered and Threatened Ecosystem Regulations, Government Notice R. 1002 dated 9th December 2011).
- Application of appropriate environmental management tools in order to ensure integrated environmental management of activities thereby ensuring that all developments within the area are in line with ecological sustainable development and protection of biodiversity.
- Limit further loss of biodiversity and conserve endangered ecosystems.

The Act's permit system is further regulated in the Act's Threatened or Protected Species Regulations Government Notice R. 152 of 23 February 2007.

RELEVANCE TO THE PROPOSED PROJECT

- *The developer must not cause a threat to any endangered ecosystems and must protect and promote biodiversity;*
- *The developer must assess the impacts of the proposed development on endangered ecosystems;*
- *The developer may not remove or damage any protected species without a permit; and*
- *The developer must ensure that the site is cleared of alien vegetation using appropriate means.*
- *Alien Invasive Species (AIS) Regulations, Government Notice R. 598 of 1st April 2014 are applicable.*



4.2.1.4 National Environmental Management: Waste Management Act, 2008 (Act No. 59 of 2008)

The National Environmental Management: Waste Management Act, 2008 (Act No. 59 of 2008) (NEMWMA) gives legal effect to the Government's policies and principles relating to waste management in South Africa, as reflected in the National Waste Management Strategy (NWMS). The objects of the Act are *"to protect health, well-being and the environment by providing reasonable measures for—*

- *minimising the consumption of natural resources;*
- *avoiding and minimising the generation of waste;*
- *reducing, re-using, recycling and recovering waste;*
- *treating and safely disposing of waste as a last resort;*
- *preventing pollution and ecological degradation;*
- *securing ecologically sustainable development while promoting justifiable economic and social development;*
- *promoting and ensuring the effective delivery of waste services;*
- *remediating land where contamination presents, or may present, a significant risk of harm to health or the environment; and*
- *achieving integrated waste management reporting and planning."*

RELEVANCE TO THE PROPOSED PROJECT

- *The developer must ensure that all activities associated with the project address waste related matters in compliance with the requirements of the Act.*
- *The developer must consult with the local municipalities to ensure that waste is disposed of at a registered landfill site.*

4.2.1.5 Occupational Health and Safety Act, 1993 (Act No. 85 of 1993)

The objective of this Act is to provide for the health and safety of persons at work. In addition, the Act requires that, "as far as reasonably practicable, employers must ensure that their activities do not expose non-employees to health hazards". The importance of the Act lies in its numerous regulations, many of which will be relevant to the proposed project. These cover, among other issues, noise and lighting.

RELEVANCE TO THE PROPOSED PROJECT

- *The developer must be mindful of the principles and broad liability and implications contained in the OHS Act and mitigate any potential impacts.*

4.2.1.6 National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004)

The National Environmental Management: Air Quality Act (No. 39 of 2004)(NEMAQA) is the principal legislation regulating air quality in South Africa. The objects of the Act are to:

- Give effect to section 24(b) of the Constitution in order to enhance the quality of ambient air for the sake of securing an environment that is not harmful to the health and well-being of people, and
- Protect the environment by providing reasonable measures for:
 - Protection and enhancement of the quality of air in the Republic.
 - Prevention of air pollution and ecological degradation.



- Securing ecologically sustainable development while promoting justifiable economic and social development.

The Air Quality Act empowers the Minister to establish a national framework for achieving the objects of this Act. The said national framework will bind all organs of state. The said national framework will *inter alia* have to establish national standards for municipalities to monitor ambient air quality and point, non-point and mobile emissions.

RELEVANCE TO THE PROPOSED PROJECT

- *Although no major air quality issues are expected, the developer needs to be mindful of the Act as it also relates to potential dust generation during construction, etc.*

4.2.1.7 National Water Act, 1998 (Act No. 36 of 1998)

The National Water Act (NWA) provides for fundamental reform of the law relating to water resources in South Africa.

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

- meeting the basic human needs of present and future generations;*
- promoting equitable access to water;*
- redressing the results of past racial and gender discrimination;*
- promoting the efficient, sustainable and beneficial use of water in the public interest;*
- facilitating social and economic development;*
- providing for growing demand for water use;*
- protecting aquatic and associated ecosystems and their biological diversity;*
- reducing and preventing pollution and degradation of water resources;*
- meeting international obligations;*
- promoting dam safety;*
- managing floods and droughts.”*

Section 21 of the NWA describes activities defined as a water use under the Act. These activities may only be undertaken subject to the application for, and issue of, a Water Use License (WUL) or General Authorisation (GA). Water use activities include—

- taking water from a water resource;*
- storing water;*
- impeding or diverting the flow of water in a watercourse;*
- engaging in a stream flow reduction activity contemplated in section 36;*
- engaging in a controlled activity identified as such in section 37(1) or declared under section 38(1);*
- discharging waste or water containing waste into a water resource through a pipe, canal, sewer, sea outfall or other conduit;*
- disposing of waste in a manner which may detrimentally impact on a water resource;*
- disposing in any manner of water which contains waste from, or which has been heated in, any industrial or power generation process;*
- altering the bed, banks, course or characteristics of a watercourse;*
- removing, discharging or disposing of water found underground if it is necessary for the efficient continuation of an activity or for the safety of people; and*



(k) using water for recreational purposes.”

RELEVANCE TO THE PROPOSED PROJECT

- Water for the construction and operational phases of the proposed development will be sourced from the Municipality line that is currently supplying Pampierstad.
- The specific supply should have a separate meter for any other logistical purposes. This water may require temporary storage on site, triggering the need for a Water Use Authorisation (WUA) under the National Water Act (NWA), (Act No 36 of 1998) Section 21 for the following water use: 21(b) for the storage of water.
- The development falls within 100 m of watercourses and 500 m of artificial wetlands, triggering the need for a Water Use Authorisation (WUA) under the National Water Act (NWA), (Act No 36 of 1998) Section 21 for the following water uses:
 - 21(c) impeding or diverting the flow of water in a watercourse (relevant to the construction occurring in close proximity to drainage lines); and
 - 21(i) altering the bed, banks, course or characteristics of a watercourse (relevant to the construction occurring in close proximity to drainage lines).

4.2.1.8 National Road Traffic Act, 1996 (Act No. 93 of 1996)

The National Road Traffic Act (No. 93 of 1996) (NRTA) provides for all road traffic matters and is applied uniformly throughout South Africa. The Act enforces the necessity of registering and licensing motor vehicles. It also stipulates requirements regarding fitness of drivers and vehicles as well as making provision for the transportation of dangerous goods.

RELEVANCE TO THE PROPOSED PROJECT

- All the requirements stipulated in the NRTA will need to be complied with during the construction and operational phases of the proposed powerline.

4.2.1.9 Other Relevant National Legislation

Other legislation that may be relevant to the proposed powerline and associated infrastructure includes:

- The Environment Conservation Act, 1989 (Act No. 73 of 1989) (ECA) Noise Control Regulations, which specifically provide for regulations to be made with regard to the control of noise, vibration and shock, including prevention, acceptable levels, powers of local authorities and related matters;
- Provincial Nature and Environmental Conservation Ordinance, 1974 (Act No. 19 of 1974), which lists species of special concern which require permits for removal. Schedules 1 to 4 list protected and endangered plant and animal species.
- Spatial Planning and Land Use Management Act, 2013 (Act No. 16 of 2013 – came into force on 1 July 2015) (SPLUMA) aims to provide inclusive, developmental, equitable and efficient spatial planning at the different spheres of the government. This act repeals national laws on the Removal of Restrictions Act, Physical Planning Act, Less Formal Township Planning Act and Development Facilitation Act.

4.2.2 PROVINCIAL

4.2.2.1 Northern Cape and North West Biodiversity Plans

The Biodiversity Plan is a useful tool for addressing the need to take biodiversity into account



in land use planning and decision-making, in order to promote sustainable development. The purpose of a Biodiversity Sector Plan is to inform land use planning, environmental assessments, land and water use authorisations, as well as natural resource management, undertaken by a range of sectors whose policies and decisions impact on biodiversity. This is done by providing a map of biodiversity priority areas, referred to as Critical Biodiversity Areas (CBAs) and Ecological Support Areas (ESAs), with accompanying land use planning and decision-making guidelines.

RELEVANCE TO THE PROPOSED PROJECT

- *The proposed development must be aligned with provincial spatial planning guidelines and targets.*
- *The developer must not cause a threat to any endangered ecosystems and must protect and promote biodiversity.*
- *The developer must assess the impacts of the proposed development on endangered ecosystems.*

4.2.2.2 The Government of the Northwest Territories (GNWT) 2030 Energy Strategy

The Northwest Territories' 2030 Energy Strategy (Energy Strategy) sets out the Government of the Northwest Territories' (GNWT) long-term approach to supporting secure, affordable and sustainable energy supply and use in the NWT. The goal of this strategy is to guide the development of secure, affordable, and sustainable energy for transportation, heat and electricity, support energy efficiency and conservation, and promote renewable and alternative energy solutions for the NWT.

By 2030, the NWT will have a secure, affordable and sustainable energy system that is less dependent on fossil fuels, and contributes to the economic, social and environmental wellbeing of the Territory and its residents. The GNWT will achieve this vision by following guiding principles in decision making that include shared responsibility, Indigenous and community engagement, leading by example, as well as transparency and accountability.

4.2.2.3 The Government of the Northern Cape Territories (GNNC) 2040 Energy Strategy

The province is currently developing a Provincial Growth and Development Plan (PGDP - Vision 2040) and reviewing the Provincial Spatial Development Framework (PSDF), which will plot the path to changing the energy landscape of the Northern Cape. The PGDP – Vision 2040 and the PSDF will also provide a developmental agenda based on four paths of prosperity, namely economic, social, environmental and governance. These paths are founded within an ethos of sustainable development.

A social pact is therefore required to create a prosperous energy sector in the province through a negotiated resolution where the private sector commits to investing in new areas; where labour and business work together with government to address the inhibiting factors and identifying opportunities; and developing partnerships with civil society to ensure that our people benefit from the natural resources of our beautiful Province.

Four accords, emanating from the New Growth Path (NGP) have already been signed on basic education, skills development, local procurement and the green economy which can serve as a guide in creating a Provincial Green Economy Accord, which would encompass the proposed initiatives of an Energy Transformation Charter.



4.2.3 DISTRICT

4.2.3.1 *Dr Ruth Segomotsi Mompoti District Municipality Environmental Management Framework*

Section 24 of the Constitution provides that everyone has the right to an environment that is not harmful to their health or well-being and to have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that:

- prevent pollution and ecological degradation;
- promote conservation; and
- Secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development.

DR RSM's considerable and diverse natural resources open up a wide array of investment possibilities, from alternative energy to both game and livestock farming. Being part Republic of South Africa, which is a signatory to various international environmental agreements, DR RSM is concerned to protect its natural resources and promote their sustainable use.

DR RSM district municipality derives its environmental mandate to ensure the protection of the environment and conservation of natural resources. The Municipality performs its environmental mandate through the community services' environmental/Municipal health unit with further support from the Department of Environmental Affairs' local government support unit that has deployed 1 Control environmental Officer Grade A to provide support to the District and its 5 Local municipalities on environmental management issues (DR RUTH SEGOMOTSI MOMPATI DISTRICT MUNICIPALITY, 2019-2020)

RELEVANCE TO THE PROPOSED PROJECT

- *The proposed development must be aligned with district spatial planning guidelines and targets.*

4.2.3.2 *Frances Baard District Municipality Environmental Management Framework*

It is understood that the first EMF was not formally adopted by the FBDM's Council. It was also not adopted by the Minister or MEC, in terms of Regulation 5(1) of the EMF Regulations of 2010, and was thus not gazetted. It is noted that regardless of its formal status, the EMF still offers a valuable tool to facilitate planning and decision-making in the district. This was echoed by representatives from DEA during discussions at the first PSC Meeting (Frances Baard District Municipality, 2019).

The primary objective of the EMF is to promote the sustainable management of natural resource in the district by facilitating decision-making and providing strategic guidance to development. Observations with regards to the achievement of this objective are as follows:

- Proposed developments / projects were not screened against the GIS for possible encroachment into the EMZs;
- Development applications under NEMA and SPLUMA are not being optimally screened against the provisions of the EMF;
- Development proposals are not being evaluated with regards to the implications of the EMF; and



- The management provisions associated with the EMZs were not used to guide or influence developments / projects.

Based on the above, it is concluded that the EMF is not currently influencing developments in a meaningful or considerable manner (Frances Baard District Municipality, 2019).

4.2.3.2.1 Phokwane Local Municipality Environmental Management Framework (2010)

The Environmental Management Framework was prepared in 2010 and is incorporated with the Integrated Environment Plan, which was adopted in 2004. The EMF was prepared to identify areas of natural resource importance, ecological sensitivity and other biophysical environments within the District as well as revealing where specific land uses may best be practiced and to offer performance standards for maintaining appropriate use of such land. The Framework intends to proactively identify areas of potential conflict between development proposals and critical/sensitive environments and to bridge the divide between development planning and environmental considerations by integrating environmental opportunities, constraints and critical resource management issues into land use and development endeavours (Phokwane Local Municipality, 2014).

4.2.4 OTHER

In addition to the above, aside from the environmental authorisation, there are other permits, contracts and licenses that will need to be obtained by the project proponent for the proposed project some of which fall outside the scope of the EIA. However, for the purposes of completeness, these include:

- North-West Spatial Development Framework
- Northern Cape Spatial Development Framework
- Dr Ruth Segomotsi Mompati District Municipality Spatial Frameworks
- Frances Baard District Municipality and Phokwane Local Municipality Spatial Frameworks
- Dr Ruth Segomotsi Mompati District Municipality By-Laws
- Frances Baard District Municipality and Phokwane Local Municipality By-Laws
- Dr Ruth Segomotsi Mompati Integrated Development Plans
- Frances Baard District Municipality and Phokwane Local Municipality Integrated Development Plans

In addition to the above, the following spatial tools from the South African National Biodiversity Institute (SANBI) need to be taken into consideration:

- The South African Vegetation Map (Mucina and Rutherford);
- The North West Conservation Plan;
- The Northern Cape Conservation Plan
- Dr Ruth Segomotsi Mompati District Bioregional Plan
- The Frances Baard District Bioregional Plan: and
- The National Freshwater Ecosystem Priority Areas (NFEPA) project.



5 DESCRIPTION OF THE AFFECTED ENVIRONMENT

This chapter provides a description of the affected environment within the vicinity of the proposed powerline. This information is provided to assist the reader in understanding the possible effects of the project on the environment within which it is proposed to be developed. This information has been sourced from existing information available for the area as well as the specialist consultants who have undertaken studies for the proposed development. This chapter aims to provide the context within which this BA is being conducted.

5.1 BIOPHYSICAL ENVIRONMENT

5.1.1 CLIMATE

The information provided herewith is based on the climate data for Pampierstad – the nearest urban area in proximity to the project area. According to the Koppen Climate Classification, the climate for Pampierstad is classified as ‘Bsh’ (Mid-Latitude Steppe and Desert Climate). The average annual temperature is 19°C, with the warmest average temperatures recorded in January (25.7°C) and coldest average temperatures recorded in July (10.9°C). Precipitation typically occurs in the summer months. Approximately 447 mm of rain is received per year, with January receiving the highest average precipitation (78.7 mm) and July receiving the lowest (2.5 mm) (Weatherbase, 2021). A summary of the climate at Pampierstad is provided in Figure 5.1 below.

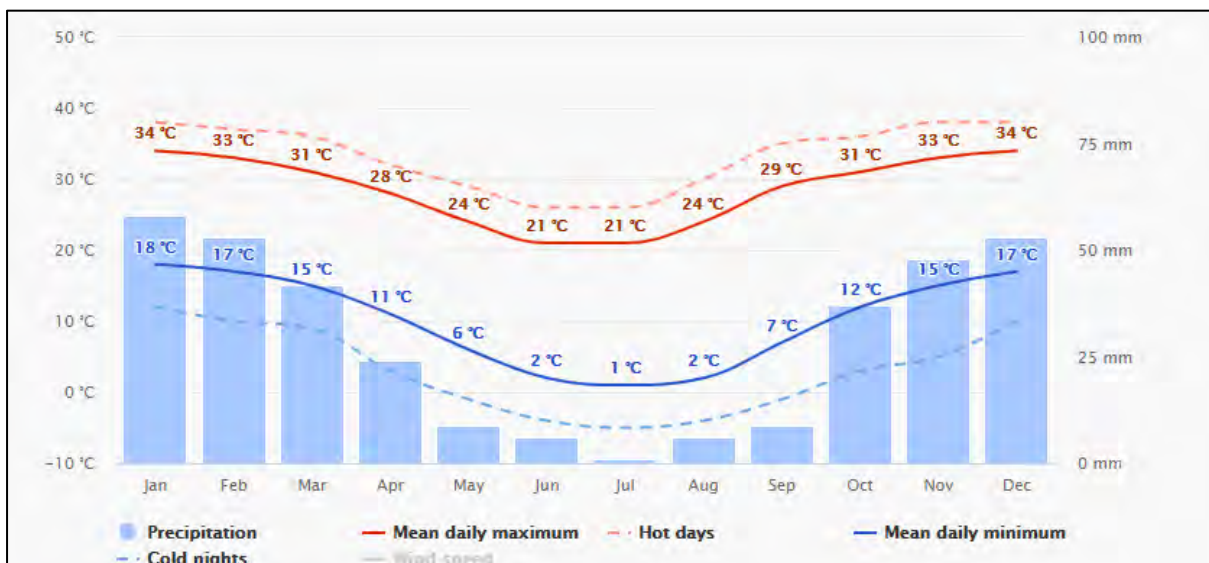


Figure 5.1: Climatic data for Pampierstad, Northern Cape (Meteoblue, 2021) .

5.1.2 TOPOGRAPHY

Vegetation types are influenced by a range of biotic and/or abiotic factors at different spatial and temporal scales, which together influence the distribution, composition, structure, and diversity of plant communities (Rodrigues *et al.*, 2018). Among the abiotic factors influencing vegetation types, topography (landform), geology, and soils are considered three of the major factors determining habitat heterogeneity and species diversity. The topography of the broader



area is relatively flat, increasing slightly in elevation towards the west and east of the project area in Figure 5.2.

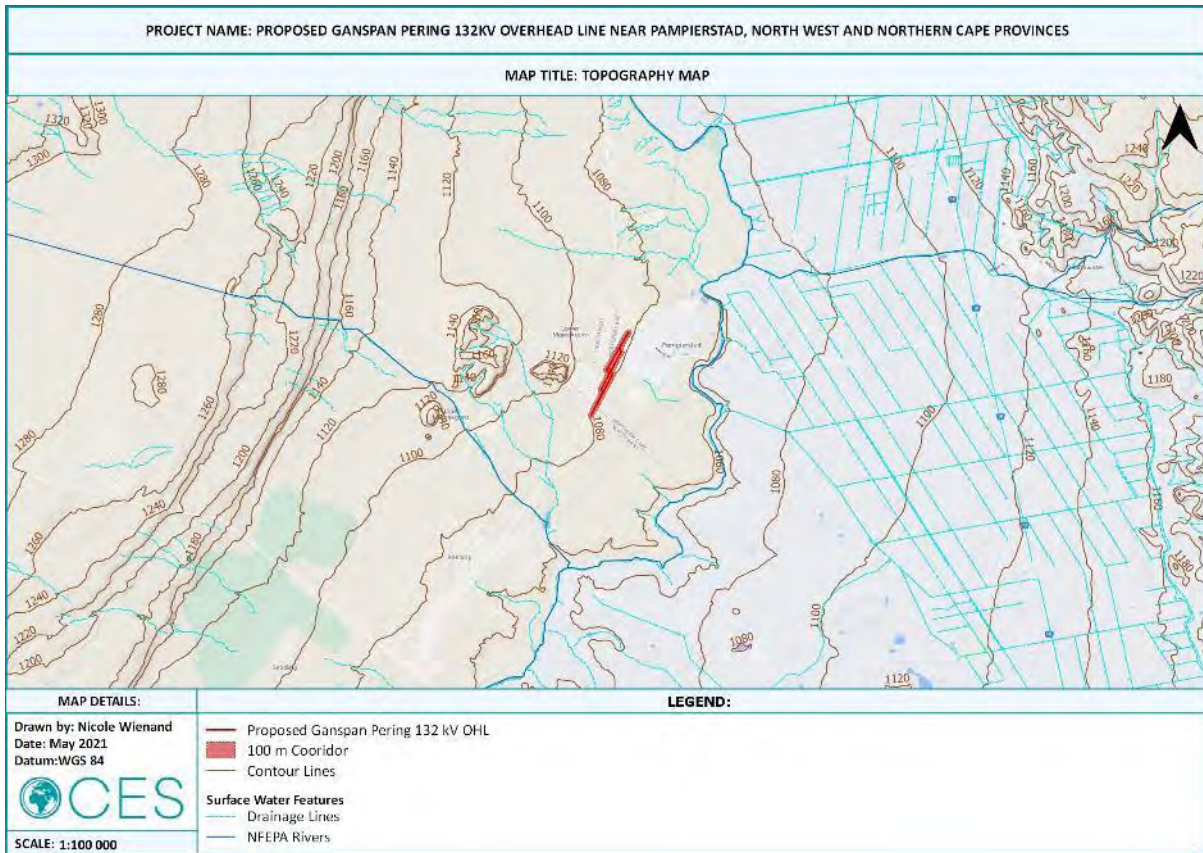


Figure 5.2: Contour Map of the study area

5.1.3 GEOLOGY AND SOILS

The geology underlying the project area is characterised by a thick sequence of Quaternary age sedimentary deposits, consisting of aeolian sand and calcrete. Two geological features, prominent on aerial imagery, occur approximately 1-3 km west of the proposed development, including an outcrop of Karoo Dolerite and Dwyka Group tillite, arenite, and mudstone (Figure 5.3).

The soils within the study site are classified as Calcic Luvisols (Figure 5.4). Luvisols are defined as, ‘soils having an argic horizon with a cation exchange capacity (1 MNH₄OAc at pH 7.0) equal to or greater than 24 cmol (+) kg⁻¹ clay, either starting within 100 cm from the soil surface, or within 200 cm from the soil surface if the argic horizon is overlain by loamy sand or coarser textures throughout’ (ISRIC, n.d.). According to the FAO Soils Portal, Calcic Luvisols are defined as “Luvisols having a calcic horizon or concentrations of soft powdery lime within 125 cm of the surface when the weighted average textural class is coarse, within 90 cm for medium textures, within 75 cm for fine textures”.

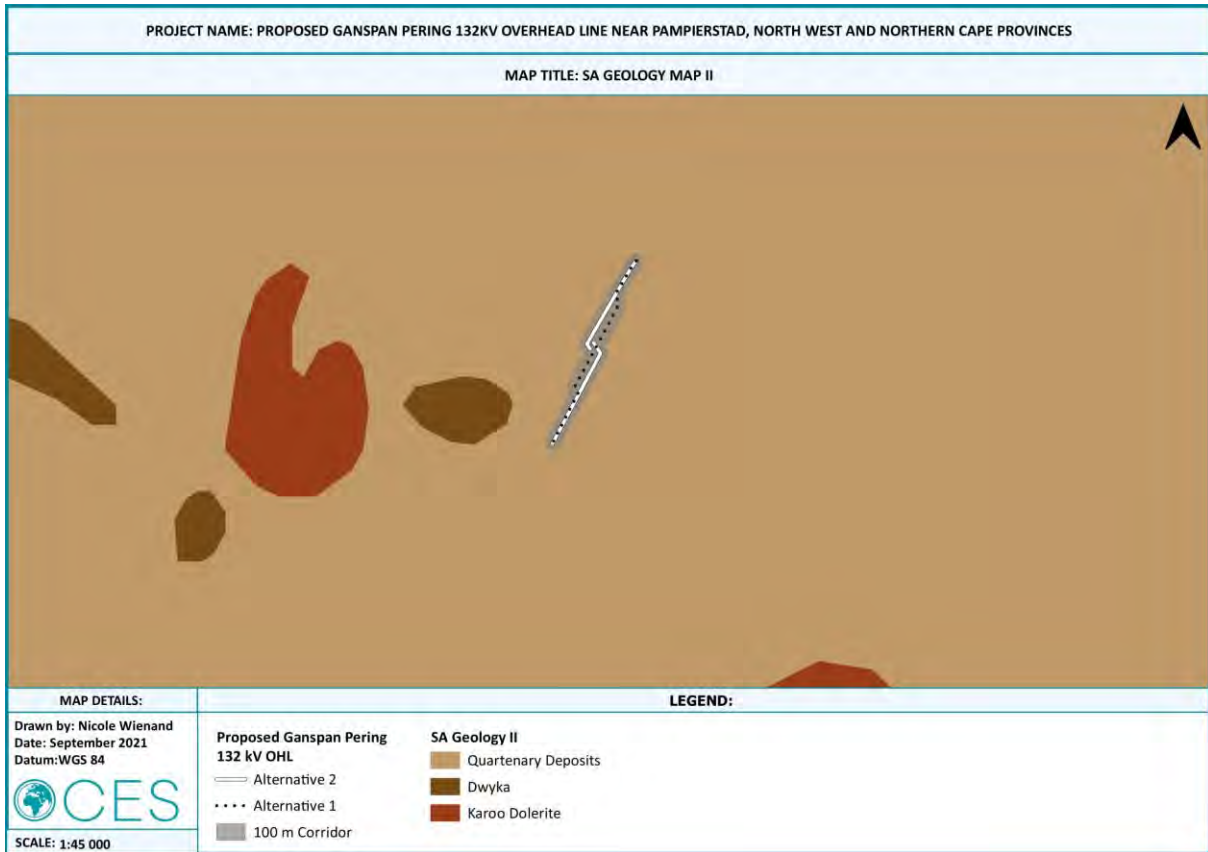


Figure 5.3: Geology map of the study site

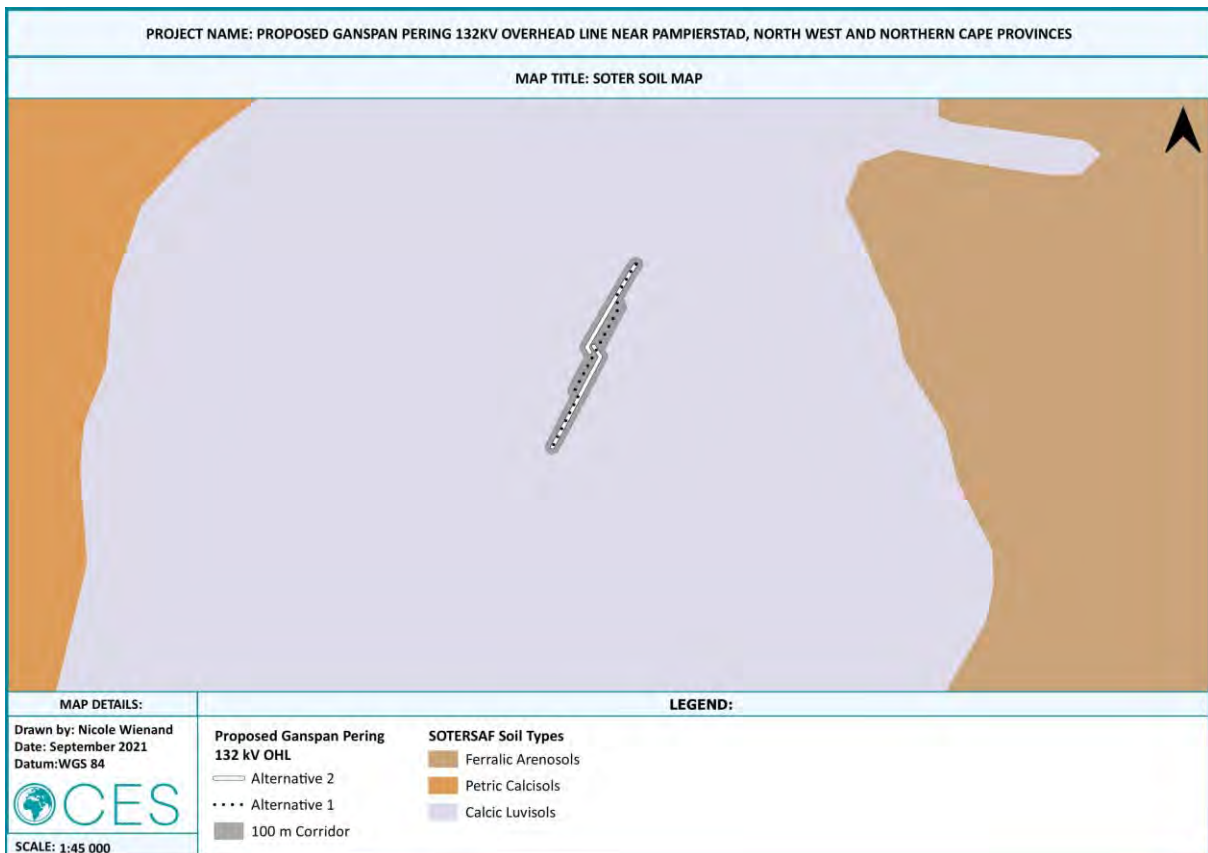


Figure 5.4: SOTER SAF Soil Map of the project area



5.1.4 LAND USE AND COVER

According to the South African National Land-Cover (2018) spatial dataset, the majority of the project area occurs within *Natural Grassland*, with the southern portion of the proposed 132 kV OHL occurring within *Low Shrubland*. Scattered portions of *Open Woodland* (10-35%) occur within the *Natural Grassland* portion of the project area. The proposed 132 kV OHL is bordered by *Residential Formal* areas (Figure 5.5).

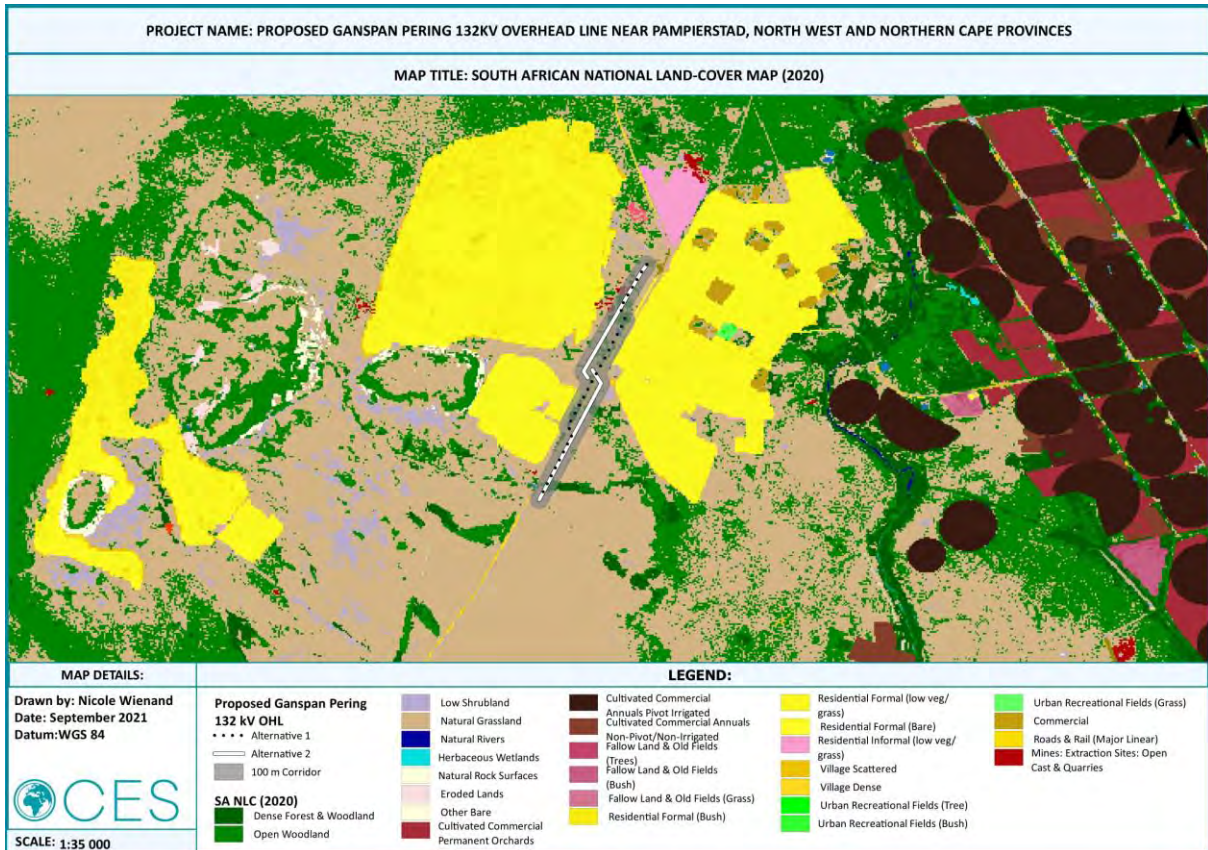


Figure 5.5: South African National Land-Cover (SANLC, 2018) Map of the project area

5.1.5 DRAINAGE, RIVER AND WETLAND ECOSYSTEM CONTEXT

The proposed development falls within Quaternary Catchment C33A, which drains the Harts River, a tributary of the Vaal River, and falls entirely within the Vaal Water Management Area (WMA 5) (Figure 5.7). The Harts River flows in a south-westerly direction, approximately 2 km to the east of the powerline. The reach has been assigned a ‘Critically Endangered’ ecosystem threat status in terms of the National Biodiversity Assessment (NBA, 2018). Critically Endangered ecosystems are ecosystem types that have very little of their original extent (measured as area, length or volume) left in natural or near-natural condition. Most of the ecosystem type has been heavily, severely or critically modified from its natural state. Any further loss of natural habitat or deterioration in condition of the remaining healthy examples of these ecosystem types must be avoided, and the remaining healthy examples should be the focus of urgent conservation action (Nel & Driver, 2012). According to the NBA (2018), the Present Ecological State (PES) of the Harts River reach closest to the proposed powerline ranges from “C: Moderately Modified” to “D: Largely Modified”, i.e. a moderate to large change in ecosystem processes and loss of natural habitat and biota and has occurred. The Harts



River is not categorised as a River FEPA in terms of the National Freshwater Ecosystem Priority Areas (NFEPA) project (2014).

5.1.5.1 Aquatic Critical Biodiversity Areas

The Northern Cape CBA Map (2016) does not include spatial data relating to aquatic CBAs. However, according to the North West BSP (2015), the proposed development does not occur within an aquatic CBA or ESA (Figure 5.6). The aquatic sensitivity of the proposed site is classified as LOW in the Screening Report.

5.1.5.2 National Biodiversity Assessment and Freshwater Ecosystem Priority Areas

According to available spatial data, the proposed development does not occur within 100 m of a water course (NFEPA River (2011/14) or non-perennial rivers) or within 500 m of a NBA (2018) or NFEPA (2011/14) wetland (Figure 5.7).

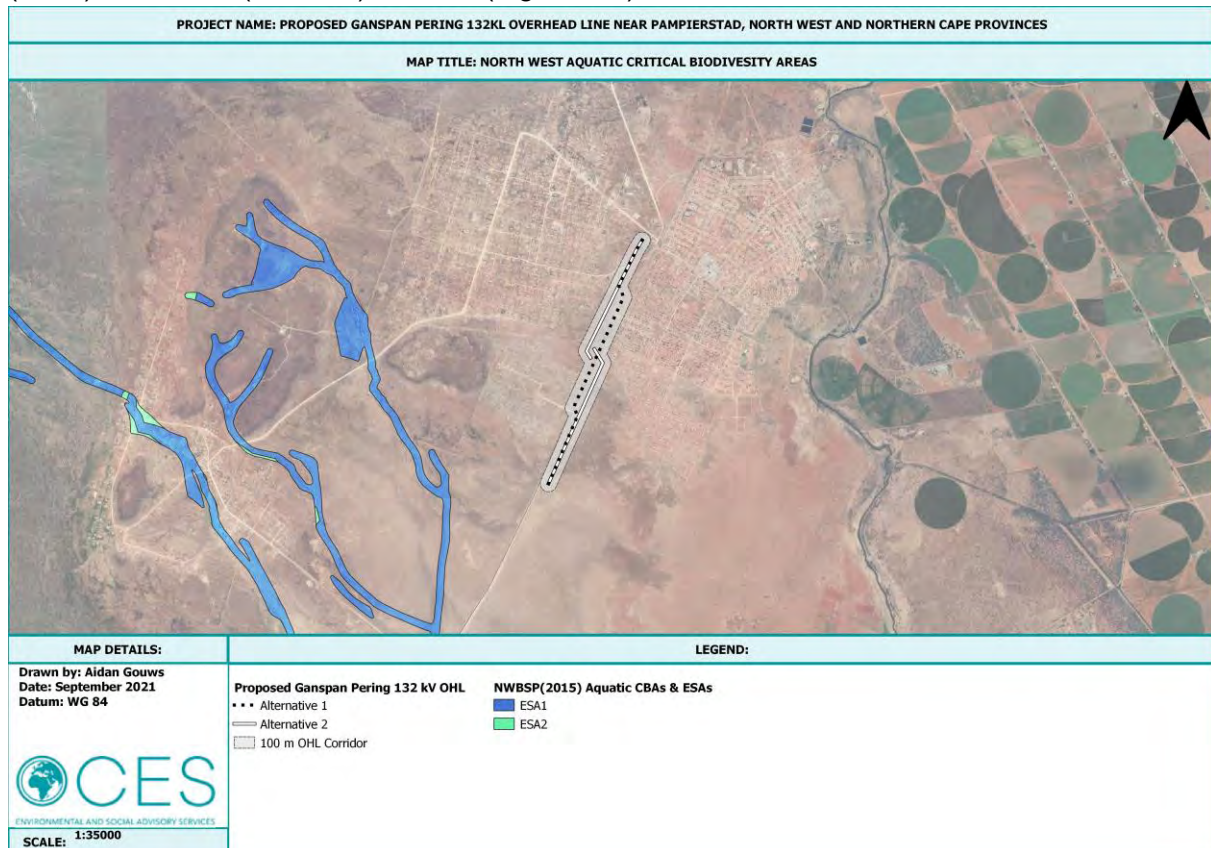


Figure 5.6: North West BSP (2015) Aquatic CBAs within the project area

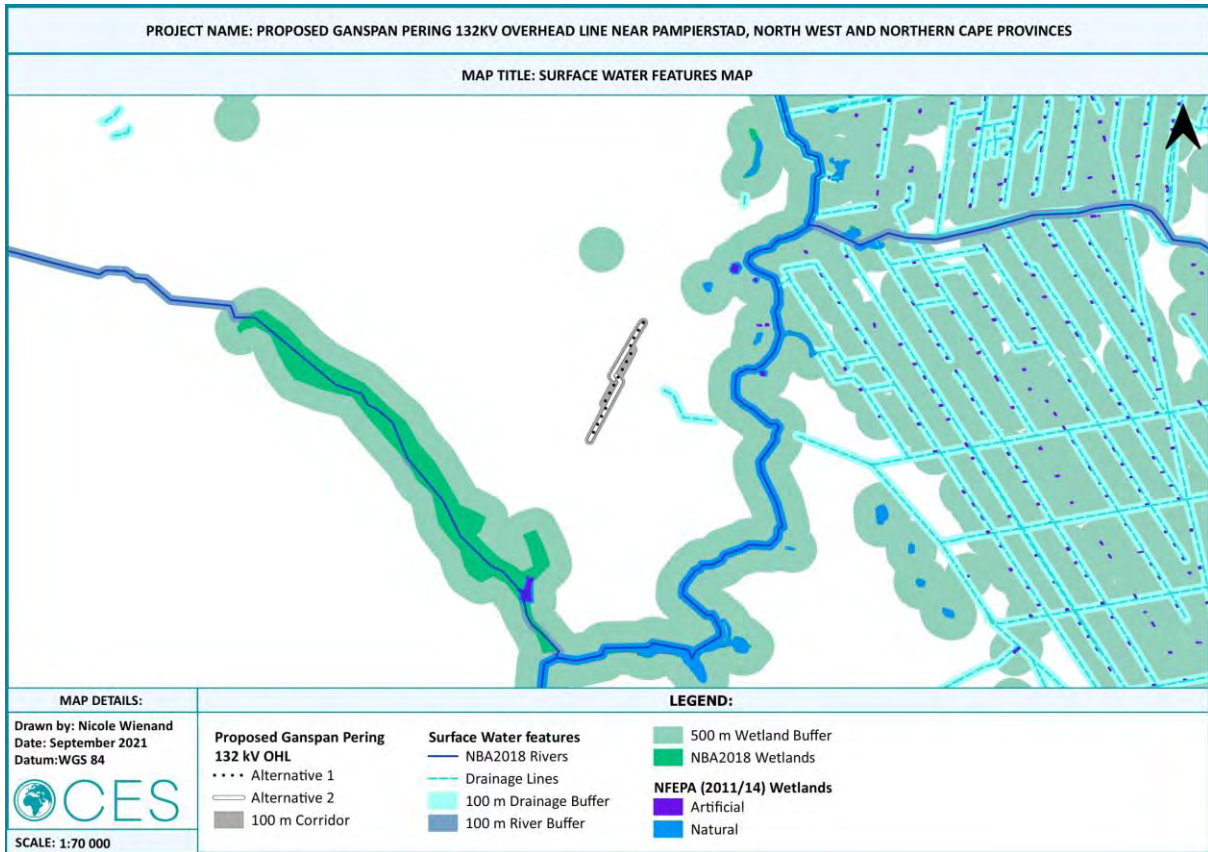


Figure 5.7: Surface water features affected by the proposed development.



Although not recorded in the NFEPA (2014) and NBA (2018) spatial datasets, eight assessment units (W1-8) were identified on site within 500 m of the proposed powerline, including two drainage line crossings and six possible artificial wetlands (Figure 5.8).



Figure 5.8: Assessment units potentially affected by the proposed development.

Upon further assessment, including a site visit on the 13th and 14th of July 2021, most of the artificial wetlands were found to have originated from old mining quarries. These were generally very degraded, with limited evidence to suggest that these support natural wetland conditions. The Present Ecological State (PES) scores were therefore not quantified for the wetlands within the assessment footprint because all were determined to be artificially created. Similarly, with the exception of biodiversity maintenance services, ecosystem services were not assessed for the artificial wetlands due to their lack of natural riparian and wetland characteristics. Delineation maps of the watercourse units, along with a time series of aerial photographs (2003, 2011, 2013 and 2018), have been provided in Figure 5.9 – Figure 5.15 below.

5.1.5.3 Wetland Classification, Delineation and Habitat Characteristics

Units W1 and W2 are located approximately 100-200 m to the west of the proposed powerline on the outskirts of the Lower Majeakgoro Township (Figure 5.9 and Figure 5.10). The units fall adjacent to historical mining operations (see 2003 and 2011 imagery) and experience periodic flooding (see 2003, 2011 and 2016 imagery). The site visit confirmed that the units are currently used as illegal dumping sites, with little to no evidence of natural wetland features. The lowest lying section of unit W1 is characterised by shallow (<25 cm) yellow to light brown sandy soils, without mottles, with small gravel-sized stones and a moderate



abundance of herbaceous cover. The edge of the W1 excavation is characterised by uniform dark brown loamy sand, without mottles, reaching a depth of 50 cm and vegetation comprised of *Eragrostis* spp., *Vachellia karroo* and *Helichrysum* sp. Although the area experiences temporary saturation, it is unable to support wetland vegetation communities due to the shallow soils and underlying impervious rock layer.



Figure 5.9: Delineation and time-series map of unit W1.

Soils in the lowest lying area of unit W2 ranged from a dark grey brown clay loam (without mottles) in the 0-20 cm horizon to a firmer dark grey brown clay (without mottles) between 20-40 cm, before striking a weathered rock layer at 50 cm. In some low lying areas, a medium brown sand and light brown sand was found at 0-10 cm and 40-50 cm, respectively. Other low lying areas, with notably shallower soils, had a 0-10 cm horizon of dark grey brown clay loam (without mottles), which transitioned to light brown loamy sand in the 10-20 cm horizon, before reaching the weathered rock layer at a depth of 25 cm. These areas are vegetated by a sparse herbaceous cover. The north-western edge of the W2 excavation is characterised by a clumpy *Schoenoplectus* sp. sedgeland, with dark grey brown loamy sands (without mottles) in the 0-20 cm soil horizon, which transitions to a lighter brown sand at 30 cm, then light brown yellow sand in the 40-50 cm horizon. The north-eastern edge is characterised by a 1.5 m high, vertical erosion wall, suggesting historical excavation, with a soil profile made up of a uniform brown sandy loam 0-50 cm horizon and a rocky light brown sand horizon below 50 cm. This edge is vegetated with *Eragrostis* spp., *Vachellia karroo* and *Opuntia ficus-indica*. Unit W2 is largely impacted by illegal dumping, which includes broken glass bottles, plastic packets, cardboard boxes, used diapers and other domestic waste.



Figure 5.10: Delineation and time-series map of unit W2.

Unit W3 is located along the 5115 tertiary road and falls underneath Alternative 1 of proposed powerline, 75 m south-east of Alternative 2 (Figure 5.11). The unit is entirely devoid of vegetation and is primarily covered by excavated debris, such as stones, large rocks and slabs of rock. Standing water, with an approximate depth of 50 cm, has accumulated along the lowest lying area of the excavation. Soils along the edge of the open water are characterised by a dark to medium grey muddy sandy loam, without mottles, to a depth of 50 cm. Soils along the edge of the excavation are characterised by a uniform dark brown grey loamy sand, with gravel-sized stones and without mottles, to a depth of 50 cm.

Unit W4 is a drainage line, originating from a stormwater channel running parallel to the 5115 tertiary road, passing through a two-pipe culvert across the road and continuing for approximately 75 m before the banks level out with the surrounding landscape (Figure 5.12). Upstream of the road crossing, the unit is partially vegetated by *Eragrostis* sp. within the channel and along its banks. The surrounding upstream area also includes a moderate to high abundance of *Tagetes minuta* and a low abundance of milkweed. Downstream of the crossing, the bed of the unit is mostly bare, with *Eragrostis* sp., *Bidens pilosa* and *T. minuta* dominating the banks.

Unit W5 is a shallow depression of historical mining origin, located approximately 175 m west of the proposed powerline, on the opposite site of the 5115 tertiary road (Figure 5.13). The lowest point of the depression is mostly bare, with a sparse, short grassy layer, scattered large stones and shallow (<20 cm) brown sandy soils. Although the historical imagery (2016 and 2018) suggest that the unit is susceptible to periods of inundation, insufficient onsite evidence suggests that the unit can support natural wetland conditions.

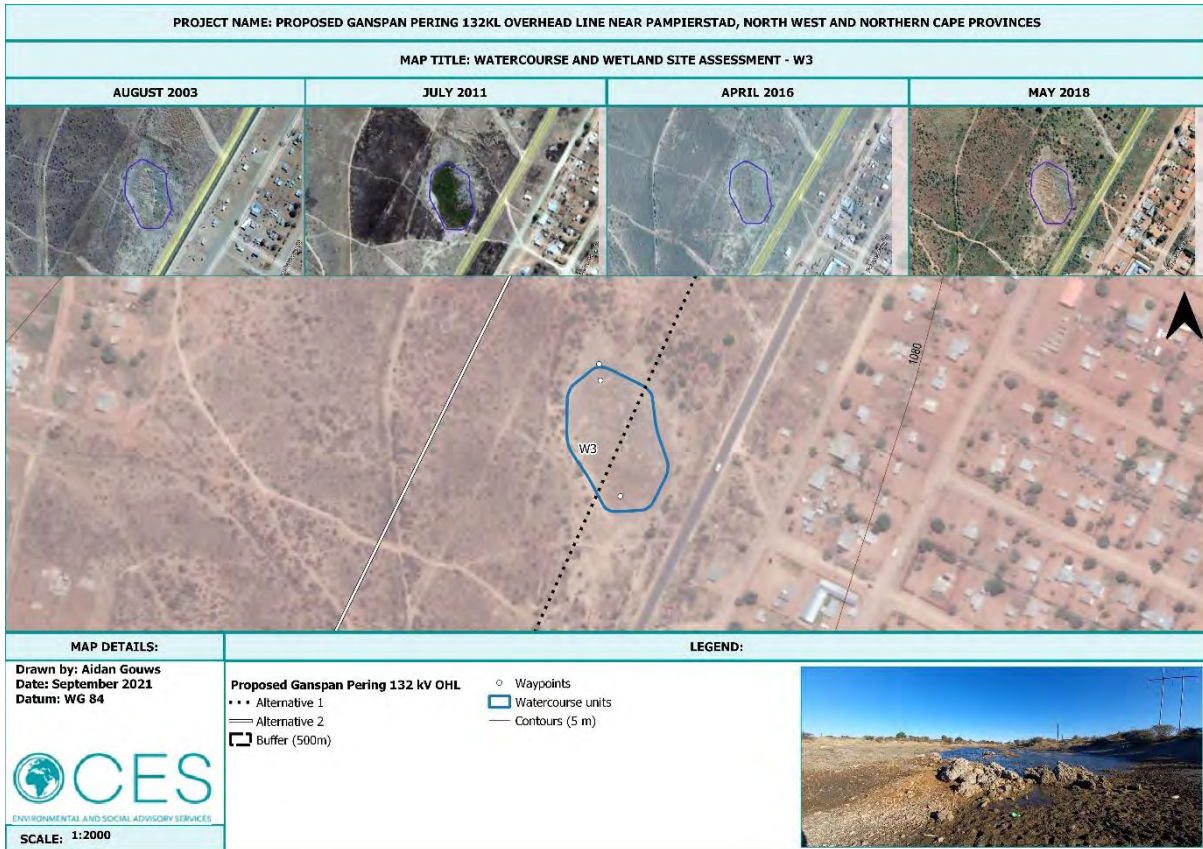


Figure 5.11: Delineation and time-series map of unit W3.

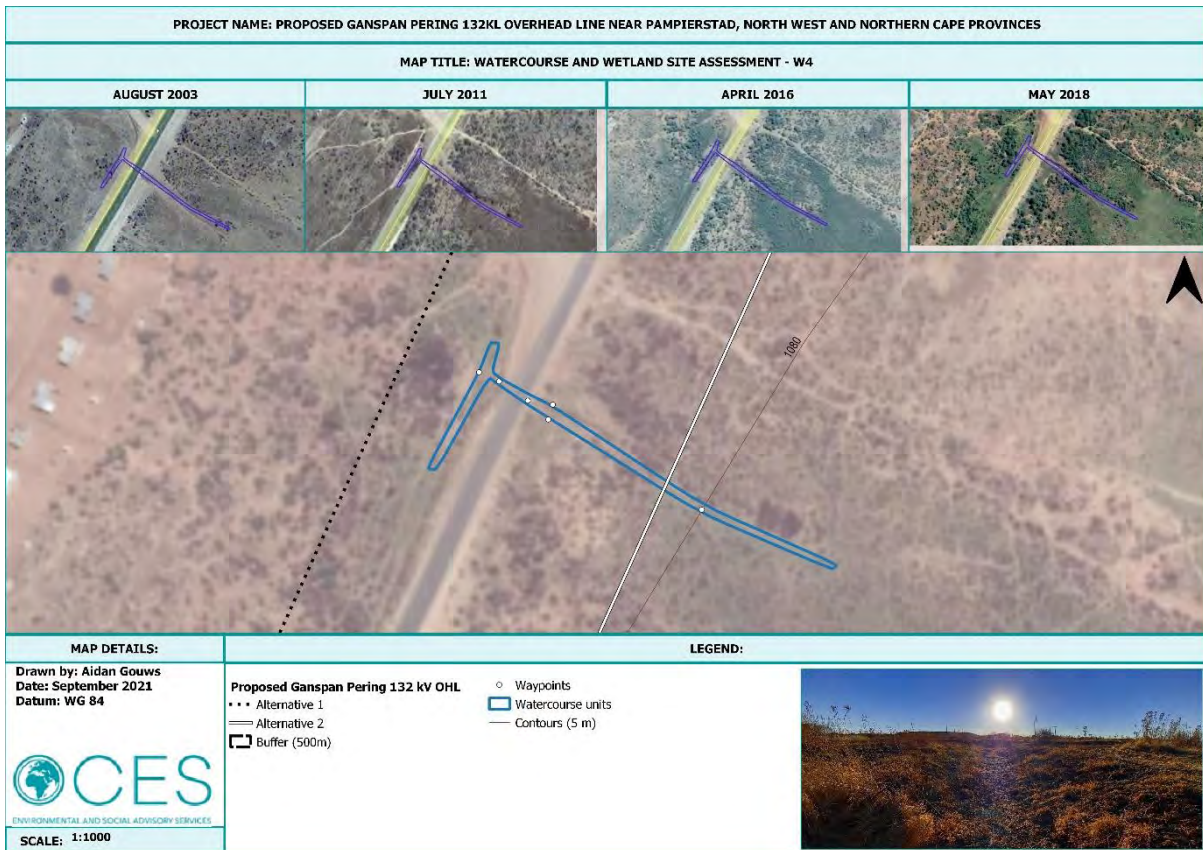


Figure 5.12: Delineation and time-series map of unit W4.

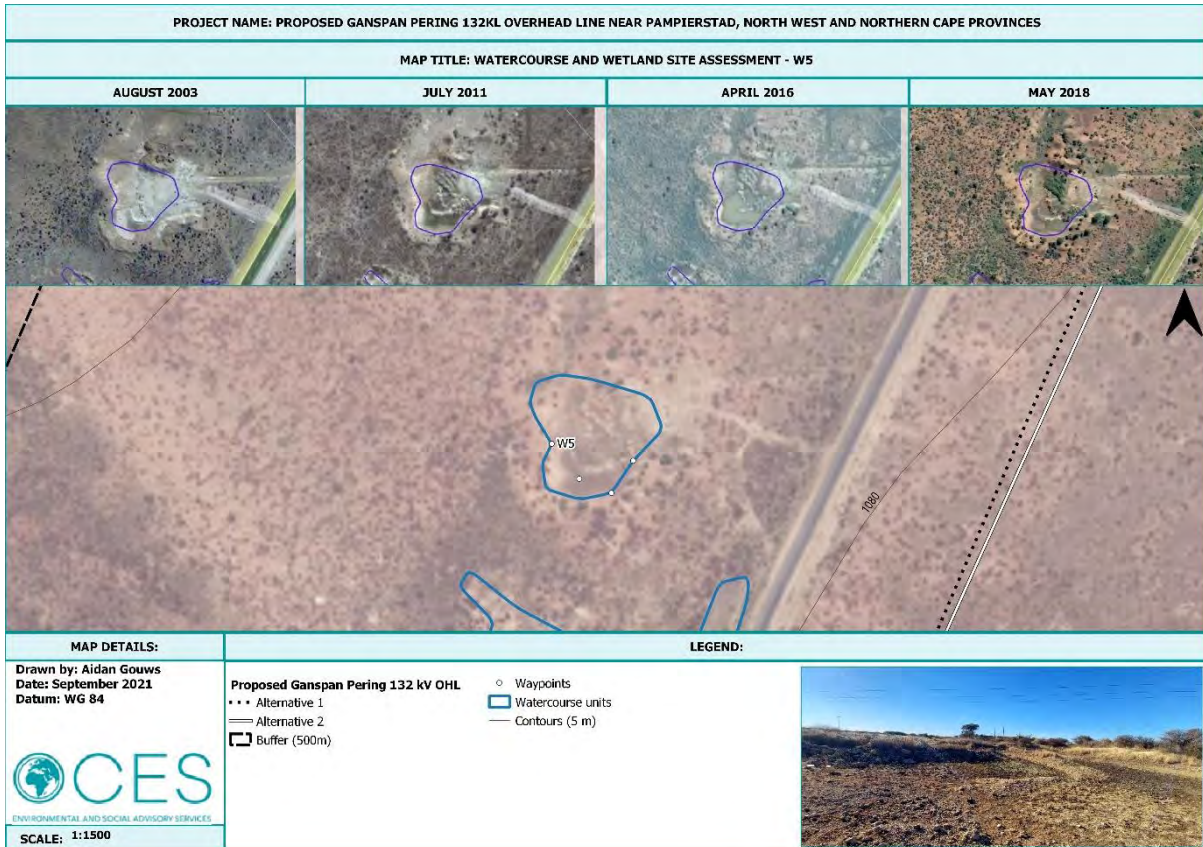


Figure 5.13: Delineation and time-series map of unit W5.

Unit W6 falls 100-250 m west of the proposed powerline and drains via a drainage line (unit W7) through a one-pipe culvert across the 5115 tertiary road (Figure 5.14). Unit W7 crosses the proposed powerline, approximately 100 m downstream of the road crossing, before its banks level out with the surrounding landscape. Unit W6 is characterised by a permanently-inundated low point, with approximately 25 cm of standing water covering a hard rock layer. The soils along the permanent wet zone are characterised by a medium grey muddy, loamy clay (without mottles) to a depth of 50 cm. This transitions abruptly to a shallow (10 cm) brown loamy sand / sandy loam, without mottles and with abundant gravel and stones. At the time of the site visit in July 2021, a 1.5 cm icy layer was observed covering the standing water and a salty odour was detected. The lowest point is completely devoid of vegetation and marked by an abrupt break in slope along the hard rock south-eastern edge of the standing water, suggesting historical excavation. The surrounding terrestrial area is sparsely- to moderately-vegetated by *V. karroo*, *T. minuta* and thorny succulents.

The inlet of the unit W7 culvert is overgrown with *B. pilosa*, *T. minuta* and *V. karroo*, whereas the outlet is sparsely vegetated with *V. karroo*, *Eragrostis* spp. and *Melinis repens* within the channel and along the banks of the drainage line.

Unit W8 is located more than 300 m west of the end of the proposed powerline on the opposite side of the 5115 tertiary road (Figure 5.15). The lowest point is characterised by dark brown sandy loam soils (without mottles) to a maximum depth of 30 cm, with a high abundance of short grassy cover.

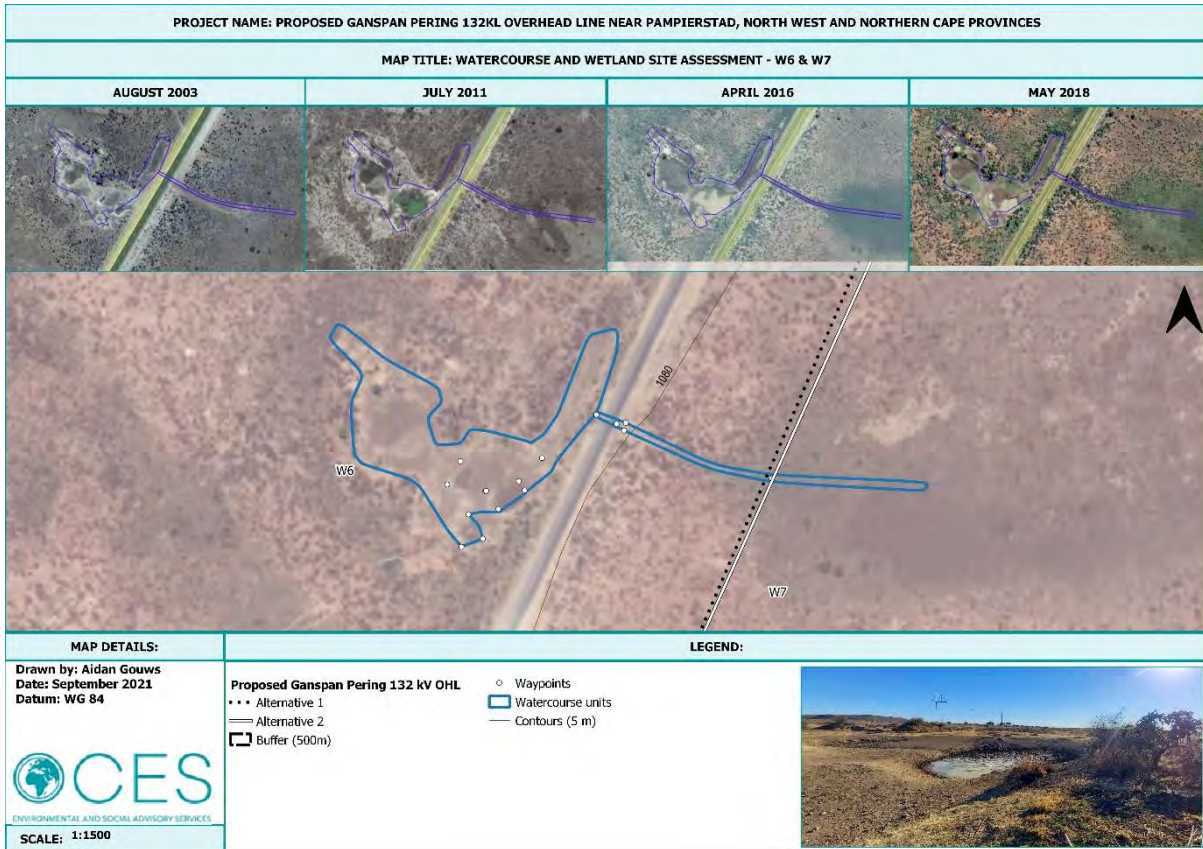


Figure 5.14: Delineation and time-series map of unit W6 and W7.

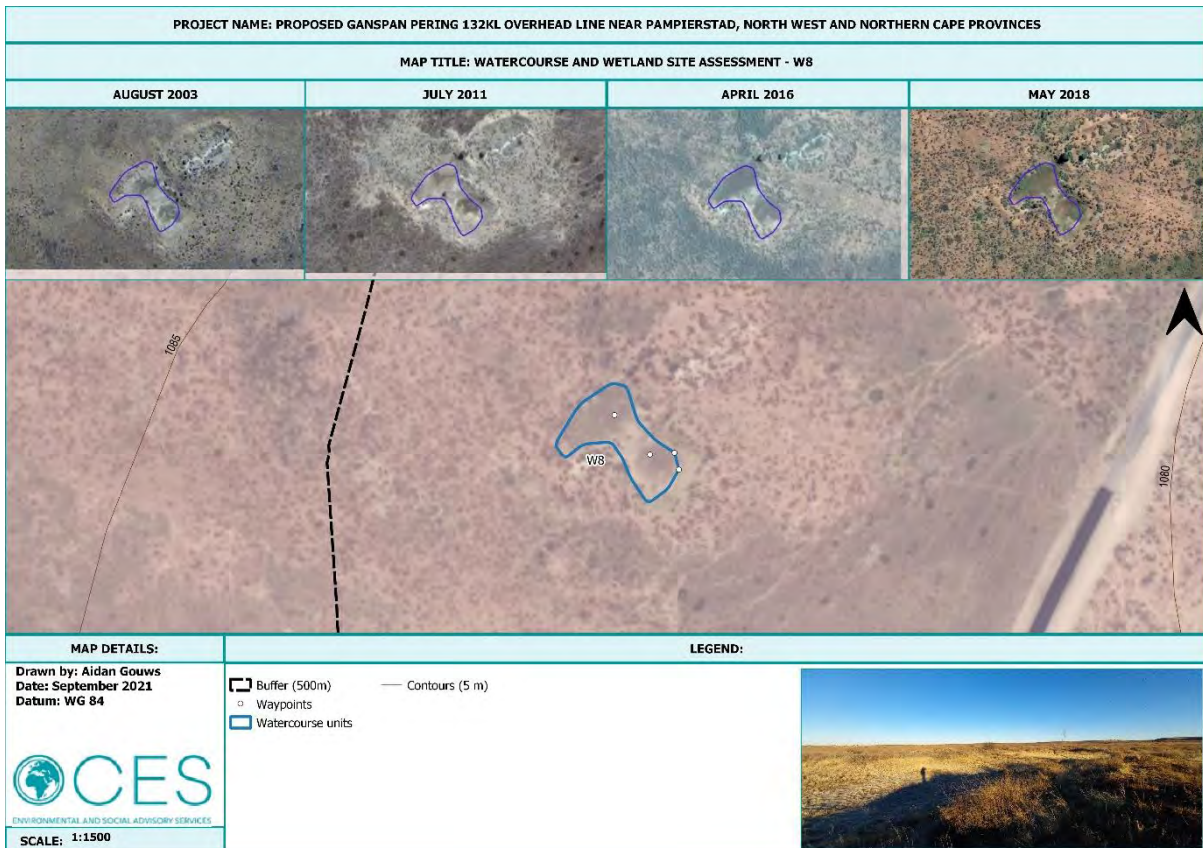


Figure 5.15: Delineation and time-series map of unit W8.



5.1.5.4 Present Ecological State

The results of the WET-Health assessment are summarised in below (Table 5.1). Of the six wetland units, four are in a critically-modified condition (PES Classes E/F), one is in a largely-modified condition (PES Class D) and one is in a fair condition (PES Class C) (Table 5.1) Units W1-3, W5 and W6 have been transformed by historical mining operations, as evident by the abrupt, vertically cut edges of these units and excavated debris littered across the units. These units are further impacted by ongoing illegal dumping of solid waste directly into the units. Other catchment impacts include formal and informal urban residential development. Unit W8 is the least impacted, with much of the unit and surrounding catchment comprised of semi-natural land cover, with limited mining and urban impacts.

Table 5.1: Present Ecological State (PES) of the wetlands

UNIT	HYDROLOGY IMPACT RATING	GEOMORPHOLOGY IMPACT SCORE	WATER QUALITY IMPACT SCORE	VEGETATION IMPACT SCORE	OVERALL PES SCORE & RATING
W1	6.9	7.4	4.8	7.2	6.7 (E)
W2	7.9	8.2	5.4	8.2	7.6 (E)
W3	8.6	9.0	4.8	8.5	8.0 (F)
W5	5.9	6.2	2.5	6.7	5.4 (D)
W6	8.6	9.0	4.8	8.9	8.1 (F)
W8	3.5	4.0	1.3	5.2	3.5 (C)

The PES for the drainage lines (W4 and W7) were assessed using the River Index of Habitat Integrity (IHI) tool, assessing both the instream and riparian habitats. The habitat integrity of the drainage lines were both scored as “Fair” (PES Class C), with only a few low existing impacts (Table 5.2). These impacts include flow and channel modifications at the road crossing, scattered alien and weedy vegetation along the banks of the channels, and physical and chemical modifications as a result of stormwater runoff from the 5115 tertiary road.

Table 5.3: Summary results of the IHI assessment

UNIT	INSTREAM IHI		RIPARIAN IHI		OVERALL PES	
	SCORE	CLASS	SCORE	CLASS	SCORE	CLASS
W4	2.04	C/B	3.30	C	2.54	C: Fair
W7	2.29	C/B	3.04	C	2.59	C: Fair

5.1.5.5 Ecosystem Services

Ecosystem services were assessed for all watercourse units using the WET-Ecoservices Tool. The overall importance scores for the goods and services provided by the units are illustrated below (Table 5.4). The rating of the extent to which a benefit is being supplied for each ecosystem service is also listed. The majority of the ecosystem services were rated as very low in terms of their overall importance. In some of the units, a few ecosystem services were scored slightly better than others, but were still rated as low, including sediment trapping, as well as cultivated foods. The low ratings were generally attributed to a relatively low supply of sediment trapping services (despite a relatively high demand) and a relatively low demand for cultivated foods (despite a relatively high supply). For example, sediment trapping was rated low in units W1 and W2 because the units are depressions with limited to no connectivity to the stream network, thus limiting the potential supply of these services to downstream users, despite the relatively high demand for these services in an urban-dominated catchment. Units



W4 and W7 scored slightly better in this regard because these units are drainage lines with better connectivity to the stream network. However, given their ephemeral nature, these drainage lines still only scored low in terms of their sediment and nutrient trapping services. On the other hand, although the units (W1, W4, W5, W7 and W8) have some potential for cultivation, the demand for this service is low because of the low reliance of the local community on these units for cultivation. Biodiversity maintenance services were scored very low for all units (Table 5.4). This is attributed to the following:

- Sparse vegetation cover in the artificial wetlands;
- No noteworthy biodiversity features present within the units;
- Low species and habitat diversity; and
- Species present indicate disturbance and early successional stages.

Table 5.4: Ecosystem Services provided by drainage line units

ECOSYSTEM SERVICE		W1	W2	W3	W4	W5	W6	W7	W8
Regulating and supporting services	Flood attenuation	0.0 (VL)	0.0 (VL)	0.0 (VL)	0.0 (VL)	0.0 (VL)	0.0 (VL)	0.0 (VL)	0.0 (VL)
	Stream flow regulation	0.0 (VL)	0.0 (VL)	0.0 (VL)	-	0.0 (VL)	0.0 (VL)	-	0.0 (VL)
	Sediment trapping	0.8 (L)	0.8 (L)	0.8 (VL)	1.2 (L)	0.4 (VL)	0.4 (VL)	1.2 (L)	0.0 (VL)
	Erosion control	0.0 (VL)	0.0 (VL)	0.0 (VL)	0.0 (VL)	0.0 (VL)	0.0 (VL)	0.0 (VL)	0.0 (VL)
	Phosphate assimilation	0.1 (VL)	0.4 (VL)	0.2 (VL)	0.9 (L)	0.0 (VL)	0.0 (VL)	0.9 (L)	0.0 (VL)
	Nitrate assimilation	0.3 (VL)	0.4 (VL)	0.5 (VL)	1.0 (L)	0.0 (VL)	0.0 (VL)	1.0 (L)	0.0 (VL)
	Toxicant assimilation	0.4 (VL)	0.4 (VL)	0.4 (VL)	0.9 (L)	0.0 (VL)	0.0 (VL)	0.9 (L)	0.0 (VL)
	Carbon storage	0.0 (VL)	0.4 (VL)	0.3 (VL)	0.8 (VL)	0.0 (VL)	0.5 (VL)	0.8 (VL)	0.0 (VL)
	Biodiversity maintenance	0.0 (VL)	0.0 (VL)	0.0 (VL)	0.4 (VL)	0.0 (VL)	0.0 (VL)	0.4 (VL)	0.0 (VL)
Provisioning services	Water for human use	0.0 (VL)	0.0 (VL)	0.0 (VL)	0.0 (VL)	0.0 (VL)	0.0 (VL)	0.0 (VL)	0.0 (VL)
	Harvestable resources	0.0 (VL)	0.0 (VL)	0.0 (VL)	0.0 (VL)	0.0 (VL)	0.0 (VL)	0.0 (VL)	0.0 (VL)
	Food for livestock	0.0 (VL)	0.0 (VL)	0.0 (VL)	0.5 (VL)	0.0 (VL)	0.0 (VL)	0.5 (VL)	0.5 (VL)
	Cultivated foods	1.3 (L)	0.8 (VL)	0.0 (VL)	1.0 (L)	1.3 (L)	0.0 (VL)	1.0 (L)	1.3 (L)
Cultural services	Tourism and Recreation	0.0 (VL)	0.0 (VL)	0.0 (VL)	0.0 (VL)	0.0 (VL)	0.0 (VL)	0.0 (VL)	0.0 (VL)
	Education and Research	0.0 (VL)	0.0 (VL)	0.0 (VL)	0.0 (VL)	0.0 (VL)	0.0 (VL)	0.0 (VL)	0.0 (VL)
	Cultural and Spiritual	0.0 (VL)	0.0 (VL)	0.0 (VL)	0.0 (VL)	0.0 (VL)	0.0 (VL)	0.0 (VL)	0.0 (VL)

5.1.5.6 Vaalharts Irrigation Scheme

The Vaalharts Irrigation Scheme is one of the largest irrigation schemes in the world covering 369.50 km² in the Northern Cape Province. It is named after the Vaal River and the Harts River, the Vaal River being its major tributary. Water from a diversion weir in the Vaal River, near Warrenton, flows through a 1 176 km long network of canals. This system provides irrigation water to a total of 39 820 ha scheduled land, industrial water to six towns and other industrial water users. The preparation for the Vaal-Harts project started during 1926/27 when a Committee was appointed to assess the unemployment issue amongst local farmers. In November 1933 the committee recommended that the Vaal-Harts project and the Loskop irrigation system be initiated.

The Rand Water Board together with Government decided to build a dam where the Vaal River and the Wilge River unite. The Government approved the building of the dam with the intention that water be stored for the Vaal-Harts project. The Department took over



surrounding properties and divided them into blocks which were marked alphabetically from the town of Jan Kemp (south) to Magogong (north). The first 80 farms were ready by 1938 and applications were received. A committee was appointed to receive and select applications.

The committee consisted of a chairman which were a superintendent of the irrigation scheme, a secretary which were an official of the trial lessee department, a regional representative and a member of the District Land Board and the Regional Manager of the Land Department. Applicants younger than 50 years with dependants were preferred above unmarried applicants. Blocks A and B were the first farms which were allocated. The numbers of the blocks were written on cards and were placed in a holder. Successful applicants were notified through the Lands Department to announce themselves at their offices in Anadalusia (Jan Kemp). They had to extract a numbered card from the holder to determine which farm will belong to them. Successful applicants were supplied with a team of donkeys, two milk cows, a wagon, harness, plough, weed plough, small apparatus, seeds and fertilizer. Farmers were appointed on a trial basis for four years. Trial farmers had to compensate part of their harvest income to the Government for usage of the land. Farmers on trial basis were not allowed to hire farm labourers. Donkeys were used by the farmers for ploughing, pulling of equipment, removal of logs and for general farm work.

Today there are altogether 126 kilometre supply canals and 540 kilometre backbone canals, all of them reinforced with cement. Bloemhof Dam consists out of 1 264 million cubic water which totals 50 % of the water of the Vaal Dam. The dam wall was designed so that it can be raised with three meters which will then consist of 275 million cubic meters of water. The Vaalharts irrigation scheme is distinguished through the steady planning of the channelized system because the main section of the irrigation area is a continuous canal with a constant descent. The canal is 32 kilometres in length and approximately six to eleven kilometres wide.

5.1.6 VEGETATION AND FLORISTICS

5.1.6.1 National Vegetation Map (SA VEGMAP, 2018)

According to the SA VEGMAP (2018), the project area occurs within one (1) vegetation type - Schmidtsdrift Thornveld (Figure 5.16). Schmidtsdrift Thornveld occurs on well-drained, shallow (<0.3 m), soil typically underlain by Dwyka diamictites and Ecca shales of the Karoo Supergroup. It is characterised by a closed shrubby thornveld dominated by *Acacia mellifera* (*Senegalia mellifera*) and *A. tortilis* (*Vachellia tortilis*) as well as a matrix of grasses, bulbous and annual herbaceous plants. Rainfall occurs in summer and autumn (MAP ± 250) while winters are very dry (Rutherford *et al.*, 2006).

Schmidtsdrift Thornveld is classified as **Least Concern** (Skowno *et al.*, 2019) and has a conservation target of 16% (SA VEGMAP, 2018). However, only 0.2% of this vegetation type was statutorily conserved when recorded by Rutherford *et al.* in 2006, while 13% was transformed for cultivation. While National level vegetation maps have described broad vegetation types, local conditions, and micro-habitats (rainfall, soil structure, rocky outcrops, etc.) can result in variations in plant composition. As such, site surveys are critical for the verification of desktop findings and establishing the baseline ecological conditions of a site.

During the site visit conducted on the 29th of April 2021, it was confirmed that the vegetation of the study site is Schmidtsdrift Thornveld. The Schmidtsdrift Thornveld vegetation of the site



is homogenous (uniform) and highly degraded due to frequent access by local community members, illegal dumping, and grazing by livestock. A recent runaway fire also resulted in the loss of a large portion of the vegetation within the project area.

Rather than a closed shrubby thornveld, the vegetation of the study site was dominated by grass species such as *Eragrostis obtusa*, *E. pallens*, *Enneapogon desvauxii*, *E. cenchroides*, *Heteropogon contortus*, *Digitaria eriantha* and *Themeda triandra*, amongst others, with scattered small trees such as *Senegalia mellifera*, *Vachellia tortilis*, and *Ziziphus mucronata*. Numerous naturalised exotic (alien) plant species were observed throughout the project area, with a large bush clump dominated by species such as *Prosopis glandulosa*, *Agave americana*, and *Echinobivia cristata* observed in the north-eastern portion of the project area.

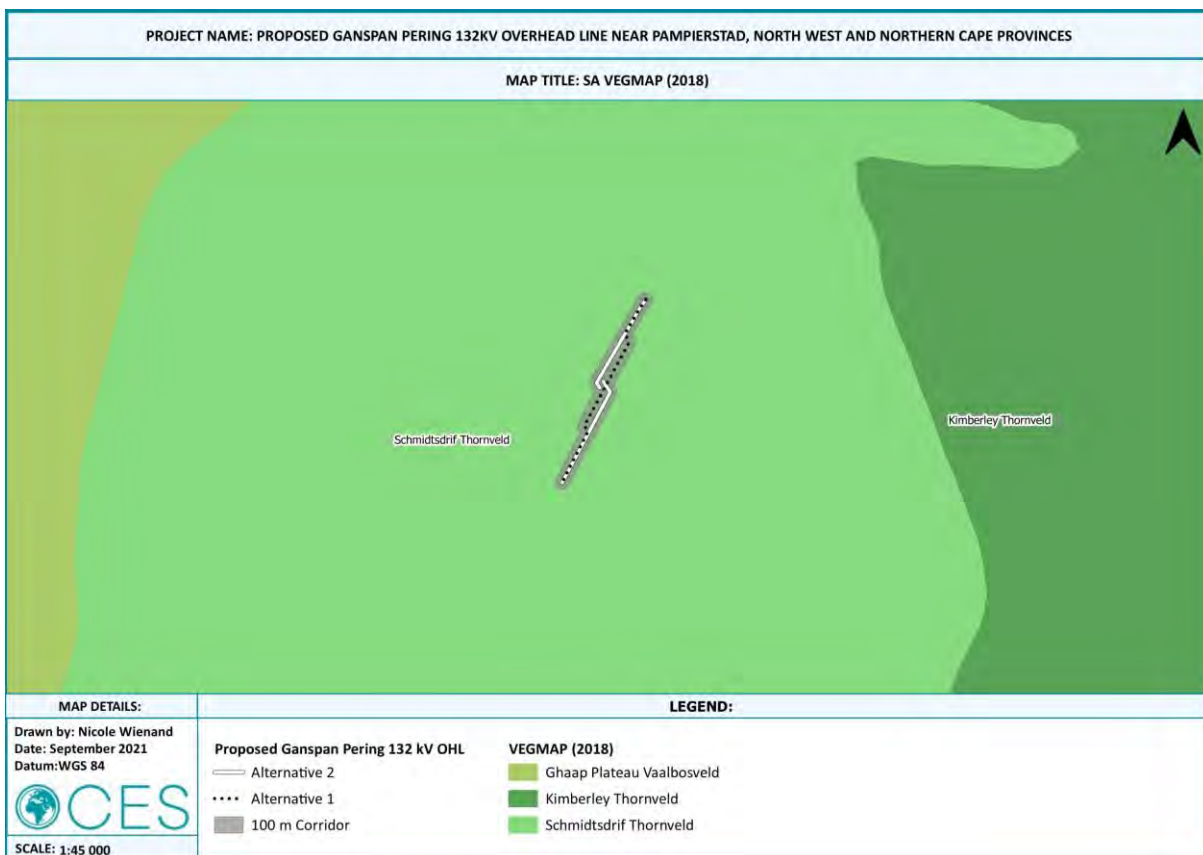


Figure 5.16: National Vegetation Map of the project site.

5.1.6.2 Critical Biodiversity Areas and broad-scale processes

The proposed development occurs on the border of the North West and Northern Cape Province as such, both the North West Biodiversity Sector Plan (NW BSP, 2015) and the Northern Cape Critical Biodiversity Areas (CBA) Map (2016) has been considered in this section. The NW BSP (2015) is a biodiversity and spatial planning tool which outlines areas containing important biodiversity needed to meet national and provincial biodiversity targets. This is achieved by identifying a network of Critical Biodiversity Areas (CBAs) and Ecological Support Areas (ESAs) in the province based on a systematic biodiversity plan. In general, CBAs are described as natural or near-natural areas that are important for preserving both biodiversity pattern and ecological process, whereas ESAs are semi-natural or transformed areas that at least retain some ecological function. More than half of the province is covered



by CBAs (29.1%) and ESAs (27.6%) collectively, with the remainder covered by Other Natural Areas (18%), areas with no natural habitat remaining (23%) and a small portion covered by Protected Areas (2.3%). The Northern Cape CBA Map (2016) identifies biodiversity priority areas, including CBAs and Ecological Support Areas (ESAs), which together with protected areas provides an important spatial planning tool which ensures the persistence of viable representative sample of all ecosystem types and species and the long-term ecological functioning at the landscape level. According to both the NWBSP (2015) and the Northern Cape CBA Map (2016), the proposed development does not occur within a terrestrial CBA or an Ecological Support Area (ESA) (Figure 5.17 and Figure 5.18). However, the majority of the project area does occur within a ‘Other Natural Area’ (ONA) in terms of the Northern Cape CBA Map (2016) (Figure 5.18).

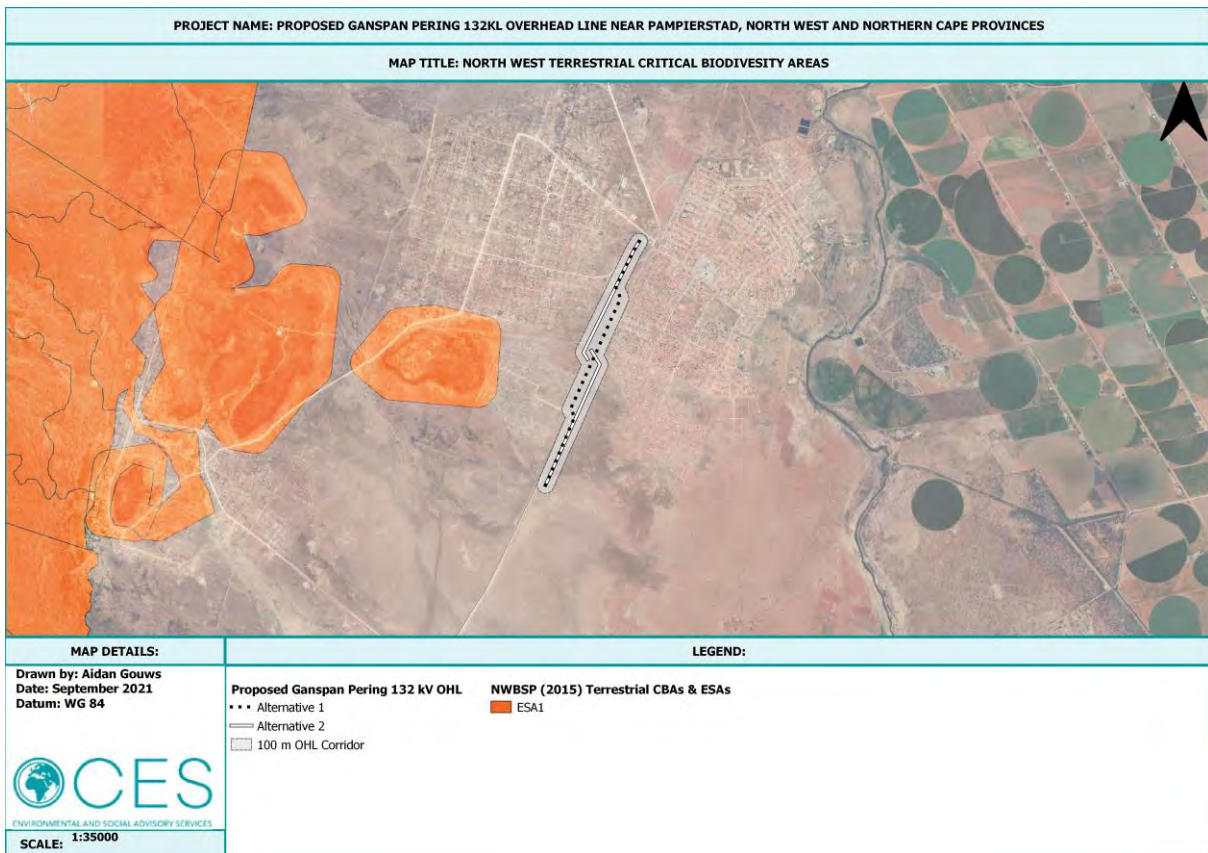


Figure 5.17: North West BSP (2015) Terrestrial CBAs within the project area

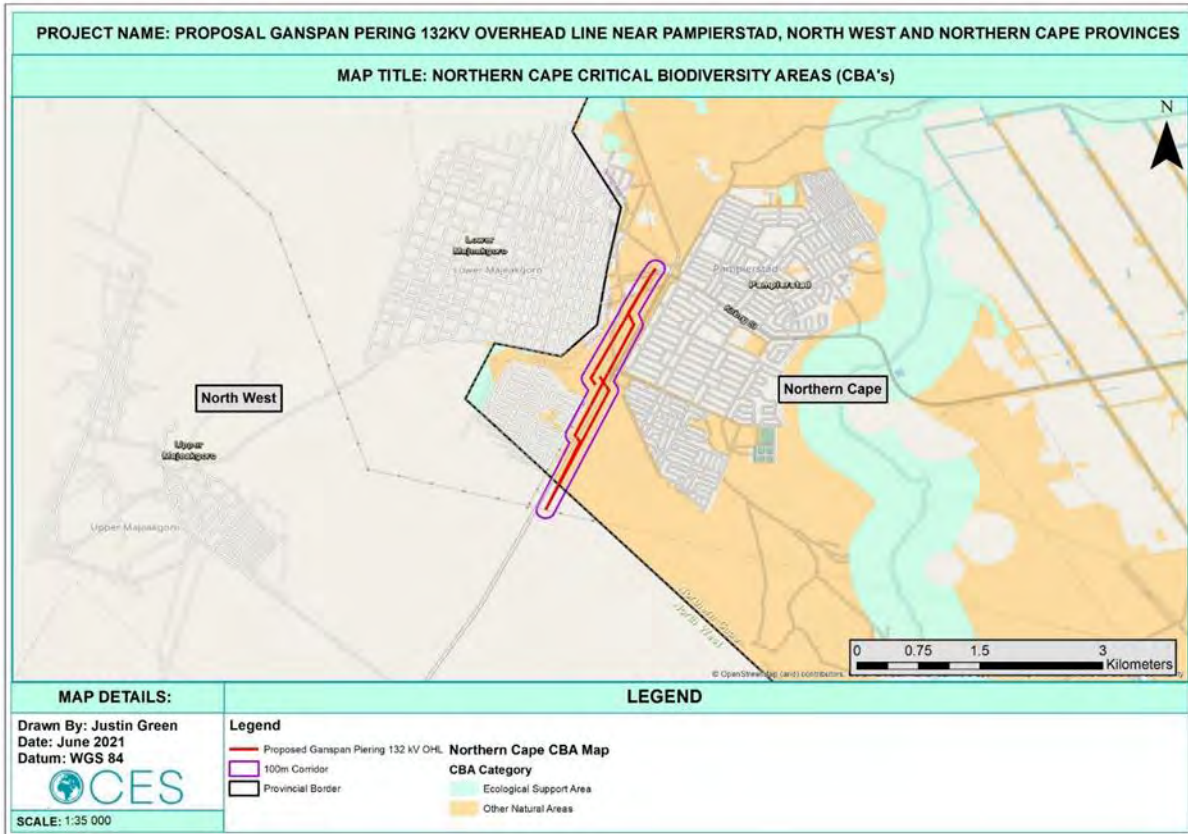


Figure 5.18: Northern Cape Terrestrial CBA Map (2016)

5.1.6.3 Ecosystem Threat Status

The National Environmental Management: Biodiversity Act, (Act No. 10 OF 2004) (NEM: BA) provides a National List of Ecosystems that are threatened and in need of protection – GN 1002 of 2011. According to the NEMBA List of Threatened Ecosystems, the project does not occur within or near to a threatened ecosystem. These findings are supported by the NBA (2018) *Terrestrial ecosystem threat status assessment* (Skowno *et al.*, 2019) which confirmed that the ecosystems within and surrounding the project area are classified as Least Concern (Figure 5.19). The nearest threatened ecosystem is Schweizer-Reneke Bushveld (VU), located approximately 41 km east of the proposed development.

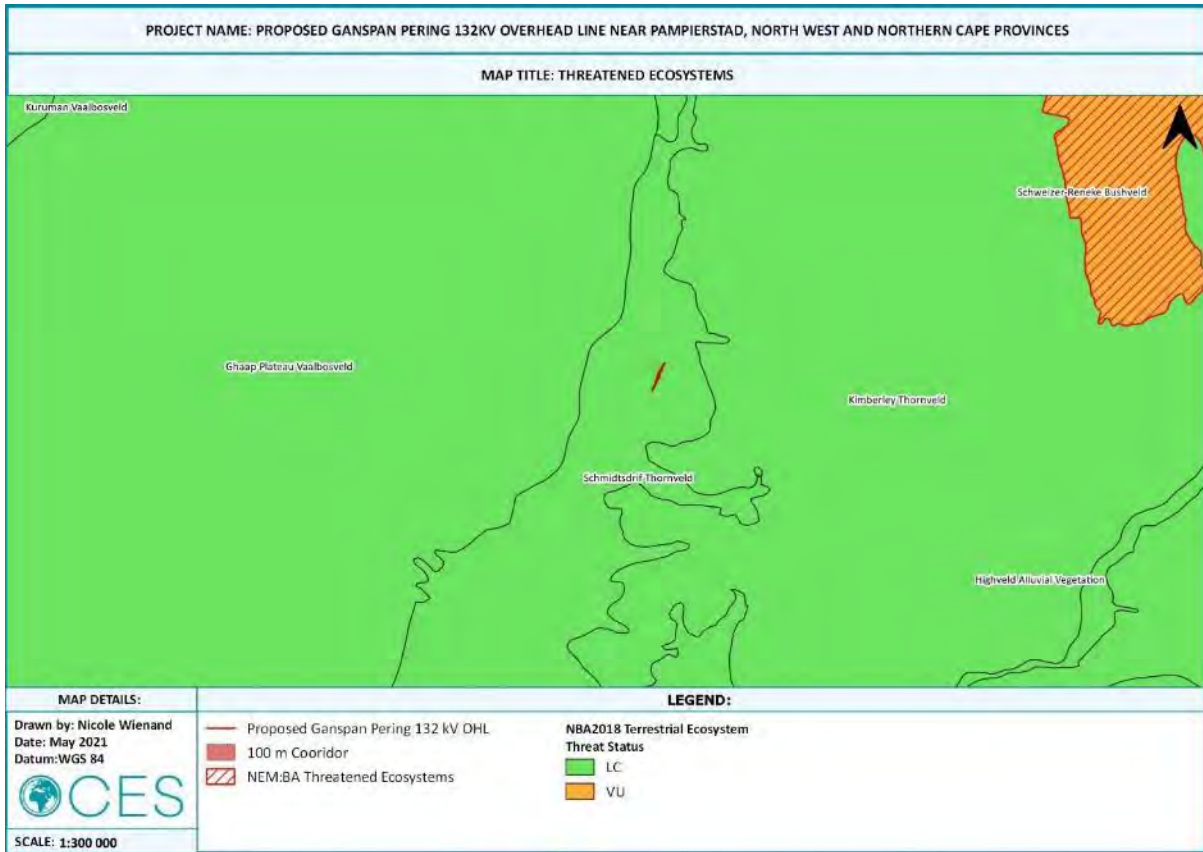


Figure 5.19: Threatened Ecosystem Map of the project area

5.1.6.4 Protected and Priority Areas

The National Protected Areas Expansion Strategy (NPAES, 2008) was developed to “achieve cost-effective protected area expansion for ecological sustainability and increased resilience to climate change.” The NPAES originated as Government recognised the importance of protected areas in maintaining biodiversity and critical ecological process. The NPAES sets targets for expanding South Africa’s protected area network, placing emphasis on those ecosystems that are least protected.

The site is not located within a protected area identified by SAPAD (2020) or a NPAES Focus Area. The nearest NPAES Focus Area, the Eastern Kalahari Bushveld NPAES Focus Area, is located approximately 38 km south of the proposed development. However, the site is located within 11.3 km of a world heritage site (Fossil Hominoid Site of South Africa) (Figure 5.20).

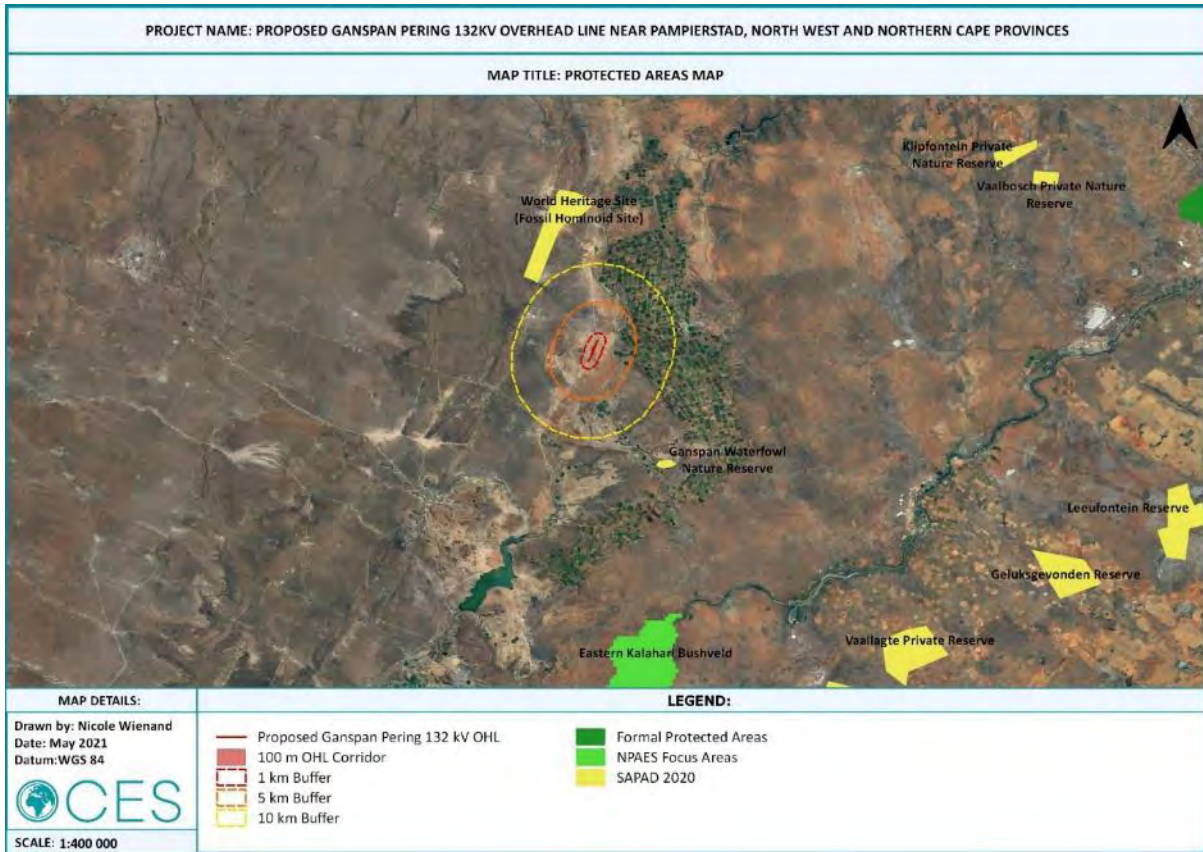


Figure 5.20: NPAES Focus Areas and Protected Areas.

5.1.7 FAUNA

South Africa is a faunally diverse country, with approximately 1,663 terrestrial vertebrate faunal species of which 850 species are birds, 343 species are mammals, 350 species are reptiles, and 120 species are amphibians spread across seven biomes and 122 million km².

5.1.7.1 Amphibians

Consultation of the ADU historical records confirms that seven (7) amphibian species have been recorded within the QDS 2724DC and are likely to occur within the project area, all of which are considered Least Concern (FitzPatrick Institute of African Ornithology, 2021) (Appendix 2).

According to IUCN, fourteen (14) amphibian species have a distribution which includes the project area, three (3) of which are endemic to South Africa (IUCN, 2021). Based on habitat requirements and previous records of these species, it is possible that these species occur on site.

5.1.7.2 Reptiles

Consultation of the ADU historical records for the QDS 2724DC indicates that three (3) reptile species have been confirmed to occur within the study area (Appendix 3). According to IUCN, fifteen (15) reptile species are likely to occur within the project area, only one (1) of which are endemic to South African and whose distribution coincides with the project area (Table 5.5).

Table 5.5: South African Endemic Reptile likely to occur within the project area



NAME	RED LIST CATEGORY (SARCA 2014)	HABITAT	DISTRIBUTION MAP
<p><i>Homopus femoralis</i> (Greater Padloper)</p>	<p>LC</p>	<p>This South African endemic occurs at higher altitudes (900-1900 m) in regions with sweet veld, such as the Dry Highveld Grassland and the eastern Nama Karoo, with a marginal presence in Savanna and Fynbos vegetation. Although associated with rocky terrains, individuals are generally found in shrubland vegetation. Not a habitat specialist (Loehr, 2013).</p>	

5.1.7.3 Mammals

Eleven (11) mammal species have been recorded within the project area QDS 2724DC (FitzPatrick Institute of African Ornithology, 2021) (Appendix 4). According to IUCN, 73 mammal species are likely to occur within the project area. Of the mammal species likely to occur within the project area, one (1) is classified as Critically Endangered, five (5) are classified as Vulnerable, and seven (7) are Near Threatened (Table 5.6).

Table 5.6: Threatened mammal SCC likely to occur within the study area

NAME	RED LIST CATEGORY (2016)	HABITAT	POSSIBILITY OF OCCURRENCE (POSSIBLE, PROBABLE, UNLIKELY)
<p><i>Diceros bicornis</i> (Black Rhino)</p>	<p>CR</p>	<p>Due to rampant poaching this species no longer occurs naturally outside of protected areas and its likelihood of occurrence within an agricultural area is therefore highly unlikely.</p>	<p>Highly Unlikely</p>
<p><i>Felis nigripes</i> (Black Footed Cat)</p>	<p>VU</p>	<p>This species has the most restricted distribution of any of the African field species. It is endemic to arid grasslands, dwarf shrub,</p>	<p>Possible</p>



NAME	RED LIST CATEGORY (2016)	HABITAT	POSSIBILITY OF OCCURRENCE (POSSIBLE, PROBABLE, UNLIKELY)
		savannah of the Karoo and Kalahari. Predominantly ground dwellers in habitats consisting of open, short grass areas with abundance of small rodents and ground-roosting birds. This species is generally nocturnal and during the day use dens in termite mounds or made by other animals. (Wilson <i>et al.</i> , 2016).	
<i>Panthera pardus</i> (Leopard)	VU	Wide habitat tolerance and highly varied diet. Habitats include woodland, grassland savannah and mountain habitats but also occur widely in coastal scrub, shrubland and semidesert (Swanepoel <i>et al.</i> 2016).	Possible
<i>Hydricteis maculicollis</i> (Spotted-necked Otter)	VU	Found in terrestrial inland lakes and larger rivers. This species has been recorded in the Free State, southern parts of the North West Province and recently in the Northern Cape Province. They inhabit freshwater habitats with clean water an abundance of small fish (Ponsonby <i>et al.</i> , 2016).	Unlikely
<i>Mystromys albicaudatus</i> (White-tailed Rat)	VU	This species is occurs primarily in Highveld grasslands, but also succulent Karoo and Fynbos. It occurs in the southeastern North West Province and marginally in the Northern Cape Province. Very little is known about this species habitat and ecology. Based on its known distribution, it is unlikely that this species occurs on site (Avenant <i>et al.</i> , 2016).	Unlikely
<i>Smutsia temminckii</i> (Temminck's Pangolin)	VU	The most widespread of Africa's pangolin species. Its distribution includes the North West and Northern Cape Provinces. It occurs in various savannah and woodland habitats but prefers arid and mesic savannah and semi-arid environments with an	Possible



NAME	RED LIST CATEGORY (2016)	HABITAT	POSSIBILITY OF OCCURRENCE (POSSIBLE, PROBABLE, UNLIKELY)
		abundance of ant and termite prey (Pietersen <i>et al.</i> , 2016).	
<i>Parahyaena brunnea</i> (Brown Hyena)	NT	Found in open woodland savanna with a maximum rainfall up to about 700 mm and favors rocky, mountainous areas with bush cover in the bushveld. It shows an ability to survive close to urban areas. Is independent of drinking water but requires some type of cover in which to lie during the day. Populations of Brown Hyaenas in non-protected areas comprise a significant proportion of the global population, suggesting that such areas are likely to be important for their sustained conservation. This species has been recorded near to the project area post-1999 (Yarnell <i>et al.</i> , 2016).	Possible
<i>Aonyx capensis</i> (Africa Clawless Otter)	NT	African Clawless Otters are predominantly aquatic and seldom found far from water. They occur in all major drainage systems in both summer and winter rainfall regions. Fresh water is an essential habitat requirement (Okes, <i>et al.</i> , 2016).	Unlikely
<i>Ceratotherium simum</i> (White Rhino)	NT	Due to rampant poaching this species no longer occurs naturally outside of protected areas and as such it is highly unlikely that it will occur within the project area.	Highly Unlikely
<i>Atelerix frontalis</i> (Southern African Hedgehog)	NT	Occurs throughout Gauteng, Free State and North West provinces, western Limpopo and Mpumalanga provinces. In the Northern Cape, they occur in the northeast and southwards towards the Grahamstown district of the Eastern Cape. Its habitat includes Savanah and grassland vegetation. On a local scale, the species appears to prefer dense vegetation habitats and rocky	Possible



NAME	RED LIST CATEGORY (2016)	HABITAT	POSSIBILITY OF OCCURRENCE (POSSIBLE, PROBABLE, UNLIKELY)
		outcrops that may provide food, cover and nesting materials. It is nocturnal (Light <i>et al.</i> , 2016).	
<i>Leptailurus serval</i> (Serval)	NT	This species' distribution includes the North West, Free State, and Northern Cape Provinces. Occurs in marshland, well-watered savannah and environments with long grass. Often associated with riparian vegetation. They exhibit increased occupancy in with higher human abundance. They are likely to be sensitive to habitat fragmentation due to habitat specialisation (preference for wetlands and associated rodents) (Ramesh <i>et al.</i> , 2016).	Possible
<i>Otomys auratus</i> (Vlei Rat)	NT	Widely distributed throughout the Highveld grasslands and Drakensberg Escarpment of South Africa. Associated with mesic grasslands and wetlands within alpine, montane and sub-montane regions typically occurring in dense vegetation in close proximity to water (Taylor <i>et al.</i> , 2016).	Unlikely
<i>Rhinolophus denti</i> (Dent's Horseshoe Bat)	NT	Occurs predominantly in the Northern Cape, but marginally in the North West and Free State provinces. Associated with arid savannah habitats where suitable roosting sites occur; typically restricting it to broken country with rocky outcrops or suitable caves (Schoeman <i>et al.</i> , 2016).	Likely



5.2 SOCIO-ECONOMIC PROFILE

The proposed Overhead Line (OHL) is located near Pampierstad on the border of the North West and Northern Province and within the Phokwane Local Municipality. The municipality is classified as Category B situated within the Frances Baard District in the Northern Cape and is 125km along the N18 to Vryburg.

5.2.1 POPULATION

Dr Ruth Segomotsi Mompoti District Municipality

With 522 406 people, the Dr Ruth Segomotsi Mompoti District Municipality housed 0.9% of South Africa's total population in 2019. Between 2009 and 2019 the population growth averaged 1.32% per annum which is very similar than the growth rate of South Africa as a whole (1.61%). Compared to other districts in the North West Province, the Dr Ruth Segomotsi Mompoti District Municipality accounts for 12.6% of the total population in the North West Province Households comprised of 146 000. This equates to an average annual growth rate of 1.79% in the number of households from 2009 to 2019. With an average annual growth rate of 1.32% in the total population, the average household size in the Dr Ruth Segomotsi Mompoti District Municipality is by implication decreasing.

In 2019 there were 272 000 (52.04%) females and 250 000 (47.96%) males in Dr Ruth Segomotsi Mompoti District Municipality. The significantly higher number of females suggests high male out migration to look for work elsewhere. In 2019 the population consisted of 91.98% African (480 000), 3.58% White (18 700), 3.82% Coloured (20 000) and 0.63% Asian (3 280) people

The age distribution revealed that the babies and kids make up the highest population (34.9%) component with the highest concentrations occurring between 0-14 years. The second larger number of people is the young working age (25-34 years) with a total of share of 20.9%, followed by the older working age (45-64 years) with a smaller population compared to the two above.

Frances Baard District Municipality

Currently, FBDM has a total population of 387 741 people, which represents 32.5% of the Northern Cape population. The Solplaatje consists of the largest population in the district of 66%, followed by Phokwane (16%); Dikgatlong (12%); and Magareng has the least population of 6%. According to the 2016 community survey, FBDM's growth rate has increased by 1.5% since 2011 (382 083 – 387 741). A slight growth in Solplaatje Local Municipality (248 037 - 255 351); and Dikgatlong Local Municipality (46839-48164). Followed by a decline in Phokwane Local Municipality (63 000 – 60 168); and Magareng Local Municipality (24 207 – 24 059).

Francis Baard District population is fairly young with 69% of the population aged 40 years and younger. Those between the ages of 41 and 65 years account for 23% and only 7% of the population is of retirement age, i.e. 66 years and older.



5.2.2 ECONOMY

Dr Ruth Segomotsi Mompati District Municipality

With a GDP of R 22.9 billion in 2019 (up from R 10.9 billion in 2009), the Dr Ruth Segomotsi Mompati District Municipality contributed 7.52% to the North-West Province GDP of R 305 billion in 2019 increasing in the share of the North-West from 7.38% in 2009. In 2019, the Dr Ruth Segomotsi Mompati District Municipality achieved an annual growth rate of -0.61% which is a slightly higher GDP growth than the NorthWest Province's -0.83%. The greatest contributor to the Dr Ruth Segomotsi Mompati District Municipality economy is the Greater Taung Local Municipality with a share of 28.32% or R 6.48 billion, increasing from R 3.42 billion in 2009.

The economy with the lowest contribution is the Mamusa Local Municipality with R 2.63 billion growing from R 1.2 billion in 2009. In 2019, the community services sector is the largest within Dr Ruth Segomotsi Mompati District Municipality accounting for R 6.07 billion or 30.6% of the total GVA in the district municipality's economy. The sector that contributes the second most to the GVA of the Dr Ruth Segomotsi Mompati District Municipality is the finance sector at 17.3%, followed by the trade sector with 15.7%. The sector that contributes the least to the economy of Dr Ruth Segomotsi Mompati District Municipality is the manufacturing sector with a contribution of R 731 million or 3.69% of the total GVA.

For the period 2019 and 2009, the GVA in the finance sector had the highest average annual growth rate in Dr Ruth Segomotsi Mompati at 2.39%. The industry with the second highest average annual growth rate is the trade sector averaging at 1.90% per year. The mining sector had an average annual growth rate of -1.18%, while the agriculture sector had the lowest average annual growth of -1.28%.

Francis Baard District Municipality

Frances Baard District Municipality (FBDM) has the strongest economic potential in the Northern Cape, accounting for 36% of the provincial GDP. The economy of the district consists of the primary sector (14%) (agriculture and mining), secondary sector (9%) (Manufacturing, electricity and construction) and tertiary sector (77%) (Trade, transport, financial and social services).

Tourism in the Frances Baard District has been identified as a sector with massive potential for economic growth. The district remains the most visited destination within the Northern Cape. It has a rich history and natural resources that can promote tourism development in the region. It is well located along the alternative route N12 from Cape Town to Johannesburg, therefore well situated for local and international tourist markets. The district is predominantly a mining and agricultural district, but also offers rich experiences in terms of culture and history. The district consists of four local municipalities, each boasting its own unique offerings

The unemployment rate of the district has also not been stagnant for the past five years. Based on the graph below, since 2010, unemployment levels in the district have been increasing instead of deteriorating. According to STATSSA: 2016, FBDM has an unemployment rate of 39.4%, whilst Phokwane (47.8%), Magareng (53.9%), Dikgatlong (44%) and Sol Plaatje



(36.2%) are also characterized by such unemployment levels. FBDM, through its local economic development initiatives seek to address such issues and improve the state of unemployment levels in the district.

5.2.3 EMPLOYMENT, EDUCATION, INCOME AND POVERTY

Dr Ruth Segomotsi Mompoti District Municipality

In 2019, Dr Ruth Segomotsi Mompoti employed 110 000 people which is 11.92% of the total employment in North-West Province (927 000). Employment within Dr Ruth Segomotsi Mompoti increased annually at an average rate of 2.63% from 2009 to 2019. The Dr Ruth Segomotsi Mompoti District Municipality average annual employment growth rate of 2.63% exceeds the average annual labour force growth rate of 1.93% resulting in unemployment decreasing from 26.85% in 2009 to 20.81% in 2019 in the district municipality.

In 2019, there were a total number of 31 600 people unemployed in Dr Ruth Segomotsi Mompoti, which is a decrease of 2 080 from 33 600 in 2009. The total number of unemployed people within Dr Ruth Segomotsi Mompoti constitutes 7.88% of the total number of unemployed people in North-West Province. The number of people without any schooling in Dr Ruth Segomotsi Mompoti District Municipality accounts for 21.29% of the number of people without schooling in the province and a total share of 2.2% of the national. In 2019, the number of people in Dr Ruth Segomotsi Mompoti District Municipality with a matric only was 62,300 which is a share of 8.36% of the province's total number of people that has obtained a matric. The number of people with a matric and a Postgrad degree constitutes 7.43% of the province. Dr Ruth Segomotsi Mompoti District Municipality's functional literacy rate of 68.96% in 2019 is lower than that of North-West at 79.73%. When comparing to National Total as whole, which has a functional literacy rate of 85.37%, it is clear that Dr Ruth Segomotsi Mompoti District Municipality lags behind the rest of the country.

In 2019, there were 291 286 people living in poverty, using the lower poverty line definition. The map below shows that the share dropped in 2011 to 46.8% only to start rising slowly again to the current 55.8%.

Frances Baard District Municipality

The lack of appropriately skilled people is one of South Africa's principal drivers of the high unemployment rate. There has been clear evidence of a shift in the profile of the main economic sectors of the country over the past 2 decades, characterised by a decline in the share of primary and secondary sectors (which are labour intensive and can absorb unskilled labour) and an increase in the Tertiary sector (which requires skilled labour). It is alarming to note that only 5.04% of the population has a Higher/National/Advanced Certificate with Grade 12/Occupational certificate NQ or higher in the district, considering that education is one of the government's priorities, to ensure economic growth and stability

FBDM has the strongest economic potential in the Northern Cape, accounting for 36% of the provincial GDP. The economy of the district consists of the primary sector (14%) (agriculture and mining), secondary sector (9%) (Manufacturing, electricity and construction) and tertiary sector (77%) (Trade, transport, financial and social services). (p21). The unemployment rate



of the district has also not been stagnant for the past five years. Since 2010, unemployment levels in the district have been increasing instead of deteriorating. According to STATSSA: 2016, FBDM has an unemployment rate of 39.4%, whilst Phokwane (47.8%), Magareng (53.9%), Dikgatlong (44%) and Sol Plaatje (36.2%) are also characterized by such unemployment levels. FBDM, through its local economic development initiatives seek to address such issues and improve the state of unemployment levels in the district.

There are still high levels of households with no income, whilst the highest earnings are between R9 061 – R19 600 and R19 601 and R38 200. It may be argued that the high levels of unemployment and low levels of education may be the result of the picture painted below. One may also motivate that the notion of the economy may be seen as a ripple effect, as the components of economic growth and stability are dependent on one another.



6 PUBLIC PARTICIPATION PROCESS

Public consultation is a legal requirement throughout the Basic Assessment (BA) process. Developers are required to conduct public consultation throughout the BA process. Formal BA documents are required to be made available for public review, which include the project brief, Draft Basic Assessment Report (BAR), Draft Environmental Management Programme (EMPr), and the decision of the Competent Authority.

According to Regulation 41(2) of the NEMA EIA Regulations 2014 (as amended 2017) “*The person conducting a public participation process must take into account any relevant guidelines applicable to public participation as contemplated in section 24J of the Act. . .*”, including:

- The 2012 Public Participation Guidelines (General Notice 807 of 2012), which provides information and guidance for applicants, I&APs and EAPS on the public participation requirements of the BA process; and
- The Promotion of Access to Information Act (PAIA), 2000 (Act No. 2 of 2000), which allows citizens access to any information held by the State, and any information held by private bodies that is required for the exercise and protection of any rights.

“*. . . and must give notice to all potential interested and affected parties of an application or proposed application which is subjected to public participation by:*

6.1 SITE NOTICES

- (a) *fixing a notice board at a place conspicuous to and accessible by the public at the boundary, on the fence or along the corridor of—*
- (i) *the site where the activity to which the application or proposed application relates is or is to be undertaken; and*
 - (ii) *any alternative site.*

A site notice was placed at the entrance to the Sidiba Substation (27°46'37.97"S, 24°40'51.51"E) during the initial site visit on the 29th of April 2021.

6.2 I&AP AND STAKEHOLDER NOTIFICATIONS

- (b) *giving written notice, in any of the manners provided for in section 47 D of the Act, to—*
- (i) *the occupiers of the site and, if the proponent or applicant is not the owner or person in control of the site on which the activity is to be undertaken, and to any alternative site where the activity is to be undertaken;*
 - (ii) *owners, persons in control of, and occupiers of land adjacent to the site where the activity is or is to be undertaken and to any alternative site where the activity is to be undertaken;*
 - (iii) *the municipal councillor of the ward in which the site and alternative site is situated and any organisation of ratepayers that represent the community in the area;*
 - (iv) *the municipality which has jurisdiction in the area;*
 - (v) *any organ of state having jurisdiction in respect of any aspect of the activity; and*
 - (vi) *any other party as required by the competent authority;*



Formal notifications will be sent out via email and postal mail to notify potential Interested and Affected Parties (I&APs) of the inception of the proposed development and invite them to register to be added to the I&APs database and provide initial comments. All registered I&APs will be notified via email and postal mail of the availability of the Draft BAR and EMPr for public review. All notification proofs will be provided in the final reports.

6.3 NEWSPAPER ADVERTISEMENT

- (c) *placing an advertisement in—*
- (i) *one local newspaper; or*
 - (ii) *any official Gazette that is published specifically for the purpose of providing public notice of applications or other submissions made in terms of these Regulations;*
- (d) *placing an advertisement in at least one provincial newspaper or national newspaper, if the activity has or may have an impact that extends beyond the boundaries of the metropolitan or district municipality in which it is or will be undertaken: Provided that this paragraph need not be complied with if an advertisement has been placed in an official Gazette referred to in paragraph (c)(ii);*

A newspaper advertisement will be placed in the Stellalander News, in order to notify the general public of the proposed development and availability of the Draft BAR for public review. All publication proofs will be provided in the final reports.

6.4 REGISTER OF STAKEHOLDERS AND I&APS

According to Regulation 42 of the NEMA EIA Regulations 2014 (as amended 2017) “A proponent or applicant must ensure the opening and maintenance of a register of interested and affected parties and submit such a register to the competent authority, which register must contain the names, contact details and addresses of—

- (a) *all persons who, as a consequence of the public participation process conducted in respect of that application, have submitted written comments or attended meetings with the proponent, applicant or EAP;*
- (b) *all persons who have requested the proponent or applicant, in writing, for their names to be placed on the register; and*
- (c) *all organs of state which have jurisdiction in respect of the activity to which the application relates.*

A comprehensive I&AP register will be compiled and will be included in the final reports. This register will include the following parties, among others:

- Immediate neighbours,
- The National Department of Forestry, Fisheries and Environment (DFFE);
- The Department of Mineral Resources and Energy (DMRE);
- The Department of Human Settlement, Water and Sanitation (DHSWS);
- The North West Department of Economic Development, Environment, Conservation and Tourism (DEDECT);
- The Northern Cape Department of Environment and Nature Conservation
- The North West Provincial Heritage Resources Authority (PHRA);



- Dr Ruth Segomotsi Mompoti District Municipality, including the Municipal Ward councillor; and
- Eskom.

6.5 PUBLIC REVIEW OF DRAFT BASIC ASSESSMENT REPORT

The Draft BAR and EMPr will be subject to a 30-day public review period. The draft reports will be made available electronically on the CES website. Letters of notification will be emailed and/or posted to the registered I&APs, notifying them of the commencement of the public review period and the availability of the draft reports (including the link to the CES website), as well as providing the contact details (telephone and email) of the EAP. I&APs will be invited to provide comment on the draft reports via a number of contact options, namely telephone, post, fax and/or email. Additionally, I&APs will be provided the option of receiving a hardcopy version of the executive summary of the draft reports via registered post, upon request, in cases where they are unable to access the electronic version. The medium of correspondence will be noted in the I&APs register.

6.6 PUBLIC MEETING

It is not compulsory to hold a public meeting in terms of the NEMA EIA Regulations 2014 (as amended 2017). However, should sufficient interest or concern be raised by the public through the public participation process, a VIRTUAL public meeting may be considered. Meetings will be conducted virtually via Microsoft Teams (or alternative), if required. Telephonic meetings will be conducted for I&APs with limited or no internet connectivity, if required.

6.7 ISSUES RAISED BY I&APS

The applicant must ensure that the comments of interested and affected parties are recorded in reports and plans, and that such written comments, including responses, are attached to the reports and plans that are submitted to the competent authority in terms of these regulations.”

A full record of the issues raised by the I&APs, as well as the response by the applicant and EAP, will be kept throughout the duration of the project. A full Issues and Response Trail (IRT) will be attached to the final reports.



7 ALTERNATIVES

Alternatives should include consideration of all possible means by which the purpose and need of the proposed activity could be accomplished. In all cases, the no-go alternative must be included in the assessment phase as the baseline against which the impacts of the other alternatives are assessed. The determination of whether site or activity (including different processes etc.) or both is appropriate needs to be informed by the specific circumstances of the activity and its environment.

“**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—

- (a) The property on which or location where it is proposed to undertake the activity.
- (b) The type of activity to be undertaken.
- (c) The design or layout of the activity.
- (d) The technology to be used in the activity.
- (e) The operational aspects of the activity.
- (f) The option of not implementing the activity.

7.1 FUNDAMENTAL, INCREMENTAL AND NO-GO ALTERNATIVES

7.1.1 FUNDAMENTAL ALTERNATIVES

Fundamental alternatives are developments that are totally different from the proposed project description and usually include the following:

- Alternative property or location where it is proposed to undertake the activity.
- Alternative type of activity to be undertaken.
- Alternative technology to be used in the activity.

7.1.2 INCREMENTAL ALTERNATIVES

Incremental alternatives relate to modifications or variations to the design of a project that provide different options to reduce or minimise environmental impacts. There are several incremental alternatives that can be considered with respect to the current project, including:

- Alternative design or layout of the activity.
- Alternative operational aspects of the activity.

7.1.3 NO-GO ALTERNATIVE

It is mandatory to consider the “no-go” option in the BA process. The “no-go” alternative refers to the current status quo and the risks and impacts associated with it. Some existing activities may carry risks and may be undesirable (e.g. an existing contaminated site earmarked for a development). The no-go is the continuation of the existing land use, i.e. maintain the status quo.



7.2 ALTERNATIVES CONSIDERED

Integral to the EIA process is the consideration and evaluation of alternatives to the proposed development plan. For the purposes of this Basic Assessment, the following alternatives have been assessed

7.2.1 LOCATION ALTERNATIVES

TYPE OF ALTERNATIVES CONSIDERED	DESCRIPTION OF THE ALTERNATIVE RELATING TO THE PROPOSED OHL
Location alternative	<p>Only one location (corridor) has been assessed. Within that corridor two alternatives have been considered. The first, a new line (Figure 7.1), and the second, partial use of the existing line with the additional of partial new lines (Figure 7.2) the preferred option.</p> <p>Alternative locations for the current project are not reasonable or feasible since the proposed OHL needs connect the existing Eskom Sidiba Switching Station to the existing Ganspan/Pering 1 132kV OHL. The proposed route for the OHL is the most direct and avoids having to navigate through the surrounding urban areas.</p> <p>Therefore, only the project corridor as described in this report has been considered.</p>

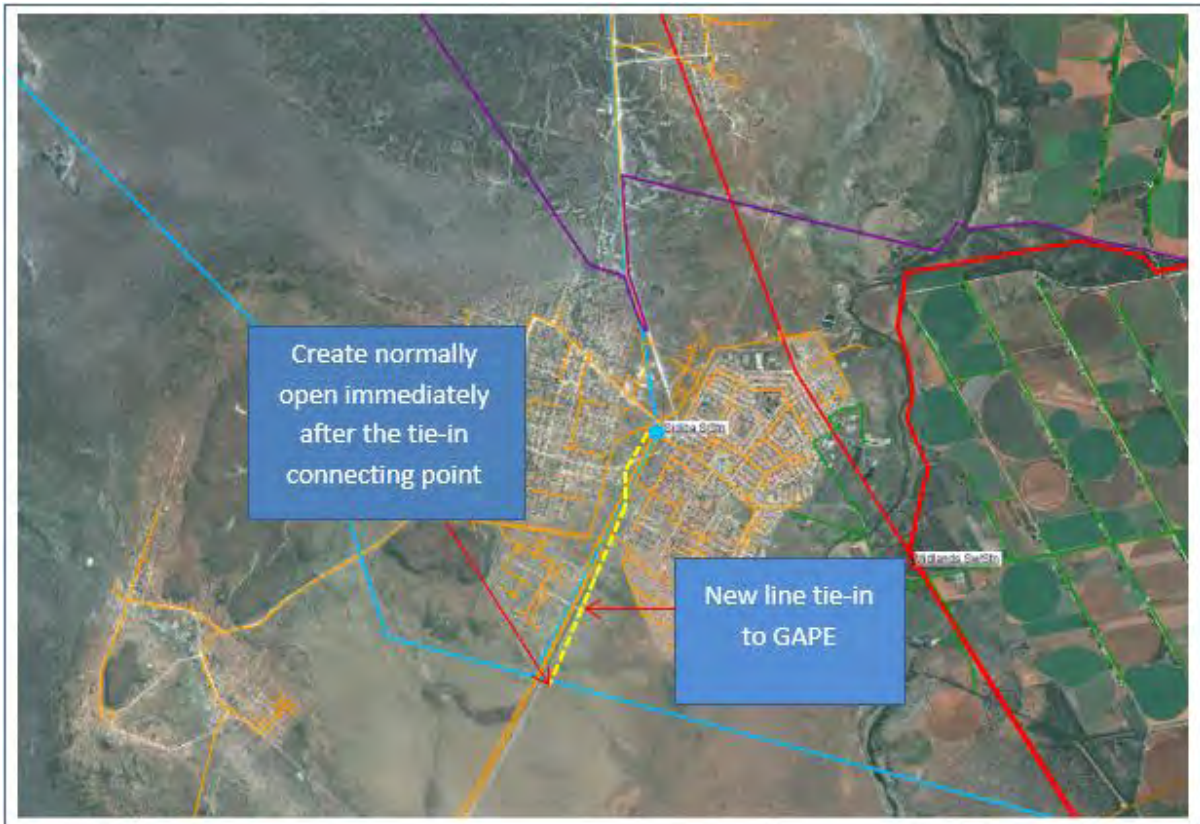


Figure 7.1: Alternative 1 for the proposed 132 kV Powerline, near Pampierstad



Figure 7.2: Alternative 2 (preferred) for the proposed 132 kV Powerline, near Pampierstad

7.2.2 TECHNOLOGY ALTERNATIVES

TYPE OF ALTERNATIVES CONSIDERED	DESCRIPTION OF THE ALTERNATIVE RELATING TO THE PROPOSED OHL
Technology alternatives	Only the development of a 132 kV OHL strung on tubular steel monopole structure is considered.

7.2.3 ACTIVITY ALTERNATIVES

TYPE OF ALTERNATIVES CONSIDERED	DESCRIPTION OF THE ALTERNATIVE RELATING TO THE PROPOSED OHL
Activity alternatives	Alternative activities for the current project are not reasonable or feasible as the purpose of the proposed OHL is to connect the existing Eskom Sidiba Switching Station to the existing Ganspan/Pering 1 132kV OHL.

7.2.4 NO-GO ALTERNATIVE

TYPE OF ALTERNATIVES CONSIDERED	DESCRIPTION OF THE ALTERNATIVE RELATING TO THE PROPOSED OHL
No-go alternative	The “No-go” alternative entails maintaining the status quo. In other words, the proposed construction of the 132 kV OHL would not go ahead, and current land uses would continue as before. While potential risks associated with the new 132 kV OHL would be avoided, the existing impacts of existing electrical infrastructure (i.e. existing powerline and switching station) would persist and, potential benefits of the proposed project would be forfeited.



Table 7.1: Analysis of the proposed alternatives for the 132 kV Powerline, near Pampierstad,

LEVEL	ALTERNATIVES	ADVANTAGES	DISADVANTAGES	REASONABLE AND FEASIBLE	FURTHER ASSESSMENT
Property or location	Alternative 1 – the development of a new continuous line.		Requires a longer length route and therefore will require more structures to be constructed to achieve the same scope of work and therefore more expensive.	YES	YES
	Alternative 2 – the development of 2 new lines using the old line as part of the development	There is already an existing portion of the T-section from Sediba Substation which makes a Tee with Ganspan/Pering 132kV line, therefore, going with Alternative 2, implies the second portion of Loop In Loop out with this Alternative will require only one section of the line from Sediba to be connected to Pering 132KV line after which the Tee will be broken to now have Ganspan/Sediba 132kV line and Sediba/Pering 132kV line. That works out cheaper as compared to Alternative 1.		YES	YES
Technology	OHL strung on tubular steel monopole	<ul style="list-style-type: none"> • Similar to the existing infrastructure • Simple design with easy installation • Smaller footprint than other structures 	Not as sturdy as a lattice structure	YES	YES



LEVEL	ALTERNATIVES	ADVANTAGES	DISADVANTAGES	REASONABLE AND FEASIBLE	FURTHER ASSESSMENT
Activity	Alternative activities for the current project are not reasonable or feasible as the purpose of the proposed OHL is to connect the existing Eskom Sidiba Switching Station to the existing Ganspan/Pering 1 132kV OHL.			YES	NO
No-go option	The “No-go” alternative entails maintaining the status quo. In other words, the proposed construction of the 132 kV OHL would not go ahead, and current land uses would continue as before.	<ul style="list-style-type: none"> No additional impact to the existing natural and social environment 	<ul style="list-style-type: none"> No benefit of upgraded electrical infrastructure 	YES	YES



8 IMPACT ASSESSMENT METHODOLOGY

8.1 AIMS OF ENVIRONMENTAL IMPACT ASSESSMENT

The aim of Basic Assessments and Environmental Impact Assessments is to determine the consequences of proposed developments on the environments to better inform decision-making and the management of natural and social systems. This BA sought to assess the potential environmental impacts of the proposed development of the 132 kV Powerline, near Pampierstad.

8.2 IMPACT ASSESSMENT CRITERIA

CES has developed evaluation criteria for assessing impacts in accordance with the requirements outlined in Appendix 2 of the EIA Regulations (2014, as amended). This scale takes into consideration the following variables:

- **Nature:** negative or positive impact on the environment.
- **Type:** direct, indirect and/or cumulative effect of impact on the environment.
- **Significance:** The criteria in Table 8.1 are used to determine the overall significance of an activity. The impact effect (which includes duration; extent; consequence and probability) and the reversibility/mitigation of the impact are then read off the significance matrix in order to determine the overall significance of the issue. The overall significance is either negative or positive and will be classified as low, moderate or high (Table 8.2).
- **Consequence:** the consequence scale is used in order to objectively evaluate how severe a number of negative impacts might be on the issue under consideration, or how beneficial a number of positive impacts might be on the issue under consideration.
- **Extent:** the spatial scale defines the physical extent of the impact.
- **Duration:** the temporal scale defines the significance of the impact at various time scales, as an indication of the duration of the impact.
- **Probability:** the likelihood of impacts taking place as a result of project actions arising from the various alternatives. There is no doubt that some impacts would occur (e.g. loss of vegetation), but other impacts are not as likely to occur (e.g. vehicle accident), and may or may not result from the proposed development and alternatives. Although some impacts may have a severe effect, the likelihood of them occurring may affect their overall significance.
- **Reversibility:** The degree to which an environment can be returned to its original/partially original state.
- **Irreplaceable loss:** The degree of loss which an impact may cause.
- **Mitigation potential:** The degree of difficulty of reversing and/or mitigating the various impacts ranges from very difficult to easily achievable. The four categories used are listed and explained in Table 8.1 below. Both the practical feasibility of the measure, the potential cost and the potential effectiveness is taken into consideration when determining the appropriate degree of difficulty.

Table 8.1: Ranking of Evaluation Criteria

Nature	
Positive	Beneficial/positive impact.
Negative	Detrimental/negative impact.
Type	
Direct	Direct interaction of an activity with the environment.
Indirect	Impacts on the environment that are not a direct result of the project or activity.



Cumulative	Impacts which may result from a combination of impacts of this project and similar related projects.
Duration	
Short term	Less than 5 years.
Medium term	Between 5-20 years.
Long term	More than 20 years.
Permanent	Over 40 years or resulting in a permanent and lasting change that will always be there.
Extent	
Localised	Impacts affect a small area of a few hectares in extent. Often only a portion of the project area.
Study area	The proposed site and its immediate environments.
Municipal	Impacts affect the municipality, or any towns within the municipality.
Regional	Impacts affect the wider district municipality or the Eastern Cape Province as a whole.
National	Impacts affect the entire country.
International/Global	Impacts affect other countries or have a global influence.
Consequence	
Slight	Slight impacts or benefits on the affected system(s) or party(ies).
Moderate	Moderate impacts or benefits on the affected system(s) or party(ies).
Severe/ Beneficial	Severe impacts or benefits on the affected system(s) or party(ies).
Probability	
Definite	More than 90% sure of a particular fact. Should have substantial supportive data.
Probable	Over 70% sure of a particular fact, or of the likelihood of that impact occurring.
Possible	Only over 40% sure of a particular fact, or of the likelihood of an impact occurring.
Unsure	Less than 40% sure of a particular fact, or of the likelihood of an impact occurring.
Reversibility	
Reversible	The activity will lead to an impact that can be reversed provided appropriate mitigation measures are implemented.
Irreversible	The activity will lead to an impact that is permanent regardless of the implementation of mitigation measures.
Irreplaceable loss	
Resource will not be lost	The resource will not be lost/destroyed provided mitigation measures are implemented.
Resource will be partly lost	The resource will be partially destroyed even though mitigation measures are implemented.
Resource will be lost	The resource will be lost despite the implementation of mitigation measures.
Mitigation potential	
Easily achievable	The impact can be easily, effectively and cost effectively mitigated/reversed.
Achievable	The impact can be effectively mitigated/reversed without much difficulty or cost.
Difficult	The impact could be mitigated/reversed but there will be some difficulty in ensuring effectiveness and/or implementation, and significant costs.
Very Difficult	The impact could be mitigated/reversed but it would be very difficult to ensure effectiveness, technically very challenging and financially very costly.



Table 8.2: Description of significance ratings

Significance Rating		Description
LOW NEGATIVE	LOW POSITIVE	The impacts on this issue are acceptable and mitigation, whilst desirable, is not essential. The impacts on the issue by themselves are insufficient, even in combination with other low impacts, to prevent the development being approved. Impacts on this particular issue will result in either positive or negative medium to short term effects on the social and/or natural environment.
MODERATE NEGATIVE	MODERATE POSITIVE	The impacts on this issue are important and require mitigation. The impacts on this issue are, by themselves, insufficient to prevent the implementation of the project, but could in conjunction with other issues with moderate impacts, prevent its implementation. Impacts on this particular issue will usually result in either a positive or negative medium to long-term effect on the social and/or natural environment.
HIGH NEGATIVE	HIGH POSITIVE	The impacts on this issue are serious, and if not mitigated, they may prevent the implementation of the project (if it is a negative impact). Impacts on this particular issue would be considered by society as constituting a major and usually a long-term change to the (natural and/or social) environment, and will result in severe effects or if positive, substantial beneficial effects.

8.3 ASSESSMENT OF CUMULATIVE IMPACTS

In terms of the NEMA EIA Regulations (2014), a cumulative impact is defined as:

“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”.

Project induced cumulative impacts should be considered, along with direct and indirect impacts, in order to better inform the developer’s decision making and project development process. Cumulative impacts may be categorised into one or more of the following types:

- **Additive:** the simple sum of all the effects (e.g. the accumulation of ground water pollution from various developments over time leading to a decrease in the economic potential of the resource);
- **Synergistic:** effects interact to produce a total effect greater than the sum of individual effects. These effects often happen as habitats or resources approach capacity (e.g. the accumulation of water, air and land degradation over time leading to a decrease in the economic potential of an area);
- **Time crowding:** frequent, repetitive impacts on a particular resource at the same time (e.g. multiple boreholes decreasing the value of water resources);
- **Neutralizing:** where effects may counteract each other to reduce the overall effect (e.g. infilling of a wetland for road construction, and creation of new wetlands for water treatment); and,
- **Space crowding:** high spatial density of impacts on an ecosystem (e.g. rapid informal residential settlement).”



Cumulative impacts are, however, difficult to accurately and confidently assess, owing to the high degree of uncertainty, as well as their often being based on assumptions. It is therefore difficult to provide as detailed an assessment of cumulative impacts as is the case for direct and indirect project induced impacts. This is usually because of the absence of specific details and information related to cumulative impacts. In these situations, the EAP will need to ensure that any assumptions made as part of the assessment are made clear. Accordingly, this includes an overview and analysis of cumulative impacts related to a variety of project actions, and does not provide a significance rating for these impacts, as was done for direct project induced impacts. The objective is to identify and focus on potentially significant cumulative impacts so these may be taken into consideration in the decision-making process. It is important to realise these constraints, and to recognise that the assessment will not, and indeed cannot, be perfect. The potential for cumulative impacts will, however, be considered, rather than omitted from the decision making-process and is therefore of value to the project and the environment.



9 IMPACT ASSESSMENT

The impact assessment identified and assessed impacts across three phases of development:

- Planning & Design Phase
- Construction Phase
- Operational Phase

Using the technical scope as a guide, an impact assessment was conducted based on site visits and information provided by Eskom Holdings SOC Ltd relating to the planning, construction and operation phases, as well as the no-go alternative, for the 132 kV Powerline A detailed impact assessment of all the identified impacts is provided in Appendix B. A breakdown of the assessment and mitigation measures is presented in the tables below.



9.1 PLANNING AND DESIGN PHASE IMPACTS

Table 9.1: Summary of impacts associated with the proposed 132 kV Powerline during the planning and design phase.

POTENTIAL ISSUE	ALTERNATIVES	SOURCE OF ISSUE	SIGNIFICANCE WITHOUT MITIGATION	MITIGATION MEASURES	SIGNIFICANCE WITH MITIGATION
ENVIRONMENTAL POLICY					
Legal and policy compliance	All Alternatives	During the planning and design phase, failure to adhere to existing policies and legal obligations and obtain the necessary authorisations could lead to the project conflicting with local, provincial and national policies, legislation, etc. This could result in lack of institutional support for the project, overall project failure and undue disturbance to the natural environment.	HIGH -	<ul style="list-style-type: none"> All relevant legislation and policy must be consulted and the proponent must ensure that the project is compliant with such legislation and policy. These should include (but are not restricted to): NEMA and Local Municipal bylaws. All relevant permits and authorisations including Water Use Licences or General Authorisations, Building Plan Approvals and plant removal permits must be in place prior to commencement of construction. 	LOW -
BUILT ENVIRONMENT					
Infrastructure	All Alternatives	During the planning and design phase, planning and placement of structures and associated infrastructure in sensitive areas could lead to the damage and degradation of natural areas as well as to the structures themselves.	MODERATE -	<ul style="list-style-type: none"> Planning for and placement of infrastructure must be done so as to avoid sensitive areas as far as possible. 	LOW -



POTENTIAL ISSUE	ALTERNATIVES	SOURCE OF ISSUE	SIGNIFICANCE WITHOUT MITIGATION	MITIGATION MEASURES	SIGNIFICANCE WITH MITIGATION
Stormwater management	All Alternatives	During the planning and design phase, inadequate planning for stormwater during the construction and operational phases within the site could result in erosion and contamination of the soil and surrounding watercourses if there are not appropriate stormwater management structures in place.	MODERATE -	<ul style="list-style-type: none"> A method statement must be developed by the project manager or contractor prior to construction, including considerations for stormwater, erosion, waste and alien vegetation management, as well as site rehabilitation and maintenance considerations. This method statement must be approved by the appointed ECO. This method statement should include stormwater management considerations to control runoff prevent erosion of the site and its surroundings, and mitigate the unnecessary loss of soil and sedimentation of watercourses during all phases of the project. Regular monitoring of implementation of this method statement for the rehabilitation of disturbed areas must be conducted. Appropriate stormwater structures, in alignment with the method statement, must be designed to minimise erosion of the surrounding environment to the extent required 	LOW -



POTENTIAL ISSUE	ALTERNATIVES	SOURCE OF ISSUE	SIGNIFICANCE WITHOUT MITIGATION	MITIGATION MEASURES	SIGNIFICANCE WITH MITIGATION
Waste management	All Alternatives	During the planning and design phase, failure to plan for the storage, handling and disposal of general and hazardous waste during the construction and operation phase may lead to littering and pollution of the surrounding environment, unsanitary conditions and health risks.	MODERATE -	<ul style="list-style-type: none"> A method statement must be developed by the project manager or contractor prior to construction, including considerations for stormwater, erosion, waste and alien vegetation management, as well as site rehabilitation and maintenance considerations. This method statement must be approved by the appointed ECO. This method statement should include waste management considerations for handling onsite general and hazardous waste during the construction and operation phases must be developed and implemented during construction. An appropriate area must be identified where waste can be stored before disposal. All hazardous substances such as paints, diesel and cement must be stored in a secure bunded area with an impermeable surface beneath them. 	LOW -
SOCIO-ECONOMIC					
Job creation	All Alternatives	During the planning and design phase, there will be some temporary job opportunities associated with planning and design of the proposed 132 KV Overhead Line.	LOW +	N/A	LOW +
Health and safety	All Alternatives	During the planning and design phase, failure to plan for potential health and safety risks during the construction and operation phase may result in the harm of labourers, staff, surrounding landowners and the public.	MODERATE -	A health and safety plan in terms of the Occupational Health and Safety Act, 1993 (Act No 85 of 1993) must be drawn up by and HSE officer prior to construction to ensure workers safety.	LOW -



POTENTIAL ISSUE	ALTERNATIVES	SOURCE OF ISSUE	SIGNIFICANCE WITHOUT MITIGATION	MITIGATION MEASURES	SIGNIFICANCE WITH MITIGATION
On-site fire risk	All Alternatives	During the planning and design phase, failure to plan for accidental fires during the construction and operation phase could result in potential harm to the public and/or surrounding landowners and their property.	MODERATE -	<ul style="list-style-type: none"> Emergency preparedness must be in place for both the construction and operational phases and before these phases commence. This should form part of the method statement. Eskom Holdings SOC must plan for and put measures in place to prevent and deal with fires including the provision of firefighting equipment. 	LOW -
Traffic	All Alternatives	During the planning and design phase, inadequate planning for the transportation of materials and specialist construction equipment to the site could cause traffic congestion.	MODERATE -	<ul style="list-style-type: none"> Consultation with the local Road Traffic Unit should be done early in the planning phase and if deemed necessary, road traffic permits should be obtained for transporting parts, containers, materials and construction equipment to the site to the extent required. Make provision for traffic accommodation where construction activities impact on existing roads. 	LOW -
REHABILITATION AND MAINTENANCE					
Inadequate rehabilitation and maintenance	All Alternatives	During the planning and design phase, inadequate planning for rehabilitation and maintenance of infrastructure could lead to degradation of the study area and surrounding areas.	MODERATE -	A rehabilitation plan must be developed by the project manager or contractor as part of the method statement and implemented during construction and operation phases. This method statement must be approved by the appointed ECO.	LOW -



9.2 CONSTRUCTION PHASE IMPACTS

Table 9.2: Summary of impacts associated with the proposed 132 kV Powerline during the construction phase.

POTENTIAL ISSUE	ALTERNATIVES	SOURCE OF ISSUE	SIGNIFICANCE WITHOUT MITIGATION	MITIGATION MEASURES	SIGNIFICANCE WITH MITIGATION
ENVIRONMENTAL POLICY					
Legal and policy compliance	All Alternatives	During the construction phase, failure to adhere to existing policies and legal obligations and obtain the necessary authorisations could lead to the project conflicting with local, provincial and national policies, legislation, etc. This could result in lack of institutional support for the project, overall project failure and undue disturbance to the natural environment.	HIGH -	<ul style="list-style-type: none"> All construction related conditions in the Environmental Authorisation, EMPr and other permits must be adhered to. Eskom Holdings SOC must employ an independent Environmental Control Officer (ECO) for the construction phase to ensure that construction is implemented according to specifications in the EA and EMPr. Copies of all applicable licenses, permits and managements plans (EA, EMPr, etc.) must be available on-site at all times. Environmental Awareness Training must be included in site meetings/talks with all workers. 	LOW -
BUILT ENVIRONMENT					
Infrastructure	All Alternatives	During the construction phase, the disturbance/clearing of vegetation and construction activities within or within close proximity to sensitive areas may result in degradation of the surrounding environment.	MODERATE -	<ul style="list-style-type: none"> Vegetation clearance must be limited to the area within the footprint of the designated area. Vegetation disturbance outside of the development footprint should be minimized. 	LOW -
Material stockpiling	All Alternatives	During the construction phase, inappropriate location and management of material stockpiles may result in erosion.	MODERATE -	<ul style="list-style-type: none"> Material stockpiles must be located away from sensitive areas and they must be monitored for erosion and alien vegetation. Material stockpile locations must be approved by the ECO. 	LOW -



POTENTIAL ISSUE	ALTERNATIVES	SOURCE OF ISSUE	SIGNIFICANCE WITHOUT MITIGATION	MITIGATION MEASURES	SIGNIFICANCE WITH MITIGATION
Stormwater management	All Alternatives	During the construction phase, failure to implement effective stormwater management measures may result in increased surface soil erosion and contamination of stormwater and resulting surrounding watercourses.	MODERATE -	<ul style="list-style-type: none"> The construction site must be managed in a manner that prevents pollution to downstream watercourses or groundwater, due to suspended solids, silt or chemical pollutants. Berms and swaths must be placed in areas that may be prone to erosion. Temporary cut-off drains and berms may be required to capture storm water and promote infiltration. 	LOW -
Waste management	All Alternatives	During the construction phase, poor management of handling, disposal and storage of general and hazardous waste may lead to the pollution of the surrounding environment.	MODERATE -	<ul style="list-style-type: none"> All general waste must be disposed of in bins/waste skips labelled "general waste". Sufficient waste bins must be provided throughout the construction site for collecting waste. All general waste collected on site must be disposed of at a licensed general waste disposal site. All hazardous waste generated on site must be placed in a temporary impermeable bunded containment area which must be disposed of at a hazardous landfill site or be collected by the appropriate service provider. Proof of receipt of hazardous waste by a licenced service provider must be maintained on the site. Adequate sanitary facilities must be provided for construction workers and they must be properly secured to the ground. Maintenance of the chemical toilets should be done on a regular basis to prevent any leakages. 	LOW -



POTENTIAL ISSUE	ALTERNATIVES	SOURCE OF ISSUE	SIGNIFICANCE WITHOUT MITIGATION	MITIGATION MEASURES	SIGNIFICANCE WITH MITIGATION
		During the construction phase, the mixing of cement on site could result in ground water contamination from compounds in the cement. In addition, a large number of cement mixing stations on site could increase the presence of impermeable areas which in turn could increase rates of run-off and thereby increase the risk of localized flooding, soil erosion, silting, gully formation, etc.	MODERATE -	<ul style="list-style-type: none"> Mixing of concrete and cement must take place on an impermeable surface, and dried waste concrete and cement must be disposed of with building rubble. No concrete mixing must take place within 32 m of any watercourse. 	LOW -
SOCIO-ECONOMIC					
Job creation	All Alternatives	During the construction phase, there will be some temporary job opportunities associated with building of the proposed 132 KV Overhead Line.	LOW +	<ul style="list-style-type: none"> N/A 	LOW +
Health and safety	All Alternatives	During the construction phase, failure to comply with health and safety policies and protocols may result in the harm of labourers, staff, surrounding landowners and the public.	MODERATE -	<ul style="list-style-type: none"> A health and safety plan in terms of the Occupational Health and Safety Act, 1993 (Act No 85 of 1993) must be adhered to and enforced by a HSE officer to ensure workers safety. 	LOW -
Air quality and dust control	All Alternatives	During the construction phase, dust generated by construction vehicles and construction activities could result in significant dust during windy conditions.	MODERATE -	<ul style="list-style-type: none"> During windy periods un-surfaced and un-vegetated areas must be dampened down. 	LOW -



POTENTIAL ISSUE	ALTERNATIVES	SOURCE OF ISSUE	SIGNIFICANCE WITHOUT MITIGATION	MITIGATION MEASURES	SIGNIFICANCE WITH MITIGATION
	All Alternatives	During the construction phase poor maintenance and servicing of construction plant and vehicles may result in an increase in vehicle emissions in the areas.	MODERATE -	<ul style="list-style-type: none"> Vegetation must be retained where possible as this will reduce dust travel. Any complaints or claims emanating from dust issues must be attended to immediately and noted in the complaints register. Vehicles and construction plant must be serviced regularly so as to reduce excessive vehicle emissions. 	LOW -
On-site fire risk	All Alternatives	During the construction phase inadequate attention to fire safety awareness and fire safety equipment could result in uncontrolled fires, posing a threat to animals, vegetation and the surrounding landowners.	MODERATE -	<p>In order to reduce the risk of fires:</p> <ul style="list-style-type: none"> All flammable substances must be stored in dry areas which do not pose an ignition risk to the said substances. Smoking must not be permitted near flammable substances. All cooking must be done in demarcated areas that are safe in terms of runaway or uncontrolled fires. No open fires must be allowed on site. Fire extinguishers must be available onsite. 	LOW -
REHABILITATION AND MAINTENANCE					
Inadequate rehabilitation and maintenance	All Alternatives	During the construction phase inadequate provision and implementation of rehabilitation measures may lead to the degradation of the surrounding environment.	MODERATE -	The rehabilitation plan must be implemented during and after the construction has been completed.	LOW -



POTENTIAL ISSUE		ALTERNATIVES	SOURCE OF ISSUE	SIGNIFICANCE WITHOUT MITIGATION	MITIGATION MEASURES	SIGNIFICANCE WITH MITIGATION
TERRESTRIAL BIODIVERSITY AND ECOLOGY						
Loss Schmidtsdrift Thornveld	Encroached	Preferred Alternative	The clearing of land for the proposed Ganspan Pering 132 kV OHL will result in the loss of Schmidtsdrift Thornveld. Vegetation clearance will occur within an area of 3.4 km and width of 8m (2.72 ha). Due to the degraded nature of the Schmidtsdrift Thornveld and the limited clearance of vegetation required for the proposed Ganspan Pering 132 kV OHL, the proposed development is not anticipated to impact on the extent and long-term conservation of this vegetation type, which is listed as Least Threatened.	LOW -	Mitigation Measures: <ul style="list-style-type: none"> • An Erosion Management Plan / Method Statement should be compiled and implemented during the Construction Phase. • Vegetation clearance must be kept to a minimum and retained where possible to avoid soil erosion. • Disturbed areas impacted during construction which do not form part of the Ganspan Pering 132 kV OHL must be rehabilitated as soon as possible. • The site should be monitored regularly for signs of erosion. Remedial action must be taken at the first signs of erosion. 	LOW - -
	Open, semi-natural			LOW -		N/A-
Disturbed	Portions of this vegetation type have already been lost due to agricultural and urban development's adjacent to the site as well as grazing by livestock, frequent access by community members and invasion by alien plant species. The additional loss of vegetation as a consequence of the proposed Ganspan Pering 132 kV OHL will therefore have a low cumulative impact.		LOW -			
All categories						



POTENTIAL ISSUE		ALTERNATIVES	SOURCE OF ISSUE	SIGNIFICANCE WITHOUT MITIGATION	MITIGATION MEASURES	SIGNIFICANCE WITH MITIGATION
		No-go alternative	If the project does not go ahead, the current impacts associated with grazing and the infestation of invasive alien species will continue. However, these are relatively minor within the proposed development footprint and as such, the No-go Alternative is classified as low negative.	LOW -		N/A
Loss of Plant Species of Conservation Concern	Preferred Alternative		Although no plant SCC were observed during the site survey, the proposed Ganspan Pering 132 kV OHL could result in the loss of potential unidentified SCC likely to occur within the project area. The SCC likely to occur within the project area are widely distributed and classified as Least Concern. As such, this significant of this impact is classified as moderate.	MODERATE -	Limit the clearance of land to the minimum technical requirements.	MODERATE -
			SCC have likely already been lost as a result of the existing developments and activities in the area. As such, the further loss of SCC associated with the proposed Ganspan Pering 132 kV OHL will likely contribute to the cumulative loss of SCC within the region.	MODERATE -		MODERATE -
	No-go alternative	The No-go alternative will not require the clearance of vegetation and will therefore not result in the loss of plant SCC. The no-go alternative is therefore negligible	NEGLIGIBLE	N/A		



POTENTIAL ISSUE	ALTERNATIVES	SOURCE OF ISSUE	SIGNIFICANCE WITHOUT MITIGATION	MITIGATION MEASURES	SIGNIFICANCE WITH MITIGATION
Impact on faunal species of conservation concern	Preferred Alternative	The clearance of vegetation and removal of potential faunal habitat could have a severe negative impact on SCC if they inhabit the area.	LOW -	Species-specific mitigations have therefore been proposed. <ul style="list-style-type: none"> Brown Hyena (<i>Parahyaena brunnea</i>) (NT) may occur in the broader project area on the outskirts of the urban area. Black Footed Cat (<i>Felis nigripes</i>), Leopard (<i>Panthera pardus</i>), Temminck's Pangolin (<i>Smutsia temminckii</i>) (all classified as VU) may occur onsite. Southern African Hedgehog (<i>Atelerix frontalis</i>), Dent's Horseshoe Bat (<i>Rhinolophus denti</i>), and Serval (<i>Leptailurus serval</i>), (all classified as NT) may utilise the site as breeding and or feeding ground. However, it is likely that most mammal SCC will move away from the areas during vegetation clearance. 	LOW -
		The proposed Ganspan Pering 132 kV OHL is not anticipated to significantly exacerbate the impacts on faunal SCC caused by existing developments and activities (including dumping, frequent access, urban development, et cetera).	LOW -		LOW -
	No-go alternative	Under the no-go alternative there will be no clearance of habitat within the project area therefore there will be no loss or impact to faunal SCC.	LOW -	No mitigation measures are proposed for the no-go alternative.	N/A
Reduced Faunal Habitat	Preferred Alternative	The project will result in the permanent habitat loss within the footprints of the proposed Ganspan Pering 132 kV OHL.	LOW -	Mitigation Measures: <ul style="list-style-type: none"> Search and clear the area prior to vegetation clearance. Avoid any dens (potentially used by <i>Felis nigripes</i>) – suggest a minimum of 300m buffer around dens and must be demarcated and declared a No-Go area. 	LOW -



POTENTIAL ISSUE	ALTERNATIVES	SOURCE OF ISSUE	SIGNIFICANCE WITHOUT MITIGATION	MITIGATION MEASURES	SIGNIFICANCE WITH MITIGATION
		Portions of faunal habitat have already been lost due to illegal dumping, frequent access by community members, urban development, and other farming activities adjacent to the site	LOW -	<ul style="list-style-type: none"> Any faunal species that may die as a result of construction must be recorded (photographed, GPS coordinates) and if somewhat intact, preserved and donated to SANBI. Any faunal species observed onsite must be recorded (photographed, GPS coordinates) and loaded onto iNaturalist. Staff and contractors are not permitted to capture, collect or eat any faunal species onsite. 	LOW -
	No-go alternative	Habitat fragmentation is occurring at a very slow rate due to the infestation of alien species, grazing by livestock, urban expansion, and frequent access by community members	LOW -	No mitigation measures are proposed for the no-go alternative.	N/A
Disruption of Faunal Species and Potential Reduction in Abundance and Mortality of Faunal Species.	Preferred Alternative	The clearance of vegetation for the establishment of the proposed Ganspan Pering 132 kV OHL will cause the majority of highly mobile faunal species to move away from the site during the construction phase. Those that remain in the project footprint could come into contact with staff and vehicles/machinery.	LOW -	Mitigation Measures: <ul style="list-style-type: none"> Search and clear the area prior to vegetation clearance. Avoid any dens (potentially used by <i>Felis nigripes</i>) – suggest a minimum of 300m buffer around dens and must be demarcated and declared a No-Go area. 	LOW -



POTENTIAL ISSUE	ALTERNATIVES	SOURCE OF ISSUE	SIGNIFICANCE WITHOUT MITIGATION	MITIGATION MEASURES	SIGNIFICANCE WITH MITIGATION
		Existing activities within the project area, such as urban expansion, illegal dumping, and frequent access by community members and domestic animals (dogs and cats) have already caused a disturbance to fauna within the project area. As such, the proposed Overhead Line will only slightly contribute to the disturbance to faunal species within the project area.	LOW -	<ul style="list-style-type: none"> Any faunal species that may die as a result of construction must be recorded (photographed, GPS coordinates) and if somewhat intact, preserved and donated to SANBI. Any faunal species observed onsite must be recorded (photographed, GPS coordinates) and loaded onto iNaturalist. Staff and contractors are not permitted to capture, collect or eat any faunal species onsite. 	LOW -
	No-go alternative	Existing activities within the project area, such as urban expansion, illegal dumping, and frequent access by community members and domestic animals (dogs and cats) have already caused a disturbance to fauna within the project area	LOW -	No mitigation measures are proposed for the no-go alternative.	N/A



POTENTIAL ISSUE	ALTERNATIVES	SOURCE OF ISSUE	SIGNIFICANCE WITHOUT MITIGATION	MITIGATION MEASURES	SIGNIFICANCE WITH MITIGATION
Disruption of Ecosystem Function and Process	Preferred Alternative	Fragmentation is one of the most important impacts on vegetation as it creates breaks in previously continuous vegetation, causing a reduction in the gene pool and a decrease in species richness and diversity. It also impacts on fauna as it separates habitats and necessitates fauna having to move across exposed areas like roads to get to another section of their habitat or territory. This impact occurs when more and more areas are cleared, resulting in the isolation of functional ecosystems, which results in reduced biodiversity and reduced movement due to the absence of ecological corridors.	LOW -	Mitigation Measures: <ul style="list-style-type: none"> • Construction will be limited to existing access roads and to the construction site. • Limit vegetation clearance to that which is strictly necessary. • Use existing access roads and servitudes, where possible 	LOW -
		Disruption of ecosystem function and process due to habitat fragmentation has already occurred within the broader area due to roads, existing powerlines, frequent access by community members, illegal dumping, urban expansion, farming, amongst other land uses	LOW -		LOW -



POTENTIAL ISSUE	ALTERNATIVES	SOURCE OF ISSUE	SIGNIFICANCE WITHOUT MITIGATION	MITIGATION MEASURES	SIGNIFICANCE WITH MITIGATION
	No-go alternative	Under the no-go alternative, habitat fragmentation will occur as a result of illegal dumping, frequent access by community members, urban expansion, grazing and infestation of invasive alien plant species. This will continue to occur if left unchecked however, at a very slow rate	LOW -		N/A
Establishment of Alien Plant Species	Preferred Alternative	The removal of existing natural vegetation creates 'open' habitats which favours the establishment of undesirable vegetation in areas that are typically very difficult to eradicate and could pose a threat to surrounding ecosystems.	MODERATE -	Mitigation Measures: <ul style="list-style-type: none"> The site must be checked regularly for the presence of alien invasive species. An Alien Invasive Management Plan/ Method Statement must be compiled, implemented, and adhered to. 	LOW -
		Scattered alien invasive species have already established in the surrounding area. Therefore, should the vegetation clearance for the proposed Overhead Line lead to the further establishment of alien invasive species in the project area, the invasion by alien species could be exacerbated	MODERATE -		MODERATE -
	No-go alternative	There is already evidence of the establishment of numerous alien species within the site. Under the no-go alternative these species are likely to continue multiplying if left unchecked.	LOW -	No mitigation measures are proposed for the no-go alternative.	N/A



POTENTIAL ISSUE	ALTERNATIVES	SOURCE OF ISSUE	SIGNIFICANCE WITHOUT MITIGATION	MITIGATION MEASURES	SIGNIFICANCE WITH MITIGATION
AVIFAUNAL IMPACT					
Impact: habitat destruction during construction	Preferred Alternative	During construction vegetation is altered or moved for the project footprint. this destroys avifauna habitat, makes it less useful to birds, or less attractive to sensitive species.	LOW -	<ul style="list-style-type: none"> No unnecessary alteration or removal of any remaining natural vegetation should take place during construction. All construction activities should be strictly managed according to generally accepted environmental best practice standards, to avoid any unnecessary impact on the receiving environment. All temporary disturbed areas should be rehabilitated according to the site's rehabilitation plan, following construction. 	LOW -
Impact: Disturbance of birds during construction	Preferred Alternative	Birds are disturbed by construction or operations activities & their survival or reproduction is compromised. Most applicable with breeding sensitive bird species.	LOW -	All construction activities should be strictly managed according to generally accepted environmental best practice standards, to avoid any unnecessary impact on the receiving environment.	LOW -
Impact: Electrocution of birds on power line & in substations	Preferred Alternative	Large birds are electrocuted whilst perched on pylons or in substation, by bridging the critical clearances between phases or phase –earth hardware.	LOW -	<ul style="list-style-type: none"> A pre-construction avifaunal walk down should be conducted to confirm final layout and identify any new sensitivities. This walk down will also identify any high-risk sections of power line for bird collision The earth wires on high risk sections should be fitted with an approved anti bird collision line marking device to make cables more visible to birds in flight and reduce the likelihood of collisions. 	LOW -



POTENTIAL ISSUE	ALTERNATIVES	SOURCE OF ISSUE	SIGNIFICANCE WITHOUT MITIGATION	MITIGATION MEASURES	SIGNIFICANCE WITH MITIGATION
Impact: Collision of birds on overhead power line	Preferred Alternative	Birds in flight collide with overhead cables (conductors or earth wires) whilst in mid-flight. This occurs when they don't see the cables until too late to take evasive action.	LOW -	<ul style="list-style-type: none"> A pre-construction avifaunal walk down should be conducted to confirm final layout and identify any new sensitivities. This walk down will also identify any high-risk sections of power line for bird collision. The earth wires on high risk sections should be fitted with an approved anti bird collision line marking device to make cables more visible to birds in flight and reduce the likelihood of collisions. 	LOW -
VISUAL IMPACT					
Visual impact of construction activity	All Alternatives	<p>There are various activities which will take place during the construction phase which may have impacts on sensitive visual receptors:</p> <ul style="list-style-type: none"> Small areas of vegetation will need to be cleared for the pylon foundations. Construction of the OHL will potentially draw attention if it is exposed above the skyline. There will be a slight increase in vehicular movement of trucks delivering supplies and construction material. Soil stockpiling and vegetation debris. 	LOW -	<p>The following mitigation measures are proposed:</p> <ul style="list-style-type: none"> The construction contractor should clearly demarcate construction areas so as to minimise site disturbance. Phased, rather than indiscriminate clearing of the site to be undertaken. Vegetation clearing should be limited to species/specimens presenting a fire risk or clearance danger. The site should be kept neat and tidy. Littering should be fined, and the ECO should organise rubbish clean-ups on a regular basis. Implement mitigation measures as recommended in the EMPr. 	LOW -



POTENTIAL ISSUE	ALTERNATIVES	SOURCE OF ISSUE	SIGNIFICANCE WITHOUT MITIGATION	MITIGATION MEASURES	SIGNIFICANCE WITH MITIGATION
HERITAGE AND CULTURAL RESOURCES					
Loss of archaeological feature	All Alternatives	The study did not identify any archaeological receptors which will be directly impacted by the proposed project.	LOW -	No Mitigation Required	LOW -
Loss of historically significant building and structures	All Alternatives	The study identified no buildings or structures of historical or heritage significance. For the rest of the project area, the general landscape holds varied significance in terms of the built environment as the area comprises historical farming remnants and relatively newly established industrial zones, settlements and townlands. However, no impact on built environment sites is anticipated.	LOW -	No Mitigation Required	LOW -
Alternation of cultural landscape	All Alternatives	Generally, the proposed project area and its surrounds are characterised by open fields and farmlands. Further away from the project area, the landscape is typical of the rural north Northern Cape with undulating hills with flatter plains in-between. This landscape stretches over many kilometres and the proposed project is unlikely to result in a significant impact on the landscape.	LOW -	No Mitigation Required	LOW -



<p>Disturbance to graves/ human burial sites</p>	<p>All Alternatives</p>	<p>No graves of human burial places were noted during the site investigation the project footprint. In the rural areas of the Northern Cape Province graves and cemeteries sometimes occur within settlements or around homesteads but they are also randomly scattered around archaeological and historical settlements. The probability of additional and informal human burials encountered during development should thus not be excluded. In addition, human remains and burials are commonly found close to archaeological sites; they may be found in "lost" graveyards, or occur sporadically anywhere as a result of prehistoric activity, victims of conflict or crime. It is often difficult to detect the presence of archaeological human remains on the landscape as these burials, in most cases, are not marked at the surface.</p> <p>Human remains are usually observed when they are exposed through erosion. In some instances packed stones or rocks may indicate the presence of informal pre-colonial burials. If any human bones are found during the course of construction work then they should be reported to an archaeologist and work in the immediate vicinity should cease until the appropriate actions have been carried out by the archaeologist. Where human remains are part of a burial they</p>	<p style="text-align: center;">LOW -</p>	<p>Human remains are usually observed when they are exposed through erosion. In some instances packed stones or rocks may indicate the presence of informal pre-colonial burials. If any human bones are found during the course of construction work then they should be reported to an archaeologist and work in the immediate vicinity should cease until the appropriate actions have been carried out by the archaeologist. Where human remains are part of a burial they would need to be exhumed under a permit from SAHRA (for pre-colonial burials as well as burials later than about AD 1500).</p> <p>Should any unmarked human burials/remains be found during the course of construction, work in the immediate vicinity should cease and the find must immediately be reported to the archaeologist, or the South African Heritage Resources Agency (SAHRA). Under no circumstances may burials be disturbed or removed until such time as necessary statutory procedures required for grave relocation have been met.</p>	<p style="text-align: center;">LOW -</p>
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POTENTIAL ISSUE	ALTERNATIVES	SOURCE OF ISSUE	SIGNIFICANCE WITHOUT MITIGATION	MITIGATION MEASURES	SIGNIFICANCE WITH MITIGATION
		would need to be exhumed under a permit from SAHRA (for pre-colonial burials as well as burials later than about AD 1500). Should any unmarked human burials/remains be found during the course of construction, work in the immediate vicinity should cease and the find must immediately be reported to the archaeologist, or the South African Heritage Resources Agency (SAHRA). Under no circumstances may burials be disturbed or removed until such time as necessary statutory procedures required for grave relocation have been met.			
WATERCOURSE AND WETLAND IMPACTS					
Direct ecosystem modification or destruction / loss impacts	All alternatives	During the construction phase, vegetation clearance, construction vehicle traffic and earthworks may result in the temporary disturbance of units W1, W2, W3, W4, W6 and W7.	LOW -	Avoid/prevent impact: <ul style="list-style-type: none"> • Powerlines should span the extent of watercourses where possible. • Pylons should not be placed within 32 m of watercourses. • All construction phase access and haulage roads must avoid the delineated watercourses and buffer zones. As far as practically possible, existing roads and dirt tracks should be used to access the construction sites if such access routes avoid watercourses. 	LOW -
Alteration of hydrological and geomorphological processes	All alternatives	During the construction phase, the clearance of vegetation and compaction of soil may result in increased run-off and erosion, altering hydrological and geomorphological processes.	LOW -	Minimize/reduce impact:	LOW -



POTENTIAL ISSUE	ALTERNATIVES	SOURCE OF ISSUE	SIGNIFICANCE WITHOUT MITIGATION	MITIGATION MEASURES	SIGNIFICANCE WITH MITIGATION
Ecological connectivity and edge disturbance impacts	All alternatives	During the construction phase, vegetation clearance, construction vehicle traffic and earthworks may reduce ecological connectivity and disturb the watercourse/terrestrial edge.	LOW -	<ul style="list-style-type: none"> • Construction activities should be undertaken during the driest part of the year to minimize erosion and downstream sedimentation due to excavation, etc. • Appropriate stormwater management must be implemented during construction to control run-off, minimize erosion and trap sediment. Such measures include the installation of sediment fences, earthen / sand bag barriers at regular intervals. • Vegetation clearing must be kept a minimum and only to the site footprint. • Stockpiles must be monitored for erosion and mobilisation of materials towards watercourses. • Stockpiles must not exceed 1.5m in height. Stockpiles must be covered during windy periods. <p>Remediate/rehabilitate impact:</p> <ul style="list-style-type: none"> • Disturbed areas must be monitored for erosion and these must be rehabilitated. • All trenches/excavations must be backfilled and all disturbed areas backfilled, compacted and revegetated, where applicable. 	LOW -



POTENTIAL ISSUE	ALTERNATIVES	SOURCE OF ISSUE	SIGNIFICANCE WITHOUT MITIGATION	MITIGATION MEASURES	SIGNIFICANCE WITH MITIGATION
Water pollution impacts	All alternatives	During the construction phase, accidental spillages of wet concrete and chemical / hazardous substances may result in soil and groundwater contamination, adversely affecting the aquatic ecosystems in the broader area.	LOW-	<p>Avoid/prevent impact:</p> <ul style="list-style-type: none"> No concrete mixing must take place within of any watercourse. No machinery must be parked overnight within 50 m of the rivers/wetlands. All stationary machinery must be equipped with a drip tray to retain any oil leaks. Chemicals used for construction must be stored safely on bunded surfaces in the construction site camp. No ablution facilities must be located within 50 m of any river or wetland system. Chemical toilets must be regularly maintained/ serviced to prevent ground or surface water pollution. Any hazardous substances/waste must be stored in impermeable bunded areas or secondary containers 110% the volume of the contents within it. All general waste and refuse must be removed from site and disposed and windproof temporary storage area before being disposed of at a registered landfill site. <p>Remediate/rehabilitate impact:</p> <ul style="list-style-type: none"> Emergency plans must be in place in case of spillages onto bare soil or within water courses. 	LOW -
Status-quo maintained	No-go	Should the project not proceed then the current land use will remain the same. The site is highly degraded and current impacts are likely to persist.	LOW -	No mitigation measures are proposed for the no-go alternative.	LOW -



9.3 OPERATIONAL PHASE IMPACTS

Table 9.3: Summary of impacts associated with the proposed 132 kV Powerline during the operational phase.

POTENTIAL ISSUE	ALTERNATIVES	SOURCE OF ISSUE	SIGNIFICANCE WITHOUT MITIGATION	MITIGATION MEASURES	SIGNIFICANCE WITH MITIGATION
ENVIRONMENTAL POLICY					
Legal and policy compliance	All Alternatives	During the operation phase, failure to adhere to all permits, authorisations and regulations may lead to financial penalties and closure of the proposed 132 KV Overhead Line.	HIGH -	<ul style="list-style-type: none"> The proponent must ensure that operations of the 132 KV Overhead line is compliant with the relevant legislation and policy. These should include (but are not restricted to): NEMA, EA, EMPr and any other permits/authorisations. 	LOW -
BUILT ENVIRONMENT					
Infrastructure	All Alternatives	During the operation phase, the Overhead line will provide electricity in an efficient and sustainable manner, including its generation, transmission and distribution and retail.	MODERATE +	<ul style="list-style-type: none"> Regular maintenance and inspections of all infrastructure and services must be undertaken. 	MODERATE +
Stormwater management	All Alternatives	During the operation phase, failure of the stormwater system and or lack of maintenance of the stormwater system may result in the erosion and or pollution of the surrounding environment should the stormwater be contaminated.	MODERATE -	<ul style="list-style-type: none"> Stormwater management measures such as attenuation structures, channels, etc. must be properly maintained and monitored. If the stormwater management measures put in place are deemed insufficient, a qualified engineer must be approached to assist with additional storm water attenuation mechanisms and remediation. 	LOW -
SOCIO-ECONOMIC					
Job creation	All Alternatives	During the construction phase, there will be some temporary job opportunities associated with building of the proposed 132 KV Overhead Line.	LOW +	<ul style="list-style-type: none"> N/A 	LOW +



POTENTIAL ISSUE	ALTERNATIVES	SOURCE OF ISSUE	SIGNIFICANCE WITHOUT MITIGATION	MITIGATION MEASURES	SIGNIFICANCE WITH MITIGATION
Health and safety	All Alternatives	During the construction phase, failure to comply with health and safety policies and protocols may result in the harm of labourers, staff, surrounding landowners and the public.	MODERATE -	<ul style="list-style-type: none"> A health and safety plan in terms of the Occupational Health and Safety Act, 1993 (Act No 85 of 1993) must be adhered to and enforced by a HSE officer to ensure workers safety. 	LOW -
Air quality and dust control	All Alternatives	During the construction phase, dust generated by construction vehicles and construction activities could result in significant dust during windy conditions.	MODERATE -	<ul style="list-style-type: none"> During windy periods un-surfaced and un-vegetated areas must be dampened down. Vegetation must be retained where possible as this will reduce dust travel. 	LOW -
	All Alternatives	During the construction phase poor maintenance and servicing of construction plant and vehicles may result in an increase in vehicle emissions in the areas.	MODERATE -	<ul style="list-style-type: none"> Any complaints or claims emanating from dust issues must be attended to immediately and noted in the complaints register. Vehicles and construction plant must be serviced regularly so as to reduce excessive vehicle emissions. 	LOW -
On-site fire risk	All Alternatives	During the construction phase inadequate attention to fire safety awareness and fire safety equipment could result in uncontrolled fires, posing a threat to animals, vegetation and the surrounding landowners.	MODERATE -	<p>In order to reduce the risk of fires:</p> <ul style="list-style-type: none"> All flammable substances must be stored in dry areas which do not pose an ignition risk to the said substances. Smoking must not be permitted near flammable substances. All cooking must be done in demarcated areas that are safe in terms of runaway or uncontrolled fires. No open fires must be allowed on site. Fire extinguishers must be available onsite. 	LOW -
REHABILITATION AND MAINTENANCE					
Inadequate rehabilitation and maintenance	All Alternatives	During the operation phase inadequate rehabilitation of disturbed areas and lack of maintenance of infrastructure may lead to the degradation of the surrounding environment.	MODERATE -	Disturbed areas will be rehabilitated/prepared to allow natural re-vegetation.	LOW -



POTENTIAL ISSUE	ALTERNATIVES	SOURCE OF ISSUE	SIGNIFICANCE WITHOUT MITIGATION	MITIGATION MEASURES	SIGNIFICANCE WITH MITIGATION
TERRESTRIAL BIODIVERSITY AND ECOLOGY					
Infestation of Alien Plant Species	Preferred Alternative	If areas which do not form part of the Overhead Line are not rehabilitated, these disturbed areas can become places for alien invasive species to become established and if left unmitigated these species can spread and establish themselves in intact vegetation resulting in the displacement of indigenous species and possible local extinctions of SCC.	LOW -	Mitigation Measures: <ul style="list-style-type: none"> The site must be checked regularly for the presence of alien invasive species. When alien invasive species are found, immediate action must be taken to remove them. An Alien Invasive Management Plan/ Method Statement must be compiled, implemented and adhered to. 	LOW -
		Scattered alien invasive species have already established in the surrounding area. Therefore, should the operation of the proposed Overhead Line lead to the further establishment of alien invasive species in the project area, the invasion by alien species could be exacerbated.	MODERATE -		MODERATE-
	No-go alternative	There is already a number of alien species which has established within the project area. Under the no-go alternative these species are likely to continue multiplying if left unchecked.	LOW -	No mitigation measures are proposed for the no-go alternative.	N/A
AVIFAUNAL IMPACT					
Impact: Disturbance of birds	Preferred Alternative	Birds are disturbed by operations activities & their survival or reproduction is compromised. Most applicable with breeding sensitive bird species.	LOW -	All construction activities should be strictly managed according to generally accepted environmental best practice standards, to avoid any unnecessary impact on the receiving environment.	LOW -
Impact: Electrocution of birds on power line & in substations	Preferred Alternative	Large birds are electrocuted whilst perched on pylons or in substation, by bridging the critical clearances between phases or phase –earth hardware.	LOW -	The pole design must be an Eskom approved bird friendly design.	LOW -



POTENTIAL ISSUE	ALTERNATIVES	SOURCE OF ISSUE	SIGNIFICANCE WITHOUT MITIGATION	MITIGATION MEASURES	SIGNIFICANCE WITH MITIGATION
Impact: Collision of birds on overhead power line	Preferred Alternative	Birds in flight collide with overhead cables (conductors or earth wires) whilst in mid-flight. This occurs when they don't see the cables until too late to take evasive action.	LOW -	<p>A pre-construction avifaunal walk down should be conducted to confirm final layout and identify any new sensitivities. This walk down will also identify any high-risk sections of power line for bird collision</p> <p>The earth wires on high risk sections should be fitted with an approved anti bird collision line marking device to make cables more visible to birds in flight and reduce the likelihood of collisions.</p>	LOW -
VISUAL IMPACT					
Impact of 132 kV OHL on visually sensitive receptors	Pampierstad	The powerline will be visible from the surrounding areas. Notable features/receptors within the viewshed area include: residents of Pampierstad, residents of Lower Majeakgoro and motorists using the 5115 tertiary road.	MODERATE -	<p>Due to the height and visibility of the 132 kV OHL, mitigation measures are limited.</p> <p>The following should be considered:</p> <ul style="list-style-type: none"> Consolidate impacts by aligning the proposed 132 kV OHL line adjacent to an existing power lines. Vegetation clearing/trimming within the servitude should be limited to species/specimens presenting a fire risk or clearance danger. 	MODERATE -
	Majeakgoro		MODERATE -		MODERATE -
	5115 tertiary road		LOW -		LOW -
WATERCOURSE AND WETLAND IMPACTS					
Alteration of hydrological and geomorphological processes	All alternatives	During the operational phase, localised altered flow patterns may occur around the powerline pylons. This may indirectly result in increased run-off, erosion and sedimentation.	LOW -	<p>Minimize/reduce impact:</p> <ul style="list-style-type: none"> All operational phase service roads must avoid the delineated watercourses and buffer zones. As far as practically possible, existing roads and dirt tracks should be used as maintenance roads if such access routes avoid watercourses. Stormwater measures must be installed at pylon sites. Stormwater infrastructure must be maintained and monitored for effectiveness with respect to controlling and minimising erosion and sedimentation of watercourses. <p>Remediate/rehabilitate impact:</p> <ul style="list-style-type: none"> The site must be monitored for erosion and should be rehabilitated where applicable. 	VERY LOW -



POTENTIAL ISSUE	ALTERNATIVES	SOURCE OF ISSUE	SIGNIFICANCE WITHOUT MITIGATION	MITIGATION MEASURES	SIGNIFICANCE WITH MITIGATION
Ecological connectivity and edge disturbance impacts	All alternatives	During the operational phase, inadequate rehabilitation of disturbed areas may lead to the reduction of ecological connectivity and degradation of the surrounding environment.	LOW -	Remediate/rehabilitate impact: <ul style="list-style-type: none"> Disturbed areas should be rehabilitated and re-vegetated. 	VERY LOW -
Water pollution impacts	All alternatives	During the operational phase, routine maintenance may lead to the introduction of chemical / hazardous substances into the watercourse, soil and/or groundwater, adversely affecting the aquatic ecosystems in the broader area.	LOW-	Avoid/prevent impact: <ul style="list-style-type: none"> No machinery must be parked overnight within 50m of the rivers/wetlands. All stationary machinery must be equipped with a drip tray to retain any oil leaks. Any hazardous substances/waste must be stored in impermeable bunded areas or secondary containers 110% the volume of the contents within it. All general waste and refuse must be removed from site and disposed and windproof temporary storage area before being disposed of at a registered landfill site. Remediate/rehabilitate impact: <ul style="list-style-type: none"> Emergency plans must be in place in case of spillages onto bare soil or within water courses. 	LOW -
Status-quo maintained	No-go	Should the project not proceed then the current land use will remain the same. The site is highly degraded and current impacts are likely to persist.	LOW -	No mitigation measures are proposed for the no-go alternative.	LOW -



9.4 DECOMMISSIONING PHASE IMPACTS

Table 9.4: Summary of impacts associated with the proposed 132 kV Powerline during the decommissioning phase.

POTENTIAL ISSUE	ALTERNATIVES	SOURCE OF ISSUE	SIGNIFICANCE WITHOUT MITIGATION	MITIGATION MEASURES	SIGNIFICANCE WITH MITIGATION
VISUAL IMPACT					
Visual impact of decommissioning activity	All Alternatives	132 kV OHLs are typically designed for a 20-30 year lifecycle after which the structure may either be refurbished or decommissioned. If it is decommissioned, the impacts during the decommissioning phase will be very similar to those identified in the construction phase.	LOW -	The mitigation measures applicable to the construction phase will be applicable during the decommissioning phase as well.	LOW -



10 SENSITIVITY ANALYSIS

A site sensitivity analysis has been conducted based on specialist and general site information gathered. The site was classified into areas of low, conditional sensitivity and **NO-GO** development.

- **NO-GO** includes areas where no construction should take place.
- **High Sensitivity** areas will require considerable effort to design out, mitigate or manage negative environmental impacts. In many cases this will not be possible and in general these areas should be avoided. Only facilities that are location dependent should be permitted in these areas.
- **Moderate Sensitivity** areas can accommodate development, but there are constraints. Mitigation and management will be required to reduce significant environmental impacts to acceptable levels, and appropriate technology and design will be required to reduce impacts and ensure sustainability.
- **Low Sensitivity** areas can be easily developed, as there are only minor constraints, and little mitigation and management is required (aside from normal building design and construction restrictions outlined in the EMP).

10.1 TERRESTRIAL ECOLOGY

Using the Species Environmental Assessment guideline (SANBI, 2020) it was determined that the overall Site Ecological Importance (SEI) of Schmidtsdrift Thornveld is VERY LOW. Table 10.1 below provides a summary of how the habitat was assessed.

Table 10.1: Evaluation of Site Ecological Importance (SEI) of habitat and SCC.

Habitat Species	Conservation Importance (CI)	Functional Integrity (FI)	BI	Receptor Resilience	SEI
Schmidtsdrift Thornveld	Low	Low	Low	High	VERY LOW
	No confirmed or likely populations of threatened plant SCC. Possible faunal SCC recorded for the project area. Although their distribution ranges and the available habitat suggest that these species	Small (> 1 ha but < 5 ha) area of LC ecosystem type. Although habitat connectivity good and migration still possible across the site, habitat affected by several		According to Cadman <i>et al.</i> (2013, p. 38), “changes in species composition and structure resulting from poor rangeland management are generally reversible in the short to mid-term (5-20 years), especially if the primary grassland species (forbs and grasses) are still scattered across the grassland, even in low numbers . . . Dry Highveld ecosystems [such as the Schmidtsdrift Thorveld] will generally recover more quickly than mesic ones as they are dominated by plants that recruit more often from seeds stored in	



Habitat Species	Conservation Importance (CI)	Functional Integrity (FI)	BI	Receptor Resilience	SEI
	could survive here, the high level of activity, noise and presence of domestic animals makes this unlikely	minor and major ecological impacts and significantly degraded. A very busy used road network surrounds the area.		<p><i>the seed bank, depending on rainfall."</i></p> <p>The Schmidtdrift Thornveld is mainly dominated by grasses, with few scattered trees, and is therefore likely to recover relatively quickly and retain a high degree of the original species composition and functionality.</p>	

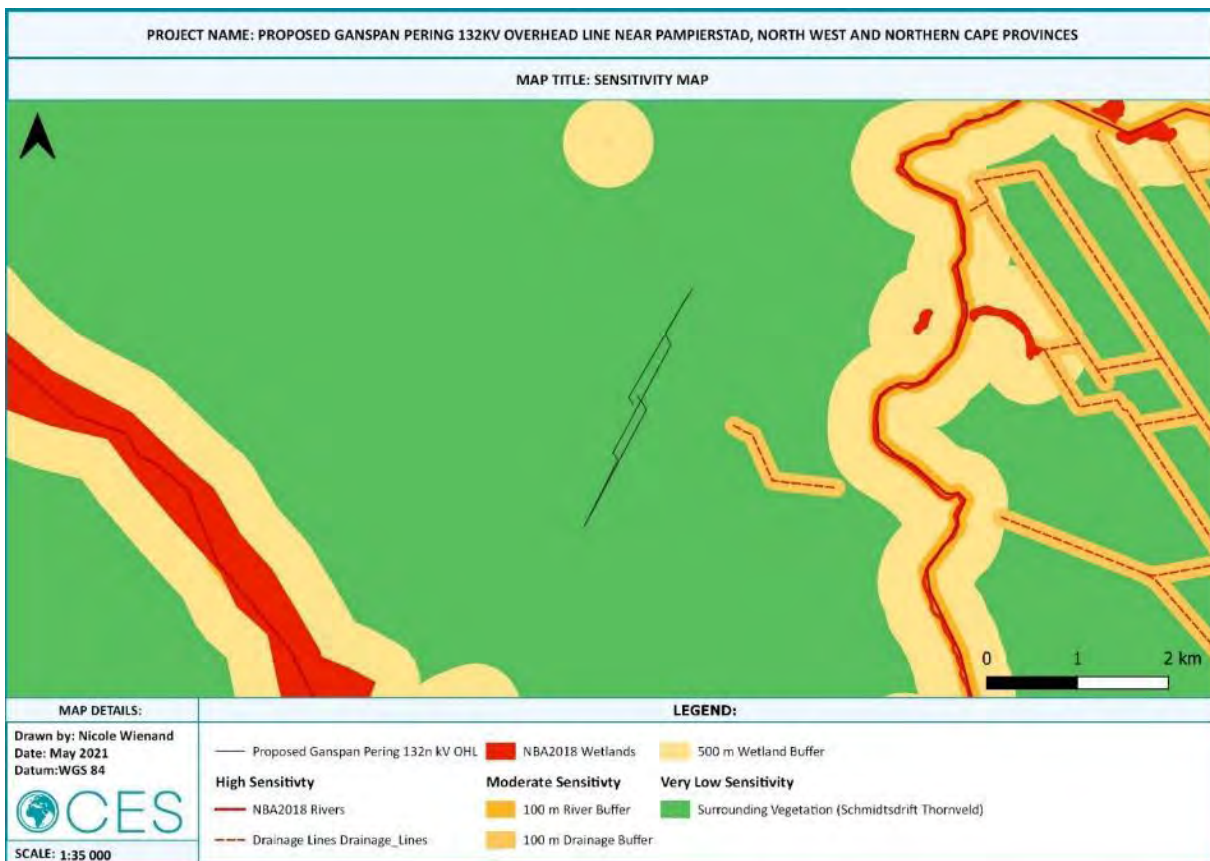


Figure 10.1: Terrestrial Ecology Sensitivity map of the project area

10.2 WATERCOURSES AND WETLANDS

This section discusses the results of the Ecological Importance and Sensitivity (EIS) assessments. The drainage lines (W4 and W7) were assessed using the Riverine EIS tool, whereas the artificial wetlands were assessed using the Wetland EIS tool. All units scored low integrated EIS ratings due to their generally marginal to low importance and sensitivity. The EIS assessment results are summarised in Table 10.2 below. A sensitivity map (Figure 10.2 below) was developed based on the above EIS ratings.



Table 10.2: Summary of EIS scores and ratings

UNIT	ECOLOGICAL IMPORTANCE SCORE	ECOLOGICAL SENSITIVITY	INTEGRATED SCORE	EIS	INTEGRATED RATING	EIS
W1	1.3	1.2	1.3		Moderately-low	
W2	0.8	1.2	1.2		Low	
W3	0.8	0.9	0.9		Low	
W4	-	-	0.5		Low	
W5	1.3	1.0	1.3		Moderately-low	
W6	0.5	0.9	0.9		Low	
W7	-	-	0.5		Low	
W8	1.3	1.0	1.3		Moderately-low	



Figure 10.2: Watercourse and wetland Ecological Importance and Sensitivity (EIS) map of the proposed development site.

10.3 AVIFAUNAL

At a landscape level, the proposed project is in an area of Low avifaunal sensitivity. The site is not in an Important Bird Area, or any other formal or informal protected status area. No particularly sensitive avifaunal receptors such as large mountains, dams or wetlands exist near the site. On site itself we have classified the entire site as Low sensitivity due to the high levels of disturbance and degradation.



10.4 VISUAL

10.4.1 OVERALL VISIBILITY OF THE PROJECT

The visibility of the project is an indication of where in the region the development will potentially be visible from. The rating is based on viewshed size only and is an indication of how much of a region will potentially be affected visually by the development. A high visibility rating does not necessarily signify a high visual impact, although it can if the region is densely populated with sensitive visual receptors.

The calculated viewshed (Figure 10.3) indicates where the proposed OHL will be visible from. As anticipated, due to the height and location, the proposed OHL will have a high visibility.

Overall visibility of the proposed OHL: **HIGH**

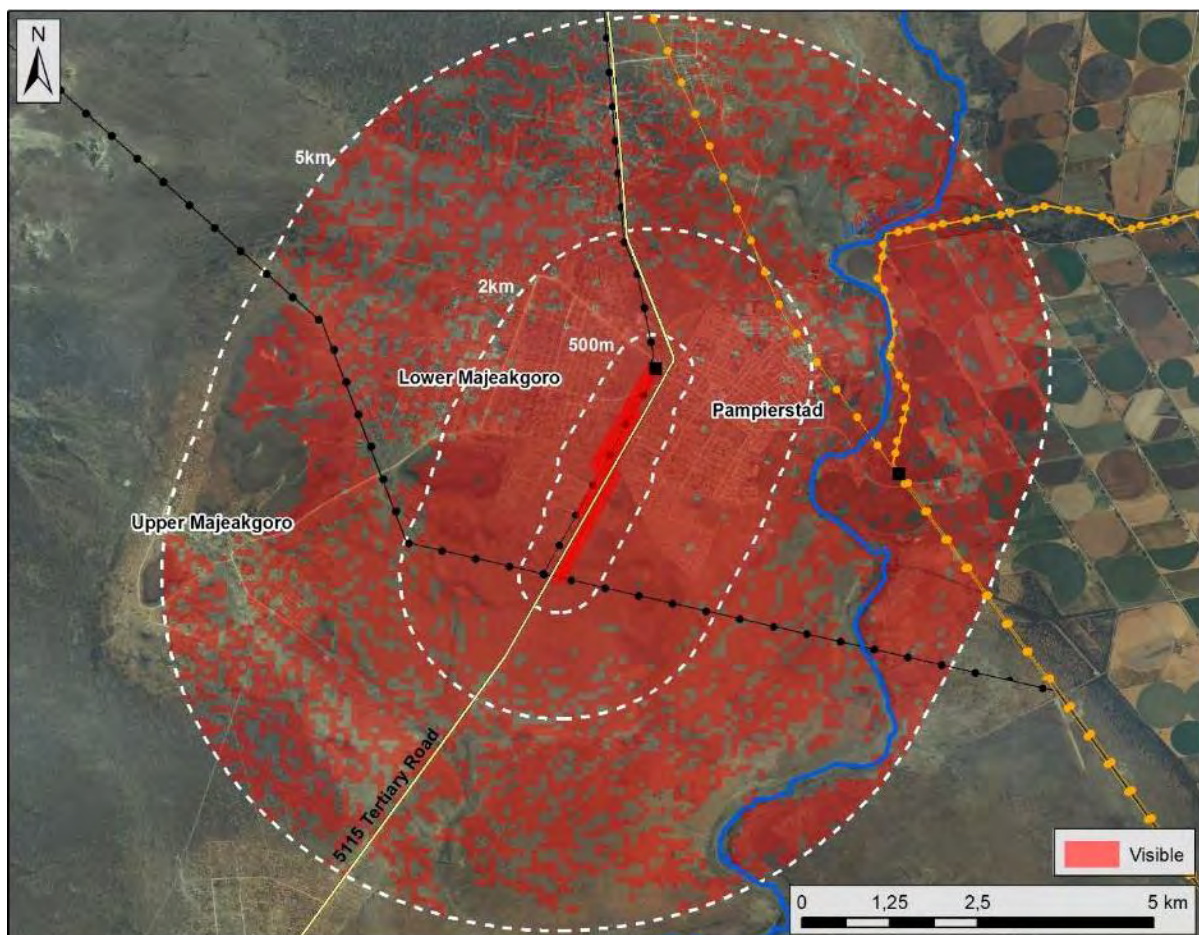


Figure 10.3: Viewshed of the proposed 132 kV OHL (up to 32m).

10.4.2 OVERALL VISUAL SENSITIVITY OF THE SURROUNDING LANDSCAPE

Visual sensitivity is the inherent visibility of the landscape, usually determined by a combination of topography, landform, vegetation cover and settlement pattern. This translates into visual sensitivity.



Large portions of the landscape in the study area have been transformed by residential/urban developments. Man-made structures (in particular, overhead electrical infrastructure) and activities are present in most views of the landscape. The terrain is relatively flat and, thus, offers minimal topographic screening. While vegetation screening may be low to moderate, it is dependent on the viewers' location in the landscape.

There are several receptors in the surrounding landscape, some of which may be opposed to the construction of the OHL with a height of up to 32m. Therefore, based on the Visual Assessment Criteria (Table 4) the surrounding landscape is classified as having Moderate visual sensitivity.

Overall visual sensitivity of the surrounding landscape: **MODERATE**

10.4.3 OVERALL VISUAL INTRUSION OF THE PROJECT ON THE SURROUNDING LANDSCAPE

Visual intrusion is the level of compatibility or congruence of the project with the particular qualities of the area, or its 'sense of place'. This is related to the idea of context and maintaining the integrity of the landscape.

- High visual intrusion – results in a noticeable change or is discordant with the surroundings;
- Moderate visual intrusion – partially fits into the surroundings, but clearly noticeable;
- Low visual intrusion – minimal change or blends in well with the surroundings.

Sense of place is defined by (Oberholzer 2005) as: 'The unique quality or character of a place... relates to uniqueness, distinctiveness or strong identity.' It describes the distinct quality of an area that makes it memorable to the observer.

While the OHL may be noticeable from the immediate surrounding areas, overhead electrical infrastructure, are already a very common site in the surrounding landscape. Based on the Visual Assessment Criteria, the visual intrusion of the proposed 132 kV OHL on the surrounding landscape is rated as low.

Overall visual intrusion on the surrounding landscape: **LOW**

10.4.4 VISUAL ASSESSMENT CRITERIA OF RECEPTORS

Viewer (or visual receptor) sensitivity is a measure of how sensitive potential viewers of the development are to changes in their views. The sensitivity of viewer groups depends on their activity and awareness within the affected landscape, their preferences, preconceptions and their opinions. Visual receptors are identified by looking at the development viewshed, and include scenic viewpoints, residents, motorists and recreational users of facilities within the viewshed. A large number of highly sensitive visual receptors can be a predictor of a high intensity/magnitude visual impact although their distance from the development (measured as visual exposure) and the current composition of their views (measured as visual intrusion) will have an influence on the significance of the impact.



The following distances from the site are used as proxy for categories of exposure:

- High exposure – 0 to 500m from the development.
- Moderate exposure – 500m to 2km from the development.
- Low exposure – greater than 2km from the development.

Based on potential sensitivity, visibility and exposure, the following sensitive receptors (Figure 8) were identified within the study area:

- Residents of Pampierstad,
- Residents of Lower Majeakgoro; and
- Motorists using the 5115 tertiary road.

An assessment of these receptors in terms of the visual sensitivity, visual exposure, visual absorption capacity (VAC) and visual intrusion has been included below. This assessment has also been used to help determine the severity rating of the impacts in Section 8.2.

Residents of Pampierstad

Pampierstad is a town located adjacent and to the east of the assessment corridor. Residents' views from their properties may potentially be affected by the proposed development. However, this will be dependent on the site-specific characteristics of each property, such as surrounding buildings and vegetation. On a whole, this area has the following visual assessment criteria:

- As it is a residential area, the sensitivity is considered *HIGH*.
- Due to its proximity (0 - 2km), the visual exposure is rated as *MODERATE* to *HIGH*.
- The 132 kV OHL is being proposed in an areas where there are already several overhead powerline, therefore the introduction of the 132kV OHL will fit in with the existing electrical infrastructure in the landscape. The visual intrusion is thus rated as *LOW*.
- The vegetation within the town and buildings will screen views from most locations within the town. Therefore, the VAC is considered *HIGH*.

Residents of Lower Majeakgoro

The town of Lower Majeakgoro is located adjacent and to the west of the assessment corridor. Residents' views from their properties may potentially be affected by the proposed development. However, this will be dependent on the site-specific characteristics of each property, such as surrounding buildings and vegetation. On a whole, this area has the following visual assessment criteria:

- As it is a residential area, the sensitivity is considered *HIGH*.
- Due to its proximity (0 - 2.5km), the visual exposure is rated as *MODERATE* to *HIGH*.
- The 132 kV OHL is being proposed in an areas where there are already several overhead powerline, therefore the introduction of the 132kV OHL will fit in with the existing electrical infrastructure in the landscape. The visual intrusion is thus rated as *LOW*.
- The vegetation within the town and buildings will screen views from most locations within the town. Therefore, the VAC is considered *HIGH*.

Motorists using the 5115 tertiary road



Motorists using the 5115 tertiary road will be able to see the proposed OHL. However, the following should be considered:

- Motorists are generally classified as *LOW SENSITIVITY* visual receptors since they are exposed to a landscape feature for only short period and are not focused on the landscape for its aesthetic value.
- The landscape has been transformed by urban developments, existing power lines and illegal dumping. As such, the visual intrusion is rated as *LOW*.
- The visual exposure is rated as *HIGH*, as sections of the 5115 road will be located within 500km of the proposed OHL.
- The topography and vegetation will not screen views of the development from the road. Therefore, the *VAC* is rated as *HIGH*.

10.5 HERITAGE AND PALEONTOLOGY

Previous studies conducted in this section of the Northern Cape Province suggest a rich and diverse archaeological landscape. Generally, the area is highly suitable for pre-colonial habitation and, even though the project area contains no visible tangible heritage remains, the probability of exposing archaeological remains that might be present in surface and sub-surface deposits along drainage lines and in pristine areas during development should not be excluded.

10.5.1 ARCHAEOLOGY

The study did not identify any archaeological receptors which will be directly impacted by the proposed project and no impact on archaeological sites or features is anticipated.

10.5.2 BUILT ENVIRONMENT

The study identified no buildings or structures of historical or heritage significance. For the rest of the project area, the general landscape holds varied significance in terms of the built environment as the area comprises historical farming remnants and relatively newly established industrial zones, settlements and townlands. However, no impact on built environment sites is anticipated.

10.5.3 CULTURAL LANDSCAPE

Generally, the proposed project area and its surrounds are characterised by open fields and farmlands. Further away from the project area, the landscape is typical of the rural north Northern Cape with undulating hills with flatter plains in-between. This landscape stretches over many kilometres and the proposed project is unlikely to result in a significant impact on the landscape.

10.5.4 GRAVES / HUMAN BURIALS SITES

No graves of human burial places were noted during the site investigation the project footprint. In the rural areas of the Northern Cape Province graves and cemeteries sometimes occur within settlements or around homesteads but they are also randomly



scattered around archaeological and historical settlements. The probability of additional and informal human burials encountered during development should thus not be excluded. In addition, human remains and burials are commonly found close to archaeological sites; they may be found in "lost" graveyards, or occur sporadically anywhere as a result of prehistoric activity, victims of conflict or crime. It is often difficult to detect the presence of archaeological human remains on the landscape as these burials, in most cases, are not marked at the surface.

Human remains are usually observed when they are exposed through erosion. In some instances packed stones or rocks may indicate the presence of informal pre-colonial burials. If any human bones are found during the course of construction work then they should be reported to an archaeologist and work in the immediate vicinity should cease until the appropriate actions have been carried out by the archaeologist. Where human remains are part of a burial they would need to be exhumed under a permit from SAHRA (for pre-colonial burials as well as burials later than about AD 1500). Should any unmarked human burials/remains be found during the course of construction, work in the immediate vicinity should cease and the find must immediately be reported to the archaeologist, or the South African Heritage Resources Agency (SAHRA). Under no circumstances may burials be disturbed or removed until such time as necessary statutory procedures required for grave relocation have been met.

10.5.5 PALEONTOLOGICAL

According to the SAHRIS Palaeosensitivity map (Figure 10.4) there is a moderate chance (green), of finding fossils in this proposed development site and thus only

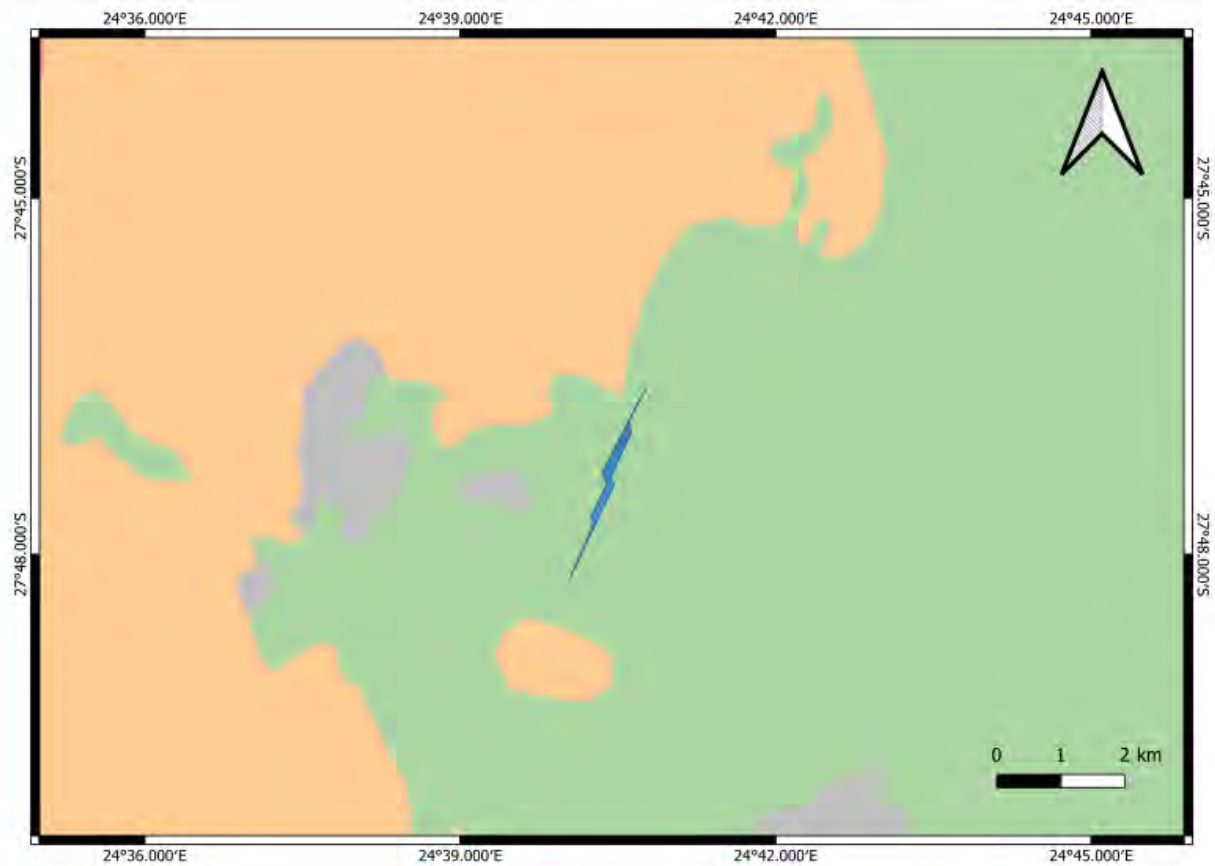


Figure 10.4: Extract of the 1 in 250 000 SAHRIS PalaeoMap map (Council of Geosciences). Location of the proposed development is indicated in blue.

COLOUR	SENSITIVITY	REQUIRED ACTION
RED	VERY HIGH	field assessment and protocol for finds is required
ORANGE/YELLOW	HIGH	desktop study is required and based on the outcome of the desktop study; a field assessment is likely
GREEN	MODERATE	desktop study is required
BLUE	LOW	no palaeontological studies are required however a protocol for finds is required
GREY	INSIGNIFICANT/ZERO	no palaeontological studies are required
WHITE/CLEAR	UNKNOWN	these areas will require a minimum of a desktop study. As more information comes to light, SAHRA will continue to populate the map.



11 SUMMARY OF KEY ENVIRONMENTAL FINDINGS

This section provides an overview of the environmental impacts associated with the development of the 132 kV powerline near Pampierstad. Table 11.1 provides an overall summary of the negative (cost) and positive (benefit) environmental impacts associated with the proposed powerline.

Table 11.1: Summary of impacts before and after mitigation across phases.

Theme	Before Mitigation			After Mitigation		
	Low	Moderate	High	Low	Moderate	High
<i>Environmental policy</i>			-3	-3		
<i>Built environment</i>		-8 (+1)		-8	(+1)	
<i>Terrestrial Biodiversity and Ecology</i>	-16	-4		-10	-3	
<i>Avifaunal Impact</i>	-7			-7		
<i>Socio-economic</i>	3	-10		-10(+3)		
<i>Rehabilitation and maintenance</i>		-3		-3		
<i>Visual Impact</i>	-1			-1		
<i>Heritage Impact</i>	-4			-4		
<i>Wetland Assessment</i>	-8			-8		
Total	-36 (+3)	-25 (+1)	-3	-54 (+3)	-3 (+1)	0



12 CONCLUSIONS AND RECOMMENDATIONS

This Chapter of the DRAFT BAR provides a summary of the findings of the proposed 132 kV Powerline and a comparative assessment of the positive and negative implications of the proposed project and identified alternatives. In addition, this Chapter provides the EAP's opinion as to whether the activity should or should not be authorised as well as the reason(s) for the opinion.

12.1 DESCRIPTION OF THE PROPOSED ACTIVITY

Eskom Holdings SOC Ltd is proposing the development of a 3.4 kilometre 132 kV Overhead Line (OHL). The proposed Ganspan Pering 132 kV OHL will connect to Sidiba Substation. The proposed OHL is located near Pampierstad on the border of the North West and Northern Cape Provinces. Vegetation will be cleared along the servitude area. In this case approximately 2.7 ha (3.4 km length, 8 m width).

12.2 ASSUMPTIONS, UNCERTAINTIES AND GAPS

12.2.1 ASSUMPTIONS

The following assumptions have been made during the BA process:

- Vegetation clearance will be kept to a minimum during the construction of the powerline

12.2.2 GAPS

No detailed engineering input was provided in this phase of the development. It is general engineering practice that the detailed design phase of a project is only initiated once environmental authorisation for a project (based on what is submitted as preliminary design) is secured. In this regard, the BAR considered industrial norms. This has also provided the EIA process an opportunity to guide the Planning and Design proactively rather than reactively. The Environmental Management Programme (EMPr) should therefore be viewed as a dynamic evolving document that can be adapted to specific needs and design conditions.

If the project is authorised by National Department of Forestry, Fisheries and Environment (DFFE), Eskom Holdings SOC Ltd will be required to provide DFFE with final layout plans (i.e. panel placement, panel designs, etc.). These plans should be informed by the BA and any other post-authorization studies or surveys as required, e.g. geotechnical investigations, ecological walk-throughs and micro siting adjustments. The final layout requirement will further serve to demonstrate to DFFE how the relevant environmental standards and management specifications contained in the EMPr, as informed by the site specific environmental context and potential impacts, as well as the relevant conditions of authorisation, will be incorporated in the detailed design process.



12.3 CONSIDERATION OF ALTERNATIVES

12.3.1 LOCATION ALTERNATIVES

Only one location (corridor) has been assessed. Within that corridor two alternatives have been considered. The first, a new line and the second, partial use of the existing line with the additional of partial new lines, which is the preferred option. Alternative locations for the current project are not reasonable or feasible since the proposed OHL needs connect the existing Eskom Sidiba Switching Station to the existing Ganspan/Pering 1 132kV OHL. The proposed route for the OHL is the most direct and avoids having to navigate through the surrounding urban areas.

12.3.2 TECHNOLOGY ALTERNATIVES

Only the development of a 132 kV OHL strung on tubular steel monopole structure is considered.

12.3.3 LAYOUT ALTERNATIVES

Alternative activities for the current project are not reasonable or feasible as the purpose of the proposed OHL is to connect the existing Eskom Sidiba Switching Station to the existing Ganspan/Pering 1 132kV OHL.

12.3.4 NO-GO ALTERNATIVE

The “No-go” alternative entails maintaining the status quo. In other words, the proposed construction of the 132 kV OHL would not go ahead, and current land uses would continue as before. While potential risks associated with the new 132 kV OHL would be avoided, the existing impacts of existing electrical infrastructure (i.e. existing powerline and switching station) would persist and, potential benefits of the proposed project would be forfeited.

12.4 OPINION OF THE EAP

It is the professional opinion of CES and specialists that:

- **NO FATAL FLAWS** are currently associated with the proposed Overhead line installation as all identified impacts can be adequately mitigated to reduce the risk or significance of impacts to an acceptable level, provided mitigation measures recommended in this report are implemented and maintained throughout the life of the project.
- If any changes to these layouts are made, the input of the relevant specialist must be obtained and incorporated into any changes.
- The information in the report is sufficient to allow DFFE to make an informed decision.

12.5 RECOMMENDATION OF THE EAP AND SPECIALISTS

It is the recommendation of CES that the proposed powerline at Eskom Ganspan Pering should be approved provided that the proposed mitigation measures are implemented and that the EMPr is implemented, maintained and adapted to incorporate relevant legislation, standard requirements and audit reporting, throughout the life of the development. The mitigation measures for all impacts identified in the BAR must be incorporated into the EMPr



and must be used by the engineers during the detailed Planning & Design Phase, by the contractors during the Construction Phase and by Eskom Holdings SOC Ltd during the Operation Phase.



13 APPENDICES

- APPENDIX A – MAPS AND PHOTOGRAPHS
- APPENDIX B – IMPACT TABLES
- APPENDIX C – SPECIALIST IMPACT ASSESSMENT
- APPENDIX D – PUBLIC PARTICIPATION PROCESS
- APPENDIX E – ENVIRONMENTAL MANAGEMENT PROGRAMME
- APPENDIX F – DETAILS AND EXPERIENCE OF THE EAP